Stormwater Management Plan

Greco Independent & Assisted Living
Minnetonka, MN

Prepared by Loucks
October 16, 2023
Revised January 30, 2024

Loucks Project No. 23055A

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Greco Independent & Assisted Living

Minnetonka, Minnesota

Stormwater Management Plan

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Stormwater Management Plan

Introduction

This stormwater management plan was created for the Greco Independent and Assisted Living apartments project located at 15407 & 15409 Wayzata Boulevard in Minnetonka, MN. The project site encompasses roughly 19.18 acres.

The project generally consists of constructing two new apartment buildings, parking lot, and associated utilities.

Included in this plan are calculations for the existing and proposed discharge of storm water from the site.

Methodology

City of Minnetonka and Minnehaha Creek Watershed District:

1. Rate Control – Runoff rates for the proposed activity shall not exceed runoff rates for the 1, 10, & 100-year critical storm events.
2. Volume/Water Quality Control –Treat onsite the equivalent to 1.1" of runoff generated from new impervious. If filtration is used only 50% is received.
3. There is to be no increase in phosphorus from the existing conditions

Methodology

The stormwater calculations were made utilizing the stormwater-modeling program HydroCAD 10.00. Calculations were performed for Atlas-14 1-year, 2-year, 10-year, and 100-year rainfall events of 2.48 inches, 2.86 inches, 4.26 inches, and 7.32 inches respectively.

Existing Conditions

The existing site is a former healthcare and rehabilitation center. The existing site is 19.18 acres, for the storm report the areas used in this report are for the disturbed area of 6.973 acres. The existing site will be broken up into two drainage areas. Drainage area DA-1E drains off-site to the wetlands and drainage area DA-2E drains off-site to Clare Lane. There is no existing stormwater treatment onsite.

Proposed Conditions

The proposed site consists of constructing a multi-story apartment building with below ground parking garage, a assisted living single story building with parking lots, entrance drives, utilities, and stormwater management practices. To meet stormwater requirements for the site, two underground filtration storm vaults will be used. The site will be broken up into four drainage areas.

Drainage area DA-1P will drain to the west underground filtration storm vault. Drainage area DA-2P will drain to the east underground filtration storm vault. Drainage area DA-4P will drain off-site to the wetlands. Drainage area DA-3P will drain off-site to Clare Lane.

Rate Control

The rate control requirements are that peak rates shall not exceed existing rates for the 2, 10, and 100-year events.

Tables 1.1 below lists the existing areas and runoff rates
Tables 1.2 below lists the proposed areas and runoff rates

Table 1.1 – Existing Peak Runoff Rates

Existing Conditions						
			1-YR Event	2-YR Event	10-YR Event	100-YR Event
Subcatch	Area (SF)	Impervious (SF)	Rate (cfs)	Rate (cfs)	Rate (cfs)	Rate (cfs)
DA-1E Wetland	258,158	108,763	10.43	12.82	22.29	42.84
DA-2E Street	45,829	28,816	2.14	2.60	4.27	7.88
TOTAL EXISTING	**303,987**	**137,579**	**12.58**	**15.52**	**26.56**	**50.72**

Table 1.2 – Proposed Peak Runoff Rates

Proposed Conditions						
			1-YR Event	2-YR Event	10-YR Event	100-YR Event
Subcatch	Area (SF)	Impervious (SF)	Rate (cfs)	Rate (cfs)	Rate (cfs)	Rate (cfs)
DA-1P West Vault	121,837	110,109	0.43	0.43	0.43	0.96
DA-2P East Vault	74,475	63,305	0.21	0.21	0.21	2.15
DA-4P	92,863	15,077	2.84	3.66	6.90	14.28
Total WETLAND	**289,175**	**188,491**	**3.28**	**4.31**	**7.55**	**16.00**
DA-3P Street	14,812	1,822	0.61	0.80	1.51	3.14
TOTAL PROPOSED	**303,987**	**190,313**	**3.54**	**4.66**	**8.18**	**17.24**

Volume Control

A water quality volume of 1.1" of runoff from the new impervious surfaces created by the project is treated. Required volume calculations are shown below:

Volume Required:	190,313 SF x 1.1" x 1'/12"	=	17,445 CF
Volume Provided:	West Vault (946.50-948.50)	=	26,745 CF
Volume Provided:	East Vault (945.50-947.50)	=	13,111 CF
Total Volume Provided:		=	39,856 CF

With filtration being used only 50% credit is allowed for filtration. Therefore 50% of 39,856 =19,928 CF which meets the requirement of 17,382 CF

Water Quality

For projects that have met the infiltration/filtration volume control requirements above, the pollutant removal requirements are considered to be met. The watershed requires that there is no net increase in phosphorus (TP) leaving the site from the existing site to the proposed site. The existing site TP is 7.238 lbs & the proposed TP is 4.152 lbs.

Best Management Practices

Best management practices (BMP's) will be implemented during construction per the project Stormwater Pollution Prevention Plan (C3-2 & C3-3). During construction, erosion control measures will include dust control, silt fencing, bio logs, inlet protection, and a temporary rock construction entrance. Permanent BMP's will include stormwater management systems, surface pavements, and turf establishment (vegetation) of disturbed areas.

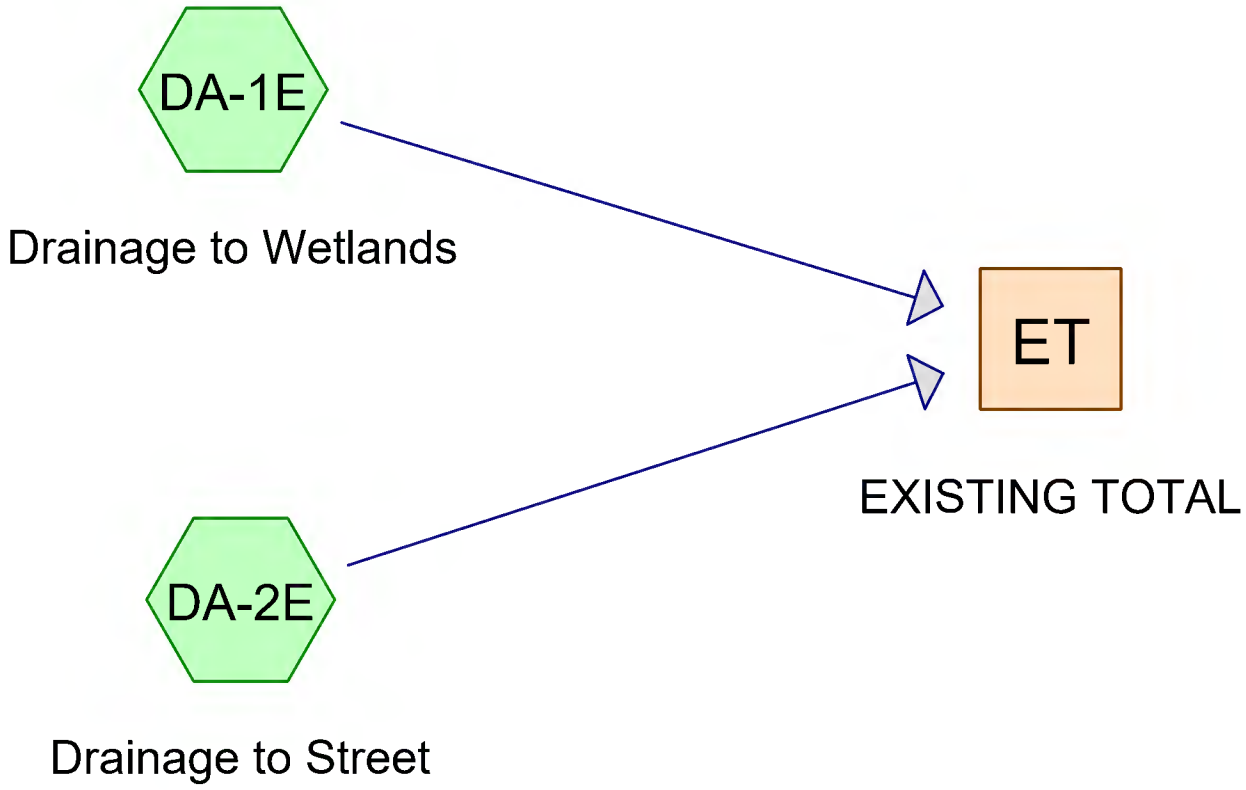
Conclusion

The proposed Stormwater Management Plan for the project provides a solution for the conveyance of stormwater from the site. The underground filtration vaults capture the runoff before discharging into the existing wetlands. They will provide rate control for the development and meet water quality requirements through the proposed filtration.

Appendix A

Existing HydroCAD Report

EXISTING SITE



Subcat Reach Pond Link

Routing Diagram for Greco
Prepared by {enter your company name here}, Printed 1/30/2024
HydroCAD® 10.10-6a s/n 02676 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1E: Drainage to Runoff Area=258,158 sf 42.13% Impervious Runoff Depth=1.36"
Tc=15.0 min CN=88 Runoff=10.43 cfs 0.674 af

Subcatchment DA-2E: Drainage to Street Runoff Area=45,829 sf 62.88% Impervious Runoff Depth=1.59"
Tc=15.0 min CN=91 Runoff=2.14 cfs 0.140 af

Reach ET: EXISTING TOTAL Inflow=12.58 cfs 0.813 af
Outflow=12.58 cfs 0.813 af

Total Runoff Area = 6.979 ac Runoff Volume = 0.813 af Average Runoff Depth = 1.40"
54.74% Pervious = 3.820 ac 45.26% Impervious = 3.158 ac

Summary for Subcatchment DA-1E: Drainage to Wetlands

Runoff = 10.43 cfs @ 12.24 hrs, Volume= 0.674 af, Depth= 1.36"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
108,763	98	Paved parking, HSG D
149,395	80	>75% Grass cover, Good, HSG D
258,158	88	Weighted Average
149,395		57.87% Pervious Area
108,763		42.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Subcatchment DA-2E: Drainage to Street

Runoff = 2.14 cfs @ 12.23 hrs, Volume= 0.140 af, Depth= 1.59"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
28,816	98	Paved parking, HSG D
17,013	80	>75% Grass cover, Good, HSG D
45,829	91	Weighted Average
17,013		37.12% Pervious Area
28,816		62.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach ET: EXISTING TOTAL

Inflow Area = 6.979 ac, 45.26% Impervious, Inflow Depth = 1.40" for 1-Year event
Inflow = 12.58 cfs @ 12.24 hrs, Volume= 0.813 af
Outflow = 12.58 cfs @ 12.24 hrs, Volume= 0.813 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1E: Drainage to Runoff Area=258,158 sf 42.13% Impervious Runoff Depth=1.69"
Tc=15.0 min CN=88 Runoff=12.92 cfs 0.837 af

Subcatchment DA-2E: Drainage to Street Runoff Area=45,829 sf 62.88% Impervious Runoff Depth=1.94"
Tc=15.0 min CN=91 Runoff=2.60 cfs 0.170 af

Reach ET: EXISTING TOTAL Inflow=15.52 cfs 1.007 af
Outflow=15.52 cfs 1.007 af

Total Runoff Area = 6.979 ac Runoff Volume = 1.007 af Average Runoff Depth = 1.73"
54.74% Pervious = 3.820 ac 45.26% Impervious = 3.158 ac

Summary for Subcatchment DA-1E: Drainage to Wetlands

Runoff = 12.92 cfs @ 12.24 hrs, Volume= 0.837 af, Depth= 1.69"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (sf)	CN	Description
108,763	98	Paved parking, HSG D
149,395	80	>75% Grass cover, Good, HSG D
258,158	88	Weighted Average
149,395		57.87% Pervious Area
108,763		42.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Subcatchment DA-2E: Drainage to Street

Runoff = 2.60 cfs @ 12.23 hrs, Volume= 0.170 af, Depth= 1.94"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (sf)	CN	Description
28,816	98	Paved parking, HSG D
17,013	80	>75% Grass cover, Good, HSG D
45,829	91	Weighted Average
17,013		37.12% Pervious Area
28,816		62.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach ET: EXISTING TOTAL

Inflow Area = 6.979 ac, 45.26% Impervious, Inflow Depth = 1.73" for 2-Year event
Inflow = 15.52 cfs @ 12.24 hrs, Volume= 1.007 af
Outflow = 15.52 cfs @ 12.24 hrs, Volume= 1.007 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1E: Drainage to Runoff Area=258,158 sf 42.13% Impervious Runoff Depth=2.97"
Tc=15.0 min CN=88 Runoff=22.29 cfs 1.467 af

Subcatchment DA-2E: Drainage to Street Runoff Area=45,829 sf 62.88% Impervious Runoff Depth=3.27"
Tc=15.0 min CN=91 Runoff=4.27 cfs 0.286 af

Reach ET: EXISTING TOTAL Inflow=26.56 cfs 1.754 af
Outflow=26.56 cfs 1.754 af

Total Runoff Area = 6.979 ac Runoff Volume = 1.754 af Average Runoff Depth = 3.02"
54.74% Pervious = 3.820 ac 45.26% Impervious = 3.158 ac

Summary for Subcatchment DA-1E: Drainage to Wetlands

Runoff = 22.29 cfs @ 12.23 hrs, Volume= 1.467 af, Depth= 2.97"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (sf)	CN	Description
108,763	98	Paved parking, HSG D
149,395	80	>75% Grass cover, Good, HSG D
258,158	88	Weighted Average
149,395		57.87% Pervious Area
108,763		42.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Subcatchment DA-2E: Drainage to Street

Runoff = 4.27 cfs @ 12.23 hrs, Volume= 0.286 af, Depth= 3.27"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (sf)	CN	Description
28,816	98	Paved parking, HSG D
17,013	80	>75% Grass cover, Good, HSG D
45,829	91	Weighted Average
17,013		37.12% Pervious Area
28,816		62.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach ET: EXISTING TOTAL

Inflow Area = 6.979 ac, 45.26% Impervious, Inflow Depth = 3.02" for 10-Year event
Inflow = 26.56 cfs @ 12.23 hrs, Volume= 1.754 af
Outflow = 26.56 cfs @ 12.23 hrs, Volume= 1.754 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1E: Drainage to Runoff Area=258,158 sf 42.13% Impervious Runoff Depth=5.90"
Tc=15.0 min CN=88 Runoff=42.84 cfs 2.916 af

Subcatchment DA-2E: Drainage to Street Runoff Area=45,829 sf 62.88% Impervious Runoff Depth=6.25"
Tc=15.0 min CN=91 Runoff=7.88 cfs 0.548 af

Reach ET: EXISTING TOTAL Inflow=50.72 cfs 3.464 af
Outflow=50.72 cfs 3.464 af

Total Runoff Area = 6.979 ac Runoff Volume = 3.464 af Average Runoff Depth = 5.96"
54.74% Pervious = 3.820 ac 45.26% Impervious = 3.158 ac

Summary for Subcatchment DA-1E: Drainage to Wetlands

Runoff = 42.84 cfs @ 12.23 hrs, Volume= 2.916 af, Depth= 5.90"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (sf)	CN	Description
108,763	98	Paved parking, HSG D
149,395	80	>75% Grass cover, Good, HSG D
258,158	88	Weighted Average
149,395		57.87% Pervious Area
108,763		42.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Subcatchment DA-2E: Drainage to Street

Runoff = 7.88 cfs @ 12.23 hrs, Volume= 0.548 af, Depth= 6.25"
Routed to Reach ET : EXISTING TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (sf)	CN	Description
28,816	98	Paved parking, HSG D
17,013	80	>75% Grass cover, Good, HSG D
45,829	91	Weighted Average
17,013		37.12% Pervious Area
28,816		62.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

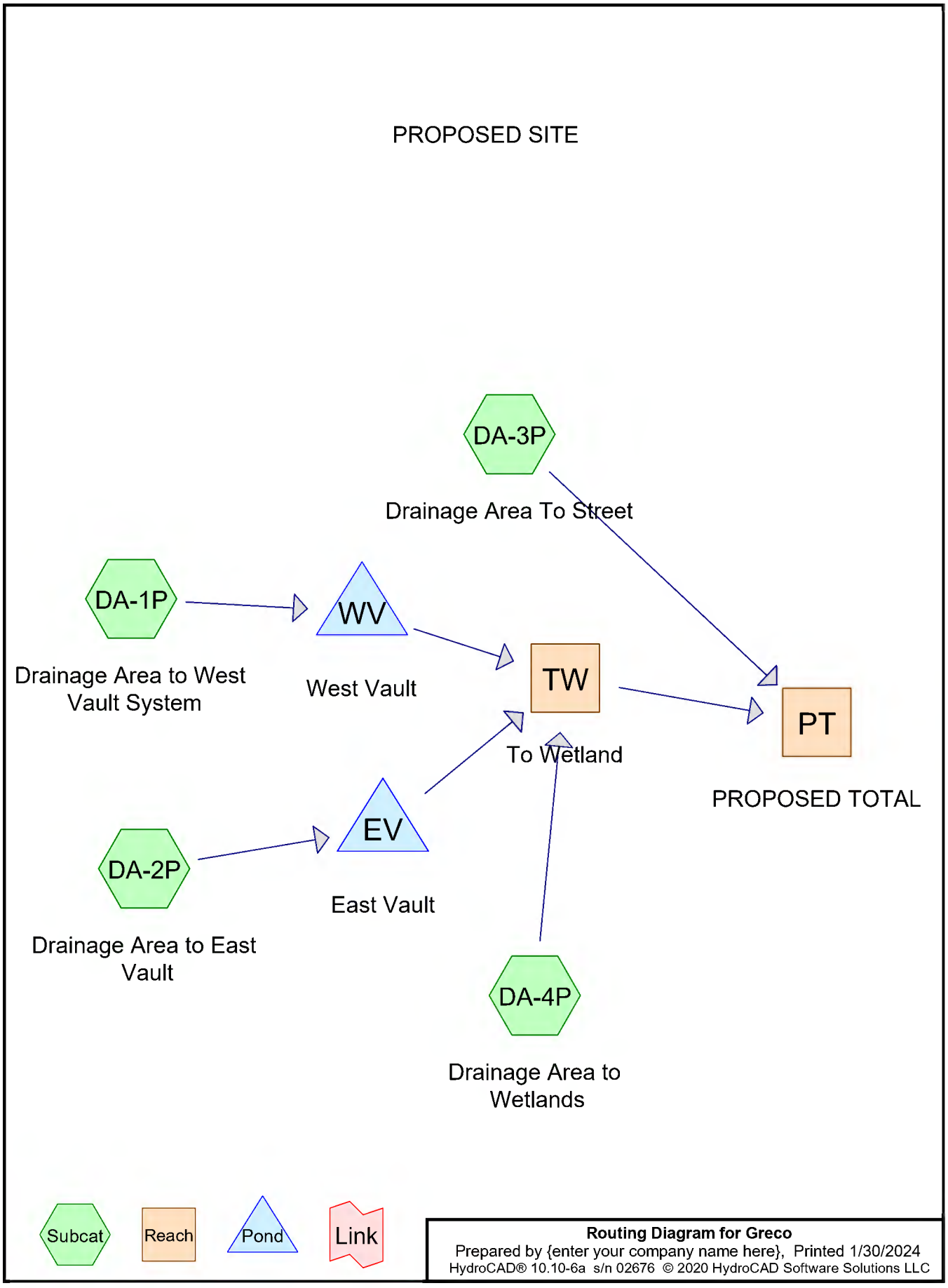
Summary for Reach ET: EXISTING TOTAL

Inflow Area = 6.979 ac, 45.26% Impervious, Inflow Depth = 5.96" for 100-Year event
Inflow = 50.72 cfs @ 12.23 hrs, Volume= 3.464 af
Outflow = 50.72 cfs @ 12.23 hrs, Volume= 3.464 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Appendix B

Proposed HydroCAD Report


PROPOSED SITE
DA-3P
Drainage Area To Street
DA-1P
Drainage Area to West Vault System
WV
West Vault
TW
To Wetland
PT
PROPOSED TOTAL
EV
East Vault
DA-2P
Drainage Area to East Vault
DA-4P
Drainage Area to Wetlands
Subcat
Reach
Pond
Link
Routing Diagram for Greco
Prepared by {enter your company name here}, Printed 1/30/2024
HydroCAD® 10.10-6a s/n 02676 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentDA-1P: Drainage Area to Runoff Area=121,837 sf 90.37% Impervious Runoff Depth=2.04"
Tc=5.0 min CN=96 Runoff=9.68 cfs 0.476 af

SubcatchmentDA-2P: Drainage Area to Runoff Area=74,475 sf 85.00% Impervious Runoff Depth=1.94"
Tc=5.0 min CN=95 Runoff=5.74 cfs 0.277 af

SubcatchmentDA-3P: Drainage Area To Runoff Area=14,812 sf 12.30% Impervious Runoff Depth=0.98"
Tc=5.0 min CN=82 Runoff=0.61 cfs 0.028 af

SubcatchmentDA-4P: Drainage Area to Runoff Area=92,863 sf 16.24% Impervious Runoff Depth=1.04"
Tc=15.0 min CN=83 Runoff=2.84 cfs 0.185 af

Reach PT: PROPOSED TOTAL Inflow=3.54 cfs 0.966 af
Outflow=3.54 cfs 0.966 af

Reach TW: To Wetland Inflow=3.28 cfs 0.938 af
Outflow=3.28 cfs 0.938 af

Pond EV: East Vault Peak Elev=946.08' Storage=7,634 cf Inflow=5.74 cfs 0.277 af
Outflow=0.21 cfs 0.277 af

Pond WV: West Vault Peak Elev=946.20' Storage=13,254 cf Inflow=9.68 cfs 0.476 af
Outflow=0.43 cfs 0.476 af

Total Runoff Area = 6.979 ac Runoff Volume = 0.966 af Average Runoff Depth = 1.66"
37.39% Pervious = 2.610 ac 62.61% Impervious = 4.369 ac

Summary for Subcatchment DA-1P: Drainage Area to West Vault System

Runoff = 9.68 cfs @ 12.11 hrs, Volume= 0.476 af, Depth= 2.04"
Routed to Pond WV : West Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
110,109	98	Paved parking, HSG D
11,728	80	>75% Grass cover, Good, HSG D
121,837	96	Weighted Average
11,728		9.63% Pervious Area
110,109		90.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-2P: Drainage Area to East Vault

Runoff = 5.74 cfs @ 12.11 hrs, Volume= 0.277 af, Depth= 1.94"
Routed to Pond EV : East Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
63,305	98	Paved parking, HSG D
11,170	80	>75% Grass cover, Good, HSG D
74,475	95	Weighted Average
11,170		15.00% Pervious Area
63,305		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-3P: Drainage Area To Street

Runoff = 0.61 cfs @ 12.12 hrs, Volume= 0.028 af, Depth= 0.98"
Routed to Reach PT : PROPOSED TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
1,822	98	Paved parking, HSG D
12,990	80	>75% Grass cover, Good, HSG D
14,812	82	Weighted Average
12,990		87.70% Pervious Area
1,822		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-4P: Drainage Area to Wetlands

Runoff = 2.84 cfs @ 12.24 hrs, Volume= 0.185 af, Depth= 1.04"
Routed to Reach TW : To Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
15,077	98	Paved parking, HSG D
77,786	80	>75% Grass cover, Good, HSG D
92,863	83	Weighted Average
77,786		83.76% Pervious Area
15,077		16.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach PT: PROPOSED TOTAL

Inflow Area = 6.979 ac, 62.61% Impervious, Inflow Depth = 1.66" for 1-Year event
Inflow = 3.54 cfs @ 12.23 hrs, Volume= 0.966 af
Outflow = 3.54 cfs @ 12.23 hrs, Volume= 0.966 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach TW: To Wetland

Inflow Area = 6.639 ac, 65.18% Impervious, Inflow Depth = 1.70" for 1-Year event
Inflow = 3.28 cfs @ 12.24 hrs, Volume= 0.938 af
Outflow = 3.28 cfs @ 12.24 hrs, Volume= 0.938 af, Atten= 0%, Lag= 0.0 min
Routed to Reach PT : PROPOSED TOTAL

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond EV: East Vault

Inflow Area = 1.710 ac, 85.00% Impervious, Inflow Depth = 1.94" for 1-Year event
Inflow = 5.74 cfs @ 12.11 hrs, Volume= 0.277 af
Outflow = 0.21 cfs @ 12.05 hrs, Volume= 0.277 af, Atten= 96%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.05 hrs, Volume= 0.277 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 946.08' @ 13.55 hrs Surf.Area= 18,423 sf Storage= 7,634 cf

Plug-Flow detention time= 365.2 min calculated for 0.277 af (100% of inflow)
Center-of-Mass det. time= 365.5 min (1,141.0 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	945.00'	5,387 cf	**20.00'W x 217.00'L x 5.50'H Field A** 23,870 cf Overall - 10,401 cf Embedded = 13,469 cf x 40.0% Voids
#2A	945.50'	10,401 cf	**CMP Round 54** x 33 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -14.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 2 = 572.6 cf Inside
#3	943.00'	2,580 cf	**20.00'W x 215.00'L x 2.00'H Prismatoid** 8,600 cf Overall x 30.0% Voids
#4B	945.00'	6,031 cf	**53.75'W x 91.00'L x 5.50'H Field B** 26,902 cf Overall - 11,825 cf Embedded = 15,077 cf x 40.0% Voids
#5B	945.50'	11,825 cf	**CMP Round 54** x 32 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 32 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#6	943.00'	29 cf	**53.75'W x 91.00'L x 2.00'H Prismatoid** 9,783 cf Overall x 0.3% Voids
		36,254 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	943.00'	**12.0" Round Culvert** L= 257.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 943.00' / 942.00' S= 0.0039 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	943.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	947.50'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 947.50' / 947.47' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.05 hrs HW=945.14' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 2.98 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.21 cfs)
  └**3=Culvert** (Controls 0.00 cfs)

Summary for Pond WV: West Vault

Inflow Area = 2.797 ac, 90.37% Impervious, Inflow Depth = 2.04" for 1-Year event
Inflow = 9.68 cfs @ 12.11 hrs, Volume= 0.476 af
Outflow = 0.43 cfs @ 12.35 hrs, Volume= 0.476 af, Atten= 96%, Lag= 14.2 min
Primary = 0.43 cfs @ 12.35 hrs, Volume= 0.476 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 946.20' @ 13.44 hrs Surf.Area= 37,578 sf Storage= 13,254 cf

Plug-Flow detention time= 468.7 min calculated for 0.476 af (100% of inflow)
Center-of-Mass det. time= 468.4 min (1,238.4 - 770.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	946.00'	8,449 cf	**53.75'W x 151.00'L x 5.00'H Field A** 40,581 cf Overall - 19,459 cf Embedded = 21,122 cf x 40.0% Voids
#2A	946.00'	19,459 cf	**CMP Round 54** x 56 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 56 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#3	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid** 16,233 cf Overall x 30.0% Voids
#4B	946.00'	3,062 cf	**20.00'W x 122.50'L x 5.50'H Field B** 13,475 cf Overall - 5,821 cf Embedded = 7,654 cf x 40.0% Voids
#5B	946.50'	5,821 cf	**CMP Round 54** x 18 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -4.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 1 = 286.3 cf Inside
#6	944.00'	1,470 cf	**20.00'W x 122.50'L x 2.00'H Prismatoid** 4,900 cf Overall x 30.0% Voids
#7C	946.00'	882 cf	**40.25'W x 16.00'L x 5.50'H Field C** 3,542 cf Overall - 1,336 cf Embedded = 2,206 cf x 40.0% Voids
#8C	946.50'	1,336 cf	**CMP Round 54** x 6 Inside #7 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -6.00' x 15.90 sf x 6 rows
#9	944.00'	386 cf	**16.00'W x 40.25'L x 2.00'H Prismatoid** 1,288 cf Overall x 30.0% Voids
#10D	946.00'	8,725 cf	**53.75'W x 131.00'L x 5.50'H Field D** 38,727 cf Overall - 16,914 cf Embedded = 21,813 cf x 40.0% Voids
#11D	946.50'	16,914 cf	**CMP Round 54** x 48 Inside #10 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L

			48 Chambers in 8 Rows
			51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#12	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid**
			16,233 cf Overall x 30.0% Voids
		76,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	944.00'	**12.0" Round Culvert**
			L= 59.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 944.00' / 943.00' S= 0.0169 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	944.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	948.50'	**12.0" Round Culvert**
			L= 10.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 948.50' / 948.45' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.35 hrs HW=946.01' (Free Discharge)
└**1=Culvert** (Passes 0.43 cfs of 4.64 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.43 cfs)
  └**3=Culvert** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentDA-1P: Drainage Area to Runoff Area=121,837 sf 90.37% Impervious Runoff Depth=2.41"
Tc=5.0 min CN=96 Runoff=11.32 cfs 0.563 af

SubcatchmentDA-2P: Drainage Area to Runoff Area=74,475 sf 85.00% Impervious Runoff Depth=2.31"
Tc=5.0 min CN=95 Runoff=6.75 cfs 0.330 af

SubcatchmentDA-3P: Drainage Area To Runoff Area=14,812 sf 12.30% Impervious Runoff Depth=1.27"
Tc=5.0 min CN=82 Runoff=0.80 cfs 0.036 af

SubcatchmentDA-4P: Drainage Area to Runoff Area=92,863 sf 16.24% Impervious Runoff Depth=1.33"
Tc=15.0 min CN=83 Runoff=3.66 cfs 0.237 af

Reach PT: PROPOSED TOTAL Inflow=4.66 cfs 1.165 af
Outflow=4.66 cfs 1.165 af

Reach TW: To Wetland Inflow=4.31 cfs 1.129 af
Outflow=4.31 cfs 1.129 af

Pond EV: East Vault Peak Elev=946.35' Storage=9,320 cf Inflow=6.75 cfs 0.330 af
Outflow=0.21 cfs 0.330 af

Pond WV: West Vault Peak Elev=946.50' Storage=15,963 cf Inflow=11.32 cfs 0.563 af
Outflow=0.43 cfs 0.563 af

Total Runoff Area = 6.979 ac Runoff Volume = 1.165 af Average Runoff Depth = 2.00"
37.39% Pervious = 2.610 ac 62.61% Impervious = 4.369 ac

Summary for Subcatchment DA-1P: Drainage Area to West Vault System

Runoff = 11.32 cfs @ 12.11 hrs, Volume= 0.563 af, Depth= 2.41"
Routed to Pond WV : West Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (sf)	CN	Description
110,109	98	Paved parking, HSG D
11,728	80	>75% Grass cover, Good, HSG D
121,837	96	Weighted Average
11,728		9.63% Pervious Area
110,109		90.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-2P: Drainage Area to East Vault

Runoff = 6.75 cfs @ 12.11 hrs, Volume= 0.330 af, Depth= 2.31"
Routed to Pond EV : East Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (sf)	CN	Description
63,305	98	Paved parking, HSG D
11,170	80	>75% Grass cover, Good, HSG D
74,475	95	Weighted Average
11,170		15.00% Pervious Area
63,305		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-3P: Drainage Area To Street

Runoff = 0.80 cfs @ 12.12 hrs, Volume= 0.036 af, Depth= 1.27"
Routed to Reach PT : PROPOSED TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (sf)	CN	Description
1,822	98	Paved parking, HSG D
12,990	80	>75% Grass cover, Good, HSG D
14,812	82	Weighted Average
12,990		87.70% Pervious Area
1,822		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-4P: Drainage Area to Wetlands

Runoff = 3.66 cfs @ 12.24 hrs, Volume= 0.237 af, Depth= 1.33"
Routed to Reach TW : To Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (sf)	CN	Description
15,077	98	Paved parking, HSG D
77,786	80	>75% Grass cover, Good, HSG D
92,863	83	Weighted Average
77,786		83.76% Pervious Area
15,077		16.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach PT: PROPOSED TOTAL

Inflow Area = 6.979 ac, 62.61% Impervious, Inflow Depth = 2.00" for 2-Year event
Inflow = 4.66 cfs @ 12.23 hrs, Volume= 1.165 af
Outflow = 4.66 cfs @ 12.23 hrs, Volume= 1.165 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach TW: To Wetland

Inflow Area = 6.639 ac, 65.18% Impervious, Inflow Depth = 2.04" for 2-Year event
Inflow = 4.31 cfs @ 12.24 hrs, Volume= 1.129 af
Outflow = 4.31 cfs @ 12.24 hrs, Volume= 1.129 af, Atten= 0%, Lag= 0.0 min
Routed to Reach PT : PROPOSED TOTAL

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond EV: East Vault

Inflow Area = 1.710 ac, 85.00% Impervious, Inflow Depth = 2.31" for 2-Year event
Inflow = 6.75 cfs @ 12.11 hrs, Volume= 0.330 af
Outflow = 0.21 cfs @ 12.00 hrs, Volume= 0.330 af, Atten= 97%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.00 hrs, Volume= 0.330 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 946.35' @ 13.60 hrs Surf.Area= 18,423 sf Storage= 9,320 cf

Plug-Flow detention time= 436.6 min calculated for 0.330 af (100% of inflow)
Center-of-Mass det. time= 436.0 min (1,208.1 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	945.00'	5,387 cf	**20.00'W x 217.00'L x 5.50'H Field A** 23,870 cf Overall - 10,401 cf Embedded = 13,469 cf x 40.0% Voids
#2A	945.50'	10,401 cf	**CMP Round 54** x 33 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -14.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 2 = 572.6 cf Inside
#3	943.00'	2,580 cf	**20.00'W x 215.00'L x 2.00'H Prismatoid** 8,600 cf Overall x 30.0% Voids
#4B	945.00'	6,031 cf	**53.75'W x 91.00'L x 5.50'H Field B** 26,902 cf Overall - 11,825 cf Embedded = 15,077 cf x 40.0% Voids
#5B	945.50'	11,825 cf	**CMP Round 54** x 32 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 32 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#6	943.00'	29 cf	**53.75'W x 91.00'L x 2.00'H Prismatoid** 9,783 cf Overall x 0.3% Voids
		36,254 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	943.00'	**12.0" Round Culvert** L= 257.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 943.00' / 942.00' S= 0.0039 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	943.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	947.50'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 947.50' / 947.47' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.00 hrs HW=945.14' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 2.98 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.21 cfs)
  └**3=Culvert** (Controls 0.00 cfs)

Summary for Pond WV: West Vault

Inflow Area = 2.797 ac, 90.37% Impervious, Inflow Depth = 2.41" for 2-Year event
Inflow = 11.32 cfs @ 12.11 hrs, Volume= 0.563 af
Outflow = 0.43 cfs @ 12.20 hrs, Volume= 0.563 af, Atten= 96%, Lag= 5.2 min
Primary = 0.43 cfs @ 12.20 hrs, Volume= 0.563 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 946.50' @ 13.53 hrs Surf.Area= 37,578 sf Storage= 15,963 cf

Plug-Flow detention time= 482.3 min calculated for 0.562 af (100% of inflow)
Center-of-Mass det. time= 483.3 min (1,250.1 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	946.00'	8,449 cf	**53.75'W x 151.00'L x 5.00'H Field A** 40,581 cf Overall - 19,459 cf Embedded = 21,122 cf x 40.0% Voids
#2A	946.00'	19,459 cf	**CMP Round 54** x 56 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 56 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#3	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid** 16,233 cf Overall x 30.0% Voids
#4B	946.00'	3,062 cf	**20.00'W x 122.50'L x 5.50'H Field B** 13,475 cf Overall - 5,821 cf Embedded = 7,654 cf x 40.0% Voids
#5B	946.50'	5,821 cf	**CMP Round 54** x 18 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -4.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 1 = 286.3 cf Inside
#6	944.00'	1,470 cf	**20.00'W x 122.50'L x 2.00'H Prismatoid** 4,900 cf Overall x 30.0% Voids
#7C	946.00'	882 cf	**40.25'W x 16.00'L x 5.50'H Field C** 3,542 cf Overall - 1,336 cf Embedded = 2,206 cf x 40.0% Voids
#8C	946.50'	1,336 cf	**CMP Round 54** x 6 Inside #7 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -6.00' x 15.90 sf x 6 rows
#9	944.00'	386 cf	**16.00'W x 40.25'L x 2.00'H Prismatoid** 1,288 cf Overall x 30.0% Voids
#10D	946.00'	8,725 cf	**53.75'W x 131.00'L x 5.50'H Field D** 38,727 cf Overall - 16,914 cf Embedded = 21,813 cf x 40.0% Voids
#11D	946.50'	16,914 cf	**CMP Round 54** x 48 Inside #10 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L

			48 Chambers in 8 Rows
			51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#12	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid**
			16,233 cf Overall x 30.0% Voids
		76,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	944.00'	**12.0" Round Culvert**
			L= 59.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 944.00' / 943.00' S= 0.0169 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	944.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	948.50'	**12.0" Round Culvert**
			L= 10.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 948.50' / 948.45' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.20 hrs HW=946.06' (Free Discharge)
└**1=Culvert** (Passes 0.43 cfs of 4.72 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.43 cfs)
  └**3=Culvert** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentDA-1P: Drainage Area to Runoff Area=121,837 sf 90.37% Impervious Runoff Depth=3.80"
Tc=5.0 min CN=96 Runoff=17.32 cfs 0.885 af

SubcatchmentDA-2P: Drainage Area to Runoff Area=74,475 sf 85.00% Impervious Runoff Depth=3.69"
Tc=5.0 min CN=95 Runoff=10.45 cfs 0.525 af

SubcatchmentDA-3P: Drainage Area To Runoff Area=14,812 sf 12.30% Impervious Runoff Depth=2.43"
Tc=5.0 min CN=82 Runoff=1.51 cfs 0.069 af

SubcatchmentDA-4P: Drainage Area to Runoff Area=92,863 sf 16.24% Impervious Runoff Depth=2.51"
Tc=15.0 min CN=83 Runoff=6.90 cfs 0.447 af

Reach PT: PROPOSED TOTAL Inflow=8.18 cfs 1.926 af
Outflow=8.18 cfs 1.926 af

Reach TW: To Wetland Inflow=7.55 cfs 1.857 af
Outflow=7.55 cfs 1.857 af

Pond EV: East Vault Peak Elev=947.29' Storage=16,027 cf Inflow=10.45 cfs 0.525 af
Outflow=0.21 cfs 0.525 af

Pond WV: West Vault Peak Elev=947.37' Storage=26,538 cf Inflow=17.32 cfs 0.885 af
Outflow=0.43 cfs 0.885 af

Total Runoff Area = 6.979 ac Runoff Volume = 1.926 af Average Runoff Depth = 3.31"
37.39% Pervious = 2.610 ac 62.61% Impervious = 4.369 ac

Summary for Subcatchment DA-1P: Drainage Area to West Vault System

Runoff = 17.32 cfs @ 12.11 hrs, Volume= 0.885 af, Depth= 3.80"
Routed to Pond WV : West Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (sf)	CN	Description
110,109	98	Paved parking, HSG D
11,728	80	>75% Grass cover, Good, HSG D
121,837	96	Weighted Average
11,728		9.63% Pervious Area
110,109		90.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-2P: Drainage Area to East Vault

Runoff = 10.45 cfs @ 12.11 hrs, Volume= 0.525 af, Depth= 3.69"
Routed to Pond EV : East Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (sf)	CN	Description
63,305	98	Paved parking, HSG D
11,170	80	>75% Grass cover, Good, HSG D
74,475	95	Weighted Average
11,170		15.00% Pervious Area
63,305		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-3P: Drainage Area To Street

Runoff = 1.51 cfs @ 12.12 hrs, Volume= 0.069 af, Depth= 2.43"
Routed to Reach PT : PROPOSED TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (sf)	CN	Description
1,822	98	Paved parking, HSG D
12,990	80	>75% Grass cover, Good, HSG D
14,812	82	Weighted Average
12,990		87.70% Pervious Area
1,822		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-4P: Drainage Area to Wetlands

Runoff = 6.90 cfs @ 12.24 hrs, Volume= 0.447 af, Depth= 2.51"
Routed to Reach TW : To Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (sf)	CN	Description
15,077	98	Paved parking, HSG D
77,786	80	>75% Grass cover, Good, HSG D
92,863	83	Weighted Average
77,786		83.76% Pervious Area
15,077		16.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach PT: PROPOSED TOTAL

Inflow Area = 6.979 ac, 62.61% Impervious, Inflow Depth = 3.31" for 10-Year event
Inflow = 8.18 cfs @ 12.22 hrs, Volume= 1.926 af
Outflow = 8.18 cfs @ 12.22 hrs, Volume= 1.926 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach TW: To Wetland

Inflow Area = 6.639 ac, 65.18% Impervious, Inflow Depth = 3.36" for 10-Year event
Inflow = 7.55 cfs @ 12.24 hrs, Volume= 1.857 af
Outflow = 7.55 cfs @ 12.24 hrs, Volume= 1.857 af, Atten= 0%, Lag= 0.0 min
Routed to Reach PT : PROPOSED TOTAL

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond EV: East Vault

Inflow Area = 1.710 ac, 85.00% Impervious, Inflow Depth = 3.69" for 10-Year event
Inflow = 10.45 cfs @ 12.11 hrs, Volume= 0.525 af
Outflow = 0.21 cfs @ 11.70 hrs, Volume= 0.525 af, Atten= 98%, Lag= 0.0 min
Primary = 0.21 cfs @ 11.70 hrs, Volume= 0.525 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 947.29' @ 15.04 hrs Surf.Area= 18,423 sf Storage= 16,027 cf

Plug-Flow detention time= 716.6 min calculated for 0.525 af (100% of inflow)
Center-of-Mass det. time= 717.1 min (1,480.4 - 763.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	945.00'	5,387 cf	**20.00'W x 217.00'L x 5.50'H Field A** 23,870 cf Overall - 10,401 cf Embedded = 13,469 cf x 40.0% Voids
#2A	945.50'	10,401 cf	**CMP Round 54** x 33 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -14.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 2 = 572.6 cf Inside
#3	943.00'	2,580 cf	**20.00'W x 215.00'L x 2.00'H Prismatoid** 8,600 cf Overall x 30.0% Voids
#4B	945.00'	6,031 cf	**53.75'W x 91.00'L x 5.50'H Field B** 26,902 cf Overall - 11,825 cf Embedded = 15,077 cf x 40.0% Voids
#5B	945.50'	11,825 cf	**CMP Round 54** x 32 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 32 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#6	943.00'	29 cf	**53.75'W x 91.00'L x 2.00'H Prismatoid** 9,783 cf Overall x 0.3% Voids
		36,254 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	943.00'	**12.0" Round Culvert** L= 257.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 943.00' / 942.00' S= 0.0039 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	943.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	947.50'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 947.50' / 947.47' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 11.70 hrs HW=945.05' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 2.92 cfs potential flow)
  └**2=Exfiltration** (Exfiltration Controls 0.21 cfs)
  └**3=Culvert** (Controls 0.00 cfs)

Summary for Pond WV: West Vault

Inflow Area = 2.797 ac, 90.37% Impervious, Inflow Depth = 3.80" for 10-Year event
Inflow = 17.32 cfs @ 12.11 hrs, Volume= 0.885 af
Outflow = 0.43 cfs @ 12.05 hrs, Volume= 0.885 af, Atten= 97%, Lag= 0.0 min
Primary = 0.43 cfs @ 12.05 hrs, Volume= 0.885 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 947.37' @ 14.09 hrs Surf.Area= 37,578 sf Storage= 26,538 cf

Plug-Flow detention time= 651.1 min calculated for 0.885 af (100% of inflow)
Center-of-Mass det. time= 651.0 min (1,409.5 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	946.00'	8,449 cf	**53.75'W x 151.00'L x 5.00'H Field A** 40,581 cf Overall - 19,459 cf Embedded = 21,122 cf x 40.0% Voids
#2A	946.00'	19,459 cf	**CMP Round 54** x 56 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 56 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#3	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid** 16,233 cf Overall x 30.0% Voids
#4B	946.00'	3,062 cf	**20.00'W x 122.50'L x 5.50'H Field B** 13,475 cf Overall - 5,821 cf Embedded = 7,654 cf x 40.0% Voids
#5B	946.50'	5,821 cf	**CMP Round 54** x 18 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -4.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 1 = 286.3 cf Inside
#6	944.00'	1,470 cf	**20.00'W x 122.50'L x 2.00'H Prismatoid** 4,900 cf Overall x 30.0% Voids
#7C	946.00'	882 cf	**40.25'W x 16.00'L x 5.50'H Field C** 3,542 cf Overall - 1,336 cf Embedded = 2,206 cf x 40.0% Voids
#8C	946.50'	1,336 cf	**CMP Round 54** x 6 Inside #7 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -6.00' x 15.90 sf x 6 rows
#9	944.00'	386 cf	**16.00'W x 40.25'L x 2.00'H Prismatoid** 1,288 cf Overall x 30.0% Voids
#10D	946.00'	8,725 cf	**53.75'W x 131.00'L x 5.50'H Field D** 38,727 cf Overall - 16,914 cf Embedded = 21,813 cf x 40.0% Voids
#11D	946.50'	16,914 cf	**CMP Round 54** x 48 Inside #10 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L

			48 Chambers in 8 Rows
			51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#12	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid**
			16,233 cf Overall x 30.0% Voids
		76,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	944.00'	**12.0" Round Culvert**
			L= 59.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 944.00' / 943.00' S= 0.0169 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	944.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	948.50'	**12.0" Round Culvert**
			L= 10.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 948.50' / 948.45' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.43 cfs @ 12.05 hrs HW=946.05' (Free Discharge)
└**1=Culvert** (Passes 0.43 cfs of 4.70 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.43 cfs)
  └**3=Culvert** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentDA-1P: Drainage Area to Runoff Area=121,837 sf 90.37% Impervious Runoff Depth=6.84"
Tc=5.0 min CN=96 Runoff=30.27 cfs 1.595 af

SubcatchmentDA-2P: Drainage Area to Runoff Area=74,475 sf 85.00% Impervious Runoff Depth=6.72"
Tc=5.0 min CN=95 Runoff=18.40 cfs 0.958 af

SubcatchmentDA-3P: Drainage Area To Runoff Area=14,812 sf 12.30% Impervious Runoff Depth=5.22"
Tc=5.0 min CN=82 Runoff=3.14 cfs 0.148 af

SubcatchmentDA-4P: Drainage Area to Runoff Area=92,863 sf 16.24% Impervious Runoff Depth=5.33"
Tc=15.0 min CN=83 Runoff=14.28 cfs 0.947 af

Reach PT: PROPOSED TOTAL Inflow=17.24 cfs 3.647 af
Outflow=17.24 cfs 3.647 af

Reach TW: To Wetland Inflow=16.00 cfs 3.499 af
Outflow=16.00 cfs 3.499 af

Pond EV: East Vault Peak Elev=948.46' Storage=24,692 cf Inflow=18.40 cfs 0.958 af
Outflow=2.15 cfs 0.958 af

Pond WV: West Vault Peak Elev=948.94' Storage=49,172 cf Inflow=30.27 cfs 1.595 af
Outflow=0.96 cfs 1.594 af

Total Runoff Area = 6.979 ac Runoff Volume = 3.648 af Average Runoff Depth = 6.27"
37.39% Pervious = 2.610 ac 62.61% Impervious = 4.369 ac

Summary for Subcatchment DA-1P: Drainage Area to West Vault System

Runoff = 30.27 cfs @ 12.11 hrs, Volume= 1.595 af, Depth= 6.84"
Routed to Pond WV : West Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (sf)	CN	Description
110,109	98	Paved parking, HSG D
11,728	80	>75% Grass cover, Good, HSG D
121,837	96	Weighted Average
11,728		9.63% Pervious Area
110,109		90.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-2P: Drainage Area to East Vault

Runoff = 18.40 cfs @ 12.11 hrs, Volume= 0.958 af, Depth= 6.72"
Routed to Pond EV : East Vault

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (sf)	CN	Description
63,305	98	Paved parking, HSG D
11,170	80	>75% Grass cover, Good, HSG D
74,475	95	Weighted Average
11,170		15.00% Pervious Area
63,305		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-3P: Drainage Area To Street

Runoff = 3.14 cfs @ 12.11 hrs, Volume= 0.148 af, Depth= 5.22"
Routed to Reach PT : PROPOSED TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (sf)	CN	Description
1,822	98	Paved parking, HSG D
12,990	80	>75% Grass cover, Good, HSG D
14,812	82	Weighted Average
12,990		87.70% Pervious Area
1,822		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment DA-4P: Drainage Area to Wetlands

Runoff = 14.28 cfs @ 12.23 hrs, Volume= 0.947 af, Depth= 5.33"
Routed to Reach TW : To Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (sf)	CN	Description
15,077	98	Paved parking, HSG D
77,786	80	>75% Grass cover, Good, HSG D
92,863	83	Weighted Average
77,786		83.76% Pervious Area
15,077		16.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Summary for Reach PT: PROPOSED TOTAL

Inflow Area = 6.979 ac, 62.61% Impervious, Inflow Depth = 6.27" for 100-Year event
Inflow = 17.24 cfs @ 12.23 hrs, Volume= 3.647 af
Outflow = 17.24 cfs @ 12.23 hrs, Volume= 3.647 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach TW: To Wetland

Inflow Area = 6.639 ac, 65.18% Impervious, Inflow Depth = 6.33" for 100-Year event
Inflow = 16.00 cfs @ 12.24 hrs, Volume= 3.499 af
Outflow = 16.00 cfs @ 12.24 hrs, Volume= 3.499 af, Atten= 0%, Lag= 0.0 min
Routed to Reach PT : PROPOSED TOTAL

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond EV: East Vault

Inflow Area = 1.710 ac, 85.00% Impervious, Inflow Depth = 6.72" for 100-Year event
Inflow = 18.40 cfs @ 12.11 hrs, Volume= 0.958 af
Outflow = 2.15 cfs @ 12.55 hrs, Volume= 0.958 af, Atten= 88%, Lag= 26.2 min
Primary = 2.15 cfs @ 12.55 hrs, Volume= 0.958 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 948.46' @ 12.55 hrs Surf.Area= 18,423 sf Storage= 24,692 cf

Plug-Flow detention time= 599.1 min calculated for 0.958 af (100% of inflow)
Center-of-Mass det. time= 598.8 min (1,351.7 - 752.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	945.00'	5,387 cf	**20.00'W x 217.00'L x 5.50'H Field A** 23,870 cf Overall - 10,401 cf Embedded = 13,469 cf x 40.0% Voids
#2A	945.50'	10,401 cf	**CMP Round 54** x 33 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -14.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 2 = 572.6 cf Inside
#3	943.00'	2,580 cf	**20.00'W x 215.00'L x 2.00'H Prismatoid** 8,600 cf Overall x 30.0% Voids
#4B	945.00'	6,031 cf	**53.75'W x 91.00'L x 5.50'H Field B** 26,902 cf Overall - 11,825 cf Embedded = 15,077 cf x 40.0% Voids
#5B	945.50'	11,825 cf	**CMP Round 54** x 32 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 32 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#6	943.00'	29 cf	**53.75'W x 91.00'L x 2.00'H Prismatoid** 9,783 cf Overall x 0.3% Voids
		36,254 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	943.00'	**12.0" Round Culvert** L= 257.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 943.00' / 942.00' S= 0.0039 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	943.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	947.50'	**12.0" Round Culvert** L= 8.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 947.50' / 947.47' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.15 cfs @ 12.55 hrs HW=948.46' (Free Discharge)
└**1=Culvert** (Passes 2.15 cfs of 4.76 cfs potential flow)
  └**2=Exfiltration** (Exfiltration Controls 0.21 cfs)
  └**3=Culvert** (Barrel Controls 1.94 cfs @ 3.20 fps)

Summary for Pond WV: West Vault

Inflow Area = 2.797 ac, 90.37% Impervious, Inflow Depth = 6.84" for 100-Year event
Inflow = 30.27 cfs @ 12.11 hrs, Volume= 1.595 af
Outflow = 0.96 cfs @ 13.59 hrs, Volume= 1.594 af, Atten= 97%, Lag= 88.6 min
Primary = 0.96 cfs @ 13.59 hrs, Volume= 1.594 af
Routed to Reach TW : To Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 948.94' @ 13.59 hrs Surf.Area= 37,578 sf Storage= 49,172 cf

Plug-Flow detention time= 943.4 min calculated for 1.593 af (100% of inflow)
Center-of-Mass det. time= 944.4 min (1,693.5 - 749.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	946.00'	8,449 cf	**53.75'W x 151.00'L x 5.00'H Field A** 40,581 cf Overall - 19,459 cf Embedded = 21,122 cf x 40.0% Voids
#2A	946.00'	19,459 cf	**CMP Round 54** x 56 Inside #1 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L 56 Chambers in 8 Rows 51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#3	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid** 16,233 cf Overall x 30.0% Voids
#4B	946.00'	3,062 cf	**20.00'W x 122.50'L x 5.50'H Field B** 13,475 cf Overall - 5,821 cf Embedded = 7,654 cf x 40.0% Voids
#5B	946.50'	5,821 cf	**CMP Round 54** x 18 Inside #4 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -4.00' x 15.90 sf x 3 rows 18.00' Header x 15.90 sf x 1 = 286.3 cf Inside
#6	944.00'	1,470 cf	**20.00'W x 122.50'L x 2.00'H Prismatoid** 4,900 cf Overall x 30.0% Voids
#7C	946.00'	882 cf	**40.25'W x 16.00'L x 5.50'H Field C** 3,542 cf Overall - 1,336 cf Embedded = 2,206 cf x 40.0% Voids
#8C	946.50'	1,336 cf	**CMP Round 54** x 6 Inside #7 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L Row Length Adjustment= -6.00' x 15.90 sf x 6 rows
#9	944.00'	386 cf	**16.00'W x 40.25'L x 2.00'H Prismatoid** 1,288 cf Overall x 30.0% Voids
#10D	946.00'	8,725 cf	**53.75'W x 131.00'L x 5.50'H Field D** 38,727 cf Overall - 16,914 cf Embedded = 21,813 cf x 40.0% Voids
#11D	946.50'	16,914 cf	**CMP Round 54** x 48 Inside #10 Effective Size= 54.0"W x 54.0"H => 15.90 sf x 20.00'L = 318.1 cf Overall Size= 54.0"W x 54.0"H x 20.00'L

			48 Chambers in 8 Rows
			51.75' Header x 15.90 sf x 2 = 1,646.1 cf Inside
#12	944.00'	4,870 cf	**53.75'W x 151.00'L x 2.00'H Prismatoid**
			16,233 cf Overall x 30.0% Voids
		76,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

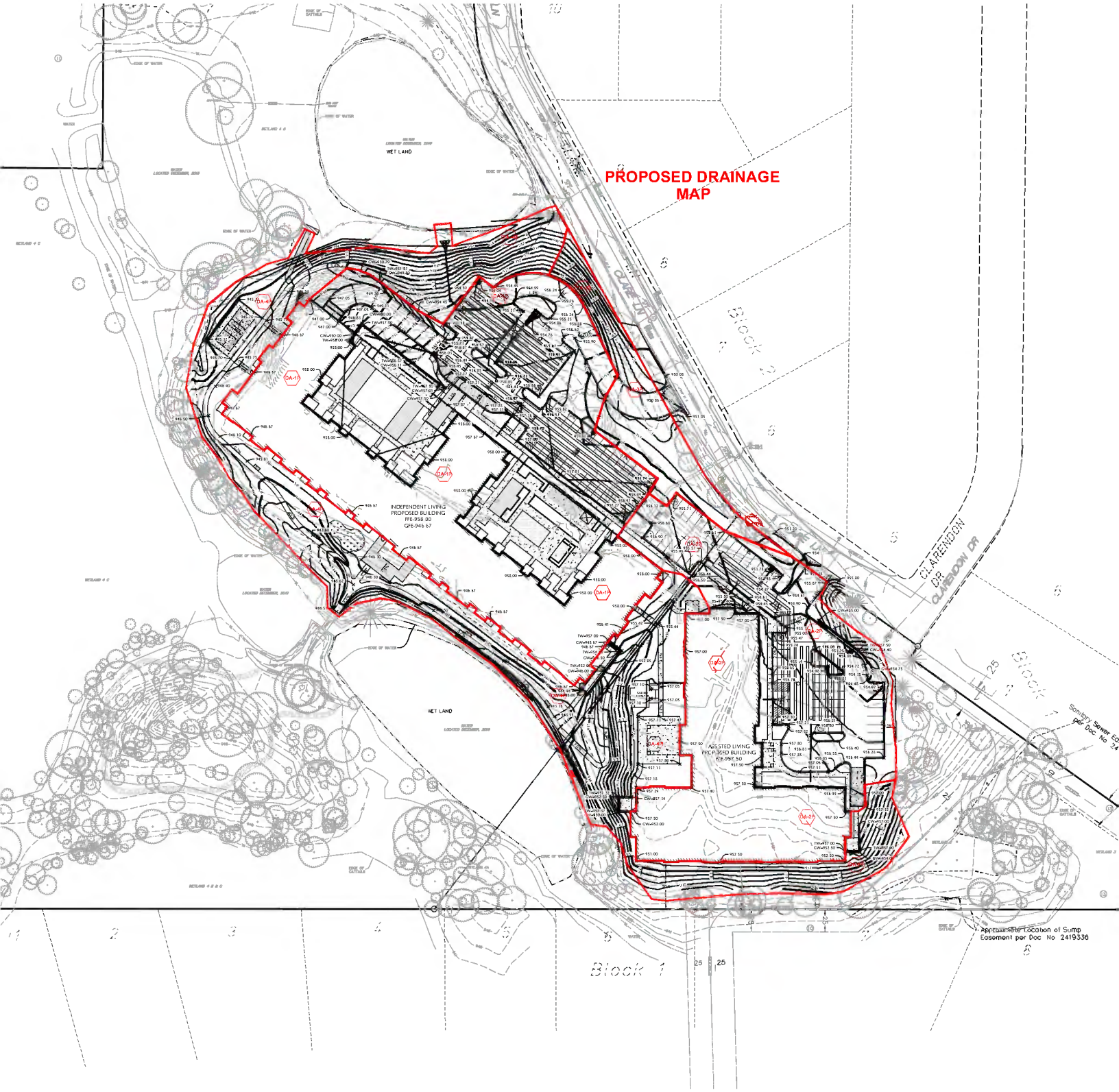
Device	Routing	Invert	Outlet Devices
#1	Primary	944.00'	**12.0" Round Culvert**
			L= 59.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 944.00' / 943.00' S= 0.0169 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	944.00'	**0.500 in/hr Exfiltration over Surface area**
#3	Device 1	948.50'	**12.0" Round Culvert**
			L= 10.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 948.50' / 948.45' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 13.59 hrs HW=948.94' (Free Discharge)
└**1=Culvert** (Passes 0.96 cfs of 7.65 cfs potential flow)
  ├**2=Exfiltration** (Exfiltration Controls 0.43 cfs)
  └**3=Culvert** (Barrel Controls 0.52 cfs @ 2.29 fps)

Figures

Existing Drainage Exhibit
Proposed Drainage Exhibit
West Vault Storage Data
East Vault Storage Data
Mids Existing
Mids Proposed

EXISTING DRAINAGE MAP


PROPOSED DRAINAGE MAP
WET LAND
CLARENDON DR
Block 2
Block 1
INDEPENDENT LIVING
PROPOSED BUILDING
PFE-958.00
GFE-946.67
ASSISTED LIVING
PROPOSED BUILDING
PFE-957.50
Approximate Location of Sump Easement per Doc No 2419336

Stage-Area-Storage for Pond WV: West Vault

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
944.00	19,327	0
944.01	19,327	58
944.02	19,327	116
944.03	19,327	174
944.04	19,327	232
944.05	19,327	290
944.06	19,327	348
944.07	19,327	406
944.08	19,327	464
944.09	19,327	522
944.10	19,327	580
944.11	19,327	638
944.12	19,327	696
944.13	19,327	754
944.14	19,327	812
944.15	19,327	870
944.16	19,327	928
944.17	19,327	986
944.18	19,327	1,044
944.19	19,327	1,102
944.20	19,327	1,160
944.21	19,327	1,218
944.22	19,327	1,276
944.23	19,327	1,334
944.24	19,327	1,392
944.25	19,327	1,449
944.26	19,327	1,507
944.27	19,327	1,565
944.28	19,327	1,623
944.29	19,327	1,681
944.30	19,327	1,739
944.31	19,327	1,797
944.32	19,327	1,855
944.33	19,327	1,913
944.34	19,327	1,971
944.35	19,327	2,029
944.36	19,327	2,087
944.37	19,327	2,145
944.38	19,327	2,203
944.39	19,327	2,261
944.40	19,327	2,319
944.41	19,327	2,377
944.42	19,327	2,435
944.43	19,327	2,493
944.44	19,327	2,551
944.45	19,327	2,609
944.46	19,327	2,667
944.47	19,327	2,725
944.48	19,327	2,783
944.49	19,327	2,841
944.50	19,327	2,899
944.51	19,327	2,957
944.52	19,327	3,015
944.53	19,327	3,073
944.54	19,327	3,131
944.55	19,327	3,189
944.56	19,327	3,247
944.57	19,327	3,305
944.58	19,327	3,363
944.59	19,327	3,421
944.60	19,327	3,479
944.61	19,327	3,537
944.62	19,327	3,595
944.63	19,327	3,653
944.64	19,327	3,711
944.65	19,327	3,769
944.66	19,327	3,827
944.67	19,327	3,885
944.68	19,327	3,943
944.69	19,327	4,001
944.70	19,327	4,059
944.71	19,327	4,117
944.72	19,327	4,175
944.73	19,327	4,233
944.74	19,327	4,290
944.75	19,327	4,348
944.76	19,327	4,406
944.77	19,327	4,464
944.78	19,327	4,522
944.79	19,327	4,580
944.80	19,327	4,638
944.81	19,327	4,696
944.82	19,327	4,754
944.83	19,327	4,812
944.84	19,327	4,870
944.85	19,327	4,928
944.86	19,327	4,986
944.87	19,327	5,044
944.88	19,327	5,102
944.89	19,327	5,160
944.90	19,327	5,218
944.91	19,327	5,276
944.92	19,327	5,334
944.93	19,327	5,392
944.94	19,327	5,450
944.95	19,327	5,508
944.96	19,327	5,566
944.97	19,327	5,624
944.98	19,327	5,682
944.99	19,327	5,740
945.00	19,327	5,798
945.01	19,327	5,856
945.02	19,327	5,914
945.03	19,327	5,972

42,711 CF - 15,955 CF = 26,745 CF

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
945.04	19,327	6,030	945.56	19,327	9,045
945.05	19,327	6,088	945.57	19,327	9,103
945.06	19,327	6,146	945.58	19,327	9,161
945.07	19,327	6,204	945.59	19,327	9,219
945.08	19,327	6,262	945.60	19,327	9,277
945.09	19,327	6,320	945.61	19,327	9,335
945.10	19,327	6,378	945.62	19,327	9,393
945.11	19,327	6,436	945.63	19,327	9,451
945.12	19,327	6,494	945.64	19,327	9,509
945.13	19,327	6,552	945.65	19,327	9,567
945.14	19,327	6,610	945.66	19,327	9,625
945.15	19,327	6,668	945.67	19,327	9,683
945.16	19,327	6,726	945.68	19,327	9,741
945.17	19,327	6,784	945.69	19,327	9,799
945.18	19,327	6,842	945.70	19,327	9,857
945.19	19,327	6,900	945.71	19,327	9,914
945.20	19,327	6,958	945.72	19,327	9,972
945.21	19,327	7,016	945.73	19,327	10,030
945.22	19,327	7,073	945.74	19,327	10,088
945.23	19,327	7,131	945.75	19,327	10,146
945.24	19,327	7,189	945.76	19,327	10,204
945.25	19,327	7,247	945.77	19,327	10,262
945.26	19,327	7,305	945.78	19,327	10,320
945.27	19,327	7,363	945.79	19,327	10,378
945.28	19,327	7,421	945.80	19,327	10,436
945.29	19,327	7,479	945.81	19,327	10,494
945.30	19,327	7,537	945.82	19,327	10,552
945.31	19,327	7,595	945.83	19,327	10,610
945.32	19,327	7,653	945.84	19,327	10,668
945.33	19,327	7,711	945.85	19,327	10,726
945.34	19,327	7,769	945.86	19,327	10,784
945.35	19,327	7,827	945.87	19,327	10,842
945.36	19,327	7,885	945.88	19,327	10,900
945.37	19,327	7,943	945.89	19,327	10,958
945.38	19,327	8,001	945.90	19,327	11,016
945.39	19,327	8,059	945.91	19,327	11,074
945.40	19,327	8,117	945.92	19,327	11,132
945.41	19,327	8,175	945.93	19,327	11,190
945.42	19,327	8,233	945.94	19,327	11,248
945.43	19,327	8,291	945.95	19,327	11,306
945.44	19,327	8,349	945.96	19,327	11,364
945.45	19,327	8,407	945.97	19,327	11,422
945.46	19,327	8,465	945.98	19,327	11,480
945.47	19,327	8,523	945.99	19,327	11,538
945.48	19,327	8,581	946.00	**37,578**	11,596
945.49	19,327	8,639	946.01	37,578	11,670
945.50	19,327	8,697	946.02	37,578	11,745
945.51	19,327	8,755	946.03	37,578	11,821
945.52	19,327	8,813	946.04	37,578	11,900
945.53	19,327	8,871	946.05	37,578	11,984
945.54	19,327	8,929	946.06	37,578	12,064
945.55	19,327	8,987	946.07	37,578	12,145

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
946.08	37,578	12,226	946.60	37,578	16,982
946.09	37,578	12,309	946.61	37,578	17,090
946.10	37,578	12,391	946.62	37,578	17,199
946.11	37,578	12,474	946.63	37,578	17,308
946.12	37,578	12,557	946.64	37,578	17,418
946.13	37,578	12,641	946.65	37,578	17,529
946.14	37,578	12,726	946.66	37,578	17,640
946.15	37,578	12,810	946.67	37,578	17,752
946.16	37,578	12,895	946.68	37,578	17,864
946.17	37,578	12,981	946.69	37,578	17,977
946.18	37,578	13,067	946.70	37,578	18,091
946.19	37,578	13,153	946.71	37,578	18,205
946.20	37,578	13,239	946.72	37,578	18,319
946.21	37,578	13,326	946.73	37,578	18,434
946.22	37,578	13,413	946.74	37,578	18,550
946.23	37,578	13,501	946.75	37,578	18,666
946.24	37,578	13,588	946.76	37,578	18,783
946.25	37,578	13,676	946.77	37,578	18,900
946.26	37,578	13,764	946.78	37,578	19,017
946.27	37,578	13,853	946.79	37,578	19,135
946.28	37,578	13,942	946.80	37,578	19,254
946.29	37,578	14,031	946.81	37,578	19,372
946.30	37,578	14,120	946.82	37,578	19,492
946.31	37,578	14,210	946.83	37,578	19,612
946.32	37,578	14,300	946.84	37,578	19,732
946.33	37,578	14,390	946.85	37,578	19,852
946.34	37,578	14,480	946.86	37,578	19,973
946.35	37,578	14,571	946.87	37,578	20,095
946.36	37,578	14,662	946.88	37,578	20,216
946.37	37,578	14,753	946.89	37,578	20,338
946.38	37,578	14,844	946.90	37,578	20,461
946.39	37,578	14,935	946.91	37,578	20,584
946.40	37,578	15,027	946.92	37,578	20,707
946.41	37,578	15,119	946.93	37,578	20,831
946.42	37,578	15,211	946.94	37,578	20,955
946.43	37,578	15,304	946.95	37,578	21,079
946.44	37,578	15,396	946.96	37,578	21,204
946.45	37,578	15,489	946.97	37,578	21,329
946.46	37,578	15,582	946.98	37,578	21,454
946.47	37,578	15,675	946.99	37,578	21,580
946.48	37,578	15,768	947.00	37,578	21,706
946.49	37,578	15,862	947.01	37,578	21,832
946.50	37,578	15,955	947.02	37,578	21,959
946.51	37,578	16,050	947.03	37,578	22,085
946.52	37,578	16,147	947.04	37,578	22,213
946.53	37,578	16,246	947.05	37,578	22,340
946.54	37,578	16,346	947.06	37,578	22,468
946.55	37,578	16,455	947.07	37,578	22,596
946.56	37,578	16,559	947.08	37,578	22,725
946.57	37,578	16,663	947.09	37,578	22,854
946.58	37,578	16,768	947.10	37,578	22,983
946.59	37,578	16,875	947.11	37,578	23,112

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
947.12	37,578	23,242	947.64	37,578	30,293
947.13	37,578	23,371	947.65	37,578	30,434
947.14	37,578	23,502	947.66	37,578	30,574
947.15	37,578	23,632	947.67	37,578	30,715
947.16	37,578	23,763	947.68	37,578	30,856
947.17	37,578	23,894	947.69	37,578	30,997
947.18	37,578	24,025	947.70	37,578	31,138
947.19	37,578	24,156	947.71	37,578	31,279
947.20	37,578	24,288	947.72	37,578	31,420
947.21	37,578	24,420	947.73	37,578	31,562
947.22	37,578	24,552	947.74	37,578	31,704
947.23	37,578	24,685	947.75	37,578	31,845
947.24	37,578	24,817	947.76	37,578	31,987
947.25	37,578	24,950	947.77	37,578	32,129
947.26	37,578	25,083	947.78	37,578	32,271
947.27	37,578	25,217	947.79	37,578	32,414
947.28	37,578	25,351	947.80	37,578	32,556
947.29	37,578	25,484	947.81	37,578	32,698
947.30	37,578	25,618	947.82	37,578	32,841
947.31	37,578	25,753	947.83	37,578	32,984
947.32	37,578	25,887	947.84	37,578	33,126
947.33	37,578	26,022	947.85	37,578	33,269
947.34	37,578	26,157	947.86	37,578	33,412
947.35	37,578	26,292	947.87	37,578	33,556
947.36	37,578	26,428	947.88	37,578	33,699
947.37	37,578	26,563	947.89	37,578	33,842
947.38	37,578	26,699	947.90	37,578	33,986
947.39	37,578	26,835	947.91	37,578	34,129
947.40	37,578	26,971	947.92	37,578	34,273
947.41	37,578	27,107	947.93	37,578	34,416
947.42	37,578	27,244	947.94	37,578	34,560
947.43	37,578	27,381	947.95	37,578	34,704
947.44	37,578	27,518	947.96	37,578	34,848
947.45	37,578	27,655	947.97	37,578	34,992
947.46	37,578	27,792	947.98	37,578	35,136
947.47	37,578	27,930	947.99	37,578	35,281
947.48	37,578	28,067	948.00	37,578	35,425
947.49	37,578	28,205	948.01	37,578	35,569
947.50	37,578	28,343	948.02	37,578	35,714
947.51	37,578	28,482	948.03	37,578	35,858
947.52	37,578	28,620	948.04	37,578	36,003
947.53	37,578	28,759	948.05	37,578	36,148
947.54	37,578	28,897	948.06	37,578	36,292
947.55	37,578	29,036	948.07	37,578	36,437
947.56	37,578	29,175	948.08	37,578	36,582
947.57	37,578	29,314	948.09	37,578	36,727
947.58	37,578	29,454	948.10	37,578	36,872
947.59	37,578	29,593	948.11	37,578	37,017
947.60	37,578	29,733	948.12	37,578	37,163
947.61	37,578	29,873	948.13	37,578	37,308
947.62	37,578	30,013	948.14	37,578	37,453
947.63	37,578	30,153	948.15	37,578	37,598

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
948.16	37,578	37,744	948.68	37,578	45,346
948.17	37,578	37,889	948.69	37,578	45,493
948.18	37,578	38,035	948.70	37,578	45,639
948.19	37,578	38,180	948.71	37,578	45,785
948.20	37,578	38,326	948.72	37,578	45,931
948.21	37,578	38,472	948.73	37,578	46,077
948.22	37,578	38,618	948.74	37,578	46,224
948.23	37,578	38,763	948.75	37,578	46,370
948.24	37,578	38,909	948.76	37,578	46,516
948.25	37,578	39,055	948.77	37,578	46,662
948.26	37,578	39,201	948.78	37,578	46,808
948.27	37,578	39,347	948.79	37,578	46,954
948.28	37,578	39,493	948.80	37,578	47,100
948.29	37,578	39,639	948.81	37,578	47,245
948.30	37,578	39,785	948.82	37,578	47,391
948.31	37,578	39,931	948.83	37,578	47,537
948.32	37,578	40,077	948.84	37,578	47,683
948.33	37,578	40,223	948.85	37,578	47,828
948.34	37,578	40,369	948.86	37,578	47,974
948.35	37,578	40,516	948.87	37,578	48,120
948.36	37,578	40,662	948.88	37,578	48,265
948.37	37,578	40,808	948.89	37,578	48,411
948.38	37,578	40,954	948.90	37,578	48,556
948.39	37,578	41,101	948.91	37,578	48,702
948.40	37,578	41,247	948.92	37,578	48,847
948.41	37,578	41,393	948.93	37,578	48,992
948.42	37,578	41,540	948.94	37,578	49,137
948.43	37,578	41,686	948.95	37,578	49,282
948.44	37,578	41,833	948.96	37,578	49,428
948.45	37,578	41,979	948.97	37,578	49,573
948.46	37,578	42,125	948.98	37,578	49,717
948.47	37,578	42,272	948.99	37,578	49,862
948.48	37,578	42,418	949.00	37,578	50,007
948.49	37,578	42,565	949.01	37,578	50,152
948.50	37,578	42,711	949.02	37,578	50,297
948.51	37,578	42,858	949.03	37,578	50,441
948.52	37,578	43,004	949.04	37,578	50,586
948.53	37,578	43,150	949.05	37,578	50,730
948.54	37,578	43,297	949.06	37,578	50,874
948.55	37,578	43,443	949.07	37,578	51,019
948.56	37,578	43,590	949.08	37,578	51,163
948.57	37,578	43,736	949.09	37,578	51,307
948.58	37,578	43,883	949.10	37,578	51,451
948.59	37,578	44,029	949.11	37,578	51,595
948.60	37,578	44,175	949.12	37,578	51,739
948.61	37,578	44,322	949.13	37,578	51,882
948.62	37,578	44,468	949.14	37,578	52,026
948.63	37,578	44,615	949.15	37,578	52,170
948.64	37,578	44,761	949.16	37,578	52,313
948.65	37,578	44,907	949.17	37,578	52,456
948.66	37,578	45,054	949.18	37,578	52,600
948.67	37,578	45,200	949.19	37,578	52,743

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
949.20	37,578	52,886	949.72	37,578	60,135
949.21	37,578	53,029	949.73	37,578	60,270
949.22	37,578	53,172	949.74	37,578	60,404
949.23	37,578	53,314	949.75	37,578	60,538
949.24	37,578	53,457	949.76	37,578	60,673
949.25	37,578	53,599	949.77	37,578	60,806
949.26	37,578	53,742	949.78	37,578	60,940
949.27	37,578	53,884	949.79	37,578	61,074
949.28	37,578	54,026	949.80	37,578	61,207
949.29	37,578	54,168	949.81	37,578	61,340
949.30	37,578	54,310	949.82	37,578	61,472
949.31	37,578	54,452	949.83	37,578	61,605
949.32	37,578	54,594	949.84	37,578	61,737
949.33	37,578	54,735	949.85	37,578	61,869
949.34	37,578	54,877	949.86	37,578	62,001
949.35	37,578	55,018	949.87	37,578	62,132
949.36	37,578	55,159	949.88	37,578	62,264
949.37	37,578	55,300	949.89	37,578	62,395
949.38	37,578	55,441	949.90	37,578	62,525
949.39	37,578	55,582	949.91	37,578	62,656
949.40	37,578	55,722	949.92	37,578	62,786
949.41	37,578	55,863	949.93	37,578	62,916
949.42	37,578	56,003	949.94	37,578	63,046
949.43	37,578	56,143	949.95	37,578	63,175
949.44	37,578	56,283	949.96	37,578	63,304
949.45	37,578	56,423	949.97	37,578	63,433
949.46	37,578	56,563	949.98	37,578	63,561
949.47	37,578	56,702	949.99	37,578	63,690
949.48	37,578	56,842	950.00	37,578	63,817
949.49	37,578	56,981	950.01	37,578	63,945
949.50	37,578	57,120	950.02	37,578	64,072
949.51	37,578	57,259	950.03	37,578	64,199
949.52	37,578	57,398	950.04	37,578	64,326
949.53	37,578	57,536	950.05	37,578	64,452
949.54	37,578	57,675	950.06	37,578	64,578
949.55	37,578	57,813	950.07	37,578	64,704
949.56	37,578	57,951	950.08	37,578	64,829
949.57	37,578	58,089	950.09	37,578	64,954
949.58	37,578	58,227	950.10	37,578	65,079
949.59	37,578	58,364	950.11	37,578	65,203
949.60	37,578	58,501	950.12	37,578	65,327
949.61	37,578	58,639	950.13	37,578	65,451
949.62	37,578	58,776	950.14	37,578	65,574
949.63	37,578	58,912	950.15	37,578	65,697
949.64	37,578	59,049	950.16	37,578	65,820
949.65	37,578	59,185	950.17	37,578	65,942
949.66	37,578	59,322	950.18	37,578	66,063
949.67	37,578	59,458	950.19	37,578	66,185
949.68	37,578	59,593	950.20	37,578	66,306
949.69	37,578	59,729	950.21	37,578	66,426
949.70	37,578	59,865	950.22	37,578	66,546
949.71	37,578	60,000	950.23	37,578	66,666

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
950.24	37,578	66,785	950.76	37,578	72,168
950.25	37,578	66,904	950.77	37,578	72,259
950.26	37,578	67,022	950.78	37,578	72,350
950.27	37,578	67,140	950.79	37,578	72,440
950.28	37,578	67,258	950.80	37,578	72,530
950.29	37,578	67,375	950.81	37,578	72,620
950.30	37,578	67,491	950.82	37,578	72,709
950.31	37,578	67,607	950.83	37,578	72,798
950.32	37,578	67,723	950.84	37,578	72,886
950.33	37,578	67,838	950.85	37,578	72,974
950.34	37,578	67,952	950.86	37,578	73,061
950.35	37,578	68,066	950.87	37,578	73,149
950.36	37,578	68,179	950.88	37,578	73,235
950.37	37,578	68,292	950.89	37,578	73,321
950.38	37,578	68,404	950.90	37,578	73,406
950.39	37,578	68,516	950.91	37,578	73,491
950.40	37,578	68,626	950.92	37,578	73,575
950.41	37,578	68,737	950.93	37,578	73,658
950.42	37,578	68,846	950.94	37,578	73,741
950.43	37,578	68,955	950.95	37,578	73,823
950.44	37,578	69,063	950.96	37,578	73,904
950.45	37,578	69,170	950.97	37,578	73,984
950.46	37,578	69,276	950.98	37,578	74,061
950.47	37,578	69,381	950.99	37,578	74,137
950.48	37,578	69,484	951.00	37,578	74,217
950.49	37,578	69,585	951.01	37,578	74,258
950.50	37,578	69,689	951.02	37,578	74,298
950.51	37,578	69,788	951.03	37,578	74,339
950.52	37,578	69,886	951.04	37,578	74,379
950.53	37,578	69,984	951.05	37,578	74,420
950.54	37,578	70,082	951.06	37,578	74,460
950.55	37,578	70,180	951.07	37,578	74,501
950.56	37,578	70,277	951.08	37,578	74,541
950.57	37,578	70,375	951.09	37,578	74,582
950.58	37,578	70,471	951.10	37,578	74,622
950.59	37,578	70,568	951.11	37,578	74,663
950.60	37,578	70,665	951.12	37,578	74,703
950.61	37,578	70,761	951.13	37,578	74,744
950.62	37,578	70,857	951.14	37,578	74,785
950.63	37,578	70,952	951.15	37,578	74,825
950.64	37,578	71,047	951.16	37,578	74,866
950.65	37,578	71,142	951.17	37,578	74,906
950.66	37,578	71,237	951.18	37,578	74,947
950.67	37,578	71,332	951.19	37,578	74,987
950.68	37,578	71,426	951.20	37,578	75,028
950.69	37,578	71,520	951.21	37,578	75,068
950.70	37,578	71,613	951.22	37,578	75,109
950.71	37,578	71,706	951.23	37,578	75,149
950.72	37,578	71,799	951.24	37,578	75,190
950.73	37,578	71,892	951.25	37,578	75,230
950.74	37,578	71,984	951.26	37,578	75,271
950.75	37,578	72,076	951.27	37,578	75,312

Stage-Area-Storage for Pond WV: West Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
951.28	37,578	75,352
951.29	37,578	75,393
951.30	37,578	75,433
951.31	37,578	75,474
951.32	37,578	75,514
951.33	37,578	75,555
951.34	37,578	75,595
951.35	37,578	75,636
951.36	37,578	75,676
951.37	37,578	75,717
951.38	37,578	75,758
951.39	37,578	75,798
951.40	37,578	75,839
951.41	37,578	75,879
951.42	37,578	75,920
951.43	37,578	75,960
951.44	37,578	76,001
951.45	37,578	76,041
951.46	37,578	76,082
951.47	37,578	76,122
951.48	37,578	76,163
951.49	37,578	76,203
951.50	37,578	**76,244**

Stage-Area-Storage for Pond EV: East Vault

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.00	9,191	0	943.52	9,191	678
943.01	9,191	13	943.53	9,191	691
943.02	9,191	26	943.54	9,191	705
943.03	9,191	39	943.55	9,191	718
943.04	9,191	52	943.56	9,191	731
943.05	9,191	65	943.57	9,191	744
943.06	9,191	78	943.58	9,191	757
943.07	9,191	91	943.59	9,191	770
943.08	9,191	104	943.60	9,191	783
943.09	9,191	117	943.61	9,191	796
943.10	9,191	130	943.62	9,191	809
943.11	9,191	144	943.63	9,191	822
943.12	9,191	157	943.64	9,191	835
943.13	9,191	170	943.65	9,191	848
943.14	9,191	183	943.66	9,191	861
943.15	9,191	196	943.67	9,191	874
943.16	9,191	209	943.68	9,191	887
943.17	9,191	222	943.69	9,191	900
943.18	9,191	235	943.70	9,191	913
943.19	9,191	248	943.71	9,191	926
943.20	9,191	261	943.72	9,191	939
943.21	9,191	274	943.73	9,191	952
943.22	9,191	287	943.74	9,191	965
943.23	9,191	300	943.75	9,191	979
943.24	9,191	313	943.76	9,191	992
943.25	9,191	326	943.77	9,191	1,005
943.26	9,191	339	943.78	9,191	1,018
943.27	9,191	352	943.79	9,191	1,031
943.28	9,191	365	943.80	9,191	1,044
943.29	9,191	378	943.81	9,191	1,057
943.30	9,191	391	943.82	9,191	1,070
943.31	9,191	404	943.83	9,191	1,083
943.32	9,191	417	943.84	9,191	1,096
943.33	9,191	431	943.85	9,191	1,109
943.34	9,191	444	943.86	9,191	1,122
943.35	9,191	457	943.87	9,191	1,135
943.36	9,191	470	943.88	9,191	1,148
943.37	9,191	483	943.89	9,191	1,161
943.38	9,191	496	943.90	9,191	1,174
943.39	9,191	509	943.91	9,191	1,187
943.40	9,191	522	943.92	9,191	1,200
943.41	9,191	535	943.93	9,191	1,213
943.42	9,191	548	943.94	9,191	1,226
943.43	9,191	561	943.95	9,191	1,239
943.44	9,191	574	943.96	9,191	1,252
943.45	9,191	587	943.97	9,191	1,266
943.46	9,191	600	943.98	9,191	1,279
943.47	9,191	613	943.99	9,191	1,292
943.48	9,191	626	944.00	9,191	1,305
943.49	9,191	639	944.01	9,191	1,318
943.50	9,191	652	944.02	9,191	1,331
943.51	9,191	665	944.03	9,191	1,344

17,567 CF - 4,456 CF = 13,111 CF

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
944.04	9,191	1,357	944.56	9,191	2,035
944.05	9,191	1,370	944.57	9,191	2,048
944.06	9,191	1,383	944.58	9,191	2,061
944.07	9,191	1,396	944.59	9,191	2,074
944.08	9,191	1,409	944.60	9,191	2,087
944.09	9,191	1,422	944.61	9,191	2,101
944.10	9,191	1,435	944.62	9,191	2,114
944.11	9,191	1,448	944.63	9,191	2,127
944.12	9,191	1,461	944.64	9,191	2,140
944.13	9,191	1,474	944.65	9,191	2,153
944.14	9,191	1,487	944.66	9,191	2,166
944.15	9,191	1,500	944.67	9,191	2,179
944.16	9,191	1,513	944.68	9,191	2,192
944.17	9,191	1,526	944.69	9,191	2,205
944.18	9,191	1,540	944.70	9,191	2,218
944.19	9,191	1,553	944.71	9,191	2,231
944.20	9,191	1,566	944.72	9,191	2,244
944.21	9,191	1,579	944.73	9,191	2,257
944.22	9,191	1,592	944.74	9,191	2,270
944.23	9,191	1,605	944.75	9,191	2,283
944.24	9,191	1,618	944.76	9,191	2,296
944.25	9,191	1,631	944.77	9,191	2,309
944.26	9,191	1,644	944.78	9,191	2,322
944.27	9,191	1,657	944.79	9,191	2,335
944.28	9,191	1,670	944.80	9,191	2,348
944.29	9,191	1,683	944.81	9,191	2,361
944.30	9,191	1,696	944.82	9,191	2,375
944.31	9,191	1,709	944.83	9,191	2,388
944.32	9,191	1,722	944.84	9,191	2,401
944.33	9,191	1,735	944.85	9,191	2,414
944.34	9,191	1,748	944.86	9,191	2,427
944.35	9,191	1,761	944.87	9,191	2,440
944.36	9,191	1,774	944.88	9,191	2,453
944.37	9,191	1,787	944.89	9,191	2,466
944.38	9,191	1,800	944.90	9,191	2,479
944.39	9,191	1,813	944.91	9,191	2,492
944.40	9,191	1,827	944.92	9,191	2,505
944.41	9,191	1,840	944.93	9,191	2,518
944.42	9,191	1,853	944.94	9,191	2,531
944.43	9,191	1,866	944.95	9,191	2,544
944.44	9,191	1,879	944.96	9,191	2,557
944.45	9,191	1,892	944.97	9,191	2,570
944.46	9,191	1,905	944.98	9,191	2,583
944.47	9,191	1,918	944.99	9,191	2,596
944.48	9,191	1,931	945.00	**18,423**	2,609
944.49	9,191	1,944	945.01	18,423	2,646
944.50	9,191	1,957	945.02	18,423	2,683
944.51	9,191	1,970	945.03	18,423	2,720
944.52	9,191	1,983	945.04	18,423	2,757
944.53	9,191	1,996	945.05	18,423	2,794
944.54	9,191	2,009	945.06	18,423	2,831
944.55	9,191	2,022	945.07	18,423	2,868

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
945.08	18,423	2,905	945.60	18,423	4,899
945.09	18,423	2,942	945.61	18,423	4,948
945.10	18,423	2,979	945.62	18,423	4,996
945.11	18,423	3,016	945.63	18,423	5,046
945.12	18,423	3,052	945.64	18,423	5,096
945.13	18,423	3,089	945.65	18,423	5,146
945.14	18,423	3,126	945.66	18,423	5,196
945.15	18,423	3,163	945.67	18,423	5,248
945.16	18,423	3,200	945.68	18,423	5,299
945.17	18,423	3,237	945.69	18,423	5,351
945.18	18,423	3,274	945.70	18,423	5,403
945.19	18,423	3,311	945.71	18,423	5,456
945.20	18,423	3,348	945.72	18,423	5,509
945.21	18,423	3,385	945.73	18,423	5,562
945.22	18,423	3,422	945.74	18,423	5,616
945.23	18,423	3,459	945.75	18,423	5,670
945.24	18,423	3,496	945.76	18,423	5,725
945.25	18,423	3,532	945.77	18,423	5,779
945.26	18,423	3,569	945.78	18,423	5,834
945.27	18,423	3,606	945.79	18,423	5,890
945.28	18,423	3,643	945.80	18,423	5,945
945.29	18,423	3,680	945.81	18,423	6,001
945.30	18,423	3,717	945.82	18,423	6,057
945.31	18,423	3,754	945.83	18,423	6,114
945.32	18,423	3,791	945.84	18,423	6,170
945.33	18,423	3,828	945.85	18,423	6,227
945.34	18,423	3,865	945.86	18,423	6,285
945.35	18,423	3,902	945.87	18,423	6,342
945.36	18,423	3,939	945.88	18,423	6,400
945.37	18,423	3,976	945.89	18,423	6,458
945.38	18,423	4,012	945.90	18,423	6,516
945.39	18,423	4,049	945.91	18,423	6,575
945.40	18,423	4,086	945.92	18,423	6,634
945.41	18,423	4,123	945.93	18,423	6,693
945.42	18,423	4,160	945.94	18,423	6,752
945.43	18,423	4,197	945.95	18,423	6,811
945.44	18,423	4,234	945.96	18,423	6,871
945.45	18,423	4,271	945.97	18,423	6,931
945.46	18,423	4,308	945.98	18,423	6,991
945.47	18,423	4,345	945.99	18,423	7,051
945.48	18,423	4,382	946.00	18,423	7,112
945.49	18,423	4,419	946.01	18,423	7,173
945.50	18,423	4,456	946.02	18,423	7,233
945.51	18,423	4,493	946.03	18,423	7,295
945.52	18,423	4,533	946.04	18,423	7,356
945.53	18,423	4,574	946.05	18,423	7,418
945.54	18,423	4,617	946.06	18,423	7,479
945.55	18,423	4,667	946.07	18,423	7,541
945.56	18,423	4,712	946.08	18,423	7,603
945.57	18,423	4,758	946.09	18,423	7,666
945.58	18,423	4,804	946.10	18,423	7,728
945.59	18,423	4,852	946.11	18,423	7,791

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
946.12	18,423	7,854	946.64	18,423	11,321
946.13	18,423	7,917	946.65	18,423	11,391
946.14	18,423	7,980	946.66	18,423	11,461
946.15	18,423	8,043	946.67	18,423	11,531
946.16	18,423	8,107	946.68	18,423	11,601
946.17	18,423	8,170	946.69	18,423	11,671
946.18	18,423	8,234	946.70	18,423	11,741
946.19	18,423	8,298	946.71	18,423	11,812
946.20	18,423	8,363	946.72	18,423	11,882
946.21	18,423	8,427	946.73	18,423	11,953
946.22	18,423	8,491	946.74	18,423	12,023
946.23	18,423	8,556	946.75	18,423	12,094
946.24	18,423	8,621	946.76	18,423	12,165
946.25	18,423	8,686	946.77	18,423	12,236
946.26	18,423	8,751	946.78	18,423	12,307
946.27	18,423	8,816	946.79	18,423	12,378
946.28	18,423	8,882	946.80	18,423	12,449
946.29	18,423	8,947	946.81	18,423	12,520
946.30	18,423	9,013	946.82	18,423	12,591
946.31	18,423	9,079	946.83	18,423	12,662
946.32	18,423	9,145	946.84	18,423	12,734
946.33	18,423	9,211	946.85	18,423	12,805
946.34	18,423	9,277	946.86	18,423	12,877
946.35	18,423	9,344	946.87	18,423	12,948
946.36	18,423	9,410	946.88	18,423	13,020
946.37	18,423	9,477	946.89	18,423	13,092
946.38	18,423	9,544	946.90	18,423	13,164
946.39	18,423	9,611	946.91	18,423	13,236
946.40	18,423	9,678	946.92	18,423	13,308
946.41	18,423	9,745	946.93	18,423	13,380
946.42	18,423	9,812	946.94	18,423	13,452
946.43	18,423	9,879	946.95	18,423	13,524
946.44	18,423	9,947	946.96	18,423	13,596
946.45	18,423	10,015	946.97	18,423	13,668
946.46	18,423	10,082	946.98	18,423	13,741
946.47	18,423	10,150	946.99	18,423	13,813
946.48	18,423	10,218	947.00	18,423	13,886
946.49	18,423	10,286	947.01	18,423	13,958
946.50	18,423	10,355	947.02	18,423	14,031
946.51	18,423	10,423	947.03	18,423	14,103
946.52	18,423	10,492	947.04	18,423	14,176
946.53	18,423	10,560	947.05	18,423	14,249
946.54	18,423	10,629	947.06	18,423	14,322
946.55	18,423	10,698	947.07	18,423	14,395
946.56	18,423	10,766	947.08	18,423	14,467
946.57	18,423	10,835	947.09	18,423	14,540
946.58	18,423	10,905	947.10	18,423	14,613
946.59	18,423	10,974	947.11	18,423	14,686
946.60	18,423	11,043	947.12	18,423	14,760
946.61	18,423	11,113	947.13	18,423	14,833
946.62	18,423	11,182	947.14	18,423	14,906
946.63	18,423	11,252	947.15	18,423	14,979

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
947.16	18,423	15,053	947.68	18,423	18,909
947.17	18,423	15,126	947.69	18,423	18,984
947.18	18,423	15,199	947.70	18,423	19,058
947.19	18,423	15,273	947.71	18,423	19,133
947.20	18,423	15,346	947.72	18,423	19,208
947.21	18,423	15,420	947.73	18,423	19,282
947.22	18,423	15,493	947.74	18,423	19,357
947.23	18,423	15,567	947.75	18,423	19,432
947.24	18,423	15,641	947.76	18,423	19,506
947.25	18,423	15,714	947.77	18,423	19,581
947.26	18,423	15,788	947.78	18,423	19,656
947.27	18,423	15,862	947.79	18,423	19,730
947.28	18,423	15,936	947.80	18,423	19,805
947.29	18,423	16,010	947.81	18,423	19,880
947.30	18,423	16,083	947.82	18,423	19,954
947.31	18,423	16,157	947.83	18,423	20,029
947.32	18,423	16,231	947.84	18,423	20,103
947.33	18,423	16,305	947.85	18,423	20,178
947.34	18,423	16,379	947.86	18,423	20,253
947.35	18,423	16,453	947.87	18,423	20,327
947.36	18,423	16,527	947.88	18,423	20,402
947.37	18,423	16,601	947.89	18,423	20,476
947.38	18,423	16,676	947.90	18,423	20,551
947.39	18,423	16,750	947.91	18,423	20,626
947.40	18,423	16,824	947.92	18,423	20,700
947.41	18,423	16,898	947.93	18,423	20,775
947.42	18,423	16,972	947.94	18,423	20,849
947.43	18,423	17,047	947.95	18,423	20,924
947.44	18,423	17,121	947.96	18,423	20,998
947.45	18,423	17,195	947.97	18,423	21,073
947.46	18,423	17,270	947.98	18,423	21,147
947.47	18,423	17,344	947.99	18,423	21,222
947.48	18,423	17,418	948.00	18,423	21,296
947.49	18,423	17,493	948.01	18,423	21,371
947.50	18,423	17,567	948.02	18,423	21,445
947.51	18,423	17,642	948.03	18,423	21,519
947.52	18,423	17,716	948.04	18,423	21,594
947.53	18,423	17,790	948.05	18,423	21,668
947.54	18,423	17,865	948.06	18,423	21,742
947.55	18,423	17,939	948.07	18,423	21,817
947.56	18,423	18,014	948.08	18,423	21,891
947.57	18,423	18,088	948.09	18,423	21,965
947.58	18,423	18,163	948.10	18,423	22,039
947.59	18,423	18,238	948.11	18,423	22,113
947.60	18,423	18,312	948.12	18,423	22,188
947.61	18,423	18,387	948.13	18,423	22,262
947.62	18,423	18,461	948.14	18,423	22,336
947.63	18,423	18,536	948.15	18,423	22,410
947.64	18,423	18,611	948.16	18,423	22,484
947.65	18,423	18,685	948.17	18,423	22,558
947.66	18,423	18,760	948.18	18,423	22,632
947.67	18,423	18,834	948.19	18,423	22,706

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
948.20	18,423	22,780	948.72	18,423	26,557
948.21	18,423	22,854	948.73	18,423	26,628
948.22	18,423	22,928	948.74	18,423	26,698
948.23	18,423	23,001	948.75	18,423	26,769
948.24	18,423	23,075	948.76	18,423	26,840
948.25	18,423	23,149	948.77	18,423	26,910
948.26	18,423	23,223	948.78	18,423	26,981
948.27	18,423	23,296	948.79	18,423	27,051
948.28	18,423	23,370	948.80	18,423	27,122
948.29	18,423	23,443	948.81	18,423	27,192
948.30	18,423	23,517	948.82	18,423	27,262
948.31	18,423	23,590	948.83	18,423	27,332
948.32	18,423	23,664	948.84	18,423	27,402
948.33	18,423	23,737	948.85	18,423	27,472
948.34	18,423	23,811	948.86	18,423	27,542
948.35	18,423	23,884	948.87	18,423	27,612
948.36	18,423	23,957	948.88	18,423	27,681
948.37	18,423	24,030	948.89	18,423	27,751
948.38	18,423	24,104	948.90	18,423	27,820
948.39	18,423	24,177	948.91	18,423	27,889
948.40	18,423	24,250	948.92	18,423	27,959
948.41	18,423	24,323	948.93	18,423	28,028
948.42	18,423	24,396	948.94	18,423	28,097
948.43	18,423	24,469	948.95	18,423	28,166
948.44	18,423	24,542	948.96	18,423	28,234
948.45	18,423	24,614	948.97	18,423	28,303
948.46	18,423	24,687	948.98	18,423	28,372
948.47	18,423	24,760	948.99	18,423	28,440
948.48	18,423	24,832	949.00	18,423	28,508
948.49	18,423	24,905	949.01	18,423	28,577
948.50	18,423	24,978	949.02	18,423	28,645
948.51	18,423	25,050	949.03	18,423	28,713
948.52	18,423	25,122	949.04	18,423	28,781
948.53	18,423	25,195	949.05	18,423	28,849
948.54	18,423	25,267	949.06	18,423	28,916
948.55	18,423	25,339	949.07	18,423	28,984
948.56	18,423	25,411	949.08	18,423	29,051
948.57	18,423	25,484	949.09	18,423	29,118
948.58	18,423	25,556	949.10	18,423	29,186
948.59	18,423	25,628	949.11	18,423	29,253
948.60	18,423	25,699	949.12	18,423	29,320
948.61	18,423	25,771	949.13	18,423	29,386
948.62	18,423	25,843	949.14	18,423	29,453
948.63	18,423	25,915	949.15	18,423	29,520
948.64	18,423	25,986	949.16	18,423	29,586
948.65	18,423	26,058	949.17	18,423	29,652
948.66	18,423	26,129	949.18	18,423	29,718
948.67	18,423	26,201	949.19	18,423	29,784
948.68	18,423	26,272	949.20	18,423	29,850
948.69	18,423	26,343	949.21	18,423	29,916
948.70	18,423	26,415	949.22	18,423	29,981
948.71	18,423	26,486	949.23	18,423	30,047

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
949.24	18,423	30,112	949.76	18,423	33,247
949.25	18,423	30,177	949.77	18,423	33,301
949.26	18,423	30,242	949.78	18,423	33,354
949.27	18,423	30,307	949.79	18,423	33,407
949.28	18,423	30,372	949.80	18,423	33,460
949.29	18,423	30,436	949.81	18,423	33,512
949.30	18,423	30,501	949.82	18,423	33,564
949.31	18,423	30,565	949.83	18,423	33,616
949.32	18,423	30,629	949.84	18,423	33,667
949.33	18,423	30,693	949.85	18,423	33,717
949.34	18,423	30,756	949.86	18,423	33,767
949.35	18,423	30,820	949.87	18,423	33,817
949.36	18,423	30,883	949.88	18,423	33,867
949.37	18,423	30,947	949.89	18,423	33,915
949.38	18,423	31,010	949.90	18,423	33,964
949.39	18,423	31,072	949.91	18,423	34,011
949.40	18,423	31,135	949.92	18,423	34,059
949.41	18,423	31,198	949.93	18,423	34,105
949.42	18,423	31,260	949.94	18,423	34,151
949.43	18,423	31,322	949.95	18,423	34,196
949.44	18,423	31,384	949.96	18,423	34,241
949.45	18,423	31,446	949.97	18,423	34,284
949.46	18,423	31,507	949.98	18,423	34,325
949.47	18,423	31,569	949.99	18,423	34,364
949.48	18,423	31,630	950.00	18,423	34,408
949.49	18,423	31,691	950.01	18,423	34,445
949.50	18,423	31,751	950.02	18,423	34,481
949.51	18,423	31,812	950.03	18,423	34,518
949.52	18,423	31,872	950.04	18,423	34,555
949.53	18,423	31,932	950.05	18,423	34,592
949.54	18,423	31,992	950.06	18,423	34,629
949.55	18,423	32,052	950.07	18,423	34,666
949.56	18,423	32,111	950.08	18,423	34,703
949.57	18,423	32,171	950.09	18,423	34,740
949.58	18,423	32,230	950.10	18,423	34,777
949.59	18,423	32,288	950.11	18,423	34,814
949.60	18,423	32,347	950.12	18,423	34,851
949.61	18,423	32,405	950.13	18,423	34,888
949.62	18,423	32,463	950.14	18,423	34,925
949.63	18,423	32,521	950.15	18,423	34,961
949.64	18,423	32,578	950.16	18,423	34,998
949.65	18,423	32,636	950.17	18,423	35,035
949.66	18,423	32,693	950.18	18,423	35,072
949.67	18,423	32,749	950.19	18,423	35,109
949.68	18,423	32,806	950.20	18,423	35,146
949.69	18,423	32,862	950.21	18,423	35,183
949.70	18,423	32,918	950.22	18,423	35,220
949.71	18,423	32,974	950.23	18,423	35,257
949.72	18,423	33,029	950.24	18,423	35,294
949.73	18,423	33,084	950.25	18,423	35,331
949.74	18,423	33,139	950.26	18,423	35,368
949.75	18,423	33,193	950.27	18,423	35,405

Stage-Area-Storage for Pond EV: East Vault (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
950.28	18,423	35,442
950.29	18,423	35,478
950.30	18,423	35,515
950.31	18,423	35,552
950.32	18,423	35,589
950.33	18,423	35,626
950.34	18,423	35,663
950.35	18,423	35,700
950.36	18,423	35,737
950.37	18,423	35,774
950.38	18,423	35,811
950.39	18,423	35,848
950.40	18,423	35,885
950.41	18,423	35,922
950.42	18,423	35,958
950.43	18,423	35,995
950.44	18,423	36,032
950.45	18,423	36,069
950.46	18,423	36,106
950.47	18,423	36,143
950.48	18,423	36,180
950.49	18,423	36,217
950.50	18,423	**36,254**

Project Information

Calculator Version:	Version 3: January 2017
Project Name:	Greco Minnetonka Existing Site
User Name / Company Name:	
Date:	01/30/24
Project Description:	
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55391
Annual Rainfall (inches):	29.9
Phosphorus EMC (mg/l):	0.3
TSS EMC (mg/l):	54.5

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed				3.821	3.821
				Impervious Area (acres)	3.158
				Total Area (acres)	6.979

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed					0
				Impervious Area (acres)	
				Total Area (acres)	0

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	12610	ft3
Volume removed by BMPs towards performance goal:		ft^3
Percent volume removed towards performance goal		**%**

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	8.8699	acre-ft
Annual runoff volume removed by BMPs:		acre-ft
Percent annual runoff volume removed:		**%**
Post development annual particulate P load:	3.981	lbs
Annual particulate P removed by BMPs:		lbs
Post development annual dissolved P load:	3.257	lbs
Annual dissolved P removed by BMPs:		lbs
Percent annual total phosphorus removed:		**%**
Post development annual TSS load:	1314.9	lbs
Annual TSS removed by BMPs:		lbs
Percent annual TSS removed:		**%**

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft3)	Volume Recieved (ft3)	Volume Retained (ft3)	Volume Outflow (ft3)	Percent Retained (%)

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

BMP Schematic

Project Information

Calculator Version:	Version 3: January 2017
Project Name:	Greco Minnetonka Proposed Site
User Name / Company Name:	
Date:	01/30/24
Project Description:	
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55391
Annual Rainfall (inches):	29.9
Phosphorus EMC (mg/l):	0.3
TSS EMC (mg/l):	54.5

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed				2.610	2.61
				Impervious Area (acres)	4.369
				Total Area (acres)	6.979

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed				0.526	0.526
				Impervious Area (acres)	3.981
				Total Area (acres)	4.507

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	17445	ft3
Volume removed by BMPs towards performance goal:		ft^3
Percent volume removed towards performance goal		**%**

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	10.7708	acre-ft
Annual runoff volume removed by BMPs:	0	acre-ft
Percent annual runoff volume removed:	**0**	**%**
Post development annual particulate P load:	4.834	lbs
Annual particulate P removed by BMPs:	3.348	lbs
Post development annual dissolved P load:	3.955	lbs
Annual dissolved P removed by BMPs:	1.289	lbs
Percent annual total phosphorus removed:	**53**	**%**
Post development annual TSS load:	1596.7	lbs
Annual TSS removed by BMPs:	1105.8	lbs
Percent annual TSS removed:	**69**	**%**

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft3)	Volume Recieved (ft3)	Volume Retained (ft3)	Volume Outflow (ft3)	Percent Retained (%)
West Underground Vualt	0	10094	0	10094	0
East underground Vault	0	5802	0	5802	0

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)
West Underground Vualt	5.5364	0	0	5.5364	0
East underground Vault	3.2395	0	0	3.2395	0

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
West Underground Vualt	2.4847	0	2.112	0.3727	85
East underground Vault	1.4539	0	1.2358	0.2181	85

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
West Underground Vualt	2.033	0	0.8132	1.2198	40
East underground Vault	1.1896	0	0.4758	0.7138	40

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
West Underground Vualt	820.72	0	697.61	123.11	85
East underground Vault	480.23	0	408.2	72.03	85

BMP Schematic