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Storm Water Management Report

FY26 Fastpitch Softball Facility Improvements – Todd Park

March 18, 2026

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Civil Engineer's Certification

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Matthew J. Isakson, PE | Registration No. 26678 | March 18th, 2026

Bookmark Summary

DESIGN NARRATIVE

Special School District 1 and the Minneapolis Parks and Recreation Board are proposing a fast-pitch softball facility improvement located at Todd Park. The property is located at 5600 Chicago Ave, Minneapolis, MN 55417.

The new improvements will include an improved aglime softball field that is up to competition standard, synthetic turf dugouts and batting cages, pedestrian pathways, drinking fountain, new stadium lighting, fencing, landscaping, and site restoration.
The project is planned for construction during the spring of 2026 and completed by summer of 2027. This design narrative will address each of the design aspects related to storm water management as required by the State of Minnesota via the National Pollutant Discharge Elimination System permit.

EXISTING INFORMATION AND DESIGN PARAMETERS

A topographic survey for the property was conducted in the spring of 2023 by Sunde Land Surveying. This survey was used as the design base for the project.

A geotechnical evaluation was completed by Chosen Valley Testing, in the winter of 2026. The borings as a result of the evaluation are attached. The geotechnical report is also attached. A previous geotechnical evaluation on the same site was completed by Braun Intertec in the summer of 2025, the boring sketch and draft logs for this have also been attached.

HYDROLOGIC & HYDRAULIC MODELING

The site's existing and proposed conditions were modeled with HydroCAD, which uses SCS TR-20 runoff methodology and Dyn-Stor-Ind methodology for reach and pond routing. Refer to HydroCAD Calculations sections for HydroCAD outputs. Rainfall amounts for the 2, 10, and 100-year storm events per the NOAA Atlas-14 Point Precipitation Frequency Estimates are 2.8", 4.2", and 7.5", respectively.

STORMWATER DESIGN

Design Summary:

The NPDES stormwater treatment requirements will be triggered for this project in the form of a SWPPP because the area of disturbed land is greater than 1 acre.

The project will add 0.28 acres of impervious surface from the site and will result in 0.50 acres of reconstructed impervious surface. The geotechnical evaluation concluded that the site is

comprised of primarily silty sand fill soils (Type SM) with a strong worry for contamination being present. Based on this information, it was determined that filtration would be best practice for this area. Two filtration basins have been added to the site as the stormwater management solution. Basin A is designed to have a surface bottom elevation of 829, bottom filtration media of 826.1, and a surface overflow of 830.26. Basin B is designed to have a surface bottom elevation of 829.6, bottom of filtration media of 826.7, and a surface overflow of 830.5. The site is also located within the Minnehaha Creek Watershed District (MCWD). Therefore, the proposed conditions have been designed to meet the most restrictive required rate control and volume control/ water quality requirements set forth by the city of Minneapolis and the MCWD.

RATE CONTROL

For City of Minneapolis:

No increase in the peak discharge over existing conditions for the 2-year, 10-year, and 100-year 24-hour storm event.

For MCWD Stormwater Rule:

4.a. An action may not increase the peak runoff rate from the site, in aggregate, for design storm events. An applicant proposing to increase peak runoff at a specific point of site discharge must demonstrate no adverse local impact on water resource values or infrastructure. Aggregate compliance for all site boundary discharge will be determined with respect to runoff not managed in a regional facility.

Rate control is required at all points of discharge for the 2, 10, and 100-year 24-hour rainfall events from NOAA Atlas 14 and has been accomplished by the inclusion of a filtration basin to the northeast of the proposed softball field. Please see the attached drainage summary for the table illustrating the rate control summary and showing that peak runoff rates on the site were not increased.

Table 1. Discharge to Point 1L Peak Outflow Rate Summary Table

Rate Control Summary			
	2-yr, 24-hr	10-yr, 24-hr	100-yr, 24-hr
Existing Conditions Outflow (cfs)	2.27	9.00	31.21
Proposed Conditions Outflow (cfs)	1.07	3.62	18.44

VOLUME CONTROL

For City of Minneapolis:

Capture and retain 1.1 inches of runoff from the new and fully reconstructed impervious surfaces within the disturbed area for sites without restrictions.

For MCWD Stormwater Rule:

3.a. For purposes of both volume and phosphorus control, an applicant subject to this rule under paragraph 2.a.1 must provide volume reduction equal to the following. Volume reduction is to be calculated in accordance with Appendix A to this rule.

3.b. Volume reduction practices must be used to meet the subsection 3.a standard, to the extent feasible. An infiltration practice is prohibited in the following circumstances:

5. Soils are predominantly Hydrologic Soil Group D (clay) or otherwise unreliable for infiltration.

3.c. If the required volume reduction cannot feasibly be provided by volume reduction practices listed in Appendix A, the applicant must incorporate filtration or other nonvolume-reduction practices to achieve phosphorous control in an amount equivalent to that which would be achieved through the required volume reduction. Equivalent phosphorus control may be demonstrated by any technically accepted method, 4 including use of a removal rate stated in the Minnesota Stormwater manual. For a filtration practice, in place of specific demonstration, an applicant may treat twice the required volume reduction, as calculated in accordance with Appendix A to this rule.

The volume to be treated for filtration is double the infiltration requirement of 1.1 inches over all new and fully reconstructed impervious areas. For the proposed improvements, this project will have 0.7 acres of new and reconstructed impervious area. This results in a volume of cubic feet required to be treated.

Table 2. Volume Control Requirements

Requirement	Volume Required (ft^3)
2.2 Inch per sq ft New and Fully Reconstructed Impervious Area	3,993
Volume provided by proposed Filtration Basins	12,025

WATER QUALITY CONTROL

The MWCD required phosphorus control filtration volume exceeds the required Minneapolis water quality volume.

Per the city of Minneapolis regarding water quality: new development, redevelopment, and nonlinear projects without site without restrictions shall capture and retain on-site 1.1 inches of runoff from the new and fully reconstructed impervious surfaces. Table 2 summarizes the project parameters, the required treatment volumes for the 1.1-inch standards, and the total water quality volume provided by the proposed filtration basin.

Table 3. Water Quality Treatment Volume Parameters

Project Information		
Project Disturbance	ac	5.7
Existing Impervious (Fully Reconstructed)	ac	0.22
Proposed Impervious - New	ac	0.28
Total Regulated Impervious	ac	0.50
Minneapolis Required Water Quality Treatment Volume (1.1" over Regulated Impervious)	cu-ft	2,000
Provided Water Quality Treatment Volume – Basin A	cu-ft	10,765
Provided Water Quality Treatment Volume – Basin B	cu-ft	1,260
Provided Water Quality Treatment Volume – Total	cu-ft	12,025
% of Goal Achieved	%	100

Per the City, there is a 30% reduction in phosphorus as the discharge point of our site is into Diamond Lake. See below table summarizing the phosphorus control volume parameters.

Table 4. Phosphorus Control Volume Parameters

Project Information		
Project Disturbance	ac	5.7
Existing Impervious (Fully Reconstructed)	ac	0.22
Proposed Impervious - New	ac	0.28
Total Regulated Impervious	ac	0.50
MCWD Required Phosphorus Control Volume (2.0" over new impervious standard)	cu-ft	3,630
Provided Phosphorus Control Treatment Volume – Basin A	cu-ft	10,765
Provided Phosphorus Control Treatment Volume – Basin B	cu-ft	1,260
Provided Phosphorus Control Treatment Volume – Basin B	cu-ft	12,025
% of Goal Achieved	%	100

DRAINAGE SUMMARY

Exisiting - 1L

Event	Inflow Peak Flow (cfs)	Outflow Elevation (ft)	Outflow Peak Flow (cfs)
2 Yr	2.72	N/A	2.72
10 Yr	10.63	N/A	10.63
100 Yr	36.20	N/A	36.20

TODD

Proposed - 1L

Event	Inflow Peak Flow (cfs)	Outflow Elevation (ft)	Outflow Peak Flow (cfs)	Design OK?
2 Yr	1.07	N/A	1.07	YES
10 Yr	3.62	N/A	3.62	YES
100 Yr	18.44	N/A	18.44	YES

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HydroCAD® Calculations

Existing Conditions

PLS Fastpitch Softball Improvement

TODD EXISTING CONDITIONS - DRAINAGE AREAS

AREA	PERVIOUS	IMPERVIOUS	TOTAL
E1	3.788 acres	0.464 acres	4.253 acres
E2	2.300 acres	0.455 acres	2.755 acres
TOTAL	6.088 acres	0.919 acres	7.008 acres

E 56TH STREET

N89°36'31"E 851.49 [850.7]

PUBLIC ROAD

BITUMINOUS

CONCRETE

GRASS

GRAVEL

DIAMOND

LAKE

TERRACE

PORTLAND AVENUE

E 57TH STREET

DIAMOND LAKE TERRACE

THIS BLOCK DEDICATED TO PUBLIC FOR PARK PURPOSES

20 FT CHAIN LINK FENCE

4 FT CHAIN LINK FENCE

6 FT CHAIN LINK FENCE

10 FT CHAIN LINK FENCE

MPLS MON GPS002

E1

E2

1L

Δ=7°26'59" R=1393.18' L=181.15 C.BRG=N1°08'51"E

Δ=62°23'40" R=33.00 L=35.94

L=73.13' W=50.06' [148.0]

R=1710.00' L=119.97' [120.0]

SET MAG NAIL WITH DISC 44900 DISC

FOUND 1/2" OPEN

3500

3502

BUS STOP

PAY STATION

PICNIC TABLE ON CONC

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MINNEAPOLIS PUBLIC SCHOOLS

FY26 FASTPITCH SOFTBALL FACILITIES IMPROVEMENTS - OP 26-2615

SHEET

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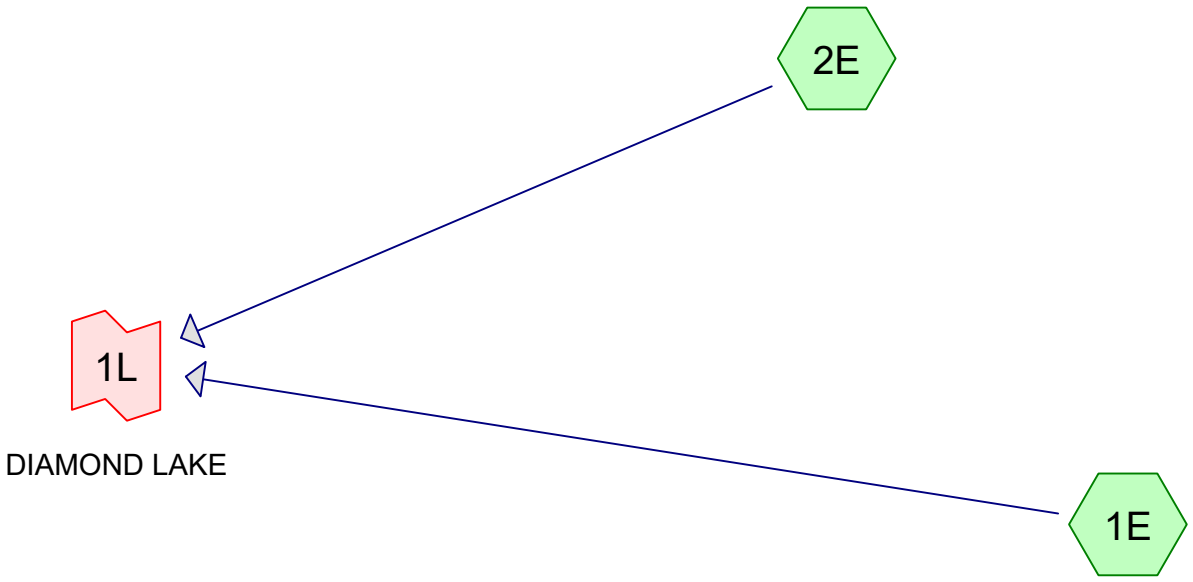

Subcat Reach Pond Link

Routing Diagram for Todd - Existing
Prepared by Bolton & Menk, Inc, Printed 5/12/2026

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YEAR	MSE 24-hr	3	Default	24.00	1	2.80	2
2	10 YEAR	MSE 24-hr	3	Default	24.00	1	4.20	2
3	100 YEAR	MSE 24-hr	3	Default	24.00	1	7.50	2

Summary for Subcatchment 1E:

Runoff = 1.55 cfs @ 12.21 hrs, Volume= 0.125 af, Depth= 0.35"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2 YEAR Rainfall=2.80"

Area (ac)	CN	Adj	Description
3.788	61		>75% Grass cover, Good, HSG B
0.464	98		Unconnected pavement, HSG B
4.252	65	63	Weighted Average, UI Adjusted
3.788			89.09% Pervious Area
0.464			10.91% Impervious Area
0.464			100.00% Unconnected

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

Summary for Subcatchment 2E:

Runoff = 1.17 cfs @ 12.21 hrs, Volume= 0.088 af, Depth= 0.38"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2 YEAR Rainfall=2.80"

Area (ac)	CN	Adj	Description
2.300	61		>75% Grass cover, Good, HSG B
0.455	98		Unconnected pavement, HSG B
2.755	67	64	Weighted Average, UI Adjusted
2.300			83.48% Pervious Area
0.455			16.52% Impervious Area
0.455			100.00% Unconnected

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

Summary for Link 1L: DIAMOND LAKE

Inflow Area = 7.007 ac, 13.12% Impervious, Inflow Depth = 0.36" for 2 YEAR event
Inflow = 2.72 cfs @ 12.21 hrs, Volume= 0.213 af
Primary = 2.72 cfs @ 12.21 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1E:

Runoff = 6.27 cfs @ 12.19 hrs, Volume= 0.364 af, Depth= 1.03"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10 YEAR Rainfall=4.20"

Area (ac)	CN	Adj	Description
3.788	61		>75% Grass cover, Good, HSG B
0.464	98		Unconnected pavement, HSG B
4.252	65	63	Weighted Average, UI Adjusted
3.788			89.09% Pervious Area
0.464			10.91% Impervious Area
0.464			100.00% Unconnected

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

Summary for Subcatchment 2E:

Runoff = 4.35 cfs @ 12.19 hrs, Volume= 0.250 af, Depth= 1.09"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10 YEAR Rainfall=4.20"

Area (ac)	CN	Adj	Description
2.300	61		>75% Grass cover, Good, HSG B
0.455	98		Unconnected pavement, HSG B
2.755	67	64	Weighted Average, UI Adjusted
2.300			83.48% Pervious Area
0.455			16.52% Impervious Area
0.455			100.00% Unconnected

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

Summary for Link 1L: DIAMOND LAKE

Inflow Area = 7.007 ac, 13.12% Impervious, Inflow Depth = 1.05" for 10 YEAR event
Inflow = 10.63 cfs @ 12.19 hrs, Volume= 0.614 af
Primary = 10.63 cfs @ 12.19 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1E:

Runoff = 21.68 cfs @ 12.18 hrs, Volume= 1.162 af, Depth= 3.28"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100 YEAR Rainfall=7.50"

Area (ac)	CN	Adj	Description
3.788	61		>75% Grass cover, Good, HSG B
0.464	98		Unconnected pavement, HSG B
4.252	65	63	Weighted Average, UI Adjusted
3.788			89.09% Pervious Area
0.464			10.91% Impervious Area
0.464			100.00% Unconnected

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

Summary for Subcatchment 2E:

Runoff = 14.52 cfs @ 12.18 hrs, Volume= 0.778 af, Depth= 3.39"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100 YEAR Rainfall=7.50"

Area (ac)	CN	Adj	Description
2.300	61		>75% Grass cover, Good, HSG B
0.455	98		Unconnected pavement, HSG B
2.755	67	64	Weighted Average, UI Adjusted
2.300			83.48% Pervious Area
0.455			16.52% Impervious Area
0.455			100.00% Unconnected

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

Summary for Link 1L: DIAMOND LAKE

Inflow Area = 7.007 ac, 13.12% Impervious, Inflow Depth = 3.32" for 100 YEAR event
Inflow = 36.20 cfs @ 12.18 hrs, Volume= 1.940 af
Primary = 36.20 cfs @ 12.18 hrs, Volume= 1.940 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs

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HydroCAD® Calculations

Proposed Conditions

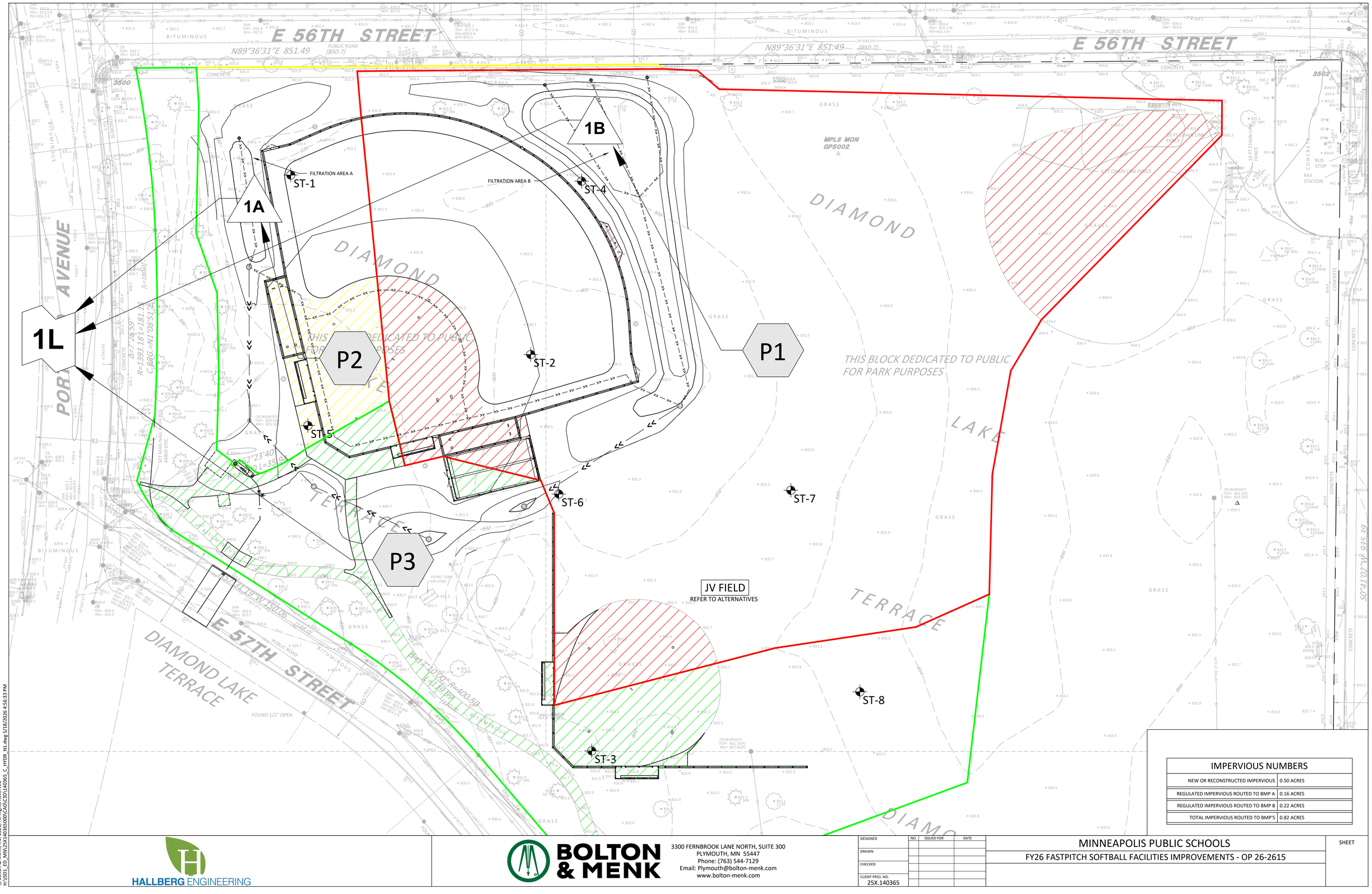
MPLS Fastpitch Softball Improvements

TODD PROPOSED CONDITIONS - DRAINAGE AREAS

AREA	PERVIOUS	IMPERVIOUS	TOTAL
P1	3.424 acres	0.656 acres	4.080 acres
P2	0.575 acres	0.165 acres	0.740 acres
P3	1.807 acres	0.380 acres	2.187 acres
TOTAL	5.806 acres	1.201 acres	7.008 acres

DIFFERENCE	-0.282 acres	0.282 acres	0.000 acres

DISTURBED AREA	-0.282 acres



IMPERVIOUS NUMBERS	
NEW OR RECONSTRUCTED IMPERVIOUS	0.50 ACRES
REGULATED IMPERVIOUS ROUTED TO BMP A	0.16 ACRES
REGULATED IMPERVIOUS ROUTED TO BMP B	0.22 ACRES
TOTAL IMPERVIOUS ROUTED TO BMP'S	0.82 ACRES

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FY26 FASTPITCH SOFTBALL FACILITIES IMPROVEMENTS - OP 26-2615

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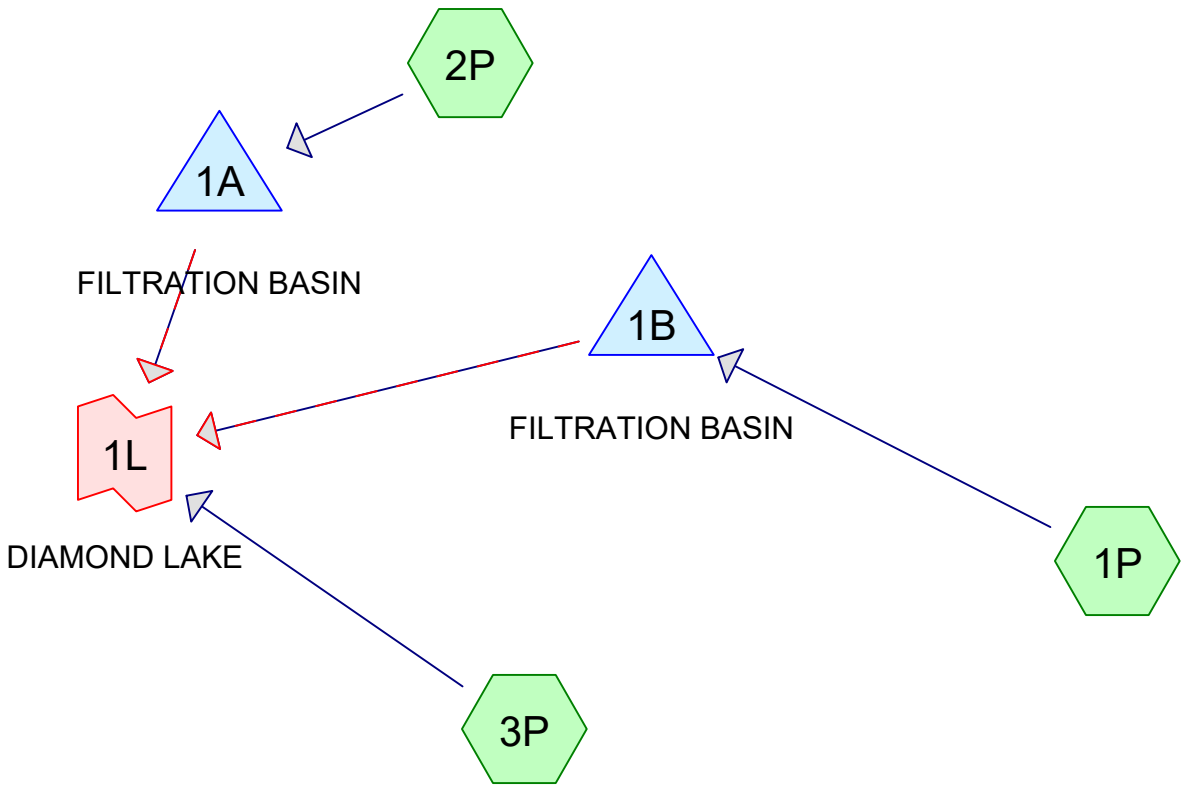


Subcat Reach Pond Link

Routing Diagram for Todd - Propsed
Prepared by Bolton & Menk, Inc, Printed 5/15/2026

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YEAR	MSE 24-hr	3	Default	24.00	1	2.80	2
2	10 YEAR	MSE 24-hr	3	Default	24.00	1	4.20	2
3	100 YEAR	MSE 24-hr	3	Default	24.00	1	7.50	2

Summary for Subcatchment 1P:

Runoff = 1.73 cfs @ 12.21 hrs, Volume= 0.131 af, Depth= 0.38"
Routed to Pond 1B : FILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2 YEAR Rainfall=2.80"

Area (ac)	CN	Adj	Description
3.424	61		>75% Grass cover, Good, HSG B
0.656	98		Unconnected pavement, HSG B
4.080	67	64	Weighted Average, UI Adjusted
3.424			83.92% Pervious Area
0.656			16.08% Impervious Area
0.656			100.00% Unconnected

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

Summary for Subcatchment 2P:

Runoff = 0.36 cfs @ 12.20 hrs, Volume= 0.026 af, Depth= 0.42"
Routed to Pond 1A : FILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2 YEAR Rainfall=2.80"

Area (ac)	CN	Adj	Description
0.575	61		>75% Grass cover, Good, HSG B
0.165	98		Unconnected pavement, HSG B
0.740	69	65	Weighted Average, UI Adjusted
0.575			77.70% Pervious Area
0.165			22.30% Impervious Area
0.165			100.00% Unconnected

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

Summary for Subcatchment 3P:

Runoff = 0.93 cfs @ 12.21 hrs, Volume= 0.070 af, Depth= 0.38"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2 YEAR Rainfall=2.80"

Area (ac)	CN	Adj	Description
1.807	61		>75% Grass cover, Good, HSG B
0.380	98		Unconnected pavement, HSG B
2.187	67	64	Weighted Average, UI Adjusted
1.807			82.62% Pervious Area
0.380			17.38% Impervious Area
0.380			100.00% Unconnected

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

Summary for Pond 1A: FILTRATION BASIN

Inflow Area = 0.740 ac, 22.30% Impervious, Inflow Depth = 0.42" for 2 YEAR event
Inflow = 0.36 cfs @ 12.20 hrs, Volume= 0.026 af
Outflow = 0.03 cfs @ 15.03 hrs, Volume= 0.026 af, Atten= 93%, Lag= 169.7 min
Primary = 0.03 cfs @ 15.03 hrs, Volume= 0.026 af
Routed to Link 1L : DIAMOND LAKE
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Routed to Link 1L : DIAMOND LAKE

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
Peak Elev= 830.12' @ 15.03 hrs Surf.Area= 1,377 sf Storage= 544 cf

Plug-Flow detention time= 263.0 min calculated for 0.026 af (100% of inflow)
Center-of-Mass det. time= 263.0 min (1,131.8 - 868.7)

Volume	Invert	Avail.Storage	Storage Description
#1	829.60'	14,381 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
829.60	750	0	0
829.70	853	80	80
829.80	961	91	171
829.90	1,074	102	273
830.00	1,192	113	386
830.10	1,317	125	511
830.20	1,563	144	655
830.30	1,868	172	827
830.40	2,160	201	1,028
830.50	2,475	232	1,260
830.60	2,942	271	1,531
830.70	3,439	319	1,850
830.80	3,952	370	2,220
830.90	4,496	422	2,642
831.00	5,066	478	3,120
831.10	5,645	536	3,656
833.00	5,645	10,725	14,381

Device	Routing	Invert	Outlet Devices
#1	Primary	826.25'	**10.0" Round 10" Outlet Pipe** L= 109.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.25' / 825.60' S= 0.0060 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	826.70'	**6.0" Round Draintile** L= 93.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.70' / 826.25' S= 0.0048 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	829.60'	**0.800 in/hr Exfiltration over Surface area**
#4	Device 1	830.50'	**26.0" Horiz. CB Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	831.10'	**10.0' long x 10.0' breadth EOF**

Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60
Coef. (English)	2.49	2.56	2.70	2.69	2.68	2.69	2.67	2.64

Primary OutFlow Max=0.03 cfs @ 15.03 hrs HW=830.12' TW=0.00' (Dynamic Tailwater)
- **1=10" Outlet Pipe** (Passes 0.03 cfs of 3.91 cfs potential flow)
  - **2=Draintile** (Passes 0.03 cfs of 1.11 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.03 cfs)
  - **4=CB Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=829.60' TW=0.00' (Dynamic Tailwater)
- **5=EOF** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 1A: FILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
829.60	750	0
829.61	760	8
829.62	771	15
829.63	781	23
829.64	791	31
829.65	801	39
829.66	812	47
829.67	822	55
829.68	832	63
829.69	843	72
829.70	853	80
829.71	864	89
829.72	875	97
829.73	885	106
829.74	896	115
829.75	907	124
829.76	918	133
829.77	929	143
829.78	939	152
829.79	950	161
829.80	961	171
829.81	972	181
829.82	984	190
829.83	995	200
829.84	1,006	210
829.85	1,018	220
829.86	1,029	231
829.87	1,040	241
829.88	1,051	251
829.89	1,063	262
829.90	1,074	273
829.91	1,086	283
829.92	1,098	294
829.93	1,109	305
829.94	1,121	317
829.95	1,133	328
829.96	1,145	339
829.97	1,157	351
829.98	1,168	362
829.99	1,180	374
830.00	1,192	386
830.01	1,204	398
830.02	1,217	410
830.03	1,229	422
830.04	1,242	435
830.05	1,255	447
830.06	1,267	460
830.07	1,280	472
830.08	1,292	485
830.09	1,305	498
830.10	1,317	511
830.11	1,342	525
830.12	1,366	538
830.13	1,391	552
830.14	1,415	566
830.15	1,440	580
830.16	1,465	595
830.17	1,489	610
830.18	1,514	625
830.19	1,538	640
830.20	1,563	655
830.21	1,593	671
830.22	1,624	687
830.23	1,654	704
830.24	1,685	720
830.25	1,715	737
830.26	1,746	755
830.27	1,776	772
830.28	1,807	790
830.29	1,838	808
830.30	1,868	827
830.31	1,897	846
830.32	1,926	865
830.33	1,956	884
830.34	1,985	904
830.35	2,014	924
830.36	2,043	944
830.37	2,072	965
830.38	2,102	986
830.39	2,131	1,007
830.40	2,160	1,028
830.41	2,191	1,050
830.42	2,223	1,072
830.43	2,255	1,095
830.44	2,286	1,117
830.45	2,318	1,140
830.46	2,349	1,164
830.47	2,381	1,187
830.48	2,412	1,211
830.49	2,444	1,235
830.50	2,475	1,260
830.51	2,522	1,285
830.52	2,568	1,310
830.53	2,615	1,336
830.54	2,662	1,363
830.55	2,709	1,390
830.56	2,755	1,417
830.57	2,802	1,445
830.58	2,849	1,473
830.59	2,895	1,502
830.60	2,942	1,531
830.61	2,992	1,561
830.62	3,041	1,591
830.63	3,091	1,621

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
830.64	3,141	1,653
830.65	3,190	1,684
830.66	3,240	1,716
830.67	3,290	1,749
830.68	3,340	1,782
830.69	3,389	1,816
830.70	3,439	1,850
830.71	3,490	1,885
830.72	3,542	1,920
830.73	3,593	1,955
830.74	3,644	1,992
830.75	3,695	2,028
830.76	3,747	2,066
830.77	3,798	2,103
830.78	3,849	2,141
830.79	3,901	2,180
830.80	3,952	2,220
830.81	4,006	2,259
830.82	4,061	2,300
830.83	4,115	2,341
830.84	4,170	2,382
830.85	4,224	2,424
830.86	4,278	2,466
830.87	4,333	2,509
830.88	4,387	2,553
830.89	4,442	2,597
830.90	4,496	2,642
830.91	4,553	2,687
830.92	4,610	2,733
830.93	4,667	2,779
830.94	4,724	2,826
830.95	4,781	2,874
830.96	4,838	2,922
830.97	4,895	2,971
830.98	4,952	3,020
830.99	5,009	3,070
831.00	5,066	3,120
831.01	5,124	3,171
831.02	5,182	3,222
831.03	5,240	3,275
831.04	5,298	3,327
831.05	5,356	3,381
831.06	5,413	3,434
831.07	5,471	3,489
831.08	5,529	3,544
831.09	5,587	3,599
831.10	**5,645**	3,656
831.11	5,645	3,712
831.12	5,645	3,768
831.13	5,645	3,825
831.14	5,645	3,881
831.15	5,645	3,938
831.16	5,645	3,994
831.17	5,645	4,051
831.18	5,645	4,107
831.19	5,645	4,164
831.20	5,645	4,220
831.21	5,645	4,277
831.22	5,645	4,333
831.23	5,645	4,389
831.24	5,645	4,446
831.25	5,645	4,502
831.26	5,645	4,559
831.27	5,645	4,615
831.28	5,645	4,672
831.29	5,645	4,728
831.30	5,645	4,785
831.31	5,645	4,841
831.32	5,645	4,897
831.33	5,645	4,954
831.34	5,645	5,010
831.35	5,645	5,067
831.36	5,645	5,123
831.37	5,645	5,180
831.38	5,645	5,236
831.39	5,645	5,293
831.40	5,645	5,349
831.41	5,645	5,405
831.42	5,645	5,462
831.43	5,645	5,518
831.44	5,645	5,575
831.45	5,645	5,631
831.46	5,645	5,688
831.47	5,645	5,744
831.48	5,645	5,801
831.49	5,645	5,857
831.50	5,645	5,914
831.51	5,645	5,970
831.52	5,645	6,026
831.53	5,645	6,083
831.54	5,645	6,139
831.55	5,645	6,196
831.56	5,645	6,252
831.57	5,645	6,309
831.58	5,645	6,365
831.59	5,645	6,422
831.60	5,645	6,478
831.61	5,645	6,534
831.62	5,645	6,591
831.63	5,645	6,647
831.64	5,645	6,704
831.65	5,645	6,760
831.66	5,645	6,817
831.67	5,645	6,873

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
831.68	5,645	6,930	832.20	5,645	9,865
831.69	5,645	6,986	832.21	5,645	9,922
831.70	5,645	7,043	832.22	5,645	9,978
831.71	5,645	7,099	832.23	5,645	10,034
831.72	5,645	7,155	832.24	5,645	10,091
831.73	5,645	7,212	832.25	5,645	10,147
831.74	5,645	7,268	832.26	5,645	10,204
831.75	5,645	7,325	832.27	5,645	10,260
831.76	5,645	7,381	832.28	5,645	10,317
831.77	5,645	7,438	832.29	5,645	10,373
831.78	5,645	7,494	832.30	5,645	10,430
831.79	5,645	7,551	832.31	5,645	10,486
831.80	5,645	7,607	832.32	5,645	10,542
831.81	5,645	7,664	832.33	5,645	10,599
831.82	5,645	7,720	832.34	5,645	10,655
831.83	5,645	7,776	832.35	5,645	10,712
831.84	5,645	7,833	832.36	5,645	10,768
831.85	5,645	7,889	832.37	5,645	10,825
831.86	5,645	7,946	832.38	5,645	10,881
831.87	5,645	8,002	832.39	5,645	10,938
831.88	5,645	8,059	832.40	5,645	10,994
831.89	5,645	8,115	832.41	5,645	11,050
831.90	5,645	8,172	832.42	5,645	11,107
831.91	5,645	8,228	832.43	5,645	11,163
831.92	5,645	8,284	832.44	5,645	11,220
831.93	5,645	8,341	832.45	5,645	11,276
831.94	5,645	8,397	832.46	5,645	11,333
831.95	5,645	8,454	832.47	5,645	11,389
831.96	5,645	8,510	832.48	5,645	11,446
831.97	5,645	8,567	832.49	5,645	11,502
831.98	5,645	8,623	832.50	5,645	11,559
831.99	5,645	8,680	832.51	5,645	11,615
832.00	5,645	8,736	832.52	5,645	11,671
832.01	5,645	8,792	832.53	5,645	11,728
832.02	5,645	8,849	832.54	5,645	11,784
832.03	5,645	8,905	832.55	5,645	11,841
832.04	5,645	8,962	832.56	5,645	11,897
832.05	5,645	9,018	832.57	5,645	11,954
832.06	5,645	9,075	832.58	5,645	12,010
832.07	5,645	9,131	832.59	5,645	12,067
832.08	5,645	9,188	832.60	5,645	12,123
832.09	5,645	9,244	832.61	5,645	12,179
832.10	5,645	9,301	832.62	5,645	12,236
832.11	5,645	9,357	832.63	5,645	12,292
832.12	5,645	9,413	832.64	5,645	12,349
832.13	5,645	9,470	832.65	5,645	12,405
832.14	5,645	9,526	832.66	5,645	12,462
832.15	5,645	9,583	832.67	5,645	12,518
832.16	5,645	9,639	832.68	5,645	12,575
832.17	5,645	9,696	832.69	5,645	12,631
832.18	5,645	9,752	832.70	5,645	12,688
832.19	5,645	9,809	832.71	5,645	12,744

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
832.72	5,645	12,800
832.73	5,645	12,857
832.74	5,645	12,913
832.75	5,645	12,970
832.76	5,645	13,026
832.77	5,645	13,083
832.78	5,645	13,139
832.79	5,645	13,196
832.80	5,645	13,252
832.81	5,645	13,309
832.82	5,645	13,365
832.83	5,645	13,421
832.84	5,645	13,478
832.85	5,645	13,534
832.86	5,645	13,591
832.87	5,645	13,647
832.88	5,645	13,704
832.89	5,645	13,760
832.90	5,645	13,817
832.91	5,645	13,873
832.92	5,645	13,929
832.93	5,645	13,986
832.94	5,645	14,042
832.95	5,645	14,099
832.96	5,645	14,155
832.97	5,645	14,212
832.98	5,645	14,268
832.99	5,645	14,325
833.00	5,645	**14,381**

Summary for Pond 1B: FILTRATION BASIN

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=31)

Inflow Area = 4.080 ac, 16.08% Impervious, Inflow Depth = 0.38" for 2 YEAR event
Inflow = 1.73 cfs @ 12.21 hrs, Volume= 0.131 af
Outflow = 0.14 cfs @ 14.30 hrs, Volume= 0.131 af, Atten= 92%, Lag= 125.5 min
Primary = 0.14 cfs @ 14.30 hrs, Volume= 0.131 af
Routed to Link 1L : DIAMOND LAKE
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Routed to Link 1L : DIAMOND LAKE

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
Peak Elev= 829.35' @ 14.30 hrs Surf.Area= 7,645 sf Storage= 2,512 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 193.6 min (1,066.6 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1	829.00'	81,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
829.00	6,706	0	0
829.10	6,970	684	684
829.20	7,236	710	1,394
829.30	7,507	737	2,131
829.40	7,781	764	2,896
829.50	8,063	792	3,688
829.60	8,372	822	4,510
829.70	8,688	853	5,363
829.80	9,014	885	6,248
829.90	9,350	918	7,166
830.00	9,699	952	8,118
830.10	10,063	988	9,106
830.20	10,443	1,025	10,132
830.30	10,839	1,064	11,196
830.40	11,252	1,105	12,300
830.50	11,682	1,147	13,447
830.60	12,131	1,191	14,638
830.70	12,599	1,237	15,874
830.80	13,091	1,284	17,159
830.90	13,612	1,335	18,494
831.00	15,305	1,446	19,940
835.00	15,305	61,220	81,160

Device	Routing	Invert	Outlet Devices
#1	Primary	825.60'	**10.0" Round 10" Outlet Pipe** L= 131.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 825.60' / 825.00' S= 0.0046 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	826.10'	**6.0" Round Draintile X 3.00** L= 260.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.10' / 825.60' S= 0.0019 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	829.00'	**0.800 in/hr Exfiltration over Surface area**
#4	Device 1	830.26'	**26.0" Horiz. CB Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	831.10'	**10.0' long x 10.0' breadth EOF** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.14 cfs @ 14.30 hrs HW=829.35' TW=0.00' (Dynamic Tailwater)
- **1=10" Outlet Pipe** (Passes 0.14 cfs of 3.58 cfs potential flow)
  - **2=Draintile** (Passes 0.14 cfs of 2.12 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.14 cfs)
  - **4=CB Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=829.00' TW=0.00' (Dynamic Tailwater)
- **5=EOF** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 1B: FILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
829.00	6,706	0
829.01	6,732	67
829.02	6,759	135
829.03	6,785	202
829.04	6,812	270
829.05	6,838	339
829.06	6,864	407
829.07	6,891	476
829.08	6,917	545
829.09	6,944	614
829.10	6,970	684
829.11	6,997	754
829.12	7,023	824
829.13	7,050	894
829.14	7,076	965
829.15	7,103	1,036
829.16	7,130	1,107
829.17	7,156	1,178
829.18	7,183	1,250
829.19	7,209	1,322
829.20	7,236	1,394
829.21	7,263	1,467
829.22	7,290	1,539
829.23	7,317	1,612
829.24	7,344	1,686
829.25	7,372	1,759
829.26	7,399	1,833
829.27	7,426	1,907
829.28	7,453	1,982
829.29	7,480	2,056
829.30	7,507	2,131
829.31	7,534	2,206
829.32	7,562	2,282
829.33	7,589	2,358
829.34	7,617	2,434
829.35	7,644	2,510
829.36	7,671	2,587
829.37	7,699	2,663
829.38	7,726	2,741
829.39	7,754	2,818
829.40	7,781	2,896
829.41	7,809	2,974
829.42	7,837	3,052
829.43	7,866	3,130
829.44	7,894	3,209
829.45	7,922	3,288
829.46	7,950	3,368
829.47	7,978	3,447
829.48	8,007	3,527
829.49	8,035	3,607
829.50	8,063	3,688
829.51	8,094	3,769
829.52	8,125	3,850
829.53	8,156	3,931
829.54	8,187	4,013
829.55	8,217	4,095
829.56	8,248	4,177
829.57	8,279	4,260
829.58	8,310	4,343
829.59	8,341	4,426
829.60	8,372	4,510
829.61	8,404	4,593
829.62	8,435	4,678
829.63	8,467	4,762
829.64	8,498	4,847
829.65	8,530	4,932
829.66	8,562	5,018
829.67	8,593	5,103
829.68	8,625	5,189
829.69	8,656	5,276
829.70	8,688	5,363
829.71	8,721	5,450
829.72	8,753	5,537
829.73	8,786	5,625
829.74	8,818	5,713
829.75	8,851	5,801
829.76	8,884	5,890
829.77	8,916	5,979
829.78	8,949	6,068
829.79	8,981	6,158
829.80	9,014	6,248
829.81	9,048	6,338
829.82	9,081	6,429
829.83	9,115	6,520
829.84	9,148	6,611
829.85	9,182	6,703
829.86	9,216	6,795
829.87	9,249	6,887
829.88	9,283	6,980
829.89	9,316	7,073
829.90	9,350	7,166
829.91	9,385	7,260
829.92	9,420	7,354
829.93	9,455	7,448
829.94	9,490	7,543
829.95	9,525	7,638
829.96	9,559	7,733
829.97	9,594	7,829
829.98	9,629	7,925
829.99	9,664	8,022
830.00	9,699	8,118
830.01	9,735	8,216
830.02	9,772	8,313
830.03	9,808	8,411

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
830.04	9,845	8,509
830.05	9,881	8,608
830.06	9,917	8,707
830.07	9,954	8,806
830.08	9,990	8,906
830.09	10,027	9,006
830.10	10,063	9,106
830.11	10,101	9,207
830.12	10,139	9,308
830.13	10,177	9,410
830.14	10,215	9,512
830.15	10,253	9,614
830.16	10,291	9,717
830.17	10,329	9,820
830.18	10,367	9,924
830.19	10,405	10,028
830.20	10,443	10,132
830.21	10,483	10,236
830.22	10,522	10,341
830.23	10,562	10,447
830.24	10,601	10,553
830.25	10,641	10,659
830.26	10,681	10,765
830.27	10,720	10,872
830.28	10,760	10,980
830.29	10,799	11,088
830.30	10,839	11,196
830.31	10,880	11,304
830.32	10,922	11,413
830.33	10,963	11,523
830.34	11,004	11,633
830.35	11,046	11,743
830.36	11,087	11,854
830.37	11,128	11,965
830.38	11,169	12,076
830.39	11,211	12,188
830.40	11,252	12,300
830.41	11,295	12,413
830.42	11,338	12,526
830.43	11,381	12,640
830.44	11,424	12,754
830.45	11,467	12,868
830.46	11,510	12,983
830.47	11,553	13,099
830.48	11,596	13,214
830.49	11,639	13,330
830.50	11,682	13,447
830.51	11,727	13,564
830.52	11,772	13,682
830.53	11,817	13,800
830.54	11,862	13,918
830.55	11,906	14,037
830.56	11,951	14,156
830.57	11,996	14,276
830.58	12,041	14,396
830.59	12,086	14,517
830.60	12,131	14,638
830.61	12,178	14,759
830.62	12,225	14,881
830.63	12,271	15,004
830.64	12,318	15,127
830.65	12,365	15,250
830.66	12,412	15,374
830.67	12,459	15,498
830.68	12,505	15,623
830.69	12,552	15,748
830.70	12,599	15,874
830.71	12,648	16,000
830.72	12,697	16,127
830.73	12,747	16,254
830.74	12,796	16,382
830.75	12,845	16,510
830.76	12,894	16,639
830.77	12,943	16,768
830.78	12,993	16,898
830.79	13,042	17,028
830.80	13,091	17,159
830.81	13,143	17,290
830.82	13,195	17,422
830.83	13,247	17,554
830.84	13,299	17,687
830.85	13,352	17,820
830.86	13,404	17,954
830.87	13,456	18,088
830.88	13,508	18,223
830.89	13,560	18,358
830.90	13,612	18,494
830.91	13,781	18,631
830.92	13,951	18,770
830.93	14,120	18,910
830.94	14,289	19,052
830.95	14,459	19,196
830.96	14,628	19,341
830.97	14,797	19,488
830.98	14,966	19,637
830.99	15,136	19,788
831.00	**15,305**	19,940
831.01	15,305	20,093
831.02	15,305	20,246
831.03	15,305	20,399
831.04	15,305	20,552
831.05	15,305	20,705
831.06	15,305	20,858
831.07	15,305	21,011

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
831.08	15,305	21,164	831.60	15,305	29,123
831.09	15,305	21,317	831.61	15,305	29,276
831.10	15,305	21,470	831.62	15,305	29,429
831.11	15,305	21,623	831.63	15,305	29,582
831.12	15,305	21,776	831.64	15,305	29,735
831.13	15,305	21,929	831.65	15,305	29,888
831.14	15,305	22,082	831.66	15,305	30,041
831.15	15,305	22,235	831.67	15,305	30,194
831.16	15,305	22,389	831.68	15,305	30,347
831.17	15,305	22,542	831.69	15,305	30,500
831.18	15,305	22,695	831.70	15,305	30,653
831.19	15,305	22,848	831.71	15,305	30,806
831.20	15,305	23,001	831.72	15,305	30,959
831.21	15,305	23,154	831.73	15,305	31,112
831.22	15,305	23,307	831.74	15,305	31,265
831.23	15,305	23,460	831.75	15,305	31,419
831.24	15,305	23,613	831.76	15,305	31,572
831.25	15,305	23,766	831.77	15,305	31,725
831.26	15,305	23,919	831.78	15,305	31,878
831.27	15,305	24,072	831.79	15,305	32,031
831.28	15,305	24,225	831.80	15,305	32,184
831.29	15,305	24,378	831.81	15,305	32,337
831.30	15,305	24,531	831.82	15,305	32,490
831.31	15,305	24,684	831.83	15,305	32,643
831.32	15,305	24,837	831.84	15,305	32,796
831.33	15,305	24,990	831.85	15,305	32,949
831.34	15,305	25,143	831.86	15,305	33,102
831.35	15,305	25,297	831.87	15,305	33,255
831.36	15,305	25,450	831.88	15,305	33,408
831.37	15,305	25,603	831.89	15,305	33,561
831.38	15,305	25,756	831.90	15,305	33,714
831.39	15,305	25,909	831.91	15,305	33,867
831.40	15,305	26,062	831.92	15,305	34,020
831.41	15,305	26,215	831.93	15,305	34,173
831.42	15,305	26,368	831.94	15,305	34,326
831.43	15,305	26,521	831.95	15,305	34,480
831.44	15,305	26,674	831.96	15,305	34,633
831.45	15,305	26,827	831.97	15,305	34,786
831.46	15,305	26,980	831.98	15,305	34,939
831.47	15,305	27,133	831.99	15,305	35,092
831.48	15,305	27,286	832.00	15,305	35,245
831.49	15,305	27,439	832.01	15,305	35,398
831.50	15,305	27,592	832.02	15,305	35,551
831.51	15,305	27,745	832.03	15,305	35,704
831.52	15,305	27,898	832.04	15,305	35,857
831.53	15,305	28,051	832.05	15,305	36,010
831.54	15,305	28,204	832.06	15,305	36,163
831.55	15,305	28,357	832.07	15,305	36,316
831.56	15,305	28,511	832.08	15,305	36,469
831.57	15,305	28,664	832.09	15,305	36,622
831.58	15,305	28,817	832.10	15,305	36,775
831.59	15,305	28,970	832.11	15,305	36,928

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
832.12	15,305	37,081	832.64	15,305	45,040
832.13	15,305	37,234	832.65	15,305	45,193
832.14	15,305	37,387	832.66	15,305	45,346
832.15	15,305	37,540	832.67	15,305	45,499
832.16	15,305	37,694	832.68	15,305	45,652
832.17	15,305	37,847	832.69	15,305	45,805
832.18	15,305	38,000	832.70	15,305	45,958
832.19	15,305	38,153	832.71	15,305	46,111
832.20	15,305	38,306	832.72	15,305	46,264
832.21	15,305	38,459	832.73	15,305	46,417
832.22	15,305	38,612	832.74	15,305	46,570
832.23	15,305	38,765	832.75	15,305	46,724
832.24	15,305	38,918	832.76	15,305	46,877
832.25	15,305	39,071	832.77	15,305	47,030
832.26	15,305	39,224	832.78	15,305	47,183
832.27	15,305	39,377	832.79	15,305	47,336
832.28	15,305	39,530	832.80	15,305	47,489
832.29	15,305	39,683	832.81	15,305	47,642
832.30	15,305	39,836	832.82	15,305	47,795
832.31	15,305	39,989	832.83	15,305	47,948
832.32	15,305	40,142	832.84	15,305	48,101
832.33	15,305	40,295	832.85	15,305	48,254
832.34	15,305	40,448	832.86	15,305	48,407
832.35	15,305	40,602	832.87	15,305	48,560
832.36	15,305	40,755	832.88	15,305	48,713
832.37	15,305	40,908	832.89	15,305	48,866
832.38	15,305	41,061	832.90	15,305	49,019
832.39	15,305	41,214	832.91	15,305	49,172
832.40	15,305	41,367	832.92	15,305	49,325
832.41	15,305	41,520	832.93	15,305	49,478
832.42	15,305	41,673	832.94	15,305	49,631
832.43	15,305	41,826	832.95	15,305	49,785
832.44	15,305	41,979	832.96	15,305	49,938
832.45	15,305	42,132	832.97	15,305	50,091
832.46	15,305	42,285	832.98	15,305	50,244
832.47	15,305	42,438	832.99	15,305	50,397
832.48	15,305	42,591	833.00	15,305	50,550
832.49	15,305	42,744	833.01	15,305	50,703
832.50	15,305	42,897	833.02	15,305	50,856
832.51	15,305	43,050	833.03	15,305	51,009
832.52	15,305	43,203	833.04	15,305	51,162
832.53	15,305	43,356	833.05	15,305	51,315
832.54	15,305	43,509	833.06	15,305	51,468
832.55	15,305	43,662	833.07	15,305	51,621
832.56	15,305	43,816	833.08	15,305	51,774
832.57	15,305	43,969	833.09	15,305	51,927
832.58	15,305	44,122	833.10	15,305	52,080
832.59	15,305	44,275	833.11	15,305	52,233
832.60	15,305	44,428	833.12	15,305	52,386
832.61	15,305	44,581	833.13	15,305	52,539
832.62	15,305	44,734	833.14	15,305	52,692
832.63	15,305	44,887	833.15	15,305	52,845

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
833.16	15,305	52,999	833.68	15,305	60,957
833.17	15,305	53,152	833.69	15,305	61,110
833.18	15,305	53,305	833.70	15,305	61,263
833.19	15,305	53,458	833.71	15,305	61,416
833.20	15,305	53,611	833.72	15,305	61,569
833.21	15,305	53,764	833.73	15,305	61,722
833.22	15,305	53,917	833.74	15,305	61,875
833.23	15,305	54,070	833.75	15,305	62,029
833.24	15,305	54,223	833.76	15,305	62,182
833.25	15,305	54,376	833.77	15,305	62,335
833.26	15,305	54,529	833.78	15,305	62,488
833.27	15,305	54,682	833.79	15,305	62,641
833.28	15,305	54,835	833.80	15,305	62,794
833.29	15,305	54,988	833.81	15,305	62,947
833.30	15,305	55,141	833.82	15,305	63,100
833.31	15,305	55,294	833.83	15,305	63,253
833.32	15,305	55,447	833.84	15,305	63,406
833.33	15,305	55,600	833.85	15,305	63,559
833.34	15,305	55,753	833.86	15,305	63,712
833.35	15,305	55,907	833.87	15,305	63,865
833.36	15,305	56,060	833.88	15,305	64,018
833.37	15,305	56,213	833.89	15,305	64,171
833.38	15,305	56,366	833.90	15,305	64,324
833.39	15,305	56,519	833.91	15,305	64,477
833.40	15,305	56,672	833.92	15,305	64,630
833.41	15,305	56,825	833.93	15,305	64,783
833.42	15,305	56,978	833.94	15,305	64,936
833.43	15,305	57,131	833.95	15,305	65,090
833.44	15,305	57,284	833.96	15,305	65,243
833.45	15,305	57,437	833.97	15,305	65,396
833.46	15,305	57,590	833.98	15,305	65,549
833.47	15,305	57,743	833.99	15,305	65,702
833.48	15,305	57,896	834.00	15,305	65,855
833.49	15,305	58,049	834.01	15,305	66,008
833.50	15,305	58,202	834.02	15,305	66,161
833.51	15,305	58,355	834.03	15,305	66,314
833.52	15,305	58,508	834.04	15,305	66,467
833.53	15,305	58,661	834.05	15,305	66,620
833.54	15,305	58,814	834.06	15,305	66,773
833.55	15,305	58,967	834.07	15,305	66,926
833.56	15,305	59,121	834.08	15,305	67,079
833.57	15,305	59,274	834.09	15,305	67,232
833.58	15,305	59,427	834.10	15,305	67,385
833.59	15,305	59,580	834.11	15,305	67,538
833.60	15,305	59,733	834.12	15,305	67,691
833.61	15,305	59,886	834.13	15,305	67,844
833.62	15,305	60,039	834.14	15,305	67,997
833.63	15,305	60,192	834.15	15,305	68,150
833.64	15,305	60,345	834.16	15,305	68,304
833.65	15,305	60,498	834.17	15,305	68,457
833.66	15,305	60,651	834.18	15,305	68,610
833.67	15,305	60,804	834.19	15,305	68,763

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
834.20	15,305	68,916
834.21	15,305	69,069
834.22	15,305	69,222
834.23	15,305	69,375
834.24	15,305	69,528
834.25	15,305	69,681
834.26	15,305	69,834
834.27	15,305	69,987
834.28	15,305	70,140
834.29	15,305	70,293
834.30	15,305	70,446
834.31	15,305	70,599
834.32	15,305	70,752
834.33	15,305	70,905
834.34	15,305	71,058
834.35	15,305	71,212
834.36	15,305	71,365
834.37	15,305	71,518
834.38	15,305	71,671
834.39	15,305	71,824
834.40	15,305	71,977
834.41	15,305	72,130
834.42	15,305	72,283
834.43	15,305	72,436
834.44	15,305	72,589
834.45	15,305	72,742
834.46	15,305	72,895
834.47	15,305	73,048
834.48	15,305	73,201
834.49	15,305	73,354
834.50	15,305	73,507
834.51	15,305	73,660
834.52	15,305	73,813
834.53	15,305	73,966
834.54	15,305	74,119
834.55	15,305	74,272
834.56	15,305	74,426
834.57	15,305	74,579
834.58	15,305	74,732
834.59	15,305	74,885
834.60	15,305	75,038
834.61	15,305	75,191
834.62	15,305	75,344
834.63	15,305	75,497
834.64	15,305	75,650
834.65	15,305	75,803
834.66	15,305	75,956
834.67	15,305	76,109
834.68	15,305	76,262
834.69	15,305	76,415
834.70	15,305	76,568
834.71	15,305	76,721
834.72	15,305	76,874
834.73	15,305	77,027
834.74	15,305	77,180
834.75	15,305	77,334
834.76	15,305	77,487
834.77	15,305	77,640
834.78	15,305	77,793
834.79	15,305	77,946
834.80	15,305	78,099
834.81	15,305	78,252
834.82	15,305	78,405
834.83	15,305	78,558
834.84	15,305	78,711
834.85	15,305	78,864
834.86	15,305	79,017
834.87	15,305	79,170
834.88	15,305	79,323
834.89	15,305	79,476
834.90	15,305	79,629
834.91	15,305	79,782
834.92	15,305	79,935
834.93	15,305	80,088
834.94	15,305	80,241
834.95	15,305	80,395
834.96	15,305	80,548
834.97	15,305	80,701
834.98	15,305	80,854
834.99	15,305	81,007
835.00	15,305	**81,160**

Summary for Link 1L: DIAMOND LAKE

Inflow Area = 7.007 ac, 17.14% Impervious, Inflow Depth = 0.39" for 2 YEAR event
Inflow = 1.07 cfs @ 12.21 hrs, Volume= 0.226 af
Primary = 1.07 cfs @ 12.21 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1P:

Runoff = 6.45 cfs @ 12.19 hrs, Volume= 0.370 af, Depth= 1.09"
Routed to Pond 1B : FILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10 YEAR Rainfall=4.20"

Area (ac)	CN	Adj	Description
3.424	61		>75% Grass cover, Good, HSG B
0.656	98		Unconnected pavement, HSG B
4.080	67	64	Weighted Average, UI Adjusted
3.424			83.92% Pervious Area
0.656			16.08% Impervious Area
0.656			100.00% Unconnected

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

Summary for Subcatchment 2P:

Runoff = 1.25 cfs @ 12.19 hrs, Volume= 0.071 af, Depth= 1.15"
Routed to Pond 1A : FILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10 YEAR Rainfall=4.20"

Area (ac)	CN	Adj	Description
0.575	61		>75% Grass cover, Good, HSG B
0.165	98		Unconnected pavement, HSG B
0.740	69	65	Weighted Average, UI Adjusted
0.575			77.70% Pervious Area
0.165			22.30% Impervious Area
0.165			100.00% Unconnected

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

Summary for Subcatchment 3P:

Runoff = 3.46 cfs @ 12.19 hrs, Volume= 0.198 af, Depth= 1.09"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10 YEAR Rainfall=4.20"

Area (ac)	CN	Adj	Description
1.807	61		>75% Grass cover, Good, HSG B
0.380	98		Unconnected pavement, HSG B
2.187	67	64	Weighted Average, UI Adjusted
1.807			82.62% Pervious Area
0.380			17.38% Impervious Area
0.380			100.00% Unconnected

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

Summary for Pond 1A: FILTRATION BASIN

Inflow Area = 0.740 ac, 22.30% Impervious, Inflow Depth = 1.15" for 10 YEAR event
Inflow = 1.25 cfs @ 12.19 hrs, Volume= 0.071 af
Outflow = 0.23 cfs @ 12.66 hrs, Volume= 0.071 af, Atten= 81%, Lag= 28.2 min
Primary = 0.23 cfs @ 12.66 hrs, Volume= 0.071 af
Routed to Link 1L : DIAMOND LAKE
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Routed to Link 1L : DIAMOND LAKE

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
Peak Elev= 830.54' @ 12.66 hrs Surf.Area= 2,667 sf Storage= 1,366 cf

Plug-Flow detention time= 304.2 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 304.3 min (1,144.2 - 839.9)

Volume	Invert	Avail.Storage	Storage Description
#1	829.60'	14,381 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
829.60	750	0	0
829.70	853	80	80
829.80	961	91	171
829.90	1,074	102	273
830.00	1,192	113	386
830.10	1,317	125	511
830.20	1,563	144	655
830.30	1,868	172	827
830.40	2,160	201	1,028
830.50	2,475	232	1,260
830.60	2,942	271	1,531
830.70	3,439	319	1,850
830.80	3,952	370	2,220
830.90	4,496	422	2,642
831.00	5,066	478	3,120
831.10	5,645	536	3,656
833.00	5,645	10,725	14,381

Device	Routing	Invert	Outlet Devices
#1	Primary	826.25'	**10.0" Round 10" Outlet Pipe** L= 109.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.25' / 825.60' S= 0.0060 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	826.70'	**6.0" Round Draintile** L= 93.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.70' / 826.25' S= 0.0048 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	829.60'	**0.800 in/hr Exfiltration over Surface area**
#4	Device 1	830.50'	**26.0" Horiz. CB Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	831.10'	**10.0' long x 10.0' breadth EOF**

Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60
Coef. (English)	2.49	2.56	2.70	2.69	2.68	2.69	2.67	2.64

Primary OutFlow Max=0.23 cfs @ 12.66 hrs HW=830.54' TW=0.00' (Dynamic Tailwater)
- **1=10" Outlet Pipe** (Passes 0.23 cfs of 4.13 cfs potential flow)
  - **2=Draintile** (Passes 0.05 cfs of 1.18 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.05 cfs)
  - **4=CB Grate** (Weir Controls 0.18 cfs @ 0.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=829.60' TW=0.00' (Dynamic Tailwater)
- **5=EOF** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 1A: FILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
829.60	750	0
829.61	760	8
829.62	771	15
829.63	781	23
829.64	791	31
829.65	801	39
829.66	812	47
829.67	822	55
829.68	832	63
829.69	843	72
829.70	853	80
829.71	864	89
829.72	875	97
829.73	885	106
829.74	896	115
829.75	907	124
829.76	918	133
829.77	929	143
829.78	939	152
829.79	950	161
829.80	961	171
829.81	972	181
829.82	984	190
829.83	995	200
829.84	1,006	210
829.85	1,018	220
829.86	1,029	231
829.87	1,040	241
829.88	1,051	251
829.89	1,063	262
829.90	1,074	273
829.91	1,086	283
829.92	1,098	294
829.93	1,109	305
829.94	1,121	317
829.95	1,133	328
829.96	1,145	339
829.97	1,157	351
829.98	1,168	362
829.99	1,180	374
830.00	1,192	386
830.01	1,204	398
830.02	1,217	410
830.03	1,229	422
830.04	1,242	435
830.05	1,255	447
830.06	1,267	460
830.07	1,280	472
830.08	1,292	485
830.09	1,305	498
830.10	1,317	511
830.11	1,342	525
830.12	1,366	538
830.13	1,391	552
830.14	1,415	566
830.15	1,440	580
830.16	1,465	595
830.17	1,489	610
830.18	1,514	625
830.19	1,538	640
830.20	1,563	655
830.21	1,593	671
830.22	1,624	687
830.23	1,654	704
830.24	1,685	720
830.25	1,715	737
830.26	1,746	755
830.27	1,776	772
830.28	1,807	790
830.29	1,838	808
830.30	1,868	827
830.31	1,897	846
830.32	1,926	865
830.33	1,956	884
830.34	1,985	904
830.35	2,014	924
830.36	2,043	944
830.37	2,072	965
830.38	2,102	986
830.39	2,131	1,007
830.40	2,160	1,028
830.41	2,191	1,050
830.42	2,223	1,072
830.43	2,255	1,095
830.44	2,286	1,117
830.45	2,318	1,140
830.46	2,349	1,164
830.47	2,381	1,187
830.48	2,412	1,211
830.49	2,444	1,235
830.50	2,475	1,260
830.51	2,522	1,285
830.52	2,568	1,310
830.53	2,615	1,336
830.54	2,662	1,363
830.55	2,709	1,390
830.56	2,755	1,417
830.57	2,802	1,445
830.58	2,849	1,473
830.59	2,895	1,502
830.60	2,942	1,531
830.61	2,992	1,561
830.62	3,041	1,591
830.63	3,091	1,621

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
830.64	3,141	1,653
830.65	3,190	1,684
830.66	3,240	1,716
830.67	3,290	1,749
830.68	3,340	1,782
830.69	3,389	1,816
830.70	3,439	1,850
830.71	3,490	1,885
830.72	3,542	1,920
830.73	3,593	1,955
830.74	3,644	1,992
830.75	3,695	2,028
830.76	3,747	2,066
830.77	3,798	2,103
830.78	3,849	2,141
830.79	3,901	2,180
830.80	3,952	2,220
830.81	4,006	2,259
830.82	4,061	2,300
830.83	4,115	2,341
830.84	4,170	2,382
830.85	4,224	2,424
830.86	4,278	2,466
830.87	4,333	2,509
830.88	4,387	2,553
830.89	4,442	2,597
830.90	4,496	2,642
830.91	4,553	2,687
830.92	4,610	2,733
830.93	4,667	2,779
830.94	4,724	2,826
830.95	4,781	2,874
830.96	4,838	2,922
830.97	4,895	2,971
830.98	4,952	3,020
830.99	5,009	3,070
831.00	5,066	3,120
831.01	5,124	3,171
831.02	5,182	3,222
831.03	5,240	3,275
831.04	5,298	3,327
831.05	5,356	3,381
831.06	5,413	3,434
831.07	5,471	3,489
831.08	5,529	3,544
831.09	5,587	3,599
831.10	**5,645**	3,656
831.11	5,645	3,712
831.12	5,645	3,768
831.13	5,645	3,825
831.14	5,645	3,881
831.15	5,645	3,938
831.16	5,645	3,994
831.17	5,645	4,051
831.18	5,645	4,107
831.19	5,645	4,164
831.20	5,645	4,220
831.21	5,645	4,277
831.22	5,645	4,333
831.23	5,645	4,389
831.24	5,645	4,446
831.25	5,645	4,502
831.26	5,645	4,559
831.27	5,645	4,615
831.28	5,645	4,672
831.29	5,645	4,728
831.30	5,645	4,785
831.31	5,645	4,841
831.32	5,645	4,897
831.33	5,645	4,954
831.34	5,645	5,010
831.35	5,645	5,067
831.36	5,645	5,123
831.37	5,645	5,180
831.38	5,645	5,236
831.39	5,645	5,293
831.40	5,645	5,349
831.41	5,645	5,405
831.42	5,645	5,462
831.43	5,645	5,518
831.44	5,645	5,575
831.45	5,645	5,631
831.46	5,645	5,688
831.47	5,645	5,744
831.48	5,645	5,801
831.49	5,645	5,857
831.50	5,645	5,914
831.51	5,645	5,970
831.52	5,645	6,026
831.53	5,645	6,083
831.54	5,645	6,139
831.55	5,645	6,196
831.56	5,645	6,252
831.57	5,645	6,309
831.58	5,645	6,365
831.59	5,645	6,422
831.60	5,645	6,478
831.61	5,645	6,534
831.62	5,645	6,591
831.63	5,645	6,647
831.64	5,645	6,704
831.65	5,645	6,760
831.66	5,645	6,817
831.67	5,645	6,873

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
831.68	5,645	6,930	832.20	5,645	9,865
831.69	5,645	6,986	832.21	5,645	9,922
831.70	5,645	7,043	832.22	5,645	9,978
831.71	5,645	7,099	832.23	5,645	10,034
831.72	5,645	7,155	832.24	5,645	10,091
831.73	5,645	7,212	832.25	5,645	10,147
831.74	5,645	7,268	832.26	5,645	10,204
831.75	5,645	7,325	832.27	5,645	10,260
831.76	5,645	7,381	832.28	5,645	10,317
831.77	5,645	7,438	832.29	5,645	10,373
831.78	5,645	7,494	832.30	5,645	10,430
831.79	5,645	7,551	832.31	5,645	10,486
831.80	5,645	7,607	832.32	5,645	10,542
831.81	5,645	7,664	832.33	5,645	10,599
831.82	5,645	7,720	832.34	5,645	10,655
831.83	5,645	7,776	832.35	5,645	10,712
831.84	5,645	7,833	832.36	5,645	10,768
831.85	5,645	7,889	832.37	5,645	10,825
831.86	5,645	7,946	832.38	5,645	10,881
831.87	5,645	8,002	832.39	5,645	10,938
831.88	5,645	8,059	832.40	5,645	10,994
831.89	5,645	8,115	832.41	5,645	11,050
831.90	5,645	8,172	832.42	5,645	11,107
831.91	5,645	8,228	832.43	5,645	11,163
831.92	5,645	8,284	832.44	5,645	11,220
831.93	5,645	8,341	832.45	5,645	11,276
831.94	5,645	8,397	832.46	5,645	11,333
831.95	5,645	8,454	832.47	5,645	11,389
831.96	5,645	8,510	832.48	5,645	11,446
831.97	5,645	8,567	832.49	5,645	11,502
831.98	5,645	8,623	832.50	5,645	11,559
831.99	5,645	8,680	832.51	5,645	11,615
832.00	5,645	8,736	832.52	5,645	11,671
832.01	5,645	8,792	832.53	5,645	11,728
832.02	5,645	8,849	832.54	5,645	11,784
832.03	5,645	8,905	832.55	5,645	11,841
832.04	5,645	8,962	832.56	5,645	11,897
832.05	5,645	9,018	832.57	5,645	11,954
832.06	5,645	9,075	832.58	5,645	12,010
832.07	5,645	9,131	832.59	5,645	12,067
832.08	5,645	9,188	832.60	5,645	12,123
832.09	5,645	9,244	832.61	5,645	12,179
832.10	5,645	9,301	832.62	5,645	12,236
832.11	5,645	9,357	832.63	5,645	12,292
832.12	5,645	9,413	832.64	5,645	12,349
832.13	5,645	9,470	832.65	5,645	12,405
832.14	5,645	9,526	832.66	5,645	12,462
832.15	5,645	9,583	832.67	5,645	12,518
832.16	5,645	9,639	832.68	5,645	12,575
832.17	5,645	9,696	832.69	5,645	12,631
832.18	5,645	9,752	832.70	5,645	12,688
832.19	5,645	9,809	832.71	5,645	12,744

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
832.72	5,645	12,800
832.73	5,645	12,857
832.74	5,645	12,913
832.75	5,645	12,970
832.76	5,645	13,026
832.77	5,645	13,083
832.78	5,645	13,139
832.79	5,645	13,196
832.80	5,645	13,252
832.81	5,645	13,309
832.82	5,645	13,365
832.83	5,645	13,421
832.84	5,645	13,478
832.85	5,645	13,534
832.86	5,645	13,591
832.87	5,645	13,647
832.88	5,645	13,704
832.89	5,645	13,760
832.90	5,645	13,817
832.91	5,645	13,873
832.92	5,645	13,929
832.93	5,645	13,986
832.94	5,645	14,042
832.95	5,645	14,099
832.96	5,645	14,155
832.97	5,645	14,212
832.98	5,645	14,268
832.99	5,645	14,325
833.00	5,645	**14,381**

Summary for Pond 1B: FILTRATION BASIN

Inflow Area = 4.080 ac, 16.08% Impervious, Inflow Depth = 1.09" for 10 YEAR event
Inflow = 6.45 cfs @ 12.19 hrs, Volume= 0.370 af
Outflow = 0.19 cfs @ 15.27 hrs, Volume= 0.370 af, Atten= 97%, Lag= 185.1 min
Primary = 0.19 cfs @ 15.27 hrs, Volume= 0.370 af
Routed to Link 1L : DIAMOND LAKE
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Routed to Link 1L : DIAMOND LAKE

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
Peak Elev= 830.22' @ 15.27 hrs Surf.Area= 10,518 sf Storage= 10,331 cf

Plug-Flow detention time= 615.7 min calculated for 0.370 af (100% of inflow)
Center-of-Mass det. time= 615.8 min (1,458.2 - 842.4)

Volume	Invert	Avail.Storage	Storage Description
#1	829.00'	81,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
829.00	6,706	0	0
829.10	6,970	684	684
829.20	7,236	710	1,394
829.30	7,507	737	2,131
829.40	7,781	764	2,896
829.50	8,063	792	3,688
829.60	8,372	822	4,510
829.70	8,688	853	5,363
829.80	9,014	885	6,248
829.90	9,350	918	7,166
830.00	9,699	952	8,118
830.10	10,063	988	9,106
830.20	10,443	1,025	10,132
830.30	10,839	1,064	11,196
830.40	11,252	1,105	12,300
830.50	11,682	1,147	13,447
830.60	12,131	1,191	14,638
830.70	12,599	1,237	15,874
830.80	13,091	1,284	17,159
830.90	13,612	1,335	18,494
831.00	15,305	1,446	19,940
835.00	15,305	61,220	81,160

Device	Routing	Invert	Outlet Devices
#1	Primary	825.60'	**10.0" Round 10" Outlet Pipe** L= 131.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 825.60' / 825.00' S= 0.0046 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	826.10'	**6.0" Round Draintile X 3.00** L= 260.0' RCP, sq.cut end projecting, Ke= 0.500

			Inlet / Outlet Invert= 826.10' / 825.60' S= 0.0019 '/' Cc= 0.900
			n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	829.00'	**0.800 in/hr Exfiltration over Surface area**
#4	Device 1	830.26'	**26.0" Horiz. CB Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	831.10'	**10.0' long x 10.0' breadth EOF**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.19 cfs @ 15.27 hrs HW=830.22' TW=0.00' (Dynamic Tailwater)
- **1=10" Outlet Pipe** (Passes 0.19 cfs of 4.00 cfs potential flow)
  - **2=Draintile** (Passes 0.19 cfs of 2.38 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.19 cfs)
  - **4=CB Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=829.00' TW=0.00' (Dynamic Tailwater)
- **5=EOF** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 1B: FILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
829.00	6,706	0	829.52	8,125	3,850
829.01	6,732	67	829.53	8,156	3,931
829.02	6,759	135	829.54	8,187	4,013
829.03	6,785	202	829.55	8,217	4,095
829.04	6,812	270	829.56	8,248	4,177
829.05	6,838	339	829.57	8,279	4,260
829.06	6,864	407	829.58	8,310	4,343
829.07	6,891	476	829.59	8,341	4,426
829.08	6,917	545	829.60	8,372	4,510
829.09	6,944	614	829.61	8,404	4,593
829.10	6,970	684	829.62	8,435	4,678
829.11	6,997	754	829.63	8,467	4,762
829.12	7,023	824	829.64	8,498	4,847
829.13	7,050	894	829.65	8,530	4,932
829.14	7,076	965	829.66	8,562	5,018
829.15	7,103	1,036	829.67	8,593	5,103
829.16	7,130	1,107	829.68	8,625	5,189
829.17	7,156	1,178	829.69	8,656	5,276
829.18	7,183	1,250	829.70	8,688	5,363
829.19	7,209	1,322	829.71	8,721	5,450
829.20	7,236	1,394	829.72	8,753	5,537
829.21	7,263	1,467	829.73	8,786	5,625
829.22	7,290	1,539	829.74	8,818	5,713
829.23	7,317	1,612	829.75	8,851	5,801
829.24	7,344	1,686	829.76	8,884	5,890
829.25	7,372	1,759	829.77	8,916	5,979
829.26	7,399	1,833	829.78	8,949	6,068
829.27	7,426	1,907	829.79	8,981	6,158
829.28	7,453	1,982	829.80	9,014	6,248
829.29	7,480	2,056	829.81	9,048	6,338
829.30	7,507	2,131	829.82	9,081	6,429
829.31	7,534	2,206	829.83	9,115	6,520
829.32	7,562	2,282	829.84	9,148	6,611
829.33	7,589	2,358	829.85	9,182	6,703
829.34	7,617	2,434	829.86	9,216	6,795
829.35	7,644	2,510	829.87	9,249	6,887
829.36	7,671	2,587	829.88	9,283	6,980
829.37	7,699	2,663	829.89	9,316	7,073
829.38	7,726	2,741	829.90	9,350	7,166
829.39	7,754	2,818	829.91	9,385	7,260
829.40	7,781	2,896	829.92	9,420	7,354
829.41	7,809	2,974	829.93	9,455	7,448
829.42	7,837	3,052	829.94	9,490	7,543
829.43	7,866	3,130	829.95	9,525	7,638
829.44	7,894	3,209	829.96	9,559	7,733
829.45	7,922	3,288	829.97	9,594	7,829
829.46	7,950	3,368	829.98	9,629	7,925
829.47	7,978	3,447	829.99	9,664	8,022
829.48	8,007	3,527	830.00	9,699	8,118
829.49	8,035	3,607	830.01	9,735	8,216
829.50	8,063	3,688	830.02	9,772	8,313
829.51	8,094	3,769	830.03	9,808	8,411

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
830.04	9,845	8,509
830.05	9,881	8,608
830.06	9,917	8,707
830.07	9,954	8,806
830.08	9,990	8,906
830.09	10,027	9,006
830.10	10,063	9,106
830.11	10,101	9,207
830.12	10,139	9,308
830.13	10,177	9,410
830.14	10,215	9,512
830.15	10,253	9,614
830.16	10,291	9,717
830.17	10,329	9,820
830.18	10,367	9,924
830.19	10,405	10,028
830.20	10,443	10,132
830.21	10,483	10,236
830.22	10,522	10,341
830.23	10,562	10,447
830.24	10,601	10,553
830.25	10,641	10,659
830.26	10,681	10,765
830.27	10,720	10,872
830.28	10,760	10,980
830.29	10,799	11,088
830.30	10,839	11,196
830.31	10,880	11,304
830.32	10,922	11,413
830.33	10,963	11,523
830.34	11,004	11,633
830.35	11,046	11,743
830.36	11,087	11,854
830.37	11,128	11,965
830.38	11,169	12,076
830.39	11,211	12,188
830.40	11,252	12,300
830.41	11,295	12,413
830.42	11,338	12,526
830.43	11,381	12,640
830.44	11,424	12,754
830.45	11,467	12,868
830.46	11,510	12,983
830.47	11,553	13,099
830.48	11,596	13,214
830.49	11,639	13,330
830.50	11,682	13,447
830.51	11,727	13,564
830.52	11,772	13,682
830.53	11,817	13,800
830.54	11,862	13,918
830.55	11,906	14,037
830.56	11,951	14,156
830.57	11,996	14,276
830.58	12,041	14,396
830.59	12,086	14,517
830.60	12,131	14,638
830.61	12,178	14,759
830.62	12,225	14,881
830.63	12,271	15,004
830.64	12,318	15,127
830.65	12,365	15,250
830.66	12,412	15,374
830.67	12,459	15,498
830.68	12,505	15,623
830.69	12,552	15,748
830.70	12,599	15,874
830.71	12,648	16,000
830.72	12,697	16,127
830.73	12,747	16,254
830.74	12,796	16,382
830.75	12,845	16,510
830.76	12,894	16,639
830.77	12,943	16,768
830.78	12,993	16,898
830.79	13,042	17,028
830.80	13,091	17,159
830.81	13,143	17,290
830.82	13,195	17,422
830.83	13,247	17,554
830.84	13,299	17,687
830.85	13,352	17,820
830.86	13,404	17,954
830.87	13,456	18,088
830.88	13,508	18,223
830.89	13,560	18,358
830.90	13,612	18,494
830.91	13,781	18,631
830.92	13,951	18,770
830.93	14,120	18,910
830.94	14,289	19,052
830.95	14,459	19,196
830.96	14,628	19,341
830.97	14,797	19,488
830.98	14,966	19,637
830.99	15,136	19,788
831.00	**15,305**	19,940
831.01	15,305	20,093
831.02	15,305	20,246
831.03	15,305	20,399
831.04	15,305	20,552
831.05	15,305	20,705
831.06	15,305	20,858
831.07	15,305	21,011

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
831.08	15,305	21,164	831.60	15,305	29,123
831.09	15,305	21,317	831.61	15,305	29,276
831.10	15,305	21,470	831.62	15,305	29,429
831.11	15,305	21,623	831.63	15,305	29,582
831.12	15,305	21,776	831.64	15,305	29,735
831.13	15,305	21,929	831.65	15,305	29,888
831.14	15,305	22,082	831.66	15,305	30,041
831.15	15,305	22,235	831.67	15,305	30,194
831.16	15,305	22,389	831.68	15,305	30,347
831.17	15,305	22,542	831.69	15,305	30,500
831.18	15,305	22,695	831.70	15,305	30,653
831.19	15,305	22,848	831.71	15,305	30,806
831.20	15,305	23,001	831.72	15,305	30,959
831.21	15,305	23,154	831.73	15,305	31,112
831.22	15,305	23,307	831.74	15,305	31,265
831.23	15,305	23,460	831.75	15,305	31,419
831.24	15,305	23,613	831.76	15,305	31,572
831.25	15,305	23,766	831.77	15,305	31,725
831.26	15,305	23,919	831.78	15,305	31,878
831.27	15,305	24,072	831.79	15,305	32,031
831.28	15,305	24,225	831.80	15,305	32,184
831.29	15,305	24,378	831.81	15,305	32,337
831.30	15,305	24,531	831.82	15,305	32,490
831.31	15,305	24,684	831.83	15,305	32,643
831.32	15,305	24,837	831.84	15,305	32,796
831.33	15,305	24,990	831.85	15,305	32,949
831.34	15,305	25,143	831.86	15,305	33,102
831.35	15,305	25,297	831.87	15,305	33,255
831.36	15,305	25,450	831.88	15,305	33,408
831.37	15,305	25,603	831.89	15,305	33,561
831.38	15,305	25,756	831.90	15,305	33,714
831.39	15,305	25,909	831.91	15,305	33,867
831.40	15,305	26,062	831.92	15,305	34,020
831.41	15,305	26,215	831.93	15,305	34,173
831.42	15,305	26,368	831.94	15,305	34,326
831.43	15,305	26,521	831.95	15,305	34,480
831.44	15,305	26,674	831.96	15,305	34,633
831.45	15,305	26,827	831.97	15,305	34,786
831.46	15,305	26,980	831.98	15,305	34,939
831.47	15,305	27,133	831.99	15,305	35,092
831.48	15,305	27,286	832.00	15,305	35,245
831.49	15,305	27,439	832.01	15,305	35,398
831.50	15,305	27,592	832.02	15,305	35,551
831.51	15,305	27,745	832.03	15,305	35,704
831.52	15,305	27,898	832.04	15,305	35,857
831.53	15,305	28,051	832.05	15,305	36,010
831.54	15,305	28,204	832.06	15,305	36,163
831.55	15,305	28,357	832.07	15,305	36,316
831.56	15,305	28,511	832.08	15,305	36,469
831.57	15,305	28,664	832.09	15,305	36,622
831.58	15,305	28,817	832.10	15,305	36,775
831.59	15,305	28,970	832.11	15,305	36,928

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
832.12	15,305	37,081	832.64	15,305	45,040
832.13	15,305	37,234	832.65	15,305	45,193
832.14	15,305	37,387	832.66	15,305	45,346
832.15	15,305	37,540	832.67	15,305	45,499
832.16	15,305	37,694	832.68	15,305	45,652
832.17	15,305	37,847	832.69	15,305	45,805
832.18	15,305	38,000	832.70	15,305	45,958
832.19	15,305	38,153	832.71	15,305	46,111
832.20	15,305	38,306	832.72	15,305	46,264
832.21	15,305	38,459	832.73	15,305	46,417
832.22	15,305	38,612	832.74	15,305	46,570
832.23	15,305	38,765	832.75	15,305	46,724
832.24	15,305	38,918	832.76	15,305	46,877
832.25	15,305	39,071	832.77	15,305	47,030
832.26	15,305	39,224	832.78	15,305	47,183
832.27	15,305	39,377	832.79	15,305	47,336
832.28	15,305	39,530	832.80	15,305	47,489
832.29	15,305	39,683	832.81	15,305	47,642
832.30	15,305	39,836	832.82	15,305	47,795
832.31	15,305	39,989	832.83	15,305	47,948
832.32	15,305	40,142	832.84	15,305	48,101
832.33	15,305	40,295	832.85	15,305	48,254
832.34	15,305	40,448	832.86	15,305	48,407
832.35	15,305	40,602	832.87	15,305	48,560
832.36	15,305	40,755	832.88	15,305	48,713
832.37	15,305	40,908	832.89	15,305	48,866
832.38	15,305	41,061	832.90	15,305	49,019
832.39	15,305	41,214	832.91	15,305	49,172
832.40	15,305	41,367	832.92	15,305	49,325
832.41	15,305	41,520	832.93	15,305	49,478
832.42	15,305	41,673	832.94	15,305	49,631
832.43	15,305	41,826	832.95	15,305	49,785
832.44	15,305	41,979	832.96	15,305	49,938
832.45	15,305	42,132	832.97	15,305	50,091
832.46	15,305	42,285	832.98	15,305	50,244
832.47	15,305	42,438	832.99	15,305	50,397
832.48	15,305	42,591	833.00	15,305	50,550
832.49	15,305	42,744	833.01	15,305	50,703
832.50	15,305	42,897	833.02	15,305	50,856
832.51	15,305	43,050	833.03	15,305	51,009
832.52	15,305	43,203	833.04	15,305	51,162
832.53	15,305	43,356	833.05	15,305	51,315
832.54	15,305	43,509	833.06	15,305	51,468
832.55	15,305	43,662	833.07	15,305	51,621
832.56	15,305	43,816	833.08	15,305	51,774
832.57	15,305	43,969	833.09	15,305	51,927
832.58	15,305	44,122	833.10	15,305	52,080
832.59	15,305	44,275	833.11	15,305	52,233
832.60	15,305	44,428	833.12	15,305	52,386
832.61	15,305	44,581	833.13	15,305	52,539
832.62	15,305	44,734	833.14	15,305	52,692
832.63	15,305	44,887	833.15	15,305	52,845

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
833.16	15,305	52,999	833.68	15,305	60,957
833.17	15,305	53,152	833.69	15,305	61,110
833.18	15,305	53,305	833.70	15,305	61,263
833.19	15,305	53,458	833.71	15,305	61,416
833.20	15,305	53,611	833.72	15,305	61,569
833.21	15,305	53,764	833.73	15,305	61,722
833.22	15,305	53,917	833.74	15,305	61,875
833.23	15,305	54,070	833.75	15,305	62,029
833.24	15,305	54,223	833.76	15,305	62,182
833.25	15,305	54,376	833.77	15,305	62,335
833.26	15,305	54,529	833.78	15,305	62,488
833.27	15,305	54,682	833.79	15,305	62,641
833.28	15,305	54,835	833.80	15,305	62,794
833.29	15,305	54,988	833.81	15,305	62,947
833.30	15,305	55,141	833.82	15,305	63,100
833.31	15,305	55,294	833.83	15,305	63,253
833.32	15,305	55,447	833.84	15,305	63,406
833.33	15,305	55,600	833.85	15,305	63,559
833.34	15,305	55,753	833.86	15,305	63,712
833.35	15,305	55,907	833.87	15,305	63,865
833.36	15,305	56,060	833.88	15,305	64,018
833.37	15,305	56,213	833.89	15,305	64,171
833.38	15,305	56,366	833.90	15,305	64,324
833.39	15,305	56,519	833.91	15,305	64,477
833.40	15,305	56,672	833.92	15,305	64,630
833.41	15,305	56,825	833.93	15,305	64,783
833.42	15,305	56,978	833.94	15,305	64,936
833.43	15,305	57,131	833.95	15,305	65,090
833.44	15,305	57,284	833.96	15,305	65,243
833.45	15,305	57,437	833.97	15,305	65,396
833.46	15,305	57,590	833.98	15,305	65,549
833.47	15,305	57,743	833.99	15,305	65,702
833.48	15,305	57,896	834.00	15,305	65,855
833.49	15,305	58,049	834.01	15,305	66,008
833.50	15,305	58,202	834.02	15,305	66,161
833.51	15,305	58,355	834.03	15,305	66,314
833.52	15,305	58,508	834.04	15,305	66,467
833.53	15,305	58,661	834.05	15,305	66,620
833.54	15,305	58,814	834.06	15,305	66,773
833.55	15,305	58,967	834.07	15,305	66,926
833.56	15,305	59,121	834.08	15,305	67,079
833.57	15,305	59,274	834.09	15,305	67,232
833.58	15,305	59,427	834.10	15,305	67,385
833.59	15,305	59,580	834.11	15,305	67,538
833.60	15,305	59,733	834.12	15,305	67,691
833.61	15,305	59,886	834.13	15,305	67,844
833.62	15,305	60,039	834.14	15,305	67,997
833.63	15,305	60,192	834.15	15,305	68,150
833.64	15,305	60,345	834.16	15,305	68,304
833.65	15,305	60,498	834.17	15,305	68,457
833.66	15,305	60,651	834.18	15,305	68,610
833.67	15,305	60,804	834.19	15,305	68,763

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
834.20	15,305	68,916
834.21	15,305	69,069
834.22	15,305	69,222
834.23	15,305	69,375
834.24	15,305	69,528
834.25	15,305	69,681
834.26	15,305	69,834
834.27	15,305	69,987
834.28	15,305	70,140
834.29	15,305	70,293
834.30	15,305	70,446
834.31	15,305	70,599
834.32	15,305	70,752
834.33	15,305	70,905
834.34	15,305	71,058
834.35	15,305	71,212
834.36	15,305	71,365
834.37	15,305	71,518
834.38	15,305	71,671
834.39	15,305	71,824
834.40	15,305	71,977
834.41	15,305	72,130
834.42	15,305	72,283
834.43	15,305	72,436
834.44	15,305	72,589
834.45	15,305	72,742
834.46	15,305	72,895
834.47	15,305	73,048
834.48	15,305	73,201
834.49	15,305	73,354
834.50	15,305	73,507
834.51	15,305	73,660
834.52	15,305	73,813
834.53	15,305	73,966
834.54	15,305	74,119
834.55	15,305	74,272
834.56	15,305	74,426
834.57	15,305	74,579
834.58	15,305	74,732
834.59	15,305	74,885
834.60	15,305	75,038
834.61	15,305	75,191
834.62	15,305	75,344
834.63	15,305	75,497
834.64	15,305	75,650
834.65	15,305	75,803
834.66	15,305	75,956
834.67	15,305	76,109
834.68	15,305	76,262
834.69	15,305	76,415
834.70	15,305	76,568
834.71	15,305	76,721
834.72	15,305	76,874
834.73	15,305	77,027
834.74	15,305	77,180
834.75	15,305	77,334
834.76	15,305	77,487
834.77	15,305	77,640
834.78	15,305	77,793
834.79	15,305	77,946
834.80	15,305	78,099
834.81	15,305	78,252
834.82	15,305	78,405
834.83	15,305	78,558
834.84	15,305	78,711
834.85	15,305	78,864
834.86	15,305	79,017
834.87	15,305	79,170
834.88	15,305	79,323
834.89	15,305	79,476
834.90	15,305	79,629
834.91	15,305	79,782
834.92	15,305	79,935
834.93	15,305	80,088
834.94	15,305	80,241
834.95	15,305	80,395
834.96	15,305	80,548
834.97	15,305	80,701
834.98	15,305	80,854
834.99	15,305	81,007
835.00	15,305	**81,160**

Summary for Link 1L: DIAMOND LAKE

Inflow Area = 7.007 ac, 17.14% Impervious, Inflow Depth = 1.09" for 10 YEAR event
Inflow = 3.62 cfs @ 12.19 hrs, Volume= 0.638 af
Primary = 3.62 cfs @ 12.19 hrs, Volume= 0.638 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1P:

Runoff = 21.50 cfs @ 12.18 hrs, Volume= 1.151 af, Depth= 3.39"
Routed to Pond 1B : FILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100 YEAR Rainfall=7.50"

Area (ac)	CN	Adj	Description
3.424	61		>75% Grass cover, Good, HSG B
0.656	98		Unconnected pavement, HSG B
4.080	67	64	Weighted Average, UI Adjusted
3.424			83.92% Pervious Area
0.656			16.08% Impervious Area
0.656			100.00% Unconnected

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

Summary for Subcatchment 2P:

Runoff = 4.03 cfs @ 12.18 hrs, Volume= 0.215 af, Depth= 3.49"
Routed to Pond 1A : FILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100 YEAR Rainfall=7.50"

Area (ac)	CN	Adj	Description
0.575	61		>75% Grass cover, Good, HSG B
0.165	98		Unconnected pavement, HSG B
0.740	69	65	Weighted Average, UI Adjusted
0.575			77.70% Pervious Area
0.165			22.30% Impervious Area
0.165			100.00% Unconnected

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

Summary for Subcatchment 3P:

Runoff = 11.53 cfs @ 12.18 hrs, Volume= 0.617 af, Depth= 3.39"
Routed to Link 1L : DIAMOND LAKE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100 YEAR Rainfall=7.50"

Area (ac)	CN	Adj	Description
1.807	61		>75% Grass cover, Good, HSG B
0.380	98		Unconnected pavement, HSG B
2.187	67	64	Weighted Average, UI Adjusted
1.807			82.62% Pervious Area
0.380			17.38% Impervious Area
0.380			100.00% Unconnected

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

Summary for Pond 1A: FILTRATION BASIN

Inflow Area = 0.740 ac, 22.30% Impervious, Inflow Depth = 3.49" for 100 YEAR event
Inflow = 4.03 cfs @ 12.18 hrs, Volume= 0.215 af
Outflow = 3.34 cfs @ 12.24 hrs, Volume= 0.215 af, Atten= 17%, Lag= 3.5 min
Primary = 3.34 cfs @ 12.24 hrs, Volume= 0.215 af
Routed to Link 1L : DIAMOND LAKE
Secondary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
Routed to Link 1L : DIAMOND LAKE

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
Peak Elev= 830.78' @ 12.24 hrs Surf.Area= 3,841 sf Storage= 2,135 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.3 min (950.3 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	829.60'	14,381 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
829.60	750	0	0
829.70	853	80	80
829.80	961	91	171
829.90	1,074	102	273
830.00	1,192	113	386
830.10	1,317	125	511
830.20	1,563	144	655
830.30	1,868	172	827
830.40	2,160	201	1,028
830.50	2,475	232	1,260
830.60	2,942	271	1,531
830.70	3,439	319	1,850
830.80	3,952	370	2,220
830.90	4,496	422	2,642
831.00	5,066	478	3,120
831.10	5,645	536	3,656
833.00	5,645	10,725	14,381

Device	Routing	Invert	Outlet Devices
#1	Primary	826.25'	**10.0" Round 10" Outlet Pipe** L= 109.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.25' / 825.60' S= 0.0060 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	826.70'	**6.0" Round Draintile** L= 93.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 826.70' / 826.25' S= 0.0048 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	829.60'	**0.800 in/hr Exfiltration over Surface area**
#4	Device 1	830.50'	**26.0" Horiz. CB Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	831.10'	**10.0' long x 10.0' breadth EOF**

Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60
Coef. (English)	2.49	2.56	2.70	2.69	2.68	2.69	2.67	2.64

Primary OutFlow Max=3.34 cfs @ 12.24 hrs HW=830.78' TW=0.00' (Dynamic Tailwater)
- **1=10" Outlet Pipe** (Passes 3.34 cfs of 4.24 cfs potential flow)
  - **2=Draintile** (Passes 0.07 cfs of 1.22 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.07 cfs)
  - **4=CB Grate** (Weir Controls 3.26 cfs @ 1.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.10 hrs HW=829.60' TW=0.00' (Dynamic Tailwater)
- **5=EOF** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 1A: FILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
829.60	750	0
829.61	760	8
829.62	771	15
829.63	781	23
829.64	791	31
829.65	801	39
829.66	812	47
829.67	822	55
829.68	832	63
829.69	843	72
829.70	853	80
829.71	864	89
829.72	875	97
829.73	885	106
829.74	896	115
829.75	907	124
829.76	918	133
829.77	929	143
829.78	939	152
829.79	950	161
829.80	961	171
829.81	972	181
829.82	984	190
829.83	995	200
829.84	1,006	210
829.85	1,018	220
829.86	1,029	231
829.87	1,040	241
829.88	1,051	251
829.89	1,063	262
829.90	1,074	273
829.91	1,086	283
829.92	1,098	294
829.93	1,109	305
829.94	1,121	317
829.95	1,133	328
829.96	1,145	339
829.97	1,157	351
829.98	1,168	362
829.99	1,180	374
830.00	1,192	386
830.01	1,204	398
830.02	1,217	410
830.03	1,229	422
830.04	1,242	435
830.05	1,255	447
830.06	1,267	460
830.07	1,280	472
830.08	1,292	485
830.09	1,305	498
830.10	1,317	511
830.11	1,342	525
830.12	1,366	538
830.13	1,391	552
830.14	1,415	566
830.15	1,440	580
830.16	1,465	595
830.17	1,489	610
830.18	1,514	625
830.19	1,538	640
830.20	1,563	655
830.21	1,593	671
830.22	1,624	687
830.23	1,654	704
830.24	1,685	720
830.25	1,715	737
830.26	1,746	755
830.27	1,776	772
830.28	1,807	790
830.29	1,838	808
830.30	1,868	827
830.31	1,897	846
830.32	1,926	865
830.33	1,956	884
830.34	1,985	904
830.35	2,014	924
830.36	2,043	944
830.37	2,072	965
830.38	2,102	986
830.39	2,131	1,007
830.40	2,160	1,028
830.41	2,191	1,050
830.42	2,223	1,072
830.43	2,255	1,095
830.44	2,286	1,117
830.45	2,318	1,140
830.46	2,349	1,164
830.47	2,381	1,187
830.48	2,412	1,211
830.49	2,444	1,235
830.50	2,475	1,260
830.51	2,522	1,285
830.52	2,568	1,310
830.53	2,615	1,336
830.54	2,662	1,363
830.55	2,709	1,390
830.56	2,755	1,417
830.57	2,802	1,445
830.58	2,849	1,473
830.59	2,895	1,502
830.60	2,942	1,531
830.61	2,992	1,561
830.62	3,041	1,591
830.63	3,091	1,621

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
830.64	3,141	1,653	831.16	5,645	3,994
830.65	3,190	1,684	831.17	5,645	4,051
830.66	3,240	1,716	831.18	5,645	4,107
830.67	3,290	1,749	831.19	5,645	4,164
830.68	3,340	1,782	831.20	5,645	4,220
830.69	3,389	1,816	831.21	5,645	4,277
830.70	3,439	1,850	831.22	5,645	4,333
830.71	3,490	1,885	831.23	5,645	4,389
830.72	3,542	1,920	831.24	5,645	4,446
830.73	3,593	1,955	831.25	5,645	4,502
830.74	3,644	1,992	831.26	5,645	4,559
830.75	3,695	2,028	831.27	5,645	4,615
830.76	3,747	2,066	831.28	5,645	4,672
830.77	3,798	2,103	831.29	5,645	4,728
830.78	3,849	2,141	831.30	5,645	4,785
830.79	3,901	2,180	831.31	5,645	4,841
830.80	3,952	2,220	831.32	5,645	4,897
830.81	4,006	2,259	831.33	5,645	4,954
830.82	4,061	2,300	831.34	5,645	5,010
830.83	4,115	2,341	831.35	5,645	5,067
830.84	4,170	2,382	831.36	5,645	5,123
830.85	4,224	2,424	831.37	5,645	5,180
830.86	4,278	2,466	831.38	5,645	5,236
830.87	4,333	2,509	831.39	5,645	5,293
830.88	4,387	2,553	831.40	5,645	5,349
830.89	4,442	2,597	831.41	5,645	5,405
830.90	4,496	2,642	831.42	5,645	5,462
830.91	4,553	2,687	831.43	5,645	5,518
830.92	4,610	2,733	831.44	5,645	5,575
830.93	4,667	2,779	831.45	5,645	5,631
830.94	4,724	2,826	831.46	5,645	5,688
830.95	4,781	2,874	831.47	5,645	5,744
830.96	4,838	2,922	831.48	5,645	5,801
830.97	4,895	2,971	831.49	5,645	5,857
830.98	4,952	3,020	831.50	5,645	5,914
830.99	5,009	3,070	831.51	5,645	5,970
831.00	5,066	3,120	831.52	5,645	6,026
831.01	5,124	3,171	831.53	5,645	6,083
831.02	5,182	3,222	831.54	5,645	6,139
831.03	5,240	3,275	831.55	5,645	6,196
831.04	5,298	3,327	831.56	5,645	6,252
831.05	5,356	3,381	831.57	5,645	6,309
831.06	5,413	3,434	831.58	5,645	6,365
831.07	5,471	3,489	831.59	5,645	6,422
831.08	5,529	3,544	831.60	5,645	6,478
831.09	5,587	3,599	831.61	5,645	6,534
831.10	**5,645**	3,656	831.62	5,645	6,591
831.11	5,645	3,712	831.63	5,645	6,647
831.12	5,645	3,768	831.64	5,645	6,704
831.13	5,645	3,825	831.65	5,645	6,760
831.14	5,645	3,881	831.66	5,645	6,817
831.15	5,645	3,938	831.67	5,645	6,873

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
831.68	5,645	6,930	832.20	5,645	9,865
831.69	5,645	6,986	832.21	5,645	9,922
831.70	5,645	7,043	832.22	5,645	9,978
831.71	5,645	7,099	832.23	5,645	10,034
831.72	5,645	7,155	832.24	5,645	10,091
831.73	5,645	7,212	832.25	5,645	10,147
831.74	5,645	7,268	832.26	5,645	10,204
831.75	5,645	7,325	832.27	5,645	10,260
831.76	5,645	7,381	832.28	5,645	10,317
831.77	5,645	7,438	832.29	5,645	10,373
831.78	5,645	7,494	832.30	5,645	10,430
831.79	5,645	7,551	832.31	5,645	10,486
831.80	5,645	7,607	832.32	5,645	10,542
831.81	5,645	7,664	832.33	5,645	10,599
831.82	5,645	7,720	832.34	5,645	10,655
831.83	5,645	7,776	832.35	5,645	10,712
831.84	5,645	7,833	832.36	5,645	10,768
831.85	5,645	7,889	832.37	5,645	10,825
831.86	5,645	7,946	832.38	5,645	10,881
831.87	5,645	8,002	832.39	5,645	10,938
831.88	5,645	8,059	832.40	5,645	10,994
831.89	5,645	8,115	832.41	5,645	11,050
831.90	5,645	8,172	832.42	5,645	11,107
831.91	5,645	8,228	832.43	5,645	11,163
831.92	5,645	8,284	832.44	5,645	11,220
831.93	5,645	8,341	832.45	5,645	11,276
831.94	5,645	8,397	832.46	5,645	11,333
831.95	5,645	8,454	832.47	5,645	11,389
831.96	5,645	8,510	832.48	5,645	11,446
831.97	5,645	8,567	832.49	5,645	11,502
831.98	5,645	8,623	832.50	5,645	11,559
831.99	5,645	8,680	832.51	5,645	11,615
832.00	5,645	8,736	832.52	5,645	11,671
832.01	5,645	8,792	832.53	5,645	11,728
832.02	5,645	8,849	832.54	5,645	11,784
832.03	5,645	8,905	832.55	5,645	11,841
832.04	5,645	8,962	832.56	5,645	11,897
832.05	5,645	9,018	832.57	5,645	11,954
832.06	5,645	9,075	832.58	5,645	12,010
832.07	5,645	9,131	832.59	5,645	12,067
832.08	5,645	9,188	832.60	5,645	12,123
832.09	5,645	9,244	832.61	5,645	12,179
832.10	5,645	9,301	832.62	5,645	12,236
832.11	5,645	9,357	832.63	5,645	12,292
832.12	5,645	9,413	832.64	5,645	12,349
832.13	5,645	9,470	832.65	5,645	12,405
832.14	5,645	9,526	832.66	5,645	12,462
832.15	5,645	9,583	832.67	5,645	12,518
832.16	5,645	9,639	832.68	5,645	12,575
832.17	5,645	9,696	832.69	5,645	12,631
832.18	5,645	9,752	832.70	5,645	12,688
832.19	5,645	9,809	832.71	5,645	12,744

Stage-Area-Storage for Pond 1A: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
832.72	5,645	12,800
832.73	5,645	12,857
832.74	5,645	12,913
832.75	5,645	12,970
832.76	5,645	13,026
832.77	5,645	13,083
832.78	5,645	13,139
832.79	5,645	13,196
832.80	5,645	13,252
832.81	5,645	13,309
832.82	5,645	13,365
832.83	5,645	13,421
832.84	5,645	13,478
832.85	5,645	13,534
832.86	5,645	13,591
832.87	5,645	13,647
832.88	5,645	13,704
832.89	5,645	13,760
832.90	5,645	13,817
832.91	5,645	13,873
832.92	5,645	13,929
832.93	5,645	13,986
832.94	5,645	14,042
832.95	5,645	14,099
832.96	5,645	14,155
832.97	5,645	14,212
832.98	5,645	14,268
832.99	5,645	14,325
833.00	5,645	**14,381**

Summary for Pond 1B: FILTRATION BASIN

Inflow Area = 4.080 ac, 16.08% Impervious, Inflow Depth = 3.39" for 100 YEAR event
Inflow = 21.50 cfs @ 12.18 hrs, Volume= 1.151 af
Outflow = 4.42 cfs @ 12.57 hrs, Volume= 1.152 af, Atten= 79%, Lag= 23.5 min
Primary = 4.39 cfs @ 12.57 hrs, Volume= 1.151 af
Routed to Link 1L : DIAMOND LAKE
Secondary = 0.03 cfs @ 12.57 hrs, Volume= 0.000 af
Routed to Link 1L : DIAMOND LAKE

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs
Peak Elev= 831.11' @ 12.57 hrs Surf.Area= 15,305 sf Storage= 21,646 cf

Plug-Flow detention time= 276.9 min calculated for 1.151 af (100% of inflow)
Center-of-Mass det. time= 277.1 min (1,093.6 - 816.5)

Volume	Invert	Avail.Storage	Storage Description
#1	829.00'	81,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
829.00	6,706	0	0
829.10	6,970	684	684
829.20	7,236	710	1,394
829.30	7,507	737	2,131
829.40	7,781	764	2,896
829.50	8,063	792	3,688
829.60	8,372	822	4,510
829.70	8,688	853	5,363
829.80	9,014	885	6,248
829.90	9,350	918	7,166
830.00	9,699	952	8,118
830.10	10,063	988	9,106
830.20	10,443	1,025	10,132
830.30	10,839	1,064	11,196
830.40	11,252	1,105	12,300
830.50	11,682	1,147	13,447
830.60	12,131	1,191	14,638
830.70	12,599	1,237	15,874
830.80	13,091	1,284	17,159
830.90	13,612	1,335	18,494
831.00	15,305	1,446	19,940
835.00	15,305	61,220	81,160

Device	Routing	Invert	Outlet Devices
#1	Primary	825.60'	**10.0" Round 10" Outlet Pipe** L= 131.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 825.60' / 825.00' S= 0.0046 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	826.10'	**6.0" Round Draintile X 3.00** L= 260.0' RCP, sq.cut end projecting, Ke= 0.500

			Inlet / Outlet Invert= 826.10' / 825.60' S= 0.0019 '/' Cc= 0.900
			n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 2	829.00'	**0.800 in/hr Exfiltration over Surface area**
#4	Device 1	830.26'	**26.0" Horiz. CB Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	831.10'	**10.0' long x 10.0' breadth EOF**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.39 cfs @ 12.57 hrs HW=831.11' TW=0.00' (Dynamic Tailwater)
- **1=10" Outlet Pipe** (Barrel Controls 4.39 cfs @ 8.04 fps)
  - **2=Draintile** (Passes < 2.63 cfs potential flow)
    - **3=Exfiltration** (Passes < 0.28 cfs potential flow)
  - **4=CB Grate** (Passes < 16.38 cfs potential flow)

Secondary OutFlow Max=0.03 cfs @ 12.57 hrs HW=831.11' TW=0.00' (Dynamic Tailwater)
- **5=EOF** (Weir Controls 0.03 cfs @ 0.27 fps)

Stage-Area-Storage for Pond 1B: FILTRATION BASIN

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
829.00	6,706	0
829.01	6,732	67
829.02	6,759	135
829.03	6,785	202
829.04	6,812	270
829.05	6,838	339
829.06	6,864	407
829.07	6,891	476
829.08	6,917	545
829.09	6,944	614
829.10	6,970	684
829.11	6,997	754
829.12	7,023	824
829.13	7,050	894
829.14	7,076	965
829.15	7,103	1,036
829.16	7,130	1,107
829.17	7,156	1,178
829.18	7,183	1,250
829.19	7,209	1,322
829.20	7,236	1,394
829.21	7,263	1,467
829.22	7,290	1,539
829.23	7,317	1,612
829.24	7,344	1,686
829.25	7,372	1,759
829.26	7,399	1,833
829.27	7,426	1,907
829.28	7,453	1,982
829.29	7,480	2,056
829.30	7,507	2,131
829.31	7,534	2,206
829.32	7,562	2,282
829.33	7,589	2,358
829.34	7,617	2,434
829.35	7,644	2,510
829.36	7,671	2,587
829.37	7,699	2,663
829.38	7,726	2,741
829.39	7,754	2,818
829.40	7,781	2,896
829.41	7,809	2,974
829.42	7,837	3,052
829.43	7,866	3,130
829.44	7,894	3,209
829.45	7,922	3,288
829.46	7,950	3,368
829.47	7,978	3,447
829.48	8,007	3,527
829.49	8,035	3,607
829.50	8,063	3,688
829.51	8,094	3,769
829.52	8,125	3,850
829.53	8,156	3,931
829.54	8,187	4,013
829.55	8,217	4,095
829.56	8,248	4,177
829.57	8,279	4,260
829.58	8,310	4,343
829.59	8,341	4,426
829.60	8,372	4,510
829.61	8,404	4,593
829.62	8,435	4,678
829.63	8,467	4,762
829.64	8,498	4,847
829.65	8,530	4,932
829.66	8,562	5,018
829.67	8,593	5,103
829.68	8,625	5,189
829.69	8,656	5,276
829.70	8,688	5,363
829.71	8,721	5,450
829.72	8,753	5,537
829.73	8,786	5,625
829.74	8,818	5,713
829.75	8,851	5,801
829.76	8,884	5,890
829.77	8,916	5,979
829.78	8,949	6,068
829.79	8,981	6,158
829.80	9,014	6,248
829.81	9,048	6,338
829.82	9,081	6,429
829.83	9,115	6,520
829.84	9,148	6,611
829.85	9,182	6,703
829.86	9,216	6,795
829.87	9,249	6,887
829.88	9,283	6,980
829.89	9,316	7,073
829.90	9,350	7,166
829.91	9,385	7,260
829.92	9,420	7,354
829.93	9,455	7,448
829.94	9,490	7,543
829.95	9,525	7,638
829.96	9,559	7,733
829.97	9,594	7,829
829.98	9,629	7,925
829.99	9,664	8,022
830.00	9,699	8,118
830.01	9,735	8,216
830.02	9,772	8,313
830.03	9,808	8,411

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
830.04	9,845	8,509
830.05	9,881	8,608
830.06	9,917	8,707
830.07	9,954	8,806
830.08	9,990	8,906
830.09	10,027	9,006
830.10	10,063	9,106
830.11	10,101	9,207
830.12	10,139	9,308
830.13	10,177	9,410
830.14	10,215	9,512
830.15	10,253	9,614
830.16	10,291	9,717
830.17	10,329	9,820
830.18	10,367	9,924
830.19	10,405	10,028
830.20	10,443	10,132
830.21	10,483	10,236
830.22	10,522	10,341
830.23	10,562	10,447
830.24	10,601	10,553
830.25	10,641	10,659
830.26	10,681	10,765
830.27	10,720	10,872
830.28	10,760	10,980
830.29	10,799	11,088
830.30	10,839	11,196
830.31	10,880	11,304
830.32	10,922	11,413
830.33	10,963	11,523
830.34	11,004	11,633
830.35	11,046	11,743
830.36	11,087	11,854
830.37	11,128	11,965
830.38	11,169	12,076
830.39	11,211	12,188
830.40	11,252	12,300
830.41	11,295	12,413
830.42	11,338	12,526
830.43	11,381	12,640
830.44	11,424	12,754
830.45	11,467	12,868
830.46	11,510	12,983
830.47	11,553	13,099
830.48	11,596	13,214
830.49	11,639	13,330
830.50	11,682	13,447
830.51	11,727	13,564
830.52	11,772	13,682
830.53	11,817	13,800
830.54	11,862	13,918
830.55	11,906	14,037
830.56	11,951	14,156
830.57	11,996	14,276
830.58	12,041	14,396
830.59	12,086	14,517
830.60	12,131	14,638
830.61	12,178	14,759
830.62	12,225	14,881
830.63	12,271	15,004
830.64	12,318	15,127
830.65	12,365	15,250
830.66	12,412	15,374
830.67	12,459	15,498
830.68	12,505	15,623
830.69	12,552	15,748
830.70	12,599	15,874
830.71	12,648	16,000
830.72	12,697	16,127
830.73	12,747	16,254
830.74	12,796	16,382
830.75	12,845	16,510
830.76	12,894	16,639
830.77	12,943	16,768
830.78	12,993	16,898
830.79	13,042	17,028
830.80	13,091	17,159
830.81	13,143	17,290
830.82	13,195	17,422
830.83	13,247	17,554
830.84	13,299	17,687
830.85	13,352	17,820
830.86	13,404	17,954
830.87	13,456	18,088
830.88	13,508	18,223
830.89	13,560	18,358
830.90	13,612	18,494
830.91	13,781	18,631
830.92	13,951	18,770
830.93	14,120	18,910
830.94	14,289	19,052
830.95	14,459	19,196
830.96	14,628	19,341
830.97	14,797	19,488
830.98	14,966	19,637
830.99	15,136	19,788
831.00	**15,305**	19,940
831.01	15,305	20,093
831.02	15,305	20,246
831.03	15,305	20,399
831.04	15,305	20,552
831.05	15,305	20,705
831.06	15,305	20,858
831.07	15,305	21,011

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
831.08	15,305	21,164	831.60	15,305	29,123
831.09	15,305	21,317	831.61	15,305	29,276
831.10	15,305	21,470	831.62	15,305	29,429
831.11	15,305	21,623	831.63	15,305	29,582
831.12	15,305	21,776	831.64	15,305	29,735
831.13	15,305	21,929	831.65	15,305	29,888
831.14	15,305	22,082	831.66	15,305	30,041
831.15	15,305	22,235	831.67	15,305	30,194
831.16	15,305	22,389	831.68	15,305	30,347
831.17	15,305	22,542	831.69	15,305	30,500
831.18	15,305	22,695	831.70	15,305	30,653
831.19	15,305	22,848	831.71	15,305	30,806
831.20	15,305	23,001	831.72	15,305	30,959
831.21	15,305	23,154	831.73	15,305	31,112
831.22	15,305	23,307	831.74	15,305	31,265
831.23	15,305	23,460	831.75	15,305	31,419
831.24	15,305	23,613	831.76	15,305	31,572
831.25	15,305	23,766	831.77	15,305	31,725
831.26	15,305	23,919	831.78	15,305	31,878
831.27	15,305	24,072	831.79	15,305	32,031
831.28	15,305	24,225	831.80	15,305	32,184
831.29	15,305	24,378	831.81	15,305	32,337
831.30	15,305	24,531	831.82	15,305	32,490
831.31	15,305	24,684	831.83	15,305	32,643
831.32	15,305	24,837	831.84	15,305	32,796
831.33	15,305	24,990	831.85	15,305	32,949
831.34	15,305	25,143	831.86	15,305	33,102
831.35	15,305	25,297	831.87	15,305	33,255
831.36	15,305	25,450	831.88	15,305	33,408
831.37	15,305	25,603	831.89	15,305	33,561
831.38	15,305	25,756	831.90	15,305	33,714
831.39	15,305	25,909	831.91	15,305	33,867
831.40	15,305	26,062	831.92	15,305	34,020
831.41	15,305	26,215	831.93	15,305	34,173
831.42	15,305	26,368	831.94	15,305	34,326
831.43	15,305	26,521	831.95	15,305	34,480
831.44	15,305	26,674	831.96	15,305	34,633
831.45	15,305	26,827	831.97	15,305	34,786
831.46	15,305	26,980	831.98	15,305	34,939
831.47	15,305	27,133	831.99	15,305	35,092
831.48	15,305	27,286	832.00	15,305	35,245
831.49	15,305	27,439	832.01	15,305	35,398
831.50	15,305	27,592	832.02	15,305	35,551
831.51	15,305	27,745	832.03	15,305	35,704
831.52	15,305	27,898	832.04	15,305	35,857
831.53	15,305	28,051	832.05	15,305	36,010
831.54	15,305	28,204	832.06	15,305	36,163
831.55	15,305	28,357	832.07	15,305	36,316
831.56	15,305	28,511	832.08	15,305	36,469
831.57	15,305	28,664	832.09	15,305	36,622
831.58	15,305	28,817	832.10	15,305	36,775
831.59	15,305	28,970	832.11	15,305	36,928

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
832.12	15,305	37,081	832.64	15,305	45,040
832.13	15,305	37,234	832.65	15,305	45,193
832.14	15,305	37,387	832.66	15,305	45,346
832.15	15,305	37,540	832.67	15,305	45,499
832.16	15,305	37,694	832.68	15,305	45,652
832.17	15,305	37,847	832.69	15,305	45,805
832.18	15,305	38,000	832.70	15,305	45,958
832.19	15,305	38,153	832.71	15,305	46,111
832.20	15,305	38,306	832.72	15,305	46,264
832.21	15,305	38,459	832.73	15,305	46,417
832.22	15,305	38,612	832.74	15,305	46,570
832.23	15,305	38,765	832.75	15,305	46,724
832.24	15,305	38,918	832.76	15,305	46,877
832.25	15,305	39,071	832.77	15,305	47,030
832.26	15,305	39,224	832.78	15,305	47,183
832.27	15,305	39,377	832.79	15,305	47,336
832.28	15,305	39,530	832.80	15,305	47,489
832.29	15,305	39,683	832.81	15,305	47,642
832.30	15,305	39,836	832.82	15,305	47,795
832.31	15,305	39,989	832.83	15,305	47,948
832.32	15,305	40,142	832.84	15,305	48,101
832.33	15,305	40,295	832.85	15,305	48,254
832.34	15,305	40,448	832.86	15,305	48,407
832.35	15,305	40,602	832.87	15,305	48,560
832.36	15,305	40,755	832.88	15,305	48,713
832.37	15,305	40,908	832.89	15,305	48,866
832.38	15,305	41,061	832.90	15,305	49,019
832.39	15,305	41,214	832.91	15,305	49,172
832.40	15,305	41,367	832.92	15,305	49,325
832.41	15,305	41,520	832.93	15,305	49,478
832.42	15,305	41,673	832.94	15,305	49,631
832.43	15,305	41,826	832.95	15,305	49,785
832.44	15,305	41,979	832.96	15,305	49,938
832.45	15,305	42,132	832.97	15,305	50,091
832.46	15,305	42,285	832.98	15,305	50,244
832.47	15,305	42,438	832.99	15,305	50,397
832.48	15,305	42,591	833.00	15,305	50,550
832.49	15,305	42,744	833.01	15,305	50,703
832.50	15,305	42,897	833.02	15,305	50,856
832.51	15,305	43,050	833.03	15,305	51,009
832.52	15,305	43,203	833.04	15,305	51,162
832.53	15,305	43,356	833.05	15,305	51,315
832.54	15,305	43,509	833.06	15,305	51,468
832.55	15,305	43,662	833.07	15,305	51,621
832.56	15,305	43,816	833.08	15,305	51,774
832.57	15,305	43,969	833.09	15,305	51,927
832.58	15,305	44,122	833.10	15,305	52,080
832.59	15,305	44,275	833.11	15,305	52,233
832.60	15,305	44,428	833.12	15,305	52,386
832.61	15,305	44,581	833.13	15,305	52,539
832.62	15,305	44,734	833.14	15,305	52,692
832.63	15,305	44,887	833.15	15,305	52,845

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
833.16	15,305	52,999	833.68	15,305	60,957
833.17	15,305	53,152	833.69	15,305	61,110
833.18	15,305	53,305	833.70	15,305	61,263
833.19	15,305	53,458	833.71	15,305	61,416
833.20	15,305	53,611	833.72	15,305	61,569
833.21	15,305	53,764	833.73	15,305	61,722
833.22	15,305	53,917	833.74	15,305	61,875
833.23	15,305	54,070	833.75	15,305	62,029
833.24	15,305	54,223	833.76	15,305	62,182
833.25	15,305	54,376	833.77	15,305	62,335
833.26	15,305	54,529	833.78	15,305	62,488
833.27	15,305	54,682	833.79	15,305	62,641
833.28	15,305	54,835	833.80	15,305	62,794
833.29	15,305	54,988	833.81	15,305	62,947
833.30	15,305	55,141	833.82	15,305	63,100
833.31	15,305	55,294	833.83	15,305	63,253
833.32	15,305	55,447	833.84	15,305	63,406
833.33	15,305	55,600	833.85	15,305	63,559
833.34	15,305	55,753	833.86	15,305	63,712
833.35	15,305	55,907	833.87	15,305	63,865
833.36	15,305	56,060	833.88	15,305	64,018
833.37	15,305	56,213	833.89	15,305	64,171
833.38	15,305	56,366	833.90	15,305	64,324
833.39	15,305	56,519	833.91	15,305	64,477
833.40	15,305	56,672	833.92	15,305	64,630
833.41	15,305	56,825	833.93	15,305	64,783
833.42	15,305	56,978	833.94	15,305	64,936
833.43	15,305	57,131	833.95	15,305	65,090
833.44	15,305	57,284	833.96	15,305	65,243
833.45	15,305	57,437	833.97	15,305	65,396
833.46	15,305	57,590	833.98	15,305	65,549
833.47	15,305	57,743	833.99	15,305	65,702
833.48	15,305	57,896	834.00	15,305	65,855
833.49	15,305	58,049	834.01	15,305	66,008
833.50	15,305	58,202	834.02	15,305	66,161
833.51	15,305	58,355	834.03	15,305	66,314
833.52	15,305	58,508	834.04	15,305	66,467
833.53	15,305	58,661	834.05	15,305	66,620
833.54	15,305	58,814	834.06	15,305	66,773
833.55	15,305	58,967	834.07	15,305	66,926
833.56	15,305	59,121	834.08	15,305	67,079
833.57	15,305	59,274	834.09	15,305	67,232
833.58	15,305	59,427	834.10	15,305	67,385
833.59	15,305	59,580	834.11	15,305	67,538
833.60	15,305	59,733	834.12	15,305	67,691
833.61	15,305	59,886	834.13	15,305	67,844
833.62	15,305	60,039	834.14	15,305	67,997
833.63	15,305	60,192	834.15	15,305	68,150
833.64	15,305	60,345	834.16	15,305	68,304
833.65	15,305	60,498	834.17	15,305	68,457
833.66	15,305	60,651	834.18	15,305	68,610
833.67	15,305	60,804	834.19	15,305	68,763

Stage-Area-Storage for Pond 1B: FILTRATION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
834.20	15,305	68,916
834.21	15,305	69,069
834.22	15,305	69,222
834.23	15,305	69,375
834.24	15,305	69,528
834.25	15,305	69,681
834.26	15,305	69,834
834.27	15,305	69,987
834.28	15,305	70,140
834.29	15,305	70,293
834.30	15,305	70,446
834.31	15,305	70,599
834.32	15,305	70,752
834.33	15,305	70,905
834.34	15,305	71,058
834.35	15,305	71,212
834.36	15,305	71,365
834.37	15,305	71,518
834.38	15,305	71,671
834.39	15,305	71,824
834.40	15,305	71,977
834.41	15,305	72,130
834.42	15,305	72,283
834.43	15,305	72,436
834.44	15,305	72,589
834.45	15,305	72,742
834.46	15,305	72,895
834.47	15,305	73,048
834.48	15,305	73,201
834.49	15,305	73,354
834.50	15,305	73,507
834.51	15,305	73,660
834.52	15,305	73,813
834.53	15,305	73,966
834.54	15,305	74,119
834.55	15,305	74,272
834.56	15,305	74,426
834.57	15,305	74,579
834.58	15,305	74,732
834.59	15,305	74,885
834.60	15,305	75,038
834.61	15,305	75,191
834.62	15,305	75,344
834.63	15,305	75,497
834.64	15,305	75,650
834.65	15,305	75,803
834.66	15,305	75,956
834.67	15,305	76,109
834.68	15,305	76,262
834.69	15,305	76,415
834.70	15,305	76,568
834.71	15,305	76,721
834.72	15,305	76,874
834.73	15,305	77,027
834.74	15,305	77,180
834.75	15,305	77,334
834.76	15,305	77,487
834.77	15,305	77,640
834.78	15,305	77,793
834.79	15,305	77,946
834.80	15,305	78,099
834.81	15,305	78,252
834.82	15,305	78,405
834.83	15,305	78,558
834.84	15,305	78,711
834.85	15,305	78,864
834.86	15,305	79,017
834.87	15,305	79,170
834.88	15,305	79,323
834.89	15,305	79,476
834.90	15,305	79,629
834.91	15,305	79,782
834.92	15,305	79,935
834.93	15,305	80,088
834.94	15,305	80,241
834.95	15,305	80,395
834.96	15,305	80,548
834.97	15,305	80,701
834.98	15,305	80,854
834.99	15,305	81,007
835.00	15,305	**81,160**

Summary for Link 1L: DIAMOND LAKE

Inflow Area = 7.007 ac, 17.14% Impervious, Inflow Depth = 3.40" for 100 YEAR event
Inflow = 18.44 cfs @ 12.20 hrs, Volume= 1.984 af
Primary = 18.44 cfs @ 12.20 hrs, Volume= 1.984 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.01 hrs

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Todd Park
User Name / Company Name:	MPS and MPRB
Date:	03/18/26
Project Description:	Softball field at Todd Park has been rebuilt and improved to accomodate high school competition. New walks and a filtration basin have also been added to the site.
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55417
Annual Rainfall (inches):	31.7
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		0.77			0.77
			Impervious Area (acres)		0.46
				Total Area (acres)	1.23

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		1.81			1.81
please adjust TOTAL SITE AREAS to match or exceed the highlighted SITE AREAS ROUTED TO BMPS			Impervious Area (acres)		0.39
				Total Area (acres)	2.2

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	1837	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	1.4051	acre-ft
Annual runoff volume removed by BMPs:	0	acre-ft
Percent annual runoff volume removed:	**0**	**%**
Post development annual particulate P load:	0.6306	lbs
Annual particulate P removed by BMPs:	0.391	lbs
Post development annual dissolved P load:	0.516	lbs
Annual dissolved P removed by BMPs:	0	lbs
Total P removed by BMPs	0.391	lbs
Percent annual total phosphorus removed:	**34**	**%**
Post development annual TSS load:	208.3	lbs
Annual TSS removed by BMPs:	232.3	lbs
Percent annual TSS removed:	**112**	**%**

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft3)	Volume Recieved (ft3)	Volume Retained (ft3)	Volume Outflow (ft3)	Percent Retained (%)
1 - Sand filter	0	878	0	878	0
2 - Sand filter	0	679	0	679	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 (%)
1 - Sand filter	1.0818	0	0	1.0818	0
2 - Sand filter	0.6598	0	0	0.6598	0

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0.4855	0	0.2428	0.2427	50
2 - Sand filter	0.2961	0	0.1481	0.148	50

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0.3972	0	0	0.3972	0
2 - Sand filter	0.2423	0	0	0.2423	0

Total Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0.8827	0	0.2428	0.6399	25
2 - Sand filter	0.5384	0	0.1481	0.3903	25

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	160.36	0	144.32	16.04	90
2 - Sand filter	97.8	0	88.02	9.78	90

BMP Schematic

2 - Sand filter

1 - Sand filter

BOLTON & MENK

Real People. Real Solutions.

Soils Reports

(Subsurface Exploration for Structural Properties)

Chosen Valley Testing, Inc.

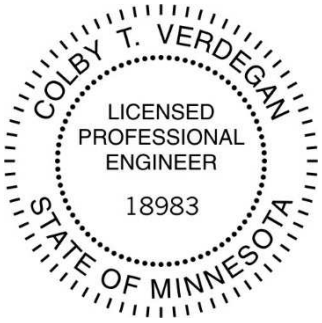
Design Phase Geotechnical Report:

Proposed Fast Pitch Softball Facility
Todd Park
5600 Chicago Avenue
Minneapolis, Minnesota
CVT# 26615.25.MNT

Prepared for:

Jay Pomeroy, RLA
Bolton & Menk, Inc.

Certification:



I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly licensed engineer under the laws of the State of Minnesota.

Colby T. Verdegan, PE
Geotechnical Engineer
Registration Number 18983
Date: January 23, 2026

Chosen Valley Testing, Inc.

Geotechnical Engineering and Testing, 245 Roselawn Ave. E., Suite #29, St. Paul, MN 55117 · (651) 756-7384 · stpaul@cvtesting.com

Jay Pomeroy, RLA
Bolton & Menk, Inc.
3300 Fernbroom Lane, Suite 300
Plymouth, MN 55447
Phone: (763) 227-6526
Email: jay.pomeroy@bolton-menk.com

January 23, 2026

Re: Design Phase Geotechnical Evaluation
Proposed Fast Pitch Softball Facility
Todd Park
5600 Chicago Avenue
Minneapolis, MN 55417
CVT Project 26615.25.MNT

Dear Mr. Pomeroy,

As authorized, we have completed the geotechnical soil boring and evaluation for the proposed facility in Minneapolis, Minnesota. CVT appreciates the opportunity to provide geotechnical services on this project. The attached report provides details of our findings, analyses and recommendations for the facility. If you have any questions or need additional information, please contact us at (651) 756-7384.

Sincerely,
Chosen Valley Testing, Inc.

Hannah Fischer
Graduate Geological Engineer

Colby T. Verdegan, PE
Sr. Geotechnical Engineer

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Design Phase Geotechnical Report
Proposed Fast Pitch Softball Facility
Todd Park
5600 Chicago Avenue
Minneapolis, Minnesota

CVT Project Number: 26615.25.MNT
Date: January 23, 2026

A. Introduction

The intent of this report is to present our findings and describe the means used to collect the data. The data was collected for a specific purpose and may not be suitable for other purposes. We should be consulted before attempting to use the data for other uses. A complete and thorough review of the entire document, including its assumptions and its appendices, should be undertaken immediately upon receipt.

A.1. Purpose

This geotechnical report was prepared to aid design and construction of proposed softball facility improvements at Todd Park in Minneapolis, MN. Our services were authorized by the project design consultant, Jay Pomeroy, RLA, with Bolton & Menk, Inc. on behalf of the City.

A.2. Scope

To provide data for analysis, one boring was authorized and drilled to a depth of about 14 feet. Our engineering scope consisted of providing this geotechnical report summarizing our findings and analyses and recommendations for the proposed improvements.

A.3. Exploration Location and Elevation

The exploration location was indicated to Chosen Valley Testing on a site plan provided by the client. The Location Sketch in the Appendix shows the approximate location as drilled and was created by superposing the GPS coordinate for the boring onto a satellite image of the site using Google Earth software.

Ground surface elevations at the explorations were estimated from topographic contours using MnTopo software from the Minnesota DNR. The estimated elevations are indicated on the Log Boring sheets in the Appendix and should be considered approximate.

A.4. Geologic Background

A geotechnical report is based on subsurface data collected for the specific structure or problem. Available geologic data from the region can help interpretation of the data and is briefly summarized in this section.

Geologic maps suggest that natural soils in the area consist of glacial outwash sands and gravels that were often covered by organic deposits that were largely removed and filled over. Bedrock is commonly on the order of 150 to 200 feet below the surface is not a consideration.

B. Subsurface Data

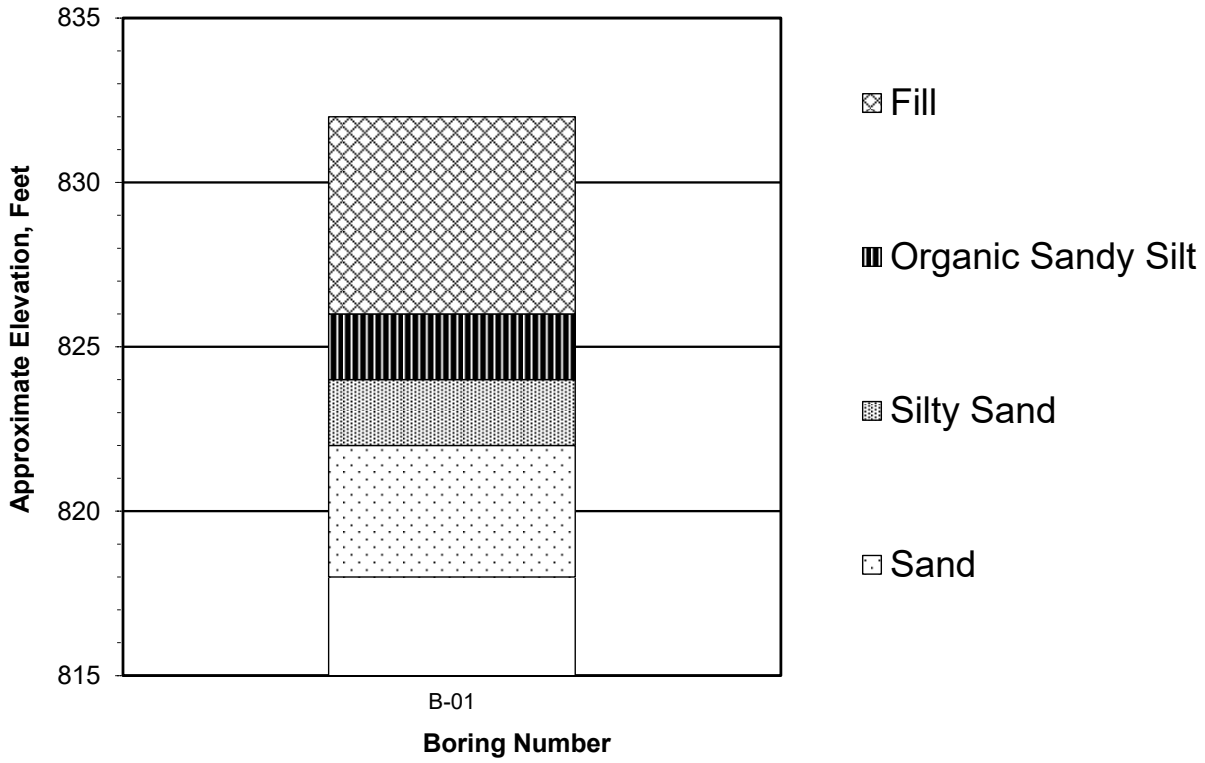
The boring was performed using penetration test procedures (Method of Test D1586 of the American Society for Testing and Materials). This procedure allows for the extraction of intact soil specimen from deep in the ground. With this method, a hollow-stem auger is drilled to the desired sampling depth. A 2-inch OD sampling tube is then screwed onto the end of a sampling rod, inserted through the hole in the auger's tip, and then driven into the soil with a 140-pound hammer dropped repeatedly from a height of 30 inches above the sampling rod. The sampler is driven 18 inches into the soil, unless the material is too hard. The samples are generally taken at 2½ to 5-foot intervals. The core of soil obtained was classified and logged by our drilling personnel at the site and a representative portion was then sealed and delivered to our laboratory for further review.

B.1. Stratification

At the surface the soil boring encountered about 6 feet of fill. The fill consisted of dark Silty Sand with traces of debris including glass, brick, and bituminous fragments.

Beneath the fill materials, the boring met a layer of organic sandy silt. The soils below the organic soils consisted of silty sand to generally clean sand. The boring terminated in generally clean sand at the planned 14-foot depth.

For the reader's convenience, we have summarized the soil boring data in the following cross-section. The reader is referred to the boring logs in the Appendix for more detailed information.



B.2. Penetration Test Results

The number of blows needed for the hammer to advance the penetration test sampler is an indicator of soil characteristics. The results tend to be more meaningful for natural mineral soils than for fill soils. In fill soils, compaction tests are more meaningful.

A penetration resistance value ("N" Values) 6 blows per foot (BPF) was recorded in the organic silt. The glacial sand recorded values of 9 to 10 BPF, indicating they were loose. Penetration values in the fill ranged from 6 to 11 BPF.

A key to descriptors used to qualify the relative density of soil (such as *soft, stiff, loose,* and *dense*) can be found on the Legend to Soil Description in the Appendix.

B.3. Groundwater Data

During drilling, the drillers may note the presence of moisture on the sampler, in the cuttings, or in the borehole itself. These findings are reported on the Log of Boring sheet. Because water levels vary with weather, time of year, and other factors, the presence or lack of water during exploration is subject to interpretation and is not always conclusive.

Water was encountered at a depth of 10 feet which corresponds to an elevation of about 822 feet. Groundwater levels are expected to fluctuate on site similar to levels in nearby streams and rivers, along with local weather patterns.

C. Design Data

Because each structure has a different loading configuration and intensity, different grades, and different structural or performance tolerances, the results of a geotechnical exploration will mean different things for different facilities. If the facility changes, Chosen Valley Testing should be contacted to discuss possible implications of the changes. Without a chance to review such changes, the recommendations of the soils engineer may no longer be valid or appropriate.

The preliminary basin design was not available at the time of the report. Our analysis is limited to providing estimated infiltration rates for the soils encountered.

D. Stormwater filtration Recommendations

Based on the boring, the soils at the site appear to consist of silty sand fill over natural organic, silty sand and generally clean sand soil layers. Infiltration rates were estimated for the various materials encountered at the site. The following table presents the recommended infiltration rate per soil type from the MPCA Minnesota Storm Water Manual (updated from Version 2X). Please see the individual Log of Boring sheet in the Appendix for soil classification details at each depth.

Unified Soil Classification System, USCS	Infiltration Rate (inches/hour)
Poorly Graded Sand with Silt (SP-SM)	0.8
Silty Sand (SM)	0.45
Organic Sandy Sily	0.06

Our experience is that the actual infiltration rates of poorly graded sands are likely much faster than the table values provided. However, the silty sands tend to infiltrate at a much slower rate than the table provides. Fill soils can lack uniformity, therefore it can be hard to assign an infiltration rate to them, especially if they contain debris. Double ring infiltrometer testing could be performed to provide site specific infiltration values but was not part of our initial work scope and would need to be performed at the bottom of the infiltration structure.

H. General Construction Recommendations

H.1. Earthwork

Tracked equipment will likely be required due to the cohesionless nature of the soils encountered in the borings. A backhoe with a smooth-lipped bucket is recommended for excavations. This is in an effort to minimize disturbance to the supporting soils left in place, while also producing a smooth working surface.

H.2. Sideslopes

The contractor will be required to slope or shore the excavations as needed to meet OSHA requirements for safety and to limit disturbance to surrounding structures. The sands, silts and silty sands are expected classify as Type C soil as defined by OSHA.

H.3. Filling and Compacting

Fill should be placed in lifts adjusted to the compactor being used and the material being compacted. We recommend limiting lifts to no more than 1-foot – assuming large, self-propelled or tow behind compactors are used. Thinner lifts should be used for lighter compaction equipment.

H.4. Cold Weather Construction

If earthwork occurs during freezing temperatures, good winter construction practices should be used. Frozen fill should not be used and fill should not be placed on frozen ground. Slab areas should be completely thawed prior to placing any concrete.

H.5. Construction Testing and Documentation

Excavations and grading should be evaluated and documented by geotechnical personnel, after the unsuitable soils are removed and before the placement of any fill, concrete, or pavements. Proposed engineered fill should be evaluated for conformance to the project gradation recommendations before its use and should be tested for compaction during construction. If the filling proceeds during periods of freezing weather, full-time testing should be considered to help confirm that imported fill is thawed prior to and during compaction, and that all snow/ice has been removed before placement of the fill.

Although our firm offers testing services relating to civil and structural components of the building (such as concrete testing, reinforcement observations, etc.) specification of such services is beyond our work scope and the designer should be consulted as to such requirements.

E. Level of Care

The services provided for this project have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in this area, under similar budget and time constraints. This is our professional responsibility. No other warranty, expressed or implied, is made.

Appendix

Soil Boring Location Sketch

Log of Boring # 1

Legend to Soil Description

Chosen Valley Testing, Inc.

Legend

Boring Locations

Boring Location Sketch

Proposed Todd Park Fast Pitch Softball Facility
5600 Chicago Avenue
Minneapolis, Minnesota 55417
CVT Project: 26615.25.MNT

N

LOG OF BORING

CHOSEN VALLEY TESTING CVT

PROJECT: 26615.25.MNT Design Phase Geotechnical Evaluation Todd Park Fast Pitch Softball Facility 5600 Chicago Ave Minneapolis, Minnesota	BORING: **B-01** LOCATION: See attached sketch. DATE: 12/11/2025 SCALE: 1" = 2'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
832.0	0.0	SM	**FILL**, Silty Sand, fine grained, trace Gravel, trace Brick, trace Glass, dark brown, moist.	11		Elevations were estimated using the MnDNR's program MnTopo and should be considered approximate. MC=9.1%
				10		MC=13.5%
			At 4 feet, black and trace Bituminous.	6		MC=8.6%
826.0	6.0	OL	**ORGANIC SANDY SILT**, fine grained, black and gray layered, wet, loose. (Swamp Deposits)	6		MC=47.8% Organic Matter=11.6%
823.5	8.5	SM	**SILTY SAND**, fine grained, gray, moist, loose. (Glacial Outwash)	9		MC=21%
822.0	10.0	SP SM	**POORLY GRADED SAND WITH SILT**, fine-to-medium grained, trace Gravel, gray, water-bearing, loose. (Glacial Outwash)	10	▽	MC=19.9%
				9		MC=21.9%
818.0	14.0		End Boring Water was encountered at 10 feet during drilling. Boring was sealed upon completion.			

CVT STANDARD 26615.25.MNT (MINNEAPOLIS, TODD PARK).GPJ LOG A GNNN06.GDT 12/30/25

UNIFIED SOIL CLASSIFICATION (ASTM D-2487/2488)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	Cu>4 AND 1<Cc<3	GW	WELL-GRADED GRAVEL
			Cu>4 AND 1>Cc>3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	Cu>6 AND 1<Cc<3	SW	WELL-GRADED SAND
			Cu>6 AND 1>Cc>3	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

Relative Proportions of Sand and Gravel

TERM	PERCENT
Trace	< 15
With	15 - 29
Modifier	> 30

Relative Proportions of Fines

TERM	PERCENT
Trace	< 5
With	5 - 12
Modifier	> 12

Grain Size Terminology

TERM	SIZE
Boulder	< 12 in.
Cobble	3 in. - 12 in.
Gravel	#4 sieve to 3 in.
Sand	#200 sieve to #4 sieve
Silt or Clay	Passing #200 sieve

SAMPLE TYPES

Hollow Stem

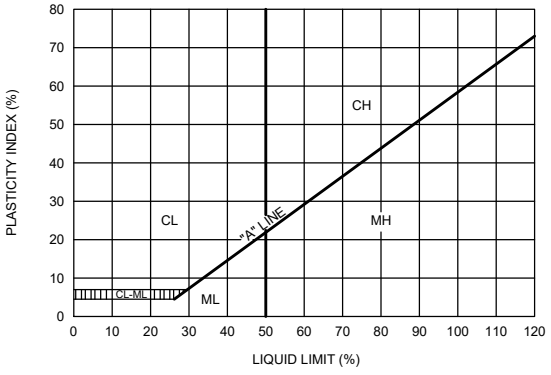
Standard Penetration Test

TEST SYMBOLS

MC	-	MOISTURE CONTENT	LL	-	LIQUID LIMIT
OC	-	ORGANIC CONTENT	PI	-	PLASTISITY INDEX
CN	-	CONSOLIDATION	SW	-	SWELL TEST
DD	-	DRY DENSITY	UU		Unconsolidated Undrained triaxial
PP	-	POCKET PENETROMETER			
RV	-	R-VALUE			
SA	-	SIEVE ANALYSIS			
P200	-	% PASSING #200 SIEVE			

- WATER LEVEL (WITH TIME OF) MEASUREMENT

PLASTICITY CHART



PENETRATION RESISTANCE
(RECORDED AS BLOWS / 0.5 FT)

SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	COMPRESSIVE STRENGTH (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 1	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 3	0.25 - 0.50
MEDIUM DENSE	10 - 30	RATHER SOFT	4 - 5	0.50 - 1.0
DENSE	30 - 50	MEDIUM	6 - 8	
VERY DENSE	OVER 50	RATHER STIFF	9 - 12	1.0 - 2.0
		STIFF	13 - 16	
		VERY STIFF	17 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

Chosen Valley Testing

Job No. 16678.20.MNT

LEGEND TO SOIL DESCRIPTIONS

CVT

Chosen Valley Testing, Inc.

CVT 16678.20.MNT (KAPPEL RESIDENCE ADDTITION).GPJ 5/28/20

DENOTES APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING

60' 0 120'

SCALE: 1"= 120'

F:\2025\B2507776\CAD\B2507776.dwg,Geotech,8/28/2025 8:45:32 AM

BRAUN INTERTEC
The science you build on
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

DRAFT
Subject to Change

Drawing Information

Project No:	B2507776
Drawing No:	B2507776
Drawn By:	JAG
Date Drawn:	8/24/25
Checked By:	RSJ
Last Modified:	8/28/25

Project Information

Todd Park Phase I Improvements

5600 Chicago Avenue

Minneapolis, Minnesota

Soil Boring Location Sketch

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-1**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140191.8 EASTING: 530471.6
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 831.0 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Apparent Aggregate Base WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
830.0		APPARENT AGGREGATE BASE, 12 inches					
1.0		FILL: CLAYEY SAND (SC), trace Gravel, slightly organic, hydrocarbon, brown and black, moist		6-8-8 (16) 18"			
			5	4-3-3 (6) 18"			
824.0							
7.0		FILL: SILTY SAND (SM), fine to coarse-grained, with Gravel, trace bituminous, and concrete fragments, black to dark brown, moist to wet		3-3-3 (6) 18"			
	▽		10	3-4-4 (8) 4"			Wet below 10 feet
				7-7-6 (13) 4"			
816.5							
14.5		FILL: SILTY SAND (SM), fine to medium-grained, trace Gravel, organic, concrete debris, gray to black, wet	15	4-4-5 (9) 18"		26	
		Trace Gravel at 20 feet	20	5-7-8 (15) 18"			
		Intermixed ORGANIC CLAY layer from 20 to 25 feet					
			25	3-3-4 (7) 8"			
801.5							
29.5		POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, trace Gravel, gray to brown, wet, loose to medium dense (ALLUVIUM)	30	3-4-4 (8) 18"		16	P200=7%

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-1**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140191.8 EASTING: 530471.6
DRILLER: B. Kammermeier LOGGED BY: S. Niraula
START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 831.0 ft RIG: 7506 METHOD: 3 1/4" HSA
SURFACING: Apparent Aggregate Base WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, trace Gravel, gray to brown, wet, loose to medium dense (ALLUVIUM)	35	3-6-9 (15) 18"			
795.0							
36.0		END OF BORING					Water observed at 10.0 feet while drilling.
		Boring immediately grouted					
			40				
			45				
			50				
			55				
			60				
			65				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-2**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140064.8 EASTING: 530641.5
DRILLER: B. Kammermeier LOGGED BY: S. Niraula
START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 830.7 ft RIG: 7506 METHOD: 3 1/4" HSA
SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
829.7		SILTY SAND (SM), fine-grained, with roots, and Gravel, dark brown, moist (TOPSOIL FILL)					
1.0		FILL: CLAYEY SAND (SC), trace Gravel, slightly organic, bituminous debris, dark brown to black, moist		2-3-4 (7) 18"			
826.2							
4.5		FILL: LEAN CLAY (CL), trace Sand, trace Gravel, slightly organic, bituminous debris, brown to black, moist	5	2-2-4 (6) 8"			
823.7							
7.0		FILL: CLAYEY SAND (SC), little Gravel, organic, wood fragments, bituminous debris, slag debris, dark brown and black, moist		3-4-4 (8) 8"			
821.2							
9.5	▽	FILL: SILTY SAND with GRAVEL (SM), fine to coarse-grained, organic, black, wet	10	4-2-3 (5) 6"			Wet below 10 feet
				31-13-11 (24) 6"			
816.2							
14.5		FILL: SILTY SAND with GRAVEL (SM), fine to coarse-grained, organic, concrete debris, black and gray, wet	15	9-4-4 (8) 6"			
			20	3-3-6 (9) 0"			No recovery at 20 feet
806.2							
24.5		SILTY SAND (SM), fine to medium-grained, gray, wet, medium dense (ALLUVIUM)	25	7-6-9 (15) 18"		24	
801.2							
29.5		SILTY SAND (SM), fine to medium-grained, trace Gravel, gray, wet, loose to medium dense (ALLUVIUM)	30	3-2-6 (8) 18"			

Continued on next page

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See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-2**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140064.8 EASTING: 530641.5
START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 830.7 ft
DRILLER: B. Kammermeier LOGGED BY: S. Niraula
RIG: 7506 METHOD: 3 1/4" HSA
SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		SILTY SAND (SM), fine to medium-grained, trace Gravel, gray, wet, loose to medium dense (ALLUVIUM)	35	2-5-6 (11) 18"		16	
794.7							Water observed at 10.0 feet while drilling.
36.0		END OF BORING Boring immediately grouted					

40
45
50
55
60
65

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-3**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 139784.9 EASTING: 530684.8
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 832.1 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
831.1		SILTY SAND (SM), fine to medium-grained, with Gravel, dark brown, moist (TOPSOIL FILL)					
1.0		FILL: SILTY SAND (SM), fine-grained, trace Gravel, slightly organic, bituminous debris, concrete debris, wood debris, dark brown to black, moist		1-1-1 (2) 14"			
			5	4-4-5 (9) 6"			
				5-2-2 (4) 12"		19	OC=3%
			10	7-6-5 (11) 10"			
820.1							
12.0	▽	POORLY GRADED SAND with SILT (SP-SM), fine-grained, contains seams of Silty Sand, gray, wet (ALLUVIUM)		9-8-6 (14) 12"			
			15	6-7-5 (12) 10"			
812.6							
19.5		SILTY SAND (SM), fine-grained, trace Gravel, contains seams of Silt, gray, wet, very loose (ALLUVIUM)	20	2-1-2 (3) 18"			
			25	2-2-2 (4) 18"		33	P200=23%
802.6							
29.5		POORLY GRADED SAND with SILT (SP-SM), fine-grained, gray, wet, very loose (ALLUVIUM)	30	2-2-2 (4) 18"			
801.1							
31.0		END OF BORING					Water observed at 12.5 feet while drilling.
		Boring immediately grouted					

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-4**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140187.3 EASTING: 530677.6
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 831.3 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
829.3		SILTY SAND (SM), fine-grained, dark brown, moist (TOPSOIL FILL)					
2.0 826.8		FILL: SILTY SAND (SM), fine to medium-grained, little Gravel, slag debris, dark brown and black, moist		9-14-11 (25) 18"			
4.5 821.8		FILL: CLAYEY SAND (SC), slightly organic, trace to little Gravel, concrete debris, dark brown and black, moist *Little Gravel at 7 1/2 feet*	5	4-3-2 (5) 6" 1-6-2 (8) 6"			
9.5 819.3	▽	FILL: SILTY SAND (SM), fine to medium-grained, trace Gravel, slag debris, gray, wet	10	3-7-3 (10) 10"			Wet below 10 feet
12.0 816.8		FILL: POORLY GRADED SAND with SILT and GRAVEL (SP-SM), fine to coarse-grained, concrete fragments, gray, wet		0-5-9 (14) 16"			
14.5 811.8		PEAT (PT), fiberous, black, moist (SWAMP DEPOSIT)	15	2-3-4 (7) 16"		147	
19.5 806.8		ORGANIC CLAY (OH), slightly organic, black, moist (SWAMP DEPOSIT)	20	2-2-2 (4) 18"		64	OC=11%
24.5 801.8		PEAT (PT), fiberous, dark brown black, moist (SWAMP DEPOSIT)	25	1-2-3 (5) 18"			
29.5		SILTY SAND (SM), fine to medium-grained, trace Gravel, dark gray, wet, medium dense (ALLUVIUM)	30	5-7-10 (17) 18"			

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BRAUN INTERTEC
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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-4**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140187.3 EASTING: 530677.6
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 831.3 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
		SILTY SAND (SM), fine to medium-grained, trace Gravel, dark gray, wet, medium dense (ALLUVIUM)	35	4-5-7 (12) 18"			
			40	2-5-7 (12) 18"			
790.3 41.0		END OF BORING Boring immediately grouted					Water observed at 10.0 feet while drilling.
			45				
			50				
			55				
			60				
			65				

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Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-5**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 140014.4 EASTING: 530484.0
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 830.3 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
829.3		SILTY SAND (SM), fine-grained, trace roots, little Gravel, dark brown, moist (TOPSOIL FILL)					
1.0		FILL: SILTY SAND with GRAVEL (SM), fine to medium-grained, trace bituminous, light brown to brown, moist		2-15-50 (65) 14"			
825.8							
4.5		FILL: SILTY SAND (SM), fine to coarse-grained, trace Gravel, slightly organic, concrete debris, black to dark brown, moist	5	6-3-4 (7) 14"			
823.3							
7.0		FILL: SILTY SAND (SM), fine to medium-grained, organic, wood debris, PEAT layers, brown, moist		1-1-7 (8) 12"			
			10	3-3-7 (10) 10"			
818.3							
12.0	▽	SILTY SAND (SM), fine-grained, gray, wet, loose (ALLUVIUM)		3-4-5 (9) 18"			
815.8							
14.5		POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, trace Gravel, gray, wet, medium dense to loose (ALLUVIUM)	15	3-4-7 (11) 18"		29	P200=7% %Sand=93%
			20	1-2-6 (8) 18"			
805.8							
24.5		LEAN CLAY (CL), SILT layers, gray, wet, stiff (ALLUVIUM)	25	2-4-6 (10) 18"		34	
			30	2-4-5 (9) 18"			
799.3							
31.0		END OF BORING Boring immediately grouted					Water observed at 12.0 feet while drilling.

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Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-6**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 139966.3 EASTING: 530661.6
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 831.2 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
830.2		SILTY SAND (SM), fine to medium-grained, with roots, trace Gravel, dark brown, moist (TOPSOIL FILL)					
1.0		FILL: SILTY SAND (SM), fine to medium-grained, trace Gravel, dark brown, moist		3-4-6 (10) 3"			
826.7							
4.5		FILL: POORLY GRADED SAND (SP), fine to coarse-grained, heavy concrete debris, brown, moist	5	12-10-9 (19) 7"			
				13-23-21 (44) 8"			
			10	8-7-8 (15) 3"			
819.2							
12.0		PEAT (PT), fiberous, ORGANIC CLAY layers, black, moist (SWAMP DEPOSIT)		9-8-9 (17) 18"		62	OC=12%
816.7							
14.5	▽	SILTY SAND (SM), fine-grained, slightly organic, dark gray to black, wet, medium dense (SWAMP DEPOSIT)	15	7-7-7 (14) 18"			Wet below 15 feet
811.7							
19.5		SANDY SILT (ML), gray, wet, very loose (ALLUVIUM)	20	2-1-1 (2) 18"		43	P200=96%
806.7							
24.5		POORLY GRADED SAND with SILT (SP-SM), fine-grained, gray, wet, medium dense (ALLUVIUM)	25	2-5-8 (13) 18"			
801.7							
29.5		POORLY GRADED SAND (SP), fine-grained, gray, wet, medium dense (ALLUVIUM)	30	3-5-7 (12) 18"			
800.2							
31.0		END OF BORING Boring immediately grouted					Water observed at 15.0 feet while drilling.

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Project Number B2507776
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Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-7**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 139969.1 EASTING: 530825.4
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 832.6 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
831.6		SILTY SAND (SM), fine to medium-grained, trace roots, trace Gravel, dark brown, moist (TOPSOIL FILL)					
1.0		FILL: SILTY SAND (SM), fine to medium-grained, with Gravel, organic, bituminous debris, concrete debris, wood debris, slag debris, dark brown to black, moist to wet		5-5-9 (14) 16"			
			5	2-1-3 (4) 14"			
				3-13-5 (18) 12"			
			10	10-7-4 (11) 7"			
	▽	*Wet below 12 1/2 feet*		3-5-7 (12) 7"		15	
		Gray at 15 feet *Heavy concrete debris below 15 feet*	15	12-8-9 (17) 8"			
813.1							
19.5		POORLY GRADED SAND (SP), fine-grained, trace Gravel, gray, wet, medium dense (ALLUVIUM)	20	12-8-9 (17) 18"		23	P200=3%
			25	3-6-7 (13) 18"			
		With Gravel at 30 feet	30	3-5-6 (11) 18"			
801.6							
31.0		END OF BORING					Water observed at 12.5 feet while drilling.
		Boring immediately grouted					

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Project Number B2507776
Geotechnical Evaluation
Todd Park Phase I Improvements
5600 Chicago Avenue
Minneapolis, Minnesota

BORING: **ST-8**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 139826.5 EASTING: 530874.3
DRILLER: B. Kammermeier LOGGED BY: S. Niraula
START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 833.4 ft RIG: 7506 METHOD: 3 1/4" HSA
SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
832.4		SILTY SAND (SM), fine to medium-grained, with roots, trace Gravel, dark brown, moist (TOPSOIL FILL)					
1.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained, trace Gravel, wood debris, light brown and brown, moist		6-5-6 (11) 16"			
828.9							
4.5		FILL: SILTY SAND (SM), fine to coarse-grained, slightly organic, concrete debris, wood debris, dark brown, moist	5	6-7-3 (10) 8"			
				1-2-7 (9) 1"			
		Heavy concrete debris below 10 feet	10	2-3-7 (10) 1"			
				50/0" (REF) 1"			
	▽		15	3-5-9 (14) 3"			
813.9							
19.5		POORLY GRADED SAND with SILT (SP-SM), fine-grained, gray, wet, loose to very loose (ALLUVIUM)	20	1-3-3 (6) 18"		42	
		Slightly organic Silty Sand seams at 25 feet	25	2-3-3 (6) 18"			
			30	0-1-1 (2) 18"			

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Minneapolis, Minnesota

BORING: **ST-8**
LOCATION: Captured with RTK GPS.
DATUM: NAD 1983 HARN Adj MN Hennepin (US Feet)
NORTHING: 139826.5 EASTING: 530874.3
DRILLER: B. Kammermeier LOGGED BY: S. Niraula START DATE: 09/03/25 END DATE: 09/03/25
SURFACE ELEVATION: 833.4 ft RIG: 7506 METHOD: 3 1/4" HSA SURFACING: Grass WEATHER: Cloudy

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q_p tsf	MC %	Tests or Remarks
798.9		POORLY GRADED SAND with SILT (SP-SM), fine-grained, gray, wet, loose to very loose (ALLUVIUM)					
34.5		POORLY GRADED SAND (SP), fine-grained, gray, wet, loose to very loose (ALLUVIUM)	35	3-5-5 (10) 18"			
			40	1-1-1 (2) 18"			
792.4							
41.0		END OF BORING Boring immediately grouted					Water observed at 15.0 feet while drilling.
			45				
			50				
			55				
			60				
			65				