Preliminary Drainage Report
for

Windingwalk
and the Enclave
PUD

Revise so it's a PDR or the Enclave only

MERIDIAN RANCH
A GOLF & RECREATIONAL COMMUNITY

EL PASO COUNTY, COLORADO

December 2017

Prepared For:

GTL DEVELOPMENT, INC.
P.O. Box 80036
San Diego, CA 92138

Prepared By:
Tech Contractors
11886 Stapleton Drive
Falcon, CO 80831
719.495.7444

PUDSP-18-003

PCD Project No. XXX-17-XXX

CERTIFICATIONS

Design 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.

________________________________ ________________

Thomas A. Kerby, P.E. #31429 Date

Owner/Developer's Statement:

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

________________________________ ________________

Raul Guzman, Vice President Date
GTL Development, Inc.
P.O. Box 80036
San Diego, CA 92138

El Paso County:

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

________________________________ ________________

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

Windingwalk and the Enclave PUD
Preliminary Drainage Plan

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Appendices:

Update narrative to focus on the Enclaves PUD

EXECUTIVE SUMMARY

The purpose of the following Preliminary Drainage Report (PDR) is to present proposed drainage pattern changes for planned ~~Windingwalk and~~ the Enclave PUD single family residential development. Runoff quantities and proposed facilities have been calculated using the current City of Colorado Springs/El Paso County Drainage Criteria Manual (DCM) (1994 version) and those portions of the City of Colorado Springs Drainage Criteria Manual, Volume 1 (DCM-1) ((2014 version) adopted by the El Paso County Board of Commissioners. Concepts presented in this report will be refined and specific improvements addressed during the Final Plat process.

This report anticipates the revisions to the most recent sketch plan amendment in process with the Planning and Community Development Department. The submitted Sketch Plan includes a change of use from business to residential resulting in lower developed runoff. Another significant change from previous drainage reports submitted to El Paso County concerning development associated within Meridian Ranch is the adopted changes to the drainage criteria. El Paso County by Resolution 15-042 adopted Chapter 6 of the 2014 version of the DCM-1. Chapter 6 addresses the hydrologic calculations and includes an updated hydrograph to be used with storm drainage runoff. The new hydrograph results in lower historic values for runoff rates and higher developed values given the same input values. The county adopted Section 3.2.1 of Chapter 13 of the DCM-1 referencing Full Spectrum Detention; the concept "provides better control of the full range of runoff rates that pass through detention facilities than the conventional multi-stage concept. By providing an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage with an outlet similar to the Water Quality Capture Volume (WQCV), *frequent and infrequent inflows are released at rates approximating undeveloped conditions.*" This report includes hydrologic models from HEC-HMS for the historic, interim and future conditions for the 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, and 100-yr design storm frequencies. The interim and the future conditions include detention facilities sized and modeled such that *"frequent and infrequent inflows are released at rates approximating undeveloped conditions"*

On November 16, 2000 the El Paso County Board of County Commissioners approved the rezoning of the Meridian Ranch project (PUD-00-010) from A-35 to PUD with several conditions. Condition number seven stated in part that "drainage plans shall release and/or retain at approximately eight percent (80%) of historic rates." At the time of the initial approvals there were no drainage improvements downstream of the Meridian Ranch project and the existing natural channels were shallow and undefined creating the potential for widespread flooding even during the smaller more frequent design storms. Since the time of the original approvals development has occurred downstream of Meridian Ranch with drainage facilities designed and constructed of sufficient size to safely convey the historic flow rates from the Meridian Ranch developemt.

Windingwalk (139± ac) and the Enclave (68± ac) PUD encompasses 207± total acres and is located in Sections 29 and 30, Township 12 South, Range 64 West of the 6th Principal Meridian. It is approximately 12 miles northeast of the city of Colorado Springs, 2.5 miles north of the unincorporated town of Falcon, and immediately north of the Woodmen Hills development.

Since this is assuming the submitted Sketch Plan amendment (SKP-17-001) is approved, update the narrative accordingly to reference SKP-17-001 which includes the condition of approval which removed the requirement to release at 80% of historic rate. Same comment applies to the Winding Walk PDR/FDR.

Windingwalk and the Enclave PUD is currently located within three separate drainage basins; the Bennett Ranch Basin, the Haegler Ranch Basin and the Gieck Ranch Basin. Each have been studied as part of the respective Drainage Basin Study, the Gieck Ranch DBPS is currently waiting for some minor revisions prior to final approval from the El Paso County. The project developer has agreed to be in substantial conformance with the appropriate "to-be approved" DBPS.

Based on the aforementioned design parameters the development of the project will not adversely affect downstream properties.

INTRODUCTION

Purpose

The purpose of the following Preliminary Drainage Report (PDR) is to present proposed drainage pattern changes as a result of the Windingwalk and the Enclave PUD development with drainage mitigation based on calculated developed flows in excess of allowable runoff discharge.

Scope

The scope of this report includes:

- Location and description of the proposed development, stating the proposed land use, density, acreage and adjacent features to the site.
- Calculations for design peak flows from all off-site tributary drainage areas.
- Calculations for design peak flows within the proposed project area for all drainage areas.
- Discussion of major drainage facilities required as a result of the development.
- Discussion and analysis of existing and proposed facilities.

Runoff quantities and proposed facilities have been calculated using the current City of Colorado Springs/El Paso County Drainage Criteria Manual (DCM) (1994 version) and those portions of the City of Colorado Springs Drainage Criteria Manual, Volume 1 (DCM-1) ((2014 version) adopted by Resolution 15-042 of the El Paso County Board of County Commissioners.

Background

On November 16, 2000 the El Paso County Board of County Commissioners approved the rezoning of the Meridian Ranch project (PUD-00-010) from A-35 to PUD with several conditions. Condition number seven stated in part that "drainage plans shall release and/or retain at approximately eight percent (80%) of historic rates." At the time of the initial approvals there were no drainage improvements downstream of the Meridian Ranch project and the existing natural channels were shallow and undefined.

Since the time of the original approvals development has occurred downstream of Meridian Ranch with drainage facilities designed and constructed of sufficient size to safely convey the historic flow rates off of Meridian Ranch to points located further downstream. The 4-Way Ranch development located adjacent and downstream of Meridian Ranch has processed a Letter of Map Revision (LOMR) and constructed storm drainage improvements downstream of the existing Pond E outlets. The LOMR was processed and the improvements constructed assuming historic flow rates from Meridian Ranch. Storm drain improvements near the intersection of Stapleton Drive and Eastonville have also been designed and constructed to convey the historic flow rates from Meridian Ranch. The design of these improvements and the downstream system anticipated 87 CFS to be collected near outlet of the future Pond H from Meridian Ranch. The preliminary design of Pond H has yielded a 100-year flow rate of 60 CFS, well below the anticipated 87 CFS figure.

Since this is assuming the submitted Sketch Plan amendment (SKP-17-001) is approved, update the narrative accordingly to reference SKP-17-001 which includes the condition of approval which removed the requirement to release at 80% of historic rate. Same comment applies to the Winding Walk PDR/FDR.

Current estimates show the design discharge Pond E to 4-Way are near or below 90% of historic flow rates for the 100-year discharge at full buildout and the 5-year discharge at or slightly above historic. The increase in the 5-year discharge rate can be directly attributed to the new hydrograph required by the adoption of the DCM-1. Previous versions of the hydrological models has shown the 5-year discharge rates from Pond H to be lower than the historic rates.

EXISTING CONDITIONS

General Location

Windingwalk and the Enclave PUD encompasses 74± acres and is located in Sections 29 and 30, Township 12 South, Range 64 West of the 6th Principal Meridian. It is approximately 12 miles northeast of the city of Colorado Springs, 2.5 miles north of the unincorporated town of Falcon, and immediately north of the Woodmen Hills development.

Land Use

Historically, ranching dominated the area surrounding Meridian Ranch; however, currently urbanization has occurred in the general vicinity. Most notably, urbanization is occurring to the north with Latigo Trails, to the south in the Woodmen Hills Subdivision, to the east in Four Way Ranch, to the west in the Falcon Hills subdivision, and to the northwest in the Paint Brush Hills subdivision.

Climate

Mild summers and winter, light precipitation; high evaporation and moderately high wind velocities characterize the climate of the study area. The average annual monthly temperature is 48.4 F with an average monthly low of 30.3 F in the winter and an average monthly high of 68.1 F in the summer. Two years in ten will have maximum temperature higher than 98 F and a minimum temperature lower than –16 F. Precipitation averages 15.73" annually, with 80% of this occurring during the months of April through September. The average annual Class A pan evaporation is 45 inches. (Soil Survey of El Paso County Area, Colorado).

Topography and Floodplains

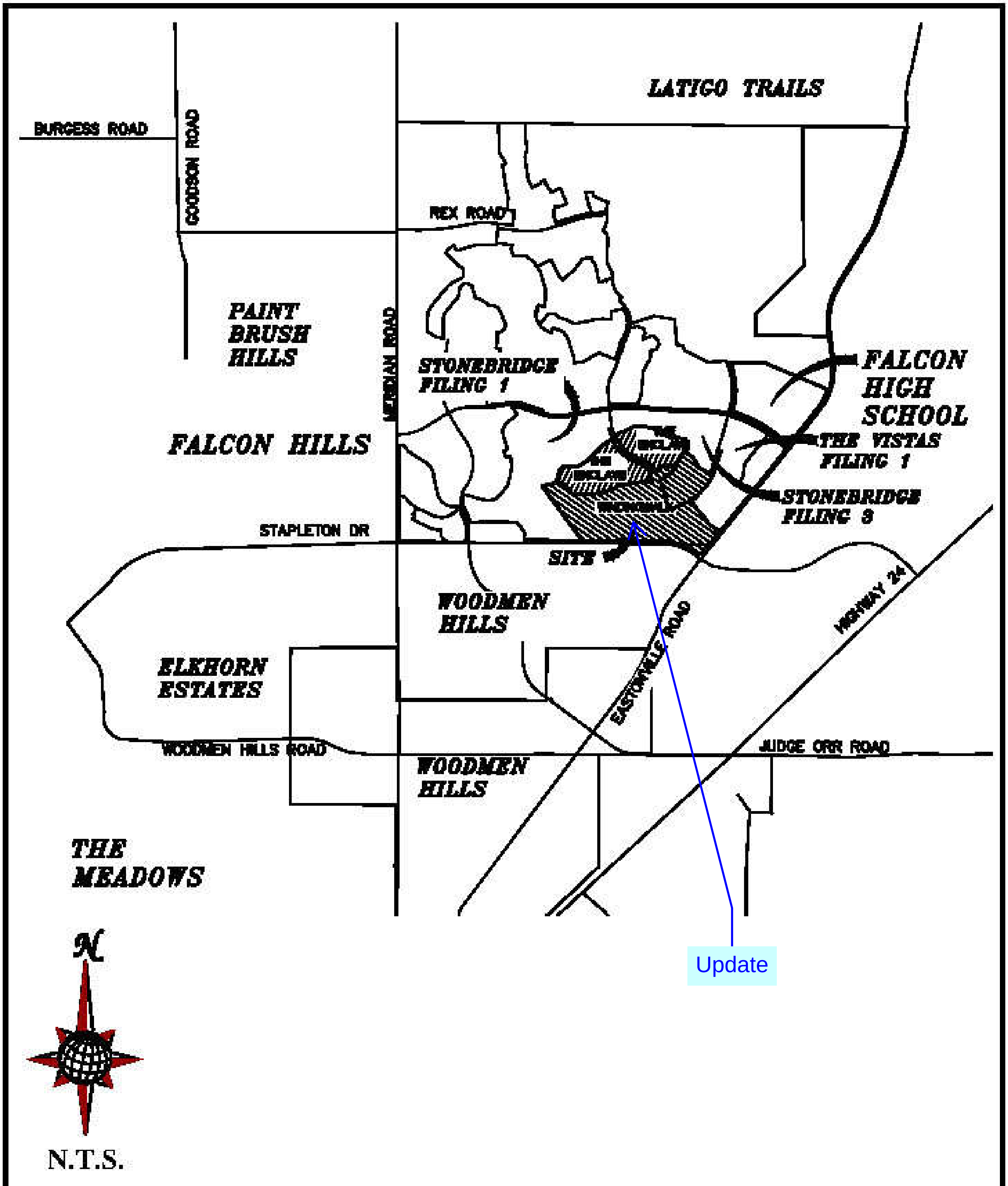
The topography of the site is typical of a high desert, short prairie grass with relatively flat slopes generally ranging from 2% to 4%. The project site drains generally from the northwest to southeast and is tributary to the Black Squirrel Creek.

The Flood Insurance Rate Maps (FIRM No. 08041C0575-F dated 3/17/1997) indicates that ~~the Windingwalk and~~ the Enclave PUD development is outside of any designated flood plain. Letter of Map Revision (LOMR), Case No. 14-08-1121P was approved by FEMA on November 6, 2014 with an effective date of March 24, 2015. Please see Figure 2: Windingwalk and the Enclave PUD Federal Emergency Management Agency (FEMA) Floodplain Map.

Geology

The National Resources Conservation Service (NRCS) soil survey records indicate that the service area is predominately covered by soils classified in the Stapleton series. This series is categorized in the Hydrological Group B.

Figure 1: Vicinity Map



MERIDIAN RANCH WINDINGWALK–ENCLAVE VICINITY MAP	TECH CONTRACTORS 11886 STAPLETON DRIVE FALCON, CO 80831 TELEPHONE: 719.495.7444 FAX: 719.495.2457
FIGURE 1	

Figure 2: FEMA Floodplain Map

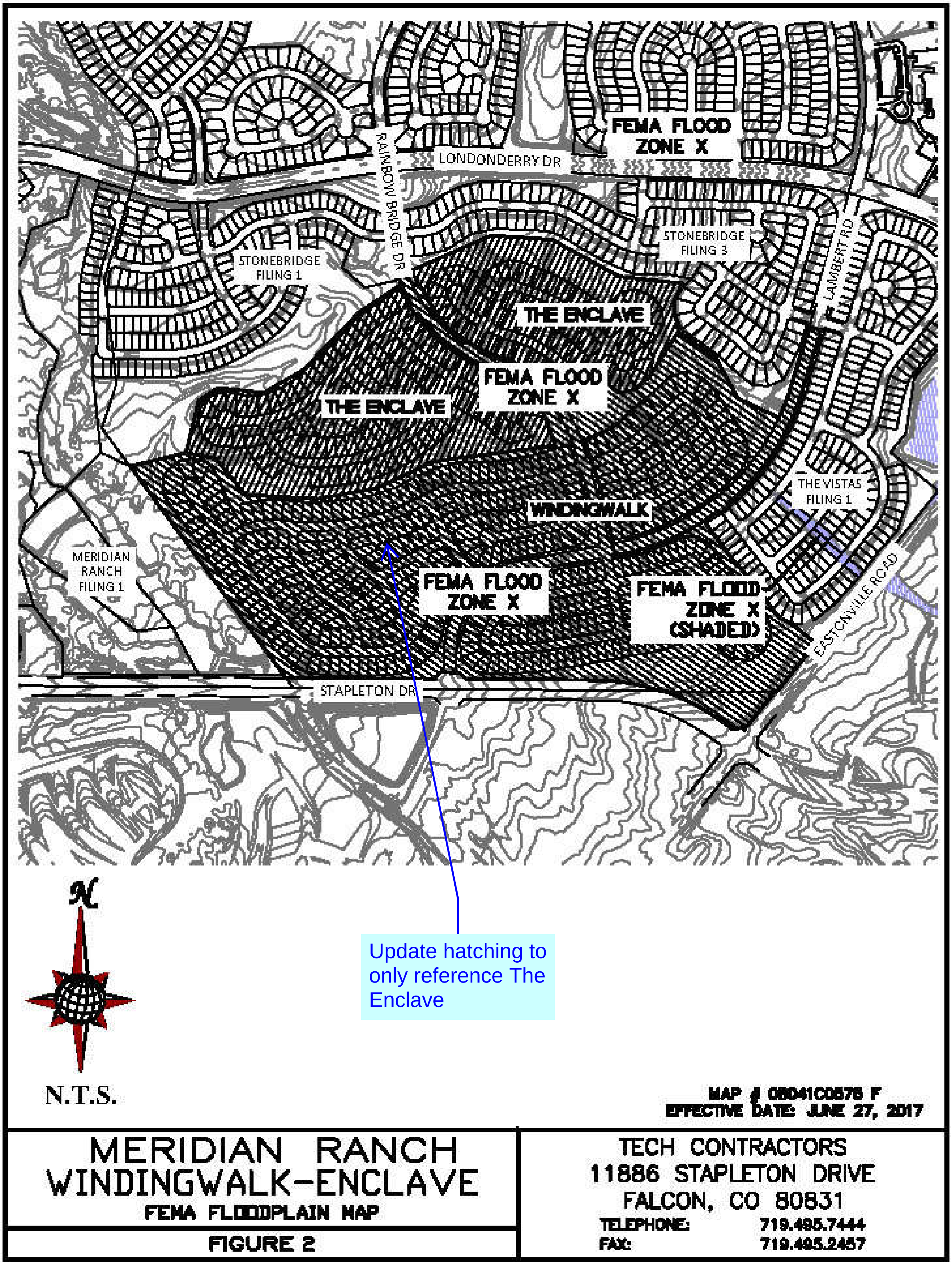
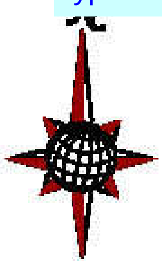


Figure 3: Soils Map

Update so the delineation b/w soil types is readily visible.

Update hatching to only reference The Enclave



N.T.S.

MERIDIAN RANCH
WINDINGWALK–ENCLAVE
SOILS MAP

FIGURE 3

TECH CONTRACTORS
11886 STAPLETON DRIVE
FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.2457

The Columbine (19) gravelly sandy loam is a deep, well-drained to excessively drained soil formed in coarse textured material on alluvial terraces, fans and flood plains. Permeability of this soil is very rapid. Available water capacity is low to moderate, surface runoff is slow, and the hazard of erosion is slight to moderate. This soil is used mainly for grazing livestock, for wildlife habitat and for home sites. The main limitation of this soil for urban development is a hazard of flooding in some areas.

The Stapleton (83) sandy loam is a deep, non-calcareous, well-drained soil formed in alluvium derived from arkosic bedrock on uplands. Permeability of this soil is rapid. Available water capacity is moderate, surface runoff is slow, and the hazard of erosion and soil blowing is moderate. This soil is suited to habitat for open land and rangeland wildlife. The main limitation of this soil for urban development is frost-action potential.

Typically, these soils are well-drained, gravelly sandy loams that form on alluvial terraces and fans and exhibit high permeability and low available water capacity with depth to bedrock greater than 6 feet.

Note: (#) indicates Soil Conservation Survey soil classification number. See Figure 3 Windingwalk and the Enclave PUD – Soils Map.

Natural Hazards Analysis

Natural hazards analysis indicates that no unusual the vicinity. However, because the soils are co drilling and/or excavation could occur. By citing opportunity to lay the banks of excavations back a associated with sloughing soils can be minimized.

Add a narrative clarifying the phasing of The Enclave w/ respect to Windingwalk. Does the infrastructure associated with both Winding Walk Filing 1 & 2 have to be in-place before The Enclaves can be developed?
You may want to categorically state that the drainage design (storm drains & Pond H sizing) within the PDR/FDR for Windingwalk accounted for the drainage within The Enclave.

<u>DRAINAGE BASINS AND SUB-BASINS</u>

The site is within the Bennett Ranch, the Haegler Ranch, and the Gieck Ranch Drainage Basins and accepts flow from areas north of the project site within portions of Meridian Ranch.

Two different scenarios were analyzed for the drainage associated with the Windingwalk and the Enclave PUD.

The first scenario analyzes the historic conditions for W condition has all of the Meridian Ranch development i

It seems that there should be an interim condition with existing plus Windingwalk built out since the drainage design for the Enclave is dependent on the completion of the Windingwalk infrastructure.

The other scenario analyzes the future build out conditions to ensure the storm drain facilities located at the discharge points of the project are able to properly convey the historic peak flow rates as the storm drainage exits the project.

Clarify. Is this full buildout condition of Winding Walk.

<u>DRAINAGE DESIGN CRITERIA</u>

SCS Hydrograph Procedure

The US Army Corp of Engineers' HEC-HMS computer program modeled the Soil Conservation Service (SCS) Hydrograph procedure to determine final design parameters for the major drainage facilities within the project. Onsite basin areas were calculated using aerial topography of the site and approved final design data. Times of concentration were estimated using the SCS procedures described in the DCM. Based upon the hydrologic soil type, the natural conditions found in the basins and the runoff curve numbers (CN) chart from Table 6-10 of the City of Colorado Springs DCM for Antecedent Runoff Condition II (ARC II), the following CN values were used for the given conditions.

Table 1: SCS Runoff Curve Numbers

Condition	CN
Residential Lots (5 acre)	63
Residential Lots (2.5 acre)	66
Residential Lots (1 acre)	68
Residential Lots (1/2 acre)	70
Residential Lots (1/3 acre)	72
Residential Lots (1/4 acre)	75
Residential Lots (1/5 acre)	78
Residential Lots (1/6 acre)	80

School	80
Parks/Open Space	62
Commercial	85
Roadways	98
Graded	67
Golf Course	62
Latigo Undeveloped	65
Undeveloped	61

*Curve Numbers were interpolated and based on amount of impervious area per lot. The 24 hour storm precipitation values were selected from the NOAA Atlas 14, Volume 8, Version 2 for the Meridian Ranch location (Latitude 38.9783°, Longitude -104.5842°, Elevation 7054 ft). These numbers along with SCS information were used as input to the U.S. Army Corp of Engineers HEC-HMS computer model to determine design runoffs. See the table for all the design storm events in Appendix A.

Full Spectrum Design

The City of Colorado Springs adopted a new Drainage Criteria Manual (DCM) in 2014 which incorporated the use of *Full Spectrum Design* for storm drainage analysis for projects located within the city limits. Full Spectrum analyzes the storm water runoff for the 2-year, 5-year, 10-year, 25-year, 50-year and the 100-year design storms in order ensure the analysis more accurately project the conditions of post development. El Paso County adopted portions of the City's 2014 DCM by resolution in January 2015; the County resolution adopted Chapter 6 (Hydrology) and Section 3.2.1 of Chapter 13 (Full Spectrum Detention) for projects outside of the City of Colorado Springs. This report has incorporated the use of full spectrum in the analysis of the interim and future conditions. The full spectrum detention concept is to release the developed runoff flows to at or below those of the pre-developed condition. The design of Pond H and control structure meets or exceeds the intent and spirit of the concept.

Table 2: Detention Pond Summaries:

POND E						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
FUTURE CONDITIONS						
5-YEAR STORM	134	17	29.0	16.8	14.4	6971.0
10-YEAR STORM	210	32	44.0	27.5	20.2	6971.6
25-YEAR STORM	340	87	69.4	49.9	28.0	6972.3
50-YEAR STORM	461	157	94.2	73.5	33.9	6972.9
100-YEAR STORM	631	255	123.4	101.9	39.5	6973.3

POND H						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
FUTURE CONDITIONS						
5-YEAR STORM	36	4	4.5	3.4	2.3	6971.5
10-YEAR STORM	56	8	6.7	5.1	3.3	6971.9
25-YEAR STORM	91	18	10.5	8.4	4.9	6972.5
50-YEAR STORM	123	31	13.9	11.7	6.2	6973.0
100-YEAR STORM	161	55	18.0	15.6	7.6	6973.4

BENNETT REGIONAL DETENTION POND						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
FUTURE CONDITIONS						
5-YEAR STORM	278	102	73	67	19.8	6970.0
10-YEAR STORM	448	256	121	113	31.0	6970.8
25-YEAR STORM	814	601	209	196	48.8	6971.8
50-YEAR STORM	1298	991	295	277	65.4	6972.7
100-YEAR STORM	1805	1400	398	379	86.4	6973.8

DRAINAGE CALCULATIONS

Identify when these temporary ponds, which were installed as part of the early grading, be removed.

General Concept

The improvements associated with ~~Windingwalk and~~ the E portions of the Bennett Ranch, the Haegler Ranch, and the Gieck Ranch Drainage Basins. Storm water runoff will be conveyed across the site overland and within storm drain networks to the detention ponds and existing drainage swales. Those portions of the site tributary to the Bennett Ranch Basin will be directed to an existing sedimentation pond prior to being released into the adjacent channel then conveyed downstream to the existing Bennett Ranch Regional Detention facility. Those portions of the site tributary to the Gieck Ranch Basin will be directed to an existing sedimentation pond located upstream to the Vistas Filing 1 then conveyed downstream to the existing Pond E. Those portions of the site tributary to the Haegler Ranch Basin will be directed to and released to the proposed Pond H detention. The proposed detention Pond H will be utilized as a combination sedimentation/detention pond until such time as the tributary areas establish sufficient ground cover or development in the area is complete.

The facilities have been adequately sized such that the developed flows will be detained and released at or below the historic flow rates for the various design storm events as outlined in the El Paso County DCM and those sections of the City of Colorado Springs DCM-1 adopted by the El Paso County Board of County Commissioners. Existing facilities located downstream of the proposed development have been designed and/or constructed to accept the given flow rates from Meridian Ranch.

The majority of narrative below was discussed in the MDDP and Windingwalk PDR/FDR. Update the narrative to discuss how Windingwalk's PDR/FDR drainage design and other studies affect the drainage design for this site.

That porti ... to Pond E was designed using the old criteria hydrologic methods and with a release rate approximating 80% of the historic peak flow rates for the 5-year and the 100-year storm events. The analysis shows the pond releasing the developed peak flows below the historic flow rates for the full spectrum of design storms and near 90 percent of historic flow rate for the 100-year storm event using the newly adopted unit hydrograph from the City DCM-1.

Stub out within Windingwalk?

The portion of the site located within the Bennett Ranch Basin is tributary to an existing 48" RCP storm drain pipe located within Lambert Road. The storm drain conveys the flow southerly toward the North Channel where it discharges into the Bennett Regional Detention Pond located within the Bennett Ranch Basin. The storm drain was designed using the old criteria hydrologic methods and was expected to accept 143 CFS for the 100-year storm event, the results of this analysis estimates 148 CFS will be discharged into the 48" RCP. The storm drain was hydraulically analyzed against the new CFS value and found to be sized adequately to convey the flow.

A portion of the site is tributary to a channel that is tributary to the existing Bennett Regional Detention Pond located within the Bennett Ranch Basin, the pond was designed using the old criteria hydrologic methods and with a release rate approximating 80% of the historic peak flow rates for the 5-year and the 100-year storm events. The analysis shows the pond releasing the developed peak flows below the historic flow rates for the full spectrum of design storms. The pond was also designed with water quality provisions to accommodate the entirety of all tributary areas from Meridian Ranch and Woodmen Hills.

A portion of the site is tributary to the proposed Pond H located within the Haegler Ranch Basin, the pond was sized using the new criteria hydrologic methods and with a release rate approximating the historic peak flow rates for the full spectrum of storm events. Pond H was identified by the Haegler Ranch DBPS as a regional detention facility, the developer will apply for credits at each final plat stage as a result of constructing the pond. The analysis shows the pond releasing the developed peak flows below the historic flow rates for the full spectrum of design storms and below 90 percent of the 100-year historic flow rate for that location. Additionally, the release rate of the 2-year storm event has been calculated to be 2.5 CFS. The existing storm drain pipe accepting flow from the proposed Pond H is designed to accept a higher flow rate than what will be discharge from the pond.

Figure 4: Meridian Ranch SCS Calculations – Historic Conditions Map and Figure 5: Meridian Ranch SCS Calculations – Future Conditions Map depict the historic and future general drainage patterns for Windingwalk and the Enclave portion of Meridian Ranch.

The purpose of this report is to show that the development of ~~Windingwalk and~~ the Enclave PUD at Meridian Ranch will not adversely impact the existing drainage facilities adjacent to and downstream of the developed area and the proposed Pond H is properly sized for the anticipated future development of the area tributary to the pond. Further evaluation will be necessary at each stage of future development within the Meridian Ranch until the anticipated build-out is reached.

Historic Drainage - SCS Calculation Method

Following is a tabulation of the surface drainage characteristics under Existing Conditions using the SCS calculation method. Please refer to Figure 4 - Meridian Ranch SCS Calculations - Historic Basin Map.

Table 3: Historic Drainage Basins – SCS

HISTORIC							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS02	0.2219	148	102	65	30	13	3.0
B01	0.2219	148	102	65	30	13	3.0
B01-B07	0.2219	148	102	65	30	13	3.0
OS03	0.1984	130	88	55	23	9	2.0
B02-B03	0.1984	129	88	55	23	9	2.0
HB01	0.0234	19	13	8	3	1	0.0
B03	0.2218	140	95	59	25	10	2.0
B03-B07	0.2218	140	94	59	25	10	2.0
OS04	0.1359	83	54	32	12	4	1.0
B04-B05	0.1359	82	54	32	12	4	1.0
HB03	0.1266	103	68	41	15	5	1.0
B05	0.2625	144	91	52	20	7	1.0
B05-B07	0.2625	144	91	52	20	7	1.0
HB02	0.1063	77	51	30	11	4	0.0
HB04	0.0609	47	31	19	7	2	0.0
B07	0.8734	519	344	207	86	33	6.0
B07-B12	0.8734	518	343	207	86	33	6.0
HB05	0.1375	102	67	40	15	5	1.0
HB06	0.1641	111	73	43	16	5	1.0
B12	1.175	679	440	259	103	40	7.0
B12-PB	1.175	677	440	259	103	39	7.0
HB07	0.0313	29	19	12	4	1	0.0
POND B	1.2063	688	446	262	105	40	7.0
PB-19	1.2063	687	444	261	104	40	7.0
OS01	1.5594	757	510	316	136	55	11
OS01-B19	1.5594	756	509	315	136	55	11
HB08	0.1344	81	53	32	12	4	1.0
HB09	0.3047	138	90	54	21	7	1.0
B19	3.2048	1563	1041	635	266	105	20
B19-B26	3.2048	1563	1039	634	266	105	20
HB10	0.3047	172	113	67	26	9	1.0
HB12	0.0797	54	36	21	8	3	0.0
HB12-B26	0.0797	54	35	21	8	3	0.0
B26	3.5892	1737	1147	693	288	113	21
26-32	3.5892	1734	1146	693	287	113	21
HB11	0.1125	60	40	23	9	3	0.0
32	3.7017	1782	1177	709	293	115	22
32-37	3.7017	1782	1175	708	293	115	22
B-14	0.4039	178	117	70	27	10	2.0
B-13	0.2813	127	83	50	19	7	1.0
36	0.6852	306	200	119	47	17	3.0
36-37	0.6852	305	200	119	47	17	3.0
B-15	0.075	39	26	15	6	2	0.0
37	4.4619	2117	1391	834	338	131	25
HG07	0.0984	50	32	19	7	3	0.0
HG07-G11	0.0984	50	32	19	7	3	0.0
HG08	0.1328	77	51	30	11	4	1.0
G11	0.2312	122	79	47	18	6	1.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Since the drainage map only shows a portion of the SCS Hydrologic Element shown on this table, add a footnote referencing the MDDP (include the PCD Project No. if known) that provides the complete analysis.

Clearly identify the pertinent hydrologic element impacted with this development

Similar comment applies to the subsequent Tables.

HISTORIC							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
G12	0.4093	196	128	76	29	10	2.0
G12-H08	0.4093	196	128	76	29	10	2.0
HG10	0.1375	40	26	16	7	3	1.0
H08	0.5468	227	149	89	35	13	2.0
HG11	0.2047	80	53	31	13	5	1.0
H09	0.2047	80	53	31	13	5	1.0
HH01	0.0984	70	46	27	10	3	0.0
H12	0.0984	70	46	27	10	3	0.0
HG12	0.1297	60	39	23	9	3	1.0
H10	0.1297	60	39	23	9	3	1.0

Future Drainage - SCS Calculation Method

Following is a tabulation of the surface drainage characteristics for the future conditions using the SCS calculation method. Please refer to Figure 6 - Meridian Ranch SCS Calculations – Future Basins Map

Table 4: Future Drainage Basins-SCS

FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS01	1.5594	757	510	316	136	55	11
DB16	0.0578	92	72	54	35	23	13
B10	1.6172	794	537	335	147	62	13
B10-B11	1.6172	793	537	335	147	62	13
DB17	0.0048	16	13	11	9	7	6
B11	1.6220	795	538	336	148	63	15
B11-POND C	1.6220	795	538	336	148	63	15
DB21	0.0519	54	38	25	12	5	1
DB18	0.0346	64	50	39	26	18	10
DB19	0.0281	36	27	20	11	7	3
DB20	0.0147	25	19	15	9	6	3
POND C	1.7513	749	507	310	129	50	11
POND C-B16	1.7513	749	507	310	128	50	11
DB25	0.0211	45	35	27	18	12	7
B16	1.7724	754	511	313	130	51	11
B16-B17	1.7724	754	510	312	130	51	11
DB26	0.0682	136	110	88	62	46	29
B17	1.8406	778	529	326	138	56	34
B17-B26	1.8406	778	529	326	138	56	34
OS03	0.1984	130	88	55	24	9	2
DB01	0.0719	90	66	46	25	14	5
B01	0.2703	199	139	89	42	19	5
B01-B02	0.2703	199	138	89	42	19	5
OS02	0.2219	148	102	65	30	13	3
DB02	0.0516	71	52	36	20	10	3
B02	0.5438	380	263	169	79	36	9
B02-POND A	0.5438	379	263	169	79	36	9
OS04	0.1359	83	54	32	12	4	1
DB03	0.0703	70	49	32	16	7	2
B03	0.2062	145	98	61	26	10	2
B03-B04	0.2062	145	98	60	26	10	2
DB04	0.0422	44	31	21	10	5	1
DB05	0.0384	37	27	18	9	5	1
B04	0.2868	218	150	94	42	18	4
B04-B05	0.2868	218	149	94	42	18	4

FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
DB06	0.0219	44	35	28	19	14	9
B05	0.3087	253	176	115	55	26	10
B05-POND A	0.3087	252	176	114	55	26	10
DB07	0.0254	35	26	18	10	6	2
DB08	0.0297	32	22	15	7	3	1
POND A	0.9076	557	401	244	98	34	6
POND A-B06	0.9076	557	400	244	98	34	6
DB09	0.0189	34	26	19	12	8	4
B06	0.9265	565	407	248	100	35	6
B06-B07	0.9265	564	406	248	99	35	6
DB11	0.0969	114	85	60	35	20	8
DB10	0.0364	56	43	32	19	12	6
B07	1.0598	652	469	286	116	42	15
B07-B09	1.0598	651	468	285	116	42	14
DB12	0.0453	81	63	48	31	21	11
B09	1.1051	677	486	296	121	45	19
B09-POND B	1.1051	676	485	296	121	45	19
DB15	0.1234	105	75	50	25	12	3
DB13	0.0703	89	67	49	29	18	8
DB14	0.0556	93	72	54	35	23	12
POND B	1.3544	688	539	337	140	69	30
POND B-B12	1.3544	688	539	336	140	69	30
DB22	0.0516	91	72	55	36	25	14
DB23	0.0172	45	38	31	23	18	13
B12	1.4232	714	562	353	148	83	38
B12-B14	1.4232	714	562	352	148	83	38
DB24	0.0531	94	73	56	36	24	13
B14	1.4763	743	577	363	162	92	46
B14-B15	1.4763	742	576	362	162	92	46
DB28	0.0741	85	63	44	24	14	5
B15	1.5504	788	597	376	177	103	51
B15-B26	1.5504	786	597	375	177	103	51
DB29	0.1697	146	105	71	37	19	6
DB27	0.0508	68	53	40	25	17	9
B26	3.6115	1612	1171	732	314	180	90
B26-27	3.6115	1612	1171	731	314	180	90
FB-02	0.0500	67	53	40	26	17	10
FB-01	0.0373	62	49	37	23	15	8
FB01-B19	0.0373	62	48	36	23	15	8
B19	0.0873	124	97	73	47	31	17
B19-27	0.0873	124	96	73	47	31	17
FB-03	0.0078	22	18	15	11	8	6
27	3.7066	1651	1200	751	326	206	102
27-32	3.7066	1651	1199	750	326	205	101
WH-24	0.1325	218	171	129	84	57	31
WH-26	0.0839	49	33	20	8	3	1
WH-27	0.0217	23	16	10	4	1	0
30	0.2381	271	205	150	91	59	31
30-31	0.2381	270	205	149	91	59	31
WH-28	0.0398	60	47	36	23	15	8
31	0.2779	330	252	185	114	74	39
31-32	0.2779	329	251	185	113	74	39
WH-29	0.0495	77	60	45	29	19	10
WH-31	0.0406	75	60	46	30	21	12
WH-30	0.0159	26	19	13	7	4	1
32	4.0905	1798	1293	811	445	277	132
WH32	0.0458	55	38	24	10	4	0
BEN POND	4.1363	1400	992	601	256	102	46
WH-33	0.0064	12	9	7	5	3	2
33	4.1427	1401	993	602	256	103	46
33-37	4.1427	1401	992	601	256	103	46
WH35	0.1550	171	124	84	44	22	6
WH34	0.0450	68	52	38	23	15	7
B34-36	0.0450	68	52	38	23	15	7
36	0.2000	239	176	122	67	37	13

FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
36-37	0.2000	238	174	121	66	37	13
WH36	0.0750	63	43	27	11	4	1
37	4.4177	1440	1022	621	266	107	49
FG08A	0.0750	125	97	73	46	30	15
FG08A-G05	0.0750	125	97	72	45	30	15
FG10	0.0669	47	35	25	15	9	4
FG08B	0.0630	94	72	54	34	22	11
FG08B-G05	0.0630	93	72	54	34	22	11
FG11	0.0625	81	63	47	30	20	11
FG09	0.0484	52	39	28	16	9	4
FG09-G05	0.0484	52	39	27	16	9	4
G05	0.3158	367	281	208	128	82	41
FG13	0.0661	46	32	21	11	5	2
FG14	0.0331	44	34	26	16	11	6
FG12	0.0328	55	44	33	22	15	9
POND D	0.4478	132	90	51	19	12	5
POND D-G17	0.4478	132	90	51	19	12	5
FG15	0.1017	100	75	54	31	19	8
G17a	0.1017	100	75	54	31	19	8
FG15a	0.0156	30	24	18	12	8	4
G17	0.5651	190	124	75	42	24	11
G17-G18	0.5651	190	124	75	42	24	11
FG16	0.0773	135	105	79	51	34	18
G18	0.6424	248	186	134	82	52	26
G18-POND E	0.6424	246	185	133	82	52	26
FG31	0.0922	123	97	74	49	33	19
FG30	0.0400	82	65	50	33	23	13
FG30-PONDHS	0.0400	81	64	49	33	23	13
POND HS	0.1322	159	113	63	37	27	16
FG17a	0.0694	111	85	64	40	26	13
FG17a-POND E	0.0694	110	85	63	40	26	13
FG18	0.0644	59	45	32	19	11	5
FG18-POND E	0.0644	59	45	32	19	11	5
FG19	0.0527	92	73	56	37	25	15
FG17c	0.0313	34	24	16	8	3	1
FG17b	0.0214	42	34	26	17	12	7
POND E	1.0138	255	157	87	32	17	11
H08	1.0138	194	130	70	24	12	8

A comparison of the peak flow rates at Eastonville Road for the design storms may be found in Table 6 – Key Design Point Comparison (below). As a result of the future development of the Windingwalk and the Enclave PUD, the calculations show that the project does not adversely affect the existing drainage facilities.

Table 5: Key Design Point Comparison - SCS

KEY DESIGN POINT FLOW RATES							
EVENT	HISTORIC PEAK FLOW (CFS)	FUTURE PEAK FLOW (CFS)	PERCENT OF HISTORIC	EVENT	HISTORIC PEAK FLOW (CFS)	FUTURE PEAK FLOW (CFS)	PERCENT OF HISTORIC
DETENTION POND E (FILING 11A)							
EASTONVILLE ROAD (H08)				EASTONVILLE ROAD (H09)			
5-YEAR	13	12	91%	5-YEAR	5	5	102%
10-YEAR	35	24	69%	10-YEAR	13	7	57%
25-YEAR	89	70	79%	25-YEAR	31	16	52%
50-YEAR	149	130	87%	50-YEAR	53	27	51%
100-YEAR	227	194	86%	100-YEAR	80	61	77%
DETENTION POND H (Windingwalk)							
STAPLETON DR/EASTONVILLE ROAD (H12)							
5-YEAR	3	4	123%				
10-YEAR	10	8	81%				
25-YEAR	27	18	67%				
50-YEAR	46	31	67%				
100-YEAR	70	55	79%				
BENNETT REGIONAL DETENTION POND							
BENNETT POND OUTLET (B32)				JUDGE ORR ROAD (B37)			
5-YEAR	115	102	89%	5-YEAR	131	107	82%
10-YEAR	293	256	87%	10-YEAR	338	266	79%
25-YEAR	709	601	85%	25-YEAR	834	621	74%
50-YEAR	1177	992	84%	50-YEAR	1391	1022	73%
100-YEAR	1782	1400	79%	100-YEAR	2117	1440	68%

Add a narrative section discussing whether or not there are any required pond improvements to Pond E, H, and Bennett Regional Pond as part of the development of The Enclave. If so what are they?

EROSION CONTROL DESIGN

General Concept

Historically, erosion on this property has been held to a minim eatures and agricultural practices including:

replace with "temporary sediment basins"

- Substantial prairie grass growth
- Construction of drainage arresting berms
- Construction of multiple stock ponds along drainage courses

Existing detention ponds will also help to minimize erosion by reducing both the volume and velocity of the peak runoff.

During construction, best management practices (BMP) for erosion control will be employed based on El Paso county Criteria. BMP's will be utilized as deemed necessary by the contractor and/or engineer and are not limited to the measures shown on the construction drawing set. The contractor shall minimize the amount of area disturbed during all construction activities.

In general the following shall be applied in developing the sequence of major activities:

- Install down-slope and side-slope perimeter BMP's before the land disturbing activity occurs.
- Do not disturb an area until it is necessary for the construction activity to proceed
- Cover or stabilize as soon as possible.
- Time the construction activities to reduce the impacts from seasonal climatic changes or weather events.
- The construction of filtration BMP's should wait until the end of the construction project when upstream drainage areas have been stabilized.
- Do not remove the temporary perimeter controls until after all upstream areas are stabilized.

Four Step Process

The following four step process is recommended for selecting structural BMP's in developing urban areas:

Step 1: Employ Runoff Reduction Practices

This development incorporates wider rights-of-way than other developments, thus decreasing the amount area devoted to pavement. The rights-of-way within Meridian Ranch are 20% wider, 60 ft. instead of 50 ft., creating more landscaped area within the development.

The project has over ten acres of open space, accounting for over 20% of the entire project, creating a lower density development.

Home owners and builders are encouraged to direct roof drains to the sideyards where the runoff will travel overland to the streets and creating an opportunity to allow the runoff to infiltrate into the ground.

Step 2: Stabilize Drainageways

The drainage swale located adjacent and south of the project was designed to have a wide flat bottom and slope reducing the velocity of the concentrated flow traveling along the drainageway. The construction of the swale also included erosion control mat along the entire length of the swale. At steeper sections of the swale straw logs or rip-rap has been installed to reduce velocities and erosion.

Step 3: Provide Water Quality Capture Volume (WQCV)

An existing extended detention pond with water quality capture volume is located to the east of the project that was designed to accommodate the runoff from this development.

Step 4: Consider Need for Industrial and Commercial BMP's

This project is neither industrial nor commercial and therefore this section does not apply.

Detention Pond

The existing detention ponds will act as the primary sedimentation control facility for the areas upstream. Runoff will be diverted into the detention pond where practical. The pond will serve a dual purpose: first, by facilitating the settling of sediment in runoff during and after construction (by means of the WQCV) and, second, by maintaining runoff at or below existing levels.

Silt Fence

Silt fence will be place along downstream limits of disturbed areas. This will prevent suspended sediment from leaving the site during infrastructure construction. Silt fencing is to remain in place until vegetation is reestablished.

Erosion Bales

Erosion bales will be placed ten (10) feet from the inlet of all culverts during construction to prevent culverts from filling with sediment. Erosion bales will remain in place until vegetation is reestablished. Erosion bale checks will be used on slopes greater than 1 percent to reduce flow velocities until vegetation is reestablished.

Miscellaneous

Best erosion control practices will be utilized as deemed necessary by the Contractor or Engineer and are not limited to the measures described above.

REFERENCES

1. "City of Colorado Springs/El Paso County Drainage Criteria Manual" September 1987, Revised November 1991, Revised October 1994.

2. Chapter 6, Hydrology and Chapter 11, Storage, Section 3.2.1 of the "City of Colorado Springs Drainage Criteria Manual" May 2014.

3. "Volume 2, El Paso County/City of Colorado Springs Drainage Criteria Manual- Stormwater Quality Policies, Procedures and Best Management Practices" November 1, 2002.

4. Flood Insurance Rate Study for El Paso County, Colorado and Incorporated Areas. Federal Emergency Management Agency, Revised March 17, 1997.

5. Soils Survey of El Paso County area, Natural Resources Conservation Services of Colorado.

6. Master Development Drainage Plan Meridian Ranch. August 2000. Prepared by URS Corp.

7. Revision to Master Development Drainage Plan Meridian Ranch. May 2015. Prepared by Tech Contractors.

8. Master Development Drainage Plan Latigo Trails. October 2001. Prepared by URS Corp.

9. Final Drainage Report for Meridian Ranch Filing 1. November 2001. Prepared by URS Corp.

10. Preliminary Drainage Plan for Meridian Ranch Phase II. September 2003. Prepared by URS.

11. Final Drainage Plan for The Trails Filing No.7. March 2005. Prepared by URS.

12. Final Drainage Report for Meridian Ranch Filing 3. August 2011. Prepared by Tech Contractors.

13. Preliminary and Final Drainage Report for Meridian Ranch Filing 7. June 2012. Prepared by Tech Contractors.

14. Final Drainage Report for Meridian Ranch Estates Filing 2. July 2013. Prepared by Tech Contractors.

15. Final Drainage Report for Meridian Ranch Filing 11A. March 2014. Prepared by Tech Contractors.

16. Preliminary and Final Drainage Report for Meridian Ranch Filing 8. December 2014. Prepared by Tech Contractors.

17. Preliminary and Final Drainage Report for Meridian Ranch Filing 4B. April 2014. Prepared by Tech Contractors.

18. Final Drainage Report for Stonebridge Filing 1 at Meridian Ranch. June 2014. Prepared by Tech Contractors.

19. Final Drainage Report for Meridian Ranch Filing 9. May 2015. Prepared by Tech Contractors.

20. Revision to Master Development Drainage Plan Meridian Ranch. July 2015. Prepared by Tech Contractors.

21. Final Drainage Report for Meridian Ranch Estates Filing 3. October 2015. Prepared by Tech Contractors.

22. Final Drainage Report for the Vistas Filing 1 at Meridian Ranch. July 2016. Prepared by Tech Contractors.

23. Final Drainage Report for Stonebridge Filing 2 at Meridian Ranch. September 2016. Prepared by Tech Contractors.

24. Final Drainage Report for Stonebridge Filing 3 at Meridian Ranch. April 2017. Prepared by Tech Contractors.

25. Revision to Master Development Drainage Plan Meridian Ranch. November 2017. Prepared by Tech Contractors.

Add the Winding Walk PDR/FDR & Interim drainage report for Windingwalk Grading (EGP-17-001)

Appendices

Appendix A – Rational Calculations

Add a section in the narrative portion of the report for Sub-basin descriptions.

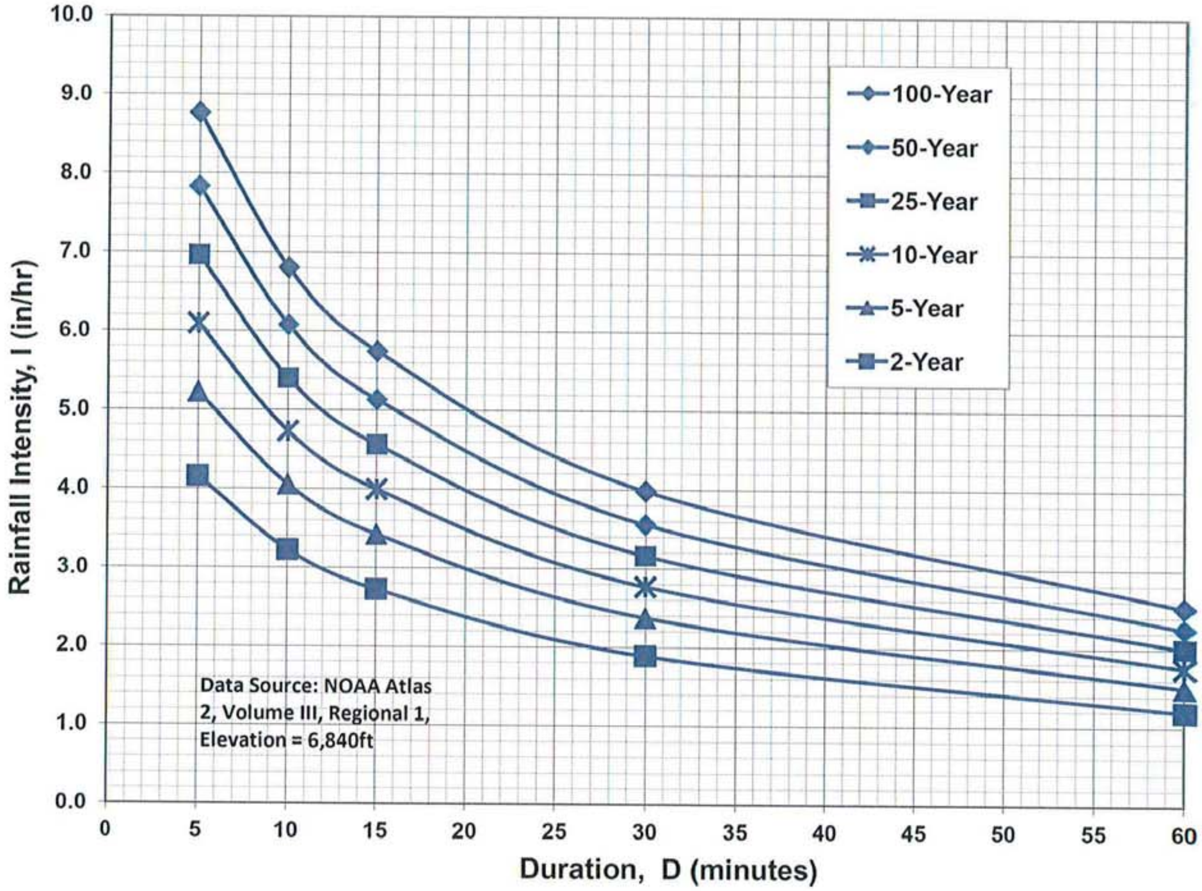
Hydraulic calculations such as street capacity and pipe sizing will be required with the Final Drainage Report.

Table 6-6. Runoff Coefficients for Rational Method

(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$

$$I_{50} = -2.25 \ln(D) + 11.375$$

$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

$$I_{5} = -1.50 \ln(D) + 7.583$$

$$I_{2} = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

COMPOSITE 'C' FACTORS

PROJECT: **Windingwalk and the Enclave PUD** 12/8/2017

BASIN		AREA (AC.)						COMPOSITE FACTOR		Percent Impervious
LABEL	DEV.	UNDEV	6 DU/AC	STREETS	REC CENTER	OPEN SPACE PARKS/GC	TOTAL	5-year	100-year	
B01	The Enclave (TE)		1.9				1.9	0.40	0.55	52.0%
B02			1.9				1.9	0.40	0.55	52.0%
B03			4.4				4.4	0.40	0.55	52.0%
B04			7.4				7.4	0.40	0.55	52.0%
B05			2.5				2.5	0.40	0.55	52.0%
B06			2.8			3.0	5.8	0.32	0.48	26.2%
B07	Windingwalk (WW)		3.3				3.3	0.40	0.55	52.0%
B08			3.2				3.2	0.40	0.55	52.0%
B09			2.4				2.4	0.40	0.55	52.0%
B10			4.1				4.1	0.40	0.55	52.0%
B11			3.3				3.3	0.40	0.55	52.0%
B12			7.1				7.1	0.40	0.55	52.0%
B13			2.3				2.3	0.40	0.55	52.0%
B14			2.5	1.4		1.0	4.9	0.51	0.64	55.8%
B15			0.5	0.6		0.3	1.4	0.58	0.69	61.3%
B16			0.8	1.9		0.5	3.2	0.66	0.76	71.5%
B17				1.7			1.7	0.90	0.96	100.0%
B18	TE		1.6			4.6	6.1	0.28	0.44	14.8%
B19	WW		4.1				4.1	0.40	0.55	52.0%
B20			3.3				3.3	0.40	0.55	52.0%
B21			2.0				2.0	0.40	0.55	52.0%
B22	S1		3.9		1.3	6.4	11.6	0.34	0.49	24.4%
B23			4.0			5.8	9.8	0.30	0.46	22.3%
B24	WW		3.1			5.9	9.1	0.30	0.46	19.3%
B25			0.8			0.7	1.5	0.32	0.48	28.5%
H01	The Enclave		1.0				1.0	0.40	0.55	52.0%
H02			1.9	0.7		0.9	3.5	0.45	0.59	47.9%
H03			1.2	0.7	0.5	0.5	3.0	0.54	0.66	55.7%
H04			1.8	0.4		0.2	2.4	0.46	0.60	55.3%
H05			2.0				2.0	0.40	0.55	52.0%
H06			2.5				2.5	0.40	0.55	52.0%
H07			2.4	0.5		0.3	3.1	0.46	0.60	54.9%
H08			1.5			2.9	4.4	0.29	0.46	19.1%
H09			1.1			1.7	2.8	0.30	0.46	21.4%

BASIN		AREA (AC.)						COMPOSITE FACTOR		Percent Impervious
LABEL	DEV.	UNDEV	6 DU/AC	STREETS	REC CENTER	OPEN SPACE PARKS/GC	TOTAL	5-year	100-year	
H10	**Windingwalk**		3.6	0.8		0.6	5.0	**0.46**	**0.59**	**53.8%**
H11			1.4	0.4		0.2	2.0	**0.48**	**0.61**	**56.0%**
H12			4.9				4.9	**0.40**	**0.55**	**52.0%**
H13			1.3				1.3	**0.40**	**0.55**	**52.0%**
H14			1.5				1.5	**0.40**	**0.55**	**52.0%**
H15			1.9				1.9	**0.40**	**0.55**	**52.0%**
H16			2.3	1.1		0.7	4.1	**0.50**	**0.63**	**55.4%**
H17			2.4	0.7		0.4	3.4	**0.48**	**0.61**	**56.0%**
H18			6.0				6.0	**0.40**	**0.55**	**52.0%**
H19			3.8				3.8	**0.40**	**0.55**	**52.0%**
H20			4.6				4.6	**0.40**	**0.55**	**52.0%**
H21			4.0				4.0	**0.40**	**0.55**	**52.0%**
H22			1.8	0.8		0.4	3.0	**0.51**	**0.64**	**58.5%**
H23			0.0	0.7		0.3	1.0	**0.67**	**0.77**	**66.6%**
H24			2.0			1.2	3.3	**0.34**	**0.49**	**33.2%**
H25			3.7			7.6	11.3	**0.29**	**0.45**	**18.3%**
H26			2.7			0.9	3.6	**0.36**	**0.51**	**39.0%**
H27			0.3			1.9	2.2	**0.26**	**0.43**	**9.0%**
H28				1.5		0.2	1.7	**0.83**	**0.90**	**89.4%**
G01	**TE**		2.7				2.7	**0.40**	**0.55**	**52.0%**
G02			4.4				4.4	**0.40**	**0.55**	**52.0%**
G03			1.2				1.2	**0.40**	**0.55**	**52.0%**
G04	**WW**		1.6				1.6	**0.40**	**0.55**	**52.0%**
G05			3.4				3.4	**0.40**	**0.55**	**52.0%**
G06			3.5				3.5	**0.40**	**0.55**	**52.0%**
E02	**S3**		7.2			10.9	18.1	**0.30**	**0.46**	**21.8%**
E03			2.1			4.2	6.3	**0.29**	**0.45**	**18.4%**
E04	**WW**		1.9	1.1		0.9	3.9	**0.51**	**0.64**	**55.1%**
E05				0.8		1.0	1.7	**0.53**	**0.65**	**45.3%**
E06	**The Vistas Filing 1**		5.1	0.3		0.1	5.4	**0.42**	**0.56**	**53.7%**
E07			4.9				4.9	**0.40**	**0.55**	**52.0%**
E08			1.2				1.2	**0.40**	**0.55**	**52.0%**
E09			2.9				2.9	**0.40**	**0.55**	**52.0%**
E10			4.9				4.9	**0.40**	**0.55**	**52.0%**
E11			3.0				3.0	**0.40**	**0.55**	**52.0%**
E12			2.6				2.6	**0.40**	**0.55**	**52.0%**
E13			3.2				3.2	**0.40**	**0.55**	**52.0%**
E14			1.9			2.3	4.2	**0.31**	**0.47**	**24.9%**
E15				1.1		0.6	1.7	**0.65**	**0.75**	**62.9%**
E16			0.6	0.9			1.5	**0.71**	**0.81**	**82.1%**
									Composite:	**42.9%**

TIME OF CONCENTRATION

SCS Calculations

PROJECT: **Windingwalk and the Enclave PUD** DATE: 12/8/2

TIME OF CONCENTRATION																
			INIT./OVERLAND TIME (T_i)				TRAVEL TIME (T_t)							TOTAL	Tc Check (Urbanized Basins)	
BASIN DESIGNATION	C_5	AREA (AC)	LENGTH (FT)	ΔH	SLOPE %	Ti (Min.)*	LENGTH (FT)	ΔH	SLOPE %	CONVEYANCE TYPE	CONVEYANCE COEF.	VEL. (FPS)	Tt(Min.)**	Ti+Tt(Min.)	L (FT)	Tc = (L/180) + 10
B01	0.40	1.9	40	0.8	2.0%	6.4	1110	12	1.1%	P	20	2.1	8.9	15.3	1150.00	16.4
B02	0.40	1.9	40	0.8	2.0%	6.4	977	11	1.1%	P	20	2.1	7.7	14.1	1017.00	15.7
B03	0.40	4.4	40	0.8	2.0%	6.4	795	23	2.9%	P	20	3.4	3.9	10.3	835.00	14.6
B04	0.40	7.4	40	0.8	2.0%	6.4	1022	13	1.3%	P	20	2.3	7.6	14.0	1062.00	15.9
B05	0.40	2.5	40	0.8	2.0%	6.4	1433	18	1.3%	P	20	2.2	10.7	17.1	1473.00	18.2
B06	0.32	5.8	210	9.0	4.3%	12.8	580	6	1.0%	B	10	1.0	9.5	22.3	790.00	14.4
B07	0.40	3.3	145	3.0	2.1%	12.1	745	8	1.1%	P	20	2.1	6.0	18.1	890.00	14.9
B08	0.40	3.2	30	0.6	2.0%	5.6	772	13	1.7%	P	20	2.6	5.0	10.5	802.00	14.5
B09	0.40	2.4	40	0.8	2.0%	6.4	755	17	2.3%	P	20	3.0	4.2	10.6	795.00	14.4
B10	0.40	4.1	170	3.4	2.0%	13.3	775	13	1.7%	P	20	2.6	5.0	18.3	945.00	15.3
B11	0.40	3.3	150	3.0	2.0%	12.5	687	19	2.8%	P	20	3.3	3.4	15.9	837.00	14.7
B12	0.40	7.1	15	0.3	2.0%	5.0	1382	26	1.9%	P	20	2.7	8.4	13.4	1397.00	17.8
B13	0.40	2.3	40	0.8	2.0%	6.4	817	17	2.1%	P	20	2.9	4.7	11.2	857.00	14.8
B14	0.51	4.9	15	0.3	2.0%	5.0	1233	21	1.7%	P	20	2.6	7.9	12.9	1248.00	16.9
B15	0.58	1.4	35	0.7	2.0%	5.0	505	13	2.6%	P	20	3.2	2.6	7.6	540.00	13.0
B16	0.66	3.2	13	0.3	2.0%	5.0	1226	22	1.8%	P	20	2.7	7.6	12.6	1238.50	16.9
B17	0.90	1.7	13	0.3	2.0%	5.0	1230	22	1.8%	P	20	2.7	7.7	12.7	1242.50	16.9
B18	0.28	6.1	170	14.0	8.2%	9.7	594	15	2.5%	B	10	1.6	6.2	15.9	764.00	14.2
B19	0.40	4.1	145	2.9	2.0%	12.3	556	3	0.5%	P	20	1.5	6.3	18.6	701.00	13.9
B20	0.40	3.3	30	0.6	2.0%	5.6	999	8	0.8%	P	20	1.8	9.3	14.9	1029.00	15.7
B21	0.40	2.0	150	3.0	2.0%	12.5	1110	13	1.2%	P	20	2.2	8.5	21.0	1260.00	17.0
B22	0.34	11.6	195	9.0	4.6%	11.7	1043	18	1.7%	G	15	2.0	8.8	20.5	1238.00	16.9
B23	0.30	9.8	300	15.0	5.0%	14.8	884	10	1.1%	G	15	1.6	9.2	24.0	1184.00	16.6
B24	0.30	9.1	300	16.0	5.3%	14.6	1700	26	1.5%	G	15	1.9	15.3	29.9	2000.00	21.1
B25	0.32	1.5	100	2.0	2.0%	11.3	125	1	1.0%	B	10	1.0	2.1	13.4	225.00	11.3
H01	0.40	1.0	150	3.0	2.0%	12.5	320	13	4.1%	P	20	4.0	1.3	13.8	470.00	12.6
H02	0.45	3.5	140	2.8	2.0%	11.2	476	15	3.2%	P	20	3.6	2.2	13.4	616.00	13.4
H03	0.54	3.0	140	2.8	2.0%	9.6	810	12	1.5%	P	20	2.4	5.5	15.2	950.00	15.3
H04	0.46	2.4	15	0.3	2.0%	5.0	707	18	2.5%	P	20	3.2	3.7	8.7	722.00	14.0
H05	0.40	2.0	15	0.3	2.0%	5.0	606	9	1.5%	P	20	2.4	4.1	9.1	621.00	13.5
H06	0.40	2.5	15	0.3	2.0%	5.0	800	23	2.9%	P	20	3.4	3.9	8.9	815.00	14.5
H07	0.46	3.1	25	0.5	2.0%	5.0	764	22	2.9%	P	20	3.4	3.8	8.8	789.00	14.4
H08	0.29	4.4	300	14.0	4.7%	15.3	600	15	2.5%	B	10	1.6	6.3	21.6	900.00	15.0
H09	0.30	2.8	100	2.0	2.0%	11.6	455	8	1.8%	B	10	1.3	5.7	17.3	555.00	13.1
H10	0.46	5.0	140	2.8	2.0%	11.0	752	16	2.1%	P	20	2.9	4.3	15.3	892.00	15.0
H11	0.48	2.0	40	0.8	2.0%	5.7	810	14	1.7%	P	20	2.6	5.1	10.8	850.00	14.7
H12	0.40	4.9	300	6.0	2.0%	17.6	561	18	3.2%	P	20	3.6	2.6	20.3	861.00	14.8
H13	0.40	1.3	40	0.8	2.0%	6.4	703	13	1.8%	P	20	2.7	4.3	10.8	743.00	14.1
H14	0.40	1.5	30	0.6	2.0%	5.6	503	13	2.6%	P	20	3.2	2.6	8.2	533.00	13.0
H15	0.40	1.9	15	0.3	2.0%	5.0	467	11	2.4%	P	20	3.1	2.5	7.5	482.00	12.7
H16	0.50	4.1	150	3.0	2.0%	10.7	671	12	1.8%	P	20	2.7	4.2	14.9	821.00	14.6
H17	0.48	3.4	135	2.7	2.0%	10.5	562	13	2.3%	P	20	3.0	3.1	13.6	697.00	13.9
H18	0.40	6.0	241	4.8	2.0%	15.8	605	11	1.8%	P	20	2.7	3.7	19.6	846.00	14.7

Revise the initial/overland length to 100 ft max for urban land uses.

			INIT./OVERLAND TIME (T_i)				TRAVEL TIME (T_t)							TOTAL	Tc Check (Urbanized Basins)	
BASIN DESIGNATION	C_5	AREA (AC)	LENGTH (FT)	ΔH	SLOPE %	Ti (Min.)*	LENGTH (FT)	ΔH	SLOPE %	CONVEYANCE TYPE	CONVEYANCE COEF.	VEL. (FPS)	Tt(Min.)**	Ti+Tt(Min.)	L (FT)	Tc = (L/180) + 10
E02	0.30	18.1	190	4.0	2.1%	15.7	2152	61	2.8%	L	7	1.2	30.4	46.1		
E03	0.29	6.3	125	4.0	3.2%	11.2	683	30	4.4%	L	7	1.5	7.8	19.0		
E04	0.51	3.9	135	8.0	5.9%	6.9	660	13	2.0%	P	20	2.8	3.9	10.9	795.00	14.4
E05	0.53	1.7												11.2	765.00	14.3
E06	0.42	5.4												13.7	695.00	13.9
E07	0.40	4.9												15.8	885.00	14.9
E08	0.40	1.2												15.2	850.00	14.7
E09	0.40	2.9	FROM APPROVED VISTAS FILING 1 FINAL DRAINAGE REPORT											16.2	680.00	13.8
E10	0.40	4.9												20.2	1230.00	16.8
E11	0.40	3.0												15.0	640.00	13.6
E12	0.40	2.6												13.9	755.00	14.2
E13	0.40	3.2												23.1	1880.00	20.4
E14	0.31	4.2												27.3		
E15	0.65	1.7	10	0.3	2.5%	5.0	530	11	2.1%	L	7	1.0	8.8	13.8	540.00	13.0
E16	0.71	1.5	25	0.5	2.0%	5.0	464	10	2.2%	L	7	1.0	7.5	12.5	489.00	12.7

Notes:

$$* \ Ti = \frac{0.395\,(1.1 - C5)\,L^{0.5}}{S^{0.33}}$$

$$V = C_V S_W^{0.5}$$

$$** \ Tt = L \times V$$

TYPE OF SURFACE		C_V
HEAVY MEADOW	H	2.5
TILLAGE/FIELD	T	5
RIPRAP (not buried)	R	6.5
SHORT PASTURE AND LAWNS	L	7
NEARLY BARE GROUND	B	10
GRASSED WATERWAY	G	15
PAVED AREAS	P	20

> Revise the minor storm to be based on 5yr.

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)
SURFACE ROUTING

PROJECT: **Windingwalk and the Enclave PUD**

Date: 12/8/2017

DESIGN POINT	DIRECT RUNOFF											TOTAL RUNOFF							OVERLAND TRAVEL TIME						
				I (in./hr.)		COEFF. ©		CA		Q			I (in./ hr.)		CA		Q								
	BASIN	AREA (AC)	Tc (Min.)	(10 YR)	(100 YR)	(10 YR)	(100 YR)	(10 YR)	(100 YR)	(10 YR)	(100 YR)	Sum Tc (min.)	(10 YR)	(100 YR)	(10 YR)	(100 YR)	**(10 YR)**	**(100 YR)**	DESTINATION DP	CONVEYANCE TYPE	COEFFICIENT C_V	SLOPE %	VEL. (FPS)	LENGTH (FT)	TRAVEL TIME Tt
I01	B01	1.9	15.3	3.49	5.85	0.40	0.55	0.75	1.03	2.6	6.0						**2.6**	**6.0**							
I02	B02	1.9	14.1	3.61	6.06	0.40	0.55	0.76	1.04	2.7	6.3						**2.7**	**6.3**	I04	P	20.0	1.30%	2.3	1072	7.8
I03	B03	4.4	10.3	4.08	6.85	0.40	0.55	1.76	2.40	7.2	16						**7.2**	**16**	I04	P	20.0	1.80%	2.7	163	1.0
I04	B04	7.4	22.0	2.95	4.95	0.40	0.55	2.96	4.03	8.7	20	22.0	2.95	4.95	3.13	4.59	**9.2**	**23**							
I05	B05	2.5	17.1	3.32	5.58	0.40	0.55	1.00	1.36	3.3	7.6						**3.3**	**7.6**							
CB01	B06	5.8	14.4	3.58	6.02	0.32	0.48	1.85	2.76	6.6	17						**6.6**	**17**							
I06	B07	3.3	14.9	3.53	5.92	0.40	0.55	1.34	1.82	4.7	11						**4.7**	**11**	I08	P	20.0	2.24%	3.0	625	3.5
I07	B08	3.2	10.5	4.05	6.80	0.40	0.55	1.27	1.73	5.2	12						**5.2**	**12**							
I08	B09	2.4	10.6	4.04	6.78	0.40	0.55	0.97	1.32	3.9	9.0						**3.9**	**9.0**							
I09	B10	4.1	15.3	3.50	5.87	0.40	0.55	1.63	2.22	5.7	13						**5.7**	**13**							
I10	B11	3.3	14.7	3.56	5.97	0.40	0.55	1.30	1.77	4.6	11						**4.6**	**11**							
I11	B12	7.1	13.4	3.69	6.20	0.40	0.55	2.83	3.85	10	24						**10**	**24**	I12	P	20.0	2.00%	2.8	17.5	0.1
I12	B13	2.3	11.2	3.96	6.66	0.40	0.55	0.91	1.24	3.6	8.3	13.5	3.68	6.18	0.91	1.97	**3.6**	**12**							
I13	B14	4.9	12.9	3.75	6.30	0.51	0.64	2.52	3.14	9.5	20	13.2	3.71	6.22	3.14	4.03	**12**	**25**	I14	P	20.0	2.00%	2.8	25	0.1
I14	B15	1.4	7.6	4.54	7.62	0.58	0.69	0.83	0.99	3.8	7.6	13.4	3.69	6.20	0.83	1.98	**3.8**	**12**	EI37a	P	20.0	2.10%	2.9	815	4.7
EI15	B16	3.2	12.6	3.78	6.34	0.66	0.76	2.15	2.47	8.1	16						**8.1**	**16**	I13	P	20.0	2.20%	3.0	110	0.6
EI16	B17	1.7	12.7	3.77	6.34	0.90	0.96	1.55	1.65	5.8	10						**5.8**	**10**	EI17	P	20.0	2.00%	2.8	530	3.1
EI17	E15	1.7	13.0	3.74	6.27	0.65	0.75	1.11	1.29	4.2	8.1	15.8	3.44	5.78	1.49	1.81	**5.1**	**10**							
EI18	E16	1.5	12.5	3.80	6.37	0.71	0.81	1.08	1.21	4.1	7.7						**4.1**	**7.7**							
DP05	H01	1.0	12.6	3.78	6.35	0.40	0.55	0.40	0.54	1.5	3.4						**1.5**	**3.4**	I20	P	20.0	1.20%	2.2	140	1.1
I20	H02	3.5	13.4	3.69	6.20	0.45	0.59	1.57	2.04	5.8	13	13.7	3.66	6.14	1.97	2.58	**7.2**	**16**	I23	P	20.0	3.10%	3.5	650	3.1
DP06	H03	3.0	15.2	3.50	5.88	0.54	0.66	1.60	1.96	5.6	12						**5.6**	**12**	I21	P	20.0	2.75%	3.3	618	3.1
I21	H04	2.4	8.7	4.34	7.29	0.46	0.60	1.10	1.42	4.8	10	18.3	3.22	5.41	2.70	3.38	**8.7**	**18**							
I22	H05	2.0	9.1	4.26	7.16	0.40	0.55	0.81	1.11	3.5	7.9						**3.5**	**7.9**							
DP07	H06	2.5	8.9	4.30	7.22	0.40	0.55	1.01	1.37	4.3	9.9						**4.3**	**9.9**	I23	P	20.0	1.00%	2.0	152	1.3
I23	H07	3.1	8.8	4.33	7.27	0.46	0.60	1.45	1.87	6.3	14	16.8	3.36	5.63	2.46	3.40	**8.2**	**19**	I25	P	20.0	3.30%	3.6	520	2.4
CB03	H08	4.4	15.0	3.52	5.91	0.29	0.46	1.30	2.01	4.6	12						**4.6**	**12**							
CB04	H09	2.8	13.1	3.73	6.26	0.30	0.46	0.84	1.28	3.1	8.0						**3.1**	**8.0**							
I24	H10	5.0	15.0	3.53	5.92	0.46	0.59	2.29	2.96	8.1	18						**8.1**	**18**	I29	P	20.0	2.50%	3.2	523	2.8
I25	H11	2.0	10.8	4.01	6.73	0.48	0.61	0.95	1.21	3.8	8.1	19.1	3.16	5.30	0.95	1.95	**3.8**	**10**							
I26	H12	4.9	14.8	3.54	5.95	0.40	0.55	1.95	2.66	6.9	16						**6.9**	**16**	I27	P	20.0	2.00%	2.8	15	0.1
I27	H13	1.3	10.8	4.02	6.75	0.40	0.55	0.51	0.70	2.1	4.7	14.9	3.53	5.93	0.52	1.47	**2.1**	**8.7**							
DP08	H14	1.5	8.2	4.43	7.44	0.40	0.55	0.61	0.83	2.7	6.2						**2.7**	**6.2**	I28	P	20.0	1.20%	2.2	170	1.3
I28	H15	1.9	7.5	4.55	7.65	0.40	0.55	0.75	1.03	3.4	7.9	9.5	4.21	7.07	1.37	1.86	**5.8**	**13**							
I29	H16	4.1	14.6	3.57	5.99	0.50	0.63	2.07	2.60	7.4	16	17.7	3.27	5.49	2.07	3.72	**7.4**	**20**	I35	P	20.0	1.20%	2.2	600	4.6
I30	H17	3.4	13.6	3.67	6.16	0.48	0.61	1.65	2.10	6.0	13						**6.0**	**13**	I31	P	20.0	2.30%	3.0	300	1.6

DESIGN POINT	BASIN	AREA (AC)	Tc (Min.)	DIRECT RUNOFF I (in./ hr.) (10 YR)	DIRECT RUNOFF I (in./ hr.) (100 YR)	DIRECT RUNOFF COEFF. © (10 YR)	DIRECT RUNOFF COEFF. © (100 YR)	DIRECT RUNOFF CA (10 YR)	DIRECT RUNOFF CA (100 YR)	DIRECT RUNOFF Q (10 YR)	DIRECT RUNOFF Q (100 YR)	TOTAL RUNOFF Sum Tc (min.)	TOTAL RUNOFF I (in./ hr.) (10 YR)	TOTAL RUNOFF I (in./ hr.) (100 YR)	TOTAL RUNOFF CA (10 YR)	TOTAL RUNOFF CA (100 YR)	TOTAL RUNOFF Q **(10 YR)**	TOTAL RUNOFF Q **(100 YR)**	OVERLAND TRAVEL TIME DESTINATION DP	CONVEYANCE TYPE	COEFFICIENT C_V	SLOPE %	VEL. (FPS)	LENGTH (FT)	TRAVEL TIME Tt
I31	H18	6.0	14.7	3.55	5.96	0.40	0.55	2.40	3.27	8.5	19	15.2	3.50	5.87	2.40	3.59	**8.5**	**21**	I33	p	20.0	1.00%	2.0	410	3.4
I32	H19	3.8	15.2	3.51	5.88	0.40	0.55	1.53	2.09	5.4	12						**5.4**	**12**	I34	P	20.0	1.00%	2.0	308	2.6
I33	H20	4.6	12.3	3.82	6.42	0.40	0.55	1.84	2.50	7.0	16	18.6	3.19	5.36	1.84	2.87	**7.0**	**16**	I34	P	20.0	2.00%	2.8	15	0.1
I34	H21	4.0	20.1	3.09	5.18	0.40	0.55	1.60	2.19	4.9	11	20.1	3.09	5.18	1.64	3.32	**5.1**	**17**							
CB02	B18	6.1	14.2	3.60	6.04	0.28	0.44	1.72	2.72	6.2	16						**6.2**	**16**							
I17	B19	4.1	13.9	3.64	6.10	0.40	0.55	1.63	2.22	5.9	14						**5.9**	**14**	I18	P	20.0	0.94%	1.9	638	5.5
I18	B20	3.3	14.9	3.53	5.93	0.40	0.55	1.30	1.78	4.6	11	19.4	3.14	5.27	1.30	2.20	**4.6**	**12**	I19	P	20.0	2.00%	2.8	15	0.1
I19	B21	2.0	17.0	3.33	5.60	0.40	0.55	0.80	1.09	2.7	6.1	19.5	3.13	5.25	0.80	1.16	**2.7**	**6.1**							
DP01	B22	11.6	16.9	3.34	5.61	0.34	0.49	3.94	5.71	13	32						**13**	**32**	DP02	G	15.0	1.10%	1.6	921	9.8
DP02	B23	9.8	16.6	3.37	5.66	0.30	0.46	2.99	4.56	10	26	26.6	2.66	4.46	6.93	10.28	**18**	**46**	DP03	G	15.0	1.40%	1.8	1546	14.5
DP03	B24	9.1	21.1	3.01	5.05	0.30	0.46	2.68	4.14	8.1	21	41.2	2.01	3.37	9.61	14.42	**19**	**49**							
DP04	B25	1.5	11.3	3.95	6.64	0.32	0.48	0.50	0.74	2.0	4.9						**2.0**	**4.9**							
I35	H22	3.0	13.8	3.65	6.13	0.51	0.64	1.55	1.93	5.7	12	22.3	2.93	4.91	1.55	2.20	**5.7**	**12**							
I36	H23	1.0	8.7	4.34	7.28	0.67	0.77	0.69	0.79	3.0	5.7						**3.0**	**5.7**							
OS4	H24	3.3	13.6	3.02	6.16	0.34	0.49	1.11	1.62	3.4	10						**3.4**	**10**	POND	G	15.0	1.20%	1.6	425	4.3
POND	H25	11.3	13.9	2.98	6.11	0.29	0.45	3.30	5.13	10	31	17.9	3.26	5.46	4.42	6.76	**14**	**37**							
EI37a	H26	3.6	14.5	2.90	5.99	0.36	0.51	1.29	1.83	3.7	11	18.1	3.24	5.44	1.32	2.25	**4.3**	**12**	EI37b	P	20.0	2.10%	2.9	53	0.3
EI37b												18.4	3.22	5.40	0.26	0.74	**0.8**	**4.0**	EI38	P	20.0	2.10%	2.9	909	5.2
DP09	H27	2.2	16.2	2.71	5.72	0.26	0.43	0.58	0.95	1.6	5.4						**1.6**	**5.4**							
EI38	H28	1.7	10.2	3.51	6.87	0.83	0.90	1.39	1.51	4.9	10	23.6	2.84	4.77	1.39	1.65	**4.9**	**10**	EI39	P	20.0	2.20%	3.0	126	0.7
EI39												24.3	2.80	4.69	0.37	0.68	**1.0**	**3.2**							
DP10	G01	2.7	9.2	3.70	7.14	0.40	0.55	1.08	1.47	4.0	11						**4.0**	**11**	I40	P	20.0	0.90%	1.9	143	1.3
I40	G02	4.4	16.7	2.65	5.64	0.40	0.55	1.74	2.38	4.6	13	16.7	3.36	5.64	2.82	3.85	**9.5**	**22**	I41	P	20.0	2.00%	2.8	15	0.1
I41	G03	1.2	8.9	3.76	7.23	0.40	0.55	0.49	0.66	1.8	4.8	16.8	3.35	5.62	0.49	1.36	**1.8**	**7.7**							
DP11	G04	1.6	8.5	3.84	7.34	0.40	0.55	0.65	0.89	2.5	6.6						**2.5**	**6.6**	I42	P	20.0	1.00%	2.0	216	1.8
I42	G05	3.4	9.6	3.62	7.03	0.40	0.55	1.37	1.87	5.0	13	10.3	4.08	6.86	2.02	2.76	**8.3**	**19**	I43	P	20.0	2.00%	2.8	15	0.1
I43	G06	3.5	16.7	2.66	5.64	0.40	0.55	1.41	1.92	3.8	11	16.7	3.36	5.64	1.41	2.10	**4.7**	**12**							
DP12	E02	18.1	46.1	0.88	3.08	0.30	0.46	5.48	8.38	5	26	46.1	1.84	3.08	8.85	12.89	**16**	**40**	DP13	G	15.0	4.50%	3.2	693	3.6
DP13	E03	6.3	19.0	2.43	5.32	0.29	0.45	1.83	2.84	4.5	15	49.8	1.72	2.89	10.68	15.73	**18**	**45**	I44	G	15.0	1.00%	1.5	50	0.6
I44	E04	3.9	10.9	3.41	6.72	0.51	0.64	2.00	2.49	6.8	17						**6.8**	**17**							
I45	E05	1.7	11.2	3.35	6.64	0.53	0.65	0.91	1.12	3.1	7.5	11.2	3.96	6.64	0.91	1.12	**3.6**	**7.5**							
EI04	E06	5.4	13.7	3.00	6.14	0.42	0.56	2.29	3.05	6.9	19						**6.9**	**19**	EI05	P	20.0	0.63%	1.6	315	3.3
EI05	E07	4.9	14.9	2.85	5.92	0.40	0.55	1.95	2.66	5.6	16	17.0	3.33	5.59	1.95	2.82	**6.5**	**16**	EI07	P	20.0	0.68%	1.6	294	3.0
EI07	E08	1.2	14.7	2.88	5.96	0.40	0.55	0.49	0.67	1.4	4.0	25.5	2.72	4.57	0.86	1.65	**2.3**	**7.5**							
DP1	E09	2.9	13.8	2.99	6.12	0.40	0.55	1.17	1.60	3.5	9.8						**3.5**	**9.8**	EI06	P	20.0	0.73%	1.7	1235	12.1
EI06	E10	4.9	16.8	2.64	5.62	0.40	0.55	1.95	2.66	5.1	15	21.8	2.96	4.97	3.12	4.25	**9.2**	**21**							

DESIGN POINT	DIRECT RUNOFF											TOTAL RUNOFF							OVERLAND TRAVEL TIME						
	BASIN	AREA (AC)	Tc (Min.)	I (in./ hr.) (10 YR)	I (in./ hr.) (100 YR)	COEFF. © (10 YR)	COEFF. © (100 YR)	CA (10 YR)	CA (100 YR)	Q (10 YR)	Q (100 YR)	Sum Tc (min.)	I (in./ hr.) (10 YR)	I (in./ hr.) (100 YR)	CA (10 YR)	CA (100 YR)	Q **(10 YR)**	Q **(100 YR)**	DESTINATION DP	CONVEYANCE TYPE	COEFFICIENT C_V	SLOPE %	VEL. (FPS)	LENGTH (FT)	TRAVEL TIME Tt
DP2	E11	3.0	13.6	3.02	6.17	0.40	0.55	1.19	1.62	3.6	10						**3.6**	**10**	EI06	P	20.0	0.91%	1.9	770	6.7
EI06	E12	2.6	13.9	2.98	6.11	0.40	0.55	1.04	1.41	3.1	8.6	16.7	3.36	5.64	2.23	3.04	**7.5**	**17**							
EI06												21.8	2.96	4.97	5.35	7.29	**16**	**36**	EI07	P	20.0	2.00%	2.8	15	0.1
EI07	E13	3.2	20.4	2.30	5.13	0.40	0.55	1.27	1.73	2.9	8.9	25.5	2.72	4.57	2.13	4.47	**5.8**	**20**							
H10	E14	4.2	27.3	1.79	4.40	0.31	0.47	1.31	1.97	2.3	8.7						**2.3**	**8.7**							

TYPE OF SURFACE		C_V
HEAVY MEADOW	H	3
TILLAGE/FIELD	T	5
RIPRAP (not buried)	R	7
SHORT PASTURE AND LAWNS	L	7
NEARLY BARE GROUND	B	10
GRASSED WATERWAY	G	15
PAVED AREAS	P	20

STORM DRAINAGE SYSTEM DESIGN

INLET CALCULATIONS

PROJECT: **Windingwalk and the Enclave PUD** Date: 12/8/2017

							Q_{Total}		$Q_{Capture}$				$Q_{Flow\text{-}by}$				DEPTH (max)		SPREAD	
DP	Inlet size L(i)	Proposed or Existing	INLET TYPE	CROSS SLOPE	STREET SLOPE	T_c	Q_{10} (cfs)	Q_{100} (cfs)	Q_{10} (cfs)	Q_{100} (cfs)	$CA_{eqv.}$ (10-yr)	$CA_{eqv.}$ (100-yr)	Q_{10} (cfs)	Q_{100} (cfs)	$CA_{eqv.}$ (10-yr)	$CA_{eqv.}$ (100-yr)	Q_{10} (cfs)	Q_{100} (ft)	Q_{10} (cfs)	Q_{100} (ft)
I01	5	PROP	SUMP	2.0%		15.3	2.6	6.0	2.6	6.0	0.75	1.03	-	-	-	-	0.50	0.50		
I02	10	PROP	FLOW-BY	2.0%	0.5%	14.1	2.7	6.3	2.1	4.2	0.59	0.70	0.6	2.1	0.17	0.34	0.32	0.41	12.0	16.3
I03	15	PROP	SUMP[1]	2.0%		10.3	7.2	16	7.2	15	1.76	2.18	-	1.5	-	0.22	0.40	0.50		
I04	15	PROP	SUMP	2.0%		22.0	9.2	23	9.2	23	3.13	4.59	-	-	-	-	0.50	0.70		
I05	10	PROP	SUMP	2.0%		17.1	3.3	7.6	3.3	7.6	1.00	1.36	-	-	-	-	0.50	0.70		
CB01	Type C	PROP	SUMP	2.0%		14.4	6.6	17	6.6	17	1.85	2.76	-	-	-	-	0.46	0.68		
I06	10	PROP	SUMP	2.0%		14.9	4.7	11	4.7	11	1.34	1.82	-	-	-	-	0.50	0.50		
I07	15	PROP	SUMP[1]	2.0%		10.5	5.2	12	5.2	12	1.27	1.73	-	-	-	-	0.50	0.50		
I08	15	PROP	SUMP[1]	2.0%		10.6	3.9	9.0	3.9	9.0	0.97	1.32	-	-	-	-	0.50	0.50		
I09	15	PROP	SUMP[1]	2.0%		15.3	5.7	13	5.7	13	1.63	2.22	-	-	-	-	0.50	0.50		
I10	10	PROP	SUMP[1]	2.0%		14.7	4.6	11	4.6	11	1.30	1.77	-	-	-	-	0.50	0.50		
I11	15	PROP	SUMP	2.0%		13.4	10	24	10	19	2.83	3.12	-	4.5	-	0.73	0.50	0.60		
I12	10	PROP	SUMP	2.0%		13.5	3.6	12	3.6	12	0.98	1.97	-	-	-	-	0.50	0.60		
I13	20	PROP	SUMP	2.0%		13.2	12	25	12	19	3.14	3.04	-	6.2	-	0.99	0.50	0.50		
I14	20	PROP	FLOW-BY	2.0%	0.5%	13.4	3.8	12	3.6	9.7	0.99	1.57	0.1	2.6	0.03	0.41	0.35	0.51	13.5	21.0
EI15	20	PROP	FLOW-BY	2.0%	2.2%	12.6	8.1	16	5.8	10	1.54	1.58	2.3	5.6	0.61	0.89	0.36	0.43	13.6	17.4
EI16	20	PROP	FLOW-BY	2.0%	2.2%	12.7	5.8	10	4.4	7.2	1.17	1.13	1.4	3.3	0.38	0.52	0.33	0.38	12.0	15.0
EI17	5	PROP	SUMP	2.0%		15.8	5.1	10	5.1	10	1.49	1.81	-	-	-	-	0.50	1.00		
EI18	12	PROP	SUMP	2.0%		12.5	4.1	7.7	4.1	7.7	1.08	1.21	-	-	-	-	0.50	1.00		
CB02	Type C	PROP	SUMP	2.0%		14.2	6.2	16	6.2	16	1.72	2.72	-	-	-	-	0.45	0.68		
I17	10	PROP	SUMP	2.0%		13.9	5.9	14	5.9	11	1.63	1.79	-	2.6	-	0.43	0.50	0.50		
I18	5	PROP	SUMP	2.0%		19.4	4.6	12	4.6	11	1.47	2.13	-	0.4	-	0.07	0.50	0.70		
I19	10	PROP	SUMP	2.0%		19.5	2.7	6.1	2.7	6.1	0.85	1.16	-	-	-	-	0.50	1.00		
I20	15	PROP	SUMP[1]	2.0%		13.7	7.2	16	7.2	15	1.97	2.43	-	0.9	-	0.15	0.50	0.50		
I21	20	PROP	SUMP[1]	2.0%		18.3	8.7	18	8.7	18	2.70	3.38	-	-	-	-	0.50	0.50		
I22	10	PROP	SUMP	2.0%		9.1	3.5	7.9	3.5	7.9	0.81	1.11	-	-	-	-	0.50	1.00		
I23	15	PROP	SUMP[1]	2.0%		16.8	8.2	19	8.2	15	2.46	2.65	-	4.2	-	0.75	0.50	0.50		

							Q_{Total}		$Q_{Capture}$				$Q_{Flow\text{-}by}$				DEPTH (max)		SPREAD	
DP	Inlet size L(i)	Proposed or Existing	INLET TYPE	CROSS SLOPE	STREET SLOPE	T_c	Q_{10} (cfs)	Q_{100} (cfs)	Q_{10} (cfs)	Q_{100} (cfs)	$CA_{eqv.}$ (10-yr)	$CA_{eqv.}$ (100-yr)	Q_{10} (cfs)	Q_{100} (cfs)	$CA_{eqv.}$ (10-yr)	$CA_{eqv.}$ (100-yr)	Q_{10} (cfs)	Q_{100} (ft)	Q_{10} (cfs)	Q_{100} (ft)
CB03	Type C	PROP	SUMP	2.0%		15.0	4.6	12	4.6	12	1.30	2.01	-	-	-	-	0.40	0.59		
CB04	Type C	PROP	SUMP	2.0%		13.1	3.1	8.0	3.1	8.0	0.84	1.28	-	-	-	-	0.32	0.50		
I24	10	PROP	SUMP[1]	2.0%		15.0	8.1	18	8.1	11	2.29	1.85	-	6.6	-	1.12	0.50	0.50		
I25	10	PROP	SUMP[1]	2.0%		19.1	3.8	10	3.8	10	1.21	1.95	-	-	-	-	0.50	0.50		
I26	5	PROP	SUMP	2.0%		14.8	6.9	16	6.9	11	1.95	1.89	0.0	4.6	0.00	0.77	0.50	0.70		
I27	10	PROP	SUMP	2.0%		14.9	2.1	8.7	2.1	8.7	0.58	1.47	-	-	-	-	0.50	0.70		
I28	15	PROP	SUMP[1]	2.0%		9.5	5.8	13	5.8	13	1.37	1.86	-	-	-	-	0.50	0.50		
I29	20	PROP	SUMP[1]	2.0%		17.7	7.4	20	7.4	19	2.26	3.45	-	1.5	-	0.27	0.50	0.50		
I30	10	PROP	SUMP[1]	2.0%		13.6	6.0	13	6.0	11	1.65	1.77	-	2.0	-	0.33	0.50	0.50		
I31	20	PROP	SUMP[1]	2.0%		15.2	8.5	21	8.5	19	2.43	3.23	-	2.1	-	0.37	0.50	0.50		
I32	10	PROP	SUMP[1]	2.0%		15.2	5.4	12	5.4	11	1.53	1.86	-	1.3	-	0.23	0.50	0.50		
I33	5	PROP	SUMP	2.0%		18.6	7.0	16	6.9	11	2.16	2.09	0.1	4.8	0.04	0.90	0.50	0.70		
I34	10	PROP	SUMP	2.0%		20.1	5.1	17	5.1	17	1.64	3.32	-	-	-	-	0.50	0.70		
I35	5	PROP	SUMP	2.0%		22.3	5.7	12	5.7	12	1.94	2.41	-	-	-	-	0.50	1.00		
I36	5	PROP	SUMP	2.0%		8.7	3.0	5.7	3.0	5.7	0.69	0.79	-	-	-	-	0.50	1.00		
EI37a	20	PROP	FLOW-BY	2.0%	2.1%	18.1	4.3	12	3.4	8.2	1.06	1.51	0.9	4.0	0.26	0.74	0.30	0.41	10.8	16.0
EI37b	20	PROP	FLOW-BY	2.0%	2.1%	18.4	0.8	4.0	0.9	3.2	0.28	0.60	-	0.8	-	0.14	0.20	0.30	5.9	10.5
EI38	20	PROP	FLOW-BY	2.0%	2.1%	23.6	4.9	10	3.8	7.2	1.35	1.51	1.1	3.2	0.37	0.68	0.31	0.39	11.4	15.1
EI39	20	PROP	FLOW-BY	2.0%	2.1%	24.3	1.0	3.2	1.1	2.7	0.38	0.57	-	0.5	-	0.11	0.21	0.28	6.4	9.7
I40	10	PROP	SUMP	2.0%		16.7	9.5	22	9.5	18	2.82	3.15	-	3.9	-	0.70	0.50	0.70		
I41	10	PROP	SUMP	2.0%		16.8	1.8	7.7	1.8	7.7	0.54	1.36	-	-	-	-	0.50	0.70		
I42	10	PROP	SUMP	2.0%		10.3	8.3	19	8.3	18	2.02	2.59	-	1.2	-	0.17	0.50	0.70		
I43	10	PROP	SUMP	2.0%		16.7	4.7	12	4.7	12	1.41	2.10	-	-	-	-	0.50	0.70		
I44	10	PROP	SUMP	2.0%		10.9	6.8	17	6.8	17	2.00	2.49	-	-	-	-	0.50	0.70		
I45	10	PROP	SUMP	2.0%		11.2	3.6	7.5	3.6	7.5	0.91	1.12	-	-	-	-	0.50	0.70		
EI04	10	EXIST	SUMP	2.0%		13.7	6.9	19	6.9	18	2.29	2.89	-	1.0	-	0.16	0.50	0.70		
EI05	10	EXIST	SUMP[1]	2.0%		17.0	6.5	16	6.5	16	1.95	2.82	-	-	-	-	0.50	0.70		
EI06	20	EXIST	SUMP	2.0%		21.8	16	36	16	31	4.71	6.20	-	5.4	-	1.09	0.50	0.70		
EI07	15	EXIST	SUMP	2.0%		25.5	5.8	20	5.8	20	2.13	4.47	-	-	-	-	0.50	0.80		

[1] Forced sump at intersection

Max storm sewer velocity is 18 fps. Update the system design accrdingly

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)
PIPE ROUTING

PROJECT: **Windingwalk and the Enclave PUD** Date: 12/8/2017

UPSTREAM DESIGN POINT	UPSTREAM BASIN	INLET FLOW Tc (Min.)	INLET FLOW I (in./ hr.) (10 YR)	INLET FLOW I (in./ hr.) (100 YR)	INLET FLOW CA (10 YR)	INLET FLOW CA (100 YR)	INLET FLOW Q (10 YR)	INLET FLOW Q (100 YR)	SYSTEM FLOW Sum Tc (min.)	SYSTEM FLOW I (in./ hr.) (10 YR)	SYSTEM FLOW I (in./ hr.) (100 YR)	SYSTEM FLOW CA (10 YR)	SYSTEM FLOW CA (100 YR)	SYSTEM FLOW Q (10 YR)	SYSTEM FLOW Q (100 YR)	TRAVEL TIME PIPE DIA	ROUGHNESS (n)	DESTINATION DP	SLOPE %	LENGTH (FT)	VEL. (FPS) (Estimate)*	TRAVEL TIME Tt
I01	B01	15.3	3.49	5.85	0.75	1.03	2.6	6.0						**2.6**	**6.0**	18	0.013	J01	0.90%	33	6	0.1
I02	B02	14.1	3.61	6.06	0.59	0.70	2.1	4.2						**2.1**	**4.2**	18	0.013	J01	1.40%	24	7	0.1
J01									15.4	2.79	5.84	1.34	1.72	**3.7**	**10**	18	0.013	J02	3.34%	297	11	0.5
J02									15.9	2.74	5.77	1.34	1.72	**3.7**	**10**	18	0.013	J02	0.81%	285	5	0.9
J03									16.8	2.65	5.63	1.34	1.72	**3.6**	**10**	24	0.013	J05	0.55%	487	5	1.5
I03	B03	10.3	4.08	6.85	1.76	2.18	7.2	15						**7.2**	**15**	18	0.013	J04	1.04%	48	6	0.1
J04									10.5	3.47	6.82	1.76	2.18	**6.1**	**15**	24	0.013	J05	1.85%	127	10	0.2
I04	B04	22.0	2.95	4.95	3.13	4.59	9.2	23						**9.2**	**23**	18	0.013	J05	1.93%	5	8	0.0
J05									22.0	2.18	4.95	6.24	8.50	**14**	**42**	24	0.013	I05	7.55%	25	20	0.0
I05	B05	17.1	3.32	5.58	1.00	1.36	3.3	7.6	22.0	2.18	4.95	7.24	9.86	**16**	**49**	24	0.013	J06	5.71%	147	17	0.1
J06									22.1	2.16	4.93	7.24	9.86	**16**	**49**	30	0.013	CB01	1.08%	102	9	0.2
CB01	B06	14.4	3.58	6.02	1.85	2.76	6.6	17	22.3	2.15	4.91	9.08	12.62	**20**	**62**	36	0.013	I06	1.62%	160	12	0.2
I06	B07	14.9	3.53	5.92	1.34	1.82	4.7	11	22.5	2.13	4.88	10.42	14.45	**22**	**71**	36	0.013	J07	3.12%	296	17	0.3
I07	B08	10.5	4.05	6.80	1.27	1.73	5.2	12						**5.2**	**12**	18	0.013	J07	1.00%	45	6	0.1
J07									22.8	2.11	4.85	11.69	16.18	**25**	**79**	36	0.013	J08	1.19%	332	10	0.5
I08	B09	10.6	4.04	6.78	0.97	1.32	3.9	9.0						**3.9**	**9.0**	18	0.013	J08	1.00%	8	6	0.0
J08									23.4	2.07	4.79	12.66	17.50	**26**	**84**	42	0.013	J09	1.06%	57	11	0.1
J09									23.5	2.06	4.78	12.66	17.50	**26**	**84**	42	0.013	J10	2.81%	306	18	0.3
J10									23.7	2.04	4.75	12.66	17.50	**26**	**83**	42	0.013	J15	1.85%	205	14	0.2
I09	B10	15.3	3.50	5.87	1.63	2.22	5.7	13						**5.7**	**13**	18	0.013	J11	1.04%	48	6	0.1
J11									15.4	2.80	5.85	1.63	2.22	**4.6**	**13**	18	0.013	J13	1.62%	334	8	0.7
I10	B11	14.7	3.56	5.97	1.30	1.77	4.6	11						**4.6**	**11**	18	0.013	J12	1.04%	58	6	0.2
J12									14.8	2.87	5.94	1.30	1.77	**3.7**	**11**	18	0.013	J13	1.06%	76	6	0.2
I11	B12	13.4	3.69	6.20	2.83	3.12	10	19						**10**	**19**	18	0.013	J13	1.93%	5	8	0.0
J13									16.1	2.72	5.73	5.76	7.11	**16**	**41**	24	0.013	I12	2.78%	25	12	0.0
I12	B13	13.5	3.68	6.18	0.98	1.97	3.6	12	16.1	2.71	5.72	6.74	9.08	**18**	**52**	30	0.013	J14	4.17%	166	17	0.2
J14									16.3	2.70	5.70	6.74	9.08	**18**	**52**	36	0.013	J15	0.88%	113	9	0.2
J15									24.0	2.02	4.73	19.40	26.59	**39**	**126**	48	0.013	J16	0.99%	85	11	0.1
I13	B14	13.2	3.71	6.22	3.14	3.04	12	19						**12**	**19**	24	0.013	J16	4.86%	13	16	0.0
I14	B15	13.4	3.69	6.20	0.99	1.57	3.6	9.7						**3.6**	**9.7**	18	0.013	J16	1.93%	33	8	0.1
J16									24.0	2.02	4.73	23.52	31.20	**48**	**148**	48	0.013	EJ16	1.00%	153	11	0.2
EI15	B16	12.6	3.78	6.34	1.54	1.58	5.8	10						**5.8**	**10**	24	0.013	EI16	1.10%	108	8	0.2
EI16	B17	12.7	3.77	6.34	1.17	1.13	4.4	7.2	12.9	3.11	6.30	2.71	2.71	**8**	**17**	30	0.013	EJ16	1.60%	100	11	0.2
EJ16									24.2	2.01	4.70	26.23	33.91	**53**	**160**	48	0.013	EJ17	1.30%	343	13	0.4
EJ17									24.6	1.97	4.66	26.23	33.91	**52**	**158**	48	0.013	EJ18	0.50%	120	8	0.2

UPSTREAM DESIGN POINT	UPSTREAM BASIN	INLET FLOW							SYSTEM FLOW							TRAVEL TIME						
		Tc (Min.)	I (in./ hr.)		CA		Q		Sum Tc (min.)	I (in./ hr.)		CA		Q		PIPE DIA	ROUGHNESS (n)	DESTINATION DP	SLOPE %	LENGTH (FT)	VEL. (FPS) (Estimate)*	TRAVEL TIME Tt
			(10 YR)	(100 YR)	(10 YR)	(100 YR)	(10 YR)	(100 YR)		(10 YR)	(100 YR)	(10 YR)	(100 YR)	**(10 YR)**	**(100 YR)**							
EI17	E15	15.8	3.44	5.78	1.49	1.81	5.1	10						**5.1**	**10**	24	0.013	EJ18	1.33%	13	8	0.0
EI18	E16	12.5	3.80	6.37	1.08	1.21	4.1	7.7						**4.1**	**7.7**	24	0.013	EJ18	0.50%	33	5	0.1
EJ18									24.9	1.96	4.63	28.80	36.94	**56**	**171**	54	0.013	EJ19	0.50%	342	9	0.7
EJ19									25.5	1.91	4.57	28.80	36.94	**55**	**169**	54	0.013	EJ19	2.10%	96	18	0.1
CB02	B18	14.2	3.60	6.04	1.72	2.72	6.2	16						**6.2**	**16**	24	0.013	J17	1.00%	180	7	0.4
J17									14.7	2.88	5.97	1.72	2.72	**5.0**	**16**	24	0.013	J18	0.99%	116	7	0.3
I17	B19	13.9	3.64	6.10	1.63	1.79	5.9	11						**5.9**	**11**	18	0.013	J18	1.93%	5	8	0.0
J18									14.9	2.85	5.92	3.35	4.51	**10**	**27**	30	0.013	J19	1.05%	38	9	0.1
J19									15.0	2.84	5.91	3.35	4.51	**10**	**27**	30	0.013	J20	1.03%	107	9	0.2
J20									15.2	2.82	5.88	3.35	4.51	**9**	**27**	30	0.013	J21	0.71%	489	7	1.2
I18	B20	19.4	3.14	5.27	1.47	2.13	4.6	11						**4.6**	**11**	18	0.013	J21	9.64%	5	19	0.0
J21									19.4	2.40	5.26	4.82	6.64	**12**	**35**	30	0.013	I19	1.22%	25	9	0.0
I19	B21	19.5	3.13	5.25	0.85	1.16	2.7	6.1	19.5	2.39	5.25	5.67	7.81	**14**	**41**	30	0.013	OS2	2.20%	159	12	0.2
I20	H02	13.7	3.66	6.14	1.97	2.43	7.2	15						**7.2**	**15**	18	0.013	J22	1.00%	65	6.0	0.2
J22									13.9	2.98	6.11	1.97	2.43	**5.9**	**15**	18	0.013	J23	3.69%	330	11.4	0.5
J23									14.3	2.92	6.02	1.97	2.43	**5.8**	**15**	18	0.013	J24	3.82%	234	11.6	0.3
I23	H07	16.8	3.36	5.63	2.46	2.65	8.2	15						**8.2**	**15**	24	0.013	J24	1.08%	32	7.5	0.1
J24									16.8	2.64	5.62	4.43	5.08	**12**	**29**	24	0.013	J26	2.91%	105	12.3	0.1
I21	H04	18.3	3.22	5.41	2.70	3.38	8.7	18						**8.7**	**18**	24	0.013	J25A	1.03%	183	7.3	0.4
J25A									18.7	2.46	5.36	2.70	3.38	**6.6**	**18**	24	0.013	I22	3.32%	344	13.2	0.4
I22	H05	9.1	4.26	7.16	0.81	1.11	3.5	7.9	19.1	2.42	5.30	3.52	4.49	**9**	**24**	24	0.013	J25B	4.97%	178	16	0.2
J25B									19.3	2.40	5.28	3.52	4.49	**8**	**24**	24	0.013	J26	1.00%	100	7	0.2
J26									19.5	2.38	5.25	7.94	9.57	**19**	**50**	30	0.013	J27	4.13%	216	17	0.2
CB03	H08	15.0	3.52	5.91	1.30	2.01	4.6	12						**4.6**	**12**	18	0.013	J27	0.99%	71	6	0.2
CB04	H09	13.1	3.73	6.26	0.84	1.28	3.1	8.0						**3.1**	**8.0**	18	0.013	J27	1.38%	51	7	0.1
J27									19.7	2.36	5.22	10.08	12.86	**24**	**67**	42	0.013	J28	3.10%	158	18	0.1
I24	H10	15.0	3.53	5.92	2.29	1.85	8.1	11						**8.1**	**11**	18	0.013	J28	1.04%	53	6	0.1
I25	H11	19.1	3.16	5.30	1.21	1.95	3.8	10						**3.8**	**10**	18	0.013	J28	1.68%	33	8	0.1
J28									19.9	2.35	5.20	13.58	16.66	**32**	**87**	42	0.013	J29	3.43%	264	19	0.2
I26	H12	14.8	3.54	5.95	1.95	1.89	6.9	11						**6.9**	**11**	18	0.013	I27	4.25%	35	12	0.0
I27	H13	14.9	3.53	5.93	0.58	1.47	2.1	8.7	14.9	2.86	5.93	2.53	3.36	**7.2**	**20**	24	0.013	J29	3.07%	192	13	0.3
J29									20.1	2.33	5.17	13.58	20.02	**32**	**104**	42	0.013	J30	1.79%	90	14	0.1
I28	H15	9.5	4.21	7.07	1.37	1.86	5.8	13						**5.8**	**13**	18	0.013	J30	1.38%	33	7	0.1
J30									20.2	2.32	5.16	14.94	21.88	**35**	**113**	42	0.013	J31	1.95%	169	15	0.2
I29	H16	17.7	3.27	5.49	2.26	3.45	7.4	19						**7.4**	**19**	24	0.013	J31	5.91%	28	18	0.0
J31									20.4	2.30	5.13	17.20	25.33	**40**	**130**	48	0.013	J32	1.43%	249	14	0.3
I30	H17	13.6	3.67	6.16	1.65	1.77	6.0	11						**6.0**	**11**	18	0.013	J32	2.45%	45	9	0.1
J32									20.7	2.28	5.10	18.85	27.10	**43**	**138**	48	0.013	J33	3.06%	303	20	0.3
I31	H18	15.2	3.50	5.87	2.43	3.23	8.5	19						**8.5**	**19**	24	0.013	J33	6.82%	25	19	0.0
J33									21.0	2.26	5.07	21.28	30.33	**48**	**154**	48	0.013	J34	1.04%	48	12	0.1
J34									21.0	2.25	5.06	21.28	30.33	**48**	**153**	48	0.013	J35	2.55%	387	18	0.4

UPSTREAM DESIGN POINT	UPSTREAM BASIN	INLET FLOW							SYSTEM FLOW							TRAVEL TIME						
		Tc (Min.)	I (in./ hr.)		CA		Q		Sum Tc (min.)	I (in./ hr.)		CA		Q		PIPE DIA	ROUGHNESS (n)	DESTINATION DP	SLOPE %	LENGTH (FT)	VEL. (FPS) (Estimate)*	TRAVEL TIME Tt
			(10 YR)	(100 YR)	(10 YR)	(100 YR)	(10 YR)	(100 YR)		(10 YR)	(100 YR)	(10 YR)	(100 YR)	**(10 YR)**	**(100 YR)**							
I32	H19	15.2	3.51	5.88	1.53	1.86	5.4	11						**5.4**	**11**	24	0.013	J35	1.62%	312	9	0.6
I33	H20	18.6	3.19	5.36	2.16	2.09	6.9	11						**6.9**	**11**	18	0.013	J35	9.90%	24	19	0.0
J32									21.4	2.22	5.02	24.97	34.28	**56**	**172**	48	0.013	I34	3.05%	5	20	0.0
I34	H21	20.1	3.09	5.18	1.64	3.32	5.1	17	21.4	2.22	5.02	26.61	37.60	**59**	**189**	48	0.013	OS3	1.01%	248	12	0.4
I35	H22	22.3	2.93	4.91	1.94	2.41	5.7	12						**5.7**	**12**	18	0.013	I36	1.03%	53	6	0.1
I36	H23	8.7	4.34	7.28	0.69	0.79	3.0	5.7	22.4	2.14	4.90	2.63	3.20	**5.6**	**16**	24	0.013	OS4	1.06%	52	7	0.1
EI37a	H26	18.1	3.24	5.44	1.06	1.51	3.4	8.2						**3.4**	**8.2**	30	0.013	DP03	2.20%	50	12	0.1
EI37b		18.4	3.22	5.40	0.28	0.60	0.9	3.2	18.4	2.49	5.40	1.34	2.11	**3.3**	**11**	30	0.013	DP03	2.20%	50	12	0.1
EI38	H28	23.6	2.84	4.77	1.35	1.51	3.8	7.2						**3.8**	**7.2**	30	0.013	DP03	2.20%	50	12	0.1
EI39		24.3	2.80	4.69	0.38	0.57	1.1	2.7						**1.1**	**2.7**							
I40	G02	16.7	3.36	5.64	2.82	3.15	9.5	18						**9.5**	**18**	18	0.013	I41	0.99%	35	6	0.1
I41	G03	16.8	3.35	5.62	0.54	1.36	1.8	7.7	16.8	2.64	5.62	3.37	4.51	**9**	**25**	24	0.013	J36	2.62%	193	12	0.3
J33									17.1	2.62	5.58	3.37	4.51	**9**	**25**	24	0.013	OS5	1.00%	114	7	0.3
I42	G05	10.3	4.08	6.86	2.02	2.59	8.3	18						**8.3**	**18**	18	0.013	I43	6.65%	35	15	0.0
I43	G06	16.7	3.36	5.64	1.41	2.10	4.7	12	16.7	2.66	5.64	3.44	4.68	**9**	**26**	24	0.013	J37	2.71%	188	12	0.3
J37									16.9	2.63	5.60	3.44	4.68	**9**	**26**	30	0.013	J38	1.02%	490	8	1.0
J38									17.9	2.53	5.46	3.44	4.68	**9**	**26**	30	0.013	J39	1.38%	123	10	0.2
DP13	E03	49.8	1.72	2.89	10.68	15.73	18	45	49.8	0.75	2.89	10.68	15.73	**8**	**45**	42	0.013	I44	1.21%	33	12	0.0
I44	E04	10.9	4.01	6.72	2.00	2.49	8.0	17	49.8	0.74	2.89	12.68	18.22	**9**	**53**	42	0.013	J39	1.07%	14	11	0.0
J39									49.8	0.74	2.88	16.12	22.90	**12**	**66**	24	0.013	I45	1.04%	34	7	0.1
I45	E05	11.2	3.96	6.64	0.91	1.12	3.6	7.5	49.9	0.74	2.88	17.03	24.03	**13**	**69**	42	0.013	EI04	2.01%	165	15	0.2
EI04	E06	13.7	3.66	6.14	2.29	2.89	8.4	18	50.1	0.73	2.87	19.32	26.92	**14**	**77**	42	0.013	EJ04	1.00%	296	10	0.5
EI05	E07	17.0	3.33	5.59	1.95	2.82	6.5	16						**6.5**	**16**	18	0.013	EJ04	3.70%	23	11	0.0
EJ04									50.6	0.72	2.85	21.27	29.74	**15**	**85**	42	0.013	EJ06	1.10%	226	11	0.3
EI06	E10 & E12	21.8	2.96	4.97	4.71	6.20	14	31						**14**	**31**	24	0.013	EJ05	1.00%	25	7	0.1
EI07	E08 & E14	25.5	2.72	4.57	2.13	4.47	5.8	20						**5.8**	**20**	24	0.013	EJ05	5.40%	5	17	0.0
EJ05									25.5	1.91	4.57	6.84	10.67	**13**	**49**	36	0.013	EJ06	1.80%	56	13	0.1
EJ06									50.9	0.71	2.83	28.12	40.41	**20**	**114**	48	0.013	OS2	1.50%	165	14	0.2

* Velocity estimated for calculation of travel time. Refer to Hydraulics for calculated velocity.

Appendix B - HEC-HMS Data

Input Data

Windingwalk and the Enclave PUD

BASIN	AREA		CURVE NO.	PERCENT IMPERV.	LAG TIME (min)
	(acre)	(mi^2)			
HISTORIC					
OS01	998	1.5594	62.9	0%	35.5
OS02	142	0.2219	64.5	13%	25.5
OS03	127	0.1984	63.2	8%	23.6
OS04	87	0.1359	61.0	0%	21.4
HB01	15	0.0234	61.0	0%	12.6
HB02	68	0.1063	61.0	0%	16.2
HB03	81	0.1266	61.0	0%	13.2
HB04	39	0.0609	61.0	0%	14.4
HB05	88	0.1375	61.0	0%	15.6
HB06	105	0.1641	61.0	0%	18.0
HB07	20	0.0313	61.0	0%	10.2
HB08	86	0.1344	61.0	0%	21.6
HB09	195	0.3047	61.0	0%	33.0
HB10	195	0.3047	61.0	0%	24.0
HB12	51	0.0797	61.0	0%	18.0
B-11	72	0.1125	61.0	0%	25.8
B-13	180	0.2813	61.0	0%	33.0
B-14	259	0.4039	61.0	0%	34.2
B-15	48	0.0750	61.0	0%	27.0
HG07	63	0.0984	61.0	0%	28.3
HG08	85	0.1328	61.0	0%	22.9
HG09	114	0.1781	61.0	0%	35.6
HG10	88	0.1375	61.0	0%	61.4
HG11	131	0.2047	61.0	0%	40.4
HG12	83	0.1297	61.0	0%	32.0
HH01	63	0.0984	61.0	0%	16.6

BASIN	AREA (acre)	AREA (mi^2)	CURVE NO.	PERCENT IMPERV.	LAG TIME (min)
FUTURE					
OS01	998	1.5594	62.9	0%	35.5
OS02	142	0.2219	64.5	13%	25.5
OS03	127	0.1984	63.2	8%	23.6
OS04	87	0.1359	61.0	0%	21.4
DB01	46	0.0719	69.7	24%	13.7
DB02	33	0.0516	69.0	22%	10.5
DB03	45	0.0703	65.8	13%	15.0
DB04	27	0.0422	66.8	16%	15.3
DB05	25	0.0384	68.0	20%	19.1
DB06	14	0.0219	84.0	63%	14.6
DB07	16	0.0254	70.0	25%	11.7
DB08	19	0.0297	64.9	10%	11.9
DB09	12	0.0189	75.0	40%	9.6
DB10	23	0.0364	75.0	40%	13.7
DB11	62	0.0969	72.0	31%	18.4
DB12	29	0.0453	78.2	43%	12.7
DB13	45	0.0703	73.9	33%	18.6
DB14	36	0.0556	78.0	43%	14.6
DB15	79	0.1234	67.1	17%	21.8
DB16	37	0.0578	78.5	47%	16.4
DB17	3	0.0048	98.0	100%	7.4
DB18	22	0.0346	80.0	47%	13.4
DB19	18	0.0281	72.6	29%	16.2
DB20	9	0.0147	78.7	46%	15.2
DB21	33	0.0519	65.6	11%	13.6
DB22	33	0.0516	80.0	48%	14.8
DB23	11	0.0172	91.6	81%	11.3
DB24	34	0.0531	78.5	43%	13.3
DB25	14	0.0211	80.0	47%	9.7
DB26	44	0.0692	85.8	72%	16.1
DB27	33	0.0508	78.1	42%	21.9
DB28	47	0.0741	70.7	24%	17.6
DB29	109	0.1697	68.5	22%	23.9
FB01	24	0.0373	77.7	41%	14.2
FB02	32	0.0500	79.1	45%	22.8
FB03	5	0.0078	90.1	78%	9.0
WH-24	85	0.1325	79.0	46%	16.0
WH-26	54	0.0839	62.0	2%	25.1
WH-27	14	0.0217	62.0	2%	8.6
WH-28	26	0.0398	78.3	44%	17.7
WH-29	32	0.0495	78.0	43%	16.6
WH-30	10	0.0159	68.6	19%	6.0
WH-31	26	0.0406	80.0	47%	13.2
WH-32	29	0.0458	62.0	2%	6.0
WH-33	4	0.0064	80.0	47%	13.0
WH-34	29	0.0453	75.0	N/A	14.4
WH-35	99	0.1547	68.0	N/A	15.0
WH-36	48	0.0750	63.0	N/A	15.6

BASIN	AREA		CURVE NO.	PERCENT IMPERV.	LAG TIME (min)	
	(acre)	(mi^2)				
FUTURE						
FG08A	48	0.0750	76.8	43%	13.3	✓
FG08B	40	0.0630	76.7	40%	16.6	✓
FG09	31	0.0484	71.7	27%	20.8	✧🗀
FG10	43	0.0669	72.7	29%	41.8	☞☝🗀
FG11	40	0.0625	78.2	44%	23.2	☞
FG12	21	0.0328	80.0	47%	16.1	☞☝
FG13	42	0.0661	66.9	14%	29.6	
FG14	21	0.0331	77.5	42%	20.9	
FG15	65	0.1017	72.9	30%	25.9	⌨📪
FG15a	10	0.0156	78.7	44%	11.2	🗁
FG16	50	0.0773	78.8	45%	13.0	🗁
FG17a	44	0.0694	76.5	39%	14.4	✓✓
FG17b	14	0.0214	79.9	47%	11.4	✓✓
FG17c	20	0.0313	65.2	10%	11.8	✓✓
FG18	41	0.0644	73.5	31%	29.9	✧
FG19	34	0.0527	80.3	48%	15.3	✓✓
FG20	7	0.0109	92.9	86%	10.1	
FG30	26	0.0400	80.0	52%	10.4	
FG31	59	0.0922	80.0	52%	24.0	🗂
FH01	86	0.1344	76.2	38%	23.4	☞🗀
FH02	6	0.0091	71.3	25%	14.6	🗁🗎📪

Update the legend so all the symbols are defined.

✧	From Meridian Ranch Drainage Reports (Windingwalk Rational Calcs., September 2017)
◆	From Retrofit Drainage Analysis For Bennett Regional Detention Pond, Jun 2014)
◆◆	From Approved Meridian Ranch MDDP, Aug 2015
✧✧	From Approved Meridian Ranch Final Drainage Reports (Stonebridge Filing 2, Oct 2016)
■	From Estates Filing 2 Final Drainage Report, July 2013
■■	From Estates Filing 3 Final Drainage Report, Nov 2015
❖	From Meridian Ranch Filing 11b Approved Final Drainage Report, Nov 2014
❖❖	From Meridian Ranch Filing 3 Approved Final Drainage Report, Aug 2012
●	From Meridian Ranch Filing 7 Approved Final Drainage Report, Aug 2012
●●	From Meridian Ranch Filing 8 Approved Final Drainage Report, Feb 2015
✓	From Meridian Ranch Filing 9 Approved Final Drainage Report, July 2015
✓✓	From Stonebridge Filing 3 Approved Final Drainage Report, April 2017
◆◆◆	From Approved Meridian Ranch MDDP, Dec 2017

NOAA Atlas 14, Volume 8, Version 2
Location name: Peyton, Colorado, USA*
Latitude: 38.9783°, Longitude: -104.5842°
Elevation: 7054.14 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

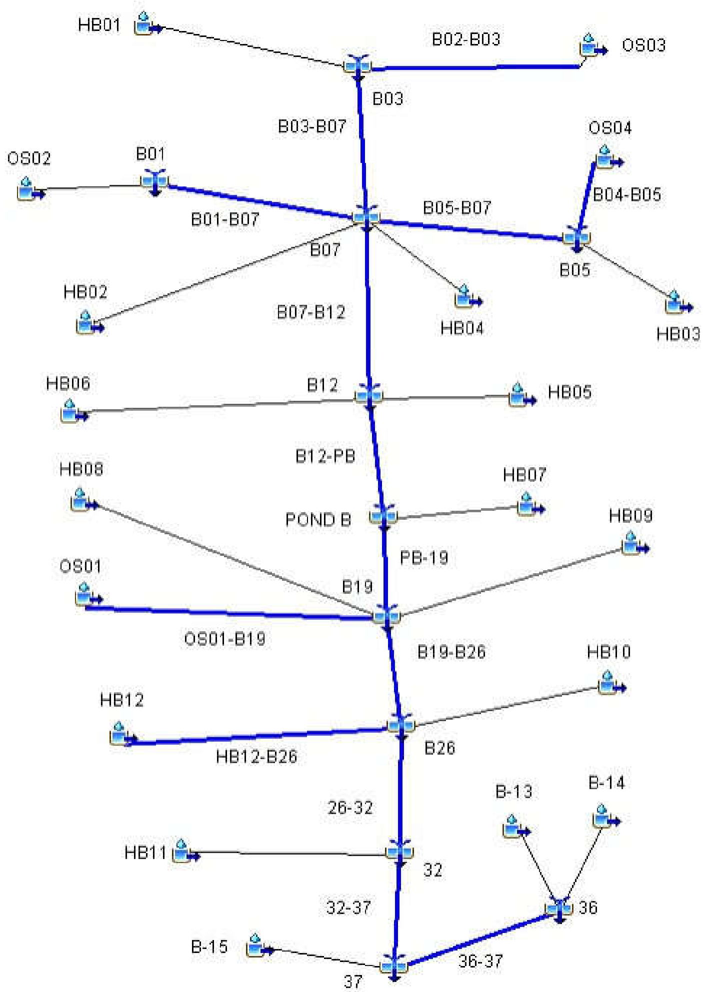
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.239 (0.190-0.301)	0.291 (0.232-0.367)	0.381 (0.302-0.482)	0.460 (0.363-0.585)	0.576 (0.442-0.764)	0.670 (0.501-0.899)	0.770 (0.556-1.05)	0.875 (0.606-1.23)	1.02 (0.680-1.45)	1.14 (0.737-1.65)
10-min	0.349 (0.278-0.441)	0.426 (0.339-0.538)	0.558 (0.443-0.706)	0.674 (0.532-0.857)	0.843 (0.647-1.12)	0.982 (0.734-1.32)	1.13 (0.814-1.55)	1.28 (0.888-1.80)	1.50 (0.996-2.16)	1.67 (1.08-2.44)
15-min	0.426 (0.340-0.538)	0.519 (0.413-0.656)	0.680 (0.540-0.861)	0.822 (0.648-1.04)	1.03 (0.789-1.36)	1.20 (0.895-1.61)	1.37 (0.993-1.89)	1.56 (1.08-2.20)	1.82 (1.22-2.64)	2.03 (1.31-2.97)
30-min	0.608 (0.485-0.768)	0.741 (0.590-0.936)	0.969 (0.769-1.23)	1.17 (0.923-1.49)	1.46 (1.12-1.94)	1.70 (1.27-2.28)	1.95 (1.41-2.66)	2.21 (1.53-3.12)	2.58 (1.72-3.73)	2.87 (1.85-4.20)
60-min	0.778 (0.620-0.982)	0.934 (0.744-1.18)	1.21 (0.962-1.54)	1.47 (1.16-1.86)	1.84 (1.42-2.46)	2.16 (1.62-2.91)	2.50 (1.81-3.44)	2.87 (1.99-4.05)	3.38 (2.26-4.91)	3.80 (2.46-5.58)
2-hr	0.948 (0.762-1.18)	1.13 (0.905-1.41)	1.46 (1.16-1.83)	1.76 (1.40-2.22)	2.23 (1.73-2.96)	2.62 (1.98-3.51)	3.05 (2.23-4.18)	3.52 (2.47-4.95)	4.19 (2.82-6.04)	4.73 (3.09-6.87)
3-hr	1.04 (0.839-1.29)	1.22 (0.986-1.52)	1.57 (1.26-1.96)	1.90 (1.51-2.38)	2.41 (1.90-3.21)	2.86 (2.16-3.83)	3.35 (2.47-4.59)	3.90 (2.75-5.47)	4.68 (3.16-6.75)	5.33 (3.50-7.71)
6-hr	1.21 (0.980-1.49)	1.40 (1.14-1.73)	1.78 (1.44-2.21)	2.16 (1.74-2.68)	2.76 (2.19-3.65)	3.29 (2.53-4.38)	3.88 (2.88-5.28)	4.53 (3.23-6.34)	5.48 (3.76-7.88)	6.28 (4.17-9.04)
12-hr	1.39 (1.14-1.70)	1.62 (1.33-1.98)	2.08 (1.69-2.56)	2.48 (2.02-3.08)	3.16 (2.53-4.14)	3.76 (2.92-4.96)	4.42 (3.31-5.97)	5.15 (3.70-7.14)	6.22 (4.30-8.85)	7.10 (4.76-10.1)
24-hr	1.61 (1.33-1.95)	1.88 (1.56-2.29)	2.39 (1.97-2.92)	2.88 (2.35-3.52)	3.63 (2.91-4.69)	4.27 (3.34-5.58)	4.98 (3.75-6.68)	5.75 (4.17-7.90)	6.87 (4.78-9.70)	7.79 (5.25-11.1)

HISTORIC 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
OS02	0.2219	148	01Jul2015, 12:20	19
B01	0.2219	148	01Jul2015, 12:20	19
B01-B07	0.2219	148	01Jul2015, 12:24	19
OS03	0.1984	130	01Jul2015, 12:18	16
B02-B03	0.1984	129	01Jul2015, 12:20	16
HB01	0.0234	19	01Jul2015, 12:08	2
B03	0.2218	140	01Jul2015, 12:20	17
B03-B07	0.2218	140	01Jul2015, 12:22	17
OS04	0.1359	83	01Jul2015, 12:16	10
B04-B05	0.1359	82	01Jul2015, 12:24	10
HB03	0.1266	103	01Jul2015, 12:08	9
B05	0.2625	144	01Jul2015, 12:16	19
B05-B07	0.2625	144	01Jul2015, 12:16	19
HB02	0.1063	77	01Jul2015, 12:12	8
HB04	0.0609	47	01Jul2015, 12:10	4
B07	0.8734	519	01Jul2015, 12:18	67
B07-B12	0.8734	518	01Jul2015, 12:24	66
HB05	0.1375	102	01Jul2015, 12:10	10
HB06	0.1641	111	01Jul2015, 12:14	12
B12	1.1750	679	01Jul2015, 12:20	88
B12-PB	1.1750	677	01Jul2015, 12:22	88
HB07	0.0313	29	01Jul2015, 12:06	2
POND B	1.2063	688	01Jul2015, 12:22	90
PB-19	1.2063	687	01Jul2015, 12:26	89
OS01	1.5594	757	01Jul2015, 12:32	122
OS01-B19	1.5594	756	01Jul2015, 12:38	121
HB08	0.1344	81	01Jul2015, 12:16	10
HB09	0.3047	138	01Jul2015, 12:30	22
B19	3.2048	1563	01Jul2015, 12:30	241
B19-B26	3.2048	1563	01Jul2015, 12:32	241
HB10	0.3047	172	01Jul2015, 12:20	22
HB12	0.0797	54	01Jul2015, 12:14	6
HB12-B26	0.0797	54	01Jul2015, 12:16	6
B26	3.5892	1737	01Jul2015, 12:30	268
26-32	3.5892	1734	01Jul2015, 12:34	267
HB11	0.1125	60	01Jul2015, 12:22	8
32	3.7017	1782	01Jul2015, 12:34	275
32-37	3.7017	1782	01Jul2015, 12:36	273
B-14	0.4039	178	01Jul2015, 12:32	29
B-13	0.2813	127	01Jul2015, 12:30	20
36	0.6852	306	01Jul2015, 12:30	49
36-37	0.6852	305	01Jul2015, 12:34	49
B-15	0.0750	39	01Jul2015, 12:22	5
37	4.4619	2117	01Jul2015, 12:36	327

Add a footnote explaining what the highlighted rows mean.

HISTORIC 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
HG07	0.0984	50	01Jul2015, 12:24	7
HG07-G11	0.0984	50	01Jul2015, 12:28	7
HG08	0.1328	77	01Jul2015, 12:18	10
G11	0.2312	122	01Jul2015, 12:22	17
G11-G12	0.2312	121	01Jul2015, 12:26	16
HG09	0.1781	76	01Jul2015, 12:32	13
G12	0.4093	196	01Jul2015, 12:28	29
G12-H08	0.4093	196	01Jul2015, 12:38	28
HG10	0.1375	40	01Jul2015, 13:04	10
H08	0.5468	227	01Jul2015, 12:40	38
HG11	0.2047	80	01Jul2015, 12:38	15
H09	0.2047	80	01Jul2015, 12:38	15
HH01	0.0984	70	01Jul2015, 12:12	7
H12	0.0984	70	01Jul2015, 12:12	7
HG12	0.1297	60	01Jul2015, 12:28	9
H10	0.1297	60	01Jul2015, 12:28	9

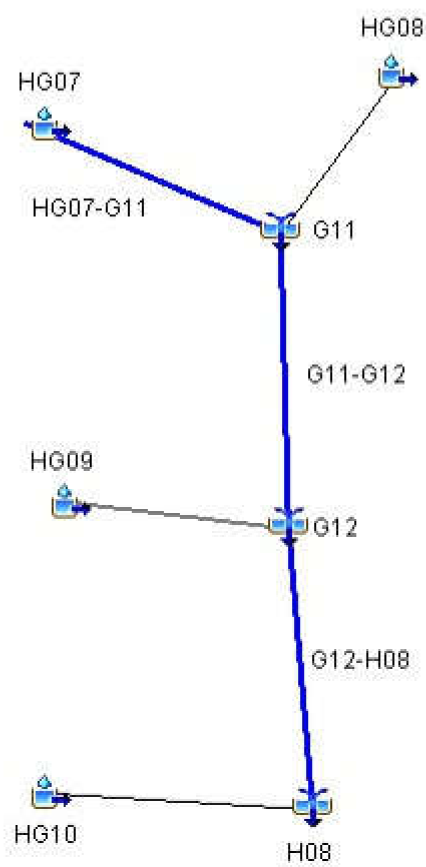
BENNETT HISTORIC



HISTORIC 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
OS02	0.2219	102	01Jul2015, 12:22	14
B01	0.2219	102	01Jul2015, 12:22	14
B01-B07	0.2219	102	01Jul2015, 12:24	14
OS03	0.1984	88	01Jul2015, 12:20	11
B02-B03	0.1984	88	01Jul2015, 12:22	11
HB01	0.0234	13	01Jul2015, 12:08	1
B03	0.2218	95	01Jul2015, 12:20	12
B03-B07	0.2218	94	01Jul2015, 12:24	12
OS04	0.1359	54	01Jul2015, 12:18	7
B04-B05	0.1359	54	01Jul2015, 12:26	7
HB03	0.1266	68	01Jul2015, 12:08	6
B05	0.2625	91	01Jul2015, 12:18	13
B05-B07	0.2625	91	01Jul2015, 12:20	13
HB02	0.1063	51	01Jul2015, 12:12	5
HB04	0.0609	31	01Jul2015, 12:10	3
B07	0.8734	344	01Jul2015, 12:20	47
B07-B12	0.8734	343	01Jul2015, 12:26	47
HB05	0.1375	67	01Jul2015, 12:12	7
HB06	0.1641	73	01Jul2015, 12:14	8
B12	1.1750	440	01Jul2015, 12:22	62
B12-PB	1.1750	440	01Jul2015, 12:24	62
HB07	0.0313	19	01Jul2015, 12:06	2
POND B	1.2063	446	01Jul2015, 12:24	64
PB-19	1.2063	444	01Jul2015, 12:28	63
OS01	1.5594	510	01Jul2015, 12:34	87
OS01-B19	1.5594	509	01Jul2015, 12:40	86
HB08	0.1344	53	01Jul2015, 12:18	7
HB09	0.3047	90	01Jul2015, 12:32	15
B19	3.2048	1041	01Jul2015, 12:34	171
B19-B26	3.2048	1039	01Jul2015, 12:34	171
HB10	0.3047	113	01Jul2015, 12:20	15
HB12	0.0797	36	01Jul2015, 12:14	4
HB12-B26	0.0797	35	01Jul2015, 12:18	4
B26	3.5892	1147	01Jul2015, 12:34	190
26-32	3.5892	1146	01Jul2015, 12:36	189
HB11	0.1125	40	01Jul2015, 12:22	6
32	3.7017	1177	01Jul2015, 12:36	194
32-37	3.7017	1175	01Jul2015, 12:40	193
B-14	0.4039	117	01Jul2015, 12:32	20
B-13	0.2813	83	01Jul2015, 12:32	14
36	0.6852	200	01Jul2015, 12:32	34
36-37	0.6852	200	01Jul2015, 12:36	34
B-15	0.0750	26	01Jul2015, 12:24	4
37	4.4619	1391	01Jul2015, 12:38	231

HISTORIC 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
HG07	0.0984	32	01Jul2015, 12:26	5
HG07-G11	0.0984	32	01Jul2015, 12:30	5
HG08	0.1328	51	01Jul2015, 12:20	7
G11	0.2312	79	01Jul2015, 12:24	12
G11-G12	0.2312	79	01Jul2015, 12:28	11
HG09	0.1781	50	01Jul2015, 12:34	9
G12	0.4093	128	01Jul2015, 12:30	20
G12-H08	0.4093	128	01Jul2015, 12:42	20
HG10	0.1375	26	01Jul2015, 13:06	7
H08	0.5468	149	01Jul2015, 12:42	27
HG11	0.2047	53	01Jul2015, 12:40	10
H09	0.2047	53	01Jul2015, 12:40	10
HH01	0.0984	46	01Jul2015, 12:12	5
H12	0.0984	46	01Jul2015, 12:12	5
HG12	0.1297	39	01Jul2015, 12:30	7
H10	0.1297	39	01Jul2015, 12:30	7

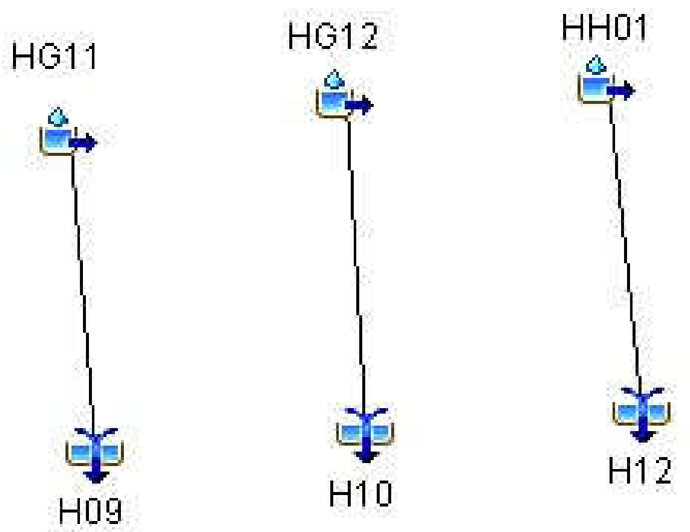
GIECK HISTORIC



HISTORIC 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
OS02	0.2219	65	01Jul2015, 12:22	9.3
B01	0.2219	65	01Jul2015, 12:22	9.3
B01-B07	0.2219	65	01Jul2015, 12:26	9.2
OS03	0.1984	55	01Jul2015, 12:20	7.7
B02-B03	0.1984	55	01Jul2015, 12:24	7.6
HB01	0.0234	8	01Jul2015, 12:08	0.8
B03	0.2218	59	01Jul2015, 12:22	8.4
B03-B07	0.2218	59	01Jul2015, 12:26	8.4
OS04	0.1359	32	01Jul2015, 12:18	4.5
B04-B05	0.1359	32	01Jul2015, 12:28	4.4
HB03	0.1266	41	01Jul2015, 12:10	4.2
B05	0.2625	52	01Jul2015, 12:24	8.7
B05-B07	0.2625	52	01Jul2015, 12:26	8.7
HB02	0.1063	30	01Jul2015, 12:12	3.6
HB04	0.0609	19	01Jul2015, 12:10	2.0
B07	0.8734	207	01Jul2015, 12:24	31.9
B07-B12	0.8734	207	01Jul2015, 12:30	31.5
HB05	0.1375	40	01Jul2015, 12:12	4.6
HB06	0.1641	43	01Jul2015, 12:14	5.5
B12	1.1750	259	01Jul2015, 12:26	41.6
B12-PB	1.1750	259	01Jul2015, 12:28	41.5
HB07	0.0313	12	01Jul2015, 12:06	1.0
POND B	1.2063	262	01Jul2015, 12:28	42.6
PB-19	1.2063	261	01Jul2015, 12:34	42.1
OS01	1.5594	316	01Jul2015, 12:36	58.6
OS01-B19	1.5594	315	01Jul2015, 12:44	57.8
HB08	0.1344	32	01Jul2015, 12:20	4.5
HB09	0.3047	54	01Jul2015, 12:34	10.1
B19	3.2048	635	01Jul2015, 12:38	114.5
B19-B26	3.2048	634	01Jul2015, 12:38	114.3
HB10	0.3047	67	01Jul2015, 12:22	10.1
HB12	0.0797	21	01Jul2015, 12:14	2.7
HB12-B26	0.0797	21	01Jul2015, 12:20	2.6
B26	3.5892	693	01Jul2015, 12:38	127.0
26-32	3.5892	693	01Jul2015, 12:42	126.0
HB11	0.1125	23	01Jul2015, 12:24	3.7
32	3.7017	709	01Jul2015, 12:42	129.8
32-37	3.7017	708	01Jul2015, 12:44	128.7
B-14	0.4039	70	01Jul2015, 12:34	13.3
B-13	0.2813	50	01Jul2015, 12:34	9.3
36	0.6852	119	01Jul2015, 12:34	22.6
36-37	0.6852	119	01Jul2015, 12:38	22.5
B-15	0.0750	15	01Jul2015, 12:26	2.5
37	4.4619	834	01Jul2015, 12:44	153.7

HISTORIC 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
HG07	0.0984	19	01Jul2015, 12:28	3.3
HG07-G11	0.0984	19	01Jul2015, 12:32	3.2
HG08	0.1328	30	01Jul2015, 12:20	4.4
G11	0.2312	47	01Jul2015, 12:24	7.6
G11-G12	0.2312	47	01Jul2015, 12:32	7.5
HG09	0.1781	30	01Jul2015, 12:36	5.9
G12	0.4093	76	01Jul2015, 12:32	13.4
G12-H08	0.4093	76	01Jul2015, 12:46	13.1
HG10	0.1375	16	01Jul2015, 13:08	4.5
H08	0.5468	89	01Jul2015, 12:48	17.6
HG11	0.2047	31	01Jul2015, 12:42	6.7
H09	0.2047	31	01Jul2015, 12:42	6.7
HH01	0.0984	27	01Jul2015, 12:14	3.3
H12	0.0984	27	01Jul2015, 12:14	3.3
HG12	0.1297	23	01Jul2015, 12:32	4.3
H10	0.1297	23	01Jul2015, 12:32	4.3

MISC. HISTORIC



HISTORIC 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
OS02	0.2219	30	01 Jul2015, 12:26	5.1
B01	0.2219	30	01 Jul2015, 12:26	5.1
B01-B07	0.2219	30	01 Jul2015, 12:30	5.0
OS03	0.1984	23	01 Jul2015, 12:24	4.1
B02-B03	0.1984	23	01 Jul2015, 12:26	4.0
HB01	0.0234	3	01 Jul2015, 12:10	0.4
B03	0.2218	25	01 Jul2015, 12:26	4.4
B03-B07	0.2218	25	01 Jul2015, 12:30	4.4
OS04	0.1359	12	01 Jul2015, 12:22	2.3
B04-B05	0.1359	12	01 Jul2015, 12:34	2.2
HB03	0.1266	15	01 Jul2015, 12:12	2.1
B05	0.2625	20	01 Jul2015, 12:30	4.4
B05-B07	0.2625	20	01 Jul2015, 12:32	4.4
HB02	0.1063	11	01 Jul2015, 12:16	1.8
HB04	0.0609	7	01 Jul2015, 12:12	1.0
B07	0.8734	86	01 Jul2015, 12:30	16.6
B07-B12	0.8734	86	01 Jul2015, 12:38	16.4
HB05	0.1375	15	01 Jul2015, 12:14	2.3
HB06	0.1641	16	01 Jul2015, 12:18	2.8
B12	1.1750	103	01 Jul2015, 12:36	21.5
B12-PB	1.1750	103	01 Jul2015, 12:38	21.4
HB07	0.0313	4	01 Jul2015, 12:08	0.5
POND B	1.2063	105	01 Jul2015, 12:38	22.0
PB-19	1.2063	104	01 Jul2015, 12:46	21.7
OS01	1.5594	136	01 Jul2015, 12:38	30.9
OS01-B19	1.5594	136	01 Jul2015, 12:48	30.4
HB08	0.1344	12	01 Jul2015, 12:22	2.3
HB09	0.3047	21	01 Jul2015, 12:38	5.1
B19	3.2048	266	01 Jul2015, 12:46	59.4
B19-B26	3.2048	266	01 Jul2015, 12:48	59.2
HB10	0.3047	26	01 Jul2015, 12:26	5.1
HB12	0.0797	8	01 Jul2015, 12:18	1.3
HB12-B26	0.0797	8	01 Jul2015, 12:24	1.3
B26	3.5892	288	01 Jul2015, 12:48	65.7
26-32	3.5892	287	01 Jul2015, 12:52	65.0
HB11	0.1125	9	01 Jul2015, 12:28	1.9
32	3.7017	293	01 Jul2015, 12:52	66.9
32-37	3.7017	293	01 Jul2015, 12:58	66.1
B-14	0.4039	27	01 Jul2015, 12:38	6.7
B-13	0.2813	19	01 Jul2015, 12:38	4.7
36	0.6852	47	01 Jul2015, 12:38	11.4
36-37	0.6852	47	01 Jul2015, 12:42	11.3
B-15	0.0750	6	01 Jul2015, 12:30	1.3
37	4.4619	338	01 Jul2015, 12:56	78.7

HISTORIC 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
HG07	0.0984	7	01Jul2015, 12:30	1.6
HG07-G11	0.0984	7	01Jul2015, 12:38	1.6
HG08	0.1328	11	01Jul2015, 12:24	2.2
G11	0.2312	18	01Jul2015, 12:30	3.9
G11-G12	0.2312	18	01Jul2015, 12:38	3.8
HG09	0.1781	12	01Jul2015, 12:40	3.0
G12	0.4093	29	01Jul2015, 12:38	6.8
G12-H08	0.4093	29	01Jul2015, 12:56	6.5
HG10	0.1375	7	01Jul2015, 13:18	2.2
H08	0.5468	35	01Jul2015, 12:58	8.8
HG11	0.2047	13	01Jul2015, 12:48	3.4
H09	0.2047	13	01Jul2015, 12:48	3.4
HH01	0.0984	10	01Jul2015, 12:16	1.7
H12	0.0984	10	01Jul2015, 12:16	1.7
HG12	0.1297	9	01Jul2015, 12:36	2.2
H10	0.1297	9	01Jul2015, 12:36	2.2

HISTORIC 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
OS02	0.2219	13	01Jul2015, 12:28	2.8
B01	0.2219	13	01Jul2015, 12:28	2.8
B01-B07	0.2219	13	01Jul2015, 12:34	2.8
OS03	0.1984	9	01Jul2015, 12:28	2.2
B02-B03	0.1984	9	01Jul2015, 12:32	2.2
HB01	0.0234	1	01Jul2015, 12:14	0.2
B03	0.2218	10	01Jul2015, 12:32	2.4
B03-B07	0.2218	10	01Jul2015, 12:36	2.4
OS04	0.1359	4	01Jul2015, 12:28	1.2
B04-B05	0.1359	4	01Jul2015, 12:44	1.1
HB03	0.1266	5	01Jul2015, 12:14	1.1
B05	0.2625	7	01Jul2015, 12:42	2.2
B05-B07	0.2625	7	01Jul2015, 12:44	2.2
HB02	0.1063	4	01Jul2015, 12:20	0.9
HB04	0.0609	2	01Jul2015, 12:16	0.5
B07	0.8734	33	01Jul2015, 12:38	8.9
B07-B12	0.8734	33	01Jul2015, 12:48	8.7
HB05	0.1375	5	01Jul2015, 12:18	1.2
HB06	0.1641	5	01Jul2015, 12:22	1.4
B12	1.175	40	01Jul2015, 12:48	11.3
B12-PB	1.175	39	01Jul2015, 12:52	11.3
HB07	0.0313	1	01Jul2015, 12:10	0.3
POND B	1.2063	40	01Jul2015, 12:52	11.5
PB-19	1.2063	40	01Jul2015, 13:00	11.3
OS01	1.5594	55	01Jul2015, 12:46	16.6
OS01-B19	1.5594	55	01Jul2015, 12:58	16.3
HB08	0.1344	4	01Jul2015, 12:28	1.2
HB09	0.3047	7	01Jul2015, 12:46	2.6
B19	3.2048	105	01Jul2015, 13:00	31.4
B19-B26	3.2048	105	01Jul2015, 13:02	31.3
HB10	0.3047	9	01Jul2015, 12:32	2.6
HB12	0.0797	3	01Jul2015, 12:22	0.7
HB12-B26	0.0797	3	01Jul2015, 12:30	0.7
B26	3.5892	113	01Jul2015, 13:02	34.6
26-32	3.5892	113	01Jul2015, 13:08	34
HB11	0.1125	3	01Jul2015, 12:34	1
32	3.7017	115	01Jul2015, 13:08	35
32-37	3.7017	115	01Jul2015, 13:14	34.5
B-14	0.4039	10	01Jul2015, 12:48	3.4
B-13	0.2813	7	01Jul2015, 12:46	2.4
36	0.6852	17	01Jul2015, 12:46	5.8
36-37	0.6852	17	01Jul2015, 12:54	5.8
B-15	0.075	2	01Jul2015, 12:36	0.6
37	4.4619	131	01Jul2015, 13:14	40.9

HISTORIC 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
HG07	0.0984	3	01Jul2015, 12:38	0.8
HG07-G11	0.0984	3	01Jul2015, 12:48	0.8
HG08	0.1328	4	01Jul2015, 12:30	1.1
G11	0.2312	6	01Jul2015, 12:40	2
G11-G12	0.2312	6	01Jul2015, 12:54	1.9
HG09	0.1781	4	01Jul2015, 12:50	1.5
G12	0.4093	10	01Jul2015, 12:52	3.4
G12-H08	0.4093	10	01Jul2015, 13:16	3.3
HG10	0.1375	3	01Jul2015, 13:30	1.1
H08	0.5468	13	01Jul2015, 13:18	4.4
HG11	0.2047	5	01Jul2015, 12:58	1.7
H09	0.2047	5	01Jul2015, 12:58	1.7
HH01	0.0984	3	01Jul2015, 12:20	0.9
H12	0.0984	3	01Jul2015, 12:20	0.9
HG12	0.1297	3	01Jul2015, 12:44	1.1
H10	0.1297	3	01Jul2015, 12:44	1.1

HISTORIC 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
OS02	0.2219	3.00	01Jul2015, 12:46	1.1
B01	0.2219	3.00	01Jul2015, 12:46	1.1
B01-B07	0.2219	3.00	01Jul2015, 12:56	1.1
OS03	0.1984	2.00	01Jul2015, 13:02	0.8
B02-B03	0.1984	2.00	01Jul2015, 13:08	0.8
HB01	0.0234	0.00	01Jul2015, 13:08	0.1
B03	0.2218	2.00	01Jul2015, 13:08	0.9
B03-B07	0.2218	2.00	01Jul2015, 13:16	0.8
OS04	0.1359	1.00	01Jul2015, 13:30	0.4
B04-B05	0.1359	1.00	01Jul2015, 13:58	0.3
HB03	0.1266	1.00	01Jul2015, 13:10	0.3
B05	0.2625	1.00	01Jul2015, 13:42	0.7
B05-B07	0.2625	1.00	01Jul2015, 13:46	0.7
HB02	0.1063	0.00	01Jul2015, 13:22	0.3
HB04	0.0609	0.00	01Jul2015, 13:16	0.2
B07	0.8734	6.00	01Jul2015, 13:26	3.1
B07-B12	0.8734	6.00	01Jul2015, 13:44	3.0
HB05	0.1375	1.00	01Jul2015, 13:20	0.4
HB06	0.1641	1.00	01Jul2015, 13:24	0.4
B12	1.1750	7.00	01Jul2015, 13:42	3.8
B12-PB	1.1750	7.00	01Jul2015, 13:46	3.8
HB07	0.0313	0.00	01Jul2015, 13:06	0.1
POND B	1.2063	7.00	01Jul2015, 13:46	3.9
PB-19	1.2063	7.00	01Jul2015, 14:02	3.7
OS01	1.5594	11.00	01Jul2015, 13:24	5.9
OS01-B19	1.5594	11.00	01Jul2015, 13:44	5.7
HB08	0.1344	1.00	01Jul2015, 13:30	0.4
HB09	0.3047	1.00	01Jul2015, 13:50	0.8
B19	3.2048	20.00	01Jul2015, 13:44	10.6
B19-B26	3.2048	20.00	01Jul2015, 13:48	10.6
HB10	0.3047	1.00	01Jul2015, 13:34	0.8
HB12	0.0797	0.00	01Jul2015, 13:24	0.2
HB12-B26	0.0797	0.00	01Jul2015, 13:38	0.2
B26	3.5892	21.00	01Jul2015, 13:46	11.6
26-32	3.5892	21.00	01Jul2015, 13:58	11.3
HB11	0.1125	0.00	01Jul2015, 13:38	0.3
32	3.7017	22.00	01Jul2015, 13:58	11.6
32-37	3.7017	22.00	01Jul2015, 14:10	11.3
B-14	0.4039	2.00	01Jul2015, 13:52	1.1
B-13	0.2813	1.00	01Jul2015, 13:50	0.7
36	0.6852	3.00	01Jul2015, 13:50	1.8
36-37	0.6852	3.00	01Jul2015, 14:02	1.8
B-15	0.0750	0.00	01Jul2015, 13:40	0.2
37	4.4619	25.00	01Jul2015, 14:10	13.2

HISTORIC 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
HG07	0.0984	0.00	01Jul2015, 13:42	0.3
HG07-G11	0.0984	0.00	01Jul2015, 13:58	0.3
HG08	0.1328	1.00	01Jul2015, 13:32	0.4
G11	0.2312	1.00	01Jul2015, 13:46	0.6
G11-G12	0.2312	1.00	01Jul2015, 14:08	0.6
HG09	0.1781	1.00	01Jul2015, 13:54	0.5
G12	0.4093	2.00	01Jul2015, 14:04	1.0
G12-H08	0.4093	2.00	01Jul2015, 14:50	0.9
HG10	0.1375	1.00	01Jul2015, 14:40	0.3
H08	0.5468	2.00	01Jul2015, 14:48	1.3
HG11	0.2047	1.00	01Jul2015, 14:04	0.5
H09	0.2047	1.00	01Jul2015, 14:04	0.5
HH01	0.0984	0.00	01Jul2015, 13:22	0.3
H12	0.0984	0.00	01Jul2015, 13:22	0.3
HG12	0.1297	1.00	01Jul2015, 13:48	0.3
H10	0.1297	1.00	01Jul2015, 13:48	0.3

FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
OS01	1.5594	757	01Jul2015, 12:32	122
DB16	0.0578	92	01Jul2015, 12:10	8
B10	1.6172	794	01Jul2015, 12:30	130
B10-B11	1.6172	793	01Jul2015, 12:32	130
DB17	0.0048	16	01Jul2015, 12:02	1
B11	1.6220	795	01Jul2015, 12:32	131
B11-POND C	1.6220	795	01Jul2015, 12:34	131
DB21	0.0519	54	01Jul2015, 12:08	5
DB18	0.0346	64	01Jul2015, 12:08	5
DB19	0.0281	36	01Jul2015, 12:10	3
DB20	0.0147	25	01Jul2015, 12:08	2
POND C	1.7513	749	01Jul2015, 12:46	141
POND C-B16	1.7513	749	01Jul2015, 12:48	141
DB25	0.0211	45	01Jul2015, 12:04	3
B16	1.7724	754	01Jul2015, 12:48	144
B16-B17	1.7724	754	01Jul2015, 12:50	144
DB26	0.0682	136	01Jul2015, 12:10	12
B17	1.8406	778	01Jul2015, 12:50	156
B17-B26	1.8406	778	01Jul2015, 12:52	156
OS03	0.1984	130	01Jul2015, 12:18	16
DB01	0.0719	90	01Jul2015, 12:08	8
B01	0.2703	199	01Jul2015, 12:14	23
B01-B02	0.2703	199	01Jul2015, 12:14	23
OS02	0.2219	148	01Jul2015, 12:20	19
DB02	0.0516	71	01Jul2015, 12:06	5
B02	0.5438	380	01Jul2015, 12:14	48
B02-POND A	0.5438	379	01Jul2015, 12:16	47
OS04	0.1359	83	01Jul2015, 12:16	10
DB03	0.0703	70	01Jul2015, 12:10	6
B03	0.2062	145	01Jul2015, 12:12	16
B03-B04	0.2062	145	01Jul2015, 12:18	16
DB04	0.0422	44	01Jul2015, 12:10	4
DB05	0.0384	37	01Jul2015, 12:14	4
B04	0.2868	218	01Jul2015, 12:16	24
B04-B05	0.2868	218	01Jul2015, 12:16	24
DB06	0.0219	44	01Jul2015, 12:08	4
B05	0.3087	253	01Jul2015, 12:14	28
B05-POND A	0.3087	252	01Jul2015, 12:16	27
DB07	0.0254	35	01Jul2015, 12:06	3
DB08	0.0297	32	01Jul2015, 12:06	3
POND A	0.9076	557	01Jul2015, 12:26	77
POND A-B06	0.9076	557	01Jul2015, 12:26	77
DB09	0.0189	34	01Jul2015, 12:04	2
B06	0.9265	565	01Jul2015, 12:26	80

FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
B06-B07	0.9265	564	01Jul2015, 12:30	79
DB11	0.0969	114	01Jul2015, 12:12	11
DB10	0.0364	56	01Jul2015, 12:08	5
B07	1.0598	652	01Jul2015, 12:26	95
B07-B09	1.0598	651	01Jul2015, 12:28	95
DB12	0.0453	81	01Jul2015, 12:06	7
B09	1.1051	677	01Jul2015, 12:26	101
B09-POND B	1.1051	676	01Jul2015, 12:28	101
DB15	0.1234	105	01Jul2015, 12:16	12
DB13	0.0703	89	01Jul2015, 12:12	9
DB14	0.0556	93	01Jul2015, 12:08	8
POND B	1.3544	688	01Jul2015, 12:42	129
POND B-B12	1.3544	688	01Jul2015, 12:44	128
DB22	0.0516	91	01Jul2015, 12:08	8
DB23	0.0172	45	01Jul2015, 12:04	4
B12	1.4232	714	01Jul2015, 12:36	140
B12-B14	1.4232	714	01Jul2015, 12:38	140
DB24	0.0531	94	01Jul2015, 12:08	8
B14	1.4763	743	01Jul2015, 12:28	147
B14-B15	1.4763	742	01Jul2015, 12:28	147
DB28	0.0741	85	01Jul2015, 12:12	8
B15	1.5504	788	01Jul2015, 12:28	155
B15-B26	1.5504	786	01Jul2015, 12:34	154
DB29	0.1697	146	01Jul2015, 12:18	17
DB27	0.0508	68	01Jul2015, 12:16	7
B26	3.6115	1612	01Jul2015, 12:46	334
B26-27	3.6115	1612	01Jul2015, 12:48	333
FB-02	0.0500	67	01Jul2015, 12:16	7
FB-01	0.0373	62	01Jul2015, 12:08	5
FB01-B19	0.0373	62	01Jul2015, 12:08	5
B19	0.0873	124	01Jul2015, 12:12	13
B19-27	0.0873	124	01Jul2015, 12:12	13
FB-03	0.0078	22	01Jul2015, 12:04	2
27	3.7066	1651	01Jul2015, 12:48	347
27-32	3.7066	1651	01Jul2015, 12:48	347
WH-24	0.1325	218	01Jul2015, 12:10	20
WH-26	0.0839	49	01Jul2015, 12:20	6
WH-27	0.0217	23	01Jul2015, 12:04	2
30	0.2381	271	01Jul2015, 12:10	28
30-31	0.2381	270	01Jul2015, 12:12	28
WH-28	0.0398	60	01Jul2015, 12:12	6
31	0.2779	330	01Jul2015, 12:12	33
31-32	0.2779	329	01Jul2015, 12:14	33
WH-29	0.0495	77	01Jul2015, 12:10	7

FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
WH-31	0.0406	75	01Jul2015, 12:06	6
WH-30	0.0159	26	01Jul2015, 12:02	2
32	4.0905	1798	01Jul2015, 12:38	395
WH32	0.0458	55	01Jul2015, 12:02	4
BEN POND	4.1363	1400	01Jul2015, 13:18	379
WH-33	0.0064	12	01Jul2015, 12:06	1
33	4.1427	1401	01Jul2015, 13:18	380
33-37	4.1427	1401	01Jul2015, 13:20	378
WH35	0.1550	171	01Jul2015, 12:10	15
WH34	0.0450	68	01Jul2015, 12:08	6
B34-36	0.0450	68	01Jul2015, 12:10	6
36	0.2000	239	01Jul2015, 12:10	21
36-37	0.2000	238	01Jul2015, 12:12	21
WH36	0.0750	63	01Jul2015, 12:10	6
37	4.4177	1440	01Jul2015, 13:20	405
FG08A	0.0750	125	01Jul2015, 12:08	10
FG08A-G05	0.0750	125	01Jul2015, 12:10	10
FG10	0.0669	47	01Jul2015, 12:36	8
FG08B	0.0630	94	01Jul2015, 12:10	9
FG08B-G05	0.0630	93	01Jul2015, 12:12	9
FG11	0.0625	81	01Jul2015, 12:16	9
FG09	0.0484	52	01Jul2015, 12:14	6
FG09-G05	0.0484	52	01Jul2015, 12:16	6
G05	0.3158	367	01Jul2015, 12:12	41
FG13	0.0661	46	01Jul2015, 12:24	6
FG14	0.0331	44	01Jul2015, 12:14	5
FG12	0.0328	55	01Jul2015, 12:10	5
POND D	0.4478	132	01Jul2015, 13:04	47
POND D-G17	0.4478	132	01Jul2015, 13:04	47
FG15	0.1017	100	01Jul2015, 12:20	12
G17a	0.1017	100	01Jul2015, 12:20	12
FG15a	0.0156	30	01Jul2015, 12:06	2
G17	0.5651	190	01Jul2015, 12:30	61
G17-G18	0.5651	190	01Jul2015, 12:32	61
FG16	0.0773	135	01Jul2015, 12:06	11
G18	0.6424	248	01Jul2015, 12:10	72
G18-POND E	0.6424	246	01Jul2015, 12:10	72
FG31	0.0922	123	01Jul2015, 12:18	14
FG30	0.0400	82	01Jul2015, 12:04	6
FG30-PONDHS	0.0400	81	01Jul2015, 12:10	6
POND HS	0.1322	159	01Jul2015, 12:22	20
FG17a	0.0694	111	01Jul2015, 12:08	9
FG17a-POND E	0.0694	110	01Jul2015, 12:08	9
FG18	0.0644	59	01Jul2015, 12:24	8

FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
FG18-POND E	0.0644	59	01Jul2015, 12:24	8
FG19	0.0527	92	01Jul2015, 12:08	8
FG17c	0.0313	34	01Jul2015, 12:06	3
FG17b	0.0214	42	01Jul2015, 12:06	3
POND E	1.0138	255	01Jul2015, 13:20	102
H08	1.0138	194	01Jul2015, 13:20	81
H09	0.0000	61	01Jul2015, 13:20	21
FH01	0.1344	161	01Jul2015, 12:16	18
POND H	0.1344	55	01Jul2015, 12:52	16
FH02	0.0091	12	01Jul2015, 12:08	1
FH03	0.0081	15	01Jul2015, 12:08	1
H12	0.1516	60	01Jul2015, 12:50	18

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
OS01	1.5594	510	01Jul2015, 12:34	87
DB16	0.0578	72	01Jul2015, 12:10	7
B10	1.6172	537	01Jul2015, 12:32	93
B10-B11	1.6172	537	01Jul2015, 12:32	93
DB17	0.0048	13	01Jul2015, 12:02	1
B11	1.6220	538	01Jul2015, 12:32	94
B11-POND C	1.6220	538	01Jul2015, 12:36	94
DB21	0.0519	38	01Jul2015, 12:08	3
DB18	0.0346	50	01Jul2015, 12:08	4
DB19	0.0281	27	01Jul2015, 12:10	3
DB20	0.0147	19	01Jul2015, 12:08	2
POND C	1.7513	507	01Jul2015, 12:48	101
POND C-B16	1.7513	507	01Jul2015, 12:50	101
DB25	0.0211	35	01Jul2015, 12:04	3
B16	1.7724	511	01Jul2015, 12:50	103
B16-B17	1.7724	510	01Jul2015, 12:54	103
DB26	0.0682	110	01Jul2015, 12:10	10
B17	1.8406	529	01Jul2015, 12:52	113
B17-B26	1.8406	529	01Jul2015, 12:54	113
OS03	0.1984	88	01Jul2015, 12:20	11
DB01	0.0719	66	01Jul2015, 12:08	6
B01	0.2703	139	01Jul2015, 12:14	17
B01-B02	0.2703	138	01Jul2015, 12:16	17
OS02	0.2219	102	01Jul2015, 12:22	14
DB02	0.0516	52	01Jul2015, 12:06	4
B02	0.5438	263	01Jul2015, 12:16	34
B02-POND A	0.5438	263	01Jul2015, 12:16	34
OS04	0.1359	54	01Jul2015, 12:18	7
DB03	0.0703	49	01Jul2015, 12:10	5
B03	0.2062	98	01Jul2015, 12:14	11
B03-B04	0.2062	98	01Jul2015, 12:18	11
DB04	0.0422	31	01Jul2015, 12:10	3
DB05	0.0384	27	01Jul2015, 12:14	3
B04	0.2868	150	01Jul2015, 12:16	17
B04-B05	0.2868	149	01Jul2015, 12:16	17
DB06	0.0219	35	01Jul2015, 12:08	3
B05	0.3087	176	01Jul2015, 12:16	20
B05-POND A	0.3087	176	01Jul2015, 12:16	20
DB07	0.0254	26	01Jul2015, 12:06	2
DB08	0.0297	22	01Jul2015, 12:06	2
POND A	0.9076	401	01Jul2015, 12:26	56
POND A-B06	0.9076	400	01Jul2015, 12:26	55
DB09	0.0189	26	01Jul2015, 12:04	2
B06	0.9265	407	01Jul2015, 12:26	57

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
B06-B07	0.9265	406	01Jul2015, 12:30	57
DB11	0.0969	85	01Jul2015, 12:12	9
DB10	0.0364	43	01Jul2015, 12:08	4
B07	1.0598	469	01Jul2015, 12:28	69
B07-B09	1.0598	468	01Jul2015, 12:30	69
DB12	0.0453	63	01Jul2015, 12:06	5
B09	1.1051	486	01Jul2015, 12:30	74
B09-POND B	1.1051	485	01Jul2015, 12:30	74
DB15	0.1234	75	01Jul2015, 12:16	9
DB13	0.0703	67	01Jul2015, 12:12	7
DB14	0.0556	72	01Jul2015, 12:08	6
POND B	1.3544	539	01Jul2015, 12:38	95
POND B-B12	1.3544	539	01Jul2015, 12:40	94
DB22	0.0516	72	01Jul2015, 12:08	6
DB23	0.0172	38	01Jul2015, 12:04	3
B12	1.4232	562	01Jul2015, 12:38	104
B12-B14	1.4232	562	01Jul2015, 12:40	103
DB24	0.0531	73	01Jul2015, 12:08	6
B14	1.4763	577	01Jul2015, 12:40	109
B14-B15	1.4763	576	01Jul2015, 12:40	109
DB28	0.0741	63	01Jul2015, 12:12	6
B15	1.5504	597	01Jul2015, 12:40	115
B15-B26	1.5504	597	01Jul2015, 12:44	114
DB29	0.1697	105	01Jul2015, 12:18	13
DB27	0.0508	53	01Jul2015, 12:16	6
B26	3.6115	1171	01Jul2015, 12:48	245
B26-27	3.6115	1171	01Jul2015, 12:50	244
FB-02	0.0500	53	01Jul2015, 12:16	6
FB-01	0.0373	49	01Jul2015, 12:08	4
FB01-B19	0.0373	48	01Jul2015, 12:10	4
B19	0.0873	97	01Jul2015, 12:12	10
B19-27	0.0873	96	01Jul2015, 12:12	10
FB-03	0.0078	18	01Jul2015, 12:04	1
27	3.7066	1200	01Jul2015, 12:50	256
27-32	3.7066	1199	01Jul2015, 12:52	255
WH-24	0.1325	171	01Jul2015, 12:10	15
WH-26	0.0839	33	01Jul2015, 12:22	5
WH-27	0.0217	16	01Jul2015, 12:04	1
30	0.2381	205	01Jul2015, 12:10	21
30-31	0.2381	205	01Jul2015, 12:12	21
WH-28	0.0398	47	01Jul2015, 12:12	5
31	0.2779	252	01Jul2015, 12:12	25
31-32	0.2779	251	01Jul2015, 12:14	25
WH-29	0.0495	60	01Jul2015, 12:10	6

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
WH-31	0.0406	60	01Jul2015, 12:08	5
WH-30	0.0159	19	01Jul2015, 12:02	1
32	4.0905	1293	01Jul2015, 12:50	292
WH32	0.0458	38	01Jul2015, 12:02	3
BEN POND	4.1363	992	01Jul2015, 13:16	277
WH-33	0.0064	9	01Jul2015, 12:06	1
33	4.1427	993	01Jul2015, 13:16	278
33-37	4.1427	992	01Jul2015, 13:20	276
WH35	0.1550	124	01Jul2015, 12:10	11
WH34	0.0450	52	01Jul2015, 12:08	5
B34-36	0.0450	52	01Jul2015, 12:10	5
36	0.2000	176	01Jul2015, 12:10	16
36-37	0.2000	174	01Jul2015, 12:14	16
WH36	0.0750	43	01Jul2015, 12:10	4
37	4.4177	1022	01Jul2015, 13:18	296
FG08A	0.0750	97	01Jul2015, 12:08	8
FG08A-G05	0.0750	97	01Jul2015, 12:10	8
FG10	0.0669	35	01Jul2015, 12:38	6
FG08B	0.0630	72	01Jul2015, 12:10	7
FG08B-G05	0.0630	72	01Jul2015, 12:12	7
FG11	0.0625	63	01Jul2015, 12:16	7
FG09	0.0484	39	01Jul2015, 12:16	4
FG09-G05	0.0484	39	01Jul2015, 12:16	4
G05	0.3158	281	01Jul2015, 12:14	32
FG13	0.0661	32	01Jul2015, 12:26	5
FG14	0.0331	34	01Jul2015, 12:14	4
FG12	0.0328	44	01Jul2015, 12:10	4
POND D	0.4478	90	01Jul2015, 13:10	35
POND D-G17	0.4478	90	01Jul2015, 13:12	35
FG15	0.1017	75	01Jul2015, 12:20	9
G17a	0.1017	75	01Jul2015, 12:20	9
FG15a	0.0156	24	01Jul2015, 12:06	2
G17	0.5651	124	01Jul2015, 12:38	46
G17-G18	0.5651	124	01Jul2015, 12:40	46
FG16	0.0773	105	01Jul2015, 12:08	9
G18	0.6424	186	01Jul2015, 12:10	54
G18-POND E	0.6424	185	01Jul2015, 12:12	54
FG31	0.0922	97	01Jul2015, 12:18	11
FG30	0.0400	65	01Jul2015, 12:04	5
FG30-PONDHS	0.0400	64	01Jul2015, 12:12	5
POND HS	0.1322	113	01Jul2015, 12:26	16
FG17a	0.0694	85	01Jul2015, 12:08	7
FG17a-POND E	0.0694	85	01Jul2015, 12:08	7
FG18	0.0644	45	01Jul2015, 12:24	6

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
FG18-POND E	0.0644	45	01Jul2015, 12:24	6
FG19	0.0527	73	01Jul2015, 12:08	6
FG17c	0.0313	24	01Jul2015, 12:06	2
FG17b	0.0214	34	01Jul2015, 12:06	3
POND E	1.0138	157	01Jul2015, 13:54	74
H08	1.0138	130	01Jul2015, 13:54	59
H09	0.0000	27	01Jul2015, 13:54	14
FH01	0.1344	123	01Jul2015, 12:18	14
POND H	0.1344	31	01Jul2015, 13:04	12
FH02	0.0091	9	01Jul2015, 12:08	1
FH03	0.0081	12	01Jul2015, 12:08	1
H12	0.1516	34	01Jul2015, 13:00	14

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
OS01	1.5594	316	01Jul2015, 12:36	58.6
DB16	0.0578	54	01Jul2015, 12:10	5.0
B10	1.6172	335	01Jul2015, 12:34	63.6
B10-B11	1.6172	335	01Jul2015, 12:34	63.5
DB17	0.0048	11	01Jul2015, 12:02	0.9
B11	1.6220	336	01Jul2015, 12:34	64.4
B11-POND C	1.6220	336	01Jul2015, 12:38	64.0
DB21	0.0519	25	01Jul2015, 12:08	2.3
DB18	0.0346	39	01Jul2015, 12:08	3.2
DB19	0.0281	20	01Jul2015, 12:10	1.9
DB20	0.0147	15	01Jul2015, 12:10	1.3
POND C	1.7513	310	01Jul2015, 12:52	68.6
POND C-B16	1.7513	310	01Jul2015, 12:54	68.4
DB25	0.0211	27	01Jul2015, 12:04	2.0
B16	1.7724	313	01Jul2015, 12:54	70.3
B16-B17	1.7724	312	01Jul2015, 12:58	69.9
DB26	0.0682	88	01Jul2015, 12:10	8.0
B17	1.8406	326	01Jul2015, 12:58	77.9
B17-B26	1.8406	326	01Jul2015, 13:00	77.5
OS03	0.1984	55	01Jul2015, 12:20	7.7
DB01	0.0719	46	01Jul2015, 12:08	4.1
B01	0.2703	89	01Jul2015, 12:14	11.7
B01-B02	0.2703	89	01Jul2015, 12:16	11.7
OS02	0.2219	65	01Jul2015, 12:22	9.3
DB02	0.0516	36	01Jul2015, 12:06	2.8
B02	0.5438	169	01Jul2015, 12:16	23.8
B02-POND A	0.5438	169	01Jul2015, 12:18	23.8
OS04	0.1359	32	01Jul2015, 12:18	4.5
DB03	0.0703	32	01Jul2015, 12:10	3.2
B03	0.2062	61	01Jul2015, 12:14	7.7
B03-B04	0.2062	60	01Jul2015, 12:20	7.6
DB04	0.0422	21	01Jul2015, 12:10	2.0
DB05	0.0384	18	01Jul2015, 12:14	2.0
B04	0.2868	94	01Jul2015, 12:18	11.7
B04-B05	0.2868	94	01Jul2015, 12:18	11.7
DB06	0.0219	28	01Jul2015, 12:08	2.4
B05	0.3087	115	01Jul2015, 12:16	14.0
B05-POND A	0.3087	114	01Jul2015, 12:18	14.0
DB07	0.0254	18	01Jul2015, 12:06	1.5
DB08	0.0297	15	01Jul2015, 12:08	1.3
POND A	0.9076	244	01Jul2015, 12:28	37.8
POND A-B06	0.9076	244	01Jul2015, 12:30	37.8
DB09	0.0189	19	01Jul2015, 12:04	1.4
B06	0.9265	248	01Jul2015, 12:30	39.2

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
B06-B07	0.9265	248	01Jul2015, 12:34	38.8
DB11	0.0969	60	01Jul2015, 12:12	6.2
DB10	0.0364	32	01Jul2015, 12:08	2.7
B07	1.0598	286	01Jul2015, 12:32	47.7
B07-B09	1.0598	285	01Jul2015, 12:36	47.4
DB12	0.0453	48	01Jul2015, 12:06	3.9
B09	1.1051	296	01Jul2015, 12:36	51.3
B09-POND B	1.1051	296	01Jul2015, 12:36	51.2
DB15	0.1234	50	01Jul2015, 12:18	6.1
DB13	0.0703	49	01Jul2015, 12:12	4.9
DB14	0.0556	54	01Jul2015, 12:08	4.7
POND B	1.3544	337	01Jul2015, 12:42	66.5
POND B-B12	1.3544	336	01Jul2015, 12:44	66.3
DB22	0.0516	55	01Jul2015, 12:08	4.8
DB23	0.0172	31	01Jul2015, 12:04	2.5
B12	1.4232	353	01Jul2015, 12:42	73.6
B12-B14	1.4232	352	01Jul2015, 12:44	73.4
DB24	0.0531	56	01Jul2015, 12:08	4.6
B14	1.4763	363	01Jul2015, 12:44	78.0
B14-B15	1.4763	362	01Jul2015, 12:46	77.9
DB28	0.0741	44	01Jul2015, 12:12	4.4
B15	1.5504	376	01Jul2015, 12:44	82.3
B15-B26	1.5504	375	01Jul2015, 12:52	81.4
DB29	0.1697	71	01Jul2015, 12:20	9.0
DB27	0.0508	40	01Jul2015, 12:16	4.3
B26	3.6115	732	01Jul2015, 12:54	172.2
B26-27	3.6115	731	01Jul2015, 12:56	171.5
FB-02	0.0500	40	01Jul2015, 12:16	4.4
FB-01	0.0373	37	01Jul2015, 12:08	3.1
FB01-B19	0.0373	36	01Jul2015, 12:10	3.1
B19	0.0873	73	01Jul2015, 12:12	7.5
B19-27	0.0873	73	01Jul2015, 12:14	7.5
FB-03	0.0078	15	01Jul2015, 12:04	1.1
27	3.7066	751	01Jul2015, 12:56	180.1
27-32	3.7066	750	01Jul2015, 12:58	179.7
WH-24	0.1325	129	01Jul2015, 12:10	11.7
WH-26	0.0839	20	01Jul2015, 12:22	3.0
WH-27	0.0217	10	01Jul2015, 12:04	0.8
30	0.2381	150	01Jul2015, 12:10	15.5
30-31	0.2381	149	01Jul2015, 12:12	15.5
WH-28	0.0398	36	01Jul2015, 12:12	3.4
31	0.2779	185	01Jul2015, 12:12	18.9
31-32	0.2779	185	01Jul2015, 12:14	18.8
WH-29	0.0495	45	01Jul2015, 12:10	4.2

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
WH-31	0.0406	46	01Jul2015, 12:08	3.8
WH-30	0.0159	13	01Jul2015, 12:02	0.9
32	4.0905	811	01Jul2015, 12:56	207.3
WH32	0.0458	24	01Jul2015, 12:02	1.6
BEN POND	4.1363	601	01Jul2015, 13:26	196.0
WH-33	0.0064	7	01Jul2015, 12:08	0.6
33	4.1427	602	01Jul2015, 13:26	196.6
33-37	4.1427	601	01Jul2015, 13:30	195.1
WH35	0.1550	84	01Jul2015, 12:10	8.0
WH34	0.0450	38	01Jul2015, 12:08	3.3
B34-36	0.0450	38	01Jul2015, 12:10	3.3
36	0.2000	122	01Jul2015, 12:10	11.4
36-37	0.2000	121	01Jul2015, 12:14	11.3
WH36	0.0750	27	01Jul2015, 12:12	2.9
37	4.4177	621	01Jul2015, 13:30	209.2
FG08A	0.0750	73	01Jul2015, 12:08	6.0
FG08A-G05	0.0750	72	01Jul2015, 12:10	6.0
FG10	0.0669	25	01Jul2015, 12:38	4.4
FG08B	0.0630	54	01Jul2015, 12:10	5.0
FG08B-G05	0.0630	54	01Jul2015, 12:14	5.0
FG11	0.0625	47	01Jul2015, 12:18	5.3
FG09	0.0484	28	01Jul2015, 12:16	3.0
FG09-G05	0.0484	27	01Jul2015, 12:18	3.0
G05	0.3158	208	01Jul2015, 12:14	23.7
FG13	0.0661	21	01Jul2015, 12:26	3.2
FG14	0.0331	26	01Jul2015, 12:14	2.7
FG12	0.0328	33	01Jul2015, 12:10	3.0
POND D	0.4478	51	01Jul2015, 13:28	24.6
POND D-G17	0.4478	51	01Jul2015, 13:28	24.6
FG15	0.1017	54	01Jul2015, 12:20	6.8
G17a	0.1017	54	01Jul2015, 12:20	6.8
FG15a	0.0156	18	01Jul2015, 12:06	1.4
G17	0.5651	75	01Jul2015, 12:22	32.7
G17-G18	0.5651	75	01Jul2015, 12:24	32.7
FG16	0.0773	79	01Jul2015, 12:08	6.5
G18	0.6424	134	01Jul2015, 12:10	39.2
G18-POND E	0.6424	133	01Jul2015, 12:10	39.1
FG31	0.0922	74	01Jul2015, 12:18	8.5
FG30	0.0400	50	01Jul2015, 12:04	3.7
FG30-PONDHS	0.0400	49	01Jul2015, 12:12	3.7
POND HS	0.1322	63	01Jul2015, 12:34	12.1
FG17a	0.0694	64	01Jul2015, 12:08	5.5
FG17a-POND E	0.0694	63	01Jul2015, 12:10	5.5
FG18	0.0644	32	01Jul2015, 12:24	4.4

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
FG18-POND E	0.0644	32	01Jul2015, 12:26	4.4
FG19	0.0527	56	01Jul2015, 12:10	4.9
FG17c	0.0313	16	01Jul2015, 12:08	1.4
FG17b	0.0214	26	01Jul2015, 12:06	2.0
POND E	1.0138	87	01Jul2015, 14:26	49.9
H08	1.0138	70	01Jul2015, 14:26	39.4
H09	0.0000	16	01Jul2015, 14:26	10.5
FH01	0.1344	91	01Jul2015, 12:18	10.5
POND H	0.1344	18	01Jul2015, 13:18	8.4
FH02	0.0091	6	01Jul2015, 12:10	0.6
FH03	0.0081	9	01Jul2015, 12:08	0.8
H12	0.1516	20	01Jul2015, 13:12	9.7

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
OS01	1.5594	136	01Jul2015, 12:38	30.9
DB16	0.0578	35	01Jul2015, 12:10	3.3
B10	1.6172	147	01Jul2015, 12:36	34.2
B10-B11	1.6172	147	01Jul2015, 12:38	34.1
DB17	0.0048	9	01Jul2015, 12:02	0.7
B11	1.6220	148	01Jul2015, 12:38	34.8
B11-POND C	1.6220	148	01Jul2015, 12:42	34.5
DB21	0.0519	12	01Jul2015, 12:10	1.3
DB18	0.0346	26	01Jul2015, 12:08	2.1
DB19	0.0281	11	01Jul2015, 12:12	1.1
DB20	0.0147	9	01Jul2015, 12:10	0.8
POND C	1.7513	129	01Jul2015, 13:02	36.3
POND C-B16	1.7513	128	01Jul2015, 13:06	36.1
DB25	0.0211	18	01Jul2015, 12:04	1.3
B16	1.7724	130	01Jul2015, 13:06	37.4
B16-B17	1.7724	130	01Jul2015, 13:10	37.1
DB26	0.0682	62	01Jul2015, 12:10	5.6
B17	1.8406	138	01Jul2015, 13:08	42.7
B17-B26	1.8406	138	01Jul2015, 13:12	42.4
OS03	0.1984	24	01Jul2015, 12:24	4.1
DB01	0.0719	25	01Jul2015, 12:10	2.4
B01	0.2703	42	01Jul2015, 12:14	6.5
B01-B02	0.2703	42	01Jul2015, 12:16	6.5
OS02	0.2219	30	01Jul2015, 12:26	5.1
DB02	0.0516	20	01Jul2015, 12:06	1.7
B02	0.5438	79	01Jul2015, 12:18	13.2
B02-POND A	0.5438	79	01Jul2015, 12:20	13.1
OS04	0.1359	12	01Jul2015, 12:22	2.3
DB03	0.0703	16	01Jul2015, 12:12	1.8
B03	0.2062	26	01Jul2015, 12:16	4.1
B03-B04	0.2062	26	01Jul2015, 12:22	4.0
DB04	0.0422	10	01Jul2015, 12:12	1.2
DB05	0.0384	9	01Jul2015, 12:16	1.1
B04	0.2868	42	01Jul2015, 12:20	6.3
B04-B05	0.2868	42	01Jul2015, 12:20	6.3
DB06	0.0219	19	01Jul2015, 12:08	1.6
B05	0.3087	55	01Jul2015, 12:18	8.0
B05-POND A	0.3087	55	01Jul2015, 12:20	8.0
DB07	0.0254	10	01Jul2015, 12:08	0.9
DB08	0.0297	7	01Jul2015, 12:08	0.7
POND A	0.9076	98	01Jul2015, 12:38	20.1
POND A-B06	0.9076	98	01Jul2015, 12:38	20.1
DB09	0.0189	12	01Jul2015, 12:04	0.9
B06	0.9265	100	01Jul2015, 12:38	21.0

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
B06-B07	0.9265	99	01Jul2015, 12:46	20.7
DB11	0.0969	35	01Jul2015, 12:14	3.8
DB10	0.0364	19	01Jul2015, 12:08	1.7
B07	1.0598	116	01Jul2015, 12:44	26.2
B07-B09	1.0598	116	01Jul2015, 12:48	26.0
DB12	0.0453	31	01Jul2015, 12:08	2.5
B09	1.1051	121	01Jul2015, 12:48	28.5
B09-POND B	1.1051	121	01Jul2015, 12:48	28.5
DB15	0.1234	25	01Jul2015, 12:20	3.4
DB13	0.0703	29	01Jul2015, 12:14	3.1
DB14	0.0556	35	01Jul2015, 12:08	3.1
POND B	1.3544	140	01Jul2015, 12:56	37.8
POND B-B12	1.3544	140	01Jul2015, 12:58	37.7
DB22	0.0516	36	01Jul2015, 12:08	3.2
DB23	0.0172	23	01Jul2015, 12:06	1.8
B12	1.4232	148	01Jul2015, 12:26	42.7
B12-B14	1.4232	148	01Jul2015, 12:28	42.5
DB24	0.0531	36	01Jul2015, 12:08	3.0
B14	1.4763	162	01Jul2015, 12:26	45.6
B14-B15	1.4763	162	01Jul2015, 12:28	45.5
DB28	0.0741	24	01Jul2015, 12:14	2.7
B15	1.5504	177	01Jul2015, 12:26	48.1
B15-B26	1.5504	177	01Jul2015, 12:34	47.4
DB29	0.1697	37	01Jul2015, 12:20	5.2
DB27	0.0508	25	01Jul2015, 12:16	2.8
B26	3.6115	314	01Jul2015, 13:08	97.9
B26-27	3.6115	314	01Jul2015, 13:12	97.3
FB-02	0.0500	26	01Jul2015, 12:18	2.9
FB-01	0.0373	23	01Jul2015, 12:08	2.0
FB01-B19	0.0373	23	01Jul2015, 12:10	2.0
B19	0.0873	47	01Jul2015, 12:12	5.0
B19-27	0.0873	47	01Jul2015, 12:14	4.9
FB-03	0.0078	11	01Jul2015, 12:04	0.8
27	3.7066	326	01Jul2015, 12:24	103.1
27-32	3.7066	326	01Jul2015, 12:26	102.8
WH-24	0.1325	84	01Jul2015, 12:10	7.7
WH-26	0.0839	8	01Jul2015, 12:26	1.5
WH-27	0.0217	4	01Jul2015, 12:06	0.4
30	0.2381	91	01Jul2015, 12:10	9.7
30-31	0.2381	91	01Jul2015, 12:12	9.7
WH-28	0.0398	23	01Jul2015, 12:12	2.2
31	0.2779	114	01Jul2015, 12:12	11.9
31-32	0.2779	113	01Jul2015, 12:14	11.9
WH-29	0.0495	29	01Jul2015, 12:10	2.7

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
WH-31	0.0406	30	01Jul2015, 12:08	2.5
WH-30	0.0159	7	01Jul2015, 12:02	0.5
32	4.0905	445	01Jul2015, 12:24	120.4
WH32	0.0458	10	01Jul2015, 12:04	0.9
BEN POND	4.1363	256	01Jul2015, 13:52	113.0
WH-33	0.0064	5	01Jul2015, 12:08	0.4
33	4.1427	256	01Jul2015, 13:52	113.4
33-37	4.1427	256	01Jul2015, 13:58	112.3
WH35	0.1550	44	01Jul2015, 12:10	4.6
WH34	0.0450	23	01Jul2015, 12:10	2.1
B34-36	0.0450	23	01Jul2015, 12:12	2.1
36	0.2000	67	01Jul2015, 12:12	6.7
36-37	0.2000	66	01Jul2015, 12:16	6.7
WH36	0.0750	11	01Jul2015, 12:14	1.5
37	4.4177	266	01Jul2015, 13:56	120.5
FG08A	0.0750	46	01Jul2015, 12:08	3.9
FG08A-G05	0.0750	45	01Jul2015, 12:12	3.9
FG10	0.0669	15	01Jul2015, 12:40	2.7
FG08B	0.0630	34	01Jul2015, 12:12	3.2
FG08B-G05	0.0630	34	01Jul2015, 12:14	3.2
FG11	0.0625	30	01Jul2015, 12:18	3.5
FG09	0.0484	16	01Jul2015, 12:16	1.8
FG09-G05	0.0484	16	01Jul2015, 12:18	1.8
G05	0.3158	128	01Jul2015, 12:14	15.1
FG13	0.0661	11	01Jul2015, 12:28	1.8
FG14	0.0331	16	01Jul2015, 12:16	1.8
FG12	0.0328	22	01Jul2015, 12:10	2.0
POND D	0.4478	19	01Jul2015, 14:26	15.0
POND D-G17	0.4478	19	01Jul2015, 14:28	15.0
FG15	0.1017	31	01Jul2015, 12:22	4.2
G17a	0.1017	31	01Jul2015, 12:22	4.2
FG15a	0.0156	12	01Jul2015, 12:06	0.9
G17	0.5651	42	01Jul2015, 12:26	20.1
G17-G18	0.5651	42	01Jul2015, 12:28	20.0
FG16	0.0773	51	01Jul2015, 12:08	4.2
G18	0.6424	82	01Jul2015, 12:10	24.3
G18-POND E	0.6424	82	01Jul2015, 12:10	24.2
FG31	0.0922	49	01Jul2015, 12:18	5.7
FG30	0.0400	33	01Jul2015, 12:06	2.5
FG30-PONDHS	0.0400	33	01Jul2015, 12:12	2.4
POND HS	0.1322	37	01Jul2015, 12:38	8.1
FG17a	0.0694	40	01Jul2015, 12:08	3.5
FG17a-POND E	0.0694	40	01Jul2015, 12:10	3.5
FG18	0.0644	19	01Jul2015, 12:26	2.7

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
FG18-POND E	0.0644	19	01Jul2015, 12:26	2.7
FG19	0.0527	37	01Jul2015, 12:10	3.3
FG17c	0.0313	8	01Jul2015, 12:08	0.8
FG17b	0.0214	17	01Jul2015, 12:06	1.3
POND E	1.0138	32	01Jul2015, 17:02	27.5
H08	1.0138	24	01Jul2015, 17:02	20.4
H09	0.0000	7	01Jul2015, 17:02	7.1
FH01	0.1344	56	01Jul2015, 12:18	6.7
POND H	0.1344	8	01Jul2015, 13:48	5.1
FH02	0.0091	4	01Jul2015, 12:10	0.3
FH03	0.0081	6	01Jul2015, 12:08	0.5
H12	0.1516	11	01Jul2015, 12:10	6.0

FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
OS01	1.5594	55	01Jul2015, 12:46	16.6
DB16	0.0578	23	01Jul2015, 12:12	2.3
B10	1.6172	62	01Jul2015, 12:42	18.9
B10-B11	1.6172	62	01Jul2015, 12:42	18.9
DB17	0.0048	7	01Jul2015, 12:02	0.6
B11	1.6220	63	01Jul2015, 12:42	19.4
B11-POND C	1.6220	63	01Jul2015, 12:48	19.2
DB21	0.0519	5	01Jul2015, 12:12	0.7
DB18	0.0346	18	01Jul2015, 12:08	1.5
DB19	0.0281	7	01Jul2015, 12:12	0.7
DB20	0.0147	6	01Jul2015, 12:10	0.6
POND C	1.7513	50	01Jul2015, 13:28	19.4
POND C-B16	1.7513	50	01Jul2015, 13:32	19.2
DB25	0.0211	12	01Jul2015, 12:04	0.9
B16	1.7724	51	01Jul2015, 13:32	20.1
B16-B17	1.7724	51	01Jul2015, 13:36	19.9
DB26	0.0682	46	01Jul2015, 12:10	4.1
B17	1.8406	56	01Jul2015, 12:12	24.0
B17-B26	1.8406	56	01Jul2015, 12:16	23.8
OS03	0.1984	9	01Jul2015, 12:28	2.2
DB01	0.0719	14	01Jul2015, 12:10	1.5
B01	0.2703	19	01Jul2015, 12:14	3.7
B01-B02	0.2703	19	01Jul2015, 12:18	3.7
OS02	0.2219	13	01Jul2015, 12:28	2.8
DB02	0.0516	10	01Jul2015, 12:06	1.0
B02	0.5438	36	01Jul2015, 12:18	7.6
B02-POND A	0.5438	36	01Jul2015, 12:22	7.5
OS04	0.1359	4	01Jul2015, 12:28	1.2
DB03	0.0703	7	01Jul2015, 12:14	1.0
B03	0.2062	10	01Jul2015, 12:16	2.2
B03-B04	0.2062	10	01Jul2015, 12:26	2.2
DB04	0.0422	5	01Jul2015, 12:14	0.7
DB05	0.0384	5	01Jul2015, 12:18	0.7
B04	0.2868	18	01Jul2015, 12:22	3.5
B04-B05	0.2868	18	01Jul2015, 12:24	3.5
DB06	0.0219	14	01Jul2015, 12:08	1.2
B05	0.3087	26	01Jul2015, 12:22	4.7
B05-POND A	0.3087	26	01Jul2015, 12:22	4.7
DB07	0.0254	6	01Jul2015, 12:08	0.5
DB08	0.0297	3	01Jul2015, 12:10	0.4
POND A	0.9076	34	01Jul2015, 12:58	10.7
POND A-B06	0.9076	34	01Jul2015, 13:00	10.7
DB09	0.0189	8	01Jul2015, 12:06	0.6
B06	0.9265	35	01Jul2015, 13:00	11.3

FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
B06-B07	0.9265	35	01Jul2015, 13:08	11.1
DB11	0.0969	20	01Jul2015, 12:14	2.4
DB10	0.0364	12	01Jul2015, 12:08	1.1
B07	1.0598	42	01Jul2015, 13:06	14.7
B07-B09	1.0598	42	01Jul2015, 13:12	14.5
DB12	0.0453	21	01Jul2015, 12:08	1.7
B09	1.1051	45	01Jul2015, 12:16	16.2
B09-POND B	1.1051	45	01Jul2015, 12:18	16.2
DB15	0.1234	12	01Jul2015, 12:22	2.0
DB13	0.0703	18	01Jul2015, 12:14	2.0
DB14	0.0556	23	01Jul2015, 12:10	2.1
POND B	1.3544	69	01Jul2015, 12:30	22.2
POND B-B12	1.3544	69	01Jul2015, 12:32	22.1
DB22	0.0516	25	01Jul2015, 12:10	2.2
DB23	0.0172	18	01Jul2015, 12:06	1.4
B12	1.4232	83	01Jul2015, 12:28	25.7
B12-B14	1.4232	83	01Jul2015, 12:30	25.6
DB24	0.0531	24	01Jul2015, 12:08	2.1
B14	1.4763	92	01Jul2015, 12:26	27.7
B14-B15	1.4763	92	01Jul2015, 12:28	27.6
DB28	0.0741	14	01Jul2015, 12:14	1.7
B15	1.5504	103	01Jul2015, 12:20	29.3
B15-B26	1.5504	103	01Jul2015, 12:30	28.8
DB29	0.1697	19	01Jul2015, 12:24	3.2
DB27	0.0508	17	01Jul2015, 12:16	1.9
B26	3.6115	180	01Jul2015, 12:22	57.7
B26-27	3.6115	180	01Jul2015, 12:26	57.3
FB-02	0.0500	17	01Jul2015, 12:18	2.0
FB-01	0.0373	15	01Jul2015, 12:08	1.4
FB01-B19	0.0373	15	01Jul2015, 12:10	1.4
B19	0.0873	31	01Jul2015, 12:14	3.4
B19-27	0.0873	31	01Jul2015, 12:14	3.4
FB-03	0.0078	8	01Jul2015, 12:04	0.6
27	3.7066	206	01Jul2015, 12:26	61.3
27-32	3.7066	205	01Jul2015, 12:28	61.1
WH-24	0.1325	57	01Jul2015, 12:10	5.4
WH-26	0.0839	3	01Jul2015, 12:32	0.8
WH-27	0.0217	1	01Jul2015, 12:08	0.2
30	0.2381	59	01Jul2015, 12:10	6.4
30-31	0.2381	59	01Jul2015, 12:12	6.4
WH-28	0.0398	15	01Jul2015, 12:12	1.5
31	0.2779	74	01Jul2015, 12:12	7.9
31-32	0.2779	74	01Jul2015, 12:16	7.9
WH-29	0.0495	19	01Jul2015, 12:12	1.9

FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
WH-31	0.0406	21	01Jul2015, 12:08	1.8
WH-30	0.0159	4	01Jul2015, 12:02	0.3
32	4.0905	277	01Jul2015, 12:26	72.9
WH32	0.0458	4	01Jul2015, 12:04	0.5
BEN POND	4.1363	102	01Jul2015, 14:48	67.0
WH-33	0.0064	3	01Jul2015, 12:08	0.3
33	4.1427	103	01Jul2015, 14:48	67.3
33-37	4.1427	103	01Jul2015, 14:56	66.5
WH35	0.1550	22	01Jul2015, 12:12	2.8
WH34	0.0450	15	01Jul2015, 12:10	1.4
B34-36	0.0450	15	01Jul2015, 12:12	1.4
36	0.2000	37	01Jul2015, 12:12	4.2
36-37	0.2000	37	01Jul2015, 12:18	4.1
WH36	0.0750	4	01Jul2015, 12:16	0.8
37	4.4177	107	01Jul2015, 14:54	71.5
FG08A	0.0750	30	01Jul2015, 12:08	2.6
FG08A-G05	0.0750	30	01Jul2015, 12:12	2.6
FG10	0.0669	9	01Jul2015, 12:42	1.7
FG08B	0.0630	22	01Jul2015, 12:12	2.2
FG08B-G05	0.0630	22	01Jul2015, 12:16	2.2
FG11	0.0625	20	01Jul2015, 12:18	2.4
FG09	0.0484	9	01Jul2015, 12:18	1.2
FG09-G05	0.0484	9	01Jul2015, 12:20	1.2
G05	0.3158	82	01Jul2015, 12:16	10.1
FG13	0.0661	5	01Jul2015, 12:32	1.1
FG14	0.0331	11	01Jul2015, 12:16	1.2
FG12	0.0328	15	01Jul2015, 12:10	1.4
POND D	0.4478	12	01Jul2015, 14:40	9.3
POND D-G17	0.4478	12	01Jul2015, 14:40	9.3
FG15	0.1017	19	01Jul2015, 12:24	2.7
G17a	0.1017	19	01Jul2015, 12:24	2.7
FG15a	0.0156	8	01Jul2015, 12:06	0.6
G17	0.5651	24	01Jul2015, 12:20	12.6
G17-G18	0.5651	24	01Jul2015, 12:22	12.6
FG16	0.0773	34	01Jul2015, 12:08	2.9
G18	0.6424	52	01Jul2015, 12:10	15.5
G18-POND E	0.6424	52	01Jul2015, 12:12	15.5
FG31	0.0922	33	01Jul2015, 12:18	4.0
FG30	0.0400	23	01Jul2015, 12:06	1.7
FG30-PONDHS	0.0400	23	01Jul2015, 12:14	1.7
POND HS	0.1322	27	01Jul2015, 12:38	5.7
FG17a	0.0694	26	01Jul2015, 12:10	2.4
FG17a-POND E	0.0694	26	01Jul2015, 12:10	2.4
FG18	0.0644	11	01Jul2015, 12:28	1.8

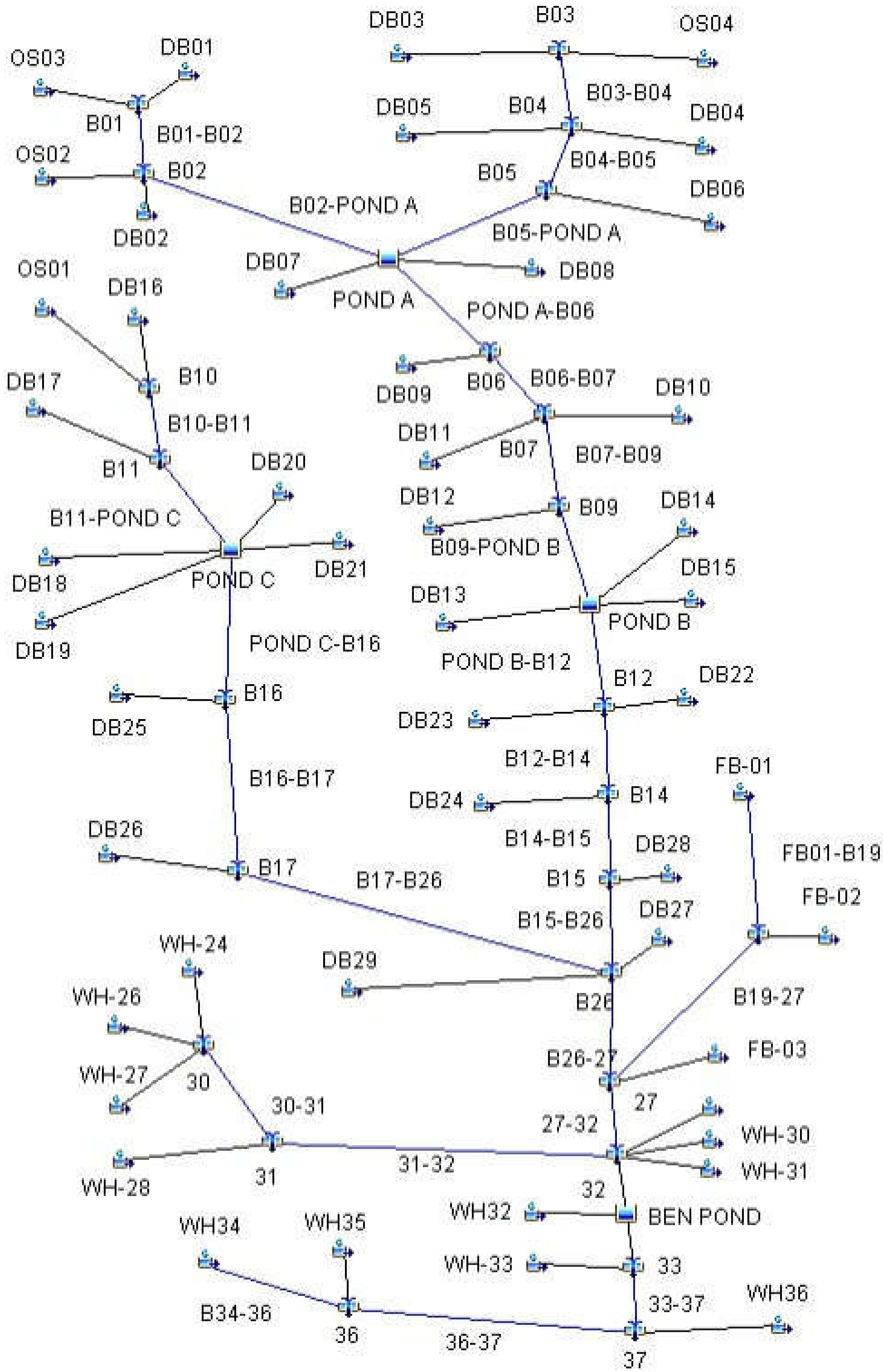
FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
FG18-POND E	0.0644	11	01Jul2015, 12:28	1.8
FG19	0.0527	25	01Jul2015, 12:10	2.3
FG17c	0.0313	3	01Jul2015, 12:10	0.4
FG17b	0.0214	12	01Jul2015, 12:06	0.9
POND E	1.0138	17	01Jul2015, 19:32	16.8
H08	1.0138	12	01Jul2015, 19:32	11.5
H09	0.0000	5	01Jul2015, 19:32	5.3
FH01	0.1344	36	01Jul2015, 12:20	4.5
POND H	0.1344	4	01Jul2015, 14:42	3.4
FH02	0.0091	2	01Jul2015, 12:10	0.2
FH03	0.0081	4	01Jul2015, 12:08	0.4
H12	0.1516	7	01Jul2015, 12:10	4.0

FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
OS01	1.5594	11.0	01Jul2015, 13:24	5.9
DB16	0.0578	12.7	01Jul2015, 12:12	1.3
B10	1.6172	13.2	01Jul2015, 12:12	7.3
B10-B11	1.6172	13.2	01Jul2015, 12:14	7.2
DB17	0.0048	5.7	01Jul2015, 12:02	0.4
B11	1.6220	15.3	01Jul2015, 12:12	7.7
B11-POND C	1.6220	15.2	01Jul2015, 12:20	7.5
DB21	0.0519	1.1	01Jul2015, 12:18	0.3
DB18	0.0346	10.0	01Jul2015, 12:08	0.9
DB19	0.0281	2.8	01Jul2015, 12:14	0.4
DB20	0.0147	3.4	01Jul2015, 12:10	0.3
POND C	1.7513	10.9	01Jul2015, 15:00	6.3
POND C-B16	1.7513	10.9	01Jul2015, 15:06	6.2
DB25	0.0211	7.1	01Jul2015, 12:06	0.6
B16	1.7724	11.3	01Jul2015, 15:06	6.7
B16-B17	1.7724	11.3	01Jul2015, 15:16	6.6
DB26	0.0682	29.4	01Jul2015, 12:10	2.7
B17	1.8406	34.4	01Jul2015, 12:14	9.3
B17-B26	1.8406	34.0	01Jul2015, 12:20	9.1
OS03	0.1984	1.6	01Jul2015, 13:02	0.8
DB01	0.0719	4.7	01Jul2015, 12:12	0.7
B01	0.2703	5.0	01Jul2015, 12:14	1.5
B01-B02	0.2703	5.0	01Jul2015, 12:18	1.5
OS02	0.2219	2.6	01Jul2015, 12:46	1.1
DB02	0.0516	3.4	01Jul2015, 12:08	0.5
B02	0.5438	8.6	01Jul2015, 12:18	3.1
B02-POND A	0.5438	8.6	01Jul2015, 12:22	3.1
OS04	0.1359	0.6	01Jul2015, 13:30	0.4
DB03	0.0703	1.5	01Jul2015, 12:20	0.4
B03	0.2062	1.5	01Jul2015, 12:20	0.8
B03-B04	0.2062	1.5	01Jul2015, 12:36	0.8
DB04	0.0422	1.2	01Jul2015, 12:18	0.3
DB05	0.0384	1.4	01Jul2015, 12:22	0.3
B04	0.2868	3.6	01Jul2015, 12:32	1.4
B04-B05	0.2868	3.6	01Jul2015, 12:34	1.4
DB06	0.0219	8.6	01Jul2015, 12:10	0.8
B05	0.3087	10.3	01Jul2015, 12:12	2.2
B05-POND A	0.3087	10.2	01Jul2015, 12:14	2.1
DB07	0.0254	1.9	01Jul2015, 12:10	0.3
DB08	0.0297	0.5	01Jul2015, 12:16	0.2
POND A	0.9076	5.5	01Jul2015, 15:32	3.3
POND A-B06	0.9076	5.5	01Jul2015, 15:34	3.3
DB09	0.0189	3.7	01Jul2015, 12:06	0.3
B06	0.9265	5.7	01Jul2015, 15:32	3.6

FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
B06-B07	0.9265	5.7	01Jul2015, 15:48	3.5
DB11	0.0969	8.1	01Jul2015, 12:16	1.2
DB10	0.0364	5.8	01Jul2015, 12:10	0.6
B07	1.0598	14.7	01Jul2015, 12:22	5.4
B07-B09	1.0598	14.4	01Jul2015, 12:30	5.3
DB12	0.0453	11.2	01Jul2015, 12:08	1.0
B09	1.1051	19.4	01Jul2015, 12:20	6.3
B09-POND B	1.1051	19.3	01Jul2015, 12:22	6.3
DB15	0.1234	3.3	01Jul2015, 12:28	0.9
DB13	0.0703	7.9	01Jul2015, 12:16	1.1
DB14	0.0556	12.4	01Jul2015, 12:10	1.2
POND B	1.3544	29.7	01Jul2015, 12:34	9.4
POND B-B12	1.3544	29.7	01Jul2015, 12:38	9.3
DB22	0.0516	14.1	01Jul2015, 12:10	1.3
DB23	0.0172	13.1	01Jul2015, 12:06	1.0
B12	1.4232	37.5	01Jul2015, 12:28	11.7
B12-B14	1.4232	37.5	01Jul2015, 12:32	11.6
DB24	0.0531	13.2	01Jul2015, 12:08	1.2
B14	1.4763	45.9	01Jul2015, 12:16	12.8
B14-B15	1.4763	45.9	01Jul2015, 12:18	12.8
DB28	0.0741	5.0	01Jul2015, 12:16	0.8
B15	1.5504	50.9	01Jul2015, 12:18	13.6
B15-B26	1.5504	50.8	01Jul2015, 12:30	13.2
DB29	0.1697	6.1	01Jul2015, 12:28	1.5
DB27	0.0508	8.9	01Jul2015, 12:18	1.1
B26	3.6115	89.9	01Jul2015, 12:26	25.0
B26-27	3.6115	89.6	01Jul2015, 12:32	24.7
FB-02	0.0500	9.5	01Jul2015, 12:18	1.2
FB-01	0.0373	8.2	01Jul2015, 12:10	0.8
FB01-B19	0.0373	8.1	01Jul2015, 12:12	0.8
B19	0.0873	16.8	01Jul2015, 12:14	2.0
B19-27	0.0873	16.8	01Jul2015, 12:16	2.0
FB-03	0.0078	5.9	01Jul2015, 12:04	0.4
27	3.7066	101.7	01Jul2015, 12:32	27.1
27-32	3.7066	101.3	01Jul2015, 12:34	26.9
WH-24	0.1325	31.1	01Jul2015, 12:12	3.2
WH-26	0.0839	0.5	01Jul2015, 13:18	0.3
WH-27	0.0217	0.1	01Jul2015, 12:50	0.1
30	0.2381	31.1	01Jul2015, 12:12	3.5
30-31	0.2381	31.1	01Jul2015, 12:14	3.5
WH-28	0.0398	8.1	01Jul2015, 12:14	0.9
31	0.2779	39.2	01Jul2015, 12:14	4.4
31-32	0.2779	38.9	01Jul2015, 12:16	4.4
WH-29	0.0495	10.2	01Jul2015, 12:12	1.1

FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
WH-31	0.0406	11.8	01Jul2015, 12:08	1.1
WH-30	0.0159	1.3	01Jul2015, 12:04	0.1
32	4.0905	131.5	01Jul2015, 12:34	33.6
WH32	0.0458	0.3	01Jul2015, 12:48	0.2
BEN POND	4.1363	45.5	01Jul2015, 13:46	29.0
WH-33	0.0064	1.9	01Jul2015, 12:08	0.2
33	4.1427	45.7	01Jul2015, 13:46	29.2
33-37	4.1427	45.7	01Jul2015, 13:58	28.7
WH35	0.1550	6.4	01Jul2015, 12:16	1.3
WH34	0.0450	7.0	01Jul2015, 12:10	0.8
B34-36	0.0450	6.9	01Jul2015, 12:14	0.8
36	0.2000	13.3	01Jul2015, 12:14	2.0
36-37	0.2000	13.2	01Jul2015, 12:22	2.0
WH36	0.0750	0.6	01Jul2015, 12:52	0.3
37	4.4177	49.0	01Jul2015, 13:54	31.0
FG08A	0.0750	15.3	01Jul2015, 12:10	1.5
FG08A-G05	0.0750	15.2	01Jul2015, 12:14	1.5
FG10	0.0669	3.7	01Jul2015, 12:46	0.9
FG08B	0.0630	11.1	01Jul2015, 12:12	1.3
FG08B-G05	0.0630	11.1	01Jul2015, 12:16	1.2
FG11	0.0625	10.6	01Jul2015, 12:20	1.4
FG09	0.0484	3.6	01Jul2015, 12:20	0.6
FG09-G05	0.0484	3.6	01Jul2015, 12:24	0.6
G05	0.3158	40.7	01Jul2015, 12:16	5.6
FG13	0.0661	1.5	01Jul2015, 12:40	0.5
FG14	0.0331	5.5	01Jul2015, 12:18	0.7
FG12	0.0328	8.5	01Jul2015, 12:12	0.9
POND D	0.4478	4.5	01Jul2015, 17:52	4.1
POND D-G17	0.4478	4.5	01Jul2015, 17:54	4.1
FG15	0.1017	7.9	01Jul2015, 12:26	1.4
G17a	0.1017	7.9	01Jul2015, 12:26	1.4
FG15a	0.0156	4.3	01Jul2015, 12:06	0.4
G17	0.5651	11.3	01Jul2015, 12:24	5.9
G17-G18	0.5651	11.3	01Jul2015, 12:26	5.9
FG16	0.0773	18.0	01Jul2015, 12:08	1.7
G18	0.6424	25.9	01Jul2015, 12:10	7.6
G18-POND E	0.6424	25.8	01Jul2015, 12:12	7.6
FG31	0.0922	18.5	01Jul2015, 12:20	2.4
FG30	0.0400	13.1	01Jul2015, 12:06	1.0
FG30-PONDHS	0.0400	12.9	01Jul2015, 12:16	1.0
POND HS	0.1322	15.5	01Jul2015, 12:40	3.4
FG17a	0.0694	13.1	01Jul2015, 12:10	1.4
FG17a-POND E	0.0694	13.0	01Jul2015, 12:12	1.4
FG18	0.0644	5.0	01Jul2015, 12:30	0.9

FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
FG18-POND E	0.0644	5.0	01Jul2015, 12:32	0.9
FG19	0.0527	14.5	01Jul2015, 12:10	1.4
FG17c	0.0313	0.6	01Jul2015, 12:16	0.2
FG17b	0.0214	6.6	01Jul2015, 12:06	0.6
POND E	1.0138	11.3	01Jul2015, 16:52	11.8
H08	1.0138	7.6	01Jul2015, 16:52	7.8
H09	0.0000	3.7	01Jul2015, 16:52	3.9
FH01	0.1344	17.8	01Jul2015, 12:20	2.5
POND H	0.1344	2.5	01Jul2015, 14:34	2.3
FH02	0.0091	0.8	01Jul2015, 12:12	0.1
FH03	0.0081	2.4	01Jul2015, 12:10	0.2
H12	0.1516	3.7	01Jul2015, 12:12	2.6


DB03
B03
OS04
OS03
DB01
B01
B01-B02
OS02
B02
DB02
DB05
B04
B03-B04
DB04
B05
B04-B05
DB06
B02-POND A
B05-POND A
DB07
POND A
DB08
POND A-B06
OS01
DB16
B10
DB17
B10-B11
B11
DB09
B06
B06-B07
DB10
DB11
B07
B07-B09
DB20
B11-POND C
DB12
B09
DB14
B09-POND B
DB18
POND C
DB21
DB15
DB19
DB13
POND B
POND C-B16
POND B-B12
B12
DB22
B16
DB25
DB23
B12-B14
FB-01
B16-B17
DB24
B14
B14-B15
DB28
DB26
B17
B17-B26
B15
FB01-B19
FB-02
B15-B26
DB27
WH-24
DB29
B26
B19-27
WH-26
B26-27
FB-03
WH-27
30
27
30-31
27-32
WH-30
WH-28
31
31-32
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WH35
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B34-36
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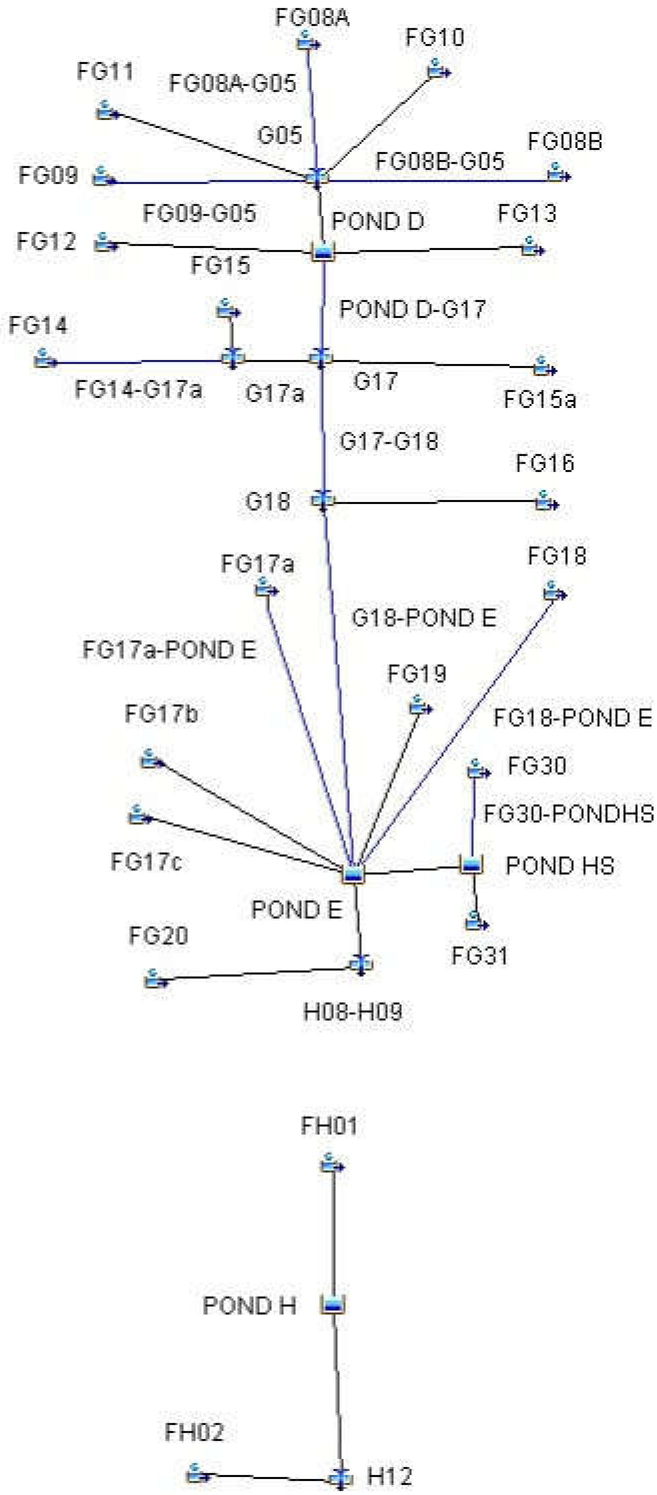
WH36
36
36-37
37


FG08A
FG10
FG11
FG08A-G05
G05
FG08B
FG09
FG08B-G05
FG09-G05
FG13
FG12
POND D
FG15
POND D-G17
FG14
FG14-G17a
G17a
G17
FG15a
G17-G18
FG16
G18
FG17a
FG18
G18-POND E
FG17a-POND E
FG19
FG17b
FG18-POND E
FG30
FG30-PONDHS
FG17c
POND HS
POND E
FG20
FG31
H08-H09
FH01
POND H
FH02
H12

Appendix C - Detention Pond Information

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E- FINAL FUTURE (TOTAL FLOWS)

Gieck Basin - El Paso County, Colorado

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974.5
100 year storage elev.=	6973.3
100 year storage vol.=	39.5
100 year discharge=	255
5 year storage elev.=	6971.0
5 year storage vol.=	14.4
5 year discharge=	17
WQCV storage elev.=	6968.4
WQCV storage vol.=	1.2
WQCV depth =	1.4
1/2 WQCV storage elev.=	6968.1
1/2 WQCV storage vol.=	0.6

50 year storage elev.=	6972.9
50 year storage vol.=	33.9
50 year discharge=	157
25 year storage elev.=	6972.3
25 year storage vol.=	28.0
25 year discharge=	87
10 year storage elev.=	6971.6
10 year storage vol.=	20.2
10 year discharge=	32
2 year storage elev.=	6969.8
2 year storage vol.=	5.6
2 year discharge=	11

STAGE		STORAGE				TOTAL DISCHARGE											
ELEV	HEIGHT	AREA		VOLUME		TOP OF BANK	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)		PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft			1	2	3	4	Rectangular		1	2		
6967	0	1808	0.04	0.0	0.00			-	-	-	-	-	-	1.4	-	-	-
6968	1	30465	0.70	0.4	0.37	-	-	0.4	-	-	-	-	-	26	-	0.4	0.394
6969	2	131592	3.02	1.9	2.23	-	-	1.0	-	6.6	-	-	-	77	-	7.6	7.621
6970	3	270997	6.22	4.6	6.85	-	-	1.3	-	10.8	-	-	-	146	-	12.1	12.140
6970.5	3.5	329360	7.56	3.4	10.30	-	-	1.5	-	12.4	-	-	-	183	-	14	13.851
6971	4	387722	8.90	7.6	14.41	-	-	1.6	1.6	13.8	-	-	-	218	-	17	16.945
6971.25	4.25	408751	9.38	2.3	16.70	-	-	1.7	4.3	14.4	0.2	-	-	236	-	21	20.572
6971.5	4.5	429780	9.87	4.7	19.10	-	-	1.7	7.8	15.0	3.0	-	-	252	-	28	27.546
6971.75	4.75	450809	10.35	2.5	21.63	-	-	1.8	12.0	15.6	7.3	-	-	266	-	37	36.781
6972	5	471838	10.83	5.2	24.28	-	-	1.8	16.8	16.2	14.2	2.4	-	280	-	51	51.396
6972.25	5.25	482595.75	11.08	2.7	27.02	-	-	1.9	21.6	16.7	20.6	15.5	-	292	-	76	76.399
6972.5	5.5	493354	11.33	5.5	29.82	-	-	1.9	25.1	17.3	26.5	34.9	-	304	-	106	105.671
6973	6	514869	11.82	5.8	35.60	-	-	2.0	31.7	18.3	39.0	86.5	-	327	-	178	177.628
6973.25	6.25	518272	11.90	3.0	38.57	-	-	2.1	36.8	18.9	48.7	128.5	-	338	-	235	235.061
6973.5	6.5	521675	11.98	5.9	41.55	-	-	2.2	40.2	19.6	55.1	182.5	-	349	-	300	299.558
6974	7	528481	12.13	12.0	47.58	-	-	2.4	48.8	21.2	71.8	334.6	-	369	-	369	369.370
6976	9	553685	12.71	24.8	72.42	-	1,102	2.6	57.9	23.5	82.8	729.0	-	443	-	443	1,545.090

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E-FINAL FUTURE (H08)

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974
100 year storage elev.=	6973.3
100 year storage vol.=	39.5
100 year discharge=	194
5 year storage elev.=	6971.00
5 year storage vol.=	14.4
5 year discharge=	12
WQCV storage elev.=	6968.4
WQCV storage vol.=	1.2
1/2 WQCV storage elev.=	6968.1
1/2 WQCV storage vol.=	0.6

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0657	1.40		Area =	0.092	Elev to cl =	6967.70
Rectangular	Orifice 2:	V	3	1.2		Area =	3.600	Elev to cl =	6971.30
Circular	Orifice 3:	H			15	Area =	1.227	Elev to cl =	6968.40
Rectangular	Orifice 4:	V	6	0.7		Area =	4.200	Elev to cl =	6971.55

Stand Pipe Dimensions

Rec Grate	11	x	7	Elev =	6971.90
Circ. Grate		dia.		Elev =	6971.90

50 year storage elev.=	6972.9
50 year discharge=	130
25 year storage elev.=	6972.3
25 year discharge=	70
10 year storage elev.=	6971.6
10 year discharge=	24
2 year storage elev.=	6969.8
2 year discharge=	8

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6966.8		6970.58		
Wall Thick.	4	in.			

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6967	0	1808	0.04	0.0	0.0			-	-	-	-	-	1		-	-
6968	1	30465	0.70	0.4	0.4			0.2	-	-	-	-	18		0.2	0.20
6969	2	131592	3.02	1.9	2.2			0.5	-	4.6	-	-	52		5.1	5.08
6970	3	270997	6.22	4.6	6.9			0.7	-	7.5	-	-	97		8	8.15
6970.5	3.5	329359.5	7.56	3.4	10			0.7	-	8.6	-	-	122		9	9.30
6971	4	387722	8.90	7.6	14			0.8	1.5	9.5	-	-	146		12	11.81
6971.25	4.25	408751	9.38	2.3	17			0.8	3.7	10.0	0.2	-	157		15	14.68
6971.5	4.5	429780	9.87	4.7	19			0.9	6.4	10.4	3.0	-	167		21	20.66
6971.75	4.75	450809	10.35	2.5	22			0.9	9.7	10.8	7.3	-	176		29	28.73
6972	5	471838	10.83	5.2	24			0.9	13.3	11.2	12.9	2	185		41	40.72
6972.25	5.25	482595.75	11.08	2.7	27			0.9	16.9	11.6	16.9	16	193		62	61.88
6972.5	5.5	493354	11.33	5.5	30			1.0	19.0	12.0	19.7	35	201		86	86.49
6973	6	514869	11.82	5.8	36			1.0	22.6	12.7	24.4	87	217		147	147.17
6973.25	6.25	518272	11.90	3.0	39			1.0	24.2	13.0	26.4	118	224		182	182.27
6973.5	6.5	521675	11.98	5.9	42			1.1	25.7	13.3	28.2	152	231		220	220.15
6974	7	528481	12.13	12.0	48			1.1	28.5	14.0	31.7	228	244		244	244.06
6976	9	553685	12.71	24.8	72			1.3	37.6	16.3	42.7	623	291		291	291.42

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E-FINAL FUTURE (H09)

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974.5
100 year storage elev.=	6973.3
100 year storage vol.=	39.5
100 year discharge=	61
5 year storage elev.=	6971.00
5 year storage vol.=	14.4
5 year discharge=	5
WQCV storage elev.=	6968.4
WQCV storage vol.=	1.2
1/2 WQCV storage elev.=	6968.1
1/2 WQCV storage vol.=	0.6

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0657	1.40		Area =	0.092	Elev to cl =	6967.70
Rectangular	Orifice 2:	V	1	2.1		Area =	2.100	Elev to cl =	6971.95
Circular	Orifice 3:	H			10	Area =	0.545	Elev to cl =	6968.40
Rectangular	Orifice 4:	V	3.5	1.25		Area =	4.375	Elev to cl =	6972.38

Stand Pipe Dimensions

Rec Grate		4.25	x	3	Elev =	6973.00
Circ. Grate			dia.		Elev =	6973.00

50 year storage elev.=	6972.86
50 year discharge=	27
25 year storage elev.=	6972.34
25 year discharge=	16
10 year storage elev.=	6971.61
10 year discharge=	7
2 year storage elev.=	6969.81
2 year discharge=	3.7

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6966.8		6970.7		
Wall Thick.	5	in.			

STAGE		STORAGE				DISCHARGE											
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6967	0	1808	0.04	0.0	0.0			-	-	-	-	-	0.5		-	-
6968	1	30465	0.70	0.4	0.4			0.2	-	-	-	-	8.8		0.2	0.20
6969	2	131592	3.02	1.9	2.2			0.5	-	2.0	-	-	26		2.5	2.54
6970	3	270997	6.22	4.6	6.9			0.7	-	3.3	-	-	48		4.0	3.99
6970.5	3.5	329359.5	7.56	3.4	10.3			0.7	-	3.8	-	-	61		4.5	4.55
6971	4	387722	8.90	7.6	14.4			0.8	0.1	4.2	-	-	73		5.1	5.13
6971.25	4.25	408751	9.38	2.3	16.7			0.8	0.6	4.4	-	-	79		5.9	5.89
6971.5	4.5	429780	9.87	4.7	19.1			0.9	1.4	4.6	-	-	85		6.9	6.88
6971.75	4.75	450809	10.35	2.5	21.6			0.9	2.4	4.8	-	-	90		8.0	8.05
6972	5	471838	10.83	5.2	24.3			0.9	3.5	5.0	1.3	-	95		10.7	10.67
6972.25	5.25	482595.75	11.08	2.7	27.0			0.9	4.7	5.2	3.7	-	99		14.5	14.52
6972.5	5.5	493354	11.33	5.5	29.8			1.0	6.1	5.3	6.8	-	103		19.2	19.18
6973	6	514869	11.82	5.8	35.6			1.0	9.1	5.6	14.7	-	111		30.5	30.46
6973.25	6.25	518272	11.90	3.0	38.6			1.1	12.6	5.9	22.3	11	114		52.8	52.79
6973.5	6.5	521675	11.98	5.9	41.6			1.1	14.5	6.2	26.9	31	118		79.4	79.41
6974	7	528481	12.13	12.0	47.6			1.3	20.3	7.2	40.1	106	125		125.3	125.31
6976	9	553685	12.71	24.8	72.4			1.3	20.3	7.2	40.1	106	151		151.4	151.40

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Proposed Detention Pond H-FUTURE

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	500
embankment elev =	6976
spillway length =	50
spillway elevation =	6974.5
100 year storage elev.=	6973.4
100 year storage vol.=	7.6
100 year discharge=	55
5 year storage elev.=	6971.5
5 year storage vol.=	2.3
5 year discharge=	4
WQCV storage elev.=	6970.0
WQCV storage vol.=	0.3
1/2 WQCV storage elev.=	6969.6
1/2 WQCV storage vol.=	0.15

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0167	1.50		Area =	0.025	Elev to cl =	6969.25
Rectangular	Orifice 2:	V	4.5000	1.40		Area =	6.300	Elev to cl =	6972.20
None Selected	Orifice 3:	H				Area =	0.000	Elev to cl =	
Circular	Orifice 4:	H			10	Area =	0.545	Elev to cl =	6970.00

Stand Pipe Dimensions

Rec Grate		9	x	4.5	Elev =	6972.90
Circ. Grate			dia.		Elev =	6972.90

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6968.5		6972.38		
Wall Thick.	4.5	in.			

50 year storage elev.=	6973.0
50 year discharge=	31
25 year storage elev.=	6972.5
25 year discharge=	18
10 year storage elev.=	6971.9
10 year discharge=	8
2 year storage elev.=	6970.9
2 year discharge=	2.5

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6968.5	0	0	0.00	0.0	0.0			-	-	-	-	-	-		-	-
6969	0.5	477	0.01	0.00	0.003	-	-	0.02	-	-	-	-	1		0.02	0.018
6970	1.5	22422	0.51	0.26	0.27	-	-	0.02	-	-	0.8	-	9		0.9	0.865
6970.5	2	44606	1.02	0.78	0.78	-	-	0.09	-	-	1.9	-	24		1.9	1.949
6971	2.5	67898	1.56	1.04	1.30	-	-	0.09	-	-	2.6	-	24		2.7	2.718
6971.5	3	92319	2.12	0.92	2.22	-	-	0.16	-	-	3.2	-	32		3.4	3.376
6972	3.5	116739	2.68	1.20	3.42	-	-	0.18	4.8	-	3.7	-	41		8.7	8.668
6972.5	4	125636	2.88	1.39	4.81	-	-	0.20	13.5	-	4.2	-	50		17.9	17.852
6973	4.5	134533	3.09	1.49	6.31	-	-	0.22	24.8	-	4.5	2	56		31.3	31.274
6973.5	5	141972	3.26	1.59	7.89	-	-	0.23	34.6	-	4.9	25	61		61	61.340
6974	5.5	149410	3.43	1.67	9.57	-	-	0.25	40.7	-	5.3	62	66		66	66.260
6975	6.5	165140	3.79	3.61	13.18	53.0	53.0	0.26	50.8	-	5.9	164	75		75	128.173
6976	7.5	192114	4.41	4.10	17.28	275.6	275.6	0.29	59.1	-	6.4	295	83		83	358.648

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

FUTURE POND E

WQCV Control Riser Calculations

Drain time for Pond E & H should be 40hr typical for all extended detention basins.

TRIBUTARY AREA		332	acres
DRAIN TIME		6	hr
	a	0.7	
IMPERVIOUSNESS RATIO	*i*	0.37	
DEPTH OF OUTLET		1.4	
WQCV		0.12	inches
WQCV DESIGN VOL		**1.2**	ac-ft
	K_{40}	0.23	
AREA PER ROW[1]	a	2.60	in^2
No. of columns		6	per riser
Hole size		3/4	in
Steel Plate Thickness		1/2	in

5 rows of holes per riser

[1] AREA PER ROW PER RISER

Actual area per row per riser: 2.65 in^2

Actual area per riser: 13.3 in^2

Actual area per riser: 0.092 ft^2

TABLE SB-2

Hole Dia (in)		Area per Row (in^2)					
Holes per Row		1	2	3	4	5	6
Min steel thickness		1/4	5/16	3/8	3/8	3/8	1/2
1/4	0.2500	0.05	0.10	0.15	0.20	0.25	0.29
5/16	0.3125	0.08	0.15	0.23	0.31	0.38	0.46
3/8	0.3750	0.11	0.22	0.33	0.44	0.55	0.66
7/16	0.4375	0.15	0.30	0.45	0.60	0.75	0.90
1/2	0.5000	0.20	0.39	0.59	0.79	0.98	1.18
9/16	0.5625	0.25	0.50	0.75	0.99	1.24	1.49
5/8	0.6250	0.31	0.61	0.92	1.23	1.53	1.84
11/16	0.6875	0.37	0.74	1.11	1.48	1.86	2.23
3/4	0.7500	0.44	0.88	1.33	1.77	2.21	2.65
7/8	0.8750	0.60	1.20	1.80	2.41	3.01	3.61
1	1.0000	0.79	1.57	2.36	3.14	3.93	4.71
1 1/8	1.1250	0.99	1.99	2.98	3.98	4.97	5.96
1 1/4	1.2500	1.23	2.45	3.68	4.91	6.14	7.36
1 3/8	1.3750	1.48	2.97	4.45	5.94	7.42	8.91
1 1/2	1.5000	1.77	3.53	5.30	7.07	8.84	10.60
1 5/8	1.6250	2.07	4.15	6.22	8.30	10.37	12.44
1 3/4	1.7500	2.41	4.81	7.22	9.62	12.03	14.43
1 7/8	1.8750	2.76	5.52	8.28	11.04	13.81	16.57
2	2.0000	3.14	6.28	9.42	12.57	15.71	18.85

n = Number of columns of perforations

FUTURE POND H

WQCV Control Riser Calculations

TRIBUTARY AREA		86	acres
DRAIN TIME		6	hr
	a	0.7	
IMPERVIOUSNESS RATIO	*i*	0.38	
DEPTH OF OUTLET		1.6	
WQCV		0.12	inches
WQCV DESIGN VOL		**0.3**	ac-ft
	K_{40}	0.29	
AREA PER ROW[1]	a	0.57	in^2
No. of columns		2	per riser
Hole size		5/8	in
Steel Plate Thickness		5/16	in
		6	rows of holes per riser

[1] AREA PER ROW PER RISER

Actual area per row per riser:	0.61	in^2
Actual area per riser:	3.7	in^2
Actual area per riser:	0.025	ft^2

TABLE SB-2

Hole Dia (in)		Area per Row (in^2)					
Holes per Row		1	2	3	4	5	6
Min steel thickness		1/4	5/16	3/8	3/8	3/8	1/2
1/4	0.2500	0.05	0.10	0.15	0.20	0.25	0.29
5/16	0.3125	0.08	0.15	0.23	0.31	0.38	0.46
3/8	0.3750	0.11	0.22	0.33	0.44	0.55	0.66
7/16	0.4375	0.15	0.30	0.45	0.60	0.75	0.90
1/2	0.5000	0.20	0.39	0.59	0.79	0.98	1.18
9/16	0.5625	0.25	0.50	0.75	0.99	1.24	1.49
5/8	0.6250	0.31	0.61	0.92	1.23	1.53	1.84
11/16	0.6875	0.37	0.74	1.11	1.48	1.86	2.23
3/4	0.7500	0.44	0.88	1.33	1.77	2.21	2.65
7/8	0.8750	0.60	1.20	1.80	2.41	3.01	3.61
1	1.0000	0.79	1.57	2.36	3.14	3.93	4.71
1 1/8	1.1250	0.99	1.99	2.98	3.98	4.97	5.96
1 1/4	1.2500	1.23	2.45	3.68	4.91	6.14	7.36
1 3/8	1.3750	1.48	2.97	4.45	5.94	7.42	8.91
1 1/2	1.5000	1.77	3.53	5.30	7.07	8.84	10.60
1 5/8	1.6250	2.07	4.15	6.22	8.30	10.37	12.44
1 3/4	1.7500	2.41	4.81	7.22	9.62	12.03	14.43
1 7/8	1.8750	2.76	5.52	8.28	11.04	13.81	16.57
2	2.0000	3.14	6.28	9.42	12.57	15.71	18.85

n = Number of columns of perforations

WINDINGWALK AND THE ENCLAVE PUD FUTURE CONDITION
Simulation Run: F-100 YR Reservoir: POND E

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 100YR
Compute Time:	11Sep2017 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	631 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 12:16
Peak Outflow:	255(CFS)	Date/Time of Peak Outflow:	01Jul2015, 13:18
Total Inflow :	123.4 (AC-FT)	Peak Storage:	39.5 (AC-FT)
Total Outflow:	101.9 (AC-FT)	Peak Elevation:	6973.3 (FT)

Simulation Run: F-005 YR Reservoir: POND E

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 005YR
Compute Time:	11Sep2017 13:26:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	134 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:14
Peak Outflow:	17(CFS)	Date/Time of Peak Outflow:	01Jul2015, 08:10
Total Inflow :	29.0 (AC-FT)	Peak Storage:	14.4 (AC-FT)
Total Outflow:	16.8 (AC-FT)	Peak Elevation:	6971.0 (FT)

Simulation Run: F-100 YR Reservoir: POND H

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 100YR
Compute Time:	11Sep2017 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	161(CFS)	Date/Time of Peak Inflow:	01Jul2015, 12:06
Peak Outflow:	55 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 12:32
Total Inflow :	18.0 (AC-FT)	Peak Storage:	7.6 (AC-FT)
Total Outflow:	15.6 (AC-FT)	Peak Elevation:	6973.4 (FT)

Simulation Run: F-005 YR Reservoir: POND H

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 005YR
Compute Time:	11Sep2017 13:26:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	36 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:14
Peak Outflow:	4 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 08:24
Total Inflow :	4.5 (AC-FT)	Peak Storage:	2.3 (AC-FT)
Total Outflow:	3.4 (AC-FT)	Peak Elevation:	6971.5 (FT)

Appendix D – Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

El Paso County Area, Colorado

Windingwalk and the Enclave

November 10, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 15, Oct 10, 2017

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

Date(s) aerial images were photographed: May 22, 2016—Mar 9, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	15.8	5.5%
83	Stapleton sandy loam, 3 to 8 percent slopes	272.3	94.5%
Totals for Area of Interest		**288.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fan terraces, fans, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Gravelly Foothill (R049BY214CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit:
Landform: Swales
Hydric soil rating: Yes

Other soils

Percent of map unit:

Hydric soil rating: No

Pleasant

Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

83—Stapleton sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369z
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Stapleton and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stapleton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

A - 0 to 11 inches: sandy loam
Bw - 11 to 17 inches: gravelly sandy loam
C - 17 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Ecological site: Gravelly Foothill (R049BY214CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls
Percent of map unit:
Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit:
Hydric soil rating: No

Pleasant
Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

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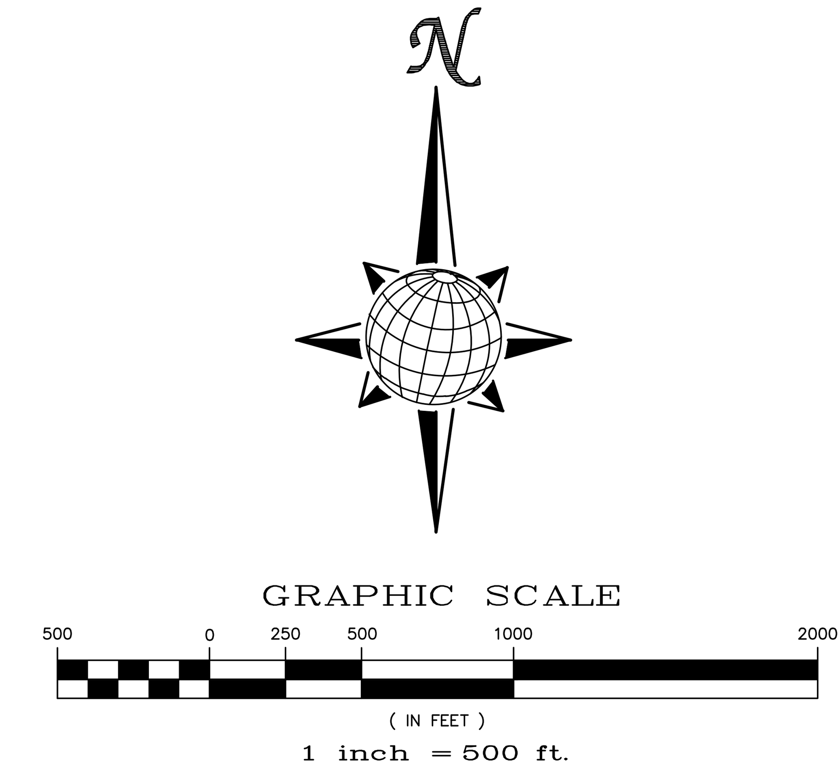
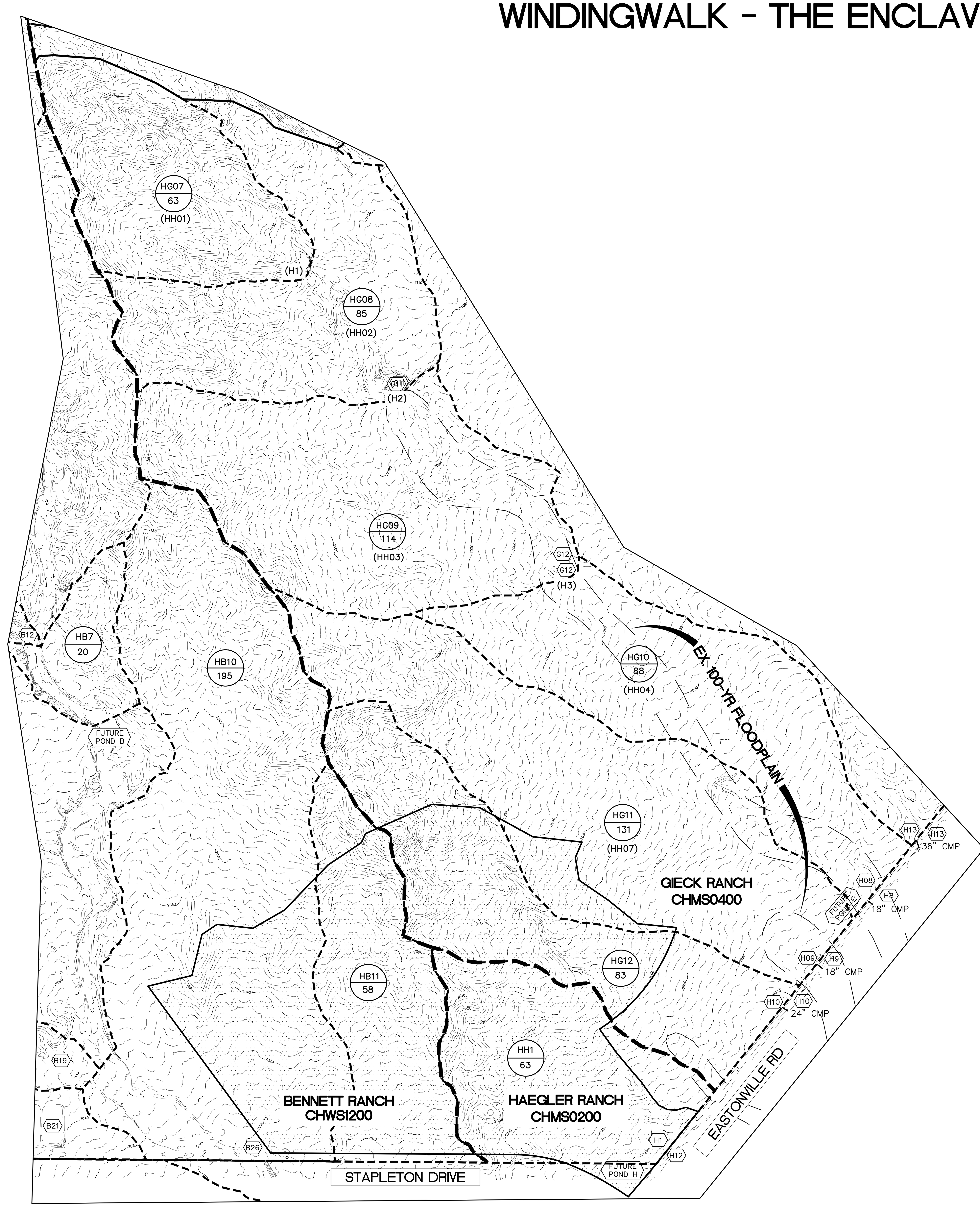
SCS DRAINAGE MAP
WINDINGWALK - THE ENCLAVE PUD





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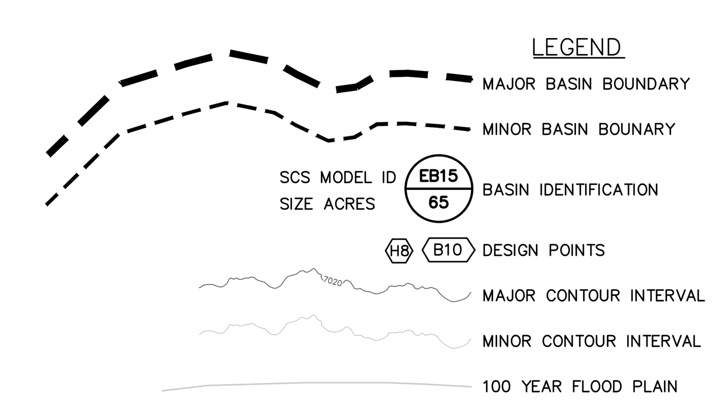

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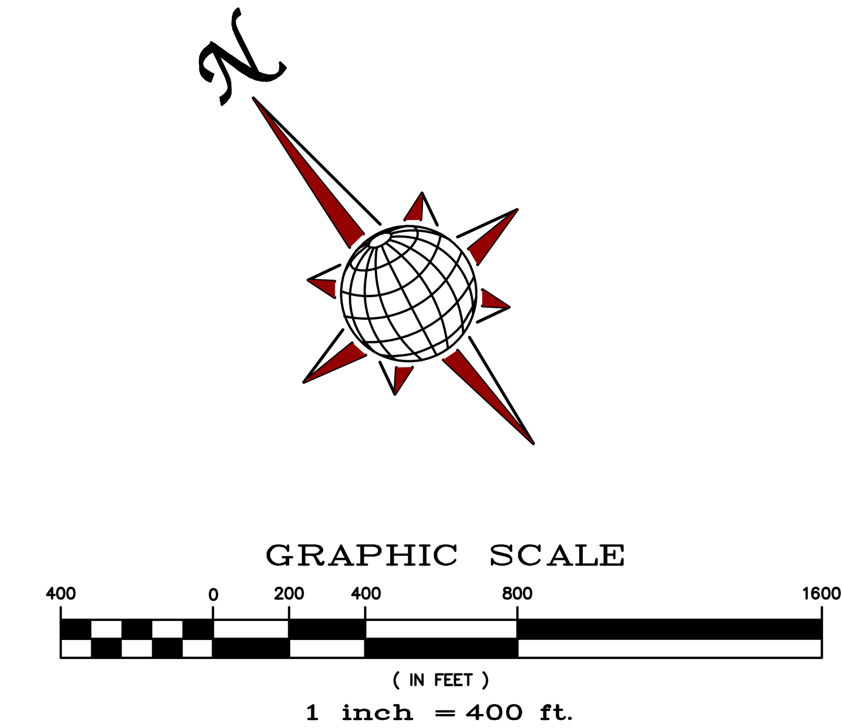
TELEPHONE: 719.495.7444

FIGURE 4

SCS DRAINAGE MAP
WINDINGWALK AND THE ENCLAVE PUD

LEGEND

- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNARY
- SCS MODEL ID / SIZE ACRES — BASIN IDENTIFICATION
- B10 — DESIGN POINTS
- MAJOR CONTOUR INTERVAL
- MINOR CONTOUR INTERVAL
- 100 YEAR FLOOD PLAIN

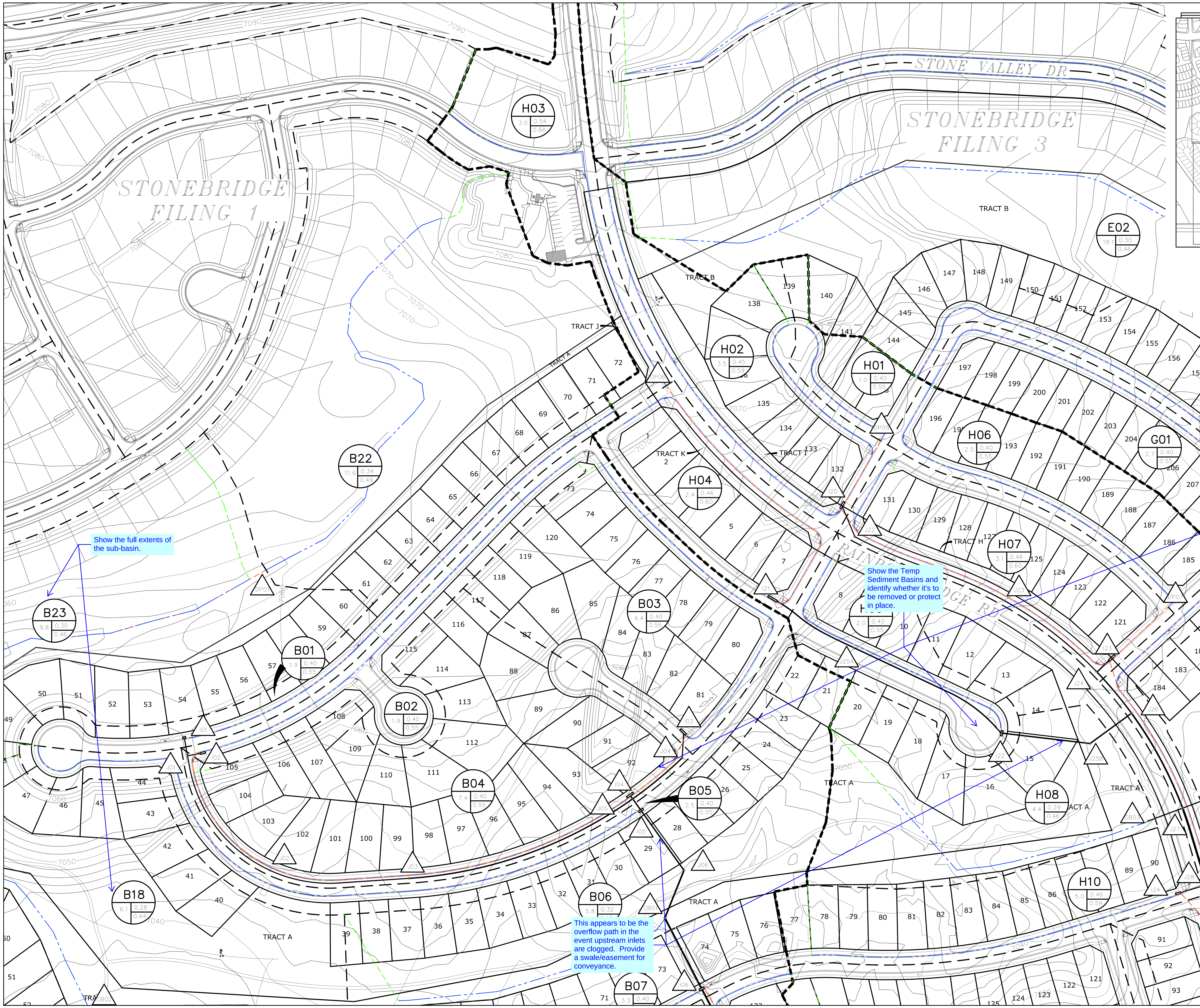


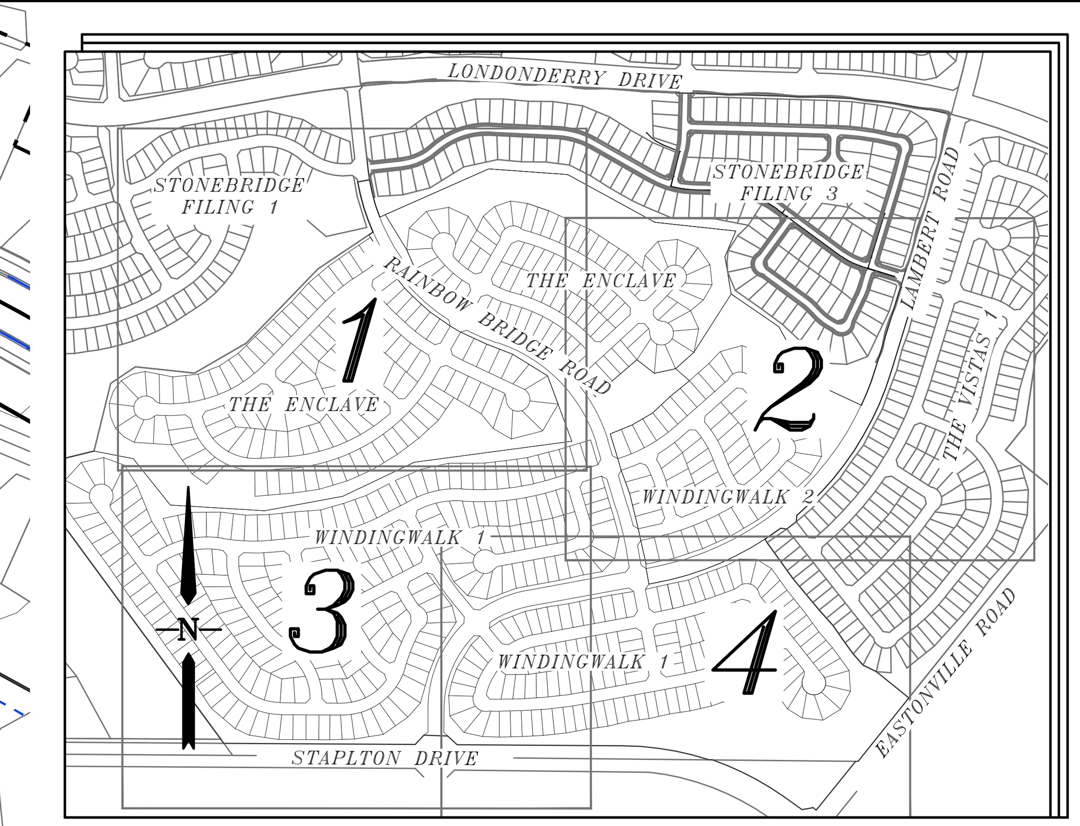
FUTURE CONDITIONS

TECH CONSTRUCTION CORP.
11886 STAPLETON DR
PEYTON, CO 80831
TELEPHONE: 719.495.7444

FIGURE 5

DEC 2017





INDEX MAP

N.T.S.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

Symbol	Description
H07 / 3.1 / 0.46 / 0.60	BASIN DESIGNATION; SUB-WATERSHED DESIGNATION; MINOR/MAJOR STORM COEFFICIENT; BASIN AREA IN ACRES
61 (triangle)	DESIGN POINT DESIGNATION
	MAJOR BASIN BOUNDARY
	SUB-BASIN BOUNDARY
6130	EXISTING CONTOUR
6130	PROPOSED COUNTOUR
	PROPOSED STORM SEWER
	INITIAL OVERLAND TIME (Ti)
	TRAVEL TIME (Tt)
	OVERLAND TIME (To)

INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)

ELEVATION = 6874.00

NOTE:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GNERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

Update the Rational Drainage Map to focus on the Enclaves. Staff recommends adding a callout box on the adjacent filings with reference to their respective PDR/FDR.

Add a summary table o the minor/major flowrates at design points

FIGURE 6

No.	Revisions	Date	Init.	Appr.	Date

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FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.2457

MERIDIAN RANCH

RATIONAL DRAINAGE MAP
PRELIMINARY DRAINAGE REPORT
WINDINGWALK - THE ENCLAVE PUD

Drawn by LCG
Checked by TAK
Date DEC 2017

SHOWN

1 of 4

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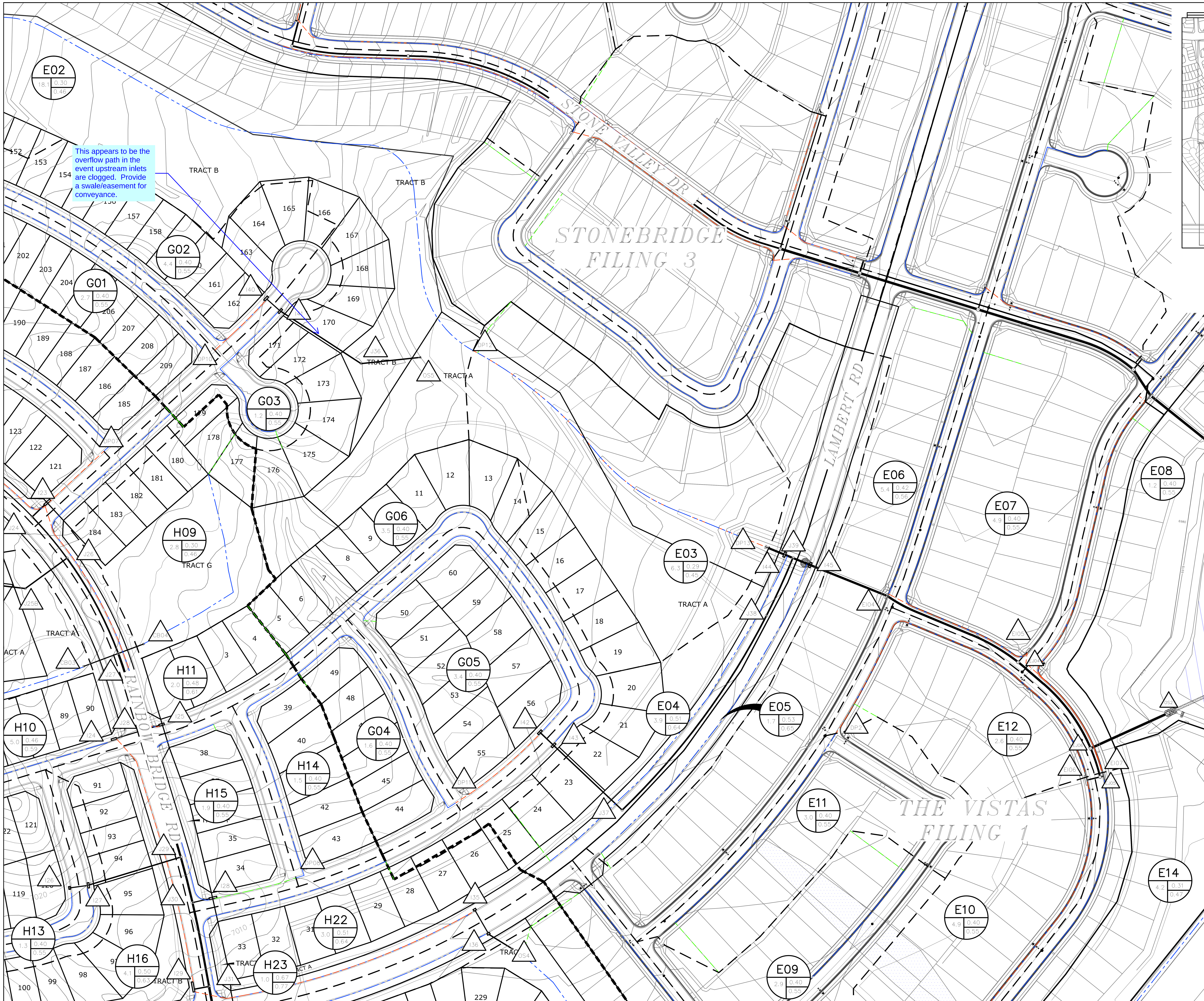

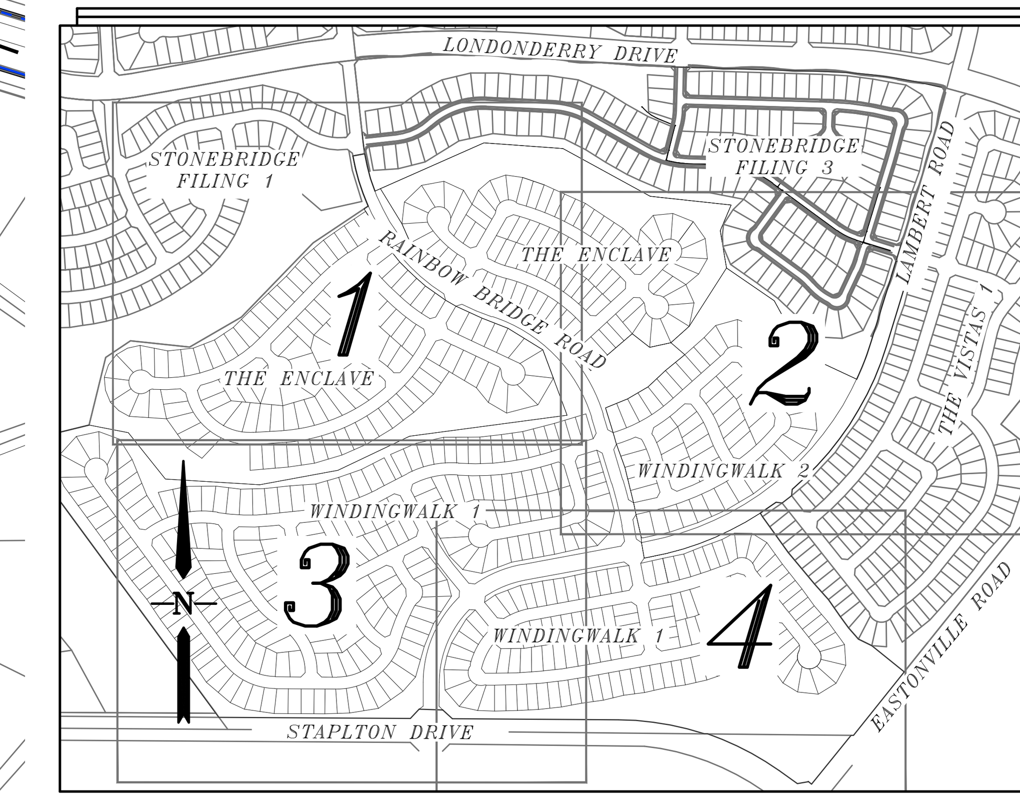

INDEX MAP

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H07 / 3.1 / 0.46 / 0.60	BASIN DESIGNATION; SUB-WATERSHED DESIGNATION; MINOR/MAJOR STORM COEFFICIENT; BASIN AREA IN ACRES
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PRELIMINARY DRAINAGE REPORT
WINDINGWALK - THE ENCLAVE PUD

Drawn by LGG
Checked by TAK
Date DEC 2017

Scale AS SHOWN

2 of 4

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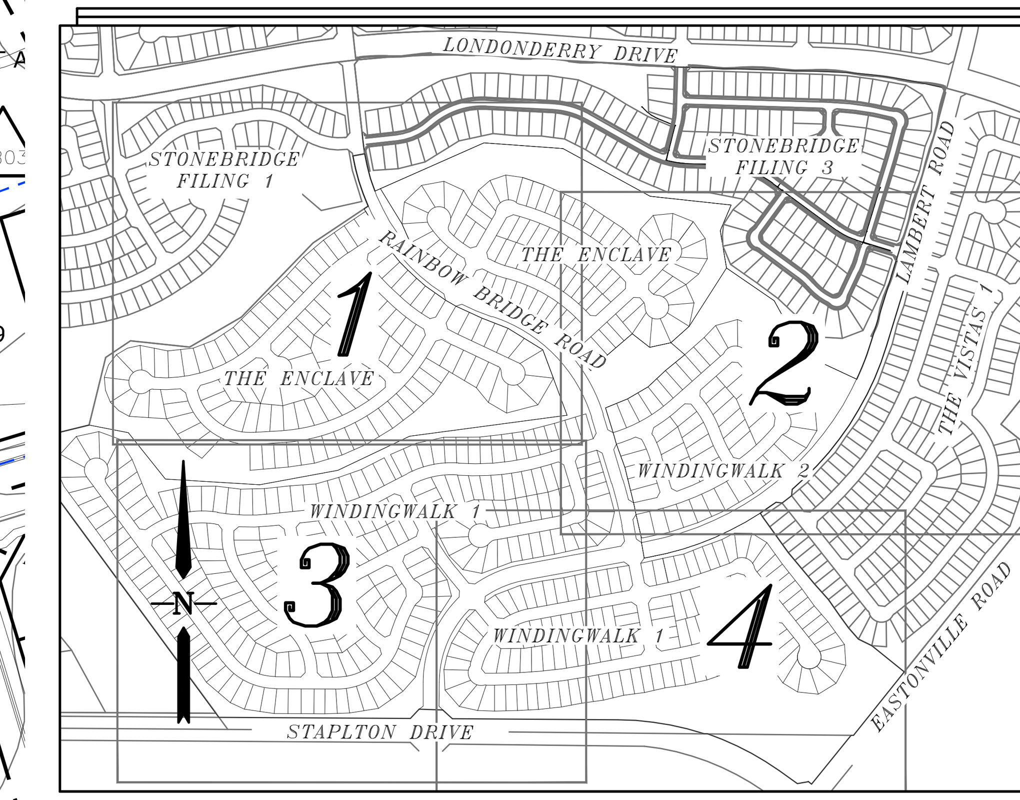

INDEX MAP

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GRAPHIC SCALE

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(IN FEET)

1 inch = 100 ft.

H07 — BASIN DESIGNATION

SUB-WATERSHED DESIGNATION

MINOR/MAJOR STORM COEFFICIENT

BASIN AREA IN ACRES

61 — DESIGN POINT DESIGNATION

MAJOR BASIN BOUNDARY

SUB-BASIN BOUNDARY

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6130 — PROPOSED COUNTOUR

PROPOSED STORM SEWER

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INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)

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PRELIMINARY DRAINAGE REPORT
WINDINGWALK - THE ENCLAVE PUD

Drawn by LCG
Checked by TAK
Date DEC 2017

Scale AS SHOWN

3 of 4

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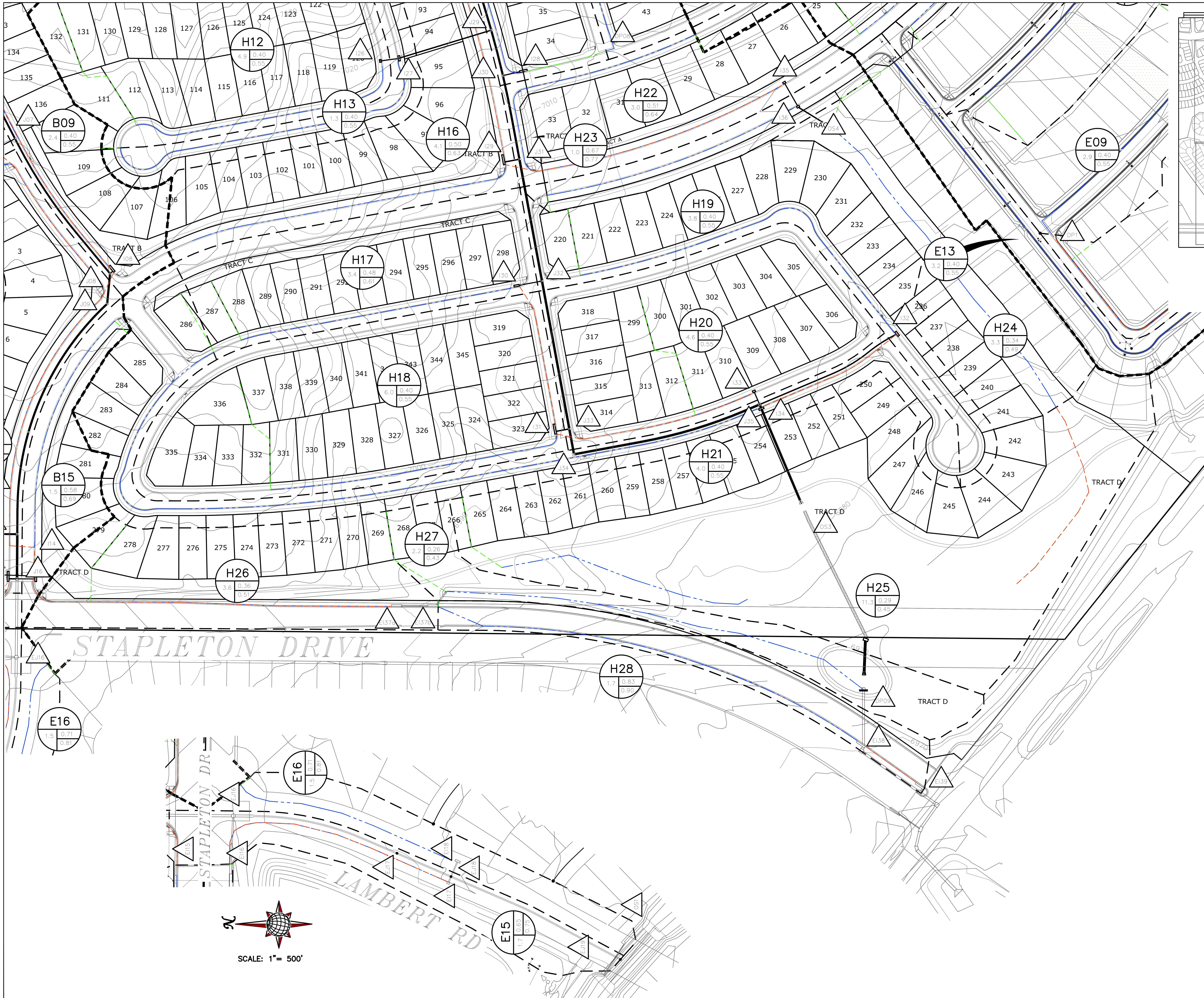

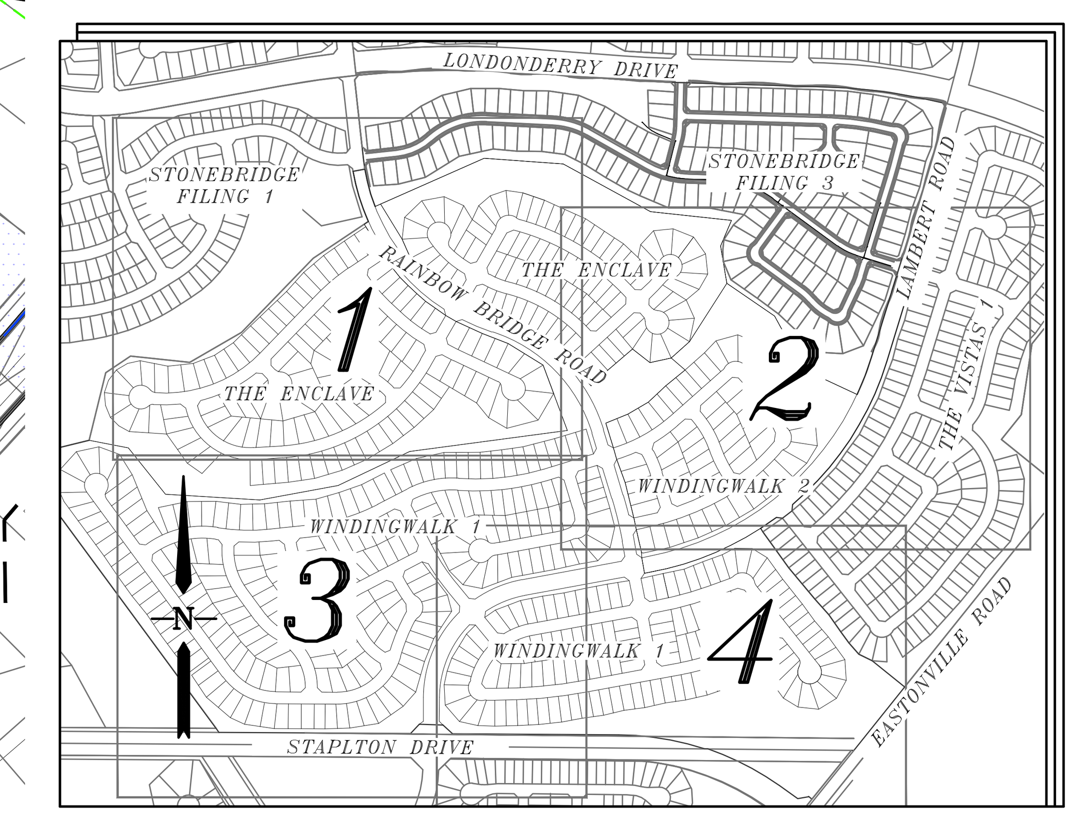

INDEX MAP

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FIGURE 6

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No.	Revisions	Date	Init.	Appr.	Date
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FAX: 719.495.2457

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PRELIMINARY DRAINAGE REPORT
WINDINGWALK - THE ENCLAVE PUD

Scale: AS SHOWN

Drawn by: LCG

Checked by: TAK

Date: DEC 2017