Exhibit "11"

Preliminary Stormwater Report

FOR

Raising Cane's

at

1075 S Burlington Blvd,

Burlington, WA 98233

October 3, 2025

PREPARED FOR:

Raising Restaurants, LLC.

1075 S BURLINGTON BLVD

BURLINGTON, WA, 98233

PREPARED BY:

KIMLEY-HORN

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OFFICE: (206) 607-2600

KHA PROJECT #: 090042018

Kimley»Horn

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Disclosure Statement:

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Contents

PROJECT NARRATIVE

The proposed Rasing Cane's Project is located northwest of the S Burlington Blvd and Cascade Mall Dr intersection, 1075 S Burlington Blvd, within APN P23694, in Burlington, Skagit County, Washington. The proposed project consists of demolition of an existing commercial building and construction of a new commercial building with associated drive aisles, parking, utility infrastructure, and onsite stormwater management.

The purpose of this report is to describe flow control and runoff treatment for the onsite improvements. This report will meet the Department of Ecology's (DOE) *Stormwater Management Manual for Western Washington (SWMMWW), dated 2024*.

Flow control and runoff treatment calculations were performed using the Western Washington Hydrology Model 2012 (WWHM), an approved continuous simulation model by the DOE. WWHM uses the EPA Hydrologic Simulation Program Fortran (HSPF), which is a calibrated continuous simulation hydrologic model.

Water Quality, Quantity and Conveyance

The existing site is an asphalt parking lot with a restaurant on the NW corner of the intersection of Burlington Blvd and Cascade Mall Dr. Existing runoff sheet flows to multiple catch basins onsite. These catch basins tie into the municipal storm sewer system on the south side of the site. To ensure runoff is properly treated and detained, a new water quality vault and underground detention pipe is being proposed.

The onsite improvements will include a water quality vault, located southeast of the building footprint, to adequately treat stormwater runoff and two detention pipe systems, located north of the building and south of the building in the second drive-through lane.

Certificate of Engineer

The drainage report and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

Prepared By: _____

Liz Willmot, PE

1.0 – PROJECT OVERVIEW

1.1 – SITE LOCATION

The 1.25-acre site is located at 1075 S Burlington Blvd, northwest of S Burlington Boulevard and Cascade Mall Drive intersection in the City of Burlington, Skagit County, Washington, as seen in Figure 1 below. The project site is located within APN P23694 and is bounded by Burlington Blvd to the east, Cascade Mall Dr to the south, and commercial properties to the north and west.

Figure 1 – Vicinity Map

1.2 – EXISTING CONDITIONS

The site contains an existing building and area of parking of approximately 38,000 square feet and 14,000 square feet of landscaping. The site is bounded by a commercial parcel to the west and north, S Burlington Blvd on the eastern frontage, and Cascade Mall Dr on the southern frontage. There is an existing mall on the parcel north of the site that includes Target, Great Clips, Dollar Tree, Xfinity, and Planet Fitness.

The existing site is relatively flat, with a drop across the site of approximately 4 feet from the southeast to the northwest with an average slope of approximately 2.50%. The project is located with Zone A7, which is within the 100-year floodplain (See Appendix A-1).

The existing site soils have been classified via the United States Department of Agriculture (USDA) Soil survey as mostly Mt. Vernon very fine sandy loam, which is considered hydrologic soil group C, with some areas of field silt loam, which is considered hydrologic soil group B. The USDA Soil Survey can be viewed in Appendix C-1.

A site geotechnical investigation was conducted by Terracon in June 2025 (See Appendix C-2). The geotechnical investigation consisted of six (6) borings. The shallowest observed groundwater was between 6' and 7.5'. Although no infiltration test pits were conducted, estimated infiltration rates were calculated using the grain-size correlation presented by the DOE's SWMMWW. Design infiltration rates were calculated to be 0.8 in/hr. Through a combination of low infiltration rates and high groundwater, it was determined that infiltration is infeasible.

1.3 – EXISTING ON-SITE STORMWATER SYSTEM

Stormwater runoff from the site, sheet flows north and west and is collected in catch basins located within neighboring properties. Collected runoff is routed through the City of Burlington's storm drainage system and ultimately outfalls into Gages Slough, southeast of the site.

1.4 – PROPOSED SITE CONDITIONS

Stormwater runoff will be captured in several catch basins placed at low points around the site and routed to one of two CMP detention facilities for temporary storage. Mitigated runoff from both facilities will then be routed to a water quality vault for both oil and metals treatment. Stormwater runoff will then connect to an existing City of Burlington owned conveyance system located southeast of the project site.

2.0 – MINIMUM REQUIREMENTS (MRs)

2.1 – APPLICABLE MINIMUM REQUIREMENTS

The site is a redevelopment project since the existing site has more than 35% impervious surface cover. The project results in 2,000 square feet or more of new plus replaced hard surface area and adds more than 5,000 square feet of new plus replaced hard surface. Therefore, this project is required to meet all MRs for new and replaced hard surfaces and converted vegetated areas per the SWMMWW dated 2024. See below for a list of the MRs, the applicability of each to this project, and where additional information regarding compliance for each MR may be found in this report.

A summary of the land disturbing activities for this project can be seen in Table 1 below.

Table 1 – Land Disturbing Activities

ONSITE BASIN	
NEW IMPERVOUS	31,018 SF (0.71 AC)
NEW OFFSITE IMPREVIOUS	2,011 SF (0.05 AC)
NEW PERVIOUS	17,986 SF (0.41 AC)
NEW OFFSITE PERVIOUS	1,053 SF (0.02 AC)
ONSITE BASIN TOTAL	52,068 SF (1.20 AC)

MR #1 – PREPARATION OF A STORMWATER SITE PLAN

Preliminary Stormwater Plans have been provided and can be viewed in Appendix A-4. Erosion and Sediment Control Plans will be provided as part of final engineering.

MR #2 –STOMRWATER POLLUTION PREVENTION PLAN (SWPPP)

A Construction Stormwater Pollution Prevention Plan (SWPPP) will be provided as part of final engineering.

MR #3 – SOURCE CONTROL OF POLLUTION

Water quality source control BMPs will be applied as applicable in accordance with the DOE's 2024 SWMMWW.

MR #4 – PRESERVATION OF NATURAL DRAINAGE SYSTEMS AND OUTFALLS

The existing drainage patterns will be maintained. Stormwater runoff will be collected in catch basins and routed to detention pipes which will ultimately tie into the municipal storm sewer system on the southeast side of the site.

MR #5 – ON-SITE STORMWATER MANAGEMENT

The project site will be examined for feasibility of Low Impact Developed (LID) design. See Section 5.0 for additional information.

MR #6 – RUNOFF TREATMENT

Runoff treatment will be provided via one water quality vault. Vault specifications to be provided as part of final engineering. For additional information on runoff treatment see Section 6.0 below.

MR #7 – FLOW CONTROL

Stormwater runoff will be detained by two CMP detention facilities prior to passing through water quality vault and connecting to the existing manhole on the southeast side of the site. See Section 7.0 below for details on design and assumptions for these proposed facilities.

MR #8 – WETLAND PROTECTION

Runoff generated from the site does not discharge into a wetland (directly or indirectly).

MR #9 – OPERATIONS AND MAINTENANCE

An operations and maintenance manual will be provided as part of final engineering.

4.0 – SOURCE CONTROL OF POLLUTION (MR#3)

All pollutants, including waste materials and demolition debris that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater.

Cover, containment and protection from vandalism shall be provided for all chemicals, liquid products, petroleum products, and non-inert wastes present on the site. On-site fueling tanks shall include secondary containment capable of containing 110% of the tank volume.

Maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and de-greasing cleaning operations, fuel tank drain down and removal, and any other activities which may result in discharge of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces shall be cleaned immediately following any discharge of spill incident. Emergency repairs may be performed on-site using temporary plastic placed beneath and, if raining, over the vehicle.

5.0 – PRESERVING NATURAL DRAINAGE SYSTEMS (MR#4)

No adjustments will be made to the existing natural discharge location. In the existing conditions, stormwater runoff is collected and routed to Gages Slough and ultimately Skagit River. It is proposed that stormwater runoff will be detained onsite to match forested conditions.

6.0 – ON-SITE BMPS (MR#5)

As the proposed project site is not Flow Control exempt and is inside the UGA, this project will evaluate List #2 of the DOE SWMMWW for feasibility of on-site BMPs in the order listed for each type of surface as specified in the requirements of the SWMMWW and outlined below:

For Lawn and Landscaped Areas:

- Post Construction Soil Quality and Depth
    - Lawn and landscaped areas will be managed using BMP T5.13: Post-Construction Soil Quality and Depth.

For Roofs:

- Full Dispersion
    - Not feasible – There is not a native vegetated flow path of at least 100 feet downgradient from the impervious surface to the property boundary. The site is fully developed and constrained by adjacent development and hardscaping, which does not provide the space needed for dispersion.
- Downspout Full Infiltration
    - Not feasible – Infiltration facilities cannot be placed without conflicting with proposed foundations and utilities. The project site is also constrained by paved areas and minimal landscaped spaces, making safe overflow route and setback distances impractical.
- Bioretention
    - Not feasible – There is not suitable space for bioretention facilities. Additionally, the available bioretention depth is limited by the high groundwater at the project site and the design infiltration rate of 0.8 inches limits the efficiency of infiltration on site.
        - The project site is constrained by building layout, trash enclosure, required screen wall, existing utilities and associated easements, proposed utilities, and hardscape parking areas and drive aisles. The project site constraints leave no suitable space for even small bioretention planters.
        - Groundwater is 6 to 7.5 feet deep, so the allowable bioretention depth is limited by the three foot minimum vertical separation between water table and the bottom of the bioretention for a site more than 10,000 square feet of impervious surface and the required soil depth.
        - Although no infiltration test pits were conducted, estimated infiltration rates were calculated using the grain-size correlation presented by the DOE's SWMMWW. Design infiltration rates were calculated to be 0.8 in/hr. An infiltration rate of 0.8 inches is above the minimum 0.3 inches, but due to the limited space available and high groundwater, it was determined that bioretention is infeasible.
- Downspout Dispersion Systems

    - Not feasible – Dispersion Systems cannot be placed without conflicting with proposed foundations and utilities. The project site is also constrained by paved areas and minimal landscaped spaces, making the 25 feet long vegetated flow path between the dispersion trench and any property line, structure, or impervious surface and setback distances impractical.
- Perforated Stub-out connections
    - Feasible – All roof leader connections will be routed through perforated pipe segments as part of final engineering to allow for shallow, distributed infiltration within available landscaped areas. This design maximizes the feasible infiltration volume while maintaining required separation from buildings and utilities. This approach represents the maximum feasible infiltration given site constraints and is consistent with the intent of Table I-3.2 of MR #5 Compliance.

For Other Hard Surfaces:

- Full Dispersion
    - Not feasible – There is not a native vegetated flow path of at least 100 feet downgradient from the impervious surface to the property boundary. The site is fully developed and constrained by adjacent development and hardscaping, which does not provide the space needed for dispersion.
- Permeable Pavement
    - Not feasible – The site requires oil control BMPs. Refer to Section 7.0 on Water Quality Facilities.
- Bioretention
    - Not feasible – There is not suitable space for bioretention facilities. Additionally, the available bioretention depth is limited by the high groundwater at the project site and the design infiltration rate of 0.8 inches limits the efficiency of infiltration on site.
        - The project site is constrained by building layout, trash enclosure, required screen wall, existing utilities and associated easements, proposed utilities, and hardscape parking areas and drive aisles. The project site constraints leave no suitable space for even small bioretention planters.
        - Groundwater is 6 to 7.5 feet deep, so the allowable bioretention depth is limited by the three foot minimum vertical separation between water table and the bottom of the bioretention for a site more than 10,000 square feet of impervious surface and the required soil depth.
        - Although no infiltration test pits were conducted, estimated infiltration rates were calculated using the grain-size correlation presented by the DOE's SWMMWW. Design infiltration rates were calculated to be 0.8 in/hr. An infiltration rate of 0.8 inches is above the minimum 0.3 inches, but due to the limited space available and high groundwater, it was determined that bioretention is infeasible.
- Sheet Flow Dispersion or Concentrated Flow Dispersion
    - Not feasible – Sheet Flow or Concentrated Flow Dispersion Systems cannot be placed without conflicting with proposed foundations and utilities. The project site is also constrained by paved areas and minimal landscaped spaces, making the 25 to 50 feet long vegetated flow path between the dispersion trench and any property line, structure, or impervious surface and setback distances impractical.

7.0 – WATER QUALITY FACILITIES (MR#6)

The project site has been evaluated based on the current edition of the SWMMWW dated 2024 and it was determined that water quality treatment will be required since new plus replaced pollution generating impervious surfaces (PGIS) exceed 5,000 square feet (SF).

The flow chart for water quality treatment was utilized to evaluate what treatment needs to be provided. A summary of the flow chart can be viewed below:

- Oil Control: The onsite basin is deemed to be a commercial site which is anticipated to have more than 300 total trips per day meaning oil control will be required.
- Pretreatment: Due to low infiltration rates present onsite, infiltration is not proposed and therefore pretreatment is deemed infeasible.
- Phosphorous: The site's ultimate discharge point is Gages Slough which is not listed as a 303(d) body of water and therefore phosphorus treatment is not required.
- Metals: Due to the anticipated high amount of trips generated, it was determined that metals treatment would be required.

A proprietary treatment structure is proposed in the drive-through lane southeast of the building after stormwater has passed through two CMP detention facilities onsite. Water quality treatment structure type and size has not been determined and will be provided prior to final engineering.

Since the proposed treatment structure is located downstream of the proposed detention pipe system, the treatment structures will be sized to handle the full 2-year mitigated flow rate. A summary of the required water quality flow rates can be seen in Figure 2 below and in Appendix B-1.

Figure 2 – Water Quality Flow Rates

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.014374
5 year	0.027783
10 year	0.041539
25 year	0.066769
50 year	0.093092
100 year	0.127759

8.0 – FLOW CONTROL (MR#7)

To ensure stormwater runoff is properly mitigated, two CMP detention facilities are proposed to maintain flows equal to forested conditions. There are two facilities north of the building and two south. The two to the north are connected by a 12" pipe and therefore are operating as one facility. The same applies to the two CMP detention facilities south of the building. A summary of all detention facilities can be seen in Table 2 below and can be viewed in Appendix B-1.

Table 2 – Detention Facility Summary

DETENTION FACILITY	CMP DIA. (FT)	PIPE LENGTH (LF)	STORAGE (CF)	BOTTOM ELEV. (FT)
DETENTION #1	5	836	16,407	26
DETENTION #2	5	135	2,657	26
TOTAL STORAGE	**---**		**19,064**	**---**

9.0 – CONVEYANCE SYSTEMS

A detailed analysis of onsite conveyance systems will be provided during final engineering.

10.0 – WETLAND PROTECTION (MR#8)

There are no existing wetlands on or adjacent to the proposed site.

11.0 – OPERATIONS AND MAINTENANCE MANUAL (MR#9)

An operations and maintenance manual will be provided during final engineering.

12.0 – OTHER PERMITS

Construction of this project and its stormwater facilities will require the following additional permits:

Construction Stormwater General Permit – Washington Department of Ecology (DOE)

13.0 – APPENDICES

Appendix A-1 – FEMA FIRMette

Appendix A-2 – Pre-Developed Drainage Area Map

Appendix A-3 – Post-Developed Drainage Area Map

Appendix A-4 – Drainage Plans

Appendix B-1 – Flow Control Modeling Output

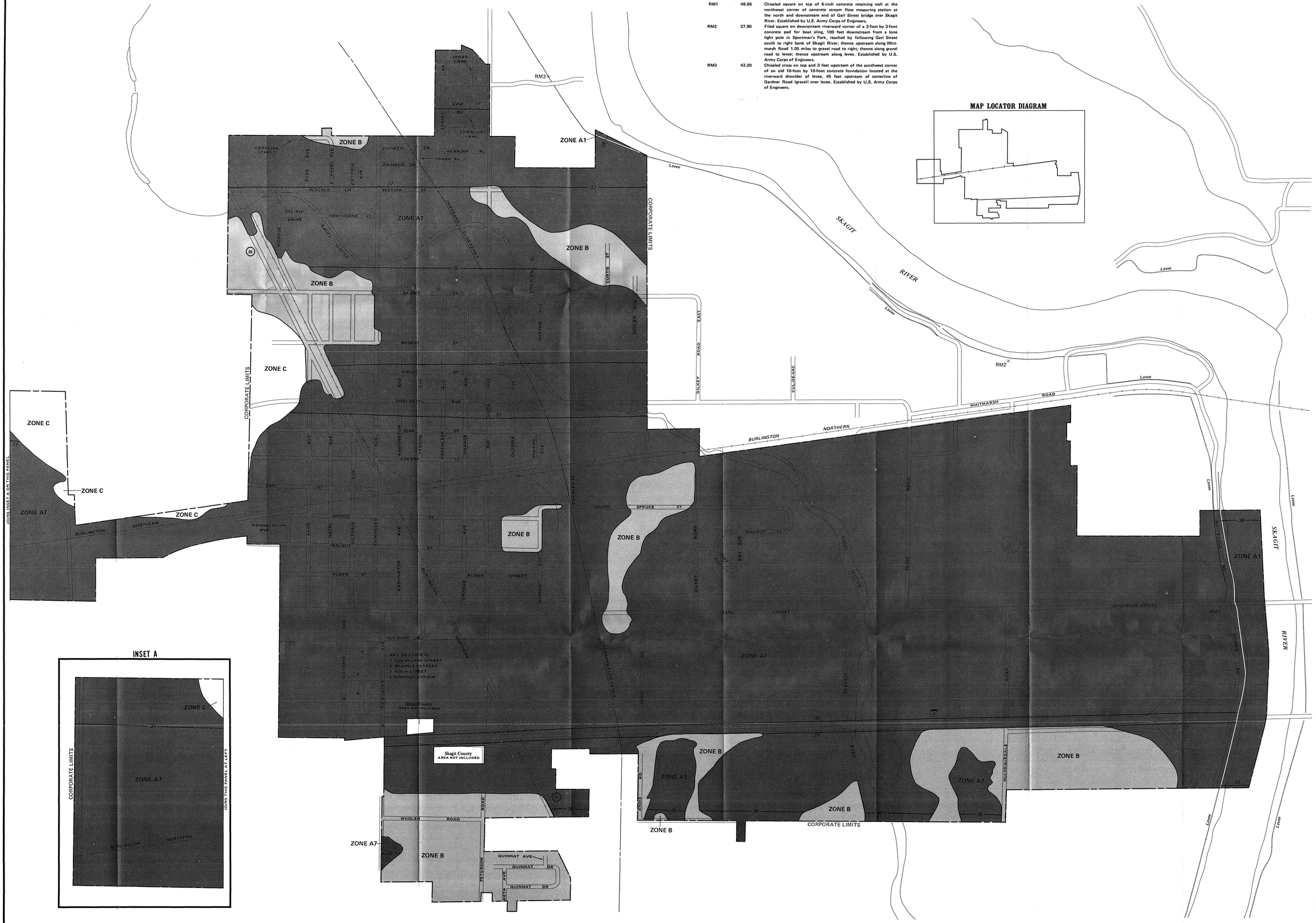
Appendix C-1 – USGS Soil Survey

Appendix C-2 – Terracon Geotechnical Report

Appendix A-1: FEMA FIRMette

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	48.66	Chiseled square on top of 6-inch concrete retaining wall at the northwest corner of concrete stream flow measuring station at the north and downstream end of Garl Street bridge over Skagit River. Established by U.S. Army Corps of Engineers.
RM2	27.96	Filed square on downstream riverward corner of a 3-foot by 3-foot concrete pad for boat sling, 100 feet downstream from a lone light pole in Sportman's Park, reached by following Garl Street south to right bank of Skagit River; thence upstream along Whitmarsh Road 1.05 miles to gravel road to right; thence along gravel road to levee; thence upstream along levee. Established by U.S. Army Corps of Engineers.
RM3	43.20	Chiseled cross on top and 3 feet upstream of the southwest corner of an old 10-foot by 10-foot concrete foundation located at the riverward shoulder of levee, 45 feet upstream of centerline of Gardner Road (gravel) over levee. Established by U.S. Army Corps of Engineers.

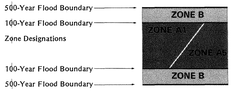


MAP LOCATOR DIAGRAM

INSET A

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations
100-Year Flood Boundary
500-Year Flood Boundary
Base Flood Elevation Line With Elevation In Feet**
Base Flood Elevation In Feet Where Uniform Within Zone**
Elevation Reference Mark
Zone D Boundary
River Mile



**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
MAY 24, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
JUNE 4, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
JANUARY 3, 1985

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
BURLINGTON, WASHINGTON
SKAGIT COUNTY

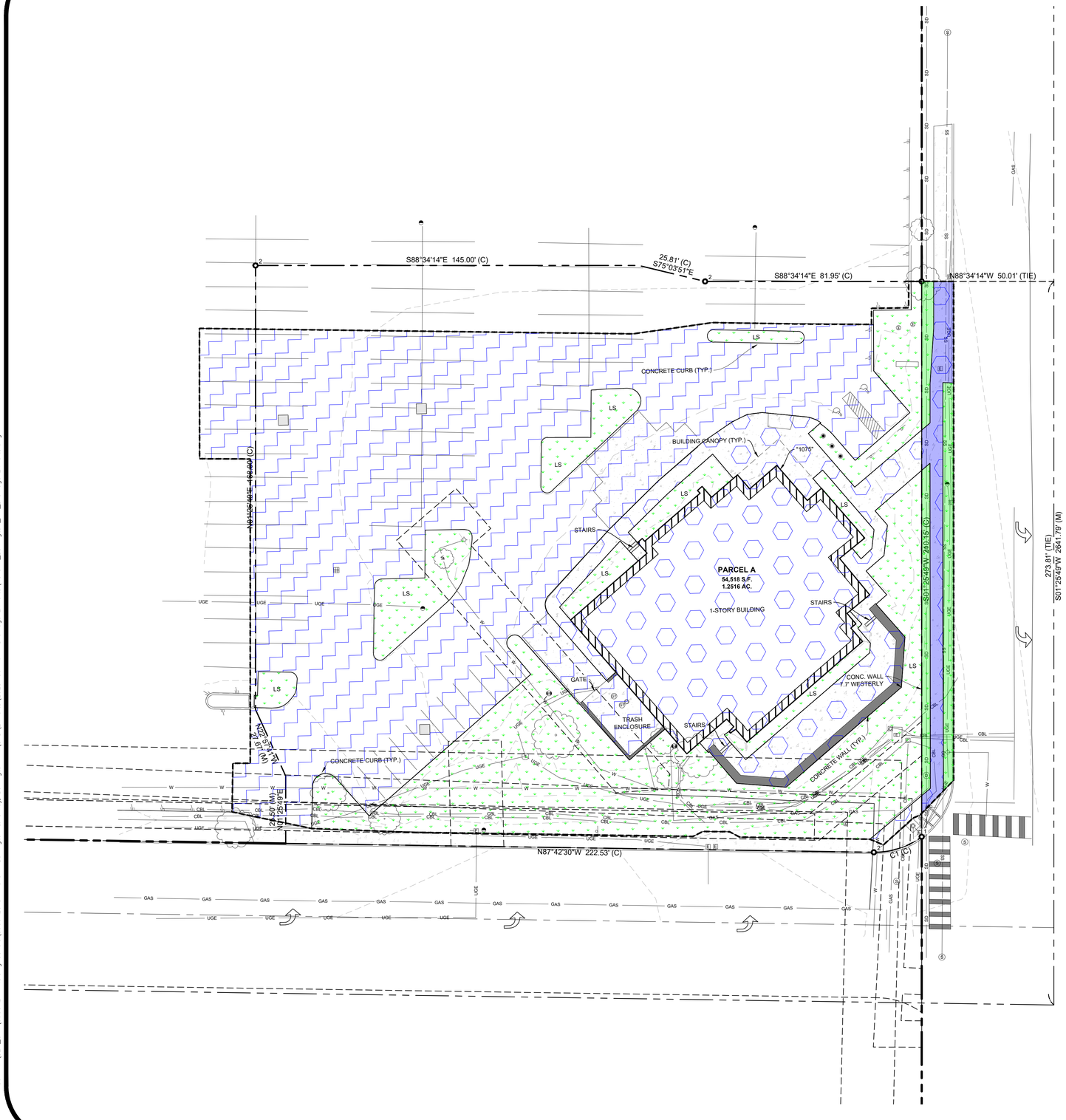
ONLY PANEL PRINTED

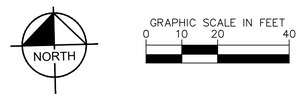
COMMUNITY-PANEL NUMBER
530153 0001 B

EFFECTIVE DATE:
JANUARY 3, 1985

Federal Emergency Management Agency

Appendix A-2: Pre-Developed Drainage Area Map





EXISTING SURFACE SUMMARY TABLE		
	SURFACE	AREA
	POLLUTION GENERATING IMPERVIOUS (ASPHALT/CONCRETE)	25,331 SF (0.58 AC)
	NON-POLLUTION GENERATING IMPERVIOUS (SIDEWALK/ROOF)	11,446 SF (0.26 AC)
	PERVIOUS (LANDSCAPING)	12,951 SF (0.30 AC)
	OFFSITE NON-POLLUTION GENERATING IMPERVIOUS (SIDEWALK)	1,133 SF (0.03 AC)
	OFFSITE PERVIOUS (LANDSCAPING)	1,207 SF (0.03 AC)
	TOTAL:	52,068 SF (1.20 AC.)

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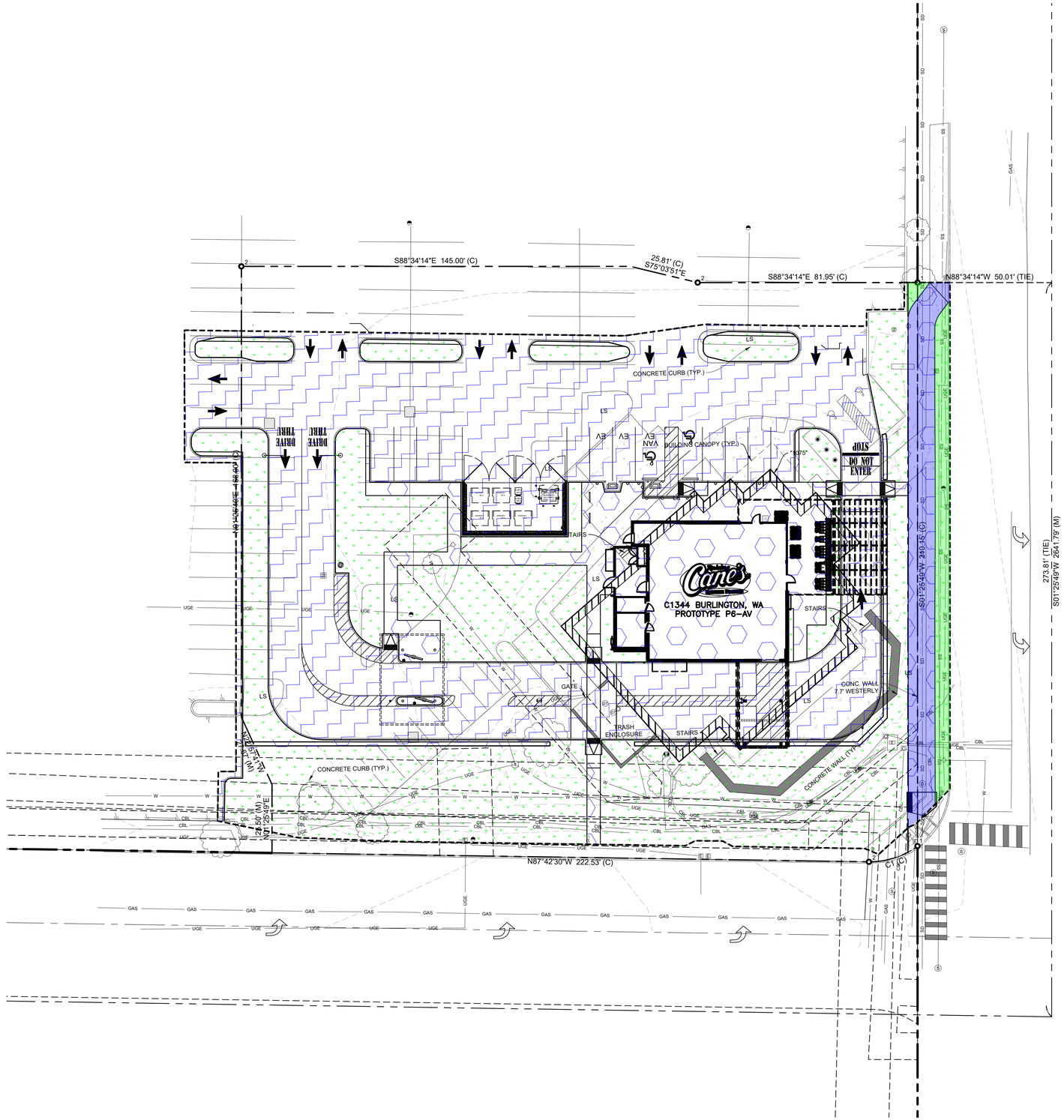
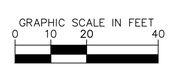
Appendix A-3: Post-Developed Drainage Area Map





PROPOSED SURFACE SUMMARY TABLE		
	SURFACE	AREA
	POLLUTION GENERATING IMPERVIOUS (ASPHALT/CONCRETE)	22,946 SF (0.53 AC)
	NON-POLLUTION GENERATING IMPERVIOUS (SIDEWALK/ROOF)	8,072 SF (0.19 AC)
	PERVIOUS (LANDSCAPING)	17,986 SF (0.41 AC)
	OFFSITE NON-POLLUTION GENERATING IMPERVIOUS (SIDEWALK)	2,011 SF (0.05 AC)
	OFFSITE PERVIOUS (LANDSCAPING)	1,053 SF (0.02 AC)
	TOTAL:	52,068 SF (1.20 AC.)

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Appendix A-4: Drainage Plans

(Provided Separately)

Appendix B-2: Flow Control Modeling Output

WWHM2012

PROJECT REPORT

General Model Information

Project Name: RC Burlington - Flow Control
Site Name:
Site Address:
City:
Report Date: 6/30/2025
Gage: Burlington
Data Start: 1948/10/01
Data End: 2009/09/30
Timestep: 15 Minute
Precip Scale: 1.000
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 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Forest, Flat	1.195
Pervious Total	1.195
Impervious Land Use	acre
Impervious Total	0
Basin Total	1.195

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C, Lawn, Flat	0.437
Pervious Total	0.437

Impervious Land Use	acre
ROADS FLAT	0.758
Impervious Total	0.758
Basin Total	1.195

Element Flows To:

Surface	Interflow	Groundwater
Tank 1	Tank 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

Tank 1

Dimensions
Depth: 5 ft.
Tank Type: Circular
Diameter: 5 ft.
Length: 975.564279980532 ft.
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.010 ft.
Notch Height: 1.483 ft.
Orifice 1 Diameter: 0.546 in. Elevation:0 ft.
Element Flows To:
Outlet 1 Outlet 2

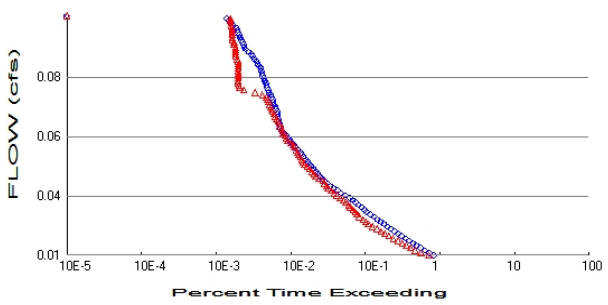
Tank Hydraulic Table

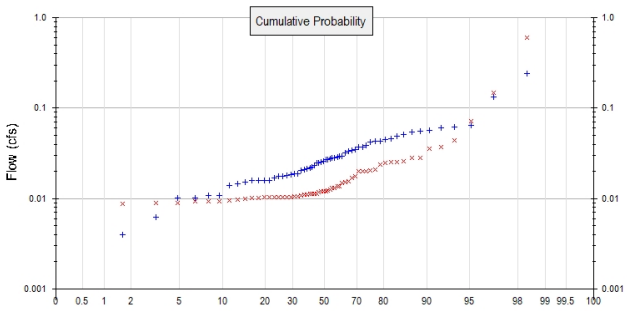
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000	0.000	0.000	0.000
0.0556	0.023	0.000	0.001	0.000
0.1111	0.033	0.002	0.002	0.000
0.1667	0.040	0.004	0.003	0.000
0.2222	0.046	0.006	0.003	0.000
0.2778	0.051	0.009	0.004	0.000
0.3333	0.055	0.012	0.004	0.000
0.3889	0.060	0.015	0.005	0.000
0.4444	0.063	0.019	0.005	0.000
0.5000	0.067	0.022	0.005	0.000
0.5556	0.070	0.026	0.006	0.000
0.6111	0.073	0.030	0.006	0.000
0.6667	0.076	0.034	0.006	0.000
0.7222	0.078	0.039	0.006	0.000
0.7778	0.081	0.043	0.007	0.000
0.8333	0.083	0.048	0.007	0.000
0.8889	0.085	0.052	0.007	0.000
0.9444	0.087	0.057	0.007	0.000
1.0000	0.089	0.062	0.008	0.000
1.0556	0.091	0.067	0.008	0.000
1.1111	0.093	0.072	0.008	0.000
1.1667	0.094	0.078	0.008	0.000
1.2222	0.096	0.083	0.008	0.000
1.2778	0.097	0.088	0.009	0.000
1.3333	0.099	0.094	0.009	0.000
1.3889	0.100	0.099	0.009	0.000
1.4444	0.101	0.105	0.009	0.000
1.5000	0.102	0.111	0.009	0.000
1.5556	0.103	0.116	0.010	0.000
1.6111	0.104	0.122	0.010	0.000
1.6667	0.105	0.128	0.010	0.000
1.7222	0.106	0.134	0.010	0.000
1.7778	0.107	0.140	0.010	0.000
1.8333	0.107	0.146	0.011	0.000
1.8889	0.108	0.152	0.011	0.000

1.9444	0.109	0.158	0.011	0.000
2.0000	0.109	0.164	0.011	0.000
2.0556	0.110	0.170	0.011	0.000
2.1111	0.110	0.176	0.011	0.000
2.1667	0.111	0.182	0.011	0.000
2.2222	0.111	0.188	0.012	0.000
2.2778	0.111	0.195	0.012	0.000
2.3333	0.111	0.201	0.012	0.000
2.3889	0.111	0.207	0.012	0.000
2.4444	0.112	0.213	0.012	0.000
2.5000	0.112	0.219	0.012	0.000
2.5556	0.112	0.226	0.013	0.000
2.6111	0.111	0.232	0.014	0.000
2.6667	0.111	0.238	0.015	0.000
2.7222	0.111	0.244	0.016	0.000
2.7778	0.111	0.250	0.017	0.000
2.8333	0.111	0.257	0.019	0.000
2.8889	0.110	0.263	0.020	0.000
2.9444	0.110	0.269	0.022	0.000
3.0000	0.109	0.275	0.024	0.000
3.0556	0.109	0.281	0.025	0.000
3.1111	0.108	0.287	0.027	0.000
3.1667	0.107	0.293	0.029	0.000
3.2222	0.107	0.299	0.031	0.000
3.2778	0.106	0.305	0.033	0.000
3.3333	0.105	0.311	0.035	0.000
3.3889	0.104	0.317	0.037	0.000
3.4444	0.103	0.323	0.039	0.000
3.5000	0.102	0.328	0.041	0.000
3.5556	0.101	0.334	0.043	0.000
3.6111	0.100	0.340	0.045	0.000
3.6667	0.099	0.345	0.048	0.000
3.7222	0.097	0.351	0.050	0.000
3.7778	0.096	0.356	0.053	0.000
3.8333	0.094	0.361	0.056	0.000
3.8889	0.093	0.367	0.058	0.000
3.9444	0.091	0.372	0.076	0.000
4.0000	0.089	0.377	0.079	0.000
4.0556	0.087	0.382	0.288	0.000
4.1111	0.085	0.386	0.667	0.000
4.1667	0.083	0.391	1.154	0.000
4.2222	0.081	0.396	1.717	0.000
4.2778	0.078	0.400	2.329	0.000
4.3333	0.076	0.404	2.962	0.000
4.3889	0.073	0.409	3.590	0.000
4.4444	0.070	0.413	4.184	0.000
4.5000	0.067	0.416	4.719	0.000
4.5556	0.063	0.420	5.178	0.000
4.6111	0.060	0.423	5.549	0.000
4.6667	0.055	0.427	5.835	0.000
4.7222	0.051	0.430	6.055	0.000
4.7778	0.046	0.432	6.331	0.000
4.8333	0.040	0.435	6.550	0.000
4.8889	0.033	0.437	6.762	0.000
4.9444	0.023	0.438	6.968	0.000
5.0000	0.000	0.439	7.168	0.000
5.0556	0.000	0.000	7.362	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 1.195
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.437
Total Impervious Area: 0.758

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.02584
5 year	0.046944
10 year	0.063709
25 year	0.087789
50 year	0.107694
100 year	0.129191

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.014374
5 year	0.027783
10 year	0.041539
25 year	0.066769
50 year	0.093092
100 year	0.127759

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.062	0.021
1950	0.043	0.036
1951	0.057	0.014
1952	0.034	0.013
1953	0.023	0.012
1954	0.028	0.011
1955	0.025	0.010
1956	0.019	0.012
1957	0.035	0.024
1958	0.021	0.010

1959	0.037	0.015
1960	0.027	0.026
1961	0.018	0.012
1962	0.004	0.011
1963	0.015	0.009
1964	0.018	0.010
1965	0.034	0.021
1966	0.018	0.009
1967	0.022	0.010
1968	0.046	0.020
1969	0.015	0.011
1970	0.010	0.009
1971	0.042	0.044
1972	0.022	0.011
1973	0.025	0.013
1974	0.043	0.025
1975	0.132	0.600
1976	0.016	0.012
1977	0.019	0.010
1978	0.029	0.013
1979	0.016	0.009
1980	0.037	0.025
1981	0.021	0.010
1982	0.052	0.028
1983	0.028	0.025
1984	0.060	0.017
1985	0.011	0.009
1986	0.032	0.028
1987	0.029	0.020
1988	0.049	0.011
1989	0.014	0.011
1990	0.039	0.072
1991	0.056	0.147
1992	0.026	0.010
1993	0.025	0.010
1994	0.006	0.009
1995	0.010	0.010
1996	0.054	0.010
1997	0.241	0.017
1998	0.027	0.010
1999	0.016	0.011
2000	0.011	0.009
2001	0.003	0.008
2002	0.020	0.014
2003	0.016	0.011
2004	0.029	0.015
2005	0.018	0.011
2006	0.045	0.020
2007	0.027	0.016
2008	0.065	0.037
2009	0.017	0.012

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.2407	0.5998
2	0.1323	0.1467
3	0.0646	0.0723

4	0.0623	0.0445
5	0.0600	0.0371
6	0.0568	0.0360
7	0.0560	0.0283
8	0.0543	0.0279
9	0.0516	0.0259
10	0.0494	0.0251
11	0.0457	0.0250
12	0.0450	0.0246
13	0.0430	0.0237
14	0.0427	0.0209
15	0.0425	0.0206
16	0.0390	0.0201
17	0.0375	0.0199
18	0.0374	0.0199
19	0.0352	0.0175
20	0.0342	0.0170
21	0.0335	0.0156
22	0.0321	0.0152
23	0.0295	0.0148
24	0.0292	0.0138
25	0.0287	0.0137
26	0.0283	0.0132
27	0.0282	0.0130
28	0.0273	0.0127
29	0.0271	0.0124
30	0.0268	0.0121
31	0.0259	0.0121
32	0.0253	0.0119
33	0.0249	0.0117
34	0.0246	0.0113
35	0.0232	0.0113
36	0.0221	0.0113
37	0.0216	0.0112
38	0.0212	0.0110
39	0.0210	0.0110
40	0.0205	0.0108
41	0.0189	0.0106
42	0.0188	0.0105
43	0.0182	0.0104
44	0.0179	0.0104
45	0.0177	0.0104
46	0.0175	0.0104
47	0.0169	0.0103
48	0.0160	0.0103
49	0.0158	0.0103
50	0.0158	0.0102
51	0.0158	0.0100
52	0.0153	0.0100
53	0.0147	0.0096
54	0.0139	0.0095
55	0.0107	0.0094
56	0.0107	0.0094
57	0.0102	0.0093
58	0.0102	0.0089
59	0.0062	0.0089
60	0.0040	0.0087
61	0.0032	0.0083

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0129	17823	15090	84	Pass
0.0139	15498	11856	76	Pass
0.0148	13505	10051	74	Pass
0.0158	11792	8633	73	Pass
0.0167	10414	7574	72	Pass
0.0177	9313	6667	71	Pass
0.0187	8310	5858	70	Pass
0.0196	7401	5080	68	Pass
0.0206	6558	4400	67	Pass
0.0215	5869	3906	66	Pass
0.0225	5234	3454	65	Pass
0.0235	4682	3076	65	Pass
0.0244	4229	2667	63	Pass
0.0254	3792	2357	62	Pass
0.0263	3433	2171	63	Pass
0.0273	3089	1992	64	Pass
0.0282	2808	1788	63	Pass
0.0292	2485	1666	67	Pass
0.0302	2224	1566	70	Pass
0.0311	2064	1458	70	Pass
0.0321	1906	1356	71	Pass
0.0330	1748	1274	72	Pass
0.0340	1590	1181	74	Pass
0.0349	1452	1083	74	Pass
0.0359	1316	974	74	Pass
0.0369	1159	887	76	Pass
0.0378	1010	809	80	Pass
0.0388	907	738	81	Pass
0.0397	803	679	84	Pass
0.0407	722	646	89	Pass
0.0416	660	609	92	Pass
0.0426	604	578	95	Pass
0.0436	558	512	91	Pass
0.0445	526	461	87	Pass
0.0455	495	435	87	Pass
0.0464	461	408	88	Pass
0.0474	433	380	87	Pass
0.0483	404	353	87	Pass
0.0493	381	324	85	Pass
0.0503	362	311	85	Pass
0.0512	346	299	86	Pass
0.0522	318	288	90	Pass
0.0531	303	277	91	Pass
0.0541	288	263	91	Pass
0.0550	266	251	94	Pass
0.0560	245	241	98	Pass
0.0570	234	230	98	Pass
0.0579	218	214	98	Pass
0.0589	209	195	93	Pass
0.0598	198	188	94	Pass
0.0608	185	180	97	Pass
0.0617	172	170	98	Pass
0.0627	160	167	104	Pass

0.0637	157	163	103	Pass
0.0646	155	154	99	Pass
0.0656	150	150	100	Pass
0.0665	148	145	97	Pass
0.0675	147	138	93	Pass
0.0684	143	131	91	Pass
0.0694	141	127	90	Pass
0.0704	139	122	87	Pass
0.0713	137	119	86	Pass
0.0723	133	115	86	Pass
0.0732	126	111	88	Pass
0.0742	124	108	87	Pass
0.0751	121	103	85	Pass
0.0761	119	101	84	Pass
0.0771	116	89	76	Pass
0.0780	108	72	66	Pass
0.0790	106	50	47	Pass
0.0799	102	44	43	Pass
0.0809	101	43	42	Pass
0.0818	99	42	42	Pass
0.0828	95	42	44	Pass
0.0838	92	42	45	Pass
0.0847	90	42	46	Pass
0.0857	88	42	47	Pass
0.0866	87	42	48	Pass
0.0876	85	42	49	Pass
0.0885	81	42	51	Pass
0.0895	77	42	54	Pass
0.0905	74	42	56	Pass
0.0914	69	41	59	Pass
0.0924	66	39	59	Pass
0.0933	64	39	60	Pass
0.0943	58	39	67	Pass
0.0952	54	39	72	Pass
0.0962	51	39	76	Pass
0.0972	50	37	74	Pass
0.0981	48	37	77	Pass
0.0991	46	35	76	Pass
0.1000	45	35	77	Pass
0.1010	43	35	81	Pass
0.1020	42	35	83	Pass
0.1029	41	35	85	Pass
0.1039	40	35	87	Pass
0.1048	36	34	94	Pass
0.1058	34	34	100	Pass
0.1067	32	33	103	Pass
0.1077	30	33	110	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
Tank 1 POC	☐	118.17			☐	0.00			
Total Volume Infiltrated		118.17	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Failed

Model Default Modifications

Total of 0 changes have been made.

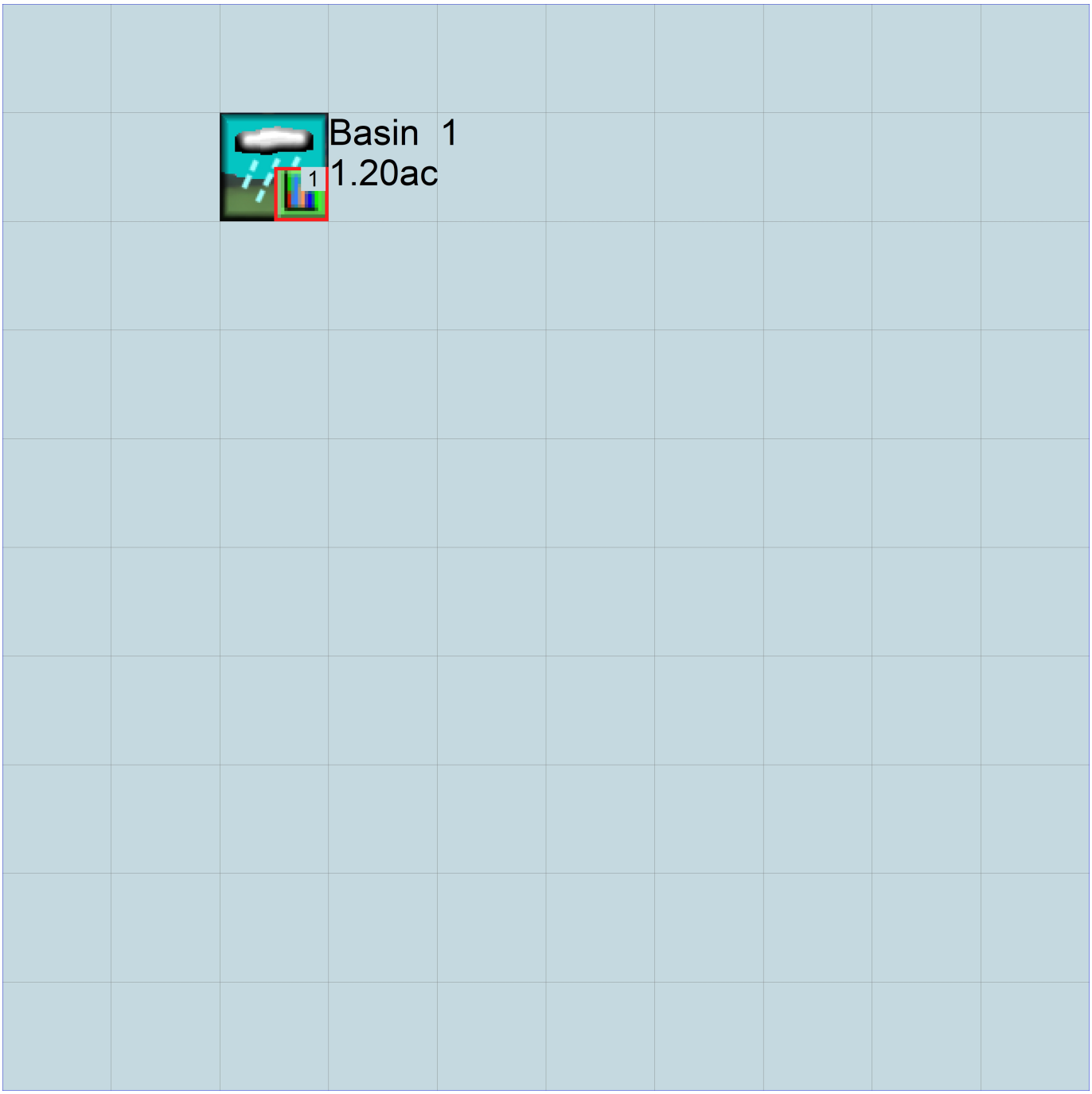
PERLND Changes

No PERLND changes have been made.

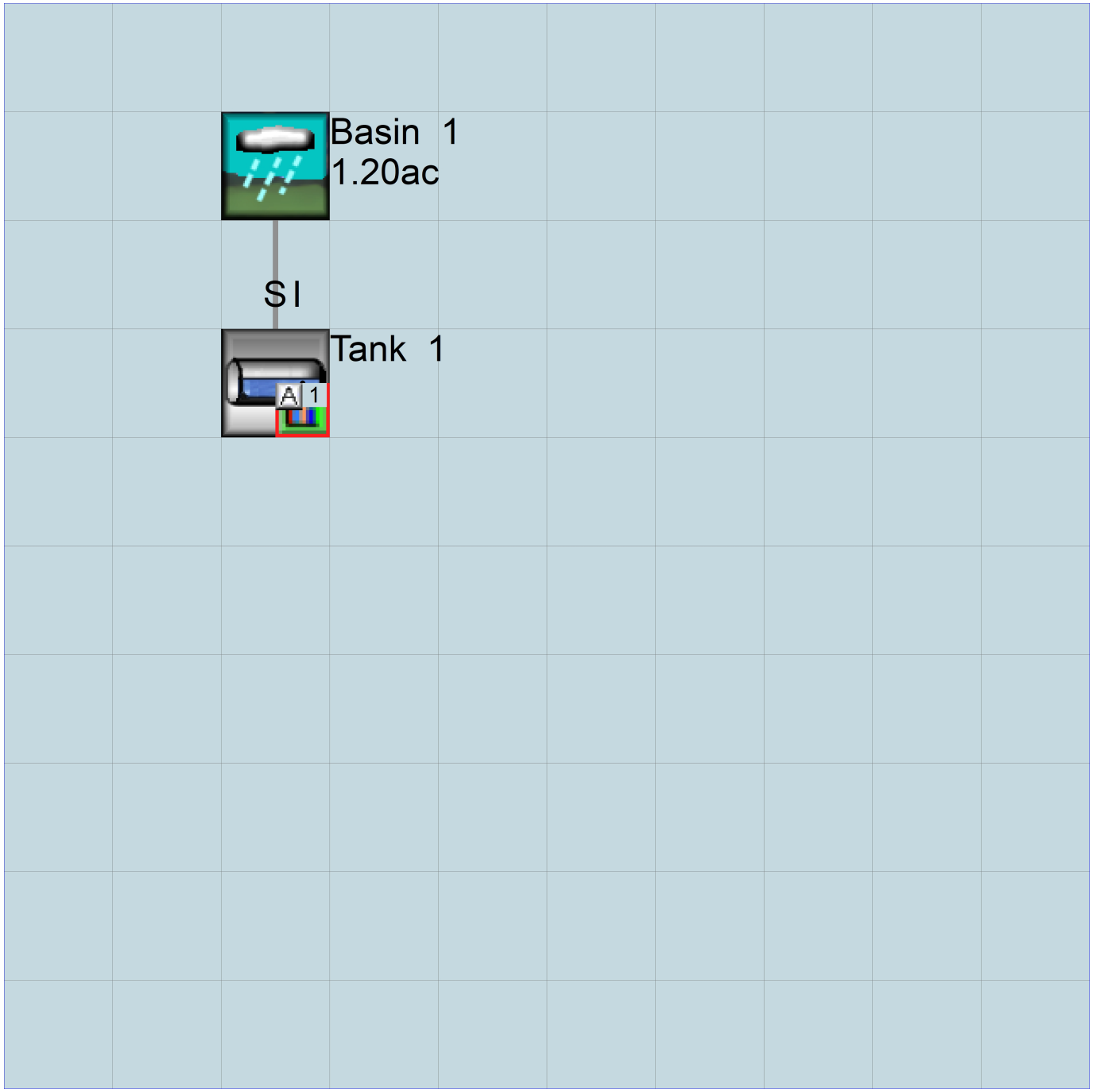
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2009 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   RC Burlington - Flow Control.wdm
MESSU       25   PreRC Burlington - Flow Control.MES
            27   PreRC Burlington - Flow Control.L61
            28   PreRC Burlington - Flow Control.L62
            30   POCRC Burlington - Flow Control1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      10
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   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           ***
   10     C, Forest, 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 ***
   10         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  *********
   10         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 ***
   10         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
   10              0       4.5      0.08       400      0.05       0.5     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   10             0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   10          0.2       0.5      0.35         6       0.5       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
   10             0         0         0          0       2.5          1          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name-------->  Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                  in  out           ***
  END GEN-INFO
  *** Section IWATER***

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

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

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

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

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

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

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND  10                       1.195     COPY   501     12
PERLND  10                       1.195     COPY   501     13

******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              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
```

```
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           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


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2009 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   RC Burlington - Flow Control.wdm
MESSU       25   MitRC Burlington - Flow Control.MES
            27   MitRC Burlington - Flow Control.L61
            28   MitRC Burlington - Flow Control.L62
            30   POCRC Burlington - Flow Control1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      16
      IMPLND       1
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Tank  1                    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           ***
   16     C, Lawn, 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 ***
   16         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  *********
```

```
 16         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 ***
 16         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
 16             0       4.5      0.03       400      0.05       0.5     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
 16             0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
 16            0.1      0.25      0.25         6       0.5      0.25
  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
 16             0         0         0         0       2.5          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  1***
PERLND  16                       0.437     RCHRES   1      2
PERLND  16                       0.437     RCHRES   1      3
IMPLND   1                       0.758     RCHRES   1      5

******Routing******
PERLND  16                       0.437     COPY     1     12
IMPLND   1                       0.758     COPY     1     15
PERLND  16                       0.437     COPY     1     13
RCHRES   1                           1     COPY   501     16
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     Tank  1                1    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
  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
  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  0  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      0.18       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  0.0  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      1
   91    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.000000  0.000000  0.000000
  0.055556  0.023476  0.000871  0.001907
  0.111111  0.033013  0.002456  0.002697
  0.166667  0.040202  0.004498  0.003303
  0.222222  0.046154  0.006901  0.003814
  0.277778  0.051300  0.009611  0.004264
  0.333333  0.055865  0.012590  0.004671
  0.388889  0.059981  0.015810  0.005045
  0.444444  0.063735  0.019248  0.005393
  0.500000  0.067188  0.022886  0.005720
  0.555556  0.070383  0.026708  0.006030
  0.611111  0.073356  0.030702  0.006324
  0.666667  0.076131  0.034855  0.006605
  0.722222  0.078730  0.039158  0.006875
  0.777778  0.081170  0.043600  0.007135
  0.833333  0.083464  0.048174  0.007385
  0.888889  0.085625  0.052872  0.007627
  0.944444  0.087662  0.057686  0.007862
  1.000000  0.089583  0.062610  0.008090
  1.055556  0.091397  0.067638  0.008312
  1.111111  0.093109  0.072763  0.008528
  1.166667  0.094724  0.077981  0.008738
  1.222222  0.096248  0.083286  0.008944
  1.277778  0.097685  0.088674  0.009145
  1.333333  0.099038  0.094139  0.009341
  1.388889  0.100312  0.099677  0.009534
  1.444444  0.101508  0.105283  0.009723
  1.500000  0.102631  0.110954  0.009908
  1.555556  0.103681  0.116685  0.010090
  1.611111  0.104662  0.122473  0.010268
  1.666667  0.105575  0.128313  0.010444
  1.722222  0.106422  0.134202  0.010617
  1.777778  0.107205  0.140136  0.010787
  1.833333  0.107924  0.146113  0.010954
  1.888889  0.108582  0.152127  0.011119
  1.944444  0.109179  0.158176  0.011281
  2.000000  0.109717  0.164257  0.011441
  2.055556  0.110196  0.170366  0.011599
  2.111111  0.110616  0.176500  0.011754
  2.166667  0.110980  0.182655  0.011908
  2.222222  0.111286  0.188830  0.012060
  2.277778  0.111536  0.195019  0.012210
  2.333333  0.111730  0.201222  0.012358
  2.388889  0.111869  0.207433  0.012504
  2.444444  0.111952  0.213650  0.012648
  2.500000  0.111979  0.219871  0.012791
  2.555556  0.111952  0.226092  0.013179
  2.611111  0.111869  0.232309  0.014010
  2.666667  0.111730  0.238520  0.015074
  2.722222  0.111536  0.244722  0.016308
  2.777778  0.111286  0.250912  0.017677
  2.833333  0.110980  0.257087  0.019157
```

```
  2.888889  0.110616  0.263242  0.020729
  2.944444  0.110196  0.269376  0.022381
  3.000000  0.109717  0.275485  0.024098
  3.055556  0.109179  0.281566  0.025872
  3.111111  0.108582  0.287615  0.027694
  3.166667  0.107924  0.293629  0.029555
  3.222222  0.107205  0.299606  0.031448
  3.277778  0.106422  0.305540  0.033368
  3.333333  0.105575  0.311429  0.035307
  3.388889  0.104662  0.317269  0.037262
  3.444444  0.103681  0.323057  0.039226
  3.500000  0.102631  0.328788  0.041195
  3.555556  0.101508  0.334459  0.043433
  3.611111  0.100312  0.340065  0.045844
  3.666667  0.099038  0.345603  0.048312
  3.722222  0.097685  0.351068  0.050838
  3.777778  0.096248  0.356456  0.053418
  3.833333  0.094724  0.361761  0.056053
  3.888889  0.093109  0.366979  0.058741
  3.944444  0.091397  0.372104  0.076023
  4.000000  0.089583  0.377132  0.079671
  4.055556  0.087662  0.382056  0.288055
  4.111111  0.085625  0.386870  0.667699
  4.166667  0.083464  0.391568  1.154274
  4.222222  0.081170  0.396142  1.717060
  4.277778  0.078730  0.400584  2.329060
  4.333333  0.076131  0.404886  2.962851
  4.388889  0.073356  0.409040  3.590360
  4.444444  0.070383  0.413033  4.184179
  4.500000  0.067188  0.416856  4.719745
  4.555556  0.063735  0.420494  5.178112
  4.611111  0.059981  0.423932  5.549205
  4.666667  0.055865  0.427152  5.835462
  4.722222  0.051300  0.430131  6.055831
  4.777778  0.046154  0.432841  6.331028
  4.833333  0.040202  0.435244  6.550490
  4.888889  0.033013  0.437285  6.762753
  4.944444  0.023476  0.438871  6.968483
  5.000000  0.001000  0.439742  7.168248
  END FTABLE  1
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              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           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***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1001 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
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       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       16
RCHRES     ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK   16


END MASS-LINK

END RUN
```

Disclaimer

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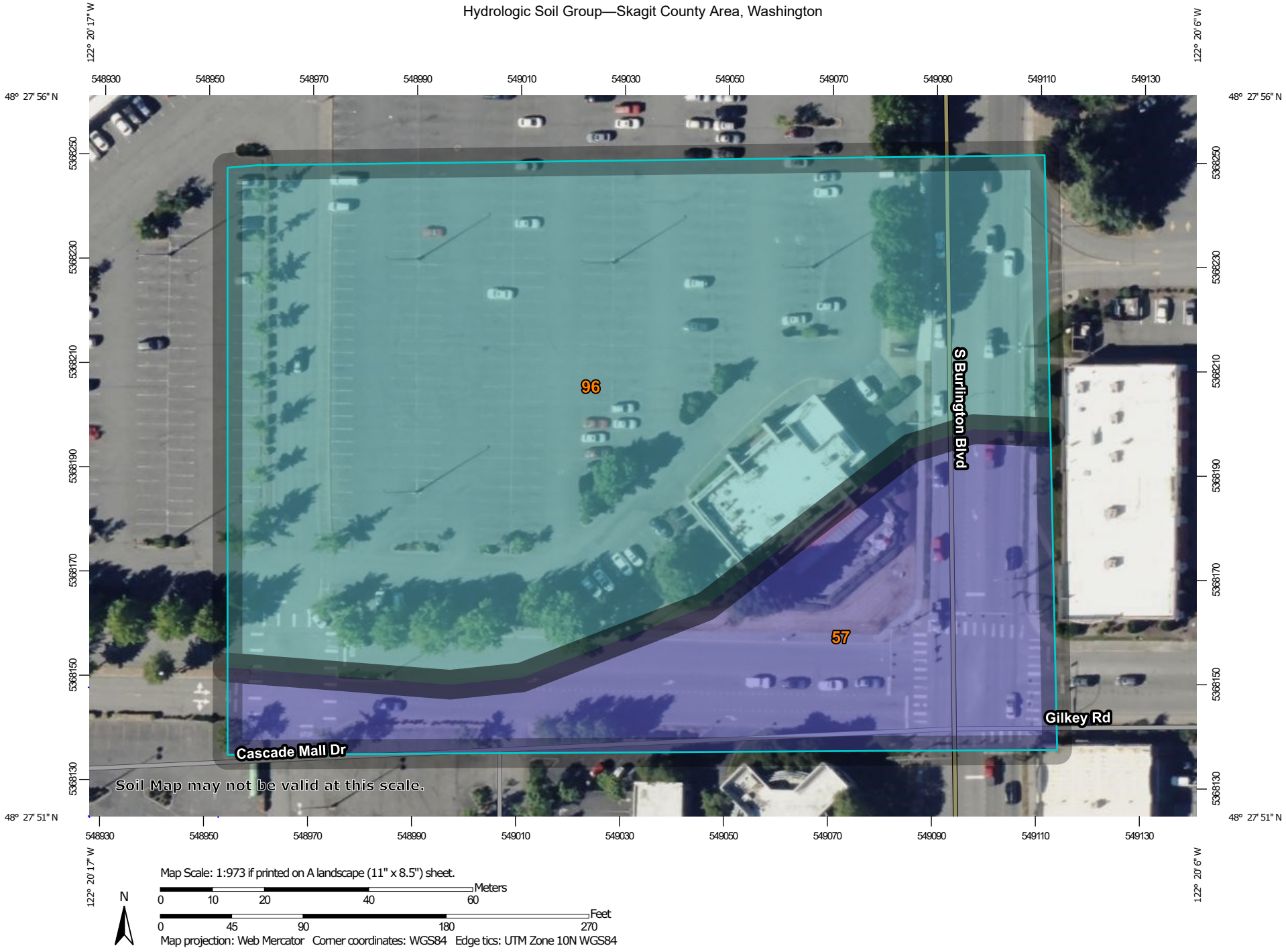
Appendix C-1: USGS Soil Survey



Map Scale: 1:973 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 45 90 180 270

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Skagit County Area, Washington
Survey Area Data: Version 24, Aug 27, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2022—Sep 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
57	Field silt loam, protected	B	1.2	27.5%
96	Mt. Vernon very fine sandy loam	C	3.2	72.5%
Totals for Area of Interest			**4.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix C-2: Terracon Geotechnical Report

(Provided Separately)