
Drainage Report for:

Abbatore Inc. – Lot 402 – File Number: Z-04-032

Revised: December 17, 2005



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COA Engineering Dept



EXPIRES: 01/01/08

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Job #15665

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Project Summary

PROPERTY DESCRIPTION

The site of proposed development is located in the SE ¼ of Section 21, Township 31 N, Range 5 E, W.M. The area of development is approximately 4.21-acres in size and is identified as Lot 402 of the Arlington Airport located on the north side of West Side Drive (See Vicinity Map below).



Figure 1: Vicinity Map. Not to scale.

EXISTING CONDITIONS

The proposed area of development is vacant lot on the Arlington Airport property. The lot is bound by West Side Drive to the SW, open airport property along it's NW and NE boundaries and Lot 401 (fully developed) to the SE. Site slopes are relatively flat. Site vegetation consists of regularly mowed pasture grass.

Onsite drainage consists of infiltration to groundwater. Runoff generated by West Side Drive is collected and directed to series of infiltration trenches located at the bottom of a parallel ditch between Lot 402 and West Side Drive. Runoff generated on Lot 401 is contained and infiltrated onsite.

According to the Snohomish County SCS consist of Lynnwood soils, hydrologic group C. On Dec. 6, 2004, soil logs were taken on site in 8-locations. The logs consistently revealed the top 3-ft consisting of brown loamy sand followed by gray gravelly medium sand below that. Soils logs were dug as deep as 14.5-ft. Water was encountered in most logs at approximately 14-ft down. Soil logs 6 & 7 ran into water at depths of 12.5-ft and 11.5-ft down respectively. See Soil Log & Soil Log Map, pp. 25-26.

DEVELOPED CONDITIONS

The proposal for this project is to construct 6 buildings with asphalt parking and driving surfaces. This site will be almost identical to the recent development by Abbatare, Inc. on Lot 401. The only difference is that the road section will be slightly wider on this project. The entire site will be virtually 100% impervious with the exception of some planters and grassy areas.

Site conditions are ideal for infiltration; therefore, infiltration is proposed for stormwater quantity and quality control. The site will have 3-drainage basins; the northern portion, the southern portion and the middle portion. Both the northern and southern basins are mirror images of each other. Runoff generated by these basins will be directed to an infiltration trench along the NW and SE boundaries. The lower portion of the trench will be lined with a minimum of 18-inches of loamy sand in order to achieve adequate water quality treatment during the infiltration of the 6-month 24-hr storm. Larger storms will fill the trench above the imported loamy sand layer and infiltrate through the native soils at a much faster rate than that of the loamy sand.

The stormwater system for the middle basin will consist of the same concept with a slight variation. Along both sides of the entrance road will be trapezoidal flat-bottom infiltration ponds. Runoff generated by the middle basin will be conveyed to the ponds where the water will infiltrate through an imported loamy sand layer a minimum of 18-inches thick. Once the water passes through the loamy sand, the water will enter an infiltration trench directly below the ponds where the water will again infiltrate into the ground, but rather through the native sandy soils.

The water quality ponds at the surface are only sized to completely infiltrate the 6-month 24-hr storm volume. Catch basins located at one end of each pond will act as overflows for the ponds. The rims of each structure will be set slightly above the 6-month peak stage in the ponds. Larger storm volumes will spill into the top of the catch basin which are connected to the trench below.

Risk Assessment Analysis And Erosion Control

Slope: Site slopes are 0-1 %, risk is low

Critical Areas: None

Soils: Soils consist of loamy sands at the surface and medium sands below it.

Ground Movement Potential: none.

Source of Water Erosion: Rainfall.

Measures Proposed to Prevent/Minimize Erosion:

During Construction: Temporary construction BMP's (see T.E.S.C. construction plan)

After Construction: Seeding and planting of exposed soils

Nearest Downstream body of water other than road ditches: Quilceda Creek watershed.

Nearest fish bearing water: Quilceda Creek watershed.

Conclusion: Potential for significant erosion/siltation impact onsite is **Low**.
Because of the following reason:

1. Flat site with high infiltrating soils.

Erosion Sedimentation Control Notes

Although the risk of erosion is low, erosion control should be taken seriously. The following list is an example of typical erosion control notes.

- (a) Erosion On-and Off-Site. During and after construction, all persons engaging in developing activities shall prevent or minimize erosion and sedimentation on-site and shall protect properties and water courses downstream from the site from erosion due to increases, in the volume, velocity and peak flow rate of storm water runoff from the site:
- (b) Transport of Sediment onto Adjacent Properties. The applicant shall prevent the transport of sediment onto adjacent properties.
- (c) Transport of Sediment onto Paved Surfaces. The applicant shall apply BMP's from the City of Arlington Construction Standards or as approved by the City, to prevent or minimize the transport of sediment onto paved surfaces during construction. If sediment is transported onto a paved surface the contractor is to clean the paved surface at the end of each day.
- (d) Stabilizing Exposed soil. The applicant shall stabilize denuded areas and soil stockpiles as follows:
 - (i) From October 1 to April 30, no soil may remain exposed for more than 2 days. From May 1 to September 30, no soil may remain exposed for more than 7 days. On portions of the site where active grading is in progress, the City may extend the deadline for soil stabilization upon determining that the likelihood of erosion impacts is low. Reasons for this determination may include, but are not limited to the following, the type and amount of soil exposed, site topography, or the potential for discharge to critical areas and lakes. Upon finding a risk of erosion, the applicant shall immediately apply soil stabilization, regardless of any previously established deadline, and the City may require immediate stabilization at any time for this purpose. The applicant shall keep materials, equipment, and other resources on site at all times, in adequate quantities to immediately stabilize all soil.
 - (ii) Denuded areas shall be covered with mulch, sod, plastic, or other BMP's described in City of Arlington Construction Standard G-4 or as approved by the City.
 - (iii) Soil stockpiles shall be stabilized or protected with sediment retention BMPs within 24 hours of formation to prevent soil loss; and
 - (iv) Grading and construction shall be timed and conducted in stages to minimize soil exposure.
- (e) Removal of Temporary Erosion and Sedimentation Control Measures. The applicant may remove all temporary erosion and sedimentation control BMPs within 30 days after final site stabilization or after they are no longer necessary.
- (f) Permanent Vegetative Cover. Before construction acceptance by the City, the applicant shall establish a permanent vegetative ground cover to control soil erosion and to survive severe weather conditions on all areas of land disturbance not otherwise permanently stabilized by impervious surfaces or other means.
- (g) Maintenance and Repair of Erosion and Sedimentation Control Measures. The applicant shall maintain and repair as necessary all temporary and permanent erosion and sedimentation control BMPs to assure their continued performance through construction acceptance and the potential for on site erosion has passed.
- (h) Field Marking. Before performing any grading or clearing, the applicant shall mark, in the filed, the limits of all proposed clearing and grading, critical areas and their buffers, trees to be retained, and drainage courses.

- (i) **Protecting Storm Sewer Inlets.** The applicant shall protect storm sewer inlets receiving storm water runoff during construction so that water will not enter the inlet without first being filtered or otherwise treated to minimize the amount of sediment entering the inlet.
- (j) **Sediment Retention.** The applicant shall route storm water runoff from disturbed areas of the site through sediment ponds, traps or other sediment retention BMPs prior to discharge from the site. The BMPs shall be installed as the first step in grading, and shall be in operation before any other site disturbance occurs. The applicant shall stabilize temporary earth structures within the time period specified in subparagraph (d)(i). If site conditions warrant, the City may require additional sediment controls, including but not limited to, preserving a vegetated buffer strip around the lower perimeter of the site.
- (k) **Temporary Sediment Ponds and Traps** shall be constructed per City of Arlington Construction Standard (G-5). Periodic removal of trapped sediments shall be performed as necessary, however trapped sediment may also be permanently stabilized onsite.
- (l) The applicant shall design and construct temporary and permanent BMPs adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream reaches.
- (m) The installation of underground utility lines shall be subject to the following additional requirements.
 - (i) Between October 1 and March 31, no more than 500 feet of continuous trench may remain open at one time unless check dams to reduce flow velocities and prevent erosion are installed.
 - (ii) Excavated material shall be placed on the uphill side of trenches, unless inconsistent with safety or site constraints.
- (n) Water from a de-watering device shall discharge into a sediment-retention BMP.

The applicant shall implement fully the erosion and sedimentation control plan at each stage of site development.

Upstream & Downstream Analysis

UPSTREAM ANALYSIS

Because the surrounding area is relatively flat and has good infiltrating soils, no stormwater runoff drains onto the project site from the upstream.

DOWNSTREAM ANALYSIS

Since infiltration is being proposed for this site there is no downstream receiving water. If any of the infiltration systems fail, each will utilize their emergency overflow pipes that will direct stormwater to the existing ditch and infiltration trenches along the north side of West Side Drive.



Figure 2: Project frontage looking SE.

Stormwater Quantity Control & Water Quality B.M.P.'s

STORMWATER QUANTITY CONTROL BMP

The stormwater quantity control BMP specified for this site is infiltration to groundwater. All rooftops landscape areas, parking and taxiways will be directed to one of three onsite infiltration facilities.

NORTH AND SOUTH INFILTRATION TRENCHES

The infiltration trenches in along the north and south boundaries of the lot will be mirror images of each other. They will be each will be 300-ft long and have a 2-ft wide bottom with 1:1 sides lopes for a depth of 2-ft. This zone of the trench will be lined with a minimum of 18-inches of loamy sand for water quality treatment. Above the trapezoidal bottom the trench expands to a total width of 9-ft and a total depth of 3.5-ft with vertical sides. In modeling the storm trenches, an infiltration rate of 1.205in/hr (half the D.O.E. rate for loamy sand 2.41 in/hr) was used for the loamy sand soils and an infiltration rate of 10-in/hr for the medium sands (half the D.O.E. rate for medium sands 20-in/hr). Trench volume calculations assume a 32% void space for the rock in the trench and 100% void space for the perforated pipe.

MIDDLE INFILTRATION TRENCHES

The infiltration trenches along the access road are located beneath the water quality ponds. These trenches accept water via infiltration through the ponds and also through the overflow catch basin structures during large storm events. Each trench is 145-ft long x 2-ft deep x 11-ft wide. In modeling the storm trenches, an infiltration rate of 10-in/hr for the medium sands was used (half the D.O.E. rate for medium sands 20-in/hr). Trench volume calculations assume a 32% void space for the rock in the trench and 100% void space for the perforated pipe.

WATER QUALITY BMP

The water quality BMP proposed for this site is infiltration. Both the north and south trenches as well as the water quality ponds along the access road will provide water quality treatment via infiltration through an imported layer of loamy sands a minimum of 18-inches thick. Since loamy sand has a cation exchange capacity of 5 milliequivalents / 100 grams, each infiltration system will be capable of providing water quality treatment.

DRAINAGE MODEL SUMMARY

The storm drainage modeling software used is StormSHED Rel. 6.1.6.8. The following table summarizes the results of the drainage model.

NORTH AND SOUTH INFILTRATION TRENCH			
STORM EVENT	TRENCH BOTTOM/TOP	STAGE	STORAGE VOLUME
	FT	FT	CF
6-MONTH	118 / 120	119.98	815
100-YR	118 / 121.5	121.43	2,078
WATER QUALITY PONDS			
STORM EVENT	POND BOTTOM/TOP	STAGE	STORAGE VOLUME
	FT	FT	CF
6-MONTH	119.5 / 122	121.40	2,821
100-YR	119.5 / 122	121.58	3,256
MIDDLE TRENCHES (UNDER WQ PONDS)			
STORM EVENT	TRENCH BOTTOM/TOP	STAGE	STORAGE VOLUME
	FT	FT	CF
6-MONTH	116 / 118	116.20	220
100-YR	116 / 118	117.81	1,968

Table 1: Calculations Summary. Refer to drainage model calculations (pp. 13-14) for more detail.

CONVEYANCE CALCULATIONS

The proposed v-ditch on opposite sides of the cul-de-sac will help to convey the majority of the stormwater runoff to the infiltration system. Each v-ditch will be vegetated with grass and 1.5-ft deep with 1.5:1 side slopes and a channel slope of 0.50%. The northwesterly ditch will see the most water of the two. The expected 100-yr peak flow in this ditch is 0.82-cfs. Using Manning's Equation the flow depth at the given flow rate will be 0.58-ft with a velocity of 1.63-cfs. See calculations pp. 27-28.

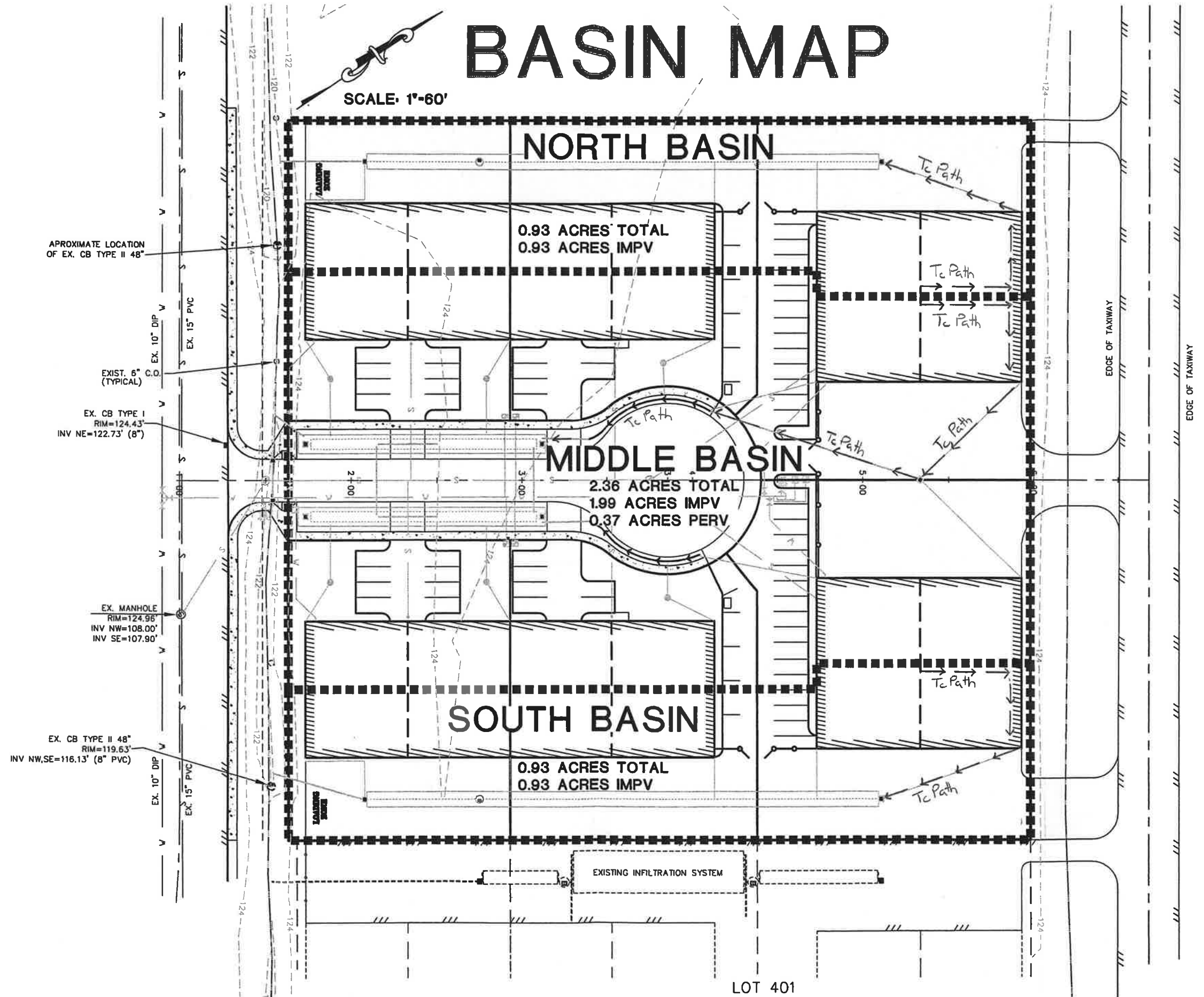
Upstream of the subject v-ditch above will be a 130-ft of 8-inch DIP at 0.50% slope. The expected 100-yr peak flow in this 8-inch pipe is 0.42-cfs. Using Manning's Equation the flow depth at the given flow rate will be 0.32-ft (47.25% capacity) with a velocity of 2.59-cfs. See calculations pg. 29-30.

Of all of the 4-inch roof downspout drains proposed, only one will be analyzed for it is the worst case scenario. Upstream of the subject 8-inch DIP will be a 83-ft of 4-inch pipe at 0.75% slope. The expected 100-yr peak flow in this 4-inch pipe is 0.07-cfs. Using Manning's Equation the flow depth at the given flow rate will be 0.14-ft (43.49% capacity) with a velocity of 1.92-cfs. See calculations pg. 31-32.

Appendix

BASIN MAP

SCALE: 1"=60'



NORTH BASIN

0.93 ACRES TOTAL
0.93 ACRES IMPV

MIDDLE BASIN

2.36 ACRES TOTAL
1.99 ACRES IMPV
0.37 ACRES PERV

SOUTH BASIN

0.93 ACRES TOTAL
0.93 ACRES IMPV

EXISTING INFILTRATION SYSTEM

APROXIMATE LOCATION
OF EX. CB TYPE II 48"

EX. 10" DIP
EX. 15" PVC

EXIST. 6" C.D.
(TYPICAL)

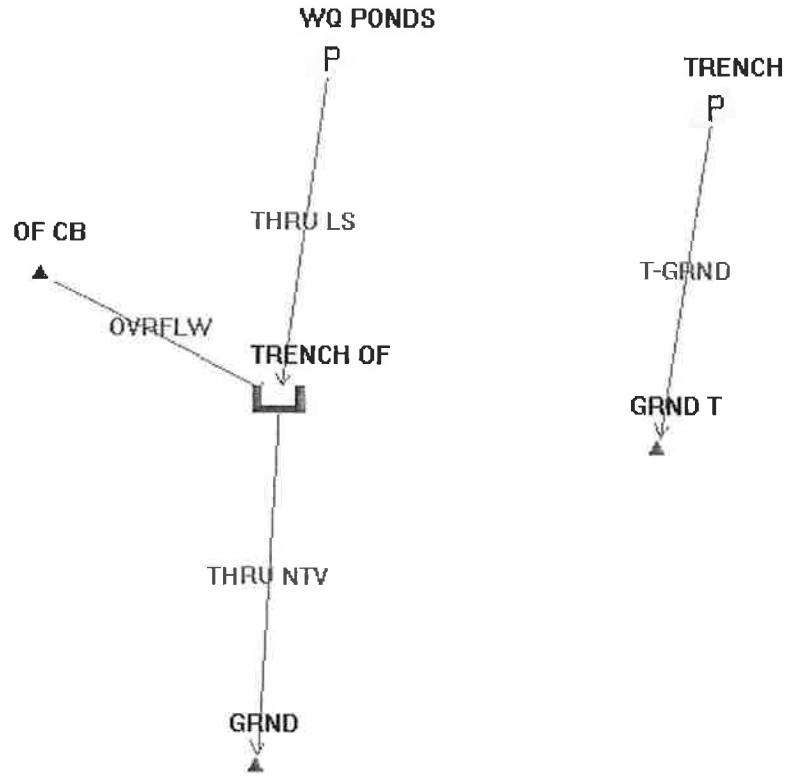
EX. CB TYPE I
RIM=124.43'
INV NE=122.73' (8")

EX. MANHOLE
RIM=124.96'
INV NW=108.00'
INV SE=107.90'

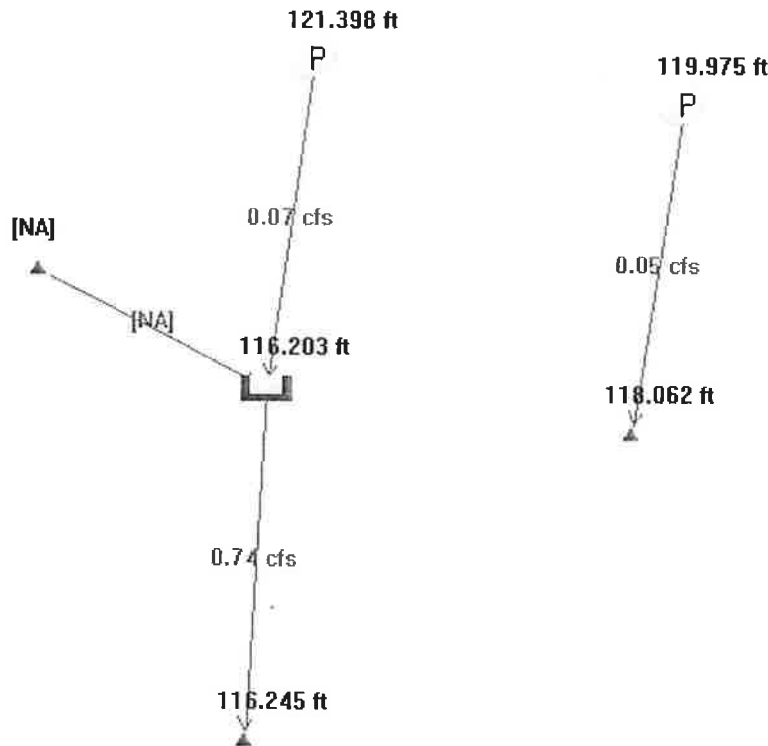
EX. CB TYPE II 48"
RIM=119.63'
INV NW,SE=116.13' (8" PVC)

LOT 401

DRAINAGE MODEL



6-MONTH CALCULATION



ROUTEHYD [] THRU [DEVELOPED] USING TYPE1A AND [6 month] NOTZERO RELATIVE

Reach	Area ac	Flow cfs	Full Q cfs	% Full ratio	nDepth ft	Size	nVel ft/s	fVel ft/s	CBasin / Hyd
-------	------------	-------------	---------------	-----------------	--------------	------	--------------	--------------	--------------

Routing spit hyd [6 month-OVERFLOW-OutHyd] through OVRFLW

OVRFLW	0.0000	0.0000	1560.32	0.00	0.0000	48" Diam	20.3364	124.1667	
--------	--------	--------	---------	------	--------	----------	---------	----------	--

Routing thru RLPool Node WQ PONDS; 6 month event

6 month Match Q: 0.0000 cfs Peak Out Q: 0.0657 cfs - Peak Stg: 121.40 ft - Active Vol: 2820.25 cf

Routing spit hyd [6 month-LMY SND-OutHyd] through THRU LS

THRU LS	2.3600	0.0657	1560.32	0.00	0.0222	48" Diam	7.4470	124.1667	CENTRAL BASIN
---------	--------	--------	---------	------	--------	----------	--------	----------	---------------

Routing thru RLPool Node TRENCH OF; 6 month event

6 month Match Q: 0.0000 cfs Peak Out Q: 0.7384 cfs - Peak Stg: 116.20 ft - Active Vol: 219.93 cf

THRU NTV	2.3600	0.7384	1560.32	0.00	0.0680	48" Diam	15.6988	124.1667	
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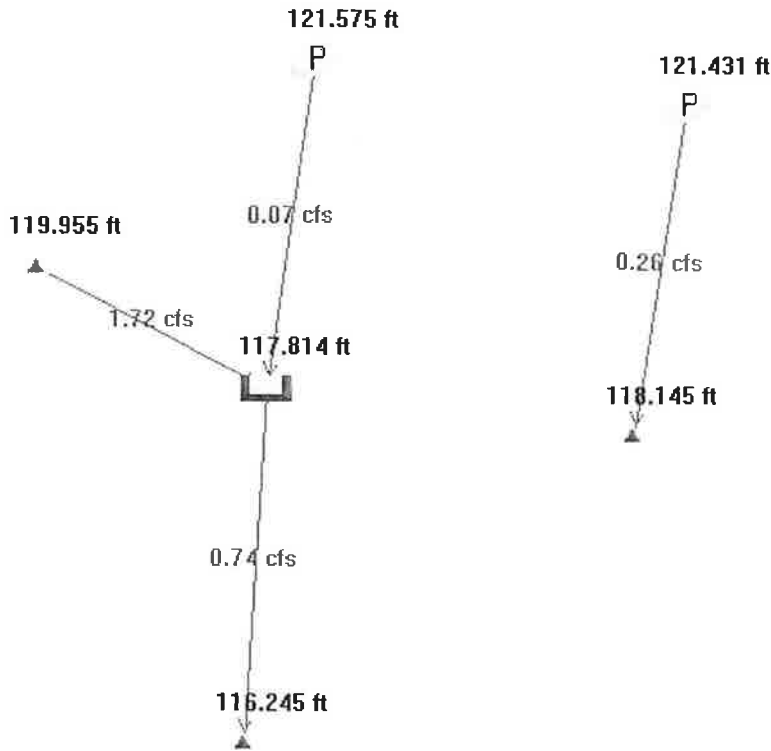
Routing thru RLPool Node TRENCH; 6 month event

6 month Match Q: 0.0000 cfs Peak Out Q: 0.0505 cfs - Peak Stg: 119.98 ft - Active Vol: 814.82 cf

T-GRND	0.9300	0.0505	1560.32	0.00	0.0195	48" Diam	6.9434	124.1667	TRENCH BASIN
--------	--------	--------	---------	------	--------	----------	--------	----------	--------------

From Node	To Node	Rch Loss ft	App Head ft	Bend Loss ft	Junct Loss ft	HW Elev ft	Max El/ Rim El ft
	GRND					116.2450	
TRENCH OF OF CB	GRND	114.3291	--na--	--na--	--na--	116.2028	118.2500
WQ PONDS	TRENCH OF	0.0000	--na--	--na--	--na--	0.0000	123.0000
TRENCH	TRENCH OF	117.5975	--na--	--na--	--na--	121.3977	122.0000
	GRND T	116.0855	--na--	--na--	--na--	119.9753	121.5000

100-YR CALCULATION



ROUTEHYD [] THRU [DEVELOPED] USING TYPE1A AND [100 yr] NOTZERO RELATIVE

Reach	Area ac	Flow cfs	Full Q cfs	% Full ratio	nDepth ft	Size	nVel ft/s	fVel ft/s	CBasin / Hyd
-------	------------	-------------	---------------	-----------------	--------------	------	--------------	--------------	--------------

Routing spit hyd [100 yr-OVERFLOW-OutHyd] through OVRFLW
 OVRFLW 1.7348 1.7169 1560.32 0.00 0.1006 48" Diam 20.3364 124.1667

Routing thru RLPool Node WQ PONDS; 100 yr event

100 yr Match Q: 0.0000 cfs Peak Out Q: 1.7878 cfs - Peak Stg: 121.57 ft - Active Vol: 3256.04 cf

Routing spit hyd [100 yr-LMY SND-OutHyd] through THRU LS

THRU LS 0.6252 0.0709 1560.32 0.00 0.0229 48" Diam 7.6638 124.1667 CENTRAL BASIN

Routing thru RLPool Node TRENCH OF; 100 yr event

100 yr Match Q: 0.0000 cfs Peak Out Q: 0.7384 cfs - Peak Stg: 117.81 ft - Active Vol: 1967.90 cf

THRU NTV 2.3600 0.7384 1560.32 0.00 0.0680 48" Diam 15.6988 124.1667

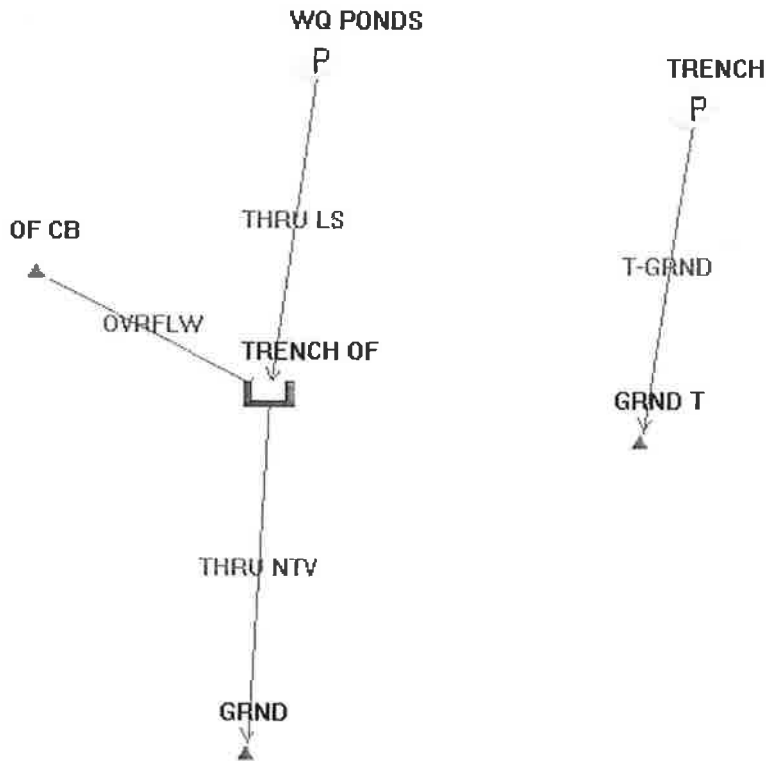
Routing thru RLPool Node TRENCH; 100 yr event

100 yr Match Q: 0.0000 cfs Peak Out Q: 0.2620 cfs - Peak Stg: 121.43 ft - Active Vol: 2077.31 cf

T-GRND 0.9300 0.2620 1560.32 0.00 0.0420 48" Diam 11.4539 124.1667 TRENCH BASIN

From Node	To Node	Rch Loss ft	App Head ft	Bend Loss ft	Junct Loss ft	HW Elev ft	Max EI/ Rim EI ft
TRENCH OF	GRND	114.3291	--na--	--na--	--na--	116.2450	
OF CB	TRENCH OF	119.9545	--na--	--na--	--na--	117.8144	118.2500
WQ PONDS	TRENCH OF	117.6013	--na--	--na--	--na--	119.9545	123.0000
TRENCH	GRND T	116.1952	--na--	--na--	--na--	121.5748	122.0000
						121.4307	121.5000

DRAINAGE MODEL REPORT



Project Precips

[6 month]	1.15 in
[2 yr]	1.80 in
[10 yr]	2.75 in
[100 yr]	3.75 in

Reach Records

Reach ID: OVRFLW

Section Properties:

Shape:	Circular	Mannings n	Routing Method:	Travel Time Translation	
Size	Material	0.0120	Hyd params By		
48" Diam	Smooth CDEP	Entrance Loss	Mannings Formula		
Length	Slope	Square Edge w/Headwall			
3.4500 ft	100.00 %				
Diam					
4.0000 ft					
Up Node	Dn Node	Up Invert	Dn Invert		
OF CB	TRENCH OF	121.4500 ft	118.0000 ft		
Conduit Constraints:					
Min Vel	Max Vel	Min Cov	Min Slope	Max Slope	Min drop
2.0000 ft	15.0000 ft	3.0000 ft	0.5000 ft	2.0000 ft	0.0000 ft
In/Exfil	Hold Up	Hold Dn	Match Inv	Allow Smaller	
0.0000 in/hr	NO	NO	YES	NO	
Conduit Summary:					
Trib Area	Flow	Capacity	Velocity	Normal Depth	
1.7348 ac	1.7169 cf	1560.3243 cf	20.3364 ft/s	0.1006 ft	
Ent Loss	Exit Loss	Frict Loss	Start TW		
3.210948 ft	6.421895 ft	0.000004 ft	118.3763 ft		

Reach ID: T-GRND

Section Properties:

Shape:	Circular	Mannings n	Routing Method:	Travel Time Translation	
Size	Material	0.0120	Hyd params By		
48" Diam	Smooth CDEP	Entrance Loss	Mannings Formula		
Length	Slope	Square Edge w/Headwall			
0.0010 ft	100.00 %				
Diam					

4.0000 ft
Up Node Dn Node Up Invert Dn Invert
TRENCH GRND T 118.0000 ft 117.9990 ft
Conduit Constraints:
Min Vel Max Vel Min Cov Min Slope Max Slope Min drop
2.0000 ft 15.0000 ft 3.0000 ft 0.5000 ft 2.0000 ft 0.0000 ft
In/Exfil Hold Up Hold Dn Match Inv Allow Smaller
0.0000 in/hr NO NO YES NO
Conduit Summary:
Trib Area Flow Capacity Velocity Normal Depth
0.9300 ac 0.2620 cf 1560.3243 cf 11.4539 ft/s 0.0420 ft
Ent Loss Exit Loss Frict Loss Start TW
1.018565 ft 2.037130 ft 0.000000 ft 118.1450 ft

Reach ID: THRU LS

Section Properties:

Shape: Circular Routing Method: Travel Time Translation
Size Material Mannings n Hyd params By
48" Diam Smooth CDEP 0.0120 Mannings Formula
Length Slope Entrance Loss
1.5000 ft 100.00 % Square Edge w/Headwall
Diam
4.0000 ft

Up Node Dn Node Up Invert Dn Invert
WQ PONDS TRENCH OF 119.5000 ft 118.0000 ft
Conduit Constraints:
Min Vel Max Vel Min Cov Min Slope Max Slope Min drop
2.0000 ft 15.0000 ft 3.0000 ft 0.5000 ft 2.0000 ft 0.0000 ft
In/Exfil Hold Up Hold Dn Match Inv Allow Smaller
0.0000 in/hr NO NO YES NO
Conduit Summary:
Trib Area Flow Capacity Velocity Normal Depth
0.6252 ac 0.0709 cf 1560.3243 cf 7.6638 ft/s 0.0229 ft
Ent Loss Exit Loss Frict Loss Start TW
0.456013 ft 0.912026 ft 0.000000 ft 118.0762 ft

Reach ID: THRU NTV

Section Properties:

Shape: Circular Routing Method: Travel Time Translation
Size Material Mannings n Hyd params By
48" Diam Smooth CDEP 0.0120 Mannings Formula
Length Slope Entrance Loss
0.0010 ft 100.00 % Square Edge w/Headwall
Diam
4.0000 ft

Up Node Dn Node Up Invert Dn Invert
TRENCH OF GRND 116.0000 ft 115.9990 ft
Conduit Constraints:
Min Vel Max Vel Min Cov Min Slope Max Slope Min drop
2.0000 ft 15.0000 ft 3.0000 ft 0.5000 ft 2.0000 ft 0.0000 ft
In/Exfil Hold Up Hold Dn Match Inv Allow Smaller
0.0000 in/hr NO NO YES NO
Conduit Summary:
Trib Area Flow Capacity Velocity Normal Depth
2.3600 ac 0.7384 cf 1560.3243 cf 15.6988 ft/s 0.0680 ft
Ent Loss Exit Loss Frict Loss Start TW
1.913459 ft 3.826917 ft 0.000000 ft 116.2450 ft

Node Records

Node ID: GRND

Start El: 116.0000 ft Max El: 122.0000 ft
 Contrib Basin: Contrib Hyd:
 Hgl Elev: 116.2450 ft

Node ID: GRND T

Start El: 118.0000 ft Max El: 121.5000 ft
 Contrib Basin: Contrib Hyd:
 Hgl Elev: 118.1450 ft

Node ID: OF CB

Start El: 121.4500 ft Max El: 123.0000 ft
 Contrib Basin: Contrib Hyd:
 Hgl Elev: 119.9545 ft

Node ID: TRENCH

Start El: 118.0000 ft Max El: 121.5000 ft
 Contrib Basin: TRENCH BASIN Contrib Hyd:
 Hgl Elev: 121.4307 ft
 Storage Id: STORAGE TRENCH Discharge Id: S+LS

Node ID: STORAGE TRENCH

Start El: 118.0000 ft Max El: 121.5000 ft
 Contrib Basin: Contrib Hyd:

Stage	Input	Volume	Volume
118.00	0.00 cf	0.00 cf	0.0000 acft
120.00	825.00 cf	825.00 cf	0.0189 acft
121.50	2138.00 cf	2138.00 cf	0.0491 acft

Control Structure ID: S+LS - Stage Discharge rating curve

Start El	Max El	Increment
118.0000 ft	121.5000 ft	0.10
Stage	Discharge	
118.0000 ft	0.0167 cfs	
120.0000 ft	0.0509 cfs	
120.0100 ft	0.2620 cfs	
121.5000 ft	0.2620 cfs	

Node ID: TRENCH OF

Start El: 116.2500 ft Max El: 118.2500 ft
 Contrib Basin: Contrib Hyd:
 Hgl Elev: 117.8144 ft
 Storage Id: STORAGE OF Discharge Id: SND

Node ID: STORAGE OF

Start El: 116.0000 ft Max El: 118.0000 ft
 Contrib Basin: Contrib Hyd:

Length	Width	Void Ratio
145.0000 ft	22.0000 ft	34.00

 Bottom area only with infiltration

Control Structure ID: SND - Infiltration control structure

Start El	Max El	Increment
116.0000 ft	118.0000 ft	0.10
Infil:	10.00 in/hr	
Multiplier:	1.00	

Node ID: WQ PONDS

Start El: 119.5000 ft Max El: 122.0000 ft
 Contrib Basin: CENTRAL BASIN Contrib Hyd:
 Hgl Elev: 121.5748 ft
 Storage Id: STORAGE WQ Discharge Id: COMBO

Node ID: STORAGE WQ

Start El: 119.5000 ft Max El: 122.0000 ft
 Contrib Basin: Contrib Hyd:

Stage	Area	Volume	Volume
119.50	550.00	0.00 cf	0.0000 acft
120.00	986.00	384.00 cf	0.0088 acft
121.00	1928.00	1841.00 cf	0.0423 acft
122.00	2996.00	4303.00 cf	0.0988 acft

Control Structure ID: COMBO - Combination Control Structure

Start El	Max El	Increment
119.5000 ft	123.0000 ft	0.10
ID List:	LMY SND	OVERLFOW
Split:	Split OutHyd into component hydrographs.	

Control Structure ID: LMY SND - Stage Discharge rating curve

Start El	Max El	Increment
119.5000 ft	122.0000 ft	0.10
Stage	Discharge	
119.5000 ft	0.0153 cfs	
120.0000 ft	0.0275 cfs	
121.0000 ft	0.0538 cfs	
122.0000 ft	0.0836 cfs	

Control Structure ID: OVERLFOW - Overflow riser

Start El	Max El	Increment			
121.4500 ft	123.0000 ft	0.10			
Riser Dia:	48.00 in	Orif Coeff:	3.78	Weir Coeff:	9.74

Contributing Drainage Areas

Drainage Area: CENTRAL BASIN

Hyd Method:	SBUH Hyd	Loss Method:	SCS CN Number
Peak Factor:	484.00	SCS Abs:	0.20
Storm Dur:	24.00 hrs	Intv:	10.00 min
	Area	CN	TC
Pervious	0.3700 ac	68.00	0.33 hrs
Impervious	1.9900 ac	98.00	0.04 hrs
Total	2.3600 ac		

Supporting Data:

Pervious CN Data:

LANDSCAPE	68.00	0.3700 ac
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Impervious CN Data:

IMPV SURFACES	98.00	1.9900 ac
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Pervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	LAWN	80.00 ft	0.50%	0.1500	19.03 min
Channel	DITCH	60.00 ft	0.50%	17.0000	0.83 min

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ROOFTOP	60.00 ft	45.00%	0.0110	0.31 min
Channel	GUTTER	50.00 ft	0.50%	42.0000	0.28 min
Channel	PIPE	210.00 ft	0.50%	42.0000	1.18 min
Channel	DITCH	60.00 ft	0.50%	17.0000	0.83 min

Drainage Area: TRENCH BASIN

Hyd Method:	SBUH Hyd	Loss Method:	SCS CN Number
Peak Factor:	484.00	SCS Abs:	0.20
Storm Dur:	24.00 hrs	Intv:	10.00 min
	Area	CN	TC
Pervious	0.0000 ac	78.00	0.00 hrs
Impervious	0.9300 ac	98.00	0.02 hrs
Total	0.9300 ac		

Supporting Data:

Impervious CN Data:

IMPEV SURFACES	98.00	0.9300 ac
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Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ROOFTOP	60.00 ft	45.00%	0.0110	0.31 min
Channel	GUTTER	40.00 ft	0.50%	42.0000	0.22 min
Channel	PIPE	100.00 ft	0.50%	42.0000	0.56 min

Layout Hydrographs

Hydrograph ID: GRND - 100 yr

Area: 2.3600 ac

Hyd Int: 10.00 min

Base Flow:

Pending tt translation: 0.00 min

Peak Flow: 0.7384 cfs

Peak Time: 3.33 hrs

Hyd Vol: 0.6306 acft

Time hr	Flow cfs	Time hr	Flow cfs	Time hr	Flow cfs
1.00	0.0000	11.33	0.7384	21.33	0.0000
1.17	0.0000	11.50	0.0000	21.50	0.7384
1.33	0.0000	11.67	0.7384	21.67	0.0000
1.50	0.0000	11.83	0.0000	21.83	0.0000
1.67	0.0000	12.00	0.7384	22.00	0.7384
1.83	0.0000	12.17	0.0000	22.17	0.0000
2.00	0.0000	12.33	0.0000	22.33	0.0000
2.17	0.0000	12.50	0.7384	22.50	0.7384
2.33	0.0000	12.67	0.0000	22.67	0.0000
2.50	0.0000	12.83	0.7384	22.83	0.0000
2.67	0.0000	13.00	0.0000	23.00	0.0000
2.83	0.0000	13.17	0.0000	23.17	0.7384
3.00	0.0000	13.33	0.7384	23.33	0.0000
3.17	0.0000	13.50	0.0000	23.50	0.0000
3.33	0.7384	13.67	0.7384	23.67	0.0000
3.50	0.0000	13.83	0.0000	23.83	0.7384
3.67	0.0000	14.00	0.0000	24.00	0.0000
3.83	0.0000	14.17	0.7384	24.17	0.0000
4.00	0.0000	14.33	0.0000	24.33	0.0000
4.17	0.0000	14.50	0.7384	24.50	0.0000
4.33	0.0000	14.67	0.0000	24.67	0.7384
4.50	0.0000	14.83	0.0000	24.83	0.0000
4.67	0.0000	15.00	0.7384	25.00	0.0000
4.83	0.7384	15.17	0.0000	25.17	0.0000
5.00	0.0000	15.33	0.0000	25.33	0.0000
5.17	0.0000	15.50	0.7384	25.50	0.0000
5.33	0.0000	15.67	0.0000	25.67	0.0000
5.50	0.0000	15.83	0.0000	25.83	0.7384
5.67	0.0000	16.00	0.7384	26.00	0.0000
5.83	0.0000	16.17	0.0000	26.17	0.0000
6.00	0.7384	16.33	0.0000	26.33	0.0000
6.17	0.0000	16.50	0.7384	26.50	0.0000
6.33	0.7384	16.67	0.0000	26.67	0.0000
6.50	0.0000	16.83	0.0000	26.83	0.0000
6.67	0.7384	17.00	0.7384	27.00	0.0000
6.83	0.7384	17.17	0.0000	27.17	0.7384
7.00	0.0000	17.33	0.0000	27.33	0.0000
7.17	0.7384	17.50	0.7384	27.50	0.0000
7.33	0.7384	17.67	0.0000	27.67	0.0000
7.50	0.7384	17.83	0.0000	27.83	0.0000
7.67	0.7384	18.00	0.7384	28.00	0.0000
7.83	0.7384	18.17	0.0000	28.17	0.0000
8.00	0.7384	18.33	0.0000	28.33	0.0000
8.17	0.7384	18.50	0.7384	28.50	0.7384
8.33	0.7384	18.67	0.0000	28.67	0.0000
8.50	0.7384	18.83	0.0000	28.83	0.0000
8.67	0.7384	19.00	0.7384	29.00	0.0000
8.83	0.7384	19.17	0.0000	29.17	0.0000
9.00	0.7384	19.33	0.0000	29.33	0.0000
9.17	0.7384	19.50	0.7384	29.50	0.0000
9.33	0.7384	19.67	0.0000	29.67	0.0000
9.50	0.7384	19.83	0.0000	29.83	0.7384
9.67	0.7384	20.00	0.7384	30.00	0.0000
9.83	0.7384	20.17	0.0000	30.17	0.0000
10.00	0.7384	20.33	0.0000	30.33	0.0000
10.17	0.7384	20.50	0.7384	30.50	0.0000
10.33	0.7384	20.67	0.0000	30.67	0.0000
10.50	0.7384	20.83	0.0000	30.83	0.0000
10.67	0.7384	21.00	0.7384	31.00	0.0000
10.83	0.0000	21.17	0.0000	31.17	0.0000
11.00	0.7384	21.33	0.0000	31.33	0.7384
11.17	0.0000	21.50	0.7384	31.50	0.0000

Hydrograph ID: GRND - 6 month

Area: 2.3600 ac

Hyd Int: 10.00 min

Base Flow:

Pending tt translation: 0.00 min

Peak Flow: 0.7384 cfs

Peak Time: 5.83 hrs

Hyd Vol: 0.1933 acft

Time hr	Flow cfs	Time hr	Flow cfs	Time hr	Flow cfs
2.00	0.0000	11.50	0.0000	20.67	0.0000
2.17	0.0000	11.67	0.0000	20.83	0.0000
2.33	0.0000	11.83	0.7384	21.00	0.0000
2.50	0.0000	12.00	0.0000	21.17	0.7384
2.67	0.0000	12.17	0.0000	21.33	0.0000
2.83	0.0000	12.33	0.0000	21.50	0.0000
3.00	0.0000	12.50	0.0000	21.67	0.0000
3.17	0.0000	12.67	0.0000	21.83	0.0000
3.33	0.0000	12.83	0.0000	22.00	0.0000
3.50	0.0000	13.00	0.7384	22.17	0.0000
3.67	0.0000	13.17	0.0000	22.33	0.7384
3.83	0.0000	13.33	0.0000	22.50	0.0000
4.00	0.0000	13.50	0.0000	22.67	0.0000
4.17	0.0000	13.67	0.0000	22.83	0.0000
4.33	0.0000	13.83	0.0000	23.00	0.0000
4.50	0.0000	14.00	0.0000	23.17	0.0000
4.67	0.0000	14.17	0.7384	23.33	0.0000
4.83	0.0000	14.33	0.0000	23.50	0.7384
5.00	0.0000	14.50	0.0000	23.67	0.0000
5.17	0.0000	14.67	0.0000	23.83	0.0000
5.33	0.0000	14.83	0.0000	24.00	0.0000
5.50	0.0000	15.00	0.0000	24.17	0.0000
5.67	0.0000	15.17	0.0000	24.33	0.0000
5.83	0.7384	15.33	0.7384	24.50	0.0000
6.00	0.0000	15.50	0.0000	24.67	0.7384
6.17	0.0000	15.67	0.0000	24.83	0.0000
6.33	0.0000	15.83	0.0000	25.00	0.0000
6.50	0.0000	16.00	0.0000	25.17	0.0000
6.67	0.0000	16.17	0.0000	25.33	0.0000
6.83	0.0000	16.33	0.0000	25.50	0.0000
7.00	0.0000	16.50	0.7384	25.67	0.0000
7.17	0.0000	16.67	0.0000	25.83	0.0000
7.33	0.0000	16.83	0.0000	26.00	0.7384
7.50	0.0000	17.00	0.0000	26.17	0.0000
7.67	0.0000	17.17	0.0000	26.33	0.0000
7.83	0.0000	17.33	0.0000	26.50	0.0000
8.00	0.7384	17.50	0.0000	26.67	0.0000
8.17	0.0000	17.67	0.7384	26.83	0.0000
8.33	0.0000	17.83	0.0000	27.00	0.0000
8.50	0.0000	18.00	0.0000	27.17	0.0000
8.67	0.0000	18.17	0.0000	27.33	0.7384
8.83	0.0000	18.33	0.0000	27.50	0.0000
9.00	0.0000	18.50	0.0000	27.67	0.0000
9.17	0.0000	18.67	0.0000	27.83	0.0000
9.33	0.7384	18.83	0.7384	28.00	0.0000
9.50	0.0000	19.00	0.0000	28.17	0.0000
9.67	0.0000	19.17	0.0000	28.33	0.0000
9.83	0.0000	19.33	0.0000	28.50	0.0000
10.00	0.0000	19.50	0.0000	28.67	0.0000
10.17	0.0000	19.67	0.0000	28.83	0.7384
10.33	0.0000	19.83	0.0000	29.00	0.0000
10.50	0.0000	20.00	0.7384	29.17	0.0000
10.67	0.7384	20.17	0.0000	29.33	0.0000
10.83	0.0000	20.33	0.0000	29.50	0.0000
11.00	0.0000	20.50	0.0000	29.67	0.0000
11.17	0.0000	20.67	0.0000	29.83	0.0000
11.33	0.0000	20.83	0.0000	30.00	0.0000

Hydrograph ID: GRND T - 6 month

Area: 0.9300 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Flow: 0.0505 cfs		Peak Time: 10.17 hrs	
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
1.83	0.0034	10.67	0.0503	19.33	0.0372
2.00	0.0032	10.83	0.0502	19.50	0.0369
2.17	0.0068	11.00	0.0500	19.67	0.0366
2.33	0.0066	11.17	0.0499	19.83	0.0363
2.50	0.0097	11.33	0.0497	20.00	0.0361
2.67	0.0092	11.50	0.0496	20.17	0.0358
2.83	0.0122	11.67	0.0494	20.33	0.0355
3.00	0.0115	11.83	0.0492	20.50	0.0353
3.17	0.0143	12.00	0.0490	20.67	0.0350
3.33	0.0135	12.17	0.0488	20.83	0.0348
3.50	0.0161	12.33	0.0485	21.00	0.0346
3.67	0.0161	12.50	0.0483	21.17	0.0343
3.83	0.0167	12.67	0.0480	21.33	0.0341
4.00	0.0168	12.83	0.0478	21.50	0.0339
4.17	0.0169	13.00	0.0475	21.67	0.0337
4.33	0.0170	13.17	0.0473	21.83	0.0335
4.50	0.0171	13.33	0.0470	22.00	0.0333
4.67	0.0173	13.50	0.0468	22.17	0.0330
4.83	0.0176	13.67	0.0465	22.33	0.0328
5.00	0.0179	13.83	0.0462	22.50	0.0326
5.17	0.0182	14.00	0.0460	22.67	0.0323
5.33	0.0185	14.17	0.0457	22.83	0.0321
5.50	0.0189	14.33	0.0454	23.00	0.0319
5.67	0.0193	14.50	0.0452	23.17	0.0317
5.83	0.0198	14.67	0.0449	23.33	0.0315
6.00	0.0202	14.83	0.0446	23.50	0.0312
6.17	0.0208	15.00	0.0444	23.67	0.0311
6.33	0.0214	15.17	0.0441	23.83	0.0309
6.50	0.0221	15.33	0.0438	24.00	0.0307
6.67	0.0228	15.50	0.0436	24.17	0.0303
6.83	0.0237	15.67	0.0433	24.33	0.0296
7.00	0.0246	15.83	0.0430	24.50	0.0288
7.17	0.0256	16.00	0.0427	24.67	0.0281
7.33	0.0268	16.17	0.0424	24.83	0.0274
7.50	0.0280	16.33	0.0421	25.00	0.0268
7.67	0.0306	16.50	0.0419	25.17	0.0261
7.83	0.0350	16.67	0.0416	25.33	0.0255
8.00	0.0396	16.83	0.0413	25.50	0.0248
8.17	0.0429	17.00	0.0411	25.67	0.0242
8.33	0.0446	17.17	0.0408	25.83	0.0236
8.50	0.0461	17.33	0.0405	26.00	0.0230
8.67	0.0474	17.50	0.0403	26.17	0.0225
8.83	0.0482	17.67	0.0400	26.33	0.0219
9.00	0.0489	17.83	0.0397	26.50	0.0214
9.17	0.0495	18.00	0.0395	26.67	0.0209
9.33	0.0498	18.17	0.0392	26.83	0.0203
9.50	0.0500	18.33	0.0389	27.00	0.0199
9.67	0.0502	18.50	0.0386	27.17	0.0194
9.83	0.0503	18.67	0.0383	27.33	0.0189
10.00	0.0504	18.83	0.0381	27.50	0.0184
10.17	0.0505	19.00	0.0378	27.67	0.0180
10.33	0.0504	19.17	0.0375	27.83	0.0175
10.50	0.0504	19.33	0.0372	28.00	0.0171

Hydrograph ID: GRND T - 100 yr

Area: 0.9300 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Time: 7.17 hrs		Hyd Vol: 0.2689 acft	
Time hr	Flow cfs	Time hr	Flow cfs	Time hr	Flow cfs
0.83	0.0153	10.50	0.2620	19.83	0.0844
1.00	0.0167	10.67	0.2620	20.00	0.0844
1.17	0.0170	10.83	0.2620	20.17	0.0844
1.33	0.0175	11.00	0.2620	20.33	0.0844
1.50	0.0182	11.17	0.2620	20.50	0.0831
1.67	0.0191	11.33	0.2620	20.67	0.0844
1.83	0.0201	11.50	0.2620	20.83	0.0844
2.00	0.0212	11.67	0.2620	21.00	0.0844
2.17	0.0225	11.83	0.2620	21.17	0.0844
2.33	0.0238	12.00	0.2620	21.33	0.0831
2.50	0.0253	12.17	0.2620	21.50	0.0844
2.67	0.0267	12.33	0.2620	21.67	0.0844
2.83	0.0282	12.50	0.2620	21.83	0.0844
3.00	0.0297	12.67	0.1591	22.00	0.0844
3.17	0.0312	12.83	0.1011	22.17	0.0780
3.33	0.0328	13.00	0.1436	22.33	0.0767
3.50	0.0343	13.17	0.1127	22.50	0.0780
3.67	0.0359	13.33	0.1359	22.67	0.0767
3.83	0.0375	13.50	0.1192	22.83	0.0767
4.00	0.0392	13.67	0.1256	23.00	0.0780
4.17	0.0409	13.83	0.1153	23.17	0.0767
4.33	0.0428	14.00	0.1205	23.33	0.0780
4.50	0.0447	14.17	0.1179	23.50	0.0767
4.67	0.0467	14.33	0.1205	23.67	0.0767
4.83	0.0489	14.50	0.1179	23.83	0.0780
5.00	0.0612	14.67	0.1153	24.00	0.0767
5.17	0.2029	14.83	0.1089	24.17	0.0505
5.33	0.1102	15.00	0.1153	24.33	0.0494
5.50	0.1823	15.17	0.1089	24.50	0.0482
5.67	0.1385	15.33	0.1140	24.67	0.0470
5.83	0.1862	15.50	0.1102	24.83	0.0459
6.00	0.1514	15.67	0.1089	25.00	0.0447
6.17	0.1990	15.83	0.1024	25.17	0.0437
6.33	0.1900	16.00	0.1076	25.33	0.0426
6.50	0.2003	16.17	0.1024	25.50	0.0415
6.67	0.2209	16.33	0.1076	25.67	0.0405
6.83	0.2493	16.50	0.1024	25.83	0.0395
7.00	0.2300	16.67	0.1076	26.00	0.0385
7.17	0.2620	16.83	0.1024	26.17	0.0376
7.33	0.2620	17.00	0.1076	26.33	0.0367
7.50	0.2620	17.17	0.0986	26.50	0.0358
7.67	0.2620	17.33	0.0973	26.67	0.0349
7.83	0.2620	17.50	0.0999	26.83	0.0340
8.00	0.2620	17.67	0.0960	27.00	0.0332
8.17	0.2620	17.83	0.0999	27.17	0.0324
8.33	0.2620	18.00	0.0973	27.33	0.0316
8.50	0.2620	18.17	0.0934	27.50	0.0308
8.67	0.2620	18.33	0.0895	27.67	0.0301
8.83	0.2620	18.50	0.0921	27.83	0.0293
9.00	0.2620	18.67	0.0908	28.00	0.0286
9.17	0.2620	18.83	0.0908	28.17	0.0279
9.33	0.2620	19.00	0.0921	28.33	0.0272
9.50	0.2620	19.17	0.0844	28.50	0.0265
9.67	0.2620	19.33	0.0844	28.67	0.0259
9.83	0.2620	19.50	0.0844	28.83	0.0252
10.00	0.2620	19.67	0.0831	29.00	0.0246
10.17	0.2620	19.83	0.0844	29.17	0.0240
10.33	0.2620	20.00	0.0844	29.33	0.0234

Hydrograph ID: GRND T - 6 month

Area: 0.9300 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Flow: 0.0505 cfs		Hyd Vol: 0.0727 acft	
Time	Flow	Peak Time:	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
1.83	0.0034	10.67	0.0503	19.33	0.0372
2.00	0.0032	10.83	0.0502	19.50	0.0369
2.17	0.0068	11.00	0.0500	19.67	0.0366
2.33	0.0066	11.17	0.0499	19.83	0.0363
2.50	0.0097	11.33	0.0497	20.00	0.0361
2.67	0.0092	11.50	0.0496	20.17	0.0358
2.83	0.0122	11.67	0.0494	20.33	0.0355
3.00	0.0115	11.83	0.0492	20.50	0.0353
3.17	0.0143	12.00	0.0490	20.67	0.0350
3.33	0.0135	12.17	0.0488	20.83	0.0348
3.50	0.0161	12.33	0.0485	21.00	0.0346
3.67	0.0161	12.50	0.0483	21.17	0.0343
3.83	0.0167	12.67	0.0480	21.33	0.0341
4.00	0.0168	12.83	0.0478	21.50	0.0339
4.17	0.0169	13.00	0.0475	21.67	0.0337
4.33	0.0170	13.17	0.0473	21.83	0.0335
4.50	0.0171	13.33	0.0470	22.00	0.0333
4.67	0.0173	13.50	0.0468	22.17	0.0330
4.83	0.0176	13.67	0.0465	22.33	0.0328
5.00	0.0179	13.83	0.0462	22.50	0.0326
5.17	0.0182	14.00	0.0460	22.67	0.0323
5.33	0.0185	14.17	0.0457	22.83	0.0321
5.50	0.0189	14.33	0.0454	23.00	0.0319
5.67	0.0193	14.50	0.0452	23.17	0.0317
5.83	0.0198	14.67	0.0449	23.33	0.0315
6.00	0.0202	14.83	0.0446	23.50	0.0312
6.17	0.0208	15.00	0.0444	23.67	0.0311
6.33	0.0214	15.17	0.0441	23.83	0.0309
6.50	0.0221	15.33	0.0438	24.00	0.0307
6.67	0.0228	15.50	0.0436	24.17	0.0303
6.83	0.0237	15.67	0.0433	24.33	0.0296
7.00	0.0246	15.83	0.0430	24.50	0.0288
7.17	0.0256	16.00	0.0427	24.67	0.0281
7.33	0.0268	16.17	0.0424	24.83	0.0274
7.50	0.0280	16.33	0.0421	25.00	0.0268
7.67	0.0306	16.50	0.0419	25.17	0.0261
7.83	0.0350	16.67	0.0416	25.33	0.0255
8.00	0.0396	16.83	0.0413	25.50	0.0248
8.17	0.0429	17.00	0.0411	25.67	0.0242
8.33	0.0446	17.17	0.0408	25.83	0.0236
8.50	0.0461	17.33	0.0405	26.00	0.0230
8.67	0.0474	17.50	0.0403	26.17	0.0225
8.83	0.0482	17.67	0.0400	26.33	0.0219
9.00	0.0489	17.83	0.0397	26.50	0.0214
9.17	0.0495	18.00	0.0395	26.67	0.0209
9.33	0.0498	18.17	0.0392	26.83	0.0203
9.50	0.0500	18.33	0.0389	27.00	0.0199
9.67	0.0502	18.50	0.0386	27.17	0.0194
9.83	0.0503	18.67	0.0383	27.33	0.0189
10.00	0.0504	18.83	0.0381	27.50	0.0184
10.17	0.0505	19.00	0.0378	27.67	0.0180
10.33	0.0504	19.17	0.0375	27.83	0.0175
10.50	0.0504	19.33	0.0372	28.00	0.0171

Hydrograph ID: GRND T - 100 yr

Area: 0.9300 ac		Hyd Int: 10.00 min		Base Flow:	
Pending translation: 0.00 min		Peak Time: 7.17 hrs		Hyd Vol: 0.2689 acft	
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
0.83	0.0153	10.50	0.2620	19.83	0.0844
1.00	0.0167	10.67	0.2620	20.00	0.0844
1.17	0.0170	10.83	0.2620	20.17	0.0844
1.33	0.0175	11.00	0.2620	20.33	0.0844
1.50	0.0182	11.17	0.2620	20.50	0.0831
1.67	0.0191	11.33	0.2620	20.67	0.0844
1.83	0.0201	11.50	0.2620	20.83	0.0844
2.00	0.0212	11.67	0.2620	21.00	0.0844
2.17	0.0225	11.83	0.2620	21.17	0.0844
2.33	0.0238	12.00	0.2620	21.33	0.0831
2.50	0.0253	12.17	0.2620	21.50	0.0844
2.67	0.0267	12.33	0.2620	21.67	0.0844
2.83	0.0282	12.50	0.2620	21.83	0.0844
3.00	0.0297	12.67	0.1591	22.00	0.0844
3.17	0.0312	12.83	0.1011	22.17	0.0780
3.33	0.0328	13.00	0.1436	22.33	0.0767
3.50	0.0343	13.17	0.1127	22.50	0.0780
3.67	0.0359	13.33	0.1359	22.67	0.0767
3.83	0.0375	13.50	0.1192	22.83	0.0767
4.00	0.0392	13.67	0.1256	23.00	0.0780
4.17	0.0409	13.83	0.1153	23.17	0.0767
4.33	0.0428	14.00	0.1205	23.33	0.0780
4.50	0.0447	14.17	0.1179	23.50	0.0767
4.67	0.0467	14.33	0.1205	23.67	0.0767
4.83	0.0489	14.50	0.1179	23.83	0.0780
5.00	0.0612	14.67	0.1153	24.00	0.0767
5.17	0.2029	14.83	0.1089	24.17	0.0505
5.33	0.1102	15.00	0.1153	24.33	0.0494
5.50	0.1823	15.17	0.1089	24.50	0.0482
5.67	0.1385	15.33	0.1140	24.67	0.0470
5.83	0.1862	15.50	0.1102	24.83	0.0459
6.00	0.1514	15.67	0.1089	25.00	0.0447
6.17	0.1990	15.83	0.1024	25.17	0.0437
6.33	0.1900	16.00	0.1076	25.33	0.0426
6.50	0.2003	16.17	0.1024	25.50	0.0415
6.67	0.2209	16.33	0.1076	25.67	0.0405
6.83	0.2493	16.50	0.1024	25.83	0.0395
7.00	0.2300	16.67	0.1076	26.00	0.0385
7.17	0.2620	16.83	0.1024	26.17	0.0376
7.33	0.2620	17.00	0.1076	26.33	0.0367
7.50	0.2620	17.17	0.0986	26.50	0.0358
7.67	0.2620	17.33	0.0973	26.67	0.0349
7.83	0.2620	17.50	0.0999	26.83	0.0340
8.00	0.2620	17.67	0.0960	27.00	0.0332
8.17	0.2620	17.83	0.0999	27.17	0.0324
8.33	0.2620	18.00	0.0973	27.33	0.0316
8.50	0.2620	18.17	0.0934	27.50	0.0308
8.67	0.2620	18.33	0.0895	27.67	0.0301
8.83	0.2620	18.50	0.0921	27.83	0.0293
9.00	0.2620	18.67	0.0908	28.00	0.0286
9.17	0.2620	18.83	0.0908	28.17	0.0279
9.33	0.2620	19.00	0.0921	28.33	0.0272
9.50	0.2620	19.17	0.0844	28.50	0.0265
9.67	0.2620	19.33	0.0844	28.67	0.0259
9.83	0.2620	19.50	0.0844	28.83	0.0252
10.00	0.2620	19.67	0.0831	29.00	0.0246
10.17	0.2620	19.83	0.0844	29.17	0.0240
10.33	0.2620	20.00	0.0844	29.33	0.0234

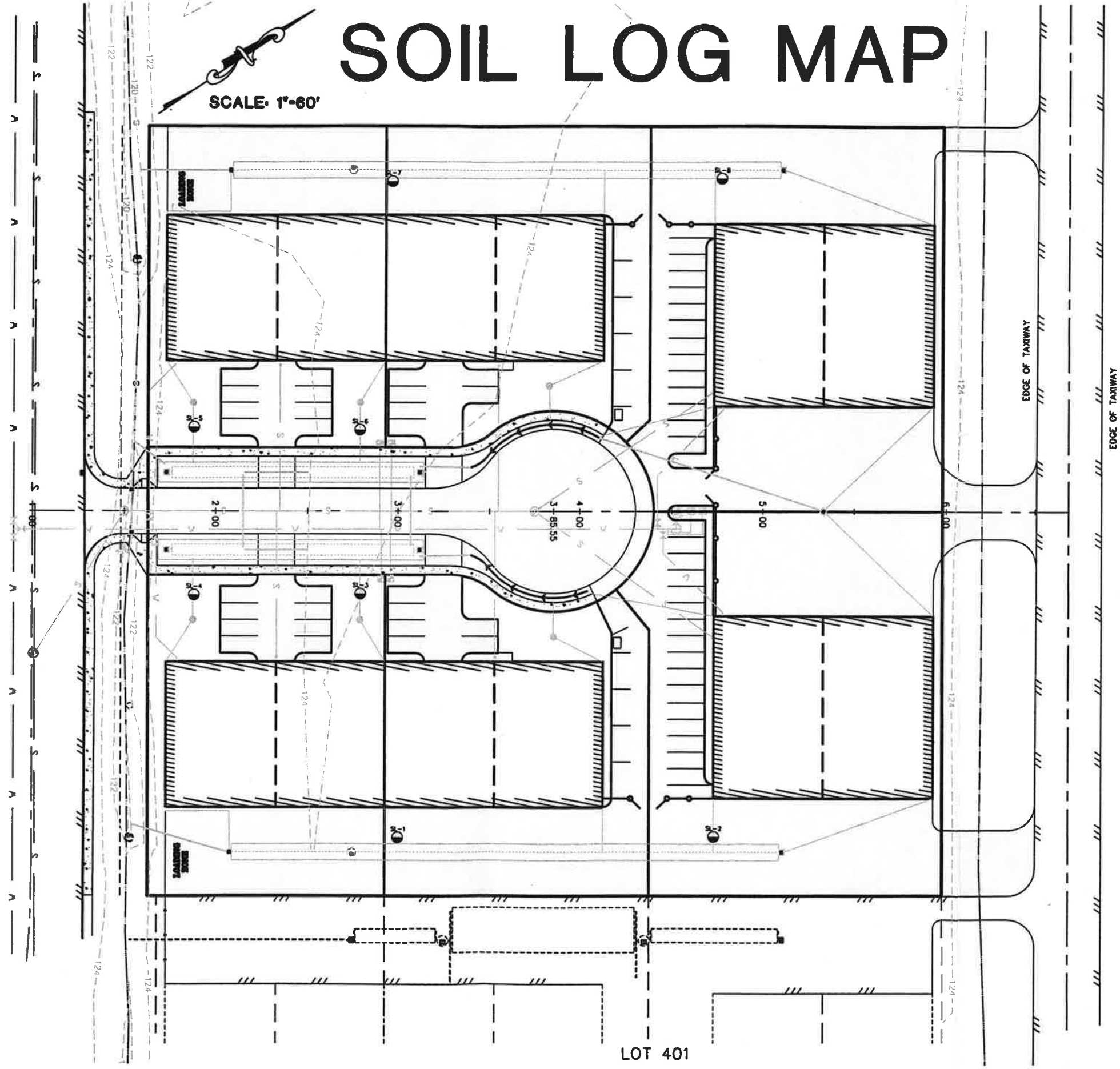
SOIL LOGS

SOIL LOGS			
SOIL LOGS PERFORMED ON DEC. 6, 2004			
SL-1	0'-3'	BROWN LOAMY SAND	
	3'-14'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=124.25'		WATER AT 14' (110.25')	
SL-2	0'-3'	BROWN LOAMY SAND	
	3'-14.5'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=125.00'		WATER AT 14.5' (110.50')	
SL-3	0'-3.5'	BROWN LOAMY SAND	
	3.5'-14'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=124.00'		WATER AT 14' (110.00')	
SL-4	0'-3.5'	BROWN LOAMY SAND	
	3.5'-13'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=124.00'		WATER AT 13.5' (110.50')	
SL-5	0'-3'	BROWN LOAMY SAND	
	3'-14'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=124.75'		WATER AT 14' (110.75')	
SL-6	0'-2.5'	BROWN LOAMY SAND	
	2.5'-12.5'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=124.00'		WATER AT 12.5' (111.50')	
SL-7	0'-2'	BROWN LOAMY SAND	
	2'-11.5'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=124.00'		WATER AT 11.5' (112.50')	
SL-8	0'-3'	BROWN LOAMY SAND	
	3'-14'	GRAY GRAVELLY MEDIUM SAND	
SURFACE ELV=125.00'		WATER AT 14' (111.00')	

- FOR SOIL LOG LOCATIONS, SEE DRAINAGE BASIN MAP PG. 26

SOIL LOG MAP

SCALE: 1"=60'



LOT 401

15665 V-DITCH 100-YR CONVEYANCE CALC
Worksheet for Triangular Channel

Project Description	
Project File	untitled.fm2
Worksheet	V-DITCH
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.025
Channel Slope	0.005000 ft/ft
Left Side Slope	1.500000 H : V
Right Side Slope	1.500000 H : V
Discharge	0.82 cfs

Results	
Depth	0.58 ft
Flow Area	0.50 ft ²
Wetted Perimeter	2.09 ft
Top Width	1.74 ft
Critical Depth	0.45 ft
Critical Slope	0.019126 ft/ft
Velocity	1.63 ft/s
Velocity Head	0.04 ft
Specific Energy	0.62 ft
Froude Number	0.53
Flow is subcritical.	

V-DITCH BASIN Event Summary

Event	Peak Q (cfs)	Peak T (hrs)	Hyd Vol (acft)	Area (ac)	Method	Raintype
6 month	0.2234	7.83	0.0695	0.8900	SBUH	TYPE1A
2 yr	0.3748	7.83	0.1169	0.8900	SBUH	TYPE1A
10 yr	0.5925	7.83	0.1869	0.8900	SBUH	TYPE1A
100 yr	0.8192	7.83	0.2608	0.8900	SBUH	TYPE1A

Record Id: V-DITCH BASIN

Design Method	SBUH	Rainfall type	TYPE1A			
Hyd Intv	10.00 min	Peaking Factor	484.00			
		Abstraction Coeff	0.20			
Pervious Area (AMC 2)	0.00 ac	DCIA	0.89 ac			
Pervious CN	0.00	DC CN	98.00			
Pervious TC	0.00 min	DC TC	1.75 min			
Directly Connected CN Calc						
Description	SubArea		Sub cn			
ROOFTOP, PARKING	0.89 ac		98.00			
DC Compositd CN (AMC 2)			98.00			
Directly Connected TC Calc						
Type	Description	Length	Slope	Coeff	Misc	TT
Sheet	ROOFTOP	60.00 ft	45.00%	0.0110	1.80 in	0.31 min
Channel (interm)	GUTTER	50.00 ft	0.50%	0.0120		0.28 min
Channel (interm)	PIPE	210.00 ft	0.50%	0.0120		1.17 min
Directly Connected TC						1.75min

15665 CB#7 TO DITCH 100YR CNVEYANCE CALC
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	CB#7 TO V-DITCH
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.012
Channel Slope	0.005000 ft/ft
Diameter	8.00 in
Discharge	0.42 cfs

Results	
Depth	0.32 ft
Flow Area	0.16 ft ²
Wetted Perimeter	1.01 ft
Top Width	0.67 ft
Critical Depth	0.30 ft
Percent Full	47.25
Critical Slope	0.005781 ft/ft
Velocity	2.59 ft/s
Velocity Head	0.10 ft
Specific Energy	0.42 ft
Froude Number	0.92
Maximum Discharge	1.00 cfs
Full Flow Capacity	0.93 cfs
Full Flow Slope	0.001029 ft/ft
Flow is subcritical.	

8" OULET CB#7 Event Summary

Event	Peak Q (cfs)	Peak T (hrs)	Hyd Vol (acft)	Area (ac)	Method	Raintype
6 month	0.1137	7.83	0.0359	0.4600	SBUH	TYPE1A
2 yr	0.1905	7.83	0.0604	0.4600	SBUH	TYPE1A
10 yr	0.3010	7.83	0.0966	0.4600	SBUH	TYPE1A
100 yr	0.4159	7.83	0.1348	0.4600	SBUH	TYPE1A

Record Id: 8" OULET CB#7

Design Method	SBUH	Rainfall type	TYPE1A			
Hyd Intv	10.00 min	Peaking Factor	484.00			
		Abstraction Coeff	0.20			
Pervious Area (AMC 2)	0.00 ac	DCIA	0.46 ac			
Pervious CN	0.00	DC CN	98.00			
Pervious TC	0.00 min	DC TC	0.74 min			
Directly Connected CN Calc						
Description	SubArea	Sub cn				
ROOFTOP, PARKING	0.46 ac	98.00				
DC Compositied CN (AMC 2)		98.00				
Directly Connected TC Calc						
Type	Description	Length	Slope	Coeff	Misc	TT
Sheet	ROOFTOP	60.00 ft	45.00%	0.0110	0.00 in	0.00 min
Channel (interm)	GUTTER	50.00 ft	0.50%	0.0120		0.28 min
Channel (interm)	PIPE	83.00 ft	0.50%	0.0120		0.46 min
Directly Connected TC						1.05min

15665 4" DOWNSPOUT CONVEYANCE CALC
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	4" ROOF DOWNSPOUT
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.012
Channel Slope	0.007500 ft/ft
Diameter	4.00 in
Discharge	0.07 cfs

Results	
Depth	0.14 ft
Flow Area	0.04 ft ²
Wetted Perimeter	0.48 ft
Top Width	0.33 ft
Critical Depth	0.15 ft
Percent Full	43.49
Critical Slope	0.007221 ft/ft
Velocity	1.92 ft/s
Velocity Head	0.06 ft
Specific Energy	0.20 ft
Froude Number	1.02
Maximum Discharge	0.19 cfs
Full Flow Capacity	0.18 cfs
Full Flow Slope	0.001153 ft/ft
Flow is supercritical.	

4" ROOF DOWNSPOUT Event Summary

Event	Peak Q (cfs)	Peak T (hrs)	Hyd Vol (acft)	Area (ac)	Method	Raintype
6 month	0.0168	7.83	0.0055	0.0700	SBUH	TYPE1A
2 yr	0.0282	7.83	0.0092	0.0700	SBUH	TYPE1A
10 yr	0.0445	7.83	0.0147	0.0700	SBUH	TYPE1A
100 yr	0.0615	7.83	0.0205	0.0700	SBUH	TYPE1A

Record Id: 4" ROOF DOWNSPOUT

Design Method	SBUH	Rainfall type	TYPE1A			
Hyd Intv	10.00 min	Peaking Factor	484.00			
		Abstraction Coeff	0.20			
Pervious Area (AMC 2)	0.00 ac	DCIA	0.07 ac			
Pervious CN	0.00	DC CN	98.00			
Pervious TC	0.00 min	DC TC	0.28 min			
Directly Connected CN Calc						
Description	SubArea		Sub cn			
ROOFTOP, PARKING	0.07 ac		98.00			
DC Compositd CN (AMC 2)			98.00			
Directly Connected TC Calc						
Type	Description	Length	Slope	Coeff	Misc	TT
Sheet	ROOFTOP	60.00 ft	45.00%	0.0110	0.00 in	0.00 min
Channel (interm)	GUTTER	50.00 ft	0.50%	0.0120		0.28 min
Directly Connected TC						0.59min

MAINTENANCE REQUIREMENTS

Infiltration Trench Inspection Schedule:

The drainage system should be monitored periodically. For the first year after completion of construction, the system should be monitored after every large storm event (> 1-in in 24-hrs), and, during the period Oct. 1- Mar. 31 inspections should be conducted monthly. From April 1-Sept. 30, the facility should be monitored on a quarterly basis. Once the performance characteristics of the facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicate that a more frequent schedule is required.

Sediment Removal:

Sediment buildup in the top foot of stone aggregate or the surface inlet should be monitored on the same schedule as the system. Sediment deposits shall not be allowed to build up to the point where it will reduce the rate of infiltration into the trench.

MAINTENANCE COMPONENT			
POND			
GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
	TRASH & DEBRIS	ANY TRASH AND DEBRIS WHICH EXCEED 1 CUBIC FOOT PER 1,000 SQUARE FEET (THIS IS ABOUT EQUAL TO THE AMOUNT OF TRASH IT WOULD TAKE TO FILL UP ONE STANDARD SIZE OFFICE GARBAGE CAN). IN GENERAL, THERE SHOULD BE NO VISUAL EVIDENCE OF DUMPING.	TRASH AND DEBRIS CLEARED FROM SITE.
	POISONOUS VEGETATION	ANY POISONOUS VEGETATION WHICH MAY CONSTITUTE A HAZARD TO COUNTY PERSONNEL OR THE PUBLIC. EXAMPLES OF POISONOUS VEGETATION INCLUDE: TANSY RAGWORT, POISON OAK, STINGING NETTLES, DEVILS CLUB.	NO DANGER OF POISONOUS VEGETATION WHERE COUNTY PERSONNEL OR THE PUBLIC MIGHT NORMALLY BE. (COORDINATION WITH HEALTH DEPARTMENT).
	POLLUTION	OIL, GASOLINE, OR OTHER CONTAMINANTS OF ONE GALLON OR MORE OR ANY AMOUNT FOUND THAT COULD: 1) CAUSE DAMAGE TO PLANT, ANIMAL, OR MARINE LIFE; 2) CONSTITUTE A FIRE HAZARD; OR 3) BE FLUSHED DOWNSTREAM DURING RAIN STORMS.:	NO CONTAMINANTS PRESENT OTHER THAN A SURFACE FILM. (COORDINATION WITH HEALTH DEPARTMENT).

	UNMOWED GRASS/GROUND COVER	IF FACILITY IS LOCATED IN PRIVATE RESIDENTIAL AREA, MOWING IS NEEDED WHEN GRASS EXCEEDS 18 INCHES IN HEIGHT. IN OTHER AREAS, THE GENERAL POLICY IS TO MAKE THE POND SITE MATCH ADJACENT GROUND COVER AND TERRAIN AS LONG AS THERE IS NO INTERFERENCE WITH THE FUNCTION OF THE FACILITY.	WHEN MOWING IS NEEDED, GRASS/GROUND COVER SHOULD BE MOWED TO 2 INCHES HEIGHT.
	RODENT HOLES	ANY EVIDENCE OF RODENT HOLES IF FACILITY IS ACTING AS A DAM OR BERM, OR ANY EVIDENCE OF WATER PIPING THROUGH DAM OR BERM VIA RODENT HOLES.	RODENTS DESTROYED AND DAM OR BERM REPAIRED. (COORDINATION WITH HEALTH DEPARTMENT)
	INSECTS	WHEN INSECTS SUCH AS WASPS AND HORNETS INTERFERE WITH MAINTENANCE ACTIVITIES.	INSECTS DESTROYED OR REMOVED FROM SITE.
	TREE GROWTH	TREE GROWTH DOES NOT ALLOW MAINTENANCE ACCESS OR INTERFERES WITH MAINTENANCE ACTIVITY (I.E., SLOPE MOVING, SILT REMOVAL, VACTORING, OR EQUIPMENT MOVEMENTS). IF TREES ARE NOT INTERFERING WITH ACCESS, LEAVE TREES ALONE.	TREES DO NOT HINDER MAINTENANCE ACTIVITIES. SELECTIVELY CULTIVATE TREES SUCH AS ALDERS FOR FIREWOOD.
SIDE SLOPES OF POND	EROSION	ERODED DAMAGE OVER 2 INCHES DEEP WHERE CAUSE OF DAMAGE IS STILL PRESENT OR WHERE THERE IS POTENTIAL FOR CONTINUE EROSION.	SLOPES SHOULD BE STABILIZED BY USING APPROPRIATE EROSION CONTROL MEASURE(S); E.G., ROCK REINFORCEMENT, PLANTING OF GRASS, COMPACTION.
STORAGE AREA	SEDIMENT	ACCUMULATED SEDIMENT THAT EXCEEDS 10% OF THE DESIGNED POND DEPTH.	SEDIMENT CLEANED OUT TO DESIGNED POND SHAPE AND DEPTH; POND RESEDED IF NECESSARY TO CONTROL EROSION.
POND DIKES	SETTLEMENTS	ANY PART OF DIKE WHICH HAS SETTLED 4 INCHES LOWER THAN THE DESIGN ELEVATION.	DIKE SHOULD BE BUILT BACK TO THE DESING ELEVATION.
EMERGENCY OVERFLOW / SPILLWAY	ROCK MISSING	ONLY ONE LAYER OR ROCK EXISTS ABOVE NATIVE SOIL IN ARE FIVE SQUARE FEET OR LARGER, OR ANY EXPOSURE OF NATIVE SOIL.	REPLACE ROCKS TO DESIGN STANDARDS.
MAINTENANCE COMPONENT			
INFILTRATION			

GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
	POISONOUS VEGETATION	SEE "PONDS" STANDARD NO. 1	SEE "PONDS" STANDARD NO. 1
	POLLUTION	SEE "PONDS" STANDARD NO. 1	SEE "PONDS" STANDARD NO. 1
	UNMOWED GRASS/ GROUND COVER	SEE "PONDS" STANDARD NO. 1	
	RODENT HOLES	SEE "PONDS" STANDARD NO. 1	SEE "PONDS" STANDARD NO. 1
	INSECTS	SEE "PONDS" STANDARD NO. 1	SEE "PONDS" STANDARD NO. 1
STORAGE AREAS	SEDIMENT	A PERCOLATION TEST PIT OR TEST OF FACILITY INDICATES FACILITY IS ONLY WORKING AT 90% OF ITS DESIGNED CAPABILITIES. IF TWO INCHES OR MORE SEDIMENT IS PRESENT, REMOVE.	SEDIMENT IS REMOVED AND/OR FACILITY IS CLEANED SO THAT INFILTRATION SYSTEM WORKS ACCORDING TO DESIGN.
	SHEET COVER (IF APPLICABLE)	SHEET COVER IS VISIBLE AND HAS MORE THAN THREE 1/4 INCH HOLES IN IT.	SHEET COVER REPAIRED OR REPLACED.
	SUMP FILLED WITH SEDMIMENT AND DEBRIS (IF APPLICABLE)	ANY SEDIMENT AND DEBRIS FILLING VAULT TO 10% OF DEPTH FROM SUMP BOTTOM TO BOTTOM OF OUTLET PIPE OR OBSTRUCTING FLOW INTO THE CONNECTOR PIPE.	CLEAN OUT SUMP TO DESIGN DEPTH.
FILTER BAGS	FILLED WITH SEDIMENT AND DEBRIS	SEDIMENT AND DEBRIS FILL BAG MORE THAN 1/2 FULL.	REPLACE FILTER BAG OR REDESIGN SYSTEM.
ROCK FILTERS	SEDIMENT AND DEBRIS	BY VISUAL INSPECTION, LITTLE OR NO WATER FLOWS THROUGH FILTER DURING HEAVY RAIN STORMS.	REPLACE GRAVEL IN ROCK FILTER.
SIDE SLOPES OF POND	EROSION	SEE "PONDS" STANDARD NO. 1	SEE "PONDS" STANDARD NO. 1

EMERGENCY OVERFLOW / SPILLWAY	ROCK MISSING	SEE "PONDS" STANDARD NO. 1	
SETTING PONDS AND AULTS	SEDIMENT	REMOVE WHEN 6" OR MORE.	

NOTE: SEDIMENT ACCUMULATION OF MORE THAN .25 INCHES PER YEAR MAY INDICATE EXCESSIVE EROSION IS OCCURRING UPSTREAM OF THE FACILITY OR THAT CONVEYANCE SYSTEMS ARE NOT BEING PROPERLY MAINTAINED. THE CONTRIBUTING DRAINAGE AREA SHOULD BE CHECKED FOR EROSION PROBLEMS OR INADEQUATE MAINTENANCE OF CONVEYANCE SYSTEMS IF EXCESSIVE SEDIMENTATION IS NOTED IN AN INFILTRATION FACILITY.

CHECK TWICE A YEAR DURING FIRST 2 YEARS OF OPERATION; ONCE A YEAR THEREAFTER. CLEAN MANHOLES/CATCH BASINS, REPAIR DAMAGED INLETS/OUTLETS, CLEAN TRASH RACKS.

MAINTENANCE COMPONENT

CATCH BASINS

GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
	TRASH & DEBRIS (INCLUDES SEDIMENT)	TRASH OR DEBRIS OF MORE THAN 1/2 CUBIC FOOT WHICH IS LOCATED IMMEDIATELY IN FRONT OF THE CATCH BASIN OPENING OR IS BLOCKING CAPACITY OF BASIN BY MORE THAN 10%.	NO TRASH OR DEBRIS LOCATED IMMEDIATELY IN FRONT OF CATCH BASIN OPENING.
		TRASH OR DEBRIS (IN THE BASIN) THAT EXCEEDS 1/3 THE DEPTH FROM THE BOTTOM OF BASIN TO INVERT T OF THE LOWEST PIPE INTO OR OUT OF THE BASIN.	NO TRASH OR DEBRIS IN THE CATCH BASIN.
		TRASH OR DEBRIS IN ANY INLET OR OUTLET PIPE BLOCKING MORE THAN 1/3 OF ITS HEIGHT.	INLET AND OUTLET PIPES FREE OF TRASH OR DEBRIS.
		DEAD ANIMALS OR VEGETATION THAT COULD GENERATE ODORS THAT WOULD CAUSE COMPLAINTS OR DANGEROUS GASES (E.G., METHANE).	NO DEAD ANIMALS OR VEGETATION PRESENT WITHIN THE CATCH BASIN.
		DEPOSITS OF GARBAGE EXCEEDING 1 CUBIC FOOT IN VOLUME.	NO CONDITION PRESENT WHICH WOULD ATTRACT OR SUPPORT THE BREEDING OF INSECTS OR RODENTS.

	STRUCTURAL DAMAGE TO FRAME AND/OR TOP SLAB	CORNER OF FRAME EXTENDS MORE THAN 3/4 INCH PAST CURB FACE INTO THE STREET (IF APPLICABLE).	FRAME IS EVEN WITH CURB.
		TOP SLAB HAS HOLES LARGER THAN 2 SQUARE INCHES OR CRACKS WIDER THAN 1/4 INCH (INTENT IS TO MAKE SURE ALL MATERIAL IS RUNNING INTO THE BASIN).	TOP SLAB IS FREE OF HOLES AND CRACKS.
		FRAME NOT SITTING FLUSH ON TOP SLAB, I. E., SEPARATION OF MORE THAN 3/4 INCH OF THE FRAME FROM THE TOP SLAB.	FRAME IS SITTING FLUSH ON TOP SLAB.
	CRACKS IN BASIN WALLS/BOTTOM	CRACKS WIDER THAN 1/2 INCH AND LONGER THAN 3 FEET, ANY EVIDENCE OF SOIL PARTICLES ENTERING CATCH BASIN THROUGH CRACKS, OR MAINTENANCE PERSON JUDGES THAT STRUCTURE IS UNSOUND.	BASIN REPLACED OR REPAIRED TO DESIGN STANDARDS.
		CRACKS WIDER THAN 1/2 INCH AND LONGER THAN 1 FOOT AT THE JOINT OF ANY INLET/OUTLET PIPE OR ANY EVIDENCE OF SOIL PARTICLES ENTERING CATCH BASIN THROUGH CRACKS.	NO CRACKS MORE THAN 1/4 INCH WIDE AT THE JOINT OF INLET/OUTLET PIPE.
		NO CRACKS MORE THAN 1/4 INCH WIDE AT THE JOINT OF INLET/OUTLET PIPE.	CRACKS WIDER THAN 1/2 INCH AND LONGER THAN 1 FOOT AT THE JOINT OF ANY INLET/OUTLET PIPE OR ANY EVIDENCE OF SOIL PARTICLES ENTERING CATCH BASIN THROUGH CRACKS.
MISALIGNMENT	SETTLEMENT/BASIN HAS SETTLED MORE THAN 1 INCH OR HAS ROTATED MORE THAN 2 INCHES OUT OF ALIGNMENT.	BASIN REPLACED OR REPAIRED TO DESIGN STANDARDS.	
	FIRE HAZARD	PRESENCE OF CHEMICALS SUCH AS NATURAL GAS. OIL, GASOLINE.	NO FLAMMABLE CHEMICALS PRESENT.
	VEGETATION	VEGETATION GROWING ACROSS AND BLOCKING MORE THAN 10% OF THE BASIN OPENING.	NO VEGETATION BLOCKING OPENING TO BASIN.
		VEGETATION GROWING IN INLET/OUTLET PIPE JOINTS THAT IS MORE THAN SIX INCHES TALL AND LESS THAN SIX INCHES APART.	NO VEGETATION OR ROOT GROWTH PRESENT.

	POLLUTION	NONFLAMMABLE CHEMICALS OF MORE THAN 1/2 CUBIC FOOT PER THREE FEET OF BASIN LENGTH.	NO POLLUTION PRESENT OTHER THAN SURFACE FILM.
CATCH BASIN COVER	COVER NOT IN PLACE	COVER IS MISSING OR ONLY PARTIALLY IN PLACE. ANY OPEN CATCH BASIN REQUIRED MAINTENANCE.	CATCH BASIN COVER IS CLOSED.
	LOCKING MECHANISM NOT WORKING	MECHANISM CANNOT BE OPENED BY ONE MAINTENANCE PERSON WITH PROPER TOOLS. BOLTS INTO FRAME HAVE LESS THAN 1/2 INCH OF THREAD.	MECHANISM OPENS WITH PROPER TOOLS.
	COVER DIFFICULT TO REMOVE	ONE MAINTENANCE PERSON CANNOT REMOVE LID AFTER APPLYING 80 LBS. OF LIFT; INTENT IS KEEP COVER FROM SEALING OFF ACCESS TO MAINTENANCE.	COVER CAN BE REMOVED BY ONE MAINTENANCE PERSON.
LADDER	LADDER RUNGS UNSAFE	LADDER IS UNSAFE DUE TO MISSING RUNGS, MISALIGNMENT, RUST, CRACKS, OR SHARP EDGES.	LADDER MEETS DESIGN STANDARDS AND ALLOWS MAINTENANCE PERSON SAFE ACCESS.
METAL GRATE (IF APPLICABLE)		GRATE OPENING WIDER THAN 7/8 INCH.	GRATE OPENINGS MEET DESIGN STANDARDS.
	TRASH AND DEBRIS	TRASH AND DEBRIS THAT IS BLOCKING MORE THAN 20% OF GRATE SURFACE.	GRATE FREE OF TRASH AND DEBRIS.
	DAMAGED OR MISSING	GRATE MISSING OR BROKEN MEMBER(S) OF THE GRATE.	GRATE IS IN PLACE AND MEETS DESIGN STANDARDS.
MAINTENANCE COMPONENT			
DEBRIS BARRIERS, I.E. TRASH RACKS			
GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
GENERAL	TRASH AND DEBRIS	TRASH OR DEBRIS THAT IS PLUGGING MORE THAN 20% OF THE OPENINGS IN THE BARRIER	BARRIER CLEAR TO RECEIVE CAPACITY FLOW.

METAL	DAMAGED/MISSING BARS	BARS ARE BET OUT OF SHAPE MORE THAN 3 INCHES	BARS IN PLACE WITH NO BENDS MORE THAN 3/4 INCH.
		BARS ARE MISSING OR ENTIRE BARRIER IS MISSING	BARS IN PLACE ACCORDING TO DESIGN.
		BARS ARE LOOSE AND RUST IS CAUSING 50% DETERIORATION TO ANY PART OF BARRIER.	REPAIR OR REPLACE BARRIER TO DESIGN STANDARDS.
		BARS ARE LOOSE AND RUST IS CAUSING 50% DETERIORATION TO ANY PART OF BARRIER.	REPAIR OR REPLACE BARRIER TO DESIGN STANDARDS.
MAINTENANCE COMPONENT			
ENERGY DISSIPATORS			
GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
EXTERNAL:			
	MISSING OR MOVED ROCK	ONLY ONE LAYER OF ROCK EXISTS ABOVE NATIVE SOIL IN AREA FIVE SQUARE FEET OR LARGER, OR ANY EXPOSURE OF NATIVE SOIL.	REPLACE ROCKS TO DESIGN STANDARD.
ROCK PAD			
	PIPE PLUGGED WITH SEDIMENT	ACCUMULATED SEDIMENT THAT EXCEEDS 20% OF THE DESIGN DEPTH.	PIPE CLEANED/FLUSHED SO THAT IT MATCHES DESIGN.
DISPERSION TRENCH			
	NOT DISCHARGING WATER PROPERLY	VISUAL EVIDENCE OF WATER DISCHARGING AT CONCENTRATED POINTS ALONG TRENCH (NORMAL CONDITION IS A "SHEET FLOW" OF WATER ALONG TRENCH). INTENT IS TO PREVENT EROSION DAMAGE.	TRENCH MUST BE REDESIGNED OR REBUILT TO STANDARD.
	PERFORATIONS PLUGGED	OVER 1/2 OF PERFORATIONS IN PIPE ARE PLUGGED WITH DEBRIS AND SEDIMENT.	CLEAN OR REPLACE PERFORATED PIPE.
	WATER FLOWS OUT TOP OF "DISTRIBUTOR" CATCH BASIN	MAINTENANCE PERSON OBSERVES WATER FLOWING OUT DURING ANY STORM LESS THAN THE DESIGN STORM OR IT IS CAUSING OR APPEARS LIKELY TO CAUSE DAMAGE.	FACILITY MUST BE REBUILT OR REDESIGN TO STANDARDS.

	RECEIVING AREA OVER-SATURATED	WATER IN RECEIVING AREA IS CAUSING OR HAS POTENTIAL OF CAUSING LANDSLIDE PROBLEMS.	NO DANGER OF LANDSLIDES.
INTERNAL:			
MANHOLE/ CHAMBER	WORN OR DAMAGED POSTS, BAFFLES, SLIDES OF CHAMBER	STRUCTURE DISSIPATING FLOW DETERIORATES TO 1/2 OR ORIGINAL SIZE OR ANY CONCENTRATED WORN SPOT EXCEEDING ONE SQUARE FOOT WHICH WOULD MAKE STRUCTURE UNSOUND.	REPLACE STRUCTURE TO DESIGN STANDARDS.
	OTHER DEFECTS	SEE "CATCH BASINS" STANDARD NO. 5	SEE "CATCH BASINS" STANDARD NO. 5
MAINTENANCE COMPONENT			
CONVEYANCE SYSTEM (PIPES & DITCHES)			
GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
PIPES	SEDIMENT & DEBRIS	ACCUMULATED SEDIMENT THAT EXCEEDS 20% OF THE DIAMETER OF THE PIPE.	PIPE CLEANED OF ALL SEDIMENT AND DEBRIS.
	VEGETATION	VEGETATION THAT REDUCES FREE MOVEMENT OF WATER THROUGH PIPES.	ALL VEGETATION REMOVED SO WATER FLOWS FREELY THROUGH PIPES.
	DAMAGED	PROTECTIVE COATING IS DAMAGED; RUST IS CAUSING MORE THAN 50% DETERIORATION TO ANY PART OF PIPE.	PIPE REPAIRED OR REPLACED.
		ANY DENT THAT DECREASES THE CROSS SECTION AREA OF PIPE BY MORE THAN 20%.	PIPE REPAIRED OR REPLACED.
	TRASH & DEBRIS	TRASH AND DEBRIS EXCEEDS 1 CUBIC FOOT PER 1,000 SQUARE FEET OF DITCH AND SLOPES.	TRASH AND DEBRIS CLEARED FROM DITCHES.
OPEN DITCHES	SEDIMENT	ACCUMULATED SEDIMENT THAT EXCEEDS 20% OF THE DESIGN DEPTH.	DITCH CLEANED/ FLUSHED OF ALL SEDIMENT AND DEBRIS SO THAT IT MATCHES DESIGN.
	VEGETATION	VEGETATION THAT REDUCES FREE MOVEMENT OF WATER THROUGH DITCHES.	WATER FLOWS FREELY THROUGH DITCHES.
	EROSION DAMAGE TO	SEE "PONDS" STANDARD NO. 1	SEE "PONDS" STANDARD NO. 1

	SLOPES		
	ROCK LINING OUT OF PLACE OR MISSING (IF APPLICABLE)	MAINTENANCE PERSON CAN SEE NATIVE SOIL BENEATH THE ROCK LINING.	REPLACE ROCKS TO DESIGN STANDARD.
CATCH BASINS		SEE "CATCH BASINS" STANDARD NO. 5	SEE "CATCH BASINS" STANDARD NO. 5
DEBRIS BARRIER E.G. TRASH RACK		SEE "DEBRIS BARRIERS" STANDARD NO. 6	

MAINTENANCE COMPONENT

GENERAL	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
	WEEDS (NONPOISONOUS)	WEEDS GROWING IN MORE THAN 20% OF THE LAND-SCAPED AREA (TREES AND SHRUBS ONLY).	WEEDS PRESENT IN LESS THAN 5% OF THE LANDSCAPED AREA.
	SAFETY HAZARD	ANY PRESENCE OF POISON IVY OR OTHER POISONOUS VEGETATION.	NO POISONOUS VEGETATION PRESENT IN A LANDSCAPED AREA.
	TRASH OR LITTER	PAPER, CAN, BOTTLES, TOTALING MORE THAN 1 CUBIC FOOT WITHIN A LANDSCAPED AREA (TREES AND SHRUBS ONLY) OF 1,000 SQUARE FEET.	AREA CLEAR OF LITTER.
	DAMAGE	LIMBS OR PARTS OF TREES OR SHRUBS THAT ARE SPLIT OR BROKEN WHICH AFFECT MORE THAN 25% OF THE TOTAL FOLIAGE OF THE TREE OR SHRUB.	TREES AND SHRUBS WITH LESS THAN 5% OF THE TOTAL FOLIAGE WITH SPLIT OR BROKEN LIMBS.
TREES AND SHRUBS		TREES OR SHRUBS THAT HAVE BEEN BLOWN DOWN OR KNOCKED OVER.	TREE OR SHRUB IN PLACE FREE OF INJURY.
		TREES OR SHRUBS WHICH ARE NOT ADEQUATELY SUPPORTED OR ARE LEANING OVER, CAUSING EXPOSURE OF THE ROOTS.	TREE OR SHRUB IN PLACE AND ADEQUATELY SUPPORTED; REMOVE ANY DEAD OR DISEASED TREES.