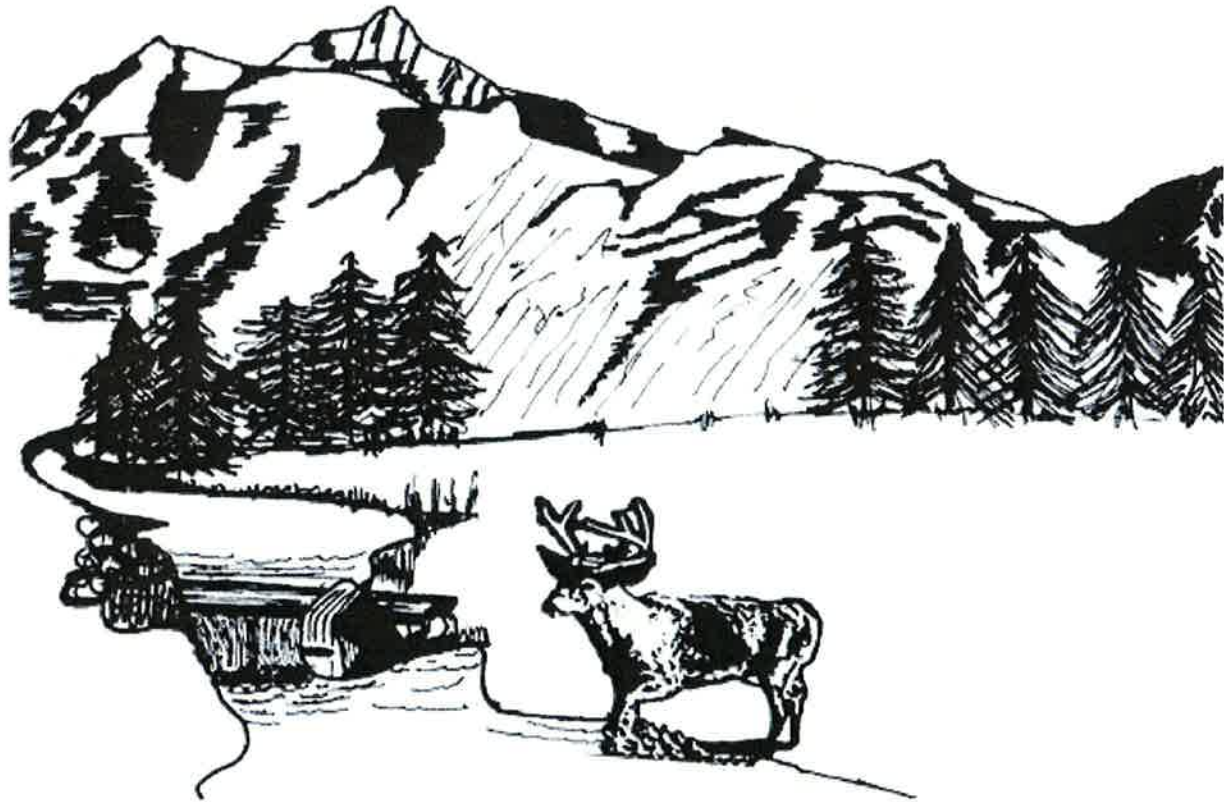

Drainage Report For:

**4-Lot Short Plat
Grandview North – File Number:**

January 12, 2005



RECEIVED

JAN 25 2005

COA PLANNING DEPT

Z-05-008-SP

RECEIVED
JAN 28 2005

Utilities Div.



EXPIRES: 01/01/06

Prepared by:
Cascade Surveying & Eng., Inc

Job #16005

Project Summary

Erosion Control Risk Assessment

Upstream & Downstream Analysis

Stream Bank Erosion Control & Water Quality BMP's

Appendix

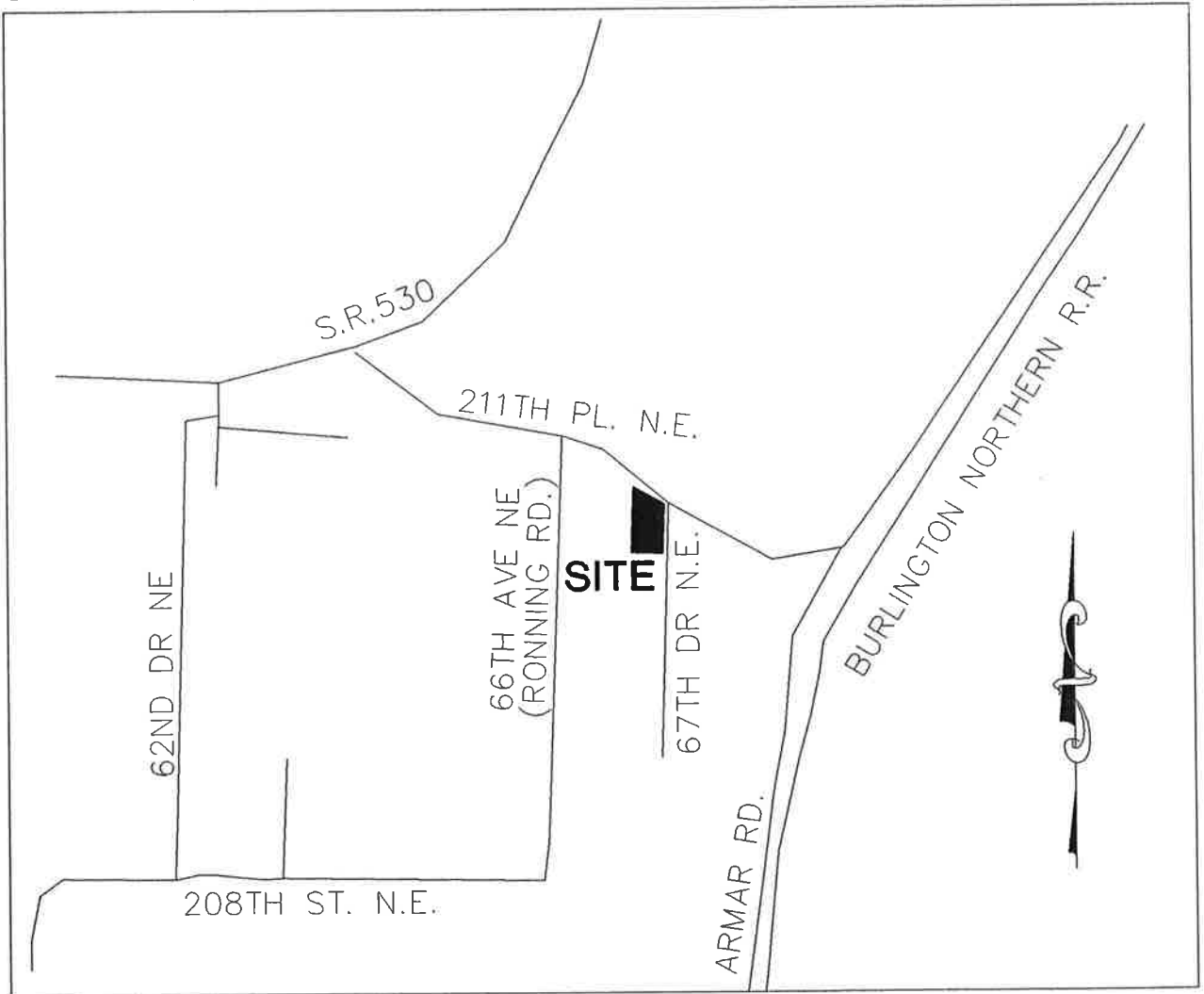
Basin & Soil Log Map
Infiltration Trench Detail
Drainage Calculations
Maintenance Requirements

PROJECT SUMMARY

PROPERTY DESCRIPTION

The site of proposed development is located in the NW ¼ of the SW ¼ of Section 11, Township 31 N, Range 5E, W.M. The properties tax number is 310511-003-009-00. The property is 1.07 acres in size (See Vicinity Map below).

Figure 1: Vicinity Map



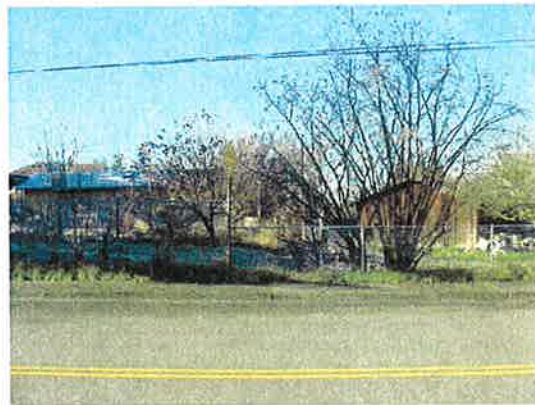
NOT TO SCALE

EXISTING CONDITIONS

The property currently has the following impervious areas: two houses, two carports, two sheds and circular driveway. These impervious areas total 7,185 square feet. The rest of the property is pervious area consisting of lawns with a couple of evergreen and numerous deciduous trees on the site. The property is bounded on the North and East by public right of way (211th PINE and 67th Avenue NE). The southern half of the property is virtually flat with a 102 foot elevation. The middle of the property has an approximately 4% slope to the north and drops from 102 foot to 98 foot elevation. The northern part of the property is relatively flat with a 98 foot elevation. According to the Snohomish County SCC, the site has very deep gravels and sands (Everett gravelly sandy loam). Four soil log test pits were dug on November 24, 2004 at the locations shown on Figure 2, page 9. The soil logs confirm that the soils are gravelly sandy loam with roots encountered from 63 to 90 inches and a water table in excess of 10 feet. Rain water infiltrates directly into the ground with no significant lateral movement.



VIEW 1: Looking West as lots 3 and 4.



VIEW 2: Looking west at lot 2.



VIEW 3: Looking west at lots 1 and 2.



VIEW 4: Looking south-west at lots 2-4.

PROPOSED DEVELOPMENT

The proposal is to subdivide the property into four lots. Lot 1 would have the following impervious areas: the existing house, a new garage and a new driveway coming off of 67th Avenue NE. The existing carport and circular driveway will be removed. This will result in a net loss in impervious area. Lot 1 will have 11,465 sq. ft. Lots 2 through 4 will each have a duplex (10,815 X 35% = 3,785 sq. ft. maximum building impervious), a driveway and parking area for a maximum total of 4,500 sq. ft. per lot. Water Quality and Water Quantity control will be provided by infiltration. Each lot will have infiltration trenches sized to support runoff generated by the maximum impervious area per lot plus the remaining pervious areas. Due to the sandy soil conditions, each lot will have two trenches. All driving surfaces will be graded to a slot drain and piped to a water quality trench that will be lined with a minimum 18 inches of loamy sand for stormwater treatment during the infiltration process. The water quality trench will be sized to handle the six month storm event. Any additional run off from the driving surfaces will overflow the water quality trench and flow directly into the infiltration trench. Roof downspouts will be piped directly to the infiltration trench. See Infiltration Trench Plan, Figure 2, Page 9, and Infiltration Detail, Figure 3, Page 10.

SOIL LOGS:

SL-A:

0-18" Brown Sandy Loam
18-26" Stained Gravelly Medium Sand
26-120"+ Gray Gravelly Medium Sand
 Roots at 72"

SL-B:

0-20" Brown Sandy Loam
20-60" Gray Medium Sand
60-120"+ Gray Gravelly Medium Sand
 Roots at 90"

SL-C:

0-40" Brown Gravelly Loamy Sand
40-55" Light Gray Loamy Sand
55-120"+ Gray Gravelly Medium Sand
 Roots at 63"

SL-D:

0-52" Brown Loamy Gravelly Sand
52-77" Tan Cemented Gravelly Silty Medium Sand
77-120"+ Gray Gravelly Medium Sand
 Roots at 78"

RISK ASSESSMENT ANALYSIS AND REOSION CONTROL

Slope: Site slopes are 0-1% and 3-4%, risk is low.

Critical Areas: None.

Soils: Soils consist of:
Everett Gravelly Sandy Loam, 0 to 1%

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. plan)

After Construction: Seeding and planting of exposed soils

Nearest Downstream body of water other than road ditches: Marsh Creek $\pm 1/4$ mile

Nearest fish bearing water: Stillaguamish River

Conclusion: Potential for significant erosion/siltation impact onsite is **LOW**.

Because of the following reasons:

1. Site slopes are nearly flat in the area of proposed development.
2. Soil permeability is good.
3. Available water capacity of the soil is good.

UPSTREAM & DOWNSTREAM ANALYSIS

UPSTREAM ANALYSIS

The Everett gravelly sandy loam soils group is good for building sites. The site is relatively flat with about a 1% slope. The contours of the adjacent properties are parallel to the site and do not allow any upstream water to run onto the property in a concentrated flow. All onsite water is from rainfall.

DOWNSTREAM ANALYSIS

Since infiltration is being proposed for this site, there is no downstream receiving water. Therefore, a downstream analysis is not necessary.

In the event of trench failure, stormwater will back up in the trench, into the catch basin and out the top. The stormwater will then infiltrate into the ground through the native soils.

STREAMBANK EROSION CONTROL & WATER QUALITY BEST MANAGEMENT PLANS

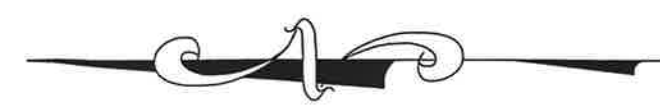
STREAMBANK EROSION CONTROL AND WATER QUALITY BMP'S

The streambank erosion control and water quality BMP's proposed for this site is infiltration. Each lot will have two trenches, a trench to treat runoff in need of water quality treatment and a straight infiltration trench for all other runoff. The water quality trench is only sized to treat the 6-month runoff volume. During larger storm events, what water that cannot be infiltrated by the water quality trench will be directed to the other trench where the infiltration rate of the native sandy soils is much more rapid. The water quality trench for lots 2-4 will be 2 x 20-ft. x 2-ft deep and 2 x 15-ft. x 2-ft. for lot 1. All water quality trenches will be lined on the bottom with a minimum of 18" of loamy sand. The infiltration trench will be 4 x 45-ft. x 2-ft. deep for lots 2-4 and 4 x 40-ft. x 2-ft. deep for lot 1. All trenches will be back filled with drain rock. 30% voids (32% with piping factored in for infiltration trenches and 33% for water quality trenches) were assumed in modeling the systems. The infiltration trenches have been sized to retain the 100-yr storm runoff generated by the drainage basin. In modeling the storm drainage facility, an infiltration rate of 10.00 in/hr (half the D.O.E. rate for gravely medium sand, 20.0 in/hr) was used for the native soils and an infiltration rate of 1.205 in/hr (half the D.O.E. rate for loamy sand, 2.41 in/hr) was used for the lined trenches.

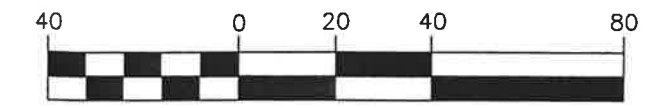
DRAINAGE MODEL SUMMARY

The storm drainage modeling software used is StormSHED Release 6.1.6.8. Key elevations are shown on the Elevation Chart on page 10.

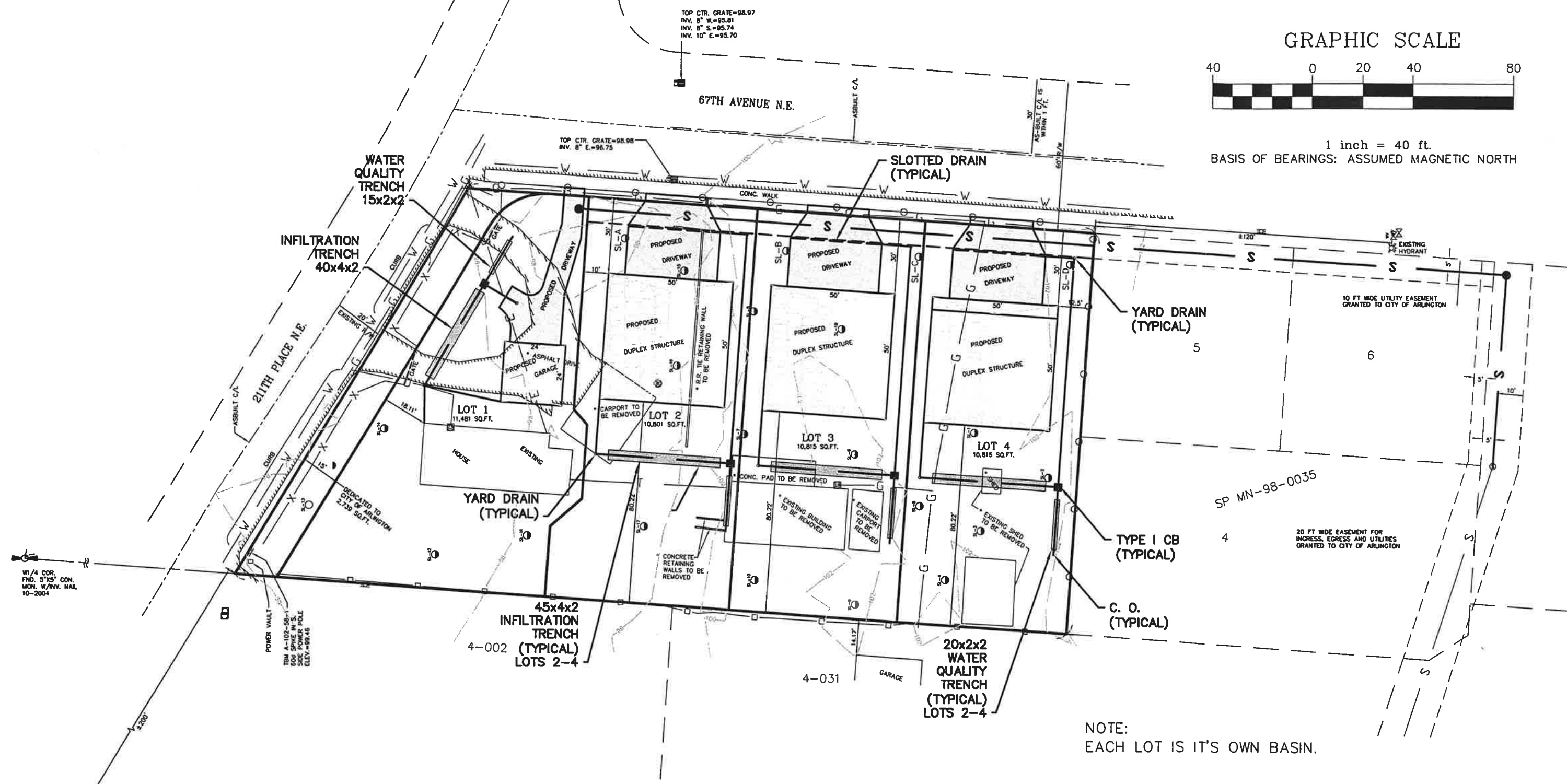
APPENDIX



GRAPHIC SCALE



1 inch = 40 ft.
BASIS OF BEARINGS: ASSUMED MAGNETIC NORTH



W1/4 COR.
FND. 3"x3" CON.
MON. W/RY. WALL
10-2004

POWER VAULT
TRM A-102-98-11
600V SPINE IN S.
SIDE POWER POLE
ELEV.=99.45

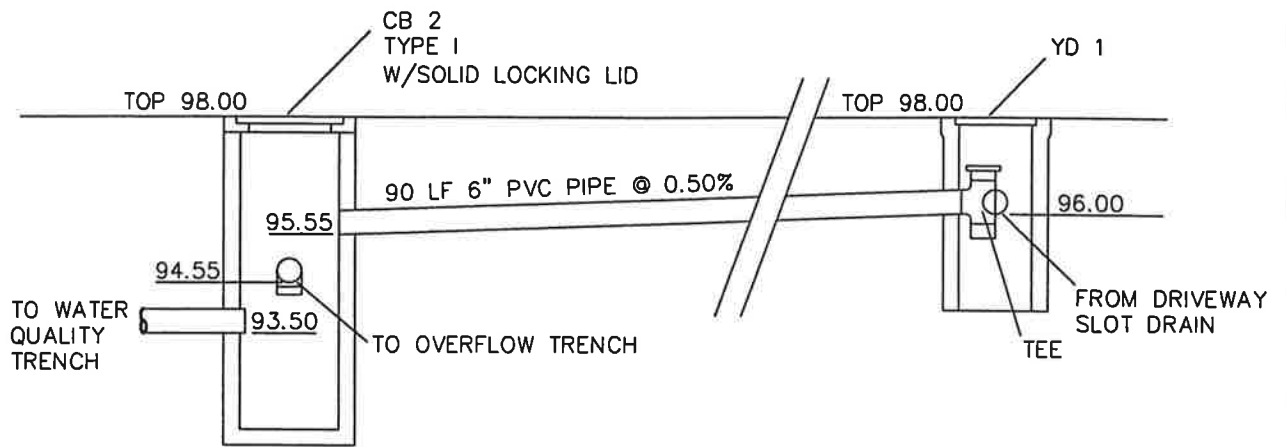
DEDICATED TO
CITY OF ARLINGTON
2,739 SQ.FT.

45x4x2
INFILTRATION
TRENCH
(TYPICAL)
4-002
LOTS 2-4

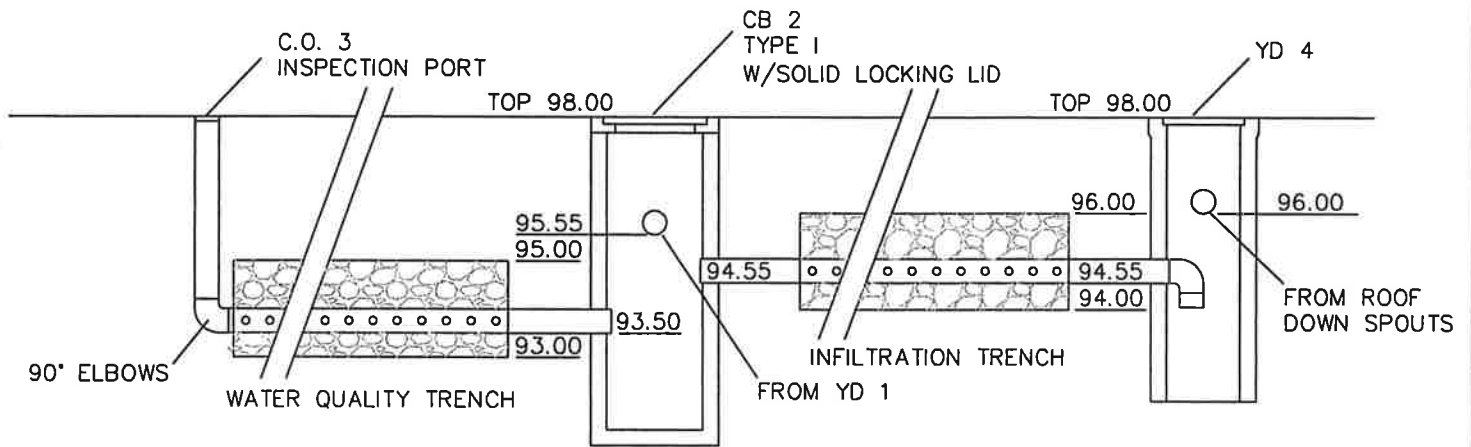
20x2x2
WATER
QUALITY
TRENCH
(TYPICAL)
LOTS 2-4

NOTE:
EACH LOT IS IT'S OWN BASIN.

INFILTRATION PLAN
FIGURE 2



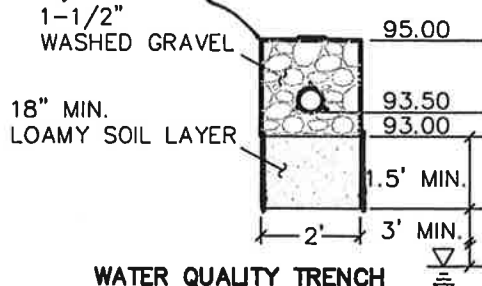
SECTION A-A'



SECTION B-B'

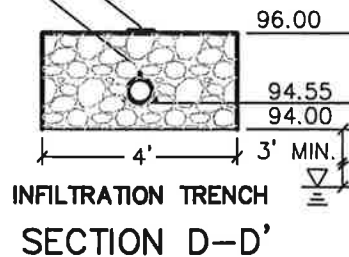
MIRAFI 140 FILTER FABRIC OVER TOP AND SIDES OF TRENCH ONLY (NONE ON TRENCH BOTTOM). 1' MIN. OVERLAP

PLASTIC LINER



WATER QUALITY TRENCH
SECTION C-C'

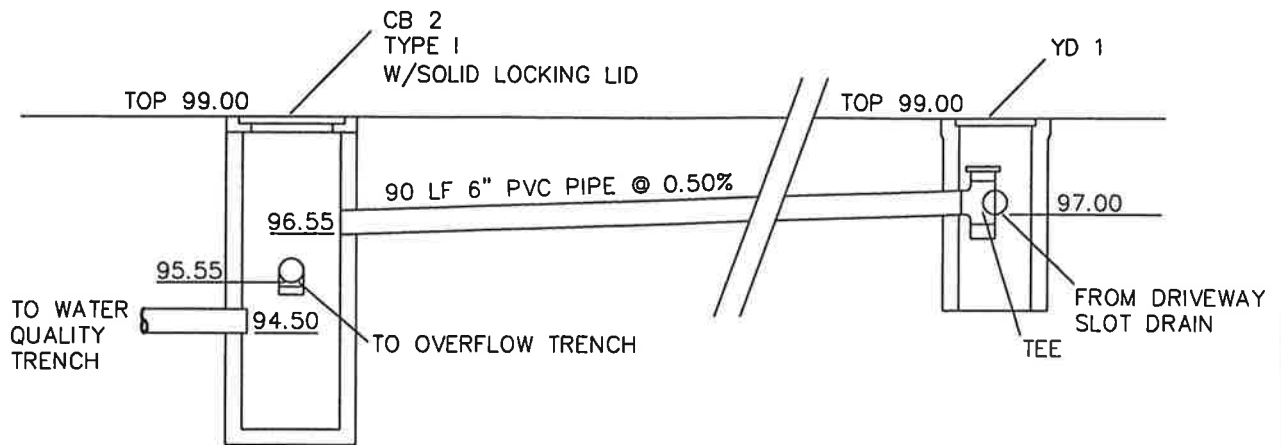
6: DIA. PERF. PIPE @ 0.0%



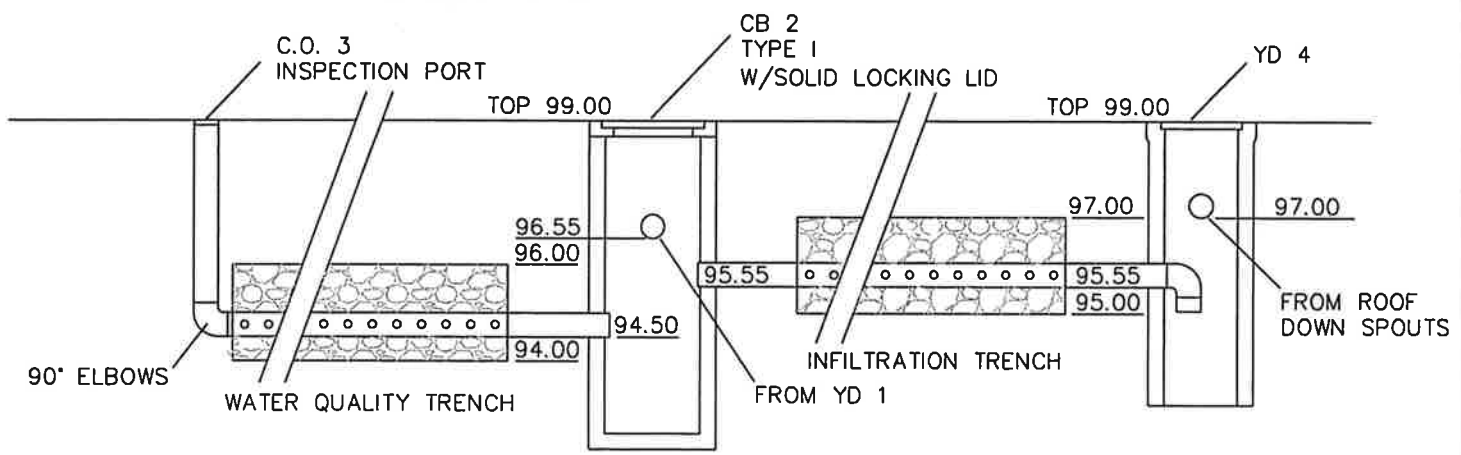
INFILTRATION TRENCH
SECTION D-D'

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LOT 1
INFILTRATION TRENCH DETAIL
FIGURE 3-1

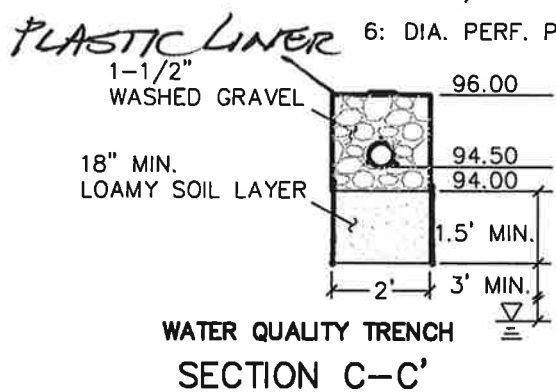


SECTION A-A'

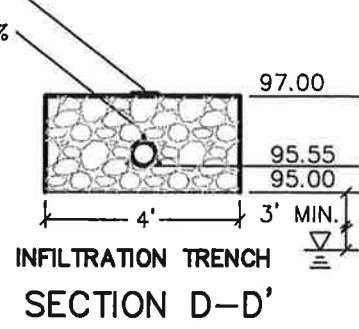


SECTION B-B'

MIRAFI 140 FILTER FABRIC OVER TOP AND SIDES OF TRENCH ONLY (NONE ON TRENCH BOTTOM). 1' MIN. OVERLAP



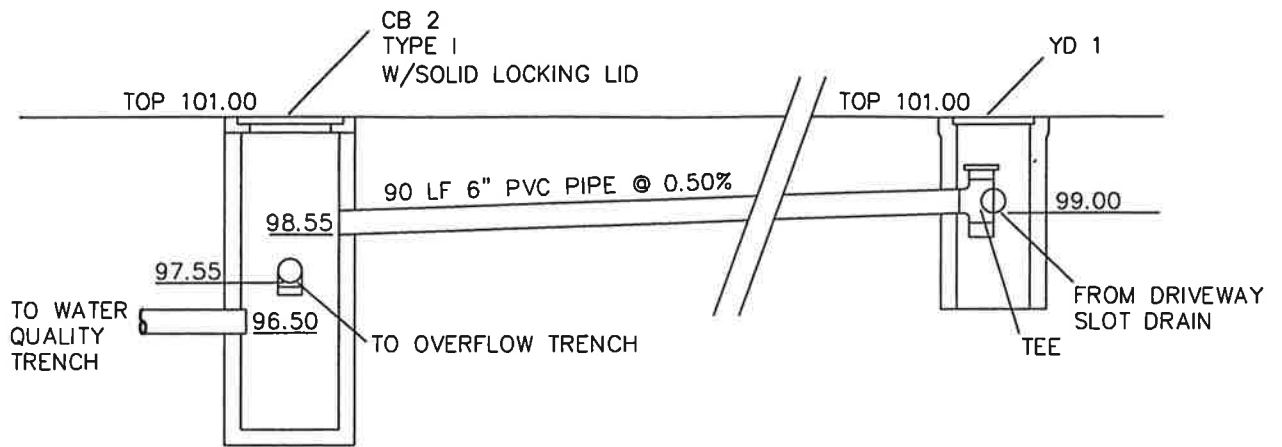
SECTION C-C'



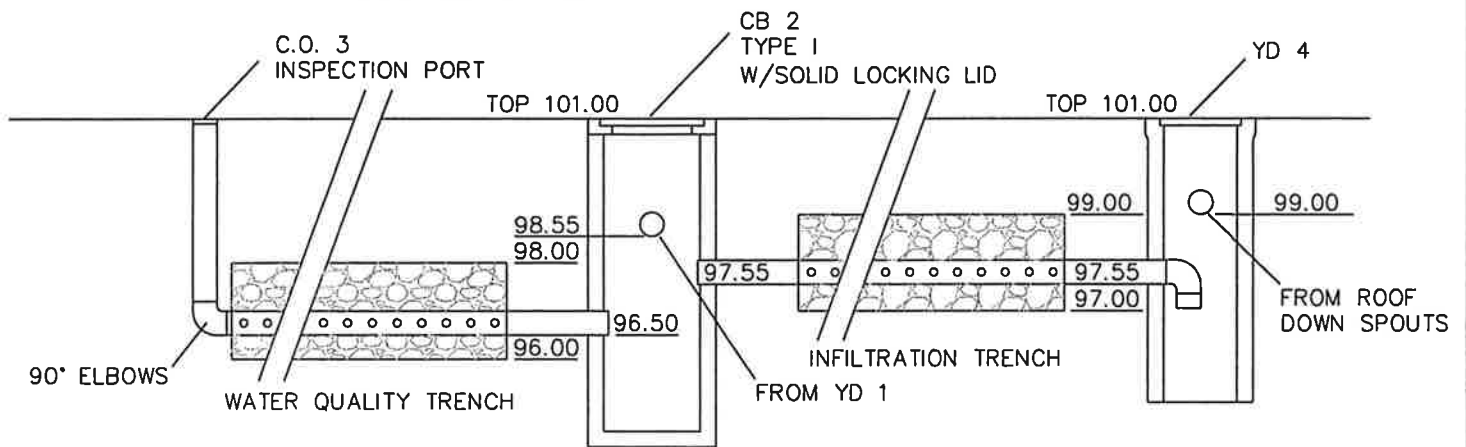
SECTION D-D'

SCALE:
 HORIZONTAL: 1" = 40'
 VERTICAL: 1" = 4'

LOT 2
INFILTRATION TRENCH DETAIL
FIGURE 3-2



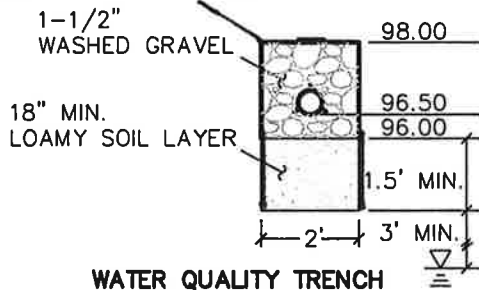
SECTION A-A'



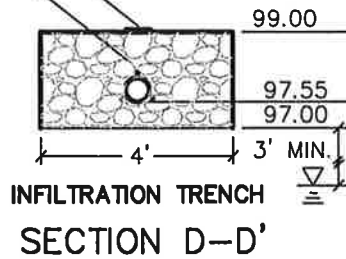
SECTION B-B'

MIRAFI 140 FILTER FABRIC OVER TOP AND SIDES OF TRENCH ONLY (NONE ON TRENCH BOTTOM). 1' MIN. OVERLAP

PLASTIC LINER



WATER QUALITY TRENCH
SECTION C-C'

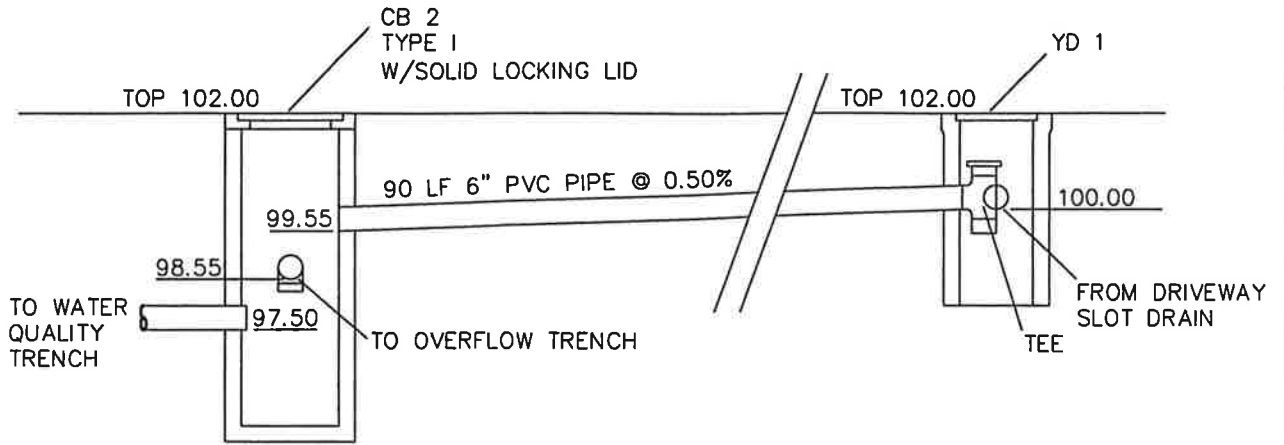


INFILTRATION TRENCH
SECTION D-D'

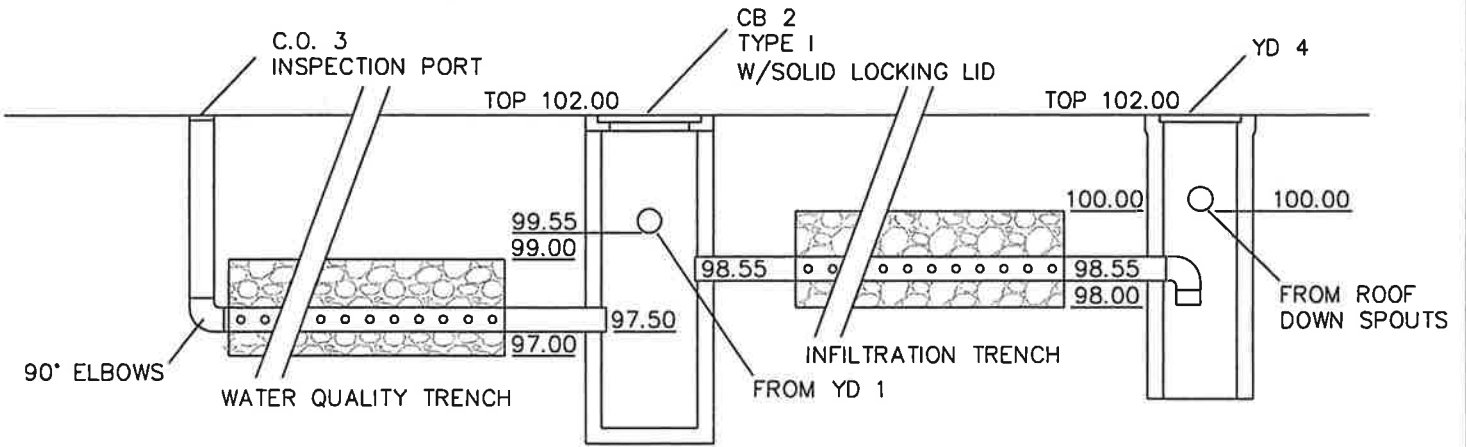
SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LOT 3 INFILTRATION TRENCH DETAIL

FIGURE 3-3

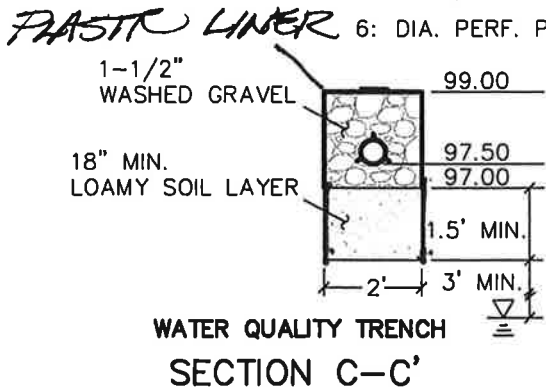


SECTION A-A'

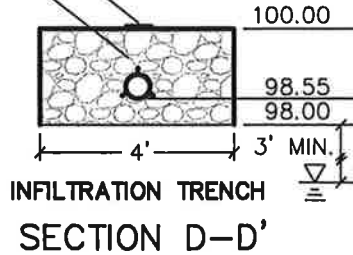


SECTION B-B'

MIRAFI 140 FILTER FABRIC OVER TOP AND SIDES OF TRENCH ONLY (NONE ON TRENCH BOTTOM). 1' MIN. OVERLAP



WATER QUALITY TRENCH
SECTION C-C'



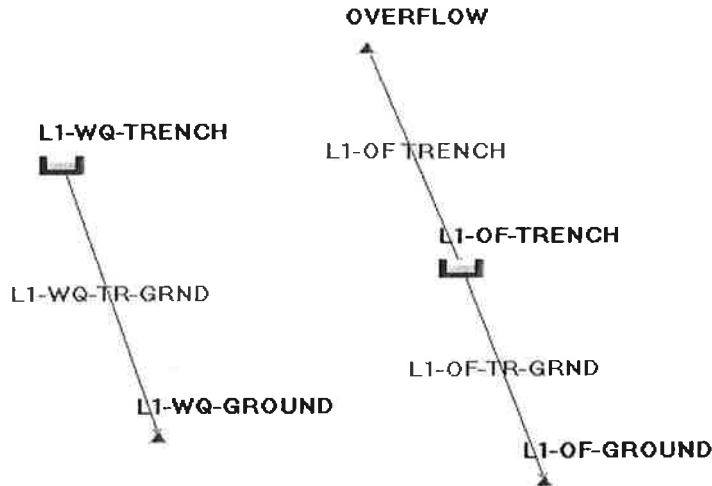
INFILTRATION TRENCH
SECTION D-D'

SCALE:
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 4'

LOT 4
INFILTRATION TRENCH DETAIL
FIGURE 3-4

DRAINAGE CALCULATIONS FOR LOT 1

DRAINAGE MODEL REPORT



Project Precip

[6 mo]	1.15 in
[2 yr]	1.80 in
[10 yr]	2.75 in
[100 yr]	3.75 in
[0]	0.00 in
[0]	0.00 in

Reach Records

Reach ID: L1-OF TRENCH

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		
OVERFLOW	L1-OF-TRENCH		94.7500 ft	94.7490 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
0.0575 ac	0.0336 cf	1560.3243 cf	6.1628 ft/s	0.0161 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.294878 ft	0.589756 ft	0.000000 ft	95.5945 ft	

Reach ID: L1-OF-TR-GRND**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 %	Groove End Projecting		
Diam				
4.0000 ft				
Up Node	Dn Node	Up Invert	Dn Invert	
L1-OF-TRENCH	L1-OF-GROUND		94.0000 ft	93.9990 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
0.2505 ac	0.0370 cf	1560.3243 cf	6.2247 ft/s	0.0171 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.120332 ft	0.601658 ft	0.000000 ft	94.0537 ft	

Reach ID: L1-WQ-TR-GRND**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 %	Groove End Projecting		
Diam				
4.0000 ft				
Up Node	Dn Node	Up Invert	Dn Invert	
L1-WQ-TRENCH		L1-WQ-GROUND	93.0000 ft	92.9990 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
0.0115 ac	0.0008 cf	1560.3243 cf	1.2857 ft/s	0.0039 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.005134 ft	0.025668 ft	0.000000 ft	93.0303 ft	

Node Records

Node ID: L1-OF-GROUND

Desc: L1 OVERFLOW TRENCH TO GROUND
Start El: 94.0000 ft Max El: 96.0000 ft
Contrib Basin: Contrib Hyd:
Hgl Elev: 94.0537 ft

Node ID: L1-OF-TRENCH

Desc: LOT 1 OVERFLOW TRENCH
Start El: 94.0000 ft Max El: 96.0000 ft
Contrib Basin: L1-SITE Contrib Hyd:
Hgl Elev: 95.5945 ft
Storage Id: L1-OF-STORAGE Discharge Id: L1-OF-MED SAND

Node ID: L1-OF-STORAGE

Desc: LOT 1 - OVERFLOW TRENCH
Start El: 94.0000 ft Max El: 96.0000 ft
Contrib Basin: Contrib Hyd:
Length Width Void Ratio
40.0000 ft 4.0000 ft 32.00
Bottom area only with infiltration

Control Structure ID: L1-OF-MED SAND - Infiltration control structure

Descrip: MEDIUM SAND LAYER
Start El Max El Increment
94.0000 ft 105.0000 ft 0.10
Infil: 10.00 in/hr Multiplier: 1.00

Node ID: L1-WQ-GROUND

Desc: LOT 1 - BOTTOM OF WQ TRENCH
Start El: 93.0000 ft Max El: 95.0000 ft
Contrib Basin: Contrib Hyd:
Hgl Elev: 93.0303 ft

Node ID: L1-WQ-TRENCH

Desc: LOT 1 WQ TRENCH
Start El: 93.0000 ft Max El: 95.0000 ft
Contrib Basin: L1-DRIVE Contrib Hyd:
Hgl Elev: 94.8054 ft
Storage Id: L1-WQ-STORAGE Discharge Id: L1-COMBO

Node ID: L1-WQ-STORAGE

Desc: LOT 1 - WATER QUALITY TRENCH
Start El: 93.0000 ft Max El: 95.0000 ft
Contrib Basin: Contrib Hyd:
Length Width Void Ratio
15.0000 ft 2.0000 ft 33.00
Bottom area only with infiltration

Control Structure ID: L1-COMBO - Combination Control Structure

Start El	Max El	Increment	
93.0000 ft	105.0000 ft	0.10	
ID List:	L1-WQ-LOAMY SAND	OVERFLOW	
Split:	Split OutHyd into component hydrographs.		

Control Structure ID: L1-WQ-LOAMY SAND - Infiltration control structure

Descrip:	LOAMY SAND LAYER		
Start El	Max El	Increment	
93.0000 ft	105.0000 ft	0.10	
Infil:	1.21 in/hr	Multiplier:	1.00

Control Structure ID: OVERFLOW - Vertical oriented orifice

Start El	Max El	Increment	
94.7500 ft	95.2500 ft	0.10	
Weir Area:	0.1963 sf	Coefficient:	0.6100

Node ID: OVERFLOW

Start El:	94.7500 ft	Max El:	108.0000 ft
Contrib Basin:		Contrib Hyd:	
Hgl Elev:	96.4791 ft		

Contributing Drainage Areas

Drainage Area: L1-DRIVE

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	0.0500 ac	68.00	0.09 hrs
Impervious	0.0190 ac	98.00	0.02 hrs
Total	0.0690 ac		

Supporting Data:

Pervious CN Data:

LAWN/LANDSCAPE	68.00	0.0500 ac
----------------	-------	-----------

Impervious CN Data:

DRIVEWAY	98.00	0.0190 ac
----------	-------	-----------

Pervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS LAWN	25.00 ft	1.00%	0.1500	5.69 min

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS DRIVEWAY	45.00 ft	1.00%	0.0110	1.13 min

Drainage Area: L1-SITE

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	0.1480 ac	68.00	0.20 hrs
Impervious	0.0450 ac	98.00	0.02 hrs
Total	0.1930 ac		

Supporting Data:

Pervious CN Data:

LAWN/LANDSCAPE	68.00	0.1480 ac
----------------	-------	-----------

Impervious CN Data:

HOUSE & GARAGE	98.00	0.0450 ac
----------------	-------	-----------

Pervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS LAWN	65.00 ft	1.00%	0.1500	12.21 min

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS DUPLEX ROOF	50.00 ft	2.00%	0.0110	0.93 min

Layout Hydrographs

Hydrograph ID: L1-OF-GROUND - 100 yr

Area: 0.2505 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Time: 2.17 hrs		Hyd Vol: 0.0352 acft	
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
0.83	0.0000	9.00	0.0370	17.00	0.0000
1.00	0.0000	9.17	0.0370	17.17	0.0370
1.17	0.0000	9.33	0.0370	17.33	0.0000
1.33	0.0000	9.50	0.0370	17.50	0.0370
1.50	0.0000	9.67	0.0370	17.67	0.0000
1.67	0.0000	9.83	0.0370	17.83	0.0000
1.83	0.0000	10.00	0.0370	18.00	0.0370
2.00	0.0000	10.17	0.0370	18.17	0.0000
2.17	0.0370	10.33	0.0370	18.33	0.0370
2.33	0.0000	10.50	0.0370	18.50	0.0000
2.50	0.0000	10.67	0.0370	18.67	0.0370
2.67	0.0000	10.83	0.0370	18.83	0.0000
2.83	0.0000	11.00	0.0370	19.00	0.0370
3.00	0.0000	11.17	0.0000	19.17	0.0000
3.17	0.0370	11.33	0.0370	19.33	0.0000
3.33	0.0000	11.50	0.0370	19.50	0.0370
3.50	0.0000	11.67	0.0000	19.67	0.0000
3.67	0.0000	11.83	0.0370	19.83	0.0370
3.83	0.0000	12.00	0.0000	20.00	0.0000
4.00	0.0370	12.17	0.0370	20.17	0.0370
4.17	0.0000	12.33	0.0370	20.33	0.0000
4.33	0.0000	12.50	0.0000	20.50	0.0000
4.50	0.0000	12.67	0.0370	20.67	0.0370
4.67	0.0000	12.83	0.0000	20.83	0.0000
4.83	0.0370	13.00	0.0370	21.00	0.0370
5.00	0.0000	13.17	0.0000	21.17	0.0000
5.17	0.0000	13.33	0.0370	21.33	0.0370
5.33	0.0000	13.50	0.0000	21.50	0.0000
5.50	0.0370	13.67	0.0370	21.67	0.0000
5.67	0.0000	13.83	0.0370	21.83	0.0370
5.83	0.0000	14.00	0.0000	22.00	0.0000
6.00	0.0370	14.17	0.0370	22.17	0.0370
6.17	0.0000	14.33	0.0000	22.33	0.0000
6.33	0.0000	14.50	0.0370	22.50	0.0000
6.50	0.0370	14.67	0.0000	22.67	0.0370
6.67	0.0000	14.83	0.0370	22.83	0.0000
6.83	0.0000	15.00	0.0000	23.00	0.0370
7.00	0.0370	15.17	0.0370	23.17	0.0000
7.17	0.0000	15.33	0.0000	23.33	0.0000
7.33	0.0370	15.50	0.0370	23.50	0.0370
7.50	0.0370	15.67	0.0000	23.67	0.0000
7.67	0.0370	15.83	0.0370	23.83	0.0370
7.83	0.0370	16.00	0.0000	24.00	0.0000
8.00	0.0370	16.17	0.0370	24.17	0.0000
8.17	0.0370	16.33	0.0000	24.33	0.0000
8.33	0.0370	16.50	0.0370	24.50	0.0366
8.50	0.0370	16.67	0.0000	24.67	0.0000
8.67	0.0370	16.83	0.0370	24.83	0.0000
8.83	0.0370	17.00	0.0000	25.00	0.0000

Hydrograph ID: L1-OF-GROUND - 6 mo

Area: 0.1930 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Flow: 0.0370 cfs		Peak Time: 5.50 hrs	
Time	Flow	Time	Flow	Hyd Vol:	0.0056 acft
hr	cfs	hr	cfs	Time	Flow
				hr	cfs
2.00	0.0000	9.50	0.0000	16.83	0.0000
2.17	0.0000	9.67	0.0370	17.00	0.0000
2.33	0.0000	9.83	0.0000	17.17	0.0367
2.50	0.0000	10.00	0.0000	17.33	0.0000
2.67	0.0000	10.17	0.0000	17.50	0.0000
2.83	0.0000	10.33	0.0000	17.67	0.0000
3.00	0.0000	10.50	0.0000	17.83	0.0000
3.17	0.0000	10.67	0.0000	18.00	0.0000
3.33	0.0000	10.83	0.0000	18.17	0.0000
3.50	0.0000	11.00	0.0000	18.33	0.0000
3.67	0.0000	11.17	0.0370	18.50	0.0000
3.83	0.0000	11.33	0.0000	18.67	0.0000
4.00	0.0000	11.50	0.0000	18.83	0.0000
4.17	0.0000	11.67	0.0000	19.00	0.0000
4.33	0.0000	11.83	0.0000	19.17	0.0000
4.50	0.0000	12.00	0.0000	19.33	0.0000
4.67	0.0000	12.17	0.0000	19.50	0.0000
4.83	0.0000	12.33	0.0000	19.67	0.0370
5.00	0.0000	12.50	0.0000	19.83	0.0000
5.17	0.0000	12.67	0.0000	20.00	0.0000
5.33	0.0000	12.83	0.0000	20.17	0.0000
5.50	0.0370	13.00	0.0370	20.33	0.0000
5.67	0.0000	13.17	0.0000	20.50	0.0000
5.83	0.0000	13.33	0.0000	20.67	0.0000
6.00	0.0000	13.50	0.0000	20.83	0.0000
6.17	0.0000	13.67	0.0000	21.00	0.0000
6.33	0.0000	13.83	0.0000	21.17	0.0000
6.50	0.0000	14.00	0.0000	21.33	0.0000
6.67	0.0000	14.17	0.0000	21.50	0.0000
6.83	0.0000	14.33	0.0000	21.67	0.0000
7.00	0.0370	14.50	0.0000	21.83	0.0000
7.17	0.0000	14.67	0.0000	22.00	0.0369
7.33	0.0000	14.83	0.0000	22.17	0.0000
7.50	0.0000	15.00	0.0370	22.33	0.0000
7.67	0.0000	15.17	0.0000	22.50	0.0000
7.83	0.0370	15.33	0.0000	22.67	0.0000
8.00	0.0000	15.50	0.0000	22.83	0.0000
8.17	0.0000	15.67	0.0000	23.00	0.0000
8.33	0.0000	15.83	0.0000	23.17	0.0000
8.50	0.0370	16.00	0.0000	23.33	0.0000
8.67	0.0000	16.17	0.0000	23.50	0.0000
8.83	0.0000	16.33	0.0000	23.67	0.0000
9.00	0.0000	16.50	0.0000	23.83	0.0000
9.17	0.0000	16.67	0.0000	24.00	0.0000
9.33	0.0000	16.83	0.0000	24.17	0.0000

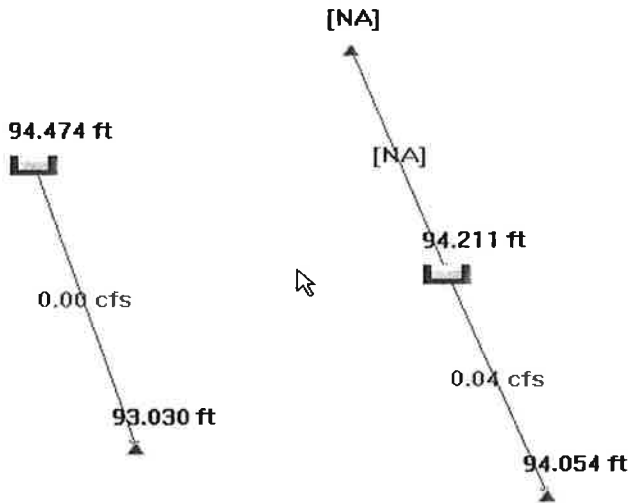
Hydrograph ID: L1-WQ-GROUND - 100 yr

Area: 0.0115 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Flow: 0.0008 cfs		Peak Time: 1.17 hrs	
Time	Flow	Time	Flow	Hyd Vol:	0.0016 acft
hr	cfs	hr	cfs	Time	Flow
				hr	cfs
1.00	0.0000	8.83	0.0008	16.50	0.0008
1.17	0.0008	9.00	0.0008	16.67	0.0008
1.33	0.0008	9.17	0.0008	16.83	0.0008
1.50	0.0008	9.33	0.0008	17.00	0.0008
1.67	0.0008	9.50	0.0008	17.17	0.0008
1.83	0.0008	9.67	0.0008	17.33	0.0008
2.00	0.0008	9.83	0.0008	17.50	0.0008
2.17	0.0008	10.00	0.0008	17.67	0.0008
2.33	0.0008	10.17	0.0008	17.83	0.0008
2.50	0.0008	10.33	0.0008	18.00	0.0008
2.67	0.0008	10.50	0.0008	18.17	0.0008
2.83	0.0008	10.67	0.0008	18.33	0.0008
3.00	0.0008	10.83	0.0008	18.50	0.0008
3.17	0.0008	11.00	0.0008	18.67	0.0008
3.33	0.0008	11.17	0.0008	18.83	0.0008
3.50	0.0008	11.33	0.0008	19.00	0.0008
3.67	0.0008	11.50	0.0008	19.17	0.0008
3.83	0.0008	11.67	0.0008	19.33	0.0008
4.00	0.0008	11.83	0.0008	19.50	0.0008
4.17	0.0008	12.00	0.0008	19.67	0.0008
4.33	0.0008	12.17	0.0008	19.83	0.0008
4.50	0.0008	12.33	0.0008	20.00	0.0008
4.67	0.0008	12.50	0.0008	20.17	0.0008
4.83	0.0008	12.67	0.0008	20.33	0.0008
5.00	0.0008	12.83	0.0008	20.50	0.0008
5.17	0.0008	13.00	0.0008	20.67	0.0008
5.33	0.0008	13.17	0.0008	20.83	0.0008
5.50	0.0008	13.33	0.0008	21.00	0.0008
5.67	0.0008	13.50	0.0008	21.17	0.0008
5.83	0.0008	13.67	0.0008	21.33	0.0008
6.00	0.0008	13.83	0.0008	21.50	0.0008
6.17	0.0008	14.00	0.0008	21.67	0.0008
6.33	0.0008	14.17	0.0008	21.83	0.0008
6.50	0.0008	14.33	0.0008	22.00	0.0008
6.67	0.0008	14.50	0.0008	22.17	0.0008
6.83	0.0008	14.67	0.0008	22.33	0.0008
7.00	0.0008	14.83	0.0008	22.50	0.0008
7.17	0.0008	15.00	0.0008	22.67	0.0008
7.33	0.0008	15.17	0.0008	22.83	0.0008
7.50	0.0008	15.33	0.0008	23.00	0.0008
7.67	0.0008	15.50	0.0008	23.17	0.0008
7.83	0.0008	15.67	0.0008	23.33	0.0008
8.00	0.0008	15.83	0.0008	23.50	0.0008
8.17	0.0008	16.00	0.0008	23.67	0.0008
8.33	0.0008	16.17	0.0008	23.83	0.0008
8.50	0.0008	16.33	0.0008	24.00	0.0008
8.67	0.0008	16.50	0.0008	24.17	0.0008

Hydrograph ID: L1-WQ-GROUND - 6 mo

Area: 0.0690 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min		Peak Flow: 0.0008 cfs		Peak Time: 2.83 hrs	
Hyd Vol: 0.0014 acft		Time		Flow	
hr	cfs	hr	cfs	hr	cfs
2.33	0.0000	9.67	0.0008	16.83	0.0008
2.50	0.0000	9.83	0.0008	17.00	0.0008
2.67	0.0000	10.00	0.0008	17.17	0.0008
2.83	0.0008	10.17	0.0008	17.33	0.0008
3.00	0.0000	10.33	0.0008	17.50	0.0008
3.17	0.0000	10.50	0.0008	17.67	0.0008
3.33	0.0008	10.67	0.0008	17.83	0.0008
3.50	0.0000	10.83	0.0008	18.00	0.0008
3.67	0.0000	11.00	0.0008	18.17	0.0008
3.83	0.0008	11.17	0.0008	18.33	0.0008
4.00	0.0000	11.33	0.0008	18.50	0.0008
4.17	0.0008	11.50	0.0008	18.67	0.0008
4.33	0.0000	11.67	0.0008	18.83	0.0008
4.50	0.0008	11.83	0.0008	19.00	0.0008
4.67	0.0008	12.00	0.0008	19.17	0.0008
4.83	0.0000	12.17	0.0008	19.33	0.0008
5.00	0.0008	12.33	0.0008	19.50	0.0008
5.17	0.0008	12.50	0.0008	19.67	0.0008
5.33	0.0000	12.67	0.0008	19.83	0.0008
5.50	0.0008	12.83	0.0008	20.00	0.0008
5.67	0.0008	13.00	0.0008	20.17	0.0008
5.83	0.0008	13.17	0.0008	20.33	0.0008
6.00	0.0008	13.33	0.0008	20.50	0.0008
6.17	0.0008	13.50	0.0008	20.67	0.0008
6.33	0.0008	13.67	0.0008	20.83	0.0008
6.50	0.0008	13.83	0.0008	21.00	0.0008
6.67	0.0008	14.00	0.0008	21.17	0.0008
6.83	0.0008	14.17	0.0008	21.33	0.0008
7.00	0.0008	14.33	0.0008	21.50	0.0008
7.17	0.0008	14.50	0.0008	21.67	0.0008
7.33	0.0008	14.67	0.0008	21.83	0.0008
7.50	0.0008	14.83	0.0008	22.00	0.0008
7.67	0.0008	15.00	0.0008	22.17	0.0008
7.83	0.0008	15.17	0.0008	22.33	0.0008
8.00	0.0008	15.33	0.0008	22.50	0.0008
8.17	0.0008	15.50	0.0008	22.67	0.0008
8.33	0.0008	15.67	0.0008	22.83	0.0008
8.50	0.0008	15.83	0.0008	23.00	0.0008
8.67	0.0008	16.00	0.0008	23.17	0.0008
8.83	0.0008	16.17	0.0008	23.33	0.0008
9.00	0.0008	16.33	0.0008	23.50	0.0008
9.17	0.0008	16.50	0.0008	23.67	0.0008
9.33	0.0008	16.67	0.0008	23.83	0.0008
9.50	0.0008	16.83	0.0008	24.00	0.0008

6-MONTH CALCULATIONS FOR LOT 1

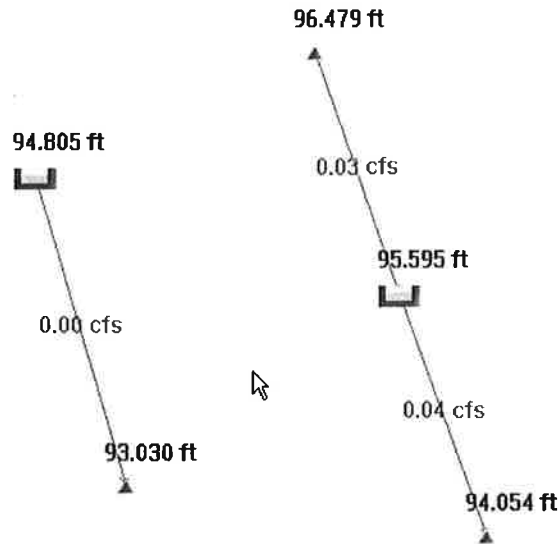


ROUTEHYD [] THRU [LOT 1] USING TYPE1A AND [6 mo] NOTZERO RELATIVE

Reach / Hyd	Area ac	Flow cfs	Full Q cfs	% Full ratio	nDepth ft	Size ----	nVel ft/s	fVel ft/s	CBasin -----
--									
Routing spit hyd [6 mo-OVERFLOW-OutHyd] through L1-OF TRENCH									
L1-OF TRENCH	0.0000	0.0000	1560.32	0.00	0.0000	48" Diam	6.1628	124.1667	
Routing thru RLPool Node L1-OF-TRENCH; 6 mo event									
6 mo Match Q: 0.0000 cfs Peak Out Q: 0.0370 cfs - Peak Stg: 94.21 ft - Active Vol: 10.79 cf									
L1-OF-TR-GRND	0.1930	0.0370	1560.32	0.00	0.0171	48" Diam	6.2247	124.1667	L1-SITE
Routing thru RLPool Node L1-WQ-TRENCH; 6 mo event									
6 mo Match Q: 0.0000 cfs Peak Out Q: 0.0008 cfs - Peak Stg: 94.47 ft - Active Vol: 14.59 cf									
Routing spit hyd [6 mo-L1-WQ-LOAMY SAND-OutHyd] through L1-WQ-TR-GRND									
L1-WQ-TR-GRND	0.0690	0.0008	1560.32	0.00	0.0039	48" Diam	1.2857	124.1667	L1-DRIVE

From Node	To Node	Rch ft	App ft	Bend ft	Junct ft	HW ft	Max ft
L1-OF-TRENCH	L1-OF-GROUND	92.0732	--na--	--na--	--na--	94.0537	94.2107
OVERFLOW	L1-OF-TRENCH	0.0000	--na--	--na--	--na--	0.0000	
L1-WQ-TRENCH	L1-WQ-GROUND	91.0313	--na--	--na--	--na--	94.4736	

100-YR CALCULATIONS FOR LOT 1



ROUTEHYD [] THRU [LOT 1] USING TYPE1A AND [100 yr] NOTZERO RELATIVE

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

Routing spit hyd [100 yr-OVERFLOW-OutHyd] through L1-OF TRENCH

L1-OF TRENCH 0.0575 0.0336 1560.32 0.00 0.0161 48" Diam 6.1628 124.1667

Routing thru RLPool Node L1-OF-TRENCH; 100 yr event

100 yr Match Q: 0.0000 cfs Peak Out Q: 0.0370 cfs - Peak Stg: 95.59 ft - Active Vol: 81.64 cf

L1-OF-TR-GRND 0.2505 0.0370 1560.32 0.00 0.0171 48" Diam 6.2247 124.1667 L1-SITE

Routing thru RLPool Node L1-WQ-TRENCH; 100 yr event

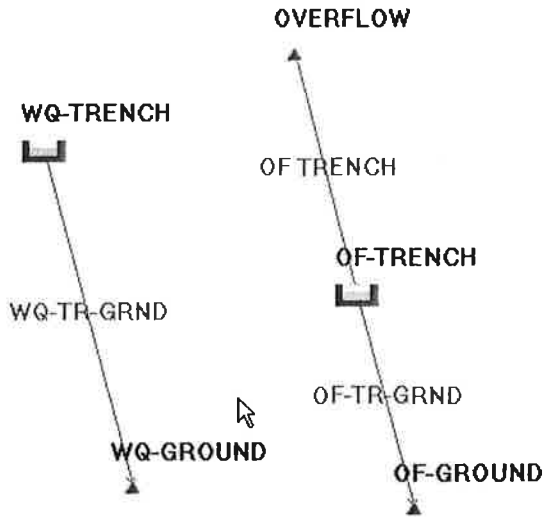
100 yr Match Q: 0.0000 cfs Peak Out Q: 0.0344 cfs - Peak Stg: 94.81 ft - Active Vol: 17.87 cf

Routing spit hyd [100 yr-L1-WQ-LOAMY SAND-OutHyd] through L1-WQ-TR-GRND

L1-WQ-TR-GRND 0.0115 0.0008 1560.32 0.00 0.0039 48" Diam 1.2857 124.1667 L1-DRIVE

From Node	To Node	Rch ft	App ft	Bend ft	Junct ft	HW ft	Max ft
L1-OF-TRENCH	L1-OF-GROUND	92.0732	--na--	--na--	--na--	94.0537	
	L1-OF-GROUND					95.5945	
OVERFLOW	L1-OF-TRENCH	96.4791	--na--	--na--	--na--	96.4791	
	L1-OF-GROUND						
L1-WQ-TRENCH	L1-WQ-GROUND	91.0313	--na--	--na--	--na--	94.8054	
	L1-OF-GROUND						

DRAINAGE CALCULATIONS FOR LOTS 2 - 4



Project Precips

[6 mo]	1.15 in
[2 yr]	1.80 in
[10 yr]	2.75 in
[100 yr]	3.75 in
[0]	0.00 in
[0]	0.00 in

Reach Records

Reach ID: OF TRENCH

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		
OVERFLOW	OF-TRENCH	98.7500 ft	98.7490 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
0.0264 ac	0.0300 cf	1560.3243 cf	5.7724 ft/s	0.0156 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.258697 ft	0.517395 ft	0.000000 ft	99.7923 ft	

Reach ID: OF-TR-GRND**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 %	Groove End Projecting			
Diam					
4.0000 ft					
Up Node	Dn Node	Up Invert	Dn Invert		
OF-TRENCH	OF-GROUND	98.0000 ft	97.9990 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
0.2504 ac	0.0417 cf	1560.3243 cf	6.4432 ft/s	0.0181 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.128928 ft	0.644640 ft	0.000000 ft	98.0576 ft	

Reach ID: WQ-TR-GRND**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 %	Groove End Projecting			
Diam					
4.0000 ft					
Up Node	Dn Node	Up Invert	Dn Invert		
WQ-TRENCH	WQ-GROUND	97.0000 ft	96.9990 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
0.0096 ac	0.0011 cf	1560.3243 cf	1.7143 ft/s	0.0039 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.009127 ft	0.045633 ft	0.000000 ft	97.0303 ft	

Node Records

Node ID: OF-GROUND

Desc: LOT 4 - BOTTOM OF OF TRENCH
Start El: 98.0000 ft Max El: 100.0000 ft
Contrib Basin: Contrib Hyd:
Hgl Elev: 98.0576 ft

Node ID: OF-TRENCH

Desc: LOT OVERFLOW TRENCH
Start El: 98.0000 ft Max El: 100.0000 ft
Contrib Basin: SITE LESS DW Contrib Hyd:
Hgl Elev: 99.7923 ft
Storage Id: OF-STORAGE Discharge Id: OF TO MED SAND

Node ID: OF-STORAGE

Desc: LOT 4 - OVERFLOW TRENCH
Start El: 98.0000 ft Max El: 100.0000 ft
Contrib Basin: Contrib Hyd:
Length Width Void Ratio
45.0000 ft 4.0000 ft 32.00
Bottom area only with infiltration

Control Structure ID: OF TO MED SAND - Infiltration control structure

Descrip: MEDIUM SAND LAYER
Start El Max El Increment
98.0000 ft 105.0000 ft 0.10
Infil: 10.00 in/hr Multiplier: 1.00

Node ID: OVERFLOW

Desc: OVERFLOW FROM WQ TRENCH RISER
Start El: 98.7500 ft Max El: 108.0000 ft
Contrib Basin: Contrib Hyd:
Hgl Elev: 100.5684 ft

Node ID: WQ-GROUND

Desc: WQ TRENCH TO GROUND
Start El: 97.0000 ft Max El: 99.0000 ft
Contrib Basin: Contrib Hyd:
Hgl Elev: 97.0303 ft

Node ID: WQ-TRENCH

Desc: WATER QUALITY TRENCH
Start El: 97.0000 ft Max El: 99.0000 ft
Contrib Basin: DRIVEWAY Contrib Hyd:
Hgl Elev: 98.7929 ft
Storage Id: WQ-STORAGE Discharge Id: COMBO

Node ID: WQ-STORAGE

Desc: WATER QUALITY TRENCH STORAGE
Start El: 97.0000 ft Max El: 99.0000 ft
Contrib Basin: Contrib Hyd:
Length Width Void Ratio
20.0000 ft 2.0000 ft 33.00
Bottom area only with infiltration

Control Structure ID: COMBO - Combination Control Structure

Descrip: WATER QUALITY TRENCH SPLITTING AFTER 6 MONTH STORM
Start El Max El Increment
97.0000 ft 105.0000 ft 0.10
ID List: WQ TO LOAMY SAND OVERFLOW
Split: Split OutHyd into component hydrographs.

Control Structure ID: WQ TO LOAMY SAND - Infiltration control structure

Descrip: LOAMY SAND LAYER
Start El Max El Increment
97.0000 ft 105.0000 ft 0.10
Infil: 1.21 in/hr Multiplier: 1.00

Control Structure ID: OVERFLOW - Vertical oriented orifice

Descrip: OVERFLOW RISER PIPE TO OVERFLOW TRENCH
Start El Max El Increment
98.7500 ft 99.2500 ft 0.10
Weir Area: 0.1963 sf Coefficient: 0.6100

Contributing Drainage Areas

Drainage Area: DRIVEWAY

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	0.0100 ac	68.00	0.09 hrs
Impervious	0.0260 ac	98.00	0.01 hrs
Total	0.0360 ac		

Supporting Data:

Pervious CN Data:
LAWN/LANDSCAPE 68.00 0.0100 ac

Impervious CN Data:
DRIVEWAY 98.00 0.0260 ac

Pervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS LAWN	25.00 ft	1.00%	0.1500	5.69 min

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS DRIVEWAY	20.00 ft	2.00%	0.0110	0.45 min

Drainage Area: SITE LESS DW

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	0.1670 ac	68.00	0.20 hrs
Impervious	0.0570 ac	98.00	0.02 hrs
Total	0.2240 ac		

Supporting Data:

Pervious CN Data:
LAWN/LANDSCAPE 68.00 0.1670 ac

Impervious CN Data:
DUPLEX 98.00 0.0570 ac

Pervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS LAWN	65.00 ft	1.00%	0.1500	12.21 min

Impervious TC Data:

Flow type:	Description:	Length:	Slope:	Coeff:	Travel Time
Sheet	ACROSS DUPLEX ROOF	50.00 ft	2.00%	0.0110	0.93 min

Layout Hydrographs

Hydrograph ID: OF-GROUND - 100 yr

Area: 0.2504 ac		Hyd Int: 10.00 min		Base Flow:	
Pending tt translation: 0.00 min					
Peak Flow:	0.0417 cfs	Peak Time:	2.17 hrs	Hyd Vol:	0.0384 acft
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
0.83	0.0000	9.00	0.0417	17.00	0.0417
1.00	0.0000	9.17	0.0417	17.17	0.0000
1.17	0.0000	9.33	0.0417	17.33	0.0417
1.33	0.0000	9.50	0.0417	17.50	0.0000
1.50	0.0000	9.67	0.0417	17.67	0.0417
1.67	0.0000	9.83	0.0417	17.83	0.0000
1.83	0.0000	10.00	0.0417	18.00	0.0000
2.00	0.0000	10.17	0.0417	18.17	0.0417
2.17	0.0417	10.33	0.0417	18.33	0.0000
2.33	0.0000	10.50	0.0417	18.50	0.0417
2.50	0.0000	10.67	0.0417	18.67	0.0000
2.67	0.0000	10.83	0.0417	18.83	0.0417
2.83	0.0000	11.00	0.0417	19.00	0.0000
3.00	0.0417	11.17	0.0417	19.17	0.0000
3.17	0.0000	11.33	0.0000	19.33	0.0417
3.33	0.0000	11.50	0.0417	19.50	0.0000
3.50	0.0000	11.67	0.0000	19.67	0.0417
3.67	0.0000	11.83	0.0417	19.83	0.0000
3.83	0.0417	12.00	0.0000	20.00	0.0000
4.00	0.0000	12.17	0.0417	20.17	0.0417
4.17	0.0000	12.33	0.0000	20.33	0.0000
4.33	0.0000	12.50	0.0417	20.50	0.0417
4.50	0.0417	12.67	0.0000	20.67	0.0000
4.67	0.0000	12.83	0.0417	20.83	0.0000
4.83	0.0000	13.00	0.0000	21.00	0.0417
5.00	0.0000	13.17	0.0417	21.17	0.0000
5.17	0.0417	13.33	0.0000	21.33	0.0417
5.33	0.0000	13.50	0.0417	21.50	0.0000
5.50	0.0000	13.67	0.0000	21.67	0.0000
5.67	0.0417	13.83	0.0417	21.83	0.0417
5.83	0.0000	14.00	0.0000	22.00	0.0000
6.00	0.0000	14.17	0.0417	22.17	0.0417
6.17	0.0417	14.33	0.0000	22.33	0.0000
6.33	0.0000	14.50	0.0417	22.50	0.0000
6.50	0.0000	14.67	0.0000	22.67	0.0417
6.67	0.0417	14.83	0.0417	22.83	0.0000
6.83	0.0000	15.00	0.0000	23.00	0.0000
7.00	0.0417	15.17	0.0417	23.17	0.0417
7.17	0.0000	15.33	0.0000	23.33	0.0000
7.33	0.0417	15.50	0.0417	23.50	0.0000
7.50	0.0417	15.67	0.0000	23.67	0.0417
7.67	0.0417	15.83	0.0417	23.83	0.0000
7.83	0.0417	16.00	0.0000	24.00	0.0413
8.00	0.0417	16.17	0.0416	24.17	0.0000
8.17	0.0417	16.33	0.0000	24.33	0.0000
8.33	0.0417	16.50	0.0000	24.50	0.0000
8.50	0.0417	16.67	0.0417	24.67	0.0000
8.67	0.0417	16.83	0.0000	24.83	0.0000
8.83	0.0417	17.00	0.0417	25.00	0.0000

Hydrograph ID: L4-OF-GROUND - 100 yr

Area:	0.2503 ac	Hyd Int:	10.00 min	Base Flow:	
Pending tt translation:	0.00 min				
Peak Flow:	0.0417 cfs	Peak Time:	2.17 hrs	Hyd Vol:	0.0384 acft
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
0.83	0.0000	9.00	0.0417	17.00	0.0417
1.00	0.0000	9.17	0.0417	17.17	0.0000
1.17	0.0000	9.33	0.0417	17.33	0.0417
1.33	0.0000	9.50	0.0417	17.50	0.0000
1.50	0.0000	9.67	0.0417	17.67	0.0000
1.67	0.0000	9.83	0.0417	17.83	0.0417
1.83	0.0000	10.00	0.0417	18.00	0.0000
2.00	0.0000	10.17	0.0417	18.17	0.0417
2.17	0.0417	10.33	0.0417	18.33	0.0000
2.33	0.0000	10.50	0.0417	18.50	0.0417
2.50	0.0000	10.67	0.0417	18.67	0.0000
2.67	0.0000	10.83	0.0417	18.83	0.0000
2.83	0.0000	11.00	0.0417	19.00	0.0417
3.00	0.0417	11.17	0.0000	19.17	0.0000
3.17	0.0000	11.33	0.0417	19.33	0.0417
3.33	0.0000	11.50	0.0417	19.50	0.0000
3.50	0.0000	11.67	0.0000	19.67	0.0000
3.67	0.0000	11.83	0.0417	19.83	0.0417
3.83	0.0417	12.00	0.0000	20.00	0.0000
4.00	0.0000	12.17	0.0417	20.17	0.0410
4.17	0.0000	12.33	0.0000	20.33	0.0000
4.33	0.0000	12.50	0.0417	20.50	0.0000
4.50	0.0417	12.67	0.0000	20.67	0.0417
4.67	0.0000	12.83	0.0417	20.83	0.0000
4.83	0.0000	13.00	0.0000	21.00	0.0417
5.00	0.0000	13.17	0.0417	21.17	0.0000
5.17	0.0417	13.33	0.0000	21.33	0.0000
5.33	0.0000	13.50	0.0417	21.50	0.0417
5.50	0.0000	13.67	0.0000	21.67	0.0000
5.67	0.0417	13.83	0.0417	21.83	0.0417
5.83	0.0000	14.00	0.0000	22.00	0.0000
6.00	0.0000	14.17	0.0417	22.17	0.0000
6.17	0.0417	14.33	0.0000	22.33	0.0417
6.33	0.0000	14.50	0.0417	22.50	0.0000
6.50	0.0000	14.67	0.0000	22.67	0.0000
6.67	0.0417	14.83	0.0417	22.83	0.0417
6.83	0.0000	15.00	0.0000	23.00	0.0000
7.00	0.0417	15.17	0.0417	23.17	0.0000
7.17	0.0000	15.33	0.0000	23.33	0.0417
7.33	0.0417	15.50	0.0417	23.50	0.0000
7.50	0.0417	15.67	0.0000	23.67	0.0417
7.67	0.0417	15.83	0.0417	23.83	0.0000
7.83	0.0417	16.00	0.0000	24.00	0.0000
8.00	0.0417	16.17	0.0000	24.17	0.0417
8.17	0.0417	16.33	0.0417	24.33	0.0000
8.33	0.0417	16.50	0.0000	24.50	0.0000
8.50	0.0417	16.67	0.0417	24.67	0.0000
8.67	0.0417	16.83	0.0000	24.83	0.0000
8.83	0.0417	17.00	0.0417	25.00	0.0000

Hydrograph ID: L4-OF-GROUND - 6 mo

Area:	0.2240 ac	Hyd Int:	10.00 min	Base Flow:	
Pending tt translation:	0.00 min				
Peak Flow:	0.0417 cfs	Peak Time:	5.33 hrs	Hyd Vol:	0.0075 acft
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
2.00	0.0000	9.67	0.0000	17.00	0.0000
2.17	0.0000	9.83	0.0000	17.17	0.0417
2.33	0.0000	10.00	0.0000	17.33	0.0000
2.50	0.0000	10.17	0.0417	17.50	0.0000
2.67	0.0000	10.33	0.0000	17.67	0.0000
2.83	0.0000	10.50	0.0000	17.83	0.0000
3.00	0.0000	10.67	0.0000	18.00	0.0000
3.17	0.0000	10.83	0.0000	18.17	0.0000
3.33	0.0000	11.00	0.0000	18.33	0.0000
3.50	0.0000	11.17	0.0000	18.50	0.0000
3.67	0.0000	11.33	0.0000	18.67	0.0000
3.83	0.0000	11.50	0.0000	18.83	0.0000
4.00	0.0000	11.67	0.0417	19.00	0.0000
4.17	0.0000	11.83	0.0000	19.17	0.0000
4.33	0.0000	12.00	0.0000	19.33	0.0417
4.50	0.0000	12.17	0.0000	19.50	0.0000
4.67	0.0000	12.33	0.0000	19.67	0.0000
4.83	0.0000	12.50	0.0000	19.83	0.0000
5.00	0.0000	12.67	0.0000	20.00	0.0000
5.17	0.0000	12.83	0.0000	20.17	0.0000
5.33	0.0417	13.00	0.0000	20.33	0.0000
5.50	0.0000	13.17	0.0000	20.50	0.0000
5.67	0.0000	13.33	0.0417	20.67	0.0000
5.83	0.0000	13.50	0.0000	20.83	0.0000
6.00	0.0000	13.67	0.0000	21.00	0.0000
6.17	0.0000	13.83	0.0000	21.17	0.0000
6.33	0.0000	14.00	0.0000	21.33	0.0000
6.50	0.0000	14.17	0.0000	21.50	0.0417
6.67	0.0000	14.33	0.0000	21.67	0.0000
6.83	0.0417	14.50	0.0000	21.83	0.0000
7.00	0.0000	14.67	0.0000	22.00	0.0000
7.17	0.0000	14.83	0.0000	22.17	0.0000
7.33	0.0000	15.00	0.0000	22.33	0.0000
7.50	0.0000	15.17	0.0417	22.50	0.0000
7.67	0.0417	15.33	0.0000	22.67	0.0000
7.83	0.0000	15.50	0.0000	22.83	0.0000
8.00	0.0000	15.67	0.0000	23.00	0.0000
8.17	0.0417	15.83	0.0000	23.17	0.0000
8.33	0.0000	16.00	0.0000	23.33	0.0000
8.50	0.0000	16.17	0.0000	23.50	0.0000
8.67	0.0000	16.33	0.0000	23.67	0.0417
8.83	0.0000	16.50	0.0000	23.83	0.0000
9.00	0.0417	16.67	0.0000	24.00	0.0000
9.17	0.0000	16.83	0.0000	24.17	0.0000
9.33	0.0000	17.00	0.0000	24.33	0.0000
9.50	0.0000	17.17	0.0417	24.50	0.0000

Hydrograph ID: OF-GROUND - 6 mo

Area:	0.2240 ac	Hyd Int:	10.00 min	Base Flow:	
Pending tt translation:	0.00 min				
Peak Flow:	0.0481 cfs	Peak Time:	5.50 hrs	Hyd Vol:	0.0073 acft
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
2.00	0.0000	9.67	0.0481	17.00	0.0000
2.17	0.0000	9.83	0.0000	17.17	0.0000
2.33	0.0000	10.00	0.0000	17.33	0.0481
2.50	0.0000	10.17	0.0000	17.50	0.0000
2.67	0.0000	10.33	0.0000	17.67	0.0000
2.83	0.0000	10.50	0.0000	17.83	0.0000
3.00	0.0000	10.67	0.0000	18.00	0.0000
3.17	0.0000	10.83	0.0000	18.17	0.0000
3.33	0.0000	11.00	0.0000	18.33	0.0000
3.50	0.0000	11.17	0.0472	18.50	0.0000
3.67	0.0000	11.33	0.0000	18.67	0.0000
3.83	0.0000	11.50	0.0000	18.83	0.0000
4.00	0.0000	11.67	0.0000	19.00	0.0000
4.17	0.0000	11.83	0.0000	19.17	0.0000
4.33	0.0000	12.00	0.0000	19.33	0.0000
4.50	0.0000	12.17	0.0000	19.50	0.0000
4.67	0.0000	12.33	0.0000	19.67	0.0000
4.83	0.0000	12.50	0.0000	19.83	0.0481
5.00	0.0000	12.67	0.0000	20.00	0.0000
5.17	0.0000	12.83	0.0000	20.17	0.0000
5.33	0.0000	13.00	0.0481	20.33	0.0000
5.50	0.0481	13.17	0.0000	20.50	0.0000
5.67	0.0000	13.33	0.0000	20.67	0.0000
5.83	0.0000	13.50	0.0000	20.83	0.0000
6.00	0.0000	13.67	0.0000	21.00	0.0000
6.17	0.0000	13.83	0.0000	21.17	0.0000
6.33	0.0000	14.00	0.0000	21.33	0.0000
6.50	0.0000	14.17	0.0000	21.50	0.0000
6.67	0.0000	14.33	0.0000	21.67	0.0000
6.83	0.0000	14.50	0.0000	21.83	0.0000
7.00	0.0474	14.67	0.0000	22.00	0.0000
7.17	0.0000	14.83	0.0000	22.17	0.0000
7.33	0.0000	15.00	0.0475	22.33	0.0481
7.50	0.0000	15.17	0.0000	22.50	0.0000
7.67	0.0000	15.33	0.0000	22.67	0.0000
7.83	0.0481	15.50	0.0000	22.83	0.0000
8.00	0.0000	15.67	0.0000	23.00	0.0000
8.17	0.0000	15.83	0.0000	23.17	0.0000
8.33	0.0000	16.00	0.0000	23.33	0.0000
8.50	0.0477	16.17	0.0000	23.50	0.0000
8.67	0.0000	16.33	0.0000	23.67	0.0000
8.83	0.0000	16.50	0.0000	23.83	0.0000
9.00	0.0000	16.67	0.0000	24.00	0.0000
9.17	0.0000	16.83	0.0000	24.17	0.0000
9.33	0.0000	17.00	0.0000	24.33	0.0000
9.50	0.0000	17.17	0.0000	24.50	0.0000

Hydrograph ID: WQ-GROUND - 6 mo

Area:	0.0360 ac	Hyd Int:	10.00 min	Base Flow:	
Pending tt translation:	0.00 min				
Peak Flow:	0.0011 cfs	Peak Time:	2.50 hrs	Hyd Vol:	0.0019 acft
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
2.17	0.0000	9.67	0.0011	16.83	0.0011
2.33	0.0000	9.83	0.0011	17.00	0.0011
2.50	0.0011	10.00	0.0011	17.17	0.0011
2.67	0.0000	10.17	0.0011	17.33	0.0011
2.83	0.0000	10.33	0.0011	17.50	0.0011
3.00	0.0011	10.50	0.0011	17.67	0.0011
3.17	0.0000	10.67	0.0011	17.83	0.0011
3.33	0.0000	10.83	0.0011	18.00	0.0011
3.50	0.0011	11.00	0.0011	18.17	0.0011
3.67	0.0000	11.17	0.0011	18.33	0.0011
3.83	0.0011	11.33	0.0011	18.50	0.0011
4.00	0.0000	11.50	0.0011	18.67	0.0011
4.17	0.0011	11.67	0.0011	18.83	0.0011
4.33	0.0000	11.83	0.0011	19.00	0.0011
4.50	0.0011	12.00	0.0011	19.17	0.0011
4.67	0.0000	12.17	0.0011	19.33	0.0011
4.83	0.0011	12.33	0.0011	19.50	0.0011
5.00	0.0011	12.50	0.0011	19.67	0.0011
5.17	0.0011	12.67	0.0011	19.83	0.0011
5.33	0.0000	12.83	0.0011	20.00	0.0011
5.50	0.0011	13.00	0.0011	20.17	0.0011
5.67	0.0011	13.17	0.0011	20.33	0.0011
5.83	0.0011	13.33	0.0011	20.50	0.0011
6.00	0.0011	13.50	0.0011	20.67	0.0011
6.17	0.0011	13.67	0.0011	20.83	0.0011
6.33	0.0011	13.83	0.0011	21.00	0.0011
6.50	0.0011	14.00	0.0011	21.17	0.0011
6.67	0.0011	14.17	0.0011	21.33	0.0011
6.83	0.0011	14.33	0.0011	21.50	0.0011
7.00	0.0011	14.50	0.0011	21.67	0.0011
7.17	0.0011	14.67	0.0011	21.83	0.0011
7.33	0.0011	14.83	0.0011	22.00	0.0011
7.50	0.0011	15.00	0.0011	22.17	0.0011
7.67	0.0011	15.17	0.0011	22.33	0.0011
7.83	0.0011	15.33	0.0011	22.50	0.0011
8.00	0.0011	15.50	0.0011	22.67	0.0011
8.17	0.0011	15.67	0.0011	22.83	0.0011
8.33	0.0011	15.83	0.0011	23.00	0.0011
8.50	0.0011	16.00	0.0011	23.17	0.0011
8.67	0.0011	16.17	0.0011	23.33	0.0011
8.83	0.0011	16.33	0.0011	23.50	0.0011
9.00	0.0011	16.50	0.0011	23.67	0.0011
9.17	0.0011	16.67	0.0011	23.83	0.0011
9.33	0.0011	16.83	0.0011	24.00	0.0011
9.50	0.0011	17.00	0.0011	24.17	0.0000

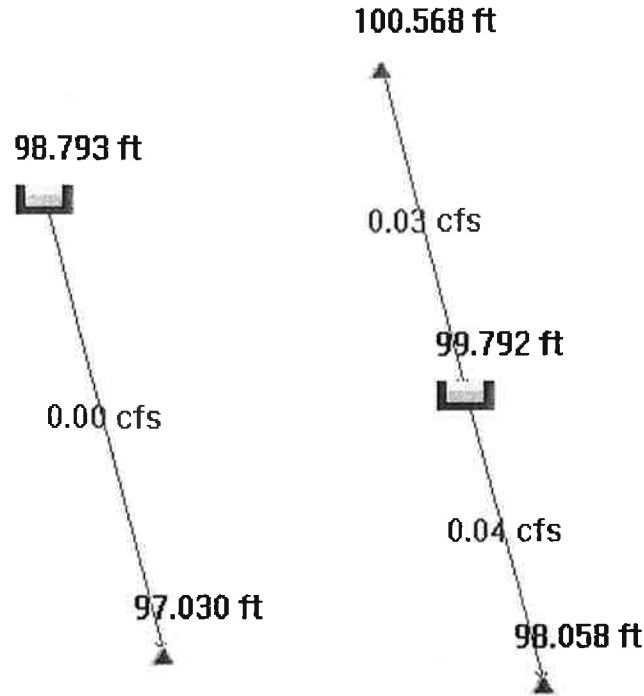
Hydrograph ID: L4-WQ-GROUND - 6 mo

Area:	0.0360 ac	Hyd Int:	10.00 min	Base Flow:	
Pending tt translation:	0.00 min				
Peak Flow:	0.0011 cfs	Peak Time:	2.50 hrs	Hyd Vol:	0.0019 acft
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
2.17	0.0000	9.67	0.0011	16.83	0.0011
2.33	0.0000	9.83	0.0011	17.00	0.0011
2.50	0.0011	10.00	0.0011	17.17	0.0011
2.67	0.0000	10.17	0.0011	17.33	0.0011
2.83	0.0000	10.33	0.0011	17.50	0.0011
3.00	0.0011	10.50	0.0011	17.67	0.0011
3.17	0.0000	10.67	0.0011	17.83	0.0011
3.33	0.0000	10.83	0.0011	18.00	0.0011
3.50	0.0011	11.00	0.0011	18.17	0.0011
3.67	0.0000	11.17	0.0011	18.33	0.0011
3.83	0.0011	11.33	0.0011	18.50	0.0011
4.00	0.0000	11.50	0.0011	18.67	0.0011
4.17	0.0011	11.67	0.0011	18.83	0.0011
4.33	0.0000	11.83	0.0011	19.00	0.0011
4.50	0.0011	12.00	0.0011	19.17	0.0011
4.67	0.0000	12.17	0.0011	19.33	0.0011
4.83	0.0011	12.33	0.0011	19.50	0.0011
5.00	0.0011	12.50	0.0011	19.67	0.0011
5.17	0.0011	12.67	0.0011	19.83	0.0011
5.33	0.0000	12.83	0.0011	20.00	0.0011
5.50	0.0011	13.00	0.0011	20.17	0.0011
5.67	0.0011	13.17	0.0011	20.33	0.0011
5.83	0.0011	13.33	0.0011	20.50	0.0011
6.00	0.0011	13.50	0.0011	20.67	0.0011
6.17	0.0011	13.67	0.0011	20.83	0.0011
6.33	0.0011	13.83	0.0011	21.00	0.0011
6.50	0.0011	14.00	0.0011	21.17	0.0011
6.67	0.0011	14.17	0.0011	21.33	0.0011
6.83	0.0011	14.33	0.0011	21.50	0.0011
7.00	0.0011	14.50	0.0011	21.67	0.0011
7.17	0.0011	14.67	0.0011	21.83	0.0011
7.33	0.0011	14.83	0.0011	22.00	0.0011
7.50	0.0011	15.00	0.0011	22.17	0.0011
7.67	0.0011	15.17	0.0011	22.33	0.0011
7.83	0.0011	15.33	0.0011	22.50	0.0011
8.00	0.0011	15.50	0.0011	22.67	0.0011
8.17	0.0011	15.67	0.0011	22.83	0.0011
8.33	0.0011	15.83	0.0011	23.00	0.0011
8.50	0.0011	16.00	0.0011	23.17	0.0011
8.67	0.0011	16.17	0.0011	23.33	0.0011
8.83	0.0011	16.33	0.0011	23.50	0.0011
9.00	0.0011	16.50	0.0011	23.67	0.0011
9.17	0.0011	16.67	0.0011	23.83	0.0011
9.33	0.0011	16.83	0.0011	24.00	0.0011
9.50	0.0011	17.00	0.0011	24.17	0.0000

Hydrograph ID: WQ-GROUND - 100 yr

Area:	0.0096 ac	Hyd Int:	10.00 min	Base Flow:	
Pending tt translation:	0.00 min	Peak Time:	1.17 hrs	Hyd Vol:	0.0021 acft
Peak Flow:	0.0011 cfs	Time	Flow	Time	Flow
Time	Flow	Time	Flow	Time	Flow
hr	cfs	hr	cfs	hr	cfs
1.00	0.0000	8.83	0.0011	16.50	0.0011
1.17	0.0011	9.00	0.0011	16.67	0.0011
1.33	0.0011	9.17	0.0011	16.83	0.0011
1.50	0.0011	9.33	0.0011	17.00	0.0011
1.67	0.0011	9.50	0.0011	17.17	0.0011
1.83	0.0011	9.67	0.0011	17.33	0.0011
2.00	0.0011	9.83	0.0011	17.50	0.0011
2.17	0.0011	10.00	0.0011	17.67	0.0011
2.33	0.0011	10.17	0.0011	17.83	0.0011
2.50	0.0011	10.33	0.0011	18.00	0.0011
2.67	0.0011	10.50	0.0011	18.17	0.0011
2.83	0.0011	10.67	0.0011	18.33	0.0011
3.00	0.0011	10.83	0.0011	18.50	0.0011
3.17	0.0011	11.00	0.0011	18.67	0.0011
3.33	0.0011	11.17	0.0011	18.83	0.0011
3.50	0.0011	11.33	0.0011	19.00	0.0011
3.67	0.0011	11.50	0.0011	19.17	0.0011
3.83	0.0011	11.67	0.0011	19.33	0.0011
4.00	0.0011	11.83	0.0011	19.50	0.0011
4.17	0.0011	12.00	0.0011	19.67	0.0011
4.33	0.0011	12.17	0.0011	19.83	0.0011
4.50	0.0011	12.33	0.0011	20.00	0.0011
4.67	0.0011	12.50	0.0011	20.17	0.0011
4.83	0.0011	12.67	0.0011	20.33	0.0011
5.00	0.0011	12.83	0.0011	20.50	0.0011
5.17	0.0011	13.00	0.0011	20.67	0.0011
5.33	0.0011	13.17	0.0011	20.83	0.0011
5.50	0.0011	13.33	0.0011	21.00	0.0011
5.67	0.0011	13.50	0.0011	21.17	0.0011
5.83	0.0011	13.67	0.0011	21.33	0.0011
6.00	0.0011	13.83	0.0011	21.50	0.0011
6.17	0.0011	14.00	0.0011	21.67	0.0011
6.33	0.0011	14.17	0.0011	21.83	0.0011
6.50	0.0011	14.33	0.0011	22.00	0.0011
6.67	0.0011	14.50	0.0011	22.17	0.0011
6.83	0.0011	14.67	0.0011	22.33	0.0011
7.00	0.0011	14.83	0.0011	22.50	0.0011
7.17	0.0011	15.00	0.0011	22.67	0.0011
7.33	0.0011	15.17	0.0011	22.83	0.0011
7.50	0.0011	15.33	0.0011	23.00	0.0011
7.67	0.0011	15.50	0.0011	23.17	0.0011
7.83	0.0011	15.67	0.0011	23.33	0.0011
8.00	0.0011	15.83	0.0011	23.50	0.0011
8.17	0.0011	16.00	0.0011	23.67	0.0011
8.33	0.0011	16.17	0.0011	23.83	0.0011
8.50	0.0011	16.33	0.0011	24.00	0.0011
8.67	0.0011	16.50	0.0011	24.17	0.0011

100-YR CALCULATIONS FOR LOTS 2 - 4



ROUTEHYD [] THRU [LOTS 2-4] 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
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Routing spit hyd [100 yr-OVERFLOW-OutHyd] through OF TRENCH

OF TRENCH	0.0264	0.0300	1560.32	0.00	0.0156	48" Diam	5.7724	124.1667	
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Routing thru RLPool Node OF-TRENCH; 100 yr event

100 yr Match Q: 0.0000 cfs Peak Out Q: 0.0417 cfs - Peak Stg: 99.79 ft - Active Vol: 103.24 cf

OF-TR-GRND	0.2504	0.0417	1560.32	0.00	0.0181	48" Diam	6.4432	124.1667	SITE LESS DW
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Routing thru RLPool Node WQ-TRENCH; 100 yr event

100 yr Match Q: 0.0000 cfs Peak Out Q: 0.0311 cfs - Peak Stg: 98.79 ft - Active Vol: 23.67 cf

Routing spit hyd [100 yr-WQ TO LOAMY SAND-OutHyd] through WQ-TR-GRND

WQ-TR-GRND	0.0096	0.0011	1560.32	0.00	0.0039	48" Diam	1.7143	124.1667	DRIVEWAY
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From Node	To Node	Rch Loss ft	App Head ft	Bend Loss ft	Junct Loss ft	HW Elev ft	Max El/ Rim El ft
OF-TRENCH	OF-GROUND	96.0776	-na-	-na-	-na-	98.0576	100.0000
OVERFLOW	OF-TRENCH	100.5684	-na-	-na-	-na-	99.7923	108.0000
WQ-TRENCH	WQ-GROUND	95.0313	-na-	-na-	-na-	98.7929	99.0000

PIPES		KEEP COVER FROM SEALING OFF ACCESS TO MAINTENANCE.	MAINTENANCE PERSON.
	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.	