EXHIBIT I

Preliminary Storm Drainage Report
for
The RIFFLE Food Carts

March 2022

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RENEWAL DATE: 12/31/2022

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PURPOSE:

The purpose of this analysis is to:

- Describe existing and proposed site conditions.
- Provide detention calculations for the 2-yr, 5-yr, 10-yr, and 25-yr storm events.
- Provide water quality calculations.

PROJECT LOCATION AND DESCRIPTION:

The subject property is located at 37115 and 37133 Highway 26, Sandy, OR (Tax lots 1000 and 1200 Map 2S 4E 14BA). The project site is in the Twin Cedars Development adjacent to the Mt. Hood Athletic Club. The property is accessed by a private driveway off Highway 26 created as part of the Twin Cedars Subdivision Improvements. Tax lot 1000 is on the west side of the private driveway accessing the athletic club and tax lot 1200 is on the east side of the street. See below.

The portions of the sites that will be developed consist primarily of grass. The northeasterly corner of tax lot 1200 will be left in its natural state and the trees will be protected from construction activities. Private storm sewer pipes were stubbed to the two pad sites and were sized for the future development of these lots. The storm pipes drain south to an existing detention system that was sized to detain the private driveways only. It was anticipated that the pad sites, would provide detention as needed with future development.

PROPOSED IMPROVEMENTS

Development on tax lot 1200 includes the construction of food cart pads with utilities to accommodate up to 18 food carts, a new 3,600 square foot building, restrooms, and 22 space parking lot. Tax lot 1000 will be used for parking only and will have about 47 spaces.

The purpose of this Preliminary Storm Drainage Report is to calculate the amount of stormwater detention and water quality requirements that will be needed to develop the proposed project. Each tax lot will have its own storm detention and water quality system. Storm sewer pipes and catch basins will be installed to convey storm water to new private detention tanks, one on each site. New CDS water quality manholes will be installed downstream of each detention tank and new storm pipes will be installed to connect to the existing storm sewer stubs discussed above. The development on tax lot 1200 will be called Basin A and tax lot 1000 will be called Basin B in this report. See the Drainage Basin Map in Appendix D.

HYDROGRAPH PARAMETERS:

Rainfall

The rainfall distribution numbers below were taken from the City of Sandy Stormwater Website: https://www.ci.sandy.or.us/publicworks/page/stormwater

2 year, 24 hr. rainfall = 3.5”
5 year, 24 hr. rainfall = 4.5”
10 year, 24 hr. rainfall = 4.8”
25 year, 24 hr. rainfall = 5.5”

Soils

The soil data for this site is from *Soil Survey of Clackamas County, Oregon* published by the United Stated Department of Agriculture (USDA). The post-development soil is assumed to be the same as pre-development.

Soil Type: 15B, Cazadero silty clay loam. Hydrologic Group “C” (Basin A,Tax Lot 1200)
24B, Cottrell silty clay loam. Hydrologic Group “C” (Basin B, Tax Lot 1000)

Areas and Curve Numbers

Drainage basin areas were determined using a topographic map drafted in AutoCAD. See the Drainage Basin Map in Appendix D. See the tables below for detailed area breakdowns the corresponding CN values.

BASIN A Pre-Development		
Areas	**CN**	**Land Use Description**
Pervious (0.69 acres)	79	Pre-development-Soil Group C, City of Portland SWMM, Table A-8. Curve Numbers
Impervious (0.00 acres)	98	Post-development-impervious area, City of Portland SWMM, Table A-8. Curve Numbers
BASIN A Post-Development		
Areas	**CN**	**Land Use Description**
Pervious (0.00 acres)*	70	Grass Lawn-Soil Group C, City of Portland SDFDM, Table 6-5 Non-Composite Curve Numbers (CNs)
Impervious (0.69 acres)*	98	Post-development-impervious area, City of Portland SWMM, Table A-8. Curve Numbers

BASIN B Pre-Development		
Areas	**CN**	**Land Use Description**
Pervious (0.43 acres)	79	Pre-development-Soil Group C, City of Portland SWMM, Table A-8. Curve Numbers
Impervious (0.00 acres)	98	Post-development-impervious area, City of Portland SWMM, Table A-8. Curve Numbers
BASIN B Post-Development		
Areas	**CN**	**Land Use Description**
Pervious (0.00 acres)*	70	Grass Lawn-Soil Group C, City of Portland SDFDM, Table 6-5 Non-Composite Curve Numbers (CNs)
Impervious (0.43 acres)*	98	Post-development-impervious area, City of Portland SWMM, Table A-8. Curve Numbers

***** To be conservative, in these preliminary calculations, the developed site will be considered 100% impervious in reality there will be landscaped area.

Time of Concentration

The times of concentrations (Tc), used in the calculations:

Pre-development T_c= 10 minutes (assumed)
Post-development T_c= 5 minutes (assumed)

The post developed time of concentration was assumed to be the minimum 5 minutes, which is a conservative assumption.

Hydrograph Modeling Results
Hydrographs for the site were determined using a spreadsheet based on the King County, Washington Hydrograph Program, version 4.21B, which uses the Santa Barbara Urban Hydrograph (SBUH) method. See Appendix B and C for detailed results.

DETENTION SIZING RESULTS:

The Post-Development flows for Basin A were routed through a proposed 4-foot diameter detention tank and the Post-Development flows for Basin B were routed through a proposed 3-foot diameter detention tank. The detention tanks have been designed so that the Post-Developed release rates for the entire site do not exceed the Pre-Developed rates for the 2-year, 5-year, 10-year, and 25-year storm events per the City of Sandy Public Works Design Standards. See the Detention System Summary in Appendix B and C.

BASIN A Results			
Recurrence Interval (years)	**Pre-developed Flows (cfs)**	**Developed Flows (cfs)**	**Proposed Release Rates (cfs)**
2	0.242	0.630	0.240
5	0.393	0.816	0.393
10	0.440	0.872	0.436
25	0.553	1.002	0.553

The required storage volume is 1,462-cubic feet. This can be contained in 116.3 linear feet of a 4-foot diameter tank.

BASIN B Results			
Recurrence Interval (years)	**Pre-developed Flows (cfs)**	**Developed Flows (cfs)**	**Proposed Release Rates (cfs)**
2	0.151	0.393	0.151
5	0.245	0.509	0.245
10	0.274	0.543	0.271
25	0.345	0.624	0.345

The required storage volume is 1,026-cubic feet. This can be contained in 145.1 linear feet of a 3-foot diameter tank.

Flow Control:

The flow control orifices were designed to release the Post-development Peak Flows at or below the Pre-developed Peak Flows. (See the Detention System Summary - Appendix B and C)

BASIN A Orifice Table		
Orifice	**Dia. (inches)**	**Height (feet)**
Bottom	2.24	-1.00
Top	2.73	2.50

BASIN B Orifice Table		
Orifice	**Dia. (inches)**	**Height (feet)**
Bottom	2.05	-0.10
Top	2.29	1.98

WATER QUALITY DESIGN:

CDS Storm Water Treatment Device
A CDS manhole by Contech Stormwater Solutions was designed for each basin to provide the required water quality for the sites - see detail in Appendix E. The total impervious area for each basin was used to size the manholes.

The flow (Q) was calculated using the rational method (Q = CIA)

Where Q = flow (cfs)
C = runoff coefficient = 0.90 pavement and Roofs
I = Intensity = 0.2 inches per hour (Water Quality Design Storm)
A = Impervious Area = 0.69 Acres (Basin A)
A = Impervious Area = 0.43 Acres (Basin B)

Q = 0.90 X 0.2 X 0.69 **= 0.124 cfs (Basin A)**
Q = 0.90 X 0.2 X 0.43 **= 0.077 cfs (Basin A)**

The Contech Storm Water Treatment Device Model: CDS2015-4-C has a treatment capacity of 0.7 cfs which exceeds the above requirements. It also has an internal bypass capable of handling 10.0 cfs.

One CDS Model CDS2015-4-C, for each basin can be used to adequately treat the stormwater runoff from this project.

CONCLUSIONS:

- On-site detention has been designed to maintain existing downstream storm water runoff characteristics in accordance with the City of Sandy requirements.
- CDS Storm Water Treatment Devices will be used for water quality.
- The conveyance system for the project will be designed to handle the peak 25-year, 24-hour storm.
- At time of final engineering, these calculations should be updated as needed.

Appendix A

USDA Custom Soil Resource Report

Soil Map—Clackamas County Area, Oregon

Map Scale: 1:1,040 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

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 1:20,000.

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: Clackamas County Area, Oregon
Survey Area Data: Version 18, Oct 27, 2021

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

Date(s) aerial images were photographed: Jun 22, 2020—Jun 26, 2020

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
15B	Cazadero silty clay loam, 0 to 7 percent slopes	3.0	60.0%
24B	Cottrell silty clay loam, 2 to 8 percent slopes	2.0	40.0%
Totals for Area of Interest		**5.0**	**100.0%**

Clackamas County Area, Oregon

15B—Cazadero silty clay loam, 0 to 7 percent slopes

Map Unit Setting

National map unit symbol: 223c
Elevation: 300 to 900 feet
Mean annual precipitation: 48 to 85 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cazadero and similar soils: 85 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazadero

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old mixed alluvium

Typical profile

H1 - 0 to 21 inches: silty clay loam
H2 - 21 to 75 inches: clay

Properties and qualities

Slope: 0 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F003XC003OR - Glaciated Western Cascades Mesic Udic Forest Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)

Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

Minor Components

Borges

Percent of map unit: 2 percent
Landform: Hillslopes, depressions on terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 18, Oct 27, 2021

Clackamas County Area, Oregon

24B—Cottrell silty clay loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 223v
Elevation: 300 to 900 feet
Mean annual precipitation: 45 to 80 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 140 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cottrell and similar soils: 90 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cottrell

Setting

Landform: Hillslopes, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, base slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old alluvium

Typical profile

H1 - 0 to 24 inches: silty clay loam
H2 - 24 to 55 inches: silty clay
H3 - 55 to 86 inches: silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: F002XB006OR - Foothill Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)

Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Borges

Percent of map unit: 4 percent
Landform: Hillslopes, depressions on terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Aquults

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 18, Oct 27, 2021

Appendix B

Basin A, Detailed Hydrographs, Analysis, Data, Detention Design

Project Name: The Riffles Parking Lot - Basin A
Hydrograph Analysis Summary

Job # 21-092
Date: 3/18/2022

Rainfall (year)	Rainfall (inches)
2	3.50
5	4.50
10	4.80
25	5.50
100	0.00

Pre-Developed

Pervious		
Area =	0.69	acres
CN =	79	na
Impervious		
Area =	0	acres
CN =	98	na
Tc =	10	min
Total A =	0.69	acres

Developed

Pervious		
Area =	0	acres
CN =	70	na
Impervious		
Area =	0.69	acres
CN =	98	na
Tc =	5	min
Total A =	0.69	acres

Note: The hydrographs shown are based on the S.C.S. Type - 1A, 24 hour storm using the SBUH method based on the King County Model.

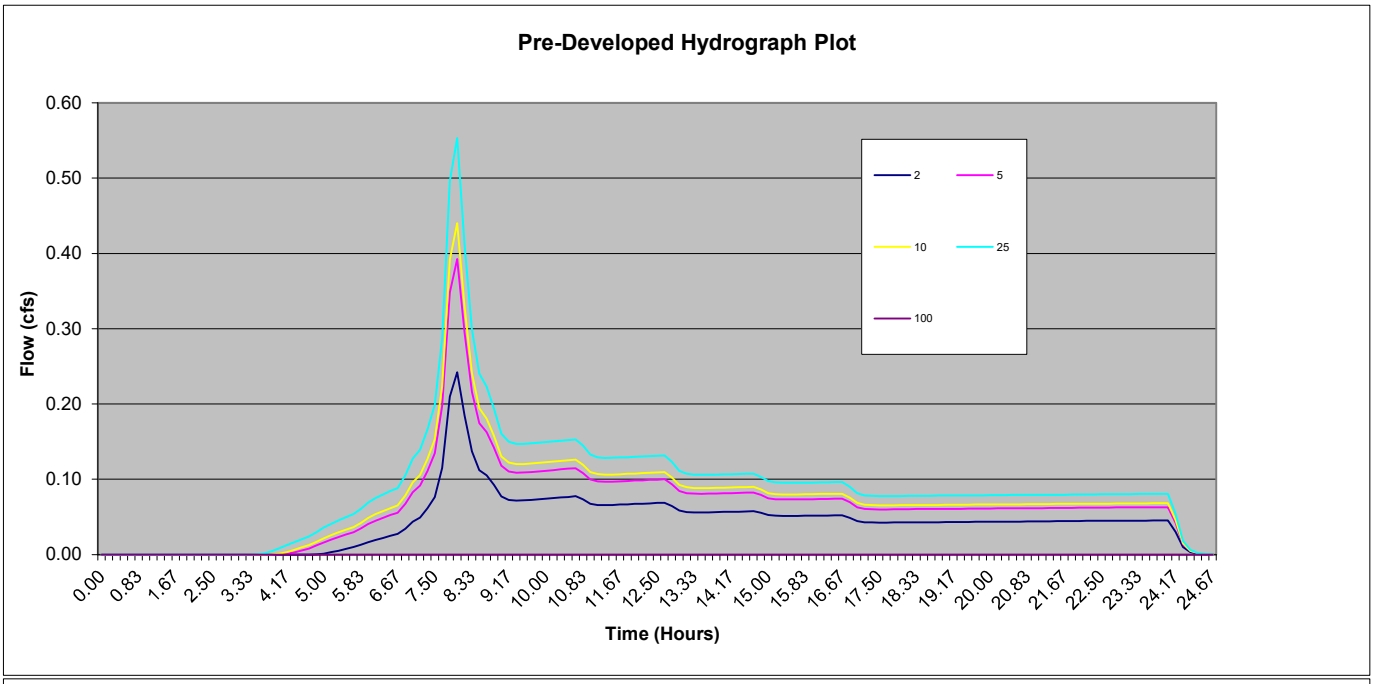
		Pre-Developed Hydrographs					Developed Hydrographs				
Year	=======>	**2**	**5**	**10**	**25**	**100**	**2**	**5**	**10**	**25**	**100**
Qpeak	cfs =>	**0.24**	**0.39**	**0.44**	**0.55**	**0.00**	**0.63**	**0.82**	**0.87**	**1.00**	**0.00**
Volume	cf =>	3,920	5,949	6,585	8,103	-	8,179	10,677	11,427	13,177	-
Tpeak	min =>	480	480	480	480	10	470	470	470	470	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17	7.83	7.83	7.83	7.83	0.17
Hydrograph Name=>		2	5	10	25	100	2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
40	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.00
50	0.83	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.00
60	1.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.04	0.00
70	1.17	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.00
80	1.33	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.05	0.00
90	1.50	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.06	0.00
100	1.67	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.06	0.00
110	1.83	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.06	0.07	0.00
120	2.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.07	0.09	0.00
130	2.17	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.07	0.09	0.00
140	2.33	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.08	0.09	0.00
150	2.50	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.08	0.10	0.00
160	2.67	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.08	0.10	0.00
170	2.83	0.00	0.00	0.00	0.00	0.00	0.06	0.08	0.09	0.11	0.00
180	3.00	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.10	0.12	0.00
190	3.17	0.00	0.00	0.00	0.00	0.00	0.07	0.10	0.10	0.12	0.00
200	3.33	0.00	0.00	0.00	0.00	0.00	0.07	0.10	0.11	0.12	0.00
210	3.50	0.00	0.00	0.00	0.00	0.00	0.07	0.10	0.11	0.13	0.00
220	3.67	0.00	0.00	0.00	0.00	0.00	0.07	0.10	0.11	0.13	0.00
230	3.83	0.00	0.00	0.00	0.00	0.00	0.08	0.11	0.12	0.14	0.00
240	4.00	0.00	0.00	0.00	0.01	0.00	0.09	0.12	0.13	0.15	0.00
250	4.17	0.00	0.00	0.00	0.01	0.00	0.09	0.12	0.13	0.15	0.00
260	4.33	0.00	0.00	0.01	0.02	0.00	0.09	0.12	0.13	0.15	0.00
270	4.50	0.00	0.01	0.01	0.02	0.00	0.09	0.12	0.13	0.15	0.00
280	4.67	0.00	0.01	0.01	0.02	0.00	0.09	0.12	0.13	0.15	0.00
290	4.83	0.00	0.01	0.02	0.03	0.00	0.10	0.13	0.14	0.17	0.00
300	5.00	0.00	0.02	0.02	0.04	0.00	0.11	0.15	0.16	0.18	0.00
310	5.17	0.00	0.02	0.03	0.04	0.00	0.11	0.15	0.16	0.18	0.00
320	5.33	0.01	0.02	0.03	0.05	0.00	0.11	0.15	0.16	0.18	0.00
330	5.50	0.01	0.03	0.03	0.05	0.00	0.11	0.15	0.16	0.18	0.00
340	5.67	0.01	0.03	0.04	0.05	0.00	0.11	0.15	0.16	0.18	0.00
350	5.83	0.01	0.03	0.04	0.06	0.00	0.12	0.16	0.17	0.20	0.00
360	6.00	0.02	0.04	0.05	0.07	0.00	0.13	0.17	0.18	0.21	0.00
370	6.17	0.02	0.04	0.05	0.07	0.00	0.13	0.17	0.18	0.21	0.00
380	6.33	0.02	0.05	0.06	0.08	0.00	0.13	0.17	0.19	0.21	0.00
390	6.50	0.02	0.05	0.06	0.08	0.00	0.13	0.17	0.19	0.21	0.00
400	6.67	0.03	0.06	0.07	0.09	0.00	0.13	0.17	0.19	0.21	0.00
410	6.83	0.03	0.07	0.08	0.11	0.00	0.16	0.21	0.22	0.26	0.00
420	7.00	0.04	0.08	0.10	0.13	0.00	0.19	0.24	0.26	0.30	0.00
430	7.17	0.05	0.09	0.11	0.14	0.00	0.19	0.24	0.26	0.30	0.00
440	7.33	0.06	0.11	0.13	0.17	0.00	0.22	0.29	0.31	0.35	0.00
450	7.50	0.08	0.13	0.15	0.20	0.00	0.26	0.33	0.36	0.41	0.00
460	7.67	0.12	0.20	0.22	0.29	0.00	0.37	0.48	0.51	0.59	0.00
470	7.83	0.21	0.35	0.39	0.50	0.00	0.63	0.82	0.87	1.00	0.00
480	8.00	0.24	0.39	0.44	0.55	0.00	0.58	0.75	0.80	0.92	0.00
490	8.17	0.18	0.29	0.33	0.41	0.00	0.32	0.42	0.45	0.51	0.00
500	8.33	0.14	0.22	0.24	0.30	0.00	0.23	0.29	0.31	0.36	0.00
510	8.50	0.11	0.17	0.19	0.24	0.00	0.19	0.25	0.27	0.31	0.00
520	8.67	0.11	0.16	0.18	0.22	0.00	0.19	0.25	0.27	0.31	0.00

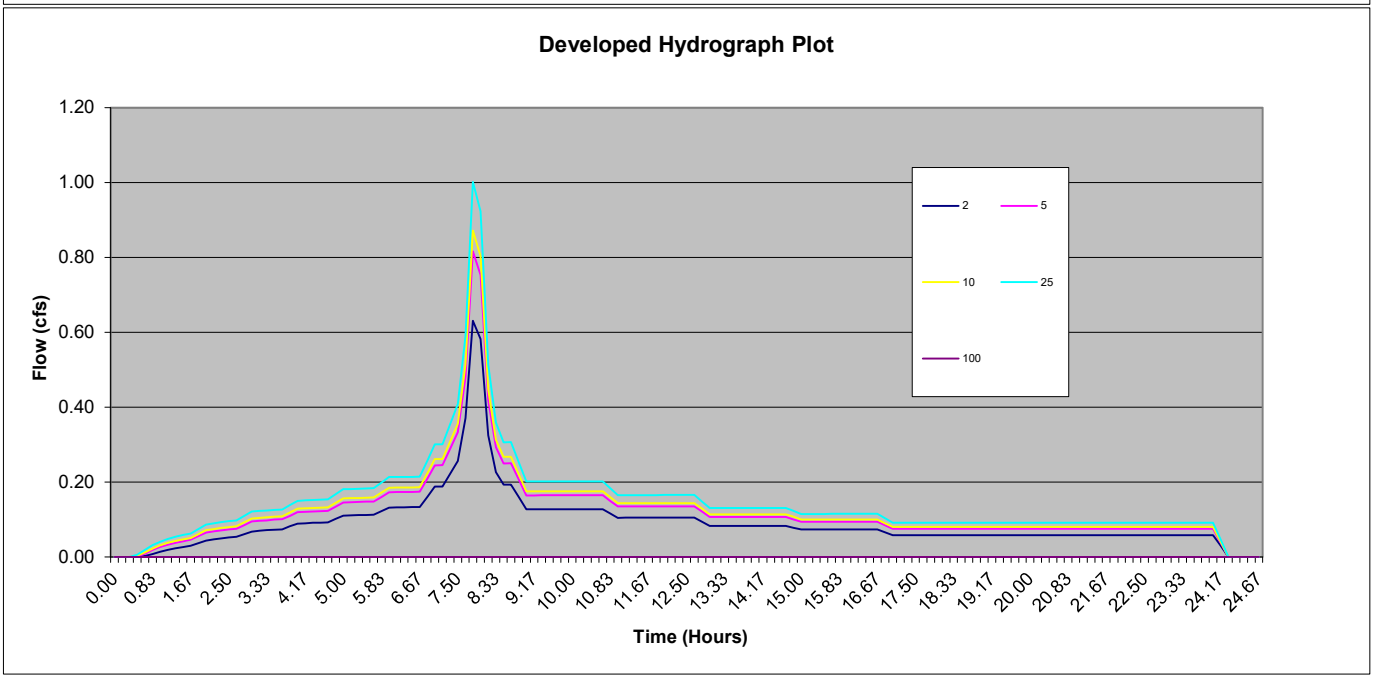
		Pre-Developed Hydrographs					Developed Hydrographs				
Year	=======>	2	5	10	25	100	2	5	10	25	100
Qpeak	cfs =>	0.24	0.39	0.44	0.55	0.00	0.63	0.82	0.87	1.00	0.00
Volume	cf =>	3,920	5,949	6,585	8,103	-	8,179	10,677	11,427	13,177	-
Tpeak	min =>	480	480	480	480	10	470	470	470	470	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17	7.83	7.83	7.83	7.83	0.17
Hydrograph Name=>		2	5	10	25	100	2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)
530	8.83	0.09	0.14	0.16	0.19	0.00	0.16	0.21	0.22	0.25	0.00
540	9.00	0.08	0.12	0.13	0.16	0.00	0.13	0.16	0.18	0.20	0.00
550	9.17	0.07	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
560	9.33	0.07	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
570	9.50	0.07	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
580	9.67	0.07	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
590	9.83	0.07	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
600	10.00	0.07	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
610	10.17	0.08	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
620	10.33	0.08	0.11	0.12	0.15	0.00	0.13	0.16	0.18	0.20	0.00
630	10.50	0.08	0.11	0.13	0.15	0.00	0.13	0.16	0.18	0.20	0.00
640	10.67	0.08	0.11	0.13	0.15	0.00	0.13	0.16	0.18	0.20	0.00
650	10.83	0.07	0.11	0.12	0.14	0.00	0.12	0.15	0.16	0.18	0.00
660	11.00	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
670	11.17	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
680	11.33	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
690	11.50	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
700	11.67	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
710	11.83	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
720	12.00	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
730	12.17	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
740	12.33	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
750	12.50	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
760	12.67	0.07	0.10	0.11	0.13	0.00	0.10	0.13	0.14	0.16	0.00
770	12.83	0.06	0.09	0.10	0.12	0.00	0.09	0.12	0.13	0.15	0.00
780	13.00	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
790	13.17	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
800	13.33	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
810	13.50	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
820	13.67	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
830	13.83	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
840	14.00	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
850	14.17	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
860	14.33	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
870	14.50	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
880	14.67	0.06	0.08	0.09	0.11	0.00	0.08	0.11	0.11	0.13	0.00
890	14.83	0.06	0.08	0.09	0.10	0.00	0.08	0.10	0.11	0.12	0.00
900	15.00	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
910	15.17	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
920	15.33	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
930	15.50	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
940	15.67	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
950	15.83	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
960	16.00	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
970	16.17	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
980	16.33	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
990	16.50	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
1000	16.67	0.05	0.07	0.08	0.10	0.00	0.07	0.09	0.10	0.11	0.00
1010	16.83	0.05	0.07	0.08	0.09	0.00	0.07	0.08	0.09	0.10	0.00
1020	17.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1030	17.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1040	17.33	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1050	17.50	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1060	17.67	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1070	17.83	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1080	18.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1090	18.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1100	18.33	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1110	18.50	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1120	18.67	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1130	18.83	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1140	19.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1150	19.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1160	19.33	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1170	19.50	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1180	19.67	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1190	19.83	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1200	20.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1210	20.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1220	20.33	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1230	20.50	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00

		Pre-Developed Hydrographs					Developed Hydrographs				
Year =======>		2	5	10	25	100	2	5	10	25	100
Qpeak cfs =>		0.24	0.39	0.44	0.55	0.00	0.63	0.82	0.87	1.00	0.00
Volume cf =>		3,920	5,949	6,585	8,103	-	8,179	10,677	11,427	13,177	-
Tpeak min =>		480	480	480	480	10	470	470	470	470	10
Tpeak hr =>		8.00	8.00	8.00	8.00	0.17	7.83	7.83	7.83	7.83	0.17
Hydrograph Name=>		2	5	10	25	100	2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)
1240	20.67	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1250	20.83	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1260	21.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1270	21.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1280	21.33	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1290	21.50	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1300	21.67	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1310	21.83	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1320	22.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1330	22.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1340	22.33	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1350	22.50	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1360	22.67	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1370	22.83	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1380	23.00	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1390	23.17	0.04	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1400	23.33	0.05	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1410	23.50	0.05	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1420	23.67	0.05	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1430	23.83	0.05	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1440	24.00	0.05	0.06	0.07	0.08	0.00	0.06	0.07	0.08	0.09	0.00
1450	24.17	0.03	0.04	0.05	0.05	0.00	0.03	0.04	0.04	0.05	0.00
1460	24.33	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
1470	24.50	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1480	24.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	24.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	24.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pre-Developed Hydrographs						
Year	=======>	2	5	10	25	100
Qpeak	cfs =>	0.24	0.39	0.44	0.55	0.00
Volume	cf =>	3,920	5,949	6,585	8,103	-
Tpeak	min =>	480	480	480	480	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17
Hydrograph Name=>		2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

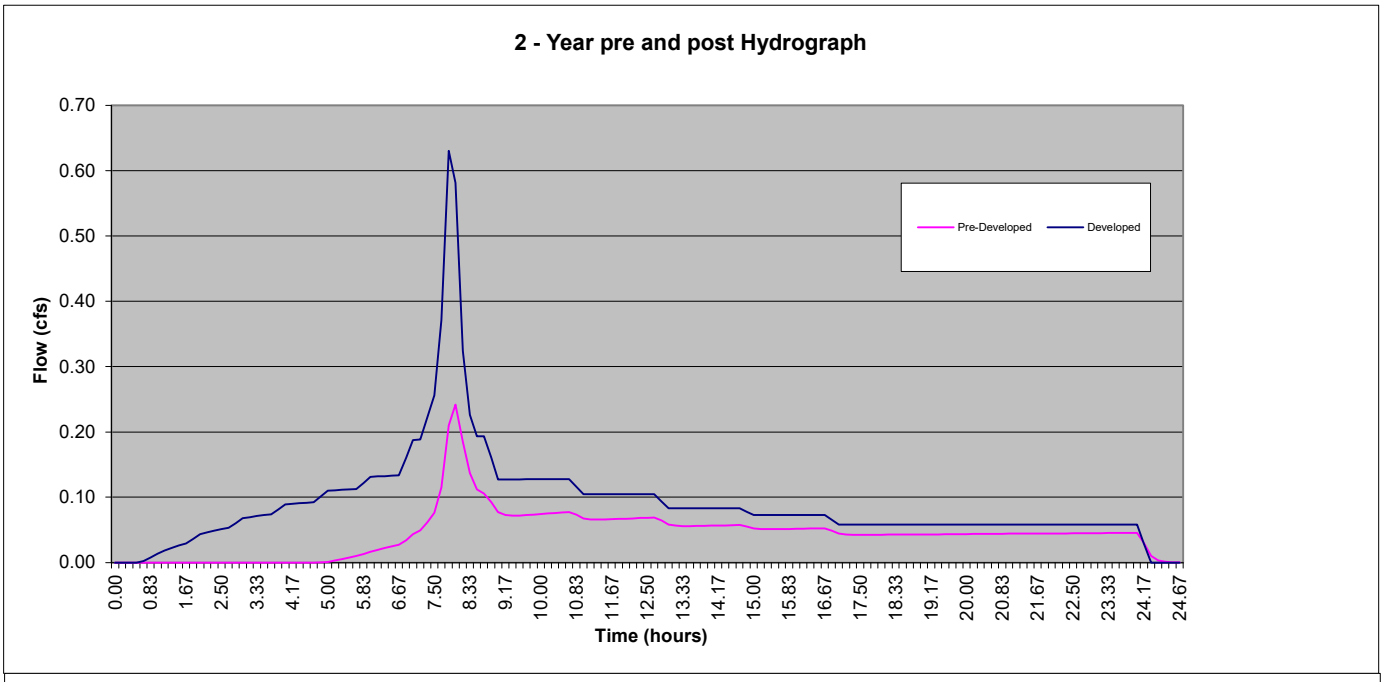
Developed Hydrographs					
2	5	10	25	100
0.63	0.82	0.87	1.00	0.00
8,179	10,677	11,427	13,177	-
470	470	470	470	10
7.83	7.83	7.83	7.83	0.17
2	5	10	25	100
Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

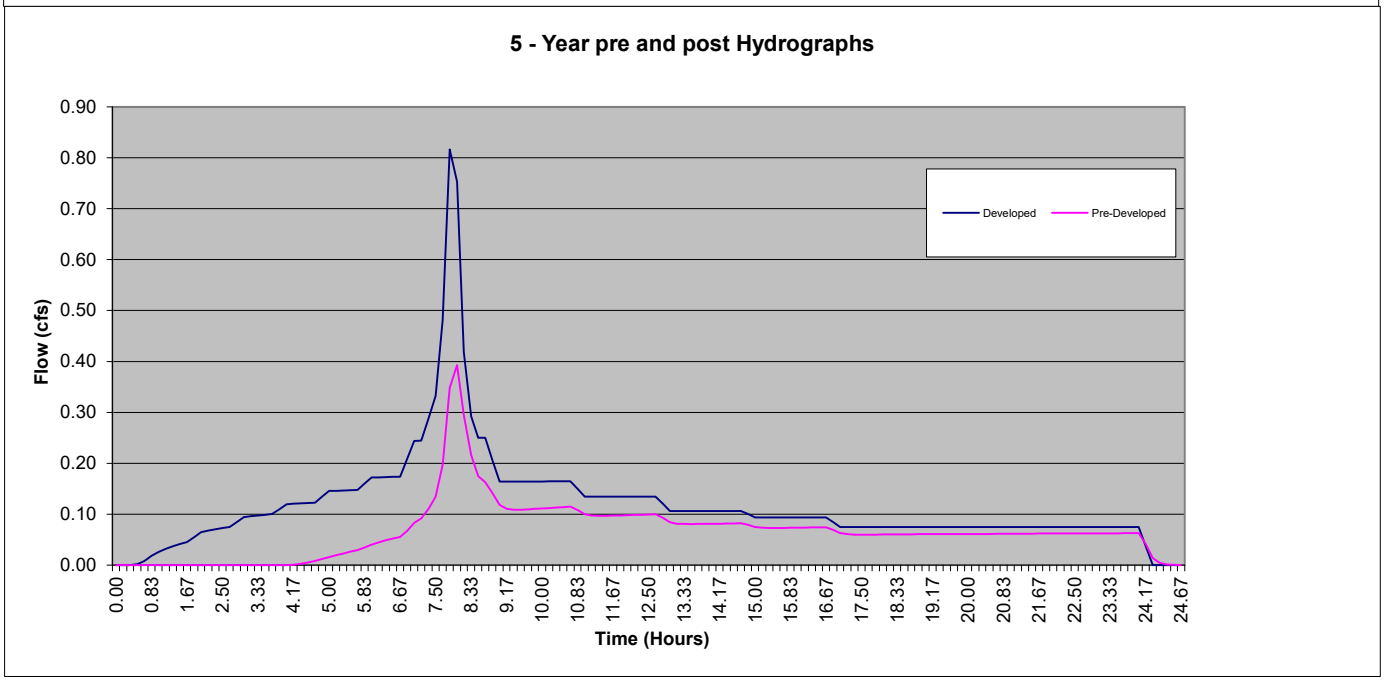




Pre-Developed Hydrographs						
Year ========>		2	5	10	25	100
Qpeak	cfs =>	0.24	0.39	0.44	0.55	0.00
Volume	cf =>	3,920	5,949	6,585	8,103	-
Tpeak	min =>	480	480	480	480	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17
Hydrograph Name=>		2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

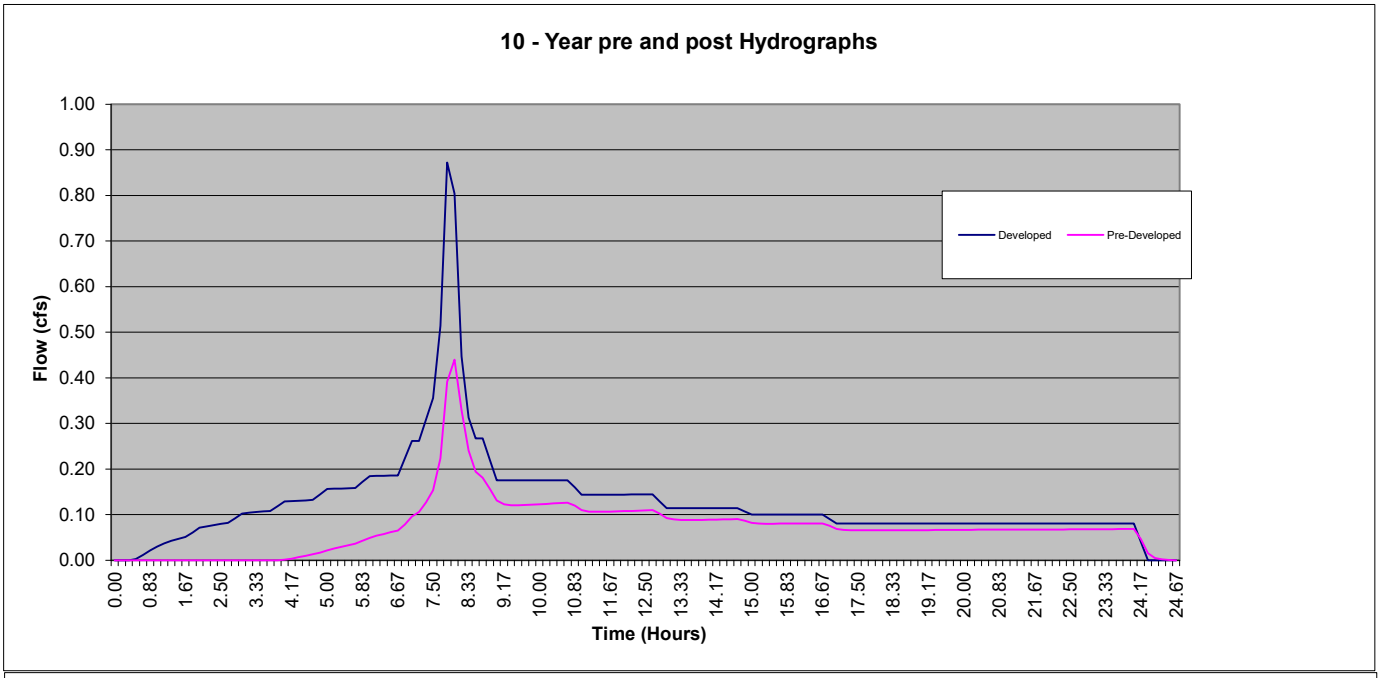
Developed Hydrographs					
2	5	10	25	100
0.63	0.82	0.87	1.00	0.00
8,179	10,677	11,427	13,177	-
470	470	470	470	10
7.83	7.83	7.83	7.83	0.17
2	5	10	25	100
Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

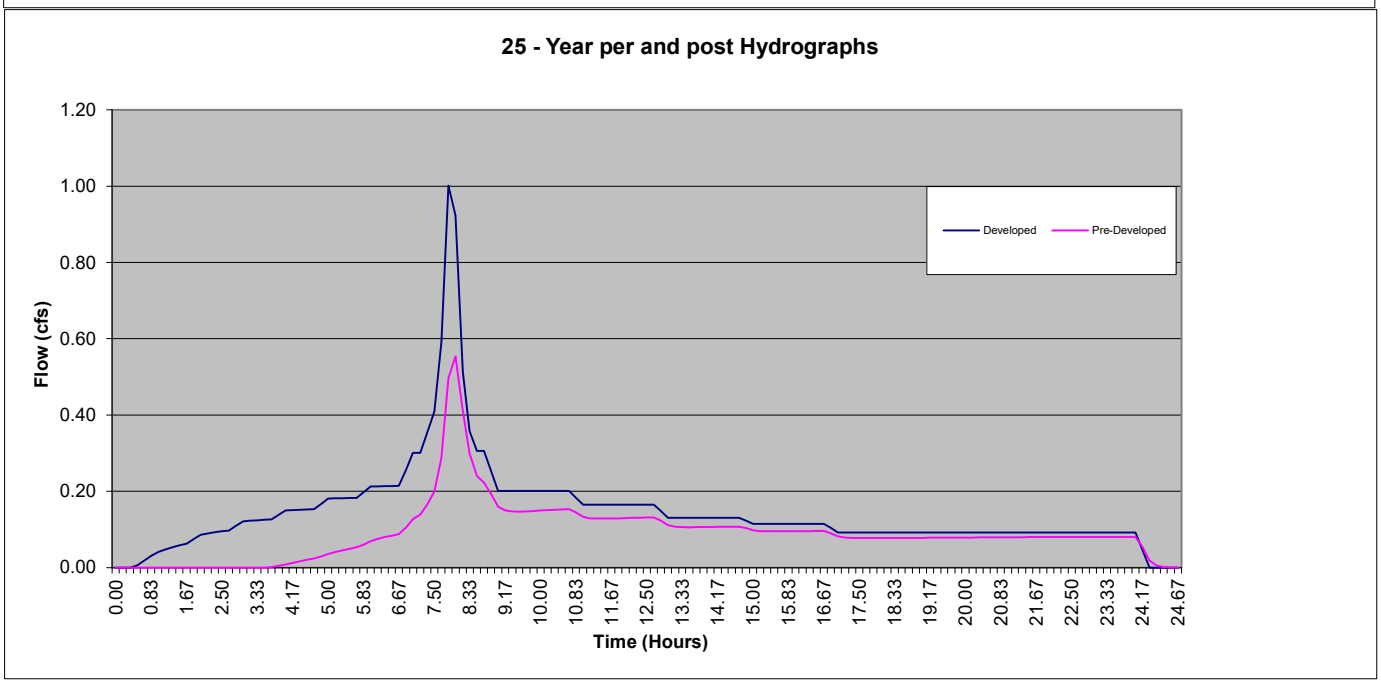




Pre-Developed Hydrographs						
Year	=======>	2	5	10	25	100
Qpeak	cfs =>	0.24	0.39	0.44	0.55	0.00
Volume	cf =>	3,920	5,949	6,585	8,103	-
Tpeak	min =>	480	480	480	480	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17
Hydrograph Name=>		2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

Developed Hydrographs				
2	5	10	25	100
0.63	0.82	0.87	1.00	0.00
8,179	10,677	11,427	13,177	-
470	470	470	470	10
7.83	7.83	7.83	7.83	0.17
2	5	10	25	100
Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)





Project Name: The Riffles Parking Lot - Basin A

Detention System Summary

Job # 21-092

Date: 3/18/2022

Note: The detention system design is based on the King County Model "Facility Design Routine".

1) Detention Facility Design Input:

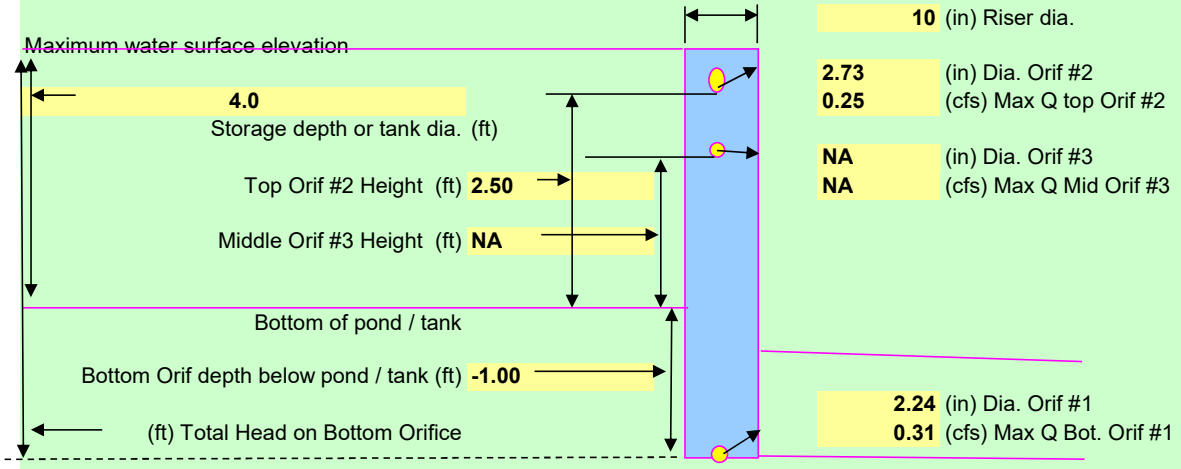
2) Type of facility:		DETENTION TANK	
3) Pond side slopes:	3	NA	
4) Tank Diameter:	**4**	**ft**	
5) Vertical permeability	0	min/in	
6) Number of orifices:	2		
7) Riser dia. =>	10	in	
8) Orifice coefficient	0.62	(typically 0.62)	
9) IE - bottom orifice:	-1	ft (distance below bottom of pond - Negative #)	
10) Max Q Bottom Orif. #1	0.31	cfs	
11) Top Orif #2 Height =	2.5	ft	
12) Max Q Mid Orif. #3	0.00	cfs	Orifice not being used
13) Mid Orif #3 Height =	0.00	ft	Orifice not being used

Detention Facility Design Results:

Performance year	Developed Inflow cfs	Pre-Developed Outflow cfs	**Actual Outflow cfs**	Peak Stage ft	Storage cf
100	0	0	**0**	0	-
25	1.00	0.55	**0.55**	4.00	1,462
10	0.87	0.44	**0.44**	3.12	1,223
5	0.82	0.39	**0.39**	2.88	1,126
2	0.63	0.24	**0.24**	2.09	774
			Required Storage ====		1,462

	Bottom Orif.	Middle Orif.	Top Orif.	Optional Weir Design
Total Q =	0.31	0.00	0.25	(for top orifice)
Head (ft) =	5.00	0.00	1.50	0.64 La (ft)
Dist. from bottom of pond (ft) =	-1.00	NA	2.50	87.91 < deg.
Orif. Dia. (in) =	2.24	0.00	2.73	Weir is an option

FLOW CONTROL STRUCTURE SCHEMATIC



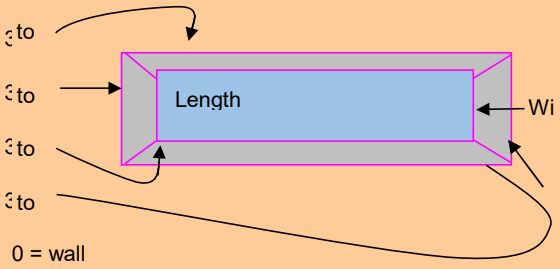
Project Name:	The Riffles Parking Lot - Basin A
Detention Facility Type	
Job #	21-092
Date:	3/18/2022

Detention Facility Type:

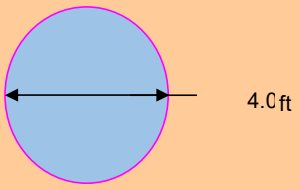
DETENTION TANK

L =	**116.3**	**ft**
W =	**116.3**	**ft**
D =	**4.0**	**ft**
Tank Vol. =	**1,462**	**cf**

DETENTION POND
NA



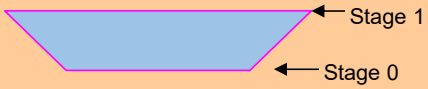
DETENTION TANK

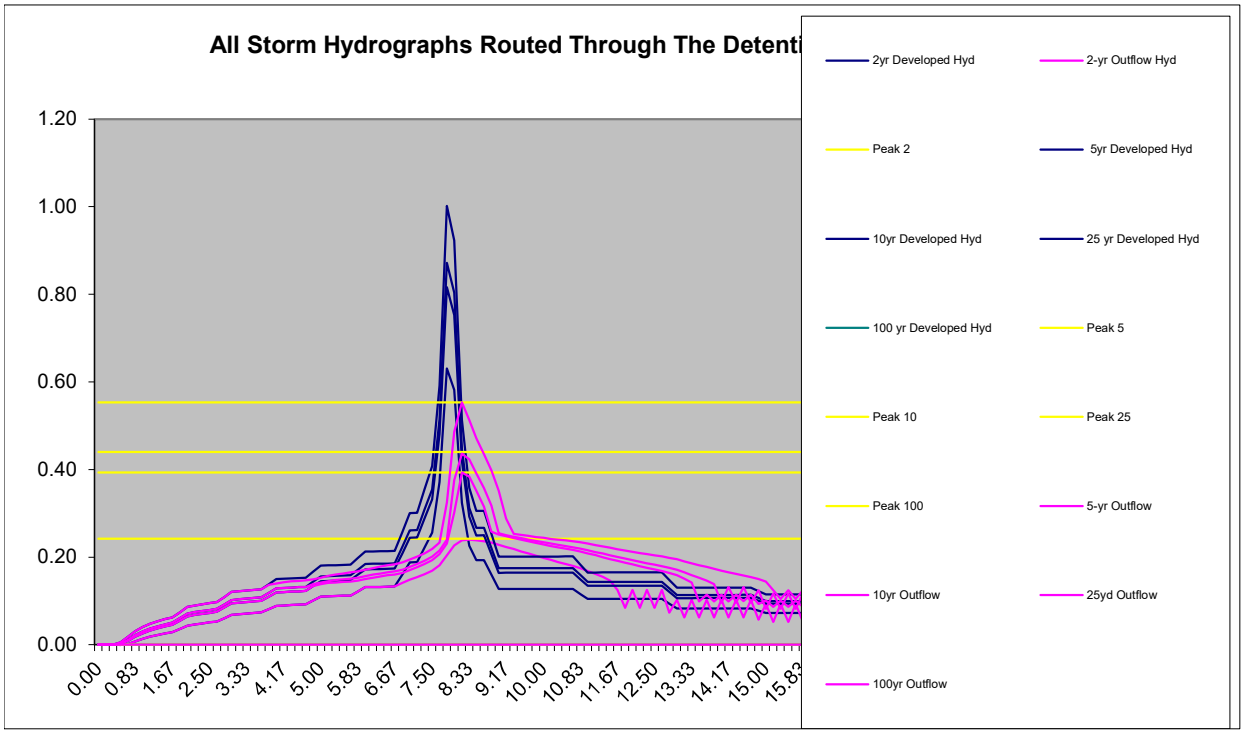


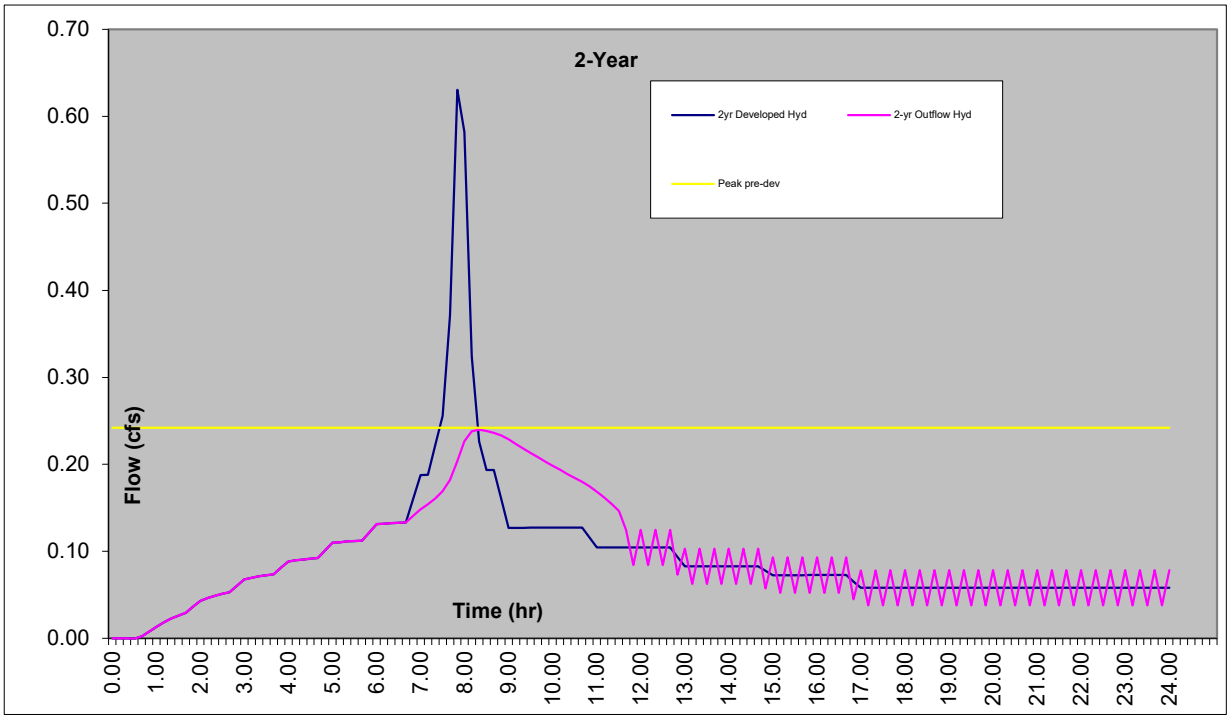
USER DEFINED POND
NA

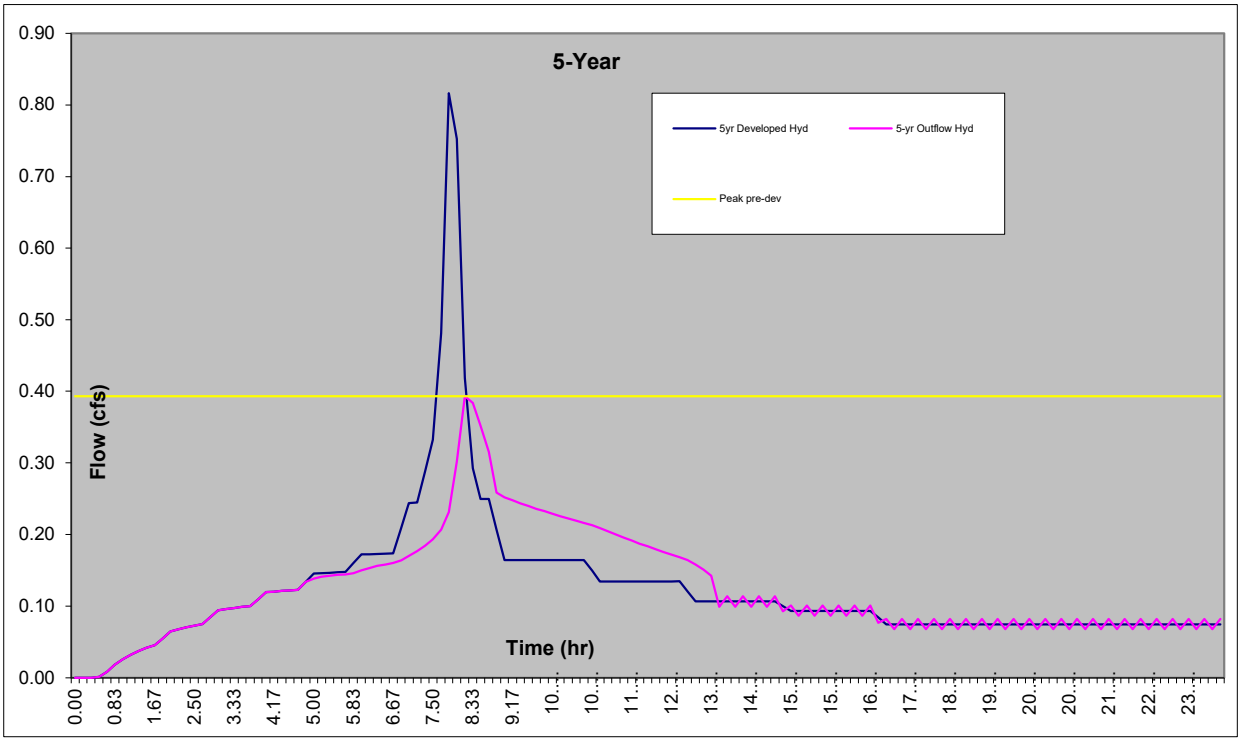
Pond Geometry

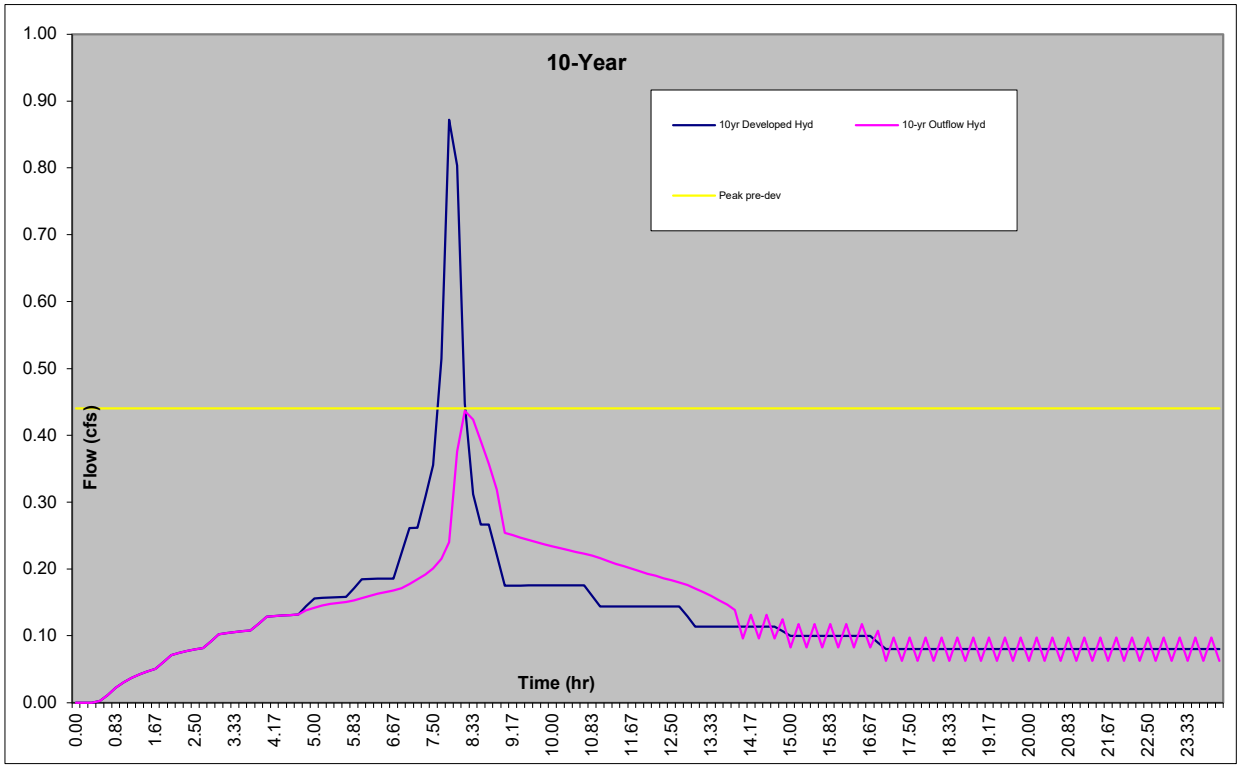
Stage (ft)	Area (sf)
0	NA
1	NA
2	NA
3	NA
4	NA
5	NA
6	NA
7	NA
8	NA
9	NA
10	NA
11	NA
12	NA
13	NA
14	NA
15	NA

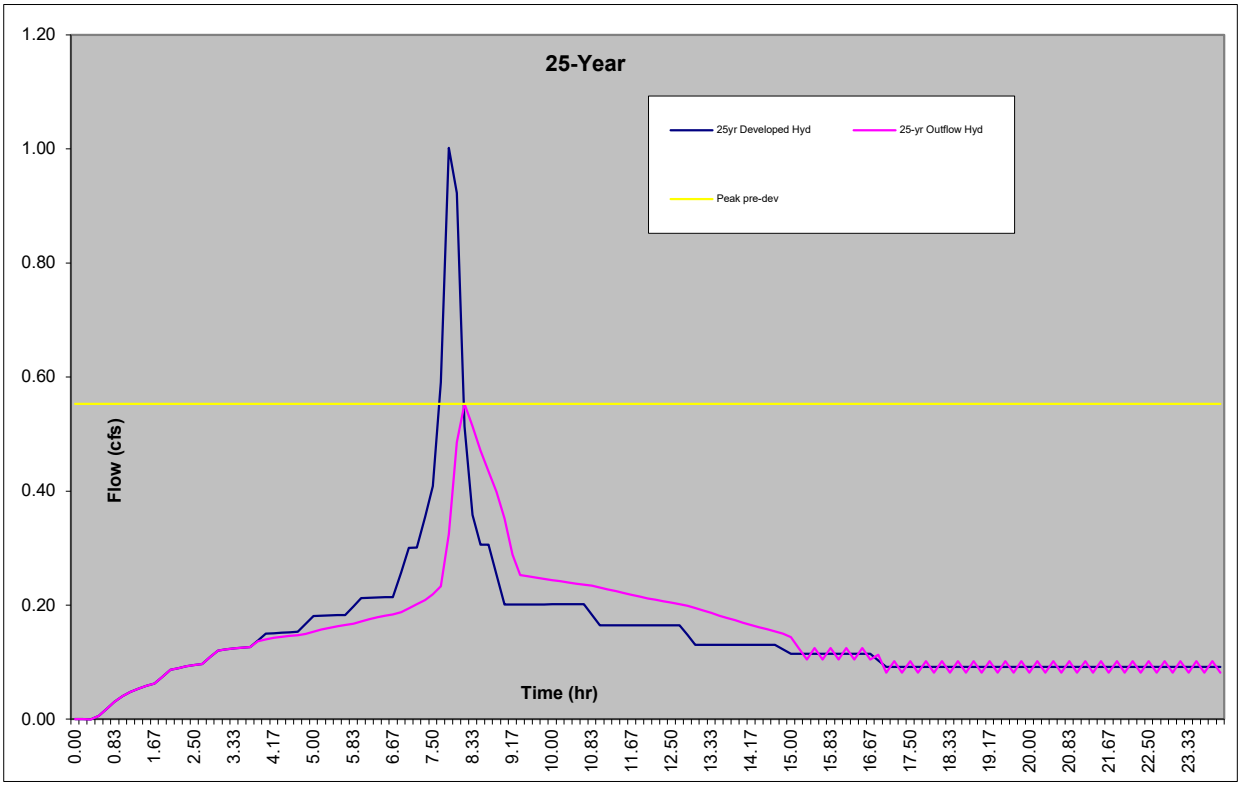



All Storm Hydrographs Routed Through The Detenti
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17
10.00
10.83
11.67
12.50
13.33
14.17
15.00
15.83
2yr Developed Hyd
2-yr Outflow Hyd
Peak 2
5yr Developed Hyd
10yr Developed Hyd
25 yr Developed Hyd
100 yr Developed Hyd
Peak 5
Peak 10
Peak 25
Peak 100
5-yr Outflow
10yr Outflow
25yd Outflow
100yr Outflow


2-Year
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Flow (cfs)
Time (hr)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
24.00
2yr Developed Hyd
2-yr Outflow Hyd
Peak pre-dev


5-Year
5yr Developed Hyd
5-yr Outflow Hyd
Peak pre-dev
Flow (cfs)
Time (hr)
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17


10-Year
10yr Developed Hyd
10-yr Outflow Hyd
Peak pre-dev
Flow (cfs)
Time (hr)
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17
10.00
10.83
11.67
12.50
13.33
14.17
15.00
15.83
16.67
17.50
18.33
19.17
20.00
20.83
21.67
22.50
23.33


25-Year
25yr Developed Hyd
25-yr Outflow Hyd
Peak pre-dev
Flow (cfs)
Time (hr)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17
10.00
10.83
11.67
12.50
13.33
14.17
15.00
15.83
16.67
17.50
18.33
19.17
20.00
20.83
21.67
22.50
23.33

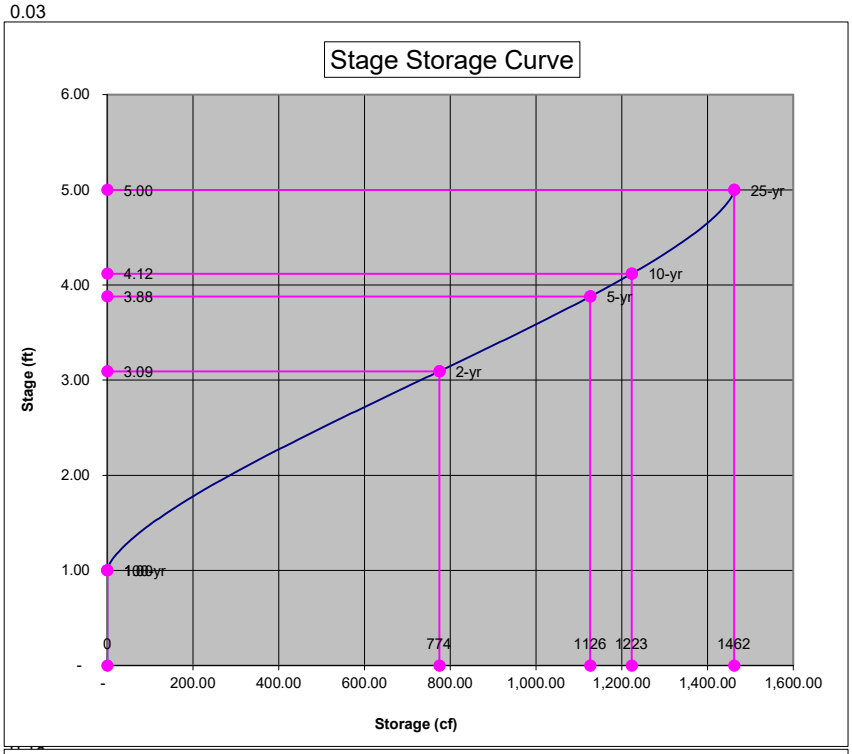
Project Name: The Riffles Parking Lot - Basin A

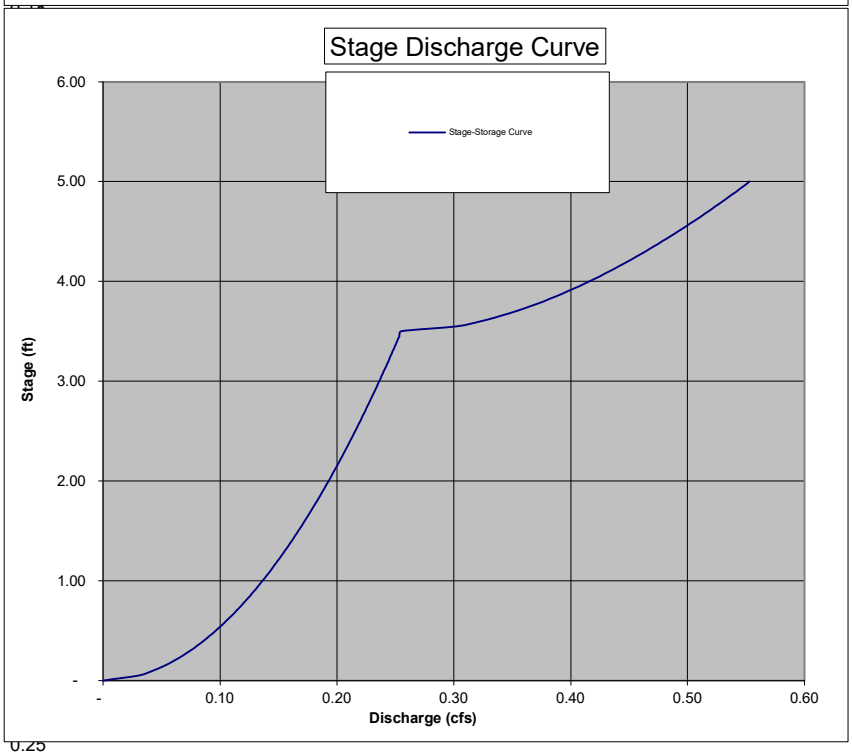
Stage Storage Summary

Job # 21-092

Date: 3/18/2022

Stage ft	Storage cf	Discharge cfs
-	-	-
0.05	-	0.03
0.10	-	
0.15	-	
0.20	-	
0.25	-	
0.30	-	
0.35	-	
0.40	-	
0.45	-	
0.50	-	
0.55	-	
0.60	-	
0.65	-	
0.70	-	
0.75	-	
0.80	-	
0.85	-	
0.90	-	
0.95	-	
1.00	-	
1.05	3.45	
1.10	9.73	
1.15	17.81	
1.20	27.32	
1.25	38.03	
1.30	49.80	
1.35	62.51	
1.40	76.06	
1.45	90.40	
1.50	105.44	
1.55	121.15	
1.60	137.47	
1.65	154.36	
1.70	171.78	
1.75	189.70	
1.80	208.09	
1.85	226.91	
1.90	246.14	
1.95	265.75	
2.00	285.73	
2.05	306.03	
2.10	326.66	
2.15	347.57	
2.20	368.76	
2.25	390.20	
2.30	411.88	
2.35	433.78	
2.40	455.87	
2.45	478.15	
2.50	500.59	
2.55	523.19	
2.60	545.92	
2.65	568.76	
2.70	591.71	
2.75	614.75	
2.80	637.87	
2.85	661.04	
2.90	684.25	
2.95	707.50	
3.00	730.75	
3.05	754.01	
3.10	777.26	
3.15	800.47	
3.20	823.64	
3.25	846.75	0.25





Stage ft	Storage cf	Discharge cfs
3.30	869.79	0.25
3.35	892.74	0.25
3.40	915.59	0.25
3.45	938.32	0.25
3.50	960.91	0.26
3.55	983.36	0.30
3.60	1,005.64	0.32
3.65	1,027.73	0.34
3.70	1,049.63	0.35
3.75	1,071.30	0.37
3.80	1,092.75	0.38
3.85	1,113.93	0.39
3.90	1,134.85	0.40
3.95	1,155.47	0.41
4.00	1,175.78	0.42
4.05	1,195.75	0.42
4.10	1,215.37	0.43
4.15	1,234.60	0.44
4.20	1,253.42	0.45
4.25	1,271.81	0.46
4.30	1,289.73	0.46
4.35	1,307.15	0.47
4.40	1,324.04	0.48
4.45	1,340.36	0.49
4.50	1,356.06	0.49
4.55	1,371.11	0.50
4.60	1,385.44	0.50
4.65	1,399.00	0.51
4.70	1,411.71	0.52
4.75	1,423.47	0.52
4.80	1,434.19	0.53
4.85	1,443.69	0.54
4.90	1,451.77	0.54
4.95	1,458.05	0.55
5.00	1,461.51	0.55

Appendix C

Basin A, Detailed Hydrographs, Analysis, Data, Detention Design

Project Name: The Riffles Parking Lot - Basin B
Hydrograph Analysis Summary

Job # 21-092
Date: 3/18/2022

Rainfall (year)	Rainfall (inches)
2	3.50
5	4.50
10	4.80
25	5.50
100	0.00

Pre-Developed

Pervious		
Area =	0.43	acres
CN =	79	na
Impervious		
Area =	0	acres
CN =	98	na
Tc =	10	min
Total A =	0.43	acres

Developed

Pervious		
Area =	0	acres
CN =	70	na
Impervious		
Area =	0.43	acres
CN =	98	na
Tc =	5	min
Total A =	0.43	acres

Note: The hydrographs shown are based on the S.C.S. Type - 1A, 24 hour storm using the SBUH method based on the King County Model.

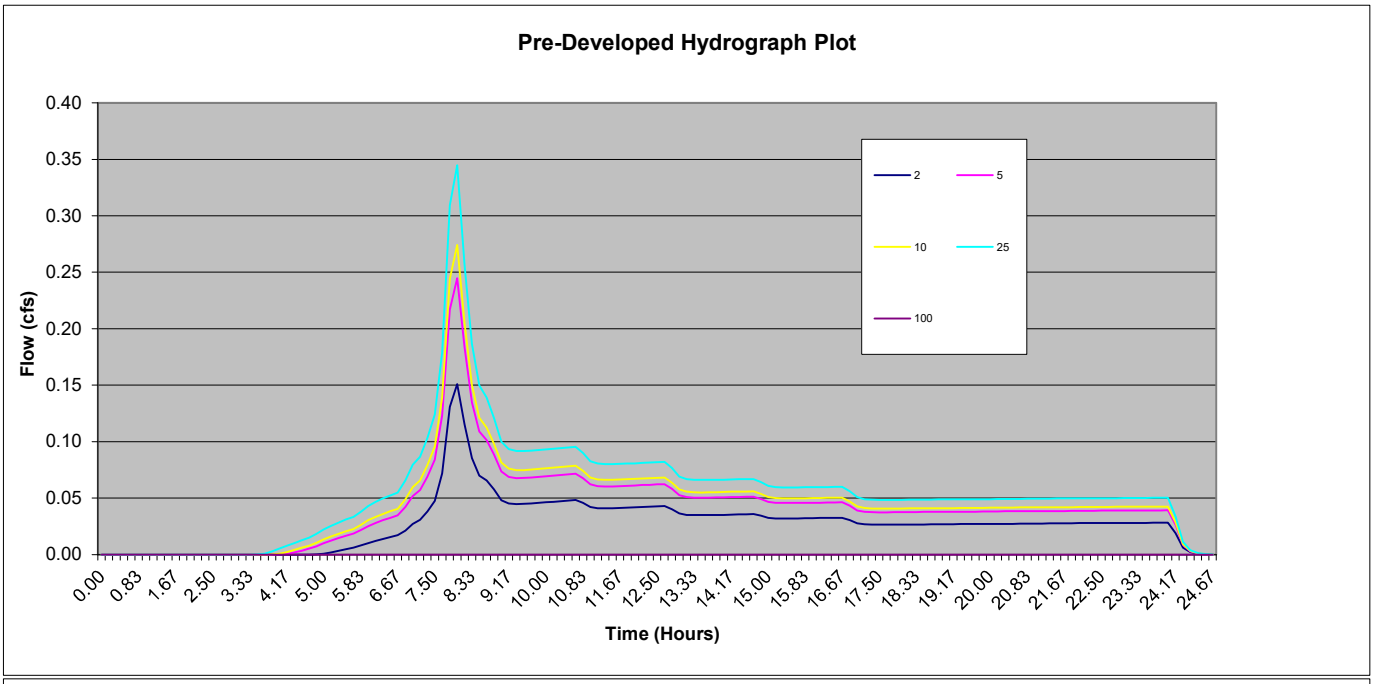
		Pre-Developed Hydrographs					Developed Hydrographs				
Year	=======>	**2**	**5**	**10**	**25**	**100**	**2**	**5**	**10**	**25**	**100**
Qpeak	cfs =>	**0.15**	**0.24**	**0.27**	**0.34**	**0.00**	**0.39**	**0.51**	**0.54**	**0.62**	**0.00**
Volume	cf =>	2,443	3,708	4,104	5,050	-	5,097	6,654	7,121	8,212	-
Tpeak	min =>	480	480	480	480	10	470	470	470	470	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17	7.83	7.83	7.83	7.83	0.17
Hydrograph Name=>		2	5	10	25	100	2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
50	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.00
60	1.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.00
70	1.17	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.00
80	1.33	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.00
90	1.50	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.04	0.00
100	1.67	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.04	0.00
110	1.83	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.00
120	2.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.04	0.05	0.00
130	2.17	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.06	0.00
140	2.33	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.06	0.00
150	2.50	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.06	0.00
160	2.67	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.06	0.00
170	2.83	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.06	0.07	0.00
180	3.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.06	0.08	0.00
190	3.17	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.06	0.08	0.00
200	3.33	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.07	0.08	0.00
210	3.50	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.07	0.08	0.00
220	3.67	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.07	0.08	0.00
230	3.83	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.07	0.09	0.00
240	4.00	0.00	0.00	0.00	0.01	0.00	0.06	0.07	0.08	0.09	0.00
250	4.17	0.00	0.00	0.00	0.01	0.00	0.06	0.08	0.08	0.09	0.00
260	4.33	0.00	0.00	0.00	0.01	0.00	0.06	0.08	0.08	0.09	0.00
270	4.50	0.00	0.00	0.01	0.01	0.00	0.06	0.08	0.08	0.10	0.00
280	4.67	0.00	0.01	0.01	0.01	0.00	0.06	0.08	0.08	0.10	0.00
290	4.83	0.00	0.01	0.01	0.02	0.00	0.06	0.08	0.09	0.10	0.00
300	5.00	0.00	0.01	0.01	0.02	0.00	0.07	0.09	0.10	0.11	0.00
310	5.17	0.00	0.01	0.02	0.03	0.00	0.07	0.09	0.10	0.11	0.00
320	5.33	0.00	0.01	0.02	0.03	0.00	0.07	0.09	0.10	0.11	0.00
330	5.50	0.00	0.02	0.02	0.03	0.00	0.07	0.09	0.10	0.11	0.00
340	5.67	0.01	0.02	0.02	0.03	0.00	0.07	0.09	0.10	0.11	0.00
350	5.83	0.01	0.02	0.03	0.04	0.00	0.08	0.10	0.11	0.12	0.00
360	6.00	0.01	0.03	0.03	0.04	0.00	0.08	0.11	0.11	0.13	0.00
370	6.17	0.01	0.03	0.03	0.05	0.00	0.08	0.11	0.12	0.13	0.00
380	6.33	0.01	0.03	0.04	0.05	0.00	0.08	0.11	0.12	0.13	0.00
390	6.50	0.02	0.03	0.04	0.05	0.00	0.08	0.11	0.12	0.13	0.00
400	6.67	0.02	0.03	0.04	0.05	0.00	0.08	0.11	0.12	0.13	0.00
410	6.83	0.02	0.04	0.05	0.07	0.00	0.10	0.13	0.14	0.16	0.00
420	7.00	0.03	0.05	0.06	0.08	0.00	0.12	0.15	0.16	0.19	0.00
430	7.17	0.03	0.06	0.07	0.09	0.00	0.12	0.15	0.16	0.19	0.00
440	7.33	0.04	0.07	0.08	0.10	0.00	0.14	0.18	0.19	0.22	0.00
450	7.50	0.05	0.08	0.10	0.12	0.00	0.16	0.21	0.22	0.25	0.00
460	7.67	0.07	0.12	0.14	0.18	0.00	0.23	0.30	0.32	0.37	0.00
470	7.83	0.13	0.22	0.24	0.31	0.00	0.39	0.51	0.54	0.62	0.00
480	8.00	0.15	0.24	0.27	0.34	0.00	0.36	0.47	0.50	0.58	0.00
490	8.17	0.12	0.18	0.21	0.26	0.00	0.20	0.26	0.28	0.32	0.00
500	8.33	0.09	0.13	0.15	0.19	0.00	0.14	0.18	0.19	0.22	0.00
510	8.50	0.07	0.11	0.12	0.15	0.00	0.12	0.16	0.17	0.19	0.00
520	8.67	0.07	0.10	0.11	0.14	0.00	0.12	0.16	0.17	0.19	0.00

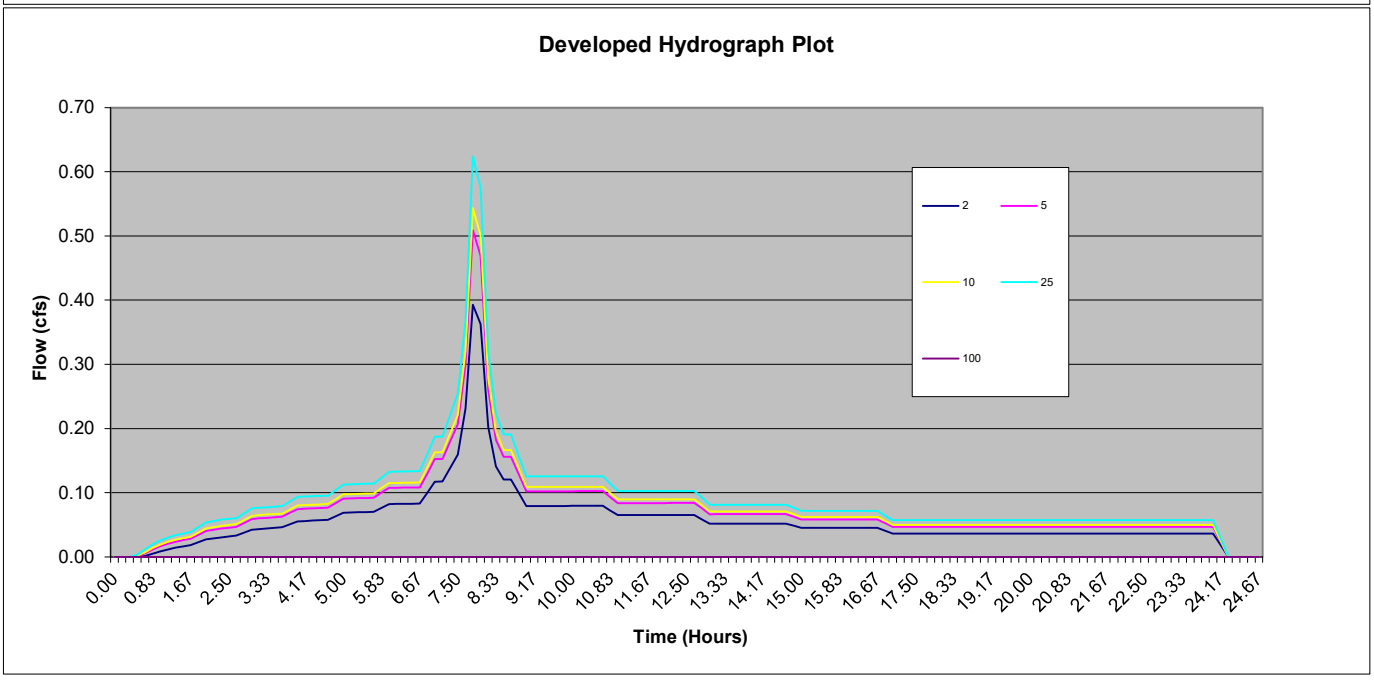
		Pre-Developed Hydrographs					Developed Hydrographs				
Year =======>		2	5	10	25	100	2	5	10	25	100
Qpeak cfs =>		0.15	0.24	0.27	0.34	0.00	0.39	0.51	0.54	0.62	0.00
Volume cf =>		2,443	3,708	4,104	5,050	-	5,097	6,654	7,121	8,212	-
Tpeak min =>		480	480	480	480	10	470	470	470	470	10
Tpeak hr =>		8.00	8.00	8.00	8.00	0.17	7.83	7.83	7.83	7.83	0.17
Hydrograph Name=>		2	5	10	25	100	2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)
530	8.83	0.06	0.09	0.10	0.12	0.00	0.10	0.13	0.14	0.16	0.00
540	9.00	0.05	0.07	0.08	0.10	0.00	0.08	0.10	0.11	0.13	0.00
550	9.17	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
560	9.33	0.04	0.07	0.07	0.09	0.00	0.08	0.10	0.11	0.13	0.00
570	9.50	0.04	0.07	0.07	0.09	0.00	0.08	0.10	0.11	0.13	0.00
580	9.67	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
590	9.83	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
600	10.00	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
610	10.17	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
620	10.33	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
630	10.50	0.05	0.07	0.08	0.09	0.00	0.08	0.10	0.11	0.13	0.00
640	10.67	0.05	0.07	0.08	0.10	0.00	0.08	0.10	0.11	0.13	0.00
650	10.83	0.05	0.07	0.07	0.09	0.00	0.07	0.09	0.10	0.11	0.00
660	11.00	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
670	11.17	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
680	11.33	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
690	11.50	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
700	11.67	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
710	11.83	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
720	12.00	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
730	12.17	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
740	12.33	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
750	12.50	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
760	12.67	0.04	0.06	0.07	0.08	0.00	0.07	0.08	0.09	0.10	0.00
770	12.83	0.04	0.06	0.06	0.08	0.00	0.06	0.08	0.08	0.09	0.00
780	13.00	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
790	13.17	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
800	13.33	0.03	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
810	13.50	0.03	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
820	13.67	0.03	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
830	13.83	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
840	14.00	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
850	14.17	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
860	14.33	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
870	14.50	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
880	14.67	0.04	0.05	0.06	0.07	0.00	0.05	0.07	0.07	0.08	0.00
890	14.83	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.07	0.08	0.00
900	15.00	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
910	15.17	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
920	15.33	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
930	15.50	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
940	15.67	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
950	15.83	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
960	16.00	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
970	16.17	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
980	16.33	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
990	16.50	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
1000	16.67	0.03	0.05	0.05	0.06	0.00	0.05	0.06	0.06	0.07	0.00
1010	16.83	0.03	0.04	0.05	0.06	0.00	0.04	0.05	0.06	0.06	0.00
1020	17.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1030	17.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1040	17.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1050	17.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1060	17.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1070	17.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1080	18.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1090	18.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1100	18.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1110	18.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1120	18.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1130	18.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1140	19.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1150	19.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1160	19.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1170	19.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1180	19.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1190	19.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1200	20.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1210	20.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1220	20.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1230	20.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00

		Pre-Developed Hydrographs					Developed Hydrographs				
Year =======>		2	5	10	25	100	2	5	10	25	100
Qpeak cfs =>		0.15	0.24	0.27	0.34	0.00	0.39	0.51	0.54	0.62	0.00
Volume cf =>		2,443	3,708	4,104	5,050	-	5,097	6,654	7,121	8,212	-
Tpeak min =>		480	480	480	480	10	470	470	470	470	10
Tpeak hr =>		8.00	8.00	8.00	8.00	0.17	7.83	7.83	7.83	7.83	0.17
Hydrograph Name=>		2	5	10	25	100	2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)
1240	20.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1250	20.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1260	21.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1270	21.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1280	21.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1290	21.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1300	21.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1310	21.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1320	22.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1330	22.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1340	22.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1350	22.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1360	22.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1370	22.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1380	23.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1390	23.17	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1400	23.33	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1410	23.50	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1420	23.67	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1430	23.83	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1440	24.00	0.03	0.04	0.04	0.05	0.00	0.04	0.05	0.05	0.06	0.00
1450	24.17	0.02	0.03	0.03	0.03	0.00	0.02	0.02	0.02	0.03	0.00
1460	24.33	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1470	24.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	24.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	24.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	24.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pre-Developed Hydrographs						
Year	=======>	2	5	10	25	100
Qpeak	cfs =>	0.15	0.24	0.27	0.34	0.00
Volume	cf =>	2,443	3,708	4,104	5,050	-
Tpeak	min =>	480	480	480	480	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17
Hydrograph Name=>		2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

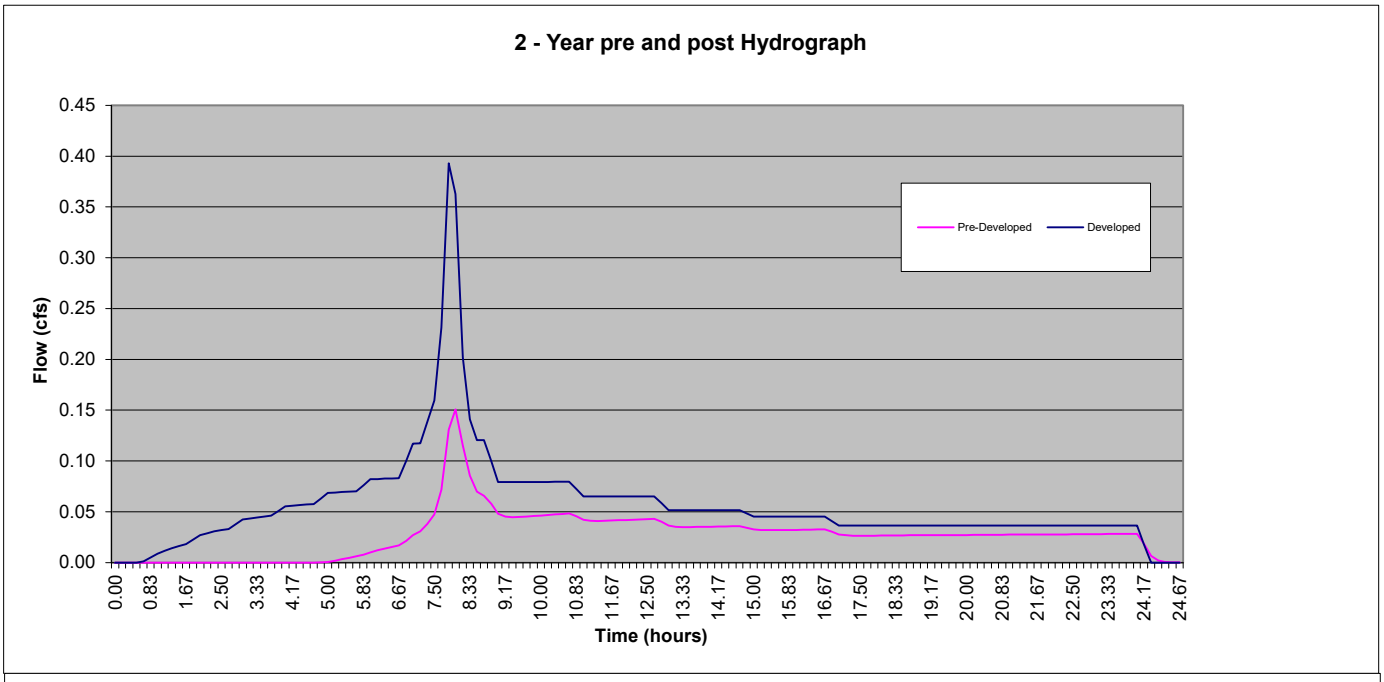
Developed Hydrographs					
2	5	10	25	100
0.39	0.51	0.54	0.62	0.00
5,097	6,654	7,121	8,212	-
470	470	470	470	10
7.83	7.83	7.83	7.83	0.17
2	5	10	25	100
Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

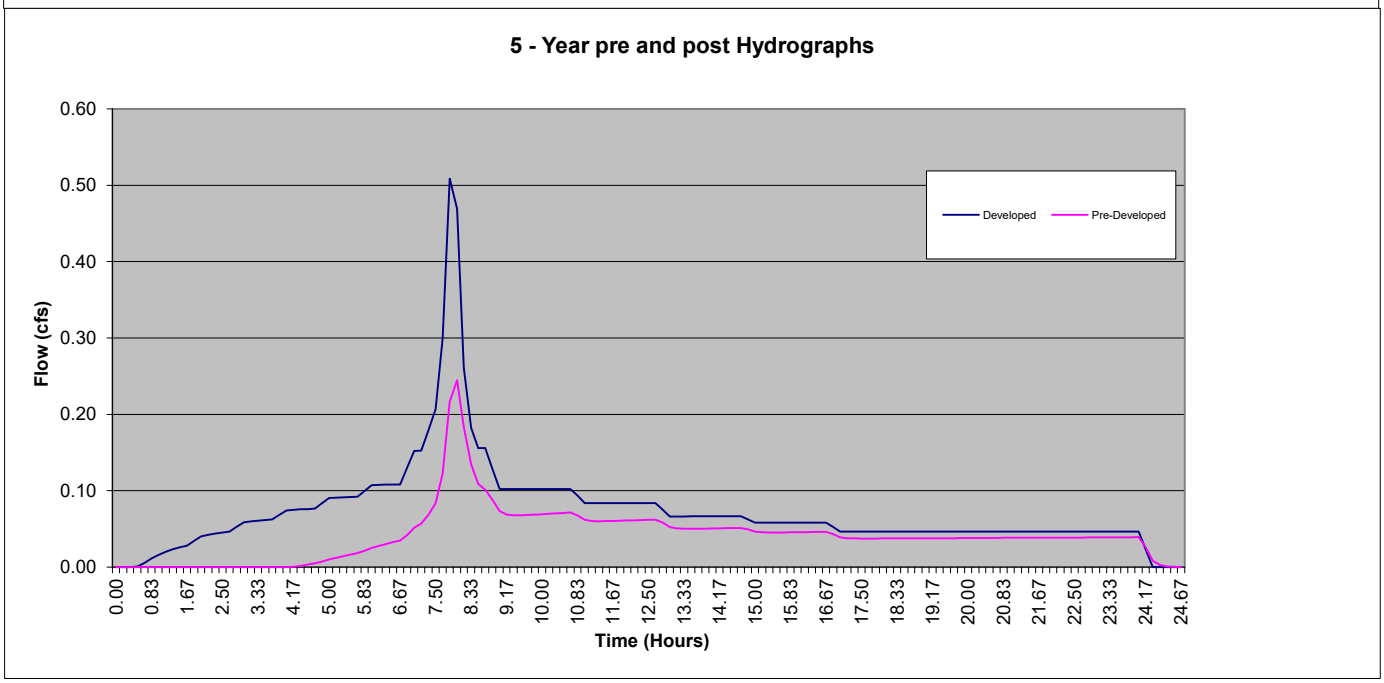




Pre-Developed Hydrographs						
Year	========>	2	5	10	25	100
Qpeak	cfs =>	0.15	0.24	0.27	0.34	0.00
Volume	cf =>	2,443	3,708	4,104	5,050	-
Tpeak	min =>	480	480	480	480	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17
Hydrograph Name=>		2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

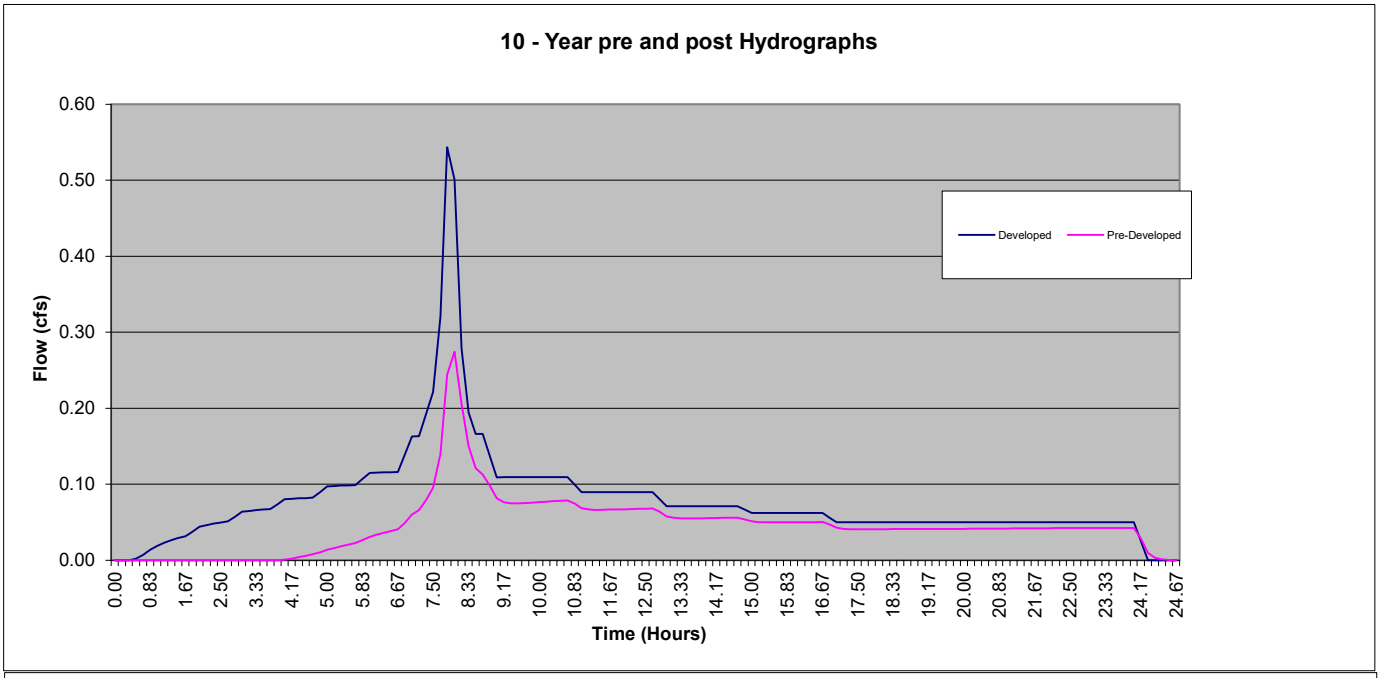
Developed Hydrographs				
2	5	10	25	100
0.39	0.51	0.54	0.62	0.00
5,097	6,654	7,121	8,212	-
470	470	470	470	10
7.83	7.83	7.83	7.83	0.17
2	5	10	25	100
Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

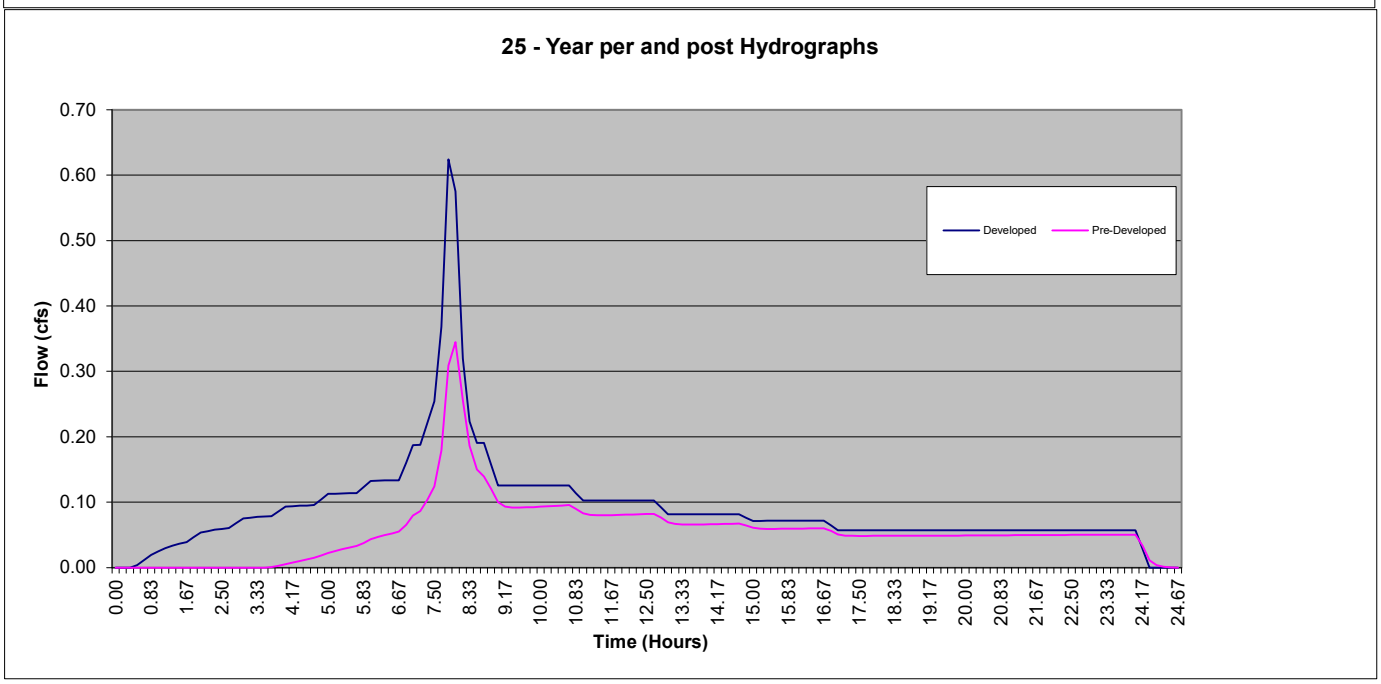




Pre-Developed Hydrographs						
Year	=======>	2	5	10	25	100
Qpeak	cfs =>	0.15	0.24	0.27	0.34	0.00
Volume	cf =>	2,443	3,708	4,104	5,050	-
Tpeak	min =>	480	480	480	480	10
Tpeak	hr =>	8.00	8.00	8.00	8.00	0.17
Hydrograph Name=>		2	5	10	25	100
Time (min)	Time (hr)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)

Developed Hydrographs				
2	5	10	25	100
0.39	0.51	0.54	0.62	0.00
5,097	6,654	7,121	8,212	-
470	470	470	470	10
7.83	7.83	7.83	7.83	0.17
2	5	10	25	100
Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)	Hyd (cfs)





Project Name: The Riffles Parking Lot - Basin B

Detention System Summary

Job # 21-092

Date: 3/18/2022

Note: The detention system design is based on the King County Model "Facility Design Routine".

1) Detention Facility Design Input:

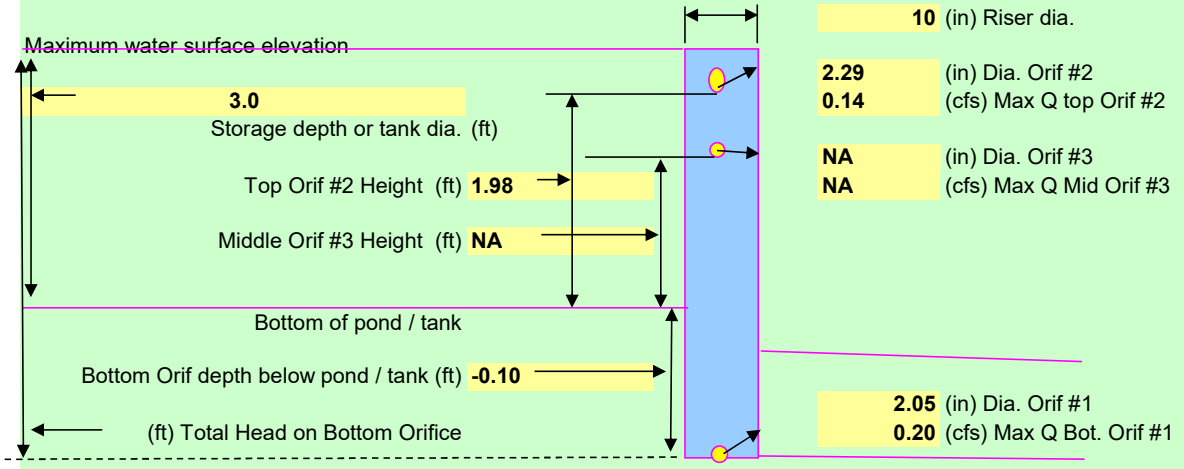
2) Type of facility:		DETENTION TANK	
3) Pond side slopes:	3	NA	
4) Tank Diameter:	**3**	**ft**	
5) Vertical permeability	0	min/in	
6) Number of orifices:	2		
7) Riser dia. =>	10	in	
8) Orifice coefficient	0.62	(typically 0.62)	
9) IE - bottom orifice:	-0.1	ft (distance below bottom of pond - Negative #)	
10) Max Q Bottom Orif. #1	0.20	cfs	
11) Top Orif #2 Height =	1.98	ft	
12) Max Q Mid Orif. #3	0.00	cfs	Orifice not being used
13) Mid Orif #3 Height =	0.00	ft	Orifice not being used

Detention Facility Design Results:

Performance year	Developed Inflow cfs	Pre-Developed Outflow cfs	**Actual Outflow cfs**	Peak Stage ft	Storage cf
100	0	0	**0**	0	-
25	0.62	0.34	**0.35**	3.00	1,026
10	0.54	0.27	**0.27**	2.39	875
5	0.51	0.24	**0.25**	2.23	816
2	0.39	0.15	**0.15**	1.65	579
			Required Storage ====		1,026

	Bottom Orif.	Middle Orif.	Top Orif.	Optional Weir Design
Total Q =	0.20	0.00	0.14	(for top orifice)
Head (ft) =	3.10	0.00	1.02	0.45 La (ft)
Dist. from bottom of pond (ft) =	-0.10	NA	1.98	61.65 < deg.
Orif. Dia. (in) =	2.05	0.00	2.29	Weir is an option

FLOW CONTROL STRUCTURE SCHEMATIC



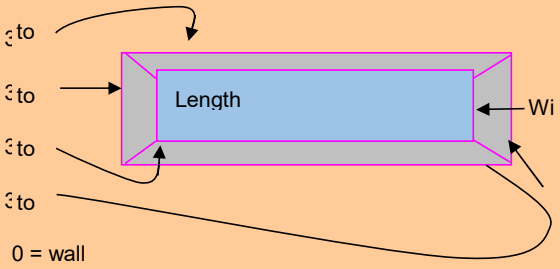
Project Name:	The Riffles Parking Lot - Basin B
Detention Facility Type	
Job #	21-092
Date:	3/18/2022

Detention Facility Type:

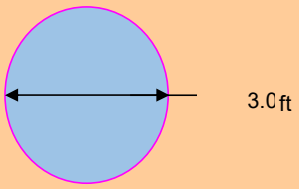
DETENTION TANK

L =	**145.1**	**ft**
W =	**145.1**	**ft**
D =	**3.0**	**ft**
Tank Vol. =	**1,026**	**cf**

DETENTION POND
NA



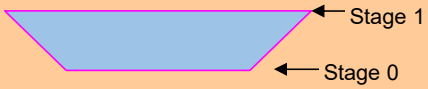
DETENTION TANK

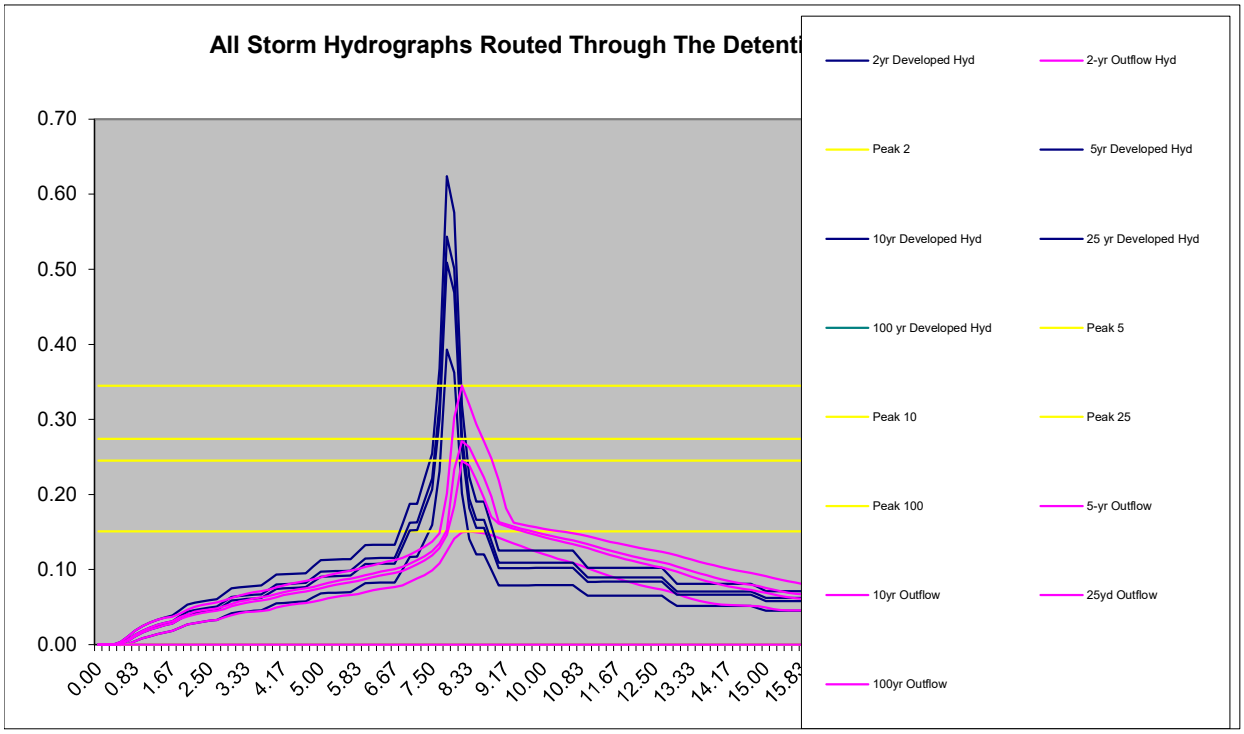


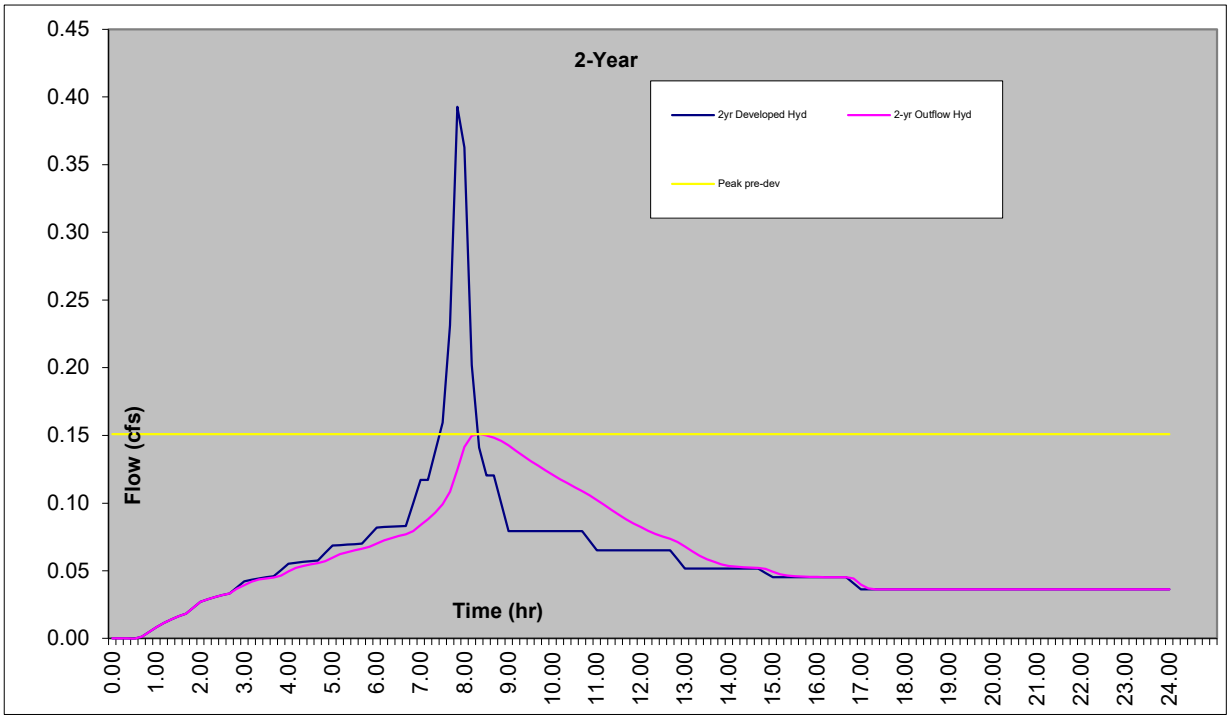
USER DEFINED POND
NA

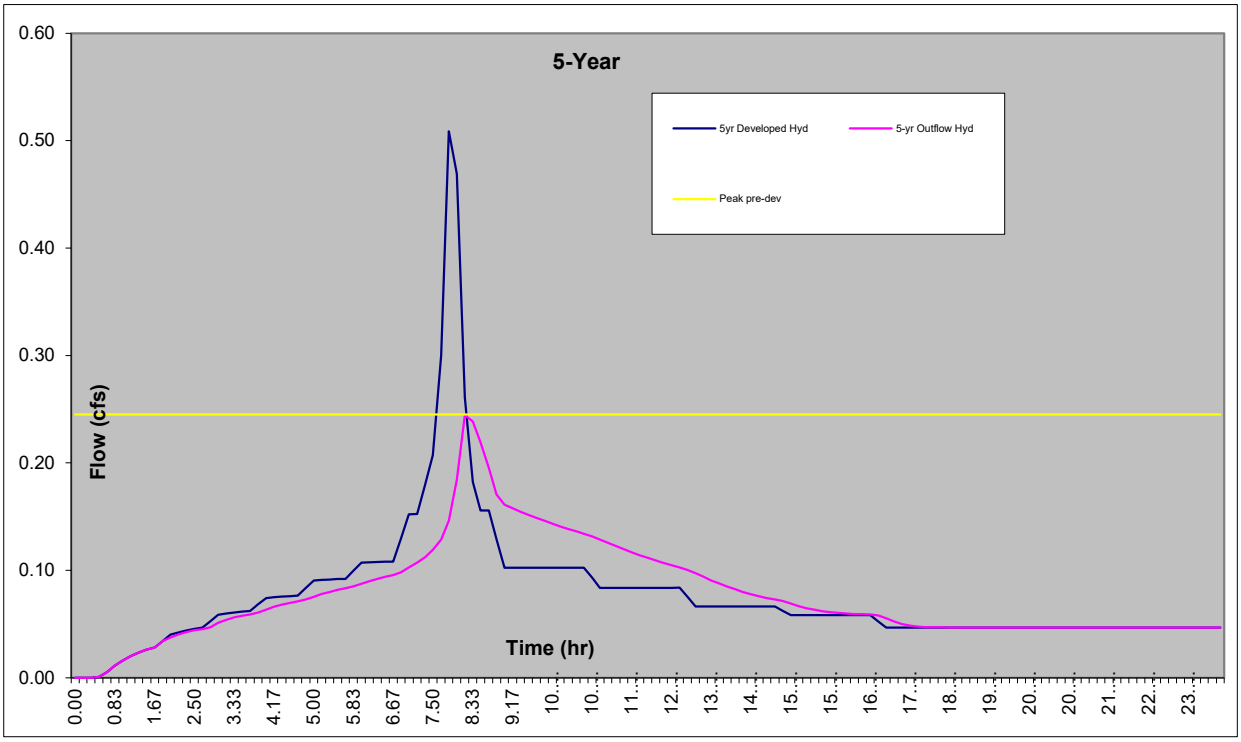
Pond Geometry

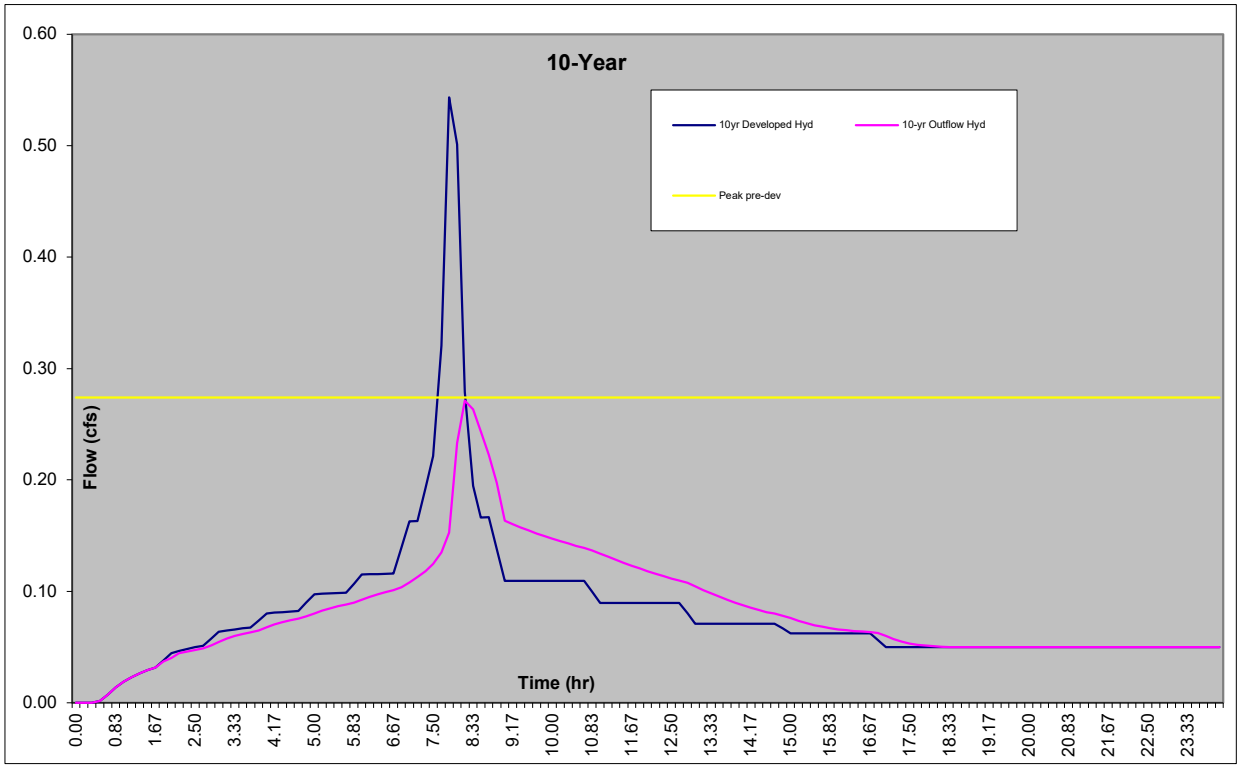
Stage (ft)	Area (sf)
0	NA
1	NA
2	NA
3	NA
4	NA
5	NA
6	NA
7	NA
8	NA
9	NA
10	NA
11	NA
12	NA
13	NA
14	NA
15	NA




All Storm Hydrographs Routed Through The Detenti
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17
10.00
10.83
11.67
12.50
13.33
14.17
15.00
15.83
2yr Developed Hyd
2-yr Outflow Hyd
Peak 2
5yr Developed Hyd
10yr Developed Hyd
25 yr Developed Hyd
100 yr Developed Hyd
Peak 5
Peak 10
Peak 25
Peak 100
5-yr Outflow
10yr Outflow
25yd Outflow
100yr Outflow


2-Year
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Flow (cfs)
Time (hr)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
24.00
2yr Developed Hyd
2-yr Outflow Hyd
Peak pre-dev


5-Year
5yr Developed Hyd
5-yr Outflow Hyd
Peak pre-dev
Flow (cfs)
Time (hr)
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17


10-Year
10yr Developed Hyd
10-yr Outflow Hyd
Peak pre-dev
Flow (cfs)
Time (hr)
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17
10.00
10.83
11.67
12.50
13.33
14.17
15.00
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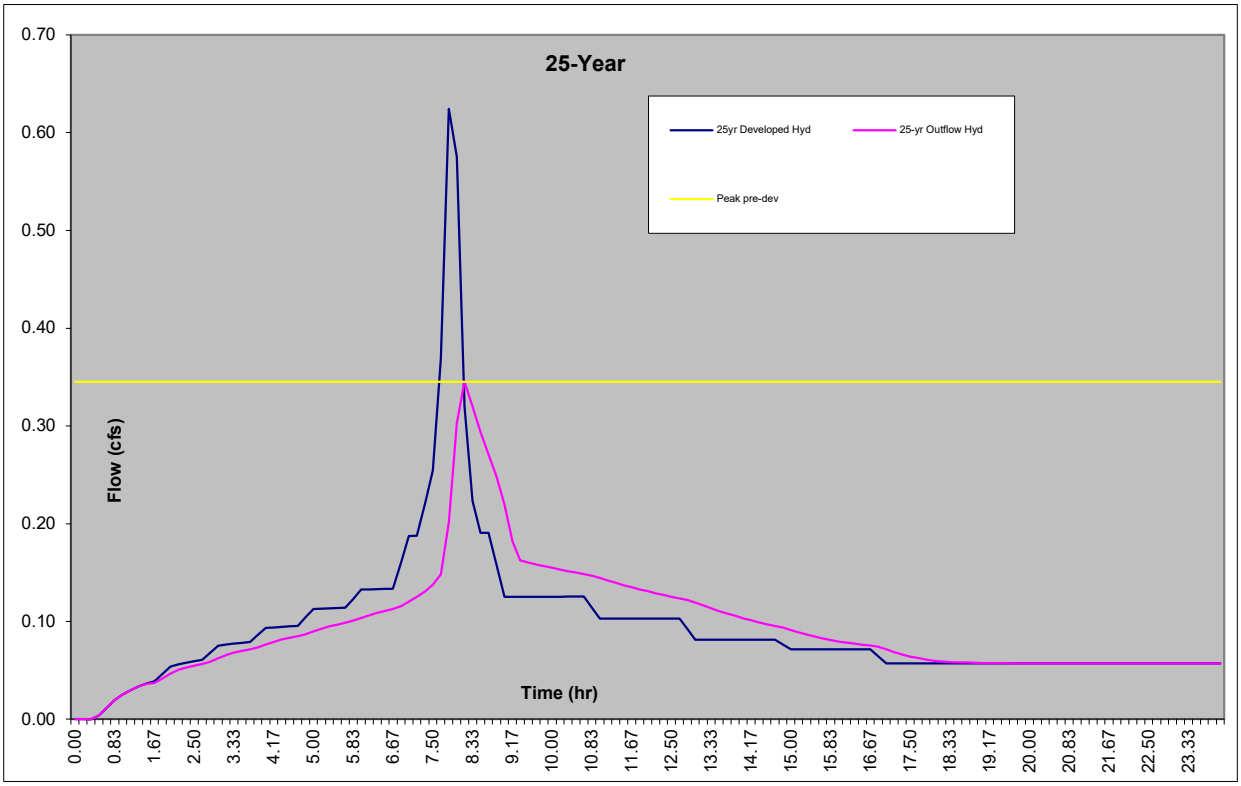
19.17
20.00
20.83
21.67
22.50
23.33


25-Year
25yr Developed Hyd
25-yr Outflow Hyd
Peak pre-dev
Flow (cfs)
Time (hr)
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
0.83
1.67
2.50
3.33
4.17
5.00
5.83
6.67
7.50
8.33
9.17
10.00
10.83
11.67
12.50
13.33
14.17
15.00
15.83
16.67
17.50
18.33
19.17
20.00
20.83
21.67
22.50
23.33

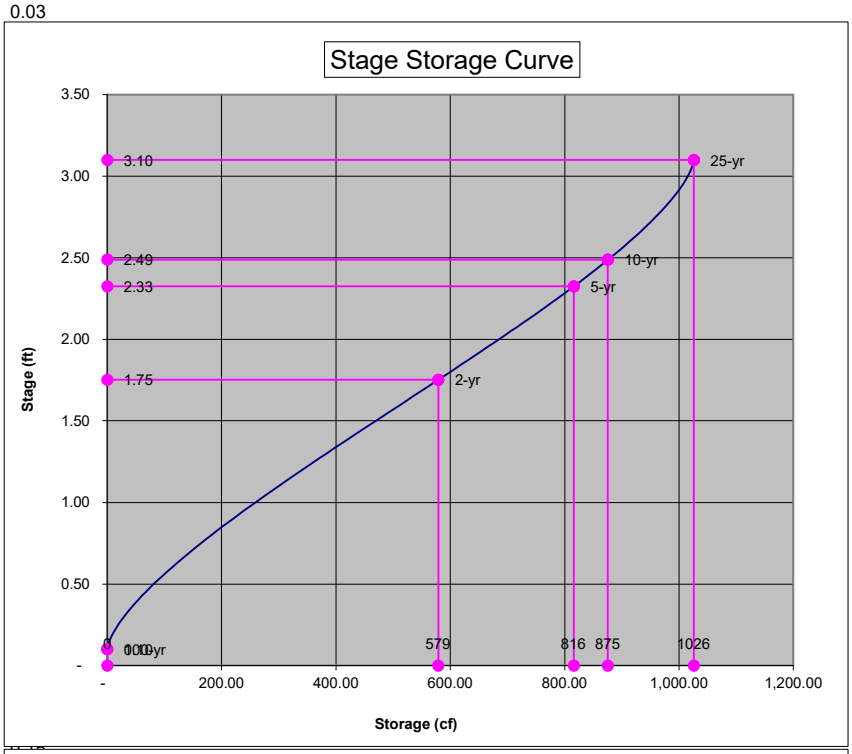
Project Name: The Riffles Parking Lot - Basin B

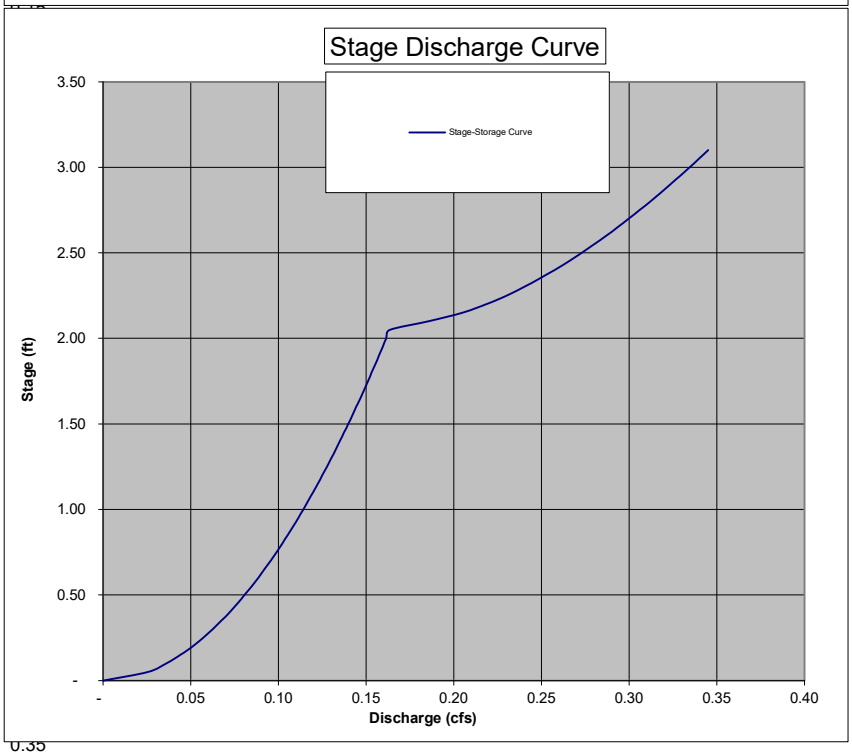
Stage Storage Summary

Job # 21-092

Date: 3/18/2022

Stage ft	Storage cf	Discharge cfs
-	-	-
0.05	-	0.03
0.10	-	
0.15	3.73	
0.20	10.49	
0.25	19.17	
0.30	29.37	
0.35	40.83	
0.40	53.38	
0.45	66.91	
0.50	81.30	
0.55	96.48	
0.60	112.37	
0.65	128.90	
0.70	146.04	
0.75	163.71	
0.80	181.89	
0.85	200.53	
0.90	219.58	
0.95	239.02	
1.00	258.80	
1.05	278.90	
1.10	299.29	
1.15	319.94	
1.20	340.81	
1.25	361.88	
1.30	383.13	
1.35	404.53	
1.40	426.04	
1.45	447.66	
1.50	469.35	
1.55	491.09	
1.60	512.85	
1.65	534.61	
1.70	556.35	
1.75	578.04	
1.80	599.66	
1.85	621.17	
1.90	642.57	
1.95	663.82	
2.00	684.89	
2.05	705.76	
2.10	726.41	
2.15	746.80	
2.20	766.90	
2.25	786.69	
2.30	806.12	
2.35	825.17	
2.40	843.81	
2.45	861.99	
2.50	879.66	
2.55	896.80	
2.60	913.33	
2.65	929.22	
2.70	944.40	
2.75	958.79	
2.80	972.32	
2.85	984.87	
2.90	996.33	
2.95	1,006.53	
3.00	1,015.21	
3.05	1,021.97	
3.10	1,025.70	
3.10	1,025.70	
3.10	1,025.70	
3.10	1,025.70	

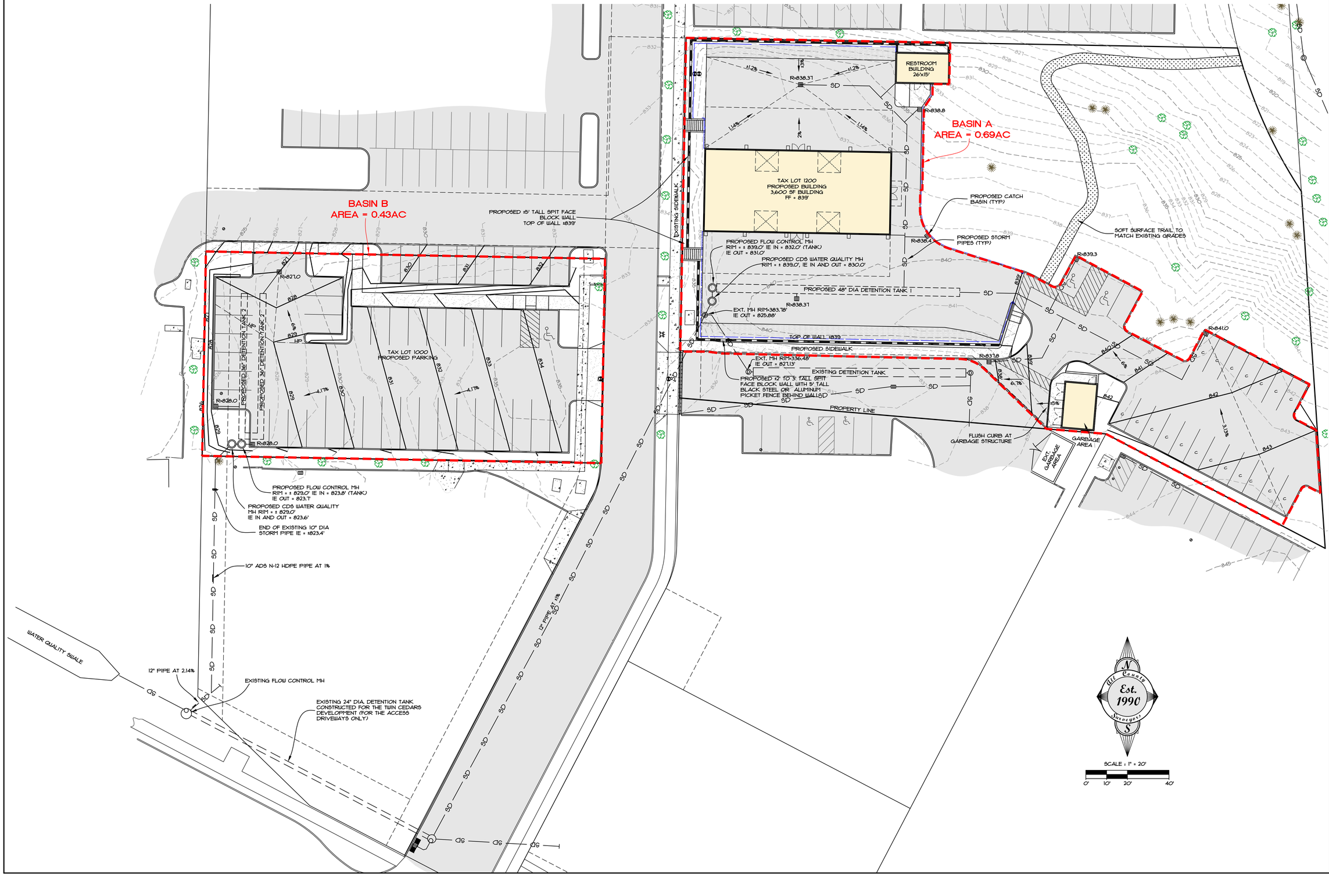




Appendix D

Drainage Basin Map

THE RIFFLE FOOD CARTS - DRAINAGE BASIN MAP



BY	REVISION	NO.	DATE
-	-	-	-

SHEET SK1 OF 1

DESIGNED: RLM
DRAWN: RLM
CHECKED: DLH
APPROVED: RLM

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 28, 1978 RAY L. MOORE
RENEWAL DATE: 12/31/2022

SCALE VERT: N/A HORIZ: 1"= 20'
DATE: 3-18-22
FILE: 21-092 - Planning.dwg

LEGAL	SECTION	TWP.	RANGE
	14	2S	4E

PROJECT:
THE RIFFLE FOOD CARTS
PRELIMINARY GRADING
AND STORMWATER PLAN

LOCATION:
TWIN CEDARS CENTER, SANDY, OREGON

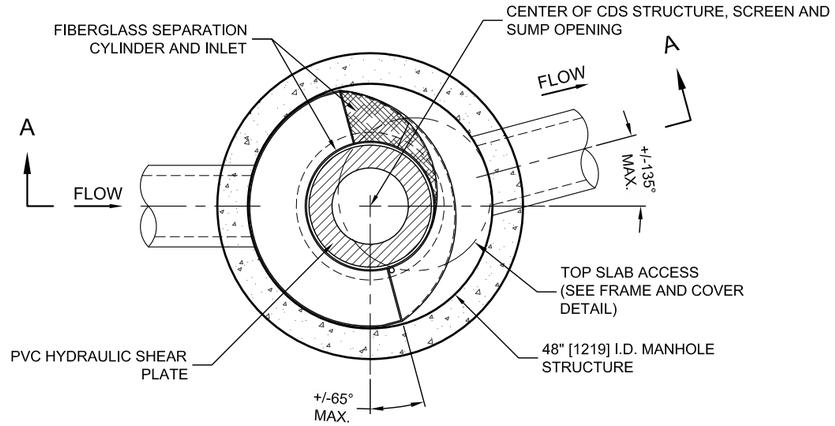
Surveyors & Planners, Inc.
Surveying, Planning and
Civil Engineering
P.O. Box 955 Sandy, OR 97055
Phone: (503) 668-3151
Fax: (503) 668-4730

DATE OF PLOT 3-18-22

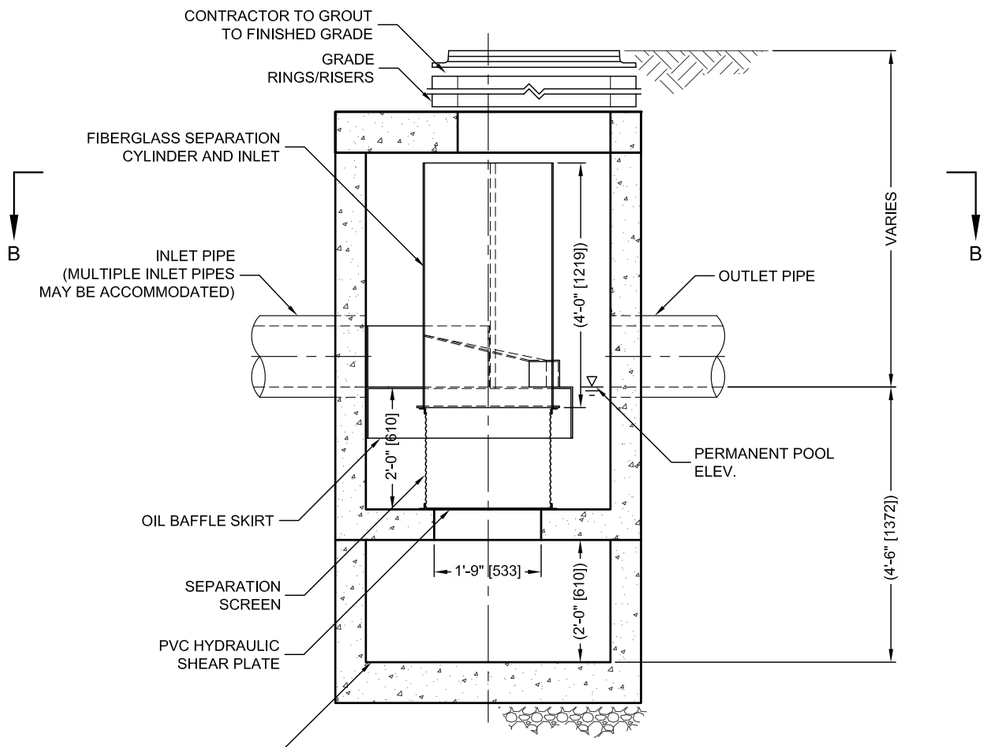
CLIENT:
TODD HOFFMAN
PO BOX 1016
SANDY, OR 97055
PHONE: 503-863-1131

Appendix E

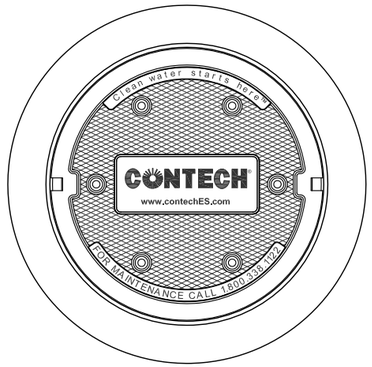
Contech CDS Manhole Detail



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

CDS2015-4-C DESIGN NOTES

THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-4-C
INLINE CDS
STANDARD DETAIL