LACAMAS COUNSELING CENTER

PRELIMINARY
TECHNICAL INFORMATION REPORT

Prepared for:
LACAMAS COUNSELING
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09/06/2022

DATE: 09/06/22
JOB #: 5023

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Tables

Technical Appendix

SECTION A - Project Overview

The project proposes to develop parcel 124290-000, approximately 0.52 acres total, into a counseling center. The site is located at 3631 NE Everett Street, Camas, WA 98607. There are currently no structures on this property.

The existing vegetation on site consists of mostly grass throughout the site with slopes typically between 0-10%. The existing runoff from the site flows west. This project will consist of site grading, constructing a parking lot, and utilities necessary to develop the site. Only a sidewalk is proposed along the NE Everett Street frontage to match the adjacent frontages. Stormwater control will conform to the requirements of the City of Camas Design Standards Manual and the 2019 Stormwater Management Manual for Western Washington. Stormwater will be managed on the site using a bioretention area and an infiltration gallery. There are currently no stormwater facilities on site.

SECTION B – Minimum Requirements

According to Table A below and Figure 1.2 from Chapter 1 of the Camas Stormwater Design Standards Manual, all Minimum Requirements (1-9) apply.

Table A. – Surface Area Breakdown Onsite

Existing Impervious Surface	**0.01 Acres**
New Impervious Surface	**0.35 Acres**
Replaced Impervious Surface	**0.00 Acres**
Native Vegetation Converted to Lawn or Landscaping	**0.19Acres**
Native Vegetation Converted to Pasture	**0.00 Acres**
Total Land-disturbing Activity	**0.55 Acres**

1. Table B shows the effective impervious area on site and the increase in 100-year flood frequency from pre-developed to developed conditions.

Table B. – TDA Summary

TDA	Impervious Area	Increase in 100-yr flow
POC 1	0.36Acres	-0.1778 cfs

2. All TDAs must meet *Minimum Requirement #6: Runoff Treatment*.
3. All TDAs must meet *Minimum Requirement #7: Flow Control*,
4. All TDAs must meet Minimum Requirement #8: Wetland Protection.

Minimum Requirement 1. – Preparation of Stormwater Site Plans*:*
The final stormwater plan and final engineering plans with layouts and construction details will be prepared after the project receives preliminary approval.

Minimum Requirement 2. – Construction Stormwater Pollution Prevention*:*
A Construction Stormwater Pollution Prevention Plan (SWPPP) is required and will be prepared. The contractor will comply with construction SWPPP requirements including elements 1-13.

Minimum Requirement 3. – Source Control of Pollution*:*
All development activities shall consult Camas Design Standard Manual. The BMPs that may apply to land disturbance could be **BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots, BMPs for Landscaping and Lawn/Vegetation Management, BMPs for Maintenance of Stormwater Drainage and Treatment Systems, BMPs for Urban Streets.** Refer to Section D of this report.

Minimum Requirement 4. – Preservation of Natural Drainage Systems and Outfalls*:*
The proposed improvements associated with this parcel will preserve the existing conveyance. Existing drainage patterns shall be maintained, and discharges from the project site shall occur as is, to the maximum extent practicable. The manner by which runoff is discharged from the project site will not cause a significant adverse impact to downstream receiving waters and downgradient properties. Refer to Section L of this report.

Minimum Requirement 5. – Onsite Stormwater Management*:*
The BMPs that may apply to Onsite Stormwater Management for this project could include T5.13 - Post-Construction Soil Quality and Depth and T5.21 - Better Site Design. Onsite Stormwater Management is a means to implement inexpensive practices on individual properties to reduce the amount of disruption of the natural hydrology. Refer to Section E of this Report.

Minimum Requirement #6. – Runoff Treatment:
Since the thresholds for impervious area added exceeds the limits, runoff treatment is required. Basic treatment and phosphorus treatment is proposed in the form a bioretention area that will be 100% infiltrated to meet or exceed the required treatment parameters. Other approved LID or traditional BMP's may be used to treat stormwater for this development. Refer to Section F of this report.

Minimum Requirement #7. – Runoff Flow Control:
The stormwater runoff from the site after treatment will be collected and conveyed to an infiltration gallery on site. The infiltration gallery was designed in accordance with Volume III-3.2.1 of the SWMMWW. The gallery is designed to infiltrate all stormwater runoff onsite. An emergency overflow will also be provided with this design.
Refer to Section G of this report.

Minimum Requirement #8. – Wetlands Protection:
No wetlands exist onsite or around the site.

Minimum Requirement #9. – Operation and Maintenance:
The storm systems will be privately owned and maintained. See latest version of City of Camas *Storm Sewer Systems Operation & Maintenance Manual*.

SECTION C – Soils Evaluation

A geotechnical investigation has been performed by Earth Engineering Inc. In a report dated February 15, 2022, a coefficient of permeability of 50 in/hr was recorded onsite.

The Soil Survey of Clark County, Washington, November 1972 identifies the onsite soils as, Hesson Clam Loam (HcB). The hydrologic soil group for these soils is "C" and WWHM3 Soil Groups (SG) 3.

SECTION D – Source Control

All development activities shall consult City of Camas Design Standard Manual and Camas Stormwater Design Standards Manual. The BMPs that may apply to land disturbance could be 'BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots', 'BMPs for Landscaping and Lawn/Vegetation Management', 'BMPs for Maintenance of Stormwater Drainage and Treatment Systems' and 'BMPs for Urban Streets'.

SECTION E - Onsite Stormwater Management BMPs

1. The following are a list of onsite stormwater management BMPs:

    T5.13 – Post-Construction Soil Quality and Depth

2. Refer to Section C above for geotechnical information

3./4. **T5.13 – Post-Construction Soil Quality and Depth (Volume V, SMMWW)**

    Since the majority of the site has been or will be stripped of topsoil and/or organic material for grading purposes, the remaining open spaces, yards and landscaping areas shall be restored with the appropriate soil quality and depths.

    T5.21 – Better Site Design (Volume V, SMMWW)

    An attempt to provide better site design has been considered to the extent practical. Sensitive areas with wetlands and significant trees have been left out of the development.

5./6./7. A bioretention area and an infiltration gallery are proposed on this project. They are shown on the Stormwater plan.

8. N/A; no pervious pavement is proposed.

9. N/A; no reversed slope sidewalks are proposed.

SECTION F - Runoff Treatment Analysis and Design

1. Based on the proposed site conditions and use, Basic and Phosphorous treatment is required.

2. Since the thresholds for impervious area added exceeds the limits, runoff treatment is required. The bioretention area will meet or exceed the required treatment parameters as described in the Washington State Department of Ecology Stormwater Management Manual for Western Washington (SWMM), Appendix III-C.

3. See Section C for Geotechnical information.

4. The following are the BMPs used in the design.

   Bioretention Area

5. In accordance with the Camas Stormwater Design Standards Manual and Volume V of the SMMWW, the water quality treatment system designs comply with these sections and provide basic treatment and phosphorus (see plans and details).

6.

Table C. – Pollution generating areas Summary

TDA	PGIS(Acres)	PGPS (Acres)
POC 1	0.24	0.19

SECTION G - Flow Control Analysis and Design

Refer to discussion above, Section C of this report for soils information.

The site was analyzed as 1 TDA with on-site predeveloped basin. All basins flow to the south west corner of the site.

The developed basin is directed to the Infiltration gallery for flow control. The gallery was designed in accordance with Volume III-3.2.1 of the SWMMWW. The gallery was designed to infiltrate all runoff.

The site was evaluated using the continuous model using the WWHM2012 software. Electronic copies of the WWHM files will be submitted upon request.

SECTION H – Wetlands Protection

There are no wetlands in or around the site.

References

United States Department of Agriculture, Soil Conservation Service. "Soil Survey of Clark County Washington," Washington, D.C., 1972.

United States Department of Agriculture, Soil Conservation Service, Engineering Division, "Technical Release 55: Urban Hydrology for Small Watersheds, 2nd Ed.," Washington, D.C., 1986.

United States Department of Transportation, Federal Highway Administration, "Hydraulic Engineering Circular No. 12: Drainage of Highway Pavements," Springfield, VA, 1984.

United States Department of Transportation, Federal Highway Administration, "Hydraulic Engineering Circular No. 15: Design of Roadside Channels with Flexible Linings," Springfield, VA, 1984.

Washington State Department of Ecology, "Stormwater Management Manual for Western Washington, Volume I-V," Olympia, WA, February 2005.

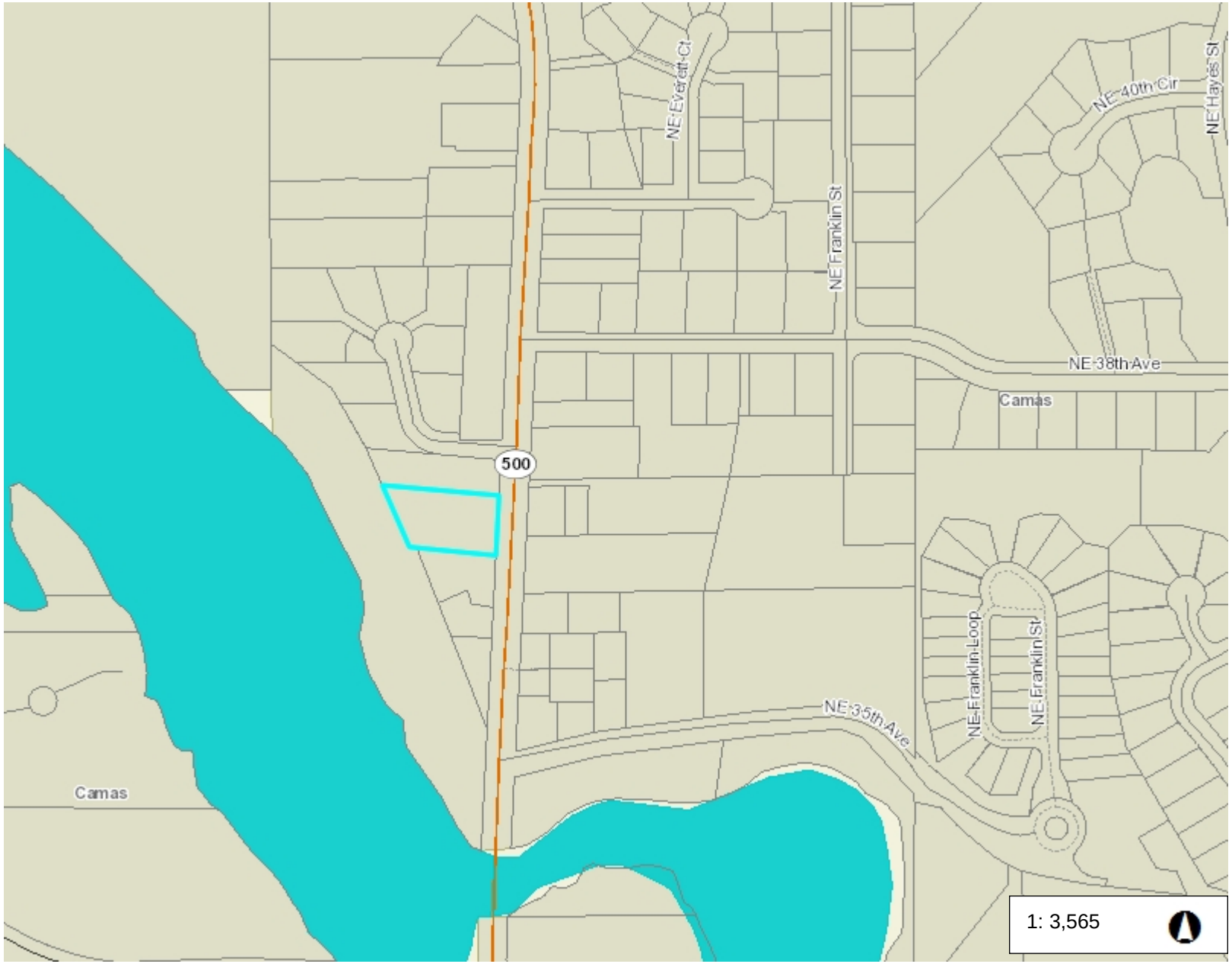
Washington State Department of Transportation, "Hydraulic Manual," Olympia, WA, 1989.

City of Camas, "Camas Stormwater Design Standards Manual," Camas, WA, 2016

Clark County Department of Assessment and GIS, "2000 Clark County Road Atlas," Vancouver, WA, 2000.

A p p e n d i x A

VICINITY MAP



Legend

- Taxlots
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

Notes:

594.2 0 297.11 594.2 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

CONTOUR MAP

Legend

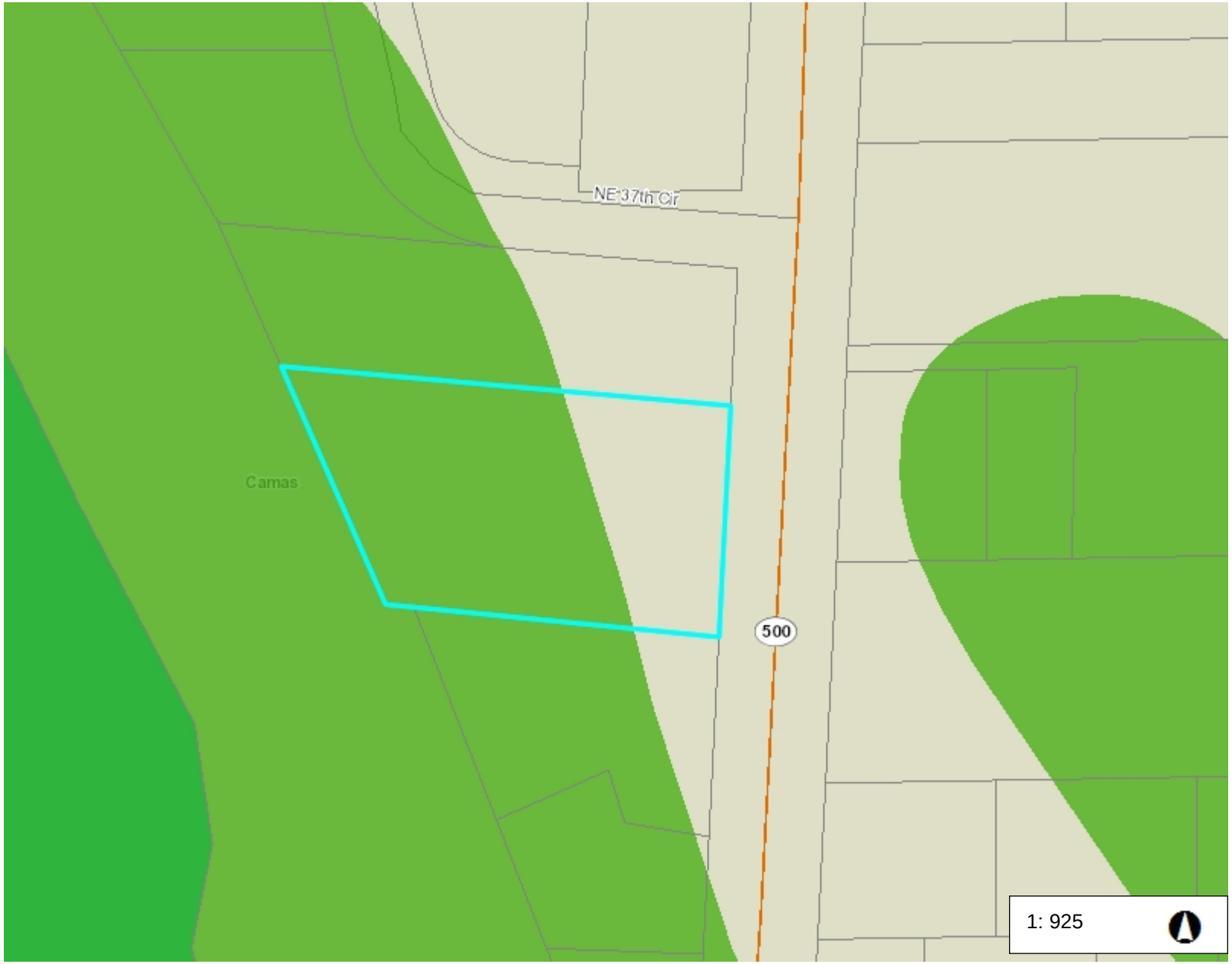
- Taxlots
- Contour Lines - 2 ft
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

Notes:

297.1 0 148.55 297.1 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

ENVIRONMENTAL AREAS



Legend

- Taxlots
- Environmental Constraints Are
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

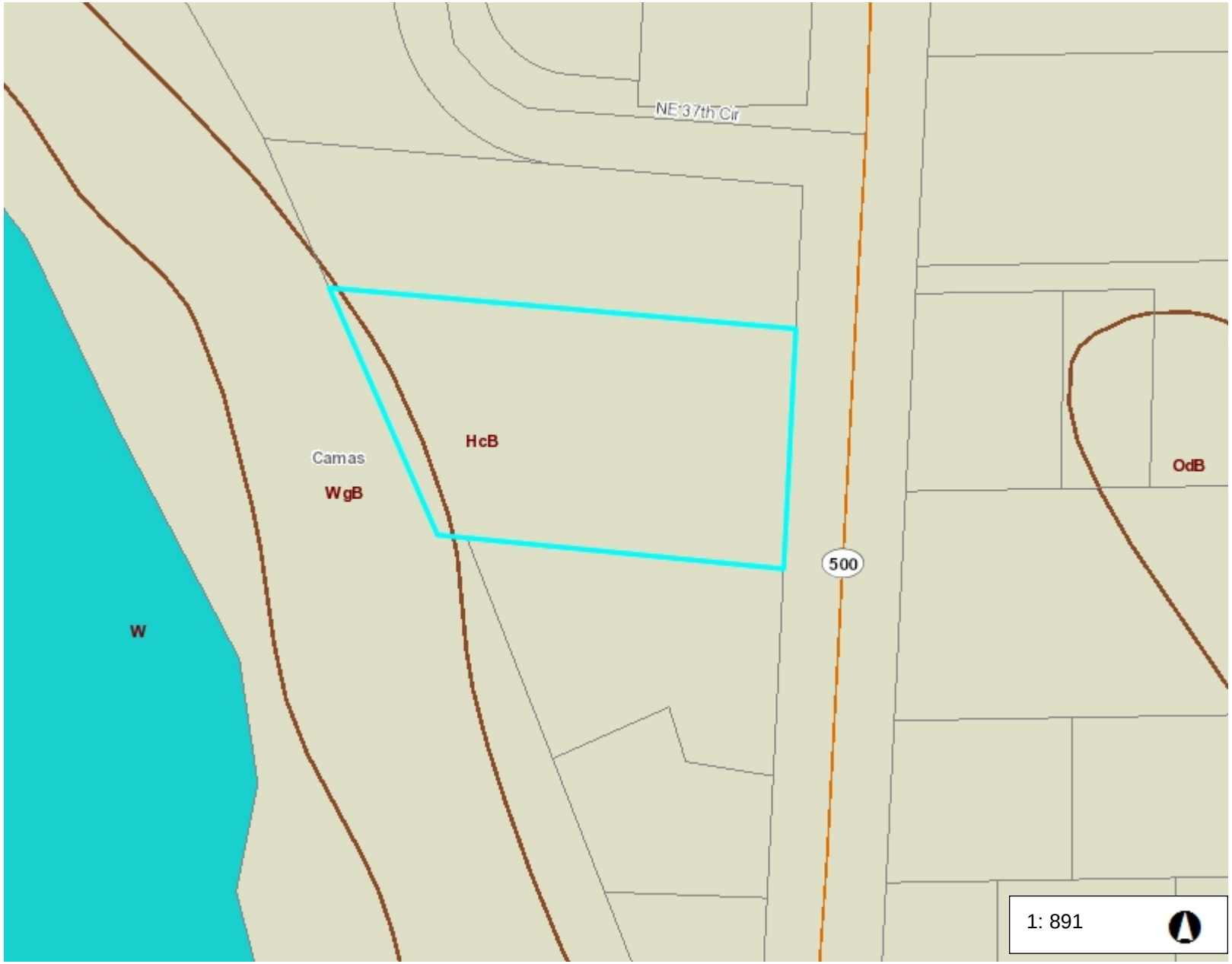
Notes:

1: 925

154.2 0 77.11 154.2 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

CONTOUR MAP



Legend

- Taxlots
- Soil Type
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

Notes:

148.6 0 74.28 148.6 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

TAX LOT
52

BASIN PRE A

TOTAL	0.55	AC.
EX IMPERVIOUS	0.00	AC.
PERVIOUS	0.57	AC.

24"OAK
34"OAK
6' BOARD FENCE
36"OAK
28"OAK
10"OAK
10"OAK
6' BOARD FENCE
6' BOARD FENCE
24"LOCUST
24"LOCUST
OAK TREE DRIPLINE
OAK TREE DRIPLINE AS FIELD LOCATED 05/10/21
OHP
30'
30'
60'
EX WELL
ASN: 124290000
3631 NE EVERETT ST
TAX LOT 56
20"MAPLE
12"MAPLE
16"MAPLE
WEST EDGE OF PAVEMENT
S 02°51'23" W 122.20'
OAK TREE DRIPLINE AS FIELD LOCATED 05/10/21
PEDESTRIAN CROSSING
EVERETT STREET (S.R. 500)
24"OAK
14"OAK
12"MAPLE
12"OAK
12"FIR
34"OAK
14"MAPLE
16"OAK
16"MAPLE
8"OAK (DEAD)
8"OAK (DEAD)
5' CHAINLINK FENCE
GATE
5' CHAINLINK FENCE
N 85°05'04" W
BUILDING
BUILDING
CONC. PAD

N

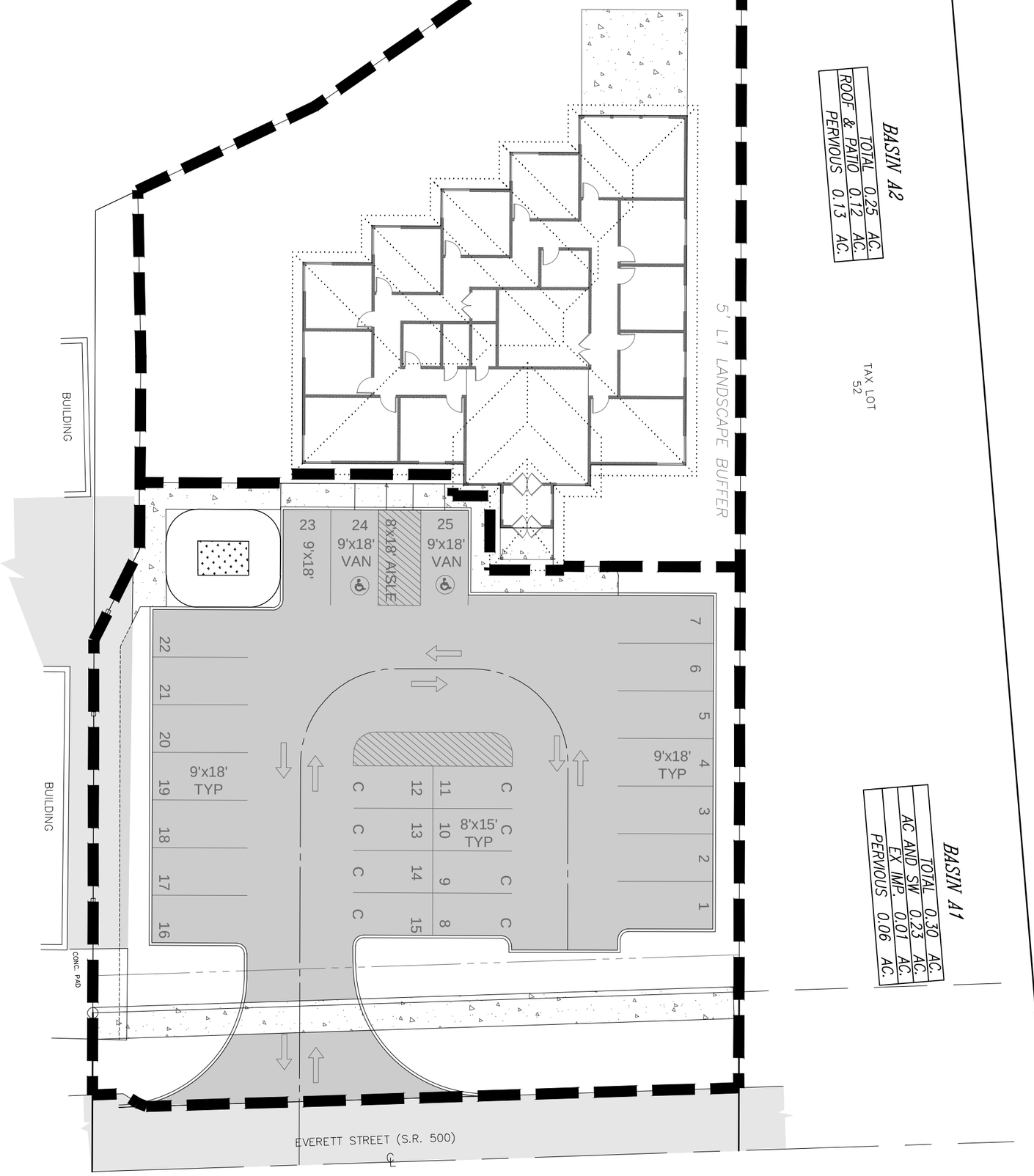
SGA ENGINEERING & DESIGN

PREDEVELOPED BASIN

LACAMAS COUNSELING CENTER

CAMAS, WASHINGTON

SCALE: 1" = 20'
DATE: 9/6/2022
PROJECT: 5023



DEVELOPED BASIN
LACAMAS COUNSELING CENTER
CAMAS, WASHINGTON

SCALE: 1" = 20'
DATE: 5/4/2022
PROJECT: 5023

SGA ENGINEERING & DESIGN

Design Criteria Appendix B

WWHM Soil Groups

Memorandum

otak

700 Washington Street
Suite 401.
Vancouver, WA 98660
Phone (360) 737-9613
Fax (360) 737-9651

To: Rod Swanson, Clark County Environmental Services

From: Tim Kraft

Copies: File

Date: December 21, 2010

Subject: Clark County WWHM Soil Groupings

The Clark County version of the Western Washington Hydrology Model (WWHM) includes five soils groups to represent the many soil types found within the county limits. Although there are over 110 different soil types throughout Clark County, similarities between the soils allows them to be grouped into categories for modeling purposes.

Clark County soils are grouped into five categories largely based on their permeability and runoff potential. These categories include:

- Soil Group (SG) 1 – Excessively drained soils (hydrologic soil groups A & B)
- Soil Group (SG) 2 – Well drained soils (mostly hydrologic soil group B)
- Soil Group (SG) 3 – Moderately drained soils (hydrologic soil groups B & C)
- Soil Group (SG) 4 – Poorly drained soils (slowly infiltrating C soils, as well as D soils)
- Soil Group (SG) 5 – Wetland soils (mucks).

Soil Groups 1 and 2 are those most suitable for traditional infiltration facilities such as trenches and drywells, while Soil Group 3 may only be suitable for slower infiltrating facilities such as rain gardens and other Low Impact Development (LID) measures. Soil Groups 4 and 5 are those which are typically not suitable for infiltration.

For additional information on the classification of soils for use in the Clark County WWHM model, please see the report titled "Development of the Clark County Version of the Western Washington Hydrology Model", which can be found on the county's community development web site.

The following table lists the WWHM soil group for each NCRS soil type in Clark County.

Map Symbol	Soil Name	HSG
Soils Group (SG) 1		
LeB	LAUREN	B
LgB	LAUREN	B
LgD	LAUREN	B
LgF	LAUREN	B
LIB	LAUREN	B
Ro	ROUGH BROKEN LAND	A
SvA	SIFTON	B
WnB	WIND RIVER VARIANT	B
WnD	WIND RIVER VARIANT	B
WnG	WIND RIVER VARIANT	B
WrB	WIND RIVER VARIANT	B
WrF	WIND RIVER VARIANT	B
	PITS	A
	BONNEVILLE STONY SAND LOAM	A
Soils Group (SG) 2		
BpB	BEAR PRARIE	B
BpC	BEAR PRARIE	B
CnB	CINEBAR	B
CnD	CINEBAR	B
CnE	CINEBAR	B
CnG	CINEBAR	B
CrE	CINEBAR	B
CrG	CINEBAR	B
CsF	CISPUS	B
CtA	CLOQUATO	B
HlA	HILLSBORO	B
HlB	HILLSBORO	B
HlC	HILLSBORO	B
HlD	HILLSBORO	B
HlE	HILLSBORO	B

Map Symbol	Soil Name	HSG
HlF	HILLSBORO	B
Soils Group (SG) 2 (continued)		
KeC	KINNEY	B
KeE	KINNEY	B
KeF	KINNEY	B
KnF	KINNEY	B
LaE	LARCHMOUNT	B
LaG	LARCHMOUNT	B
LcG	LARCHMOUNT	B
MsB	MOSSYROCK	B
NbA	NEWBERG	B
NbB	NEWBERG	B
PhB	PILCHUCK	C
PuA	PUYALLUP	B
SaC	SALKUM	B
VaB	VADER	B
VaC	VADER	B
WaA	WASHOUGAL	B
WgB	WASHOUGAL	B
WgE	WASHOUGAL	B
WhF	WASHOUGAL	B
YaA	YACOLT	B
YaC	YACOLT	B
YcB	YACOLT	B

Soils Group (SG) 3

DoB	DOLLAR	C
HcB	HESSON	C
HcD	HESSON	C
HcE	HESSON	C
HcF	HESSON	C
HgB	HESSON	C
HgD	HESSON	C
HhE	HESSON	C
HoA	HILLSBORO	B

Map Symbol	Soil Name	HSG
HoB	HILLSBORO	B
Soils Group (SG) 3 (continued)		
HoC	HILLSBORO	B
HoD	HILLSBORO	B
HoE	HILLSBORO	B
HoG	HILLSBORO	B
HsB	HILLSBORO	B
McB	McBEE	C
MeA	McBEE	C
MIA	McBEE	C
OeD	OLEQUA	B
OeE	OLEQUA	B
OeF	OLEQUA	B
OlB	OLYMPIC	B
OID	OLYMPIC	B
OlE	OLYMPIC	B
OIF	OLYMPIC	B
OmE	OLYMPIC	B
OmF	OLYMPIC	B
OpC	OLYMPIC VARIANT	C
OpE	OLYMPIC VARIANT	C
OpG	OLYMPIC VARIANT	C
OrC	OLYMPIC VARIANT	C
PoB	POWELL	C
PoD	POWELL	C
PoE	POWELL	C
SmA	SAUVIE	B
SmB	SAUVIE	B
SnA	SAUVIE	D
SpB	SAUVIE	B

Soils Group (SG) 4

CvA	COVE	D
CwA	COVE	D
GeB	GEE	C

Map Symbol	Soil Name	HSG
GeD	GEE	C
Soils Group (SG) 4 (continued)		
GeE	GEE	C
GeF	GEE	C
GuB	GUMBOOT	D
HtA	HOCKINSON	D
HuB	HOCKINSON	D
HvA	HOCKINSON	D
LrC	LAUREN	C
LrF	LAUREN	C
MnA	MINNIECE	D
MnD	MINNIECE	D
MoA	MINNIECE VARIANT	D
OdB	ODNE	D
OhD	OLEQUA VARIANT	C
OhF	OLEQUA VARIANT	C
SlB	SARA	D
SlD	SARA	D
SlF	SARA	D
Soils Group (SG) 5		
Sr	SEMIAHMOO	C
Su	SEMIAHMOO VARIANT	D
ThA	TISCH	D

Hydraulic Calculations Appendix C

Water Quality Design

Developed Hydrologic Calculations

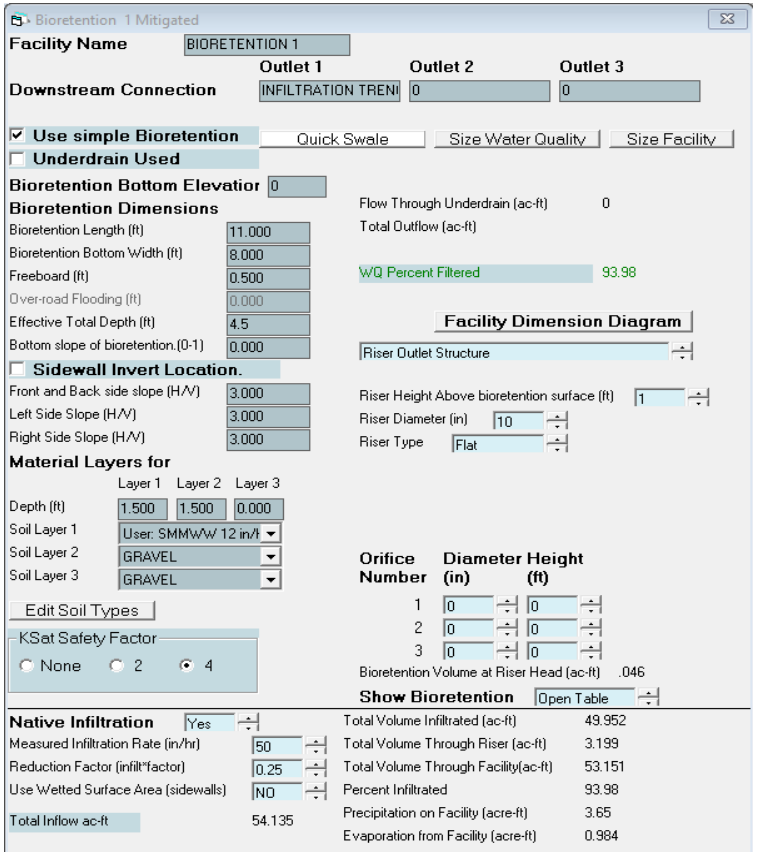
Western Washington Hydrology Model (WWHM) Project Report

BIO-RETENTION AREA WORKSHEET

09/06/2022

JOB NAME: **Lacamas Counseling Center**
JOB #: **5023**

Bio Retention Area	**1**	
Bottom Area (sq ft)	88	
Bottom Perimeter (ft)	38	
*Bottom Length (ft)	*11*	
*Bottom Width (ft)	*8*	
Treatment Depth (ft)	1	
Design Slope	3	
Slope Projection Corners	Rounded	
*Effective Slope	2.87	
Top Treatment Area (sq ft)	230.27	
Infiltration Rate (iph)	12	
Reduction Factor	0.25	
Design Rate (iph)	3	
Pool Drawdown Time (hrs)	4	**< 24**
Percent Treated	93.98%	**> 91%**
**24 Hr WQ Volume (ac ft)	0.0362	
24 Hr WQ Volume (cu ft)	1577	
Mid-Depth Area (sq ft)	159.14	
WQ Drawdown (hrs)	39.64	**< 48**



*For irregular areas, Length, Width and Slope are the dimensions required to achieve the same top and bottom areas as the irregular area that has been designed.

**Taken from the WWHM Water Quality Analysis.
Note:Grey cells are the input values.

Designed By: KRS

File: *W:\DWG\5023-Lacamas Counseling Center\Stormwater\Prelim\[5023 - WWHM DATA.xlsx]BIO-RETENTION*

WWHM2012

PROJECT REPORT

General Model Information

Project Name:	5034 WWHM
Site Name:	
Site Address:	
City:	
Report Date:	9/6/2022
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2021/08/18
Version:	4.2.18

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Mod	0.54
Pervious Total	0.54

Impervious Land Use	acre
ROADS FLAT	0.01
Impervious Total	0.01
Basin Total	0.55

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

BASIN A1

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG3, Field, Flat	0.06
Pervious Total	0.06

Impervious Land Use	acre
ROADS FLAT	0.24
Impervious Total	0.24
Basin Total	0.3

Element Flows To:

Surface	Interflow	Groundwater
Surface ORETENTION 1	Surface ORETENTION 1	

BASIN A2

Bypass:	Yes
GroundWater:	No

Pervious Land Use	acre
SG3, Field, Flat	0.13
Pervious Total	0.13

Impervious Land Use	acre
ROOF TOPS FLAT	0.12
Impervious Total	0.12
Basin Total	0.25

Element Flows To:

Surface	Interflow	Groundwater
INFILTRATION TRENCH 1	INFILTRATION TRENCH 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

BIORETENTION 1

Bottom Length: 11.00 ft.
Bottom Width: 8.00 ft.
Material thickness of first layer: 1.5
Material type for first layer: SMMWW 12 in/hr
Material thickness of second layer: 1.5
Material type for second layer: GRAVEL
Material thickness of third layer: 0
Material type for third layer: GRAVEL
Infiltration On
Infiltration rate: 50
Infiltration safety factor: 0.25
Total Volume Infiltrated (ac-ft.): 49.952
Total Volume Through Riser (ac-ft.): 3.199
Total Volume Through Facility (ac-ft.): 53.151
Percent Infiltrated: 93.98
Total Precip Applied to Facility: 3.65
Total Evap From Facility: 0.984
Underdrain not used
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 10 in.
Element Flows To:
Outlet 1 Outlet 2
INFILTRATION TRENCH 1

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0173	0.0000	0.0000	0.0000
0.0495	0.0171	0.0000	0.0000	0.0000
0.0989	0.0167	0.0001	0.0000	0.0000
0.1484	0.0163	0.0002	0.0000	0.0000
0.1978	0.0160	0.0002	0.0000	0.0000
0.2473	0.0156	0.0003	0.0000	0.0001
0.2967	0.0153	0.0003	0.0000	0.0001
0.3462	0.0149	0.0004	0.0000	0.0001
0.3956	0.0146	0.0005	0.0000	0.0001
0.4451	0.0142	0.0005	0.0000	0.0002
0.4945	0.0139	0.0006	0.0000	0.0003
0.5440	0.0135	0.0007	0.0000	0.0003
0.5934	0.0132	0.0008	0.0000	0.0004
0.6429	0.0129	0.0009	0.0000	0.0004
0.6923	0.0126	0.0010	0.0000	0.0005
0.7418	0.0122	0.0011	0.0000	0.0007
0.7912	0.0119	0.0012	0.0000	0.0008
0.8407	0.0116	0.0013	0.0000	0.0009
0.8901	0.0113	0.0014	0.0000	0.0010
0.9396	0.0110	0.0015	0.0000	0.0011
0.9890	0.0107	0.0016	0.0000	0.0013
1.0385	0.0104	0.0017	0.0000	0.0015
1.0879	0.0101	0.0019	0.0000	0.0017
1.1374	0.0099	0.0020	0.0000	0.0019
1.1868	0.0096	0.0022	0.0000	0.0020
1.2363	0.0093	0.0023	0.0000	0.0022

1.2857	0.0090	0.0024	0.0000	0.0025
1.3352	0.0088	0.0026	0.0000	0.0028
1.3846	0.0085	0.0028	0.0000	0.0031
1.4341	0.0082	0.0029	0.0000	0.0032
1.4835	0.0080	0.0031	0.0000	0.0035
1.5330	0.0077	0.0033	0.0000	0.0038
1.5824	0.0075	0.0034	0.0000	0.0042
1.6319	0.0072	0.0036	0.0000	0.0046
1.6813	0.0070	0.0038	0.0000	0.0050
1.7308	0.0068	0.0040	0.0000	0.0051
1.7802	0.0065	0.0041	0.0000	0.0055
1.8297	0.0063	0.0043	0.0000	0.0060
1.8791	0.0061	0.0045	0.0000	0.0102
1.9286	0.0058	0.0047	0.0000	0.0102
1.9780	0.0056	0.0050	0.0000	0.0102
2.0275	0.0054	0.0052	0.0000	0.0102
2.0769	0.0052	0.0054	0.0000	0.0102
2.1264	0.0050	0.0056	0.0000	0.0102
2.1758	0.0048	0.0059	0.0000	0.0102
2.2253	0.0046	0.0061	0.0000	0.0102
2.2747	0.0044	0.0063	0.0000	0.0102
2.3242	0.0042	0.0066	0.0000	0.0102
2.3736	0.0040	0.0069	0.0000	0.0102
2.4231	0.0039	0.0071	0.0000	0.0102
2.4725	0.0037	0.0074	0.0000	0.0102
2.5220	0.0035	0.0077	0.0000	0.0102
2.5714	0.0033	0.0080	0.0000	0.0102
2.6209	0.0032	0.0083	0.0000	0.0102
2.6703	0.0030	0.0086	0.0000	0.0102
2.7198	0.0029	0.0089	0.0000	0.0102
2.7692	0.0027	0.0092	0.0000	0.0102
2.8187	0.0026	0.0095	0.0000	0.0102
2.8681	0.0024	0.0099	0.0000	0.0102
2.9176	0.0023	0.0102	0.0000	0.0102
2.9670	0.0022	0.0105	0.0000	0.0102
3.0000	0.0020	0.0108	0.0000	0.0102

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
3.0000	0.017309	0.010776	0.0000	0.0061	0.0000
3.0495	0.017686	0.011642	0.0000	0.0061	0.0000
3.0989	0.018067	0.012526	0.0000	0.0065	0.0000
3.1484	0.018452	0.013429	0.0000	0.0067	0.0000
3.1978	0.018840	0.014351	0.0000	0.0069	0.0000
3.2473	0.019233	0.015292	0.0000	0.0071	0.0000
3.2967	0.019630	0.016253	0.0000	0.0073	0.0000
3.3462	0.020031	0.017234	0.0000	0.0075	0.0000
3.3956	0.020436	0.018234	0.0000	0.0077	0.0000
3.4451	0.020845	0.019255	0.0000	0.0079	0.0000
3.4945	0.021258	0.020296	0.0000	0.0081	0.0000
3.5440	0.021675	0.021357	0.0000	0.0083	0.0000
3.5934	0.022096	0.022440	0.0000	0.0085	0.0000
3.6429	0.022521	0.023543	0.0000	0.0087	0.0000
3.6923	0.022950	0.024667	0.0000	0.0089	0.0000
3.7418	0.023384	0.025813	0.0000	0.0091	0.0000
3.7912	0.023821	0.026980	0.0000	0.0093	0.0000
3.8407	0.024262	0.028169	0.0000	0.0095	0.0000
3.8901	0.024708	0.029379	0.0000	0.0097	0.0000

3.9396	0.025157	0.030612	0.0000	0.0099	0.0000
3.9890	0.025610	0.031868	0.0000	0.0101	0.0000
4.0385	0.026068	0.033145	0.0666	0.0102	0.0000
4.0879	0.026529	0.034446	0.2289	0.0102	0.0000
4.1374	0.026995	0.035769	0.4390	0.0102	0.0000
4.1868	0.027465	0.037116	0.6708	0.0102	0.0000
4.2363	0.027938	0.038486	0.8982	0.0102	0.0000
4.2857	0.028416	0.039879	1.0962	0.0102	0.0000
4.3352	0.028898	0.041296	1.2472	0.0102	0.0000
4.3846	0.029383	0.042737	1.3487	0.0102	0.0000
4.4341	0.029873	0.044202	1.4410	0.0102	0.0000
4.4835	0.030367	0.045692	1.5209	0.0102	0.0000
4.5000	0.030533	0.046194	1.5968	0.0102	0.0000

Surface ORETENTION 1

Element Flows To:

Outlet 1	Outlet 2
INFILTRATION TRENCH 1	BH ORETENTION 1

INFILTRATION TRENCH 1

Bottom Length:	32.00 ft.
Bottom Width:	30.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.333
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	50
Infiltration safety factor:	0.25
Total Volume Infiltrated (ac-ft.):	32.654
Total Volume Through Riser (ac-ft.):	0
Total Volume Through Facility (ac-ft.):	32.654
Percent Infiltrated:	100
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	2 ft.
Riser Diameter:	10 in.
Element Flows To:	
Outlet 1	Outlet 2

Gravel Trench Bed Hydraulic Table

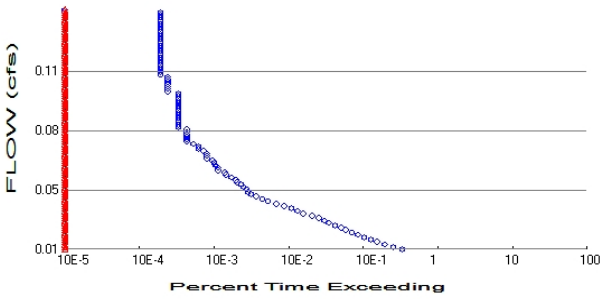
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.022	0.000	0.000	0.000
0.0333	0.022	0.000	0.000	0.277
0.0667	0.022	0.000	0.000	0.277
0.1000	0.022	0.000	0.000	0.277
0.1333	0.022	0.001	0.000	0.277
0.1667	0.022	0.001	0.000	0.277
0.2000	0.022	0.001	0.000	0.277
0.2333	0.022	0.001	0.000	0.277
0.2667	0.022	0.002	0.000	0.277
0.3000	0.022	0.002	0.000	0.277
0.3333	0.022	0.002	0.000	0.277
0.3667	0.022	0.002	0.000	0.277
0.4000	0.022	0.002	0.000	0.277
0.4333	0.022	0.003	0.000	0.277
0.4667	0.022	0.003	0.000	0.277
0.5000	0.022	0.003	0.000	0.277
0.5333	0.022	0.003	0.000	0.277
0.5667	0.022	0.004	0.000	0.277
0.6000	0.022	0.004	0.000	0.277
0.6333	0.022	0.004	0.000	0.277
0.6667	0.022	0.004	0.000	0.277
0.7000	0.022	0.005	0.000	0.277
0.7333	0.022	0.005	0.000	0.277
0.7667	0.022	0.005	0.000	0.277
0.8000	0.022	0.005	0.000	0.277
0.8333	0.022	0.006	0.000	0.277

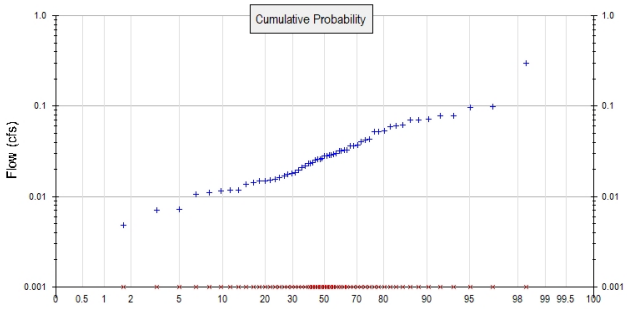
0.8667	0.022	0.006	0.000	0.277
0.9000	0.022	0.006	0.000	0.277
0.9333	0.022	0.006	0.000	0.277
0.9667	0.022	0.007	0.000	0.277
1.0000	0.022	0.007	0.000	0.277
1.0333	0.022	0.007	0.000	0.277
1.0667	0.022	0.007	0.000	0.277
1.1000	0.022	0.008	0.000	0.277
1.1333	0.022	0.008	0.000	0.277
1.1667	0.022	0.008	0.000	0.277
1.2000	0.022	0.008	0.000	0.277
1.2333	0.022	0.009	0.000	0.277
1.2667	0.022	0.009	0.000	0.277
1.3000	0.022	0.009	0.000	0.277
1.3333	0.022	0.009	0.000	0.277
1.3667	0.022	0.010	0.000	0.277
1.4000	0.022	0.010	0.000	0.277
1.4333	0.022	0.010	0.000	0.277
1.4667	0.022	0.010	0.000	0.277
1.5000	0.022	0.011	0.000	0.277
1.5333	0.022	0.011	0.000	0.277
1.5667	0.022	0.011	0.000	0.277
1.6000	0.022	0.011	0.000	0.277
1.6333	0.022	0.012	0.000	0.277
1.6667	0.022	0.012	0.000	0.277
1.7000	0.022	0.012	0.000	0.277
1.7333	0.022	0.012	0.000	0.277
1.7667	0.022	0.013	0.000	0.277
1.8000	0.022	0.013	0.000	0.277
1.8333	0.022	0.013	0.000	0.277
1.8667	0.022	0.013	0.000	0.277
1.9000	0.022	0.013	0.000	0.277
1.9333	0.022	0.014	0.000	0.277
1.9667	0.022	0.014	0.000	0.277
2.0000	0.022	0.015	0.000	0.277
2.0333	0.022	0.015	0.053	0.277
2.0667	0.022	0.016	0.151	0.277
2.1000	0.022	0.017	0.276	0.277
2.1333	0.022	0.018	0.420	0.277
2.1667	0.022	0.018	0.575	0.277
2.2000	0.022	0.019	0.733	0.277
2.2333	0.022	0.020	0.885	0.277
2.2667	0.022	0.021	1.024	0.277
2.3000	0.022	0.021	1.145	0.277
2.3333	0.022	0.022	1.242	0.277
2.3667	0.022	0.023	1.316	0.277
2.4000	0.022	0.024	1.372	0.277
2.4333	0.022	0.024	1.439	0.277
2.4667	0.022	0.025	1.494	0.277
2.5000	0.022	0.026	1.546	0.277
2.5333	0.022	0.026	1.597	0.277
2.5667	0.022	0.027	1.646	0.277
2.6000	0.022	0.028	1.694	0.277
2.6333	0.022	0.029	1.740	0.277
2.6667	0.022	0.029	1.785	0.277
2.7000	0.022	0.030	1.830	0.277
2.7333	0.022	0.031	1.873	0.277
2.7667	0.022	0.032	1.915	0.277

2.8000	0.022	0.032	1.956	0.277
2.8333	0.022	0.033	1.996	0.277
2.8667	0.022	0.034	2.036	0.277
2.9000	0.022	0.035	2.075	0.277
2.9333	0.022	0.035	2.113	0.277
2.9667	0.022	0.036	2.150	0.277
3.0000	0.022	0.037	2.187	0.277

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.54
Total Impervious Area: 0.01

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.19
Total Impervious Area: 0.36

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.026499
5 year	0.051888
10 year	0.074279
25 year	0.109515
50 year	0.141175
100 year	0.177777

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.025	0.000
1950	0.024	0.000
1951	0.061	0.000
1952	0.019	0.000
1953	0.033	0.000
1954	0.070	0.000
1955	0.026	0.000
1956	0.071	0.000
1957	0.043	0.000
1958	0.028	0.000

1959	0.018	0.000
1960	0.015	0.000
1961	0.037	0.000
1962	0.015	0.000
1963	0.021	0.000
1964	0.026	0.000
1965	0.037	0.000
1966	0.032	0.000
1967	0.029	0.000
1968	0.032	0.000
1969	0.041	0.000
1970	0.296	0.000
1971	0.014	0.000
1972	0.030	0.000
1973	0.012	0.000
1974	0.053	0.000
1975	0.022	0.000
1976	0.053	0.000
1977	0.003	0.000
1978	0.078	0.000
1979	0.012	0.000
1980	0.023	0.000
1981	0.061	0.000
1982	0.042	0.000
1983	0.098	0.000
1984	0.018	0.000
1985	0.016	0.000
1986	0.014	0.000
1987	0.059	0.000
1988	0.011	0.000
1989	0.011	0.000
1990	0.012	0.000
1991	0.026	0.000
1992	0.029	0.000
1993	0.018	0.000
1994	0.023	0.000
1995	0.015	0.000
1996	0.097	0.000
1997	0.078	0.000
1998	0.028	0.000
1999	0.033	0.000
2000	0.030	0.000
2001	0.005	0.000
2002	0.071	0.000
2003	0.052	0.000
2004	0.007	0.000
2005	0.007	0.000
2006	0.036	0.000
2007	0.017	0.000
2008	0.016	0.000

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.2960	0.0000
2	0.0982	0.0000
3	0.0973	0.0000
4	0.0783	0.0000

5	0.0780	0.0000
6	0.0712	0.0000
7	0.0709	0.0000
8	0.0700	0.0000
9	0.0614	0.0000
10	0.0609	0.0000
11	0.0593	0.0000
12	0.0529	0.0000
13	0.0527	0.0000
14	0.0519	0.0000
15	0.0432	0.0000
16	0.0422	0.0000
17	0.0405	0.0000
18	0.0373	0.0000
19	0.0367	0.0000
20	0.0360	0.0000
21	0.0330	0.0000
22	0.0326	0.0000
23	0.0320	0.0000
24	0.0317	0.0000
25	0.0301	0.0000
26	0.0295	0.0000
27	0.0288	0.0000
28	0.0286	0.0000
29	0.0285	0.0000
30	0.0280	0.0000
31	0.0265	0.0000
32	0.0258	0.0000
33	0.0256	0.0000
34	0.0251	0.0000
35	0.0238	0.0000
36	0.0234	0.0000
37	0.0232	0.0000
38	0.0218	0.0000
39	0.0209	0.0000
40	0.0195	0.0000
41	0.0182	0.0000
42	0.0180	0.0000
43	0.0176	0.0000
44	0.0168	0.0000
45	0.0162	0.0000
46	0.0157	0.0000
47	0.0152	0.0000
48	0.0149	0.0000
49	0.0148	0.0000
50	0.0142	0.0000
51	0.0137	0.0000
52	0.0117	0.0000
53	0.0117	0.0000
54	0.0116	0.0000
55	0.0109	0.0000
56	0.0106	0.0000
57	0.0071	0.0000
58	0.0071	0.0000
59	0.0048	0.0000
60	0.0033	0.0000

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0132	6989	0	0	Pass
0.0145	5260	0	0	Pass
0.0158	4102	0	0	Pass
0.0171	3234	0	0	Pass
0.0184	2636	0	0	Pass
0.0197	2152	0	0	Pass
0.0210	1795	0	0	Pass
0.0223	1472	0	0	Pass
0.0236	1220	0	0	Pass
0.0249	1059	0	0	Pass
0.0262	877	0	0	Pass
0.0275	732	0	0	Pass
0.0288	628	0	0	Pass
0.0300	536	0	0	Pass
0.0313	433	0	0	Pass
0.0326	330	0	0	Pass
0.0339	275	0	0	Pass
0.0352	229	0	0	Pass
0.0365	183	0	0	Pass
0.0378	144	0	0	Pass
0.0391	110	0	0	Pass
0.0404	93	0	0	Pass
0.0417	77	0	0	Pass
0.0430	66	0	0	Pass
0.0443	59	0	0	Pass
0.0456	57	0	0	Pass
0.0468	52	0	0	Pass
0.0481	48	0	0	Pass
0.0494	43	0	0	Pass
0.0507	41	0	0	Pass
0.0520	36	0	0	Pass
0.0533	30	0	0	Pass
0.0546	29	0	0	Pass
0.0559	24	0	0	Pass
0.0572	24	0	0	Pass
0.0585	22	0	0	Pass
0.0598	21	0	0	Pass
0.0611	20	0	0	Pass
0.0624	17	0	0	Pass
0.0636	17	0	0	Pass
0.0649	17	0	0	Pass
0.0662	15	0	0	Pass
0.0675	13	0	0	Pass
0.0688	13	0	0	Pass
0.0701	11	0	0	Pass
0.0714	9	0	0	Pass
0.0727	9	0	0	Pass
0.0740	9	0	0	Pass
0.0753	9	0	0	Pass
0.0766	9	0	0	Pass
0.0779	9	0	0	Pass
0.0792	7	0	0	Pass
0.0804	7	0	0	Pass

0.0817	7	0	0	Pass
0.0830	7	0	0	Pass
0.0843	7	0	0	Pass
0.0856	7	0	0	Pass
0.0869	7	0	0	Pass
0.0882	7	0	0	Pass
0.0895	7	0	0	Pass
0.0908	7	0	0	Pass
0.0921	7	0	0	Pass
0.0934	7	0	0	Pass
0.0947	7	0	0	Pass
0.0959	7	0	0	Pass
0.0972	7	0	0	Pass
0.0985	5	0	0	Pass
0.0998	5	0	0	Pass
0.1011	5	0	0	Pass
0.1024	5	0	0	Pass
0.1037	5	0	0	Pass
0.1050	5	0	0	Pass
0.1063	5	0	0	Pass
0.1076	4	0	0	Pass
0.1089	4	0	0	Pass
0.1102	4	0	0	Pass
0.1115	4	0	0	Pass
0.1127	4	0	0	Pass
0.1140	4	0	0	Pass
0.1153	4	0	0	Pass
0.1166	4	0	0	Pass
0.1179	4	0	0	Pass
0.1192	4	0	0	Pass
0.1205	4	0	0	Pass
0.1218	4	0	0	Pass
0.1231	4	0	0	Pass
0.1244	4	0	0	Pass
0.1257	4	0	0	Pass
0.1270	4	0	0	Pass
0.1283	4	0	0	Pass
0.1295	4	0	0	Pass
0.1308	4	0	0	Pass
0.1321	4	0	0	Pass
0.1334	4	0	0	Pass
0.1347	4	0	0	Pass
0.1360	4	0	0	Pass
0.1373	4	0	0	Pass
0.1386	4	0	0	Pass
0.1399	4	0	0	Pass
0.1412	4	0	0	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
INFILTRATION TRENCH 1	☐	29.72			☐	100.00			
ORETENTION 1	☑	48.37	53.15	49.95	☑	93.98	49.95	93.98	Treat. Credit
Total Volume Infiltrated		78.08	53.15	49.95		96.27	49.95	50 / 53 = 94%	Treat. Credit = 94%
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

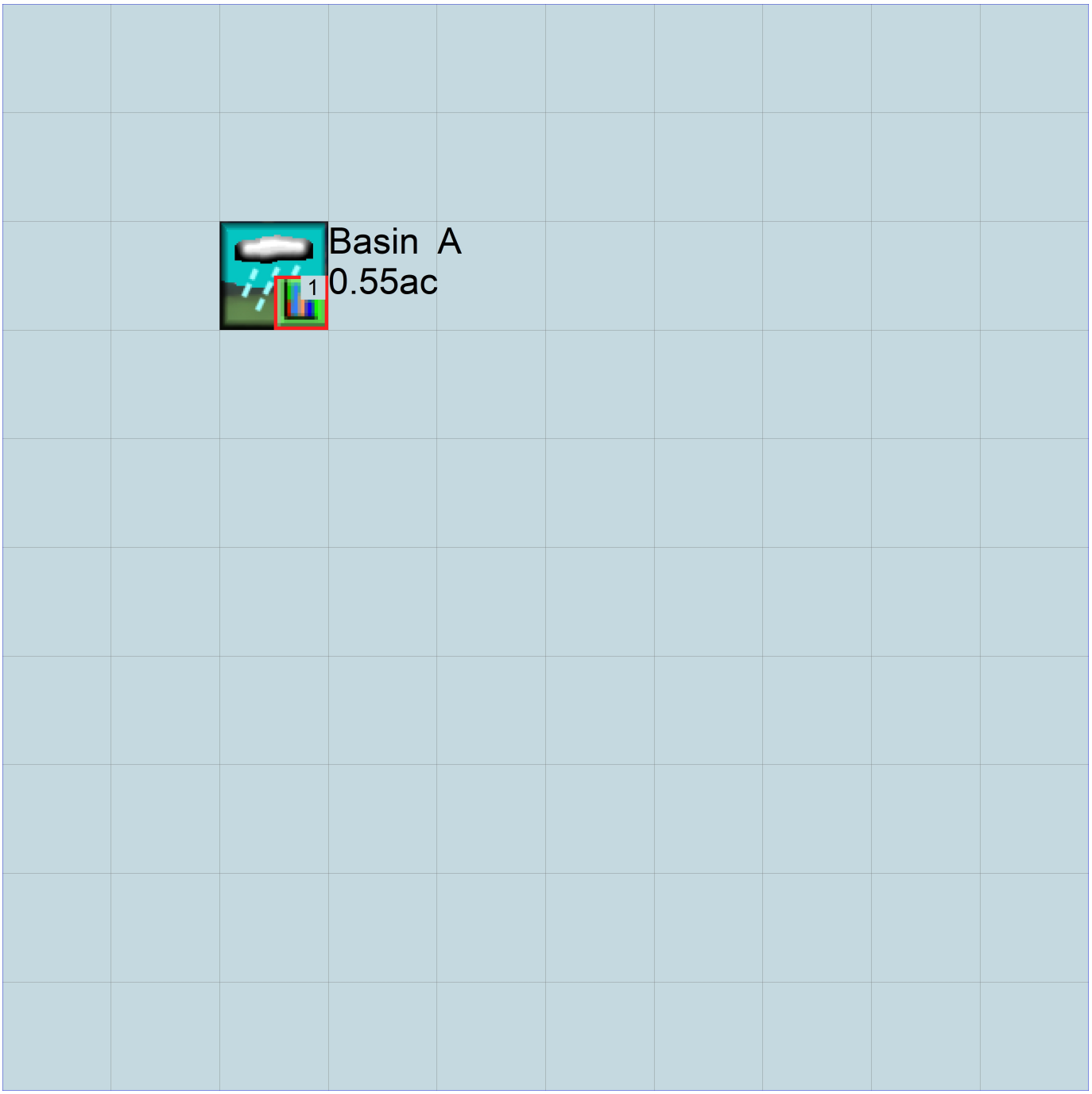
No PERLND changes have been made.

IMPLND Changes

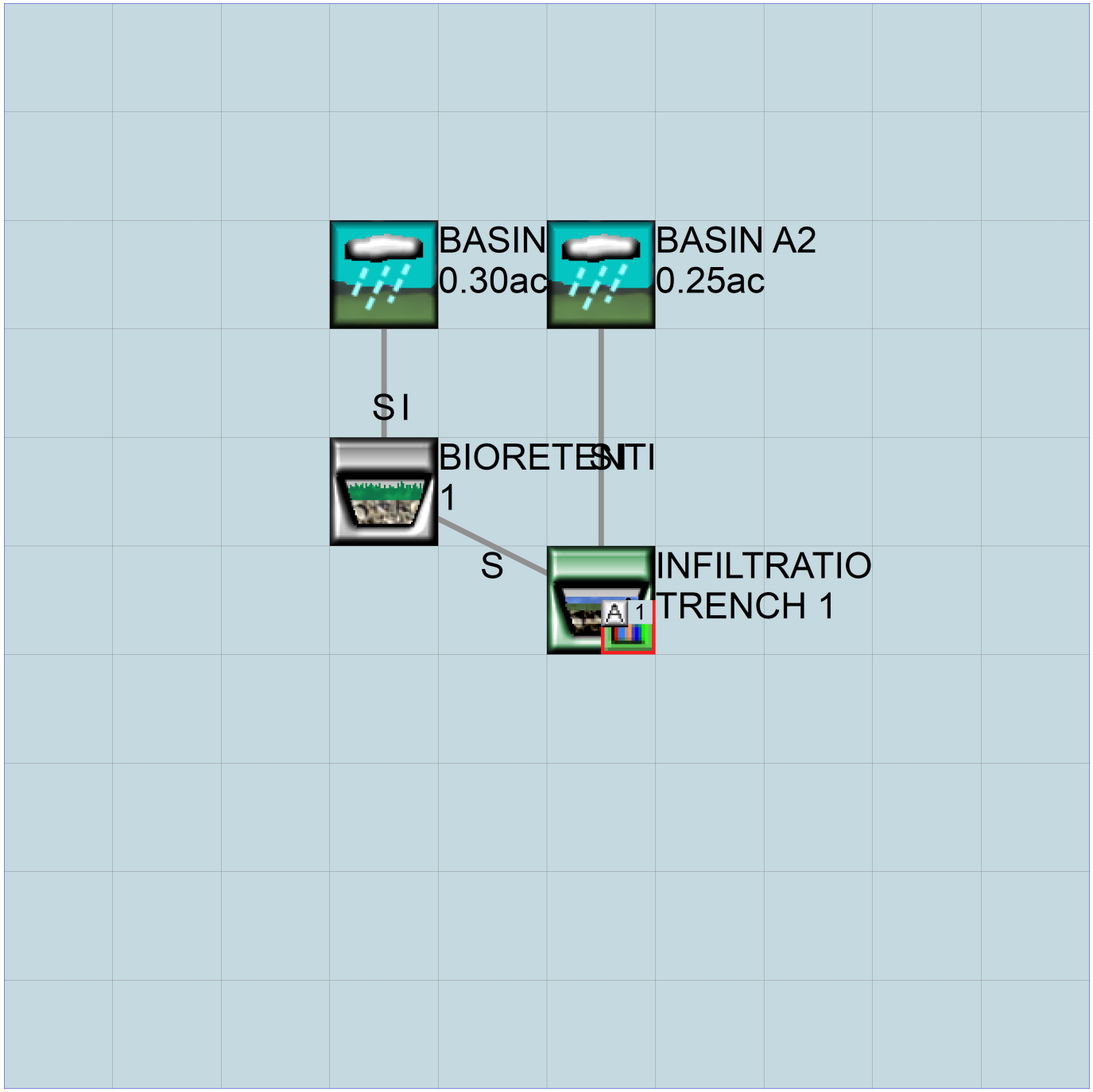
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   5034 WWHM.wdm
MESSU       25   Pre5034 WWHM.MES
            27   Pre5034 WWHM.L61
            28   Pre5034 WWHM.L62
            30   POC5034 WWHM1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      20
      IMPLND       1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  A                    MAX                     1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   20     SG3, Forest, Mod        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   20         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   20         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   20         0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   20             0         9      0.08       400       0.1         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   20              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   20            0.2         1      0.35         4       0.4       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   20             0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
```

```
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1            0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  A***
PERLND  20                        0.54     COPY   501     12
PERLND  20                        0.54     COPY   501     13
IMPLND   1                        0.01     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                 ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                           in  out                           ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                      ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                         ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
           *** ac-ft     for each possible exit       for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
```

```
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   5034 WWHM.wdm
MESSU       25   Mit5034 WWHM.MES
            27   Mit5034 WWHM.L61
            28   Mit5034 WWHM.L62
            30   POC5034 WWHM1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      22
      IMPLND       1
      IMPLND       4
      RCHRES       1
      RCHRES       2
      RCHRES       3
      COPY         1
      COPY       501
      COPY       601
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        INFILTRATION TRENCH 1       MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  601         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   22     SG3, Field, Flat        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   22         0    0    1    0    0    0    0    0    0    0    0    0
```

```
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   22         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   22              0         9      0.06       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   22              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   22          0.15         1       0.3         4       0.4       0.4
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   22              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                    in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
  END IWAT-PARM1
```

```
  IWAT-PARM2
    <PLS >       IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >       IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
BASIN A1***
PERLND  22                        0.06     RCHRES   1      2
PERLND  22                        0.06     RCHRES   1      3
IMPLND   1                        0.24     RCHRES   1      5
BASIN A2***
PERLND  22                        0.13     RCHRES   3      2
PERLND  22                        0.13     RCHRES   3      3
IMPLND   4                        0.12     RCHRES   3      5

******Routing******
PERLND  22                        0.13     COPY     1     12
IMPLND   4                        0.12     COPY     1     15
PERLND  22                        0.13     COPY     1     13
RCHRES   2                           1     RCHRES   3      7
RCHRES   2                                 COPY     1     17
RCHRES   1                           1     RCHRES   3      7
RCHRES   1                                 COPY     1     17
RCHRES   1                           1     RCHRES   2      8
RCHRES   3                           1     COPY   501     17
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                        in  out                             ***
    1     Surface ORETENTI-007    2    1    1    1   28    0    1
    2     BIORETENTION 1          2    1    1    1   28    0    1
    3     INFILTRATION TRE-008    2    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***
```

```
  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
    3         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
    2         4    0    0    0    0    0    0    0    0    0    1    9
    3         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    2        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    3        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1              1      0.01       0.0       0.0       0.0       0.0
    2              2      0.01       0.0       0.0       0.0       0.0
    3              3      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                     ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
           *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1            0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    2            0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    3            0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      2
   62    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)     (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.017309  0.000000  0.000000  0.000000
  0.049451  0.017061  0.000047  0.000000  0.000000
  0.098901  0.016691  0.000097  0.000000  0.000000
  0.148352  0.016325  0.000151  0.000000  0.000000
  0.197802  0.015963  0.000207  0.000000  0.000034
  0.247253  0.015605  0.000267  0.000000  0.000059
  0.296703  0.015251  0.000330  0.000000  0.000092
  0.346154  0.014902  0.000397  0.000000  0.000098
  0.395604  0.014556  0.000467  0.000000  0.000135
  0.445055  0.014215  0.000541  0.000000  0.000189
  0.494505  0.013877  0.000618  0.000000  0.000255
  0.543956  0.013543  0.000700  0.000000  0.000334
  0.593407  0.013214  0.000785  0.000000  0.000408
  0.642857  0.012888  0.000875  0.000000  0.000426
  0.692308  0.012567  0.000968  0.000000  0.000532
  0.741758  0.012250  0.001066  0.000000  0.000653
  0.791209  0.011936  0.001168  0.000000  0.000789
  0.840659  0.011627  0.001274  0.000000  0.000942
  0.890110  0.011322  0.001385  0.000000  0.000998
```

```
0.939560  0.011021  0.001501  0.000000  0.001111
0.989011  0.010723  0.001621  0.000000  0.001297
1.038462  0.010430  0.001746  0.000000  0.001502
1.087912  0.010141  0.001876  0.000000  0.001724
1.137363  0.009856  0.002010  0.000000  0.001923
1.186813  0.009575  0.002150  0.000000  0.001966
1.236264  0.009298  0.002295  0.000000  0.002227
1.285714  0.009025  0.002445  0.000000  0.002507
1.335165  0.008757  0.002600  0.000000  0.002808
1.384615  0.008492  0.002761  0.000000  0.003130
1.434066  0.008231  0.002927  0.000000  0.003232
1.483516  0.007974  0.003099  0.000000  0.003473
1.532967  0.007722  0.003260  0.000000  0.003837
1.582418  0.007473  0.003426  0.000000  0.004223
1.631868  0.007228  0.003598  0.000000  0.004631
1.681319  0.006988  0.003775  0.000000  0.004968
1.730769  0.006751  0.003957  0.000000  0.005060
1.780220  0.006519  0.004145  0.000000  0.005510
1.829670  0.006290  0.004339  0.000000  0.005975
1.879121  0.006066  0.004538  0.000000  0.010185
1.928571  0.005845  0.004744  0.000000  0.010185
1.978022  0.005629  0.004955  0.000000  0.010185
2.027473  0.005417  0.005172  0.000000  0.010185
2.076923  0.005209  0.005395  0.000000  0.010185
2.126374  0.005004  0.005624  0.000000  0.010185
2.175824  0.004804  0.005860  0.000000  0.010185
2.225275  0.004608  0.006101  0.000000  0.010185
2.274725  0.004416  0.006350  0.000000  0.010185
2.324176  0.004228  0.006604  0.000000  0.010185
2.373626  0.004044  0.006865  0.000000  0.010185
2.423077  0.003864  0.007133  0.000000  0.010185
2.472527  0.003688  0.007408  0.000000  0.010185
2.521978  0.003516  0.007689  0.000000  0.010185
2.571429  0.003349  0.007977  0.000000  0.010185
2.620879  0.003185  0.008273  0.000000  0.010185
2.670330  0.003025  0.008575  0.000000  0.010185
2.719780  0.002869  0.008884  0.000000  0.010185
2.769231  0.002718  0.009201  0.000000  0.010185
2.818681  0.002570  0.009525  0.000000  0.010185
2.868132  0.002427  0.009856  0.000000  0.010185
2.917582  0.002287  0.010195  0.000000  0.010185
2.967033  0.002152  0.010541  0.000000  0.010185
3.000000  0.002020  0.010987  0.000000  0.010185
END FTABLE  2
FTABLE      1
 32    5
   Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)     (cfs)   (ft/sec)    (Minutes)***
0.000000  0.002020  0.000000  0.000000  0.000000
0.049451  0.017686  0.000865  0.000000  0.006111
0.098901  0.018067  0.001749  0.000000  0.006514
0.148352  0.018452  0.002652  0.000000  0.006716
0.197802  0.018840  0.003574  0.000000  0.006917
0.247253  0.019233  0.004516  0.000000  0.007118
0.296703  0.019630  0.005477  0.000000  0.007320
0.346154  0.020031  0.006457  0.000000  0.007521
0.395604  0.020436  0.007458  0.000000  0.007723
0.445055  0.020845  0.008478  0.000000  0.007924
0.494505  0.021258  0.009519  0.000000  0.008126
0.543956  0.021675  0.010581  0.000000  0.008327
0.593407  0.022096  0.011663  0.000000  0.008529
0.642857  0.022521  0.012766  0.000000  0.008730
0.692308  0.022950  0.013891  0.000000  0.008932
0.741758  0.023384  0.015036  0.000000  0.009133
0.791209  0.023821  0.016203  0.000000  0.009335
0.840659  0.024262  0.017392  0.000000  0.009536
0.890110  0.024708  0.018603  0.000000  0.009737
0.939560  0.025157  0.019836  0.000000  0.009939
0.989011  0.025610  0.021091  0.000000  0.010140
1.038462  0.026068  0.022369  0.066625  0.010185
```

```
1.087912  0.026529  0.023669  0.228879  0.010185
1.137363  0.026995  0.024993  0.438969  0.010185
1.186813  0.027465  0.026339  0.670824  0.010185
1.236264  0.027938  0.027709  0.898153  0.010185
1.285714  0.028416  0.029103  1.096154  0.010185
1.335165  0.028898  0.030520  1.247206  0.010185
1.384615  0.029383  0.031961  1.348651  0.010185
1.434066  0.029873  0.033426  1.441036  0.010185
1.483516  0.030367  0.034915  1.520907  0.010185
1.500000  0.030533  0.035417  1.596788  0.010185
END FTABLE  1
FTABLE      3
 92    5
   Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)      (cfs)   (ft/sec)    (Minutes)***
0.000000  0.022039  0.000000  0.000000  0.000000
0.033333  0.022039  0.000245  0.000000  0.277778
0.066667  0.022039  0.000489  0.000000  0.277778
0.100000  0.022039  0.000734  0.000000  0.277778
0.133333  0.022039  0.000979  0.000000  0.277778
0.166667  0.022039  0.001223  0.000000  0.277778
0.200000  0.022039  0.001468  0.000000  0.277778
0.233333  0.022039  0.001712  0.000000  0.277778
0.266667  0.022039  0.001957  0.000000  0.277778
0.300000  0.022039  0.002202  0.000000  0.277778
0.333333  0.022039  0.002446  0.000000  0.277778
0.366667  0.022039  0.002691  0.000000  0.277778
0.400000  0.022039  0.002936  0.000000  0.277778
0.433333  0.022039  0.003180  0.000000  0.277778
0.466667  0.022039  0.003425  0.000000  0.277778
0.500000  0.022039  0.003669  0.000000  0.277778
0.533333  0.022039  0.003914  0.000000  0.277778
0.566667  0.022039  0.004159  0.000000  0.277778
0.600000  0.022039  0.004403  0.000000  0.277778
0.633333  0.022039  0.004648  0.000000  0.277778
0.666667  0.022039  0.004893  0.000000  0.277778
0.700000  0.022039  0.005137  0.000000  0.277778
0.733333  0.022039  0.005382  0.000000  0.277778
0.766667  0.022039  0.005626  0.000000  0.277778
0.800000  0.022039  0.005871  0.000000  0.277778
0.833333  0.022039  0.006116  0.000000  0.277778
0.866667  0.022039  0.006360  0.000000  0.277778
0.900000  0.022039  0.006605  0.000000  0.277778
0.933333  0.022039  0.006850  0.000000  0.277778
0.966667  0.022039  0.007094  0.000000  0.277778
1.000000  0.022039  0.007339  0.000000  0.277778
1.033333  0.022039  0.007583  0.000000  0.277778
1.066667  0.022039  0.007828  0.000000  0.277778
1.100000  0.022039  0.008073  0.000000  0.277778
1.133333  0.022039  0.008317  0.000000  0.277778
1.166667  0.022039  0.008562  0.000000  0.277778
1.200000  0.022039  0.008807  0.000000  0.277778
1.233333  0.022039  0.009051  0.000000  0.277778
1.266667  0.022039  0.009296  0.000000  0.277778
1.300000  0.022039  0.009540  0.000000  0.277778
1.333333  0.022039  0.009785  0.000000  0.277778
1.366667  0.022039  0.010030  0.000000  0.277778
1.400000  0.022039  0.010274  0.000000  0.277778
1.433333  0.022039  0.010519  0.000000  0.277778
1.466667  0.022039  0.010764  0.000000  0.277778
1.500000  0.022039  0.011008  0.000000  0.277778
1.533333  0.022039  0.011253  0.000000  0.277778
1.566667  0.022039  0.011498  0.000000  0.277778
1.600000  0.022039  0.011742  0.000000  0.277778
1.633333  0.022039  0.011987  0.000000  0.277778
1.666667  0.022039  0.012231  0.000000  0.277778
1.700000  0.022039  0.012476  0.000000  0.277778
1.733333  0.022039  0.012721  0.000000  0.277778
1.766667  0.022039  0.012965  0.000000  0.277778
1.800000  0.022039  0.013210  0.000000  0.277778
```

```
  1.833333  0.022039  0.013455  0.000000  0.277778
  1.866667  0.022039  0.013699  0.000000  0.277778
  1.900000  0.022039  0.013944  0.000000  0.277778
  1.933333  0.022039  0.014188  0.000000  0.277778
  1.966667  0.022039  0.014433  0.000000  0.277778
  2.000000  0.022039  0.015168  0.000000  0.277778
  2.033333  0.022039  0.015902  0.053769  0.277778
  2.066667  0.022039  0.016637  0.151685  0.277778
  2.100000  0.022039  0.017372  0.276837  0.277778
  2.133333  0.022039  0.018106  0.420687  0.277778
  2.166667  0.022039  0.018841  0.575411  0.277778
  2.200000  0.022039  0.019575  0.732975  0.277778
  2.233333  0.022039  0.020310  0.885276  0.277778
  2.266667  0.022039  0.021045  1.024723  0.277778
  2.300000  0.022039  0.021779  1.145088  0.277778
  2.333333  0.022039  0.022514  1.242541  0.277778
  2.366667  0.022039  0.023248  1.316838  0.277778
  2.400000  0.022039  0.023983  1.372649  0.277778
  2.433333  0.022039  0.024718  1.439820  0.277778
  2.466667  0.022039  0.025452  1.494171  0.277778
  2.500000  0.022039  0.026187  1.546614  0.277778
  2.533333  0.022039  0.026922  1.597336  0.277778
  2.566667  0.022039  0.027656  1.646497  0.277778
  2.600000  0.022039  0.028391  1.694231  0.277778
  2.633333  0.022039  0.029125  1.740657  0.277778
  2.666667  0.022039  0.029860  1.785876  0.277778
  2.700000  0.022039  0.030595  1.829979  0.277778
  2.733333  0.022039  0.031329  1.873043  0.277778
  2.766667  0.022039  0.032064  1.915139  0.277778
  2.800000  0.022039  0.032799  1.956330  0.277778
  2.833333  0.022039  0.033533  1.996671  0.277778
  2.866667  0.022039  0.034268  2.036212  0.277778
  2.900000  0.022039  0.035002  2.075001  0.277778
  2.933333  0.022039  0.035737  2.113078  0.277778
  2.966667  0.022039  0.036472  2.150480  0.277778
  3.000000  0.022039  0.037206  2.187243  0.277778
  3.033333  0.022039  0.037941  2.223398  0.277778
  END FTABLE  3
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP
WDM      2 PREC     ENGL    1.3            RCHRES   1     EXTNL  PREC
WDM      1 EVAP     ENGL    0.5            RCHRES   1     EXTNL  POTEV
WDM      1 EVAP     ENGL    0.8            RCHRES   2     EXTNL  POTEV

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   3 HYDR   RO     1 1        1      WDM   1006 FLOW     ENGL      REPL
RCHRES   3 HYDR   O      1 1        1      WDM   1007 FLOW     ENGL      REPL
RCHRES   3 HYDR   O      2 1        1      WDM   1008 FLOW     ENGL      REPL
RCHRES   3 HYDR   STAGE  1 1        1      WDM   1009 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
COPY   601 OUTPUT MEAN   1 1     48.4      WDM    901 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>           <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
```

```
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK        7
RCHRES     OFLOW  OVOL   1                 RCHRES         INFLOW IVOL
  END MASS-LINK    7

  MASS-LINK        8
RCHRES     OFLOW  OVOL   2                 RCHRES         INFLOW IVOL
  END MASS-LINK    8

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       17
RCHRES     OFLOW  OVOL   1                 COPY           INPUT  MEAN
  END MASS-LINK   17


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

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Geotechnical Report Appendix D

Refer to Section G of the application packet