

Wintergreen Townhomes
Preliminary Plat
UTILITY REPORT
Bainbridge Island, Washington 98110

Prepared For

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2/18/21

Project Description

The proposed project consists of constructing 74 townhouse units in 11 buildings on two parcels. Also included will be the parking, utility connections, and storm drainage mitigation to support the buildings. The two parcels are located on the west and east sides of Wintergreen Lane NE on Bainbridge Island.

STORMWATER DRAINAGE

Existing

The two subject properties were part of the Visconsi Master Plan. The Visconsi Master Plan consisted of five parcels totaling 8.3 acres. The proposed project is located on lots A and D. As part of the Visconsi Master Plan infrastructure was constructed to support development on each of the lots. This included water and sewer utility mains and services to each of the lots. In addition, a stormwater mitigation system was constructed on Lot D that consists of a stormwater treatment system of multiple Stormfilter treatment units and two sets of detention tanks. Also, a mitigation system was constructed on the west side of Lot B to mitigate for Wintergreen Lane and portions of Lots A and D. The proposed project is planning on utilizing the capacity of those systems to provide mitigation for the applicable areas.

Lot A is approximately 1.32 acres and Lot D is approximately 1.62 acres. Lot A slopes to the west reaching a low berm. Once at the top of the berm the site slopes to the west again. The grade steepens after leaving the property. When SR305 was constructed it was cut into this area. The slope is approximately 20 feet in height. At the bottom of the slope is the road side ditch along SR305.

Lot A is currently vegetated with pasture grass on the majority of the property. On the berm along the west side there are new plantings from the Visconsi Master Plan work. There are no significant trees on the parcel.

On Lot D the ground is very flat and slopes to the southeast. On the southeast portion of the property the ground slopes up approximately 3 feet and then is flat until reaching the property line. The northeast portion of the property there is a retaining wall that varies in height from 0 to 8 feet.

Lot D is currently vegetated with pasture grass on the majority of the property. Along the east edge of the property the vegetation consists of young plantings from the Visconsi Master Plan and established vegetation. A wetland is located in the northeast corner of the property. The existing drainage system on the site discharges through a dispersion into the 100 foot buffer of before reaching the wetland.

Included in the report is the drainage basins from the Visconsi Master Plan and the proposed basins from this development. These diagrams show how the proposed impervious areas will be divided into which mitigation system and that the mitigation systems were designed for larger impervious areas that is proposed with this development. Please note that Lot A did not have a drainage system constructed for development within its basin. For this reason a new mitigation is proposed.

As previously determined in the Visconsi Master Plan, soils on the site prevent the use of infiltration in accordance with the City's stormwater code.

Proposed

Lot A

The proposed project includes the construction of 7 buildings, walkways, an access lane, a parking area and landscape areas. The existing improvements on the property are located on the north, east and south perimeters. Along the north edge a new parking area will be constructed that ties into the Wintergreen Clinic parking area. Also, a garbage enclosure will be constructed. The existing improvements on the east side of the site will remain unchanged. A sidewalk will be added to the east frontage. Along the south side of the site the existing parking in the area will be reconfigured to allow for a new access way to be constructed.

On the east side of the property Wintergreen Lane runs south to north. The grade of Wintergreen Lane is to the north. Water from this area drains into a Stormfilter treatment system first and then into a underground detention system. The existing system was designed to accommodate 46,296 square feet of new impervious area and 3,647 square feet of replaced impervious surface. The proposed basin includes 43,394 square feet of new impervious area and 3,647 square feet of replaced impervious area. Based on this, the existing system has more capacity than is required by the proposed development.

The remainder of the site doesn't have an existing drainage system. We are proposing to construct 7,428 square feet of hardscape and 18,726 square feet of roof, and 12,027 square feet of landscaping. Of that hardscape 4,647 square feet will be for the proposed access way.

Threshold Analysis

The project will meet Minimum Requirements 1-9 as described by the City's stormwater code. See Table 1 for a description of how each minimum requirement is addressed.

Table 1
Summary of Stormwater Minimum Requirements

<u>Minimum Requirement</u>	<u>Comment</u>
1. Stormwater site plan	A stormwater site plan is presented.
2. Construction stormwater pollution prevention	A TESC plan will be developed as part of the development of the construction documents.
3. Source control of pollutants	All applicable source control best management practices will be implemented on site in accordance with City requirements.
4. Preservation of natural drainage systems and outfalls	Runoff will continue to discharge to the west and into the SR305 road side ditch.
5. On-site stormwater management	Disturbed soil with in landscape areas will be amended to meet the requirements of BMPT5.13. Soils will be amended individually as part of the construction of the buildings. Perforated stubout

	connections will be included in the building roof drain system. The runoff from the access way will be routed to an under drained rain garden.
6. Runoff treatment	The runoff from the access way will be routed to an under drained rain garden that will treat over 91% of the runoff from this area. Because the soils have been heavily modified with the development of the Visconsi Master Plan, they can not be relied upon to reliably infiltrate stormwater. Because of this, perforated under drains will be installed in the rain garden to collect the treated water. The under drain will discharge to a detention vault.
7. Flow control	A new detention system, consisting of two concrete vaults, will be constructed in the landscape space to the west of the east units. This system will reduce the peak 100 year flow from the project from 0.2717 cubic feet per second to 0.1138 cubic feet per second. In addition, the system was designed to meet the Flow Control Duration criteria as required by code.
8. Wetlands protection	Not applicable.
9. Operation and maintenance	An operation and maintenance manual and maintenance covenant will be provided.

Stormwater Mitigation

Lot B

The proposed project includes the construction of 4 buildings, walkways and landscape areas. The existing parking area will be reduced to accommodate this construction. The existing drainage system on the site was designed to accommodate 33,722 square feet of impervious area. The proposed project will construct a total of 31,968 square feet of impervious area. The flow control drainage system on Lot D was divided into two basins, south and north. The drainage system on the south basin was constructed to mitigate 19,876 square feet of impervious area. We are proposing to construct 18,686 square feet of impervious area that drains to this system. The drainage system on the north basin was constructed to mitigate 13,846 square feet of impervious area and we are proposing to construct 13,282 square feet. Based on this, the existing stormwater flow control systems have more capacity than needed.

The existing parking lot in the north basin will need to be graded to drain to 2 new stormfilter units to provide water quality treatment. The parking area in the south basin will continue to drain to the existing system without modifications.

Threshold Analysis

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2. Construction stormwater pollution prevention	A TESC plan will be developed as part of the development of the construction documents.
3. Source control of pollutants	All applicable source control best management practices will be implemented on site in accordance with City requirements.
4. Preservation of natural drainage systems and outfalls	Runoff will continue to discharge to the existing outfall that drains east.
5. On-site stormwater management	Disturbed soil with in landscape areas will be amended to meet the requirements of BMPT5.13. Soils will be amended individually as part of the construction of the buildings. Perforated stubout connections will be included in the building roof drain system.
6. Runoff treatment	The south existing stormfilter will remain. The north Stormfilter will be removed and replaced with two smaller Stormfilter systems to treat water from the pollution generating surfaces.
7. Flow control	Two detention systems exist on the property. The proposed impervious surface to these systems is less than what they were designed for. Based on this, the systems have adequate capacity to mitigate the runoff from the site.
8. Wetlands protection	The existing system will reduce the peak flows from the site. In addition, the outlet from the system will have to travel over 100 feet before it reaches the wetland. Based on this the project will not directly discharge to the wetland offsite.
9. Operation and maintenance	An updated operation and maintenance manual and maintenance covenant will be provided.

Stormwater Mitigation

The mitigation system for the project is divided into three systems. One system for the north portion of the lot, a system for the south portion of the lot and a system for the west portion of the lot. The north system will collect runoff from the roofs and landscaping and route it to the existing detention system located in the northeast corner of Lot D. The parking area in this portion of the property will be regraded to route pavement runoff to two small Stormfilter units.

The south system will also collect runoff from the roofs and landscaping to route it to the existing detention system located in the southeast corner of the property. The runoff from the existing parking and accessway will continue to drain to the existing drainage system. The outlet of the tank will be rerouted to avoid the proposed residences to the north and the second existing system.

It should be noted that the existing west parking area drains to either the water quality and quality mitigation systems on the Wintergreen Clinic site or the Walgreens site. These areas were addressed in the design of those systems.

ONSITE UTILITIES

Water

Existing

A 12-inch water line runs along the length of Wintergreen Lane and an 8-inch water line that runs from Wintergreen Lane to Polly's Lane. Domestic and fire services lines have been stubbed out to both lots in multiple locations. There is an existing fire hydrant south of Lot D and another near the entrance to the Franciscan Urgent Care.

Proposed

The project will extend the existing service lines to each of the buildings.

Sanitary Sewer

Existing

An existing 8-inch sanitary sewer main is located in Wintergreen Lane. 6 inch side sewers have been provided to the building sites.

Proposed

The 8-inch sanitary main will be extended to provide better access to the proposed units. These extensions will end in a manhole. From these points 6-inch diameter side sewers will extend to the individual units. Each side sewer will serve a maximum of 2 units.

Offsite Sanitary Sewer System

City Staff suspect that there may be a capacity issue in a portion of their sewer system downstream of our site. They have requested that we evaluate this issue taking into consideration the load from the proposed project. We are currently working with the City to obtain information on the existing system to perform that evaluation.

Other Utilities

Power, telephone and cable are located in Wintergreen Lane. Power, telephone, and cable service will be designed by others.

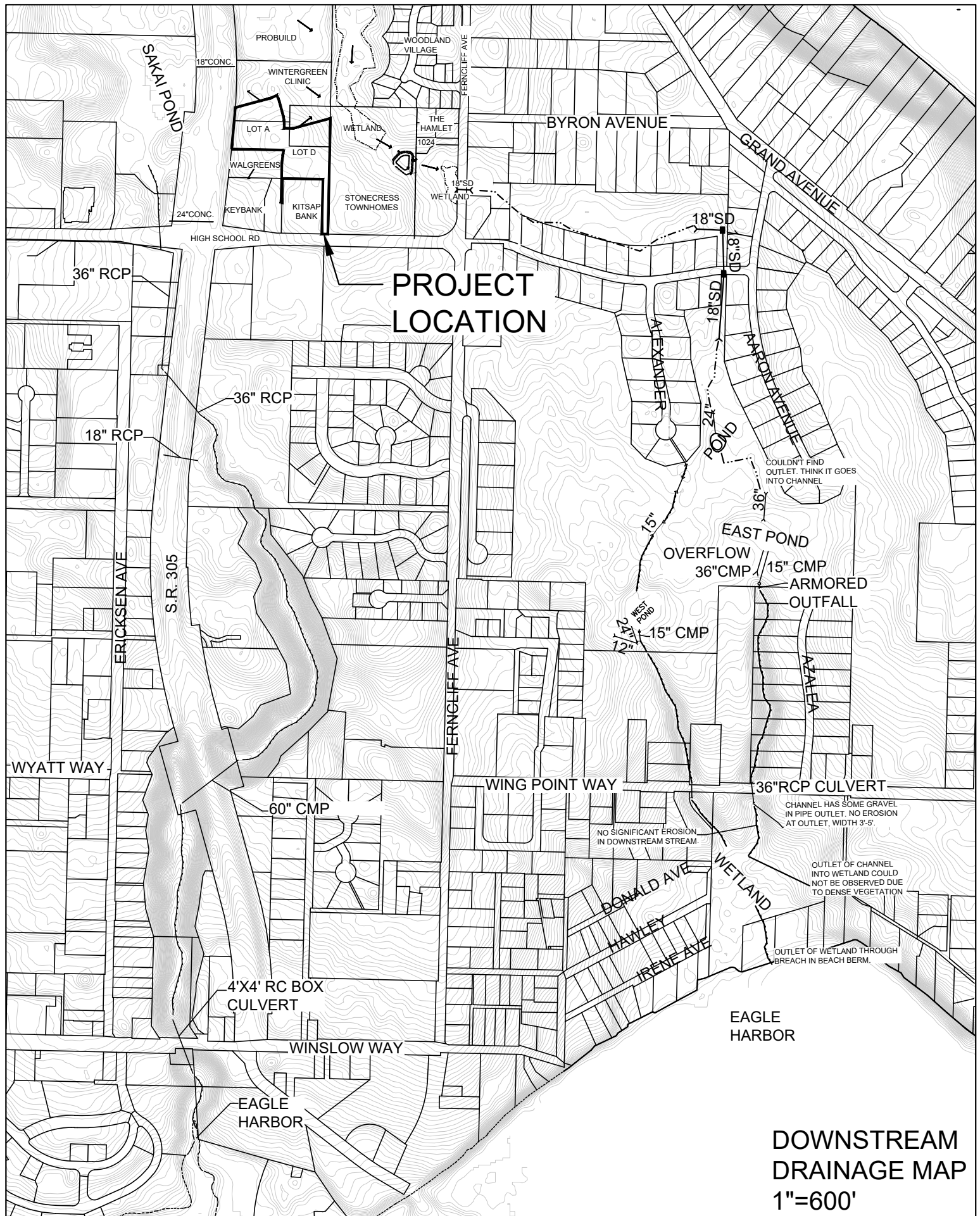
EROSION CONTROL

The Contractor will be responsible for maintaining erosion control facilities on the site during construction and for ensuring that sediment does not leave the site. The general principles of construction pollution prevention are:

- Retain native vegetation
- Prevent erosion rather than treat sediment laden water.
- Employ site specific best management practices (BMPs)
- Divert upslope runoff around disturbed area
- Phase construction operations to reduce total amount of disturbance at one time
- Amend soils before seeding
- Minimize the slope length and steepness of disturbed areas
- Reduce runoff velocities
- Prevent the tracking of sediment off site
- Employ BMPs that address not only erosion but also other potential pollutants.

A detailed erosion control plan will be submitted with the construction permit for review.

MAPS



ENGINEERING CALCULATIONS

WEST LOT

VALUES DO NOT INCLUDE IMPERVIOUS AREA TO REMAIN

TOTAL	47908	1.100 AC
NEW IMPERVIOUS	30119 SF	0.691 AC
BUILDING	18726 SF	
ROAD	5606 SF	
PATH	5787 SF	
REPLACED IMPERVIOUS	42 SF	0.001 AC
BUILDING	0 SF	
ROAD	42 SF	
PATH	0 SF	
VEGETATIVE BUFFER	5386 SF	0.124 AC
LANDSCAPING	12361 SF	0.284 AC
OFF PROPERTY		
NEW IMPERVIOUS	116 SF	0.003 AC
NEW PATH	38 SF	
NEW ROAD	78 SF	
REPLACED IMPERVIOUS		
ROAD	60 SF	0.001 AC
REMOVED IMPERVIOUS	60 SF	
LANDSCAPE	30 SF	0.001 AC

EAST LOT

VALUES DO NOT INCLUDE IMPERVIOUS AREA TO REMAIN

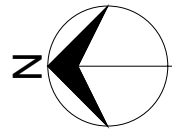
TOTAL	26348	0.605 AC
NEW IMPERVIOUS	13011 SF	0.299 AC
BUILDING	10219 SF	
ROAD	131 SF	
PATH	2661 SF	
REPLACED IMPERVIOUS	4456 SF	0.102 AC
BUILDING	3141 SF	
ROAD	79 SF	
PATH	1236 SF	
REMOVED IMPERVIOUS	1260 SF	0.029 AC
LANDSCAPING	7621 SF	0.175 AC
OFF PROPERTY		
NEW IMPERVIOUS	116 SF	0.003 AC
NEW PATH	38 SF	
NEW ROAD	78 SF	
REPLACED IMPERVIOUS		
ROAD	0 SF	0.000 AC
REMOVED IMPERVIOUS	60 SF	
LANDSCAPE	30 SF	0.001 AC

PROBUILD

PROPOSED CLINIC
(BLDG SITE 5)

SOUTH STORMFILTER SUBBASIN

WALGREENS



NORTHWEST DRAINAGE BASIN

SCALE: 1" = 60'

0 15 30 60 120

SR 305



NEW IMPERVIOUS
AREA = 46296 SF



LANDSCAPING
AREA = 9365 SF



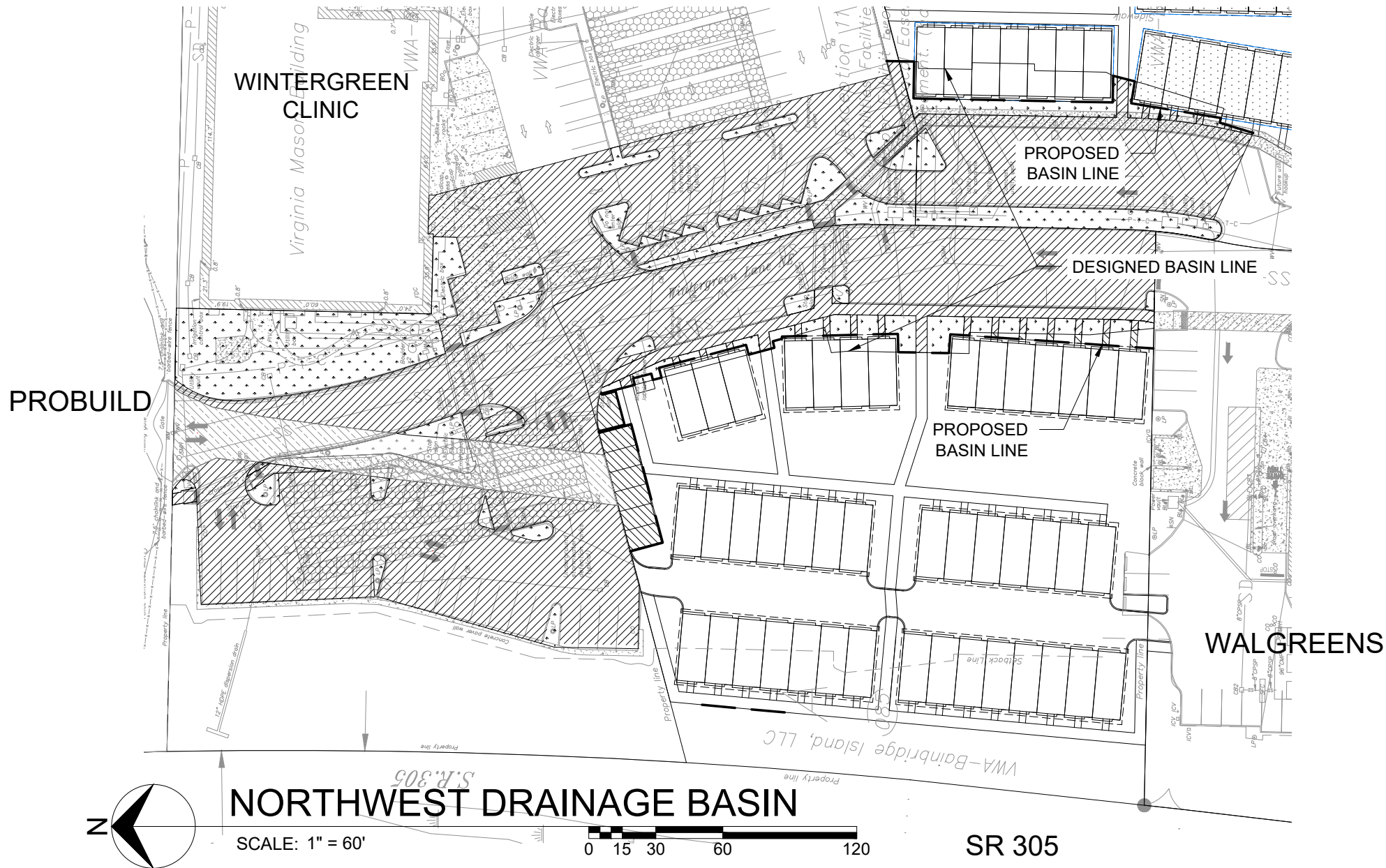
REPLACED IMPERVIOUS
AREA = 3647 SF



REMOVED IMPERVIOUS
AREA = 691 SF

NW DRAINAGE BASIN
WINTERGREEN MEDICAL BUILDING
PLAT UTILITY PERMIT SUBMITTAL

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P 206.842.0605 INFO@BrowneWheeler.COM



	NEW IMPERVIOUS AREA = 43394 SF		LANDSCAPING AREA = 11620 SF
	REPLACED IMPERVIOUS AREA = 3647 SF		
	REMOVED IMPERVIOUS AREA = 691 SF		

NW DRAINAGE BASIN
WINTERGREEN TOWNHOMES
PRELIMINARY PLAT SUBMITTAL

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PROBUILD

WINTERGREEN
CLINIC

Virginia Mason Building

PROPOSED BASIN LINE

WALGREENS

LOT A DRAINAGE BASIN

SCALE: 1" = 60'

0 15 30 60 120

SR 305



HARDSCAPE AREA = 7428 SF



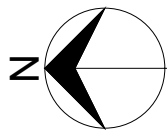
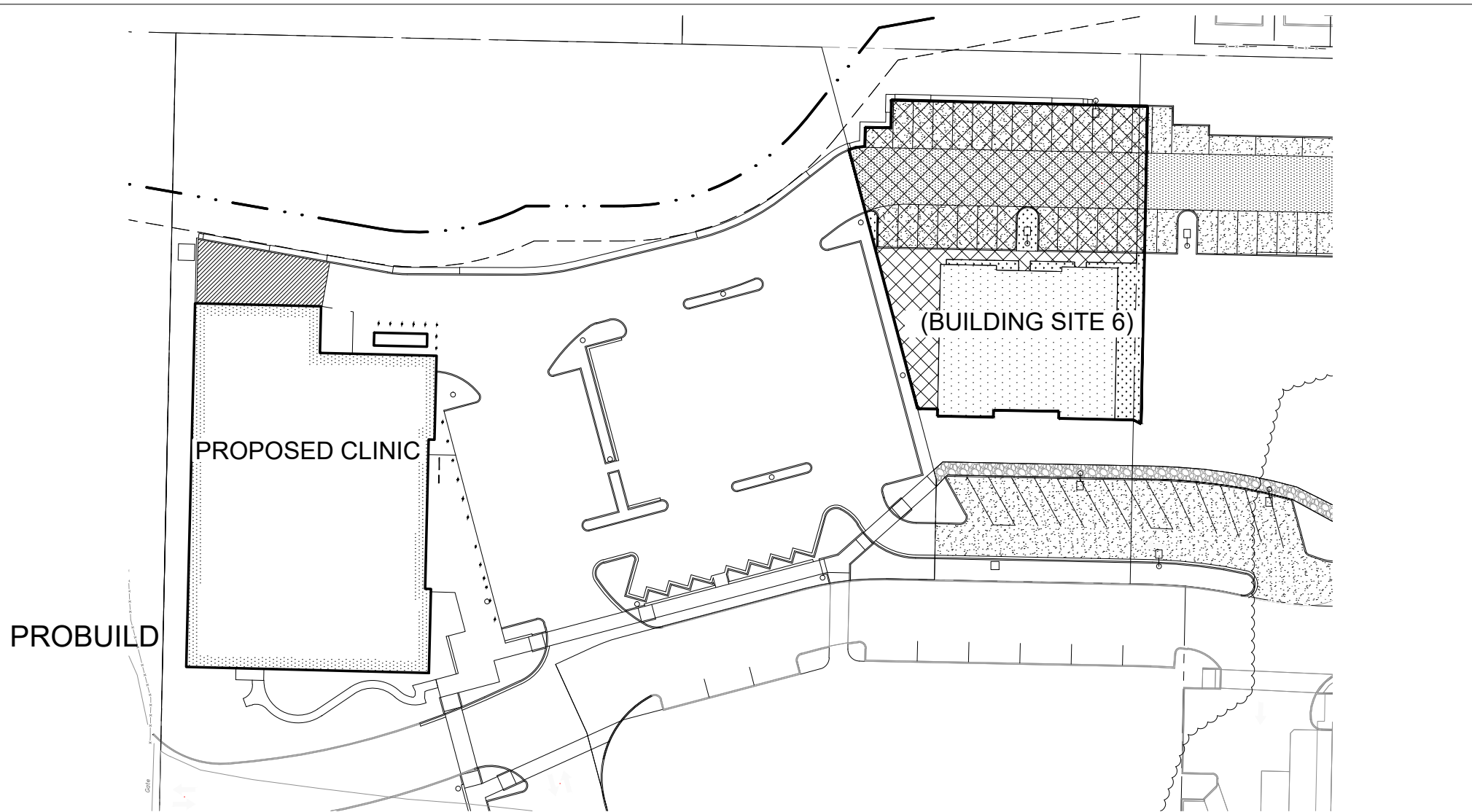
BUILDING AREA = 18726 SF



LANDSCAPING AREA = 12027 SF

LOT 4 DRAINAGE BASIN
WINTERGREEN TOWNHOMES
PRELIMINARY PLAT SUBMITTAL

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SITE 6 NORTHEAST DRAINAGE BASIN

SCALE: 1" = 60'

0 15 30 60 120



HARDSCAPE AREA = 9046 SF



BUILDING AREA = 4800 SF



LANDSCAPING AREA = 1170 SF

SITE 6 NE DRAINAGE BASIN

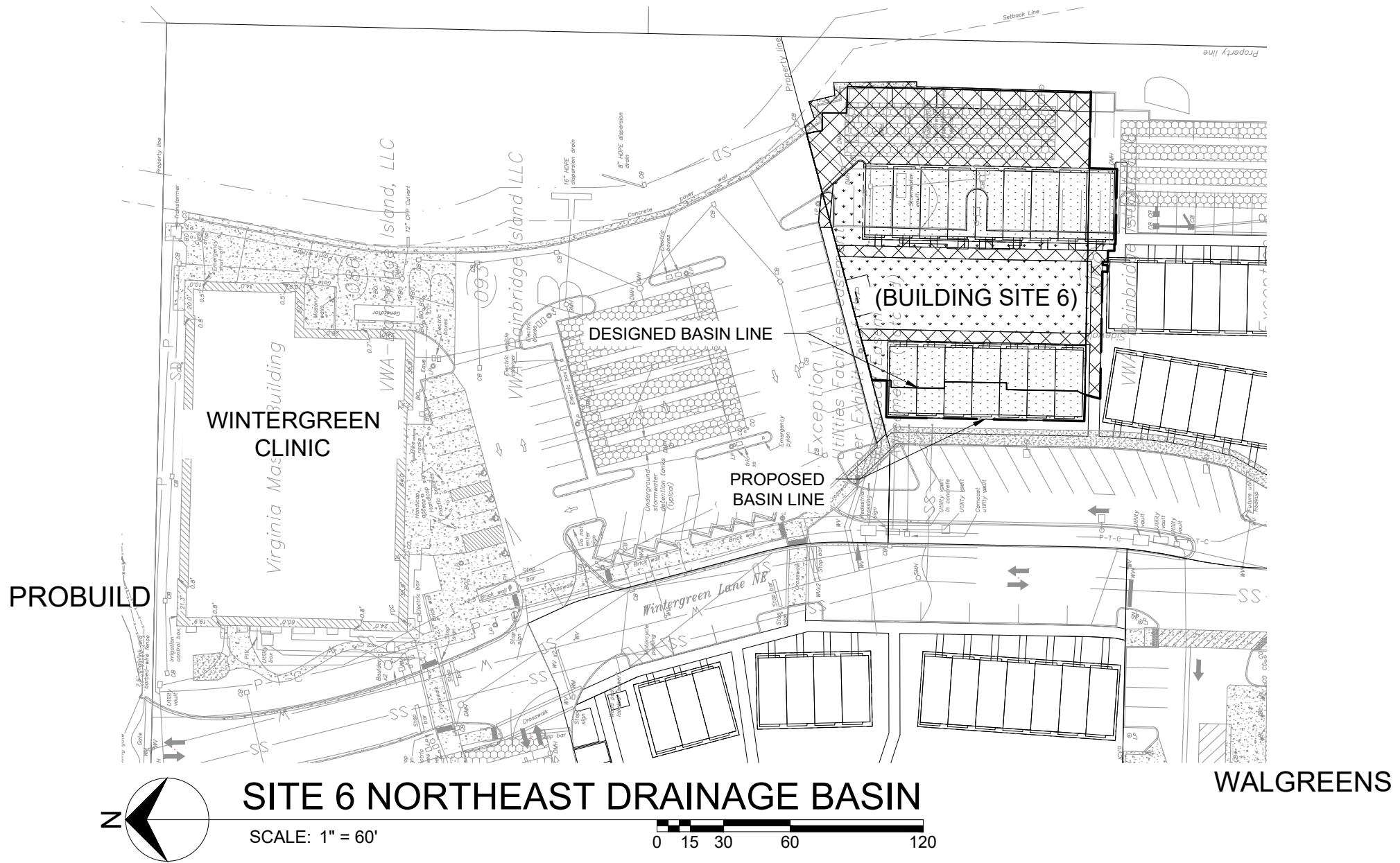
LOT 6/7

PLAT UTILITY PERMIT SUBMITTAL

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ENGINEERS, INC

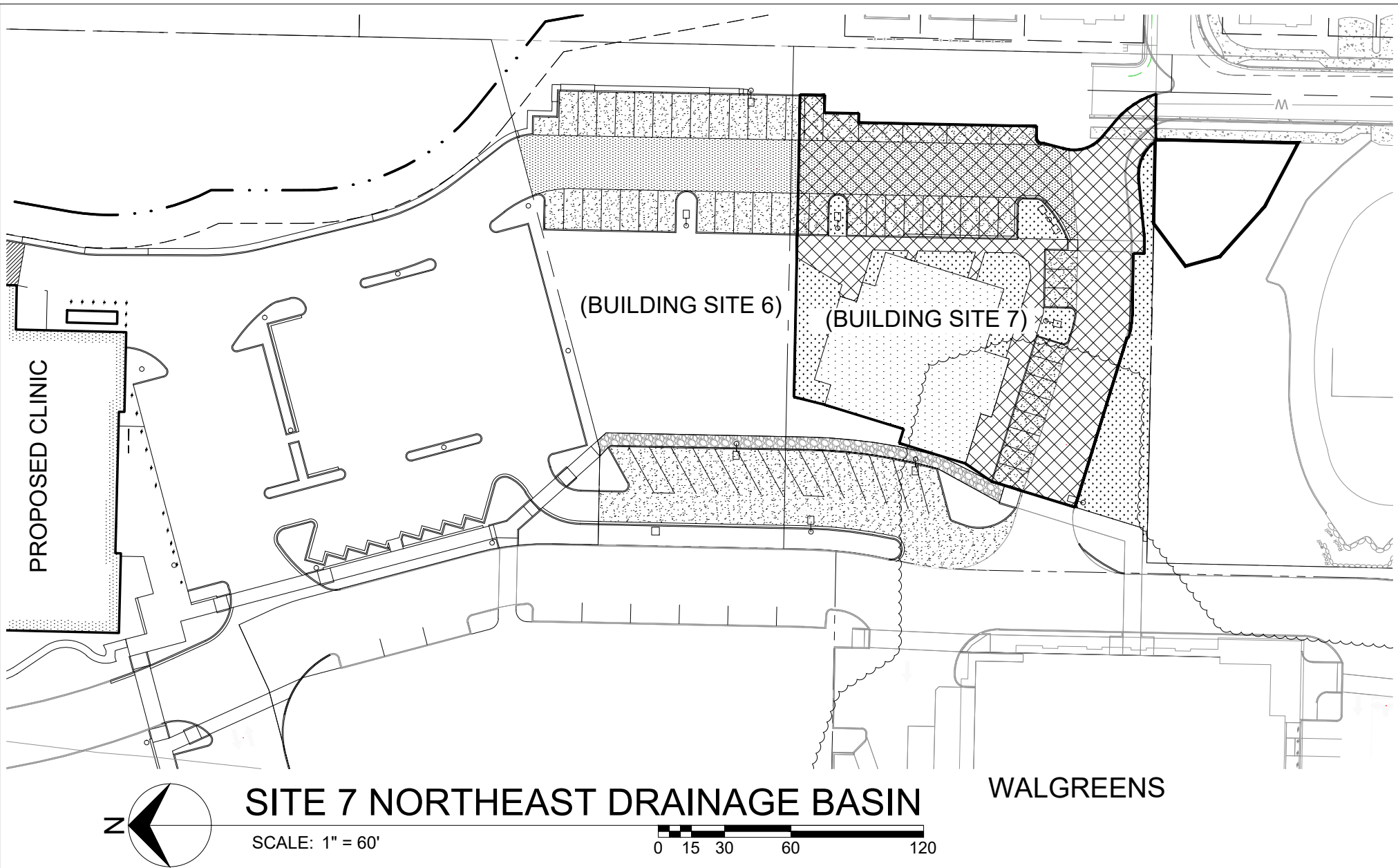
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-  **HARDSCAPE AREA = 6369 SF**
-  **BUILDING AREA = 6913 SF**
-  **LANDSCAPING AREA = 4292 SF**

SITE 6 DRAINAGE BASIN
WINTERGREEN TOWNHOMES
PRELIMINARY PLAT SUBMITTAL

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HARDSCAPE AREA = 14432 SF



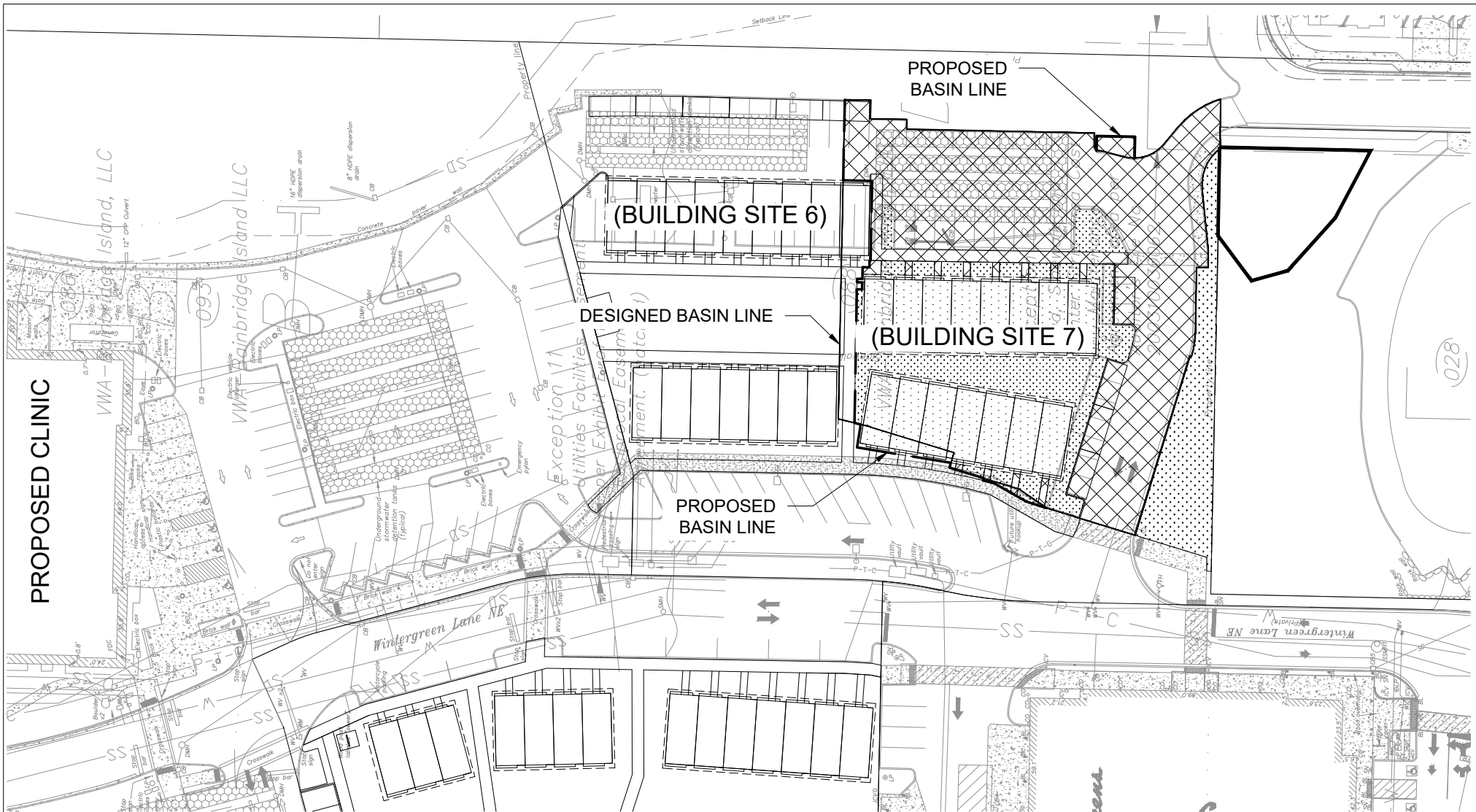
BUILDING AREA = 5444 SF



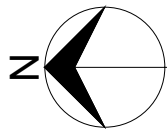
LANDSCAPING AREA = 2561 SF

SITE 7 NE DRAINAGE BASIN
LOT 6/7
PLAT UTILITY PERMIT SUBMITTAL

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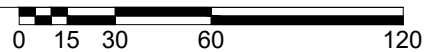


PROPOSED CLINIC



SITE 7 NORTHEAST DRAINAGE BASIN

SCALE: 1" = 60'



WALGREENS



HARDSCAPE AREA = 12196 SF



BUILDING AREA = 6490 SF



LANDSCAPING AREA = 3329 SF

SITE 7 DRAINAGE BASIN
WINTERGREEN TOWNHOMES
PRELIMINARY PLAT SUBMITTAL

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Lot D
Stormfilter Sizing

Flow/Cartridge	7.5 gpm	0.017 cfs
	11.25 gpm	0.025 cfs

SF1

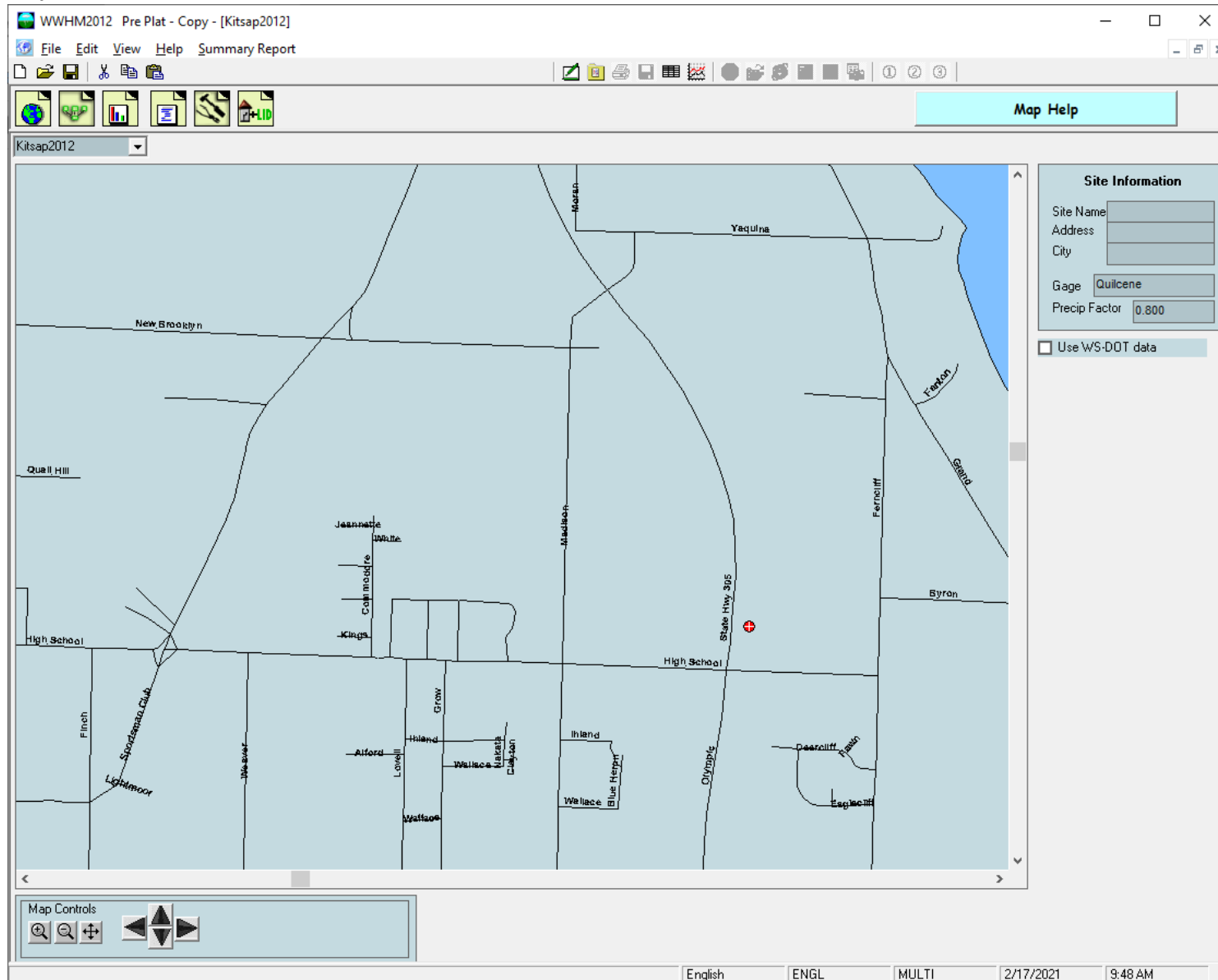
Stormfilter

Impervious	2465 sf	0.057 ac	Qwq	0.014 cfs	
Pervious	0 sf	0.000 ac	# Cartridge	0.84	→ 1

SF2 Stormfilter

Impervious	2468 sf	0.057 ac	Qwq	0.014 cfs	
Pervious	0 sf	0.000 ac	# Cartridge	0.84	→ 1

Project Location



Lot A Predeveloped Basin Characteristics

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File Edit View Help Summary Report

Basin Help

Schematic

Basin 1

SCENARIOS

☒ Predeveloped

☐ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 0 Y 0

Wed 11:51 a - Pre Plat - Copy - Finish Mitigated

Basin 1 Predeveloped

Subbasin Name: Basin 1

Flows To: Surface Interflow Groundwater

Area in Basin

☐ Show Only Selected

Available Pervious		Available Impervious	
	Acres		Acres
☐ A/B, Forest, Flat	0	☒ ROADS/FLAT	0
☐ A/B, Forest, Mod	0	☐ ROADS/MOD	0
☐ A/B, Forest, Steep	0	☐ ROADS/STEEP	0
☐ A/B, Pasture, Flat	0	☒ ROOF TOPS/FLAT	0
☐ A/B, Pasture, Mod	0	☐ DRIVEWAYS/FLAT	0
☐ A/B, Pasture, Steep	0	☐ DRIVEWAYS/MOD	0
☐ A/B, Lawn, Flat	0	☐ DRIVEWAYS/STEEP	0
☐ A/B, Lawn, Mod	0	☒ SIDEWALKS/FLAT	0
☐ A/B, Lawn, Steep	0	☐ SIDEWALKS/MOD	0
☒ C, Forest, Flat	0.8765	☐ SIDEWALKS/STEEP	0
☐ C, Forest, Mod	0	☐ PARKING/FLAT	0
☐ C, Forest, Steep	0	☐ PARKING/MOD	0
☒ C, Pasture, Flat	0	☐ PARKING/STEEP	0
☐ C, Pasture, Mod	0	☐ POND	0
☐ C, Pasture, Steep	0	☐ Porous Pavement	0
☐ C, Lawn, Flat	0		
☐ C, Lawn, Mod	0		
☐ C, Lawn, Steep	0		
☐ SAT, Forest, Flat	0		
☐ SAT, Forest, Mod	0		
☐ SAT, Forest, Steep	0		

Pervious Total 0.8765 Acres

Impervious Total 0 Acres

Basin Total 0.8765 Acres

Precipitation Gage 2 - <UNK> | Quilcene Auto Assign Gages

Deselect Zero Select By: GO

English ENGL MULTI 2/17/2021 3:22 PM

Lot A Proposed Basin Characteristics for Basin That Discharges Directly to the Proposed Detention Vault

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Basin Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 0 Y 0

Wed 11:51 a - Pre Plat - Copy - Finish Mitigated

To Tank Mitigated

Subbasin Name: To Tank ☐ Designate as Bypass for POC

Flows To : Surface Vault 1 Interflow Vault 1 Groundwater

Area in Basin ☐ Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
☐ A/B, Forest, Flat	0	☒ ROADS/FLAT	0
☐ A/B, Forest, Mod	0	☐ ROADS/MOD	0
☐ A/B, Forest, Steep	0	☐ ROADS/STEEP	0
☐ A/B, Pasture, Flat	0	☒ ROOF TOPS/FLAT	.43
☐ A/B, Pasture, Mod	0	☐ DRIVEWAYS/FLAT	0
☐ A/B, Pasture, Steep	0	☐ DRIVEWAYS/MOD	0
☐ A/B, Lawn, Flat	0	☐ DRIVEWAYS/STEEP	0
☐ A/B, Lawn, Mod	0	☒ SIDEWALKS/FLAT	.064
☐ A/B, Lawn, Steep	0	☐ SIDEWALKS/MOD	0
☒ C, Forest, Flat	0	☐ SIDEWALKS/STEEP	0
☐ C, Forest, Mod	0	☐ PARKING/FLAT	0
☐ C, Forest, Steep	0	☐ PARKING/MOD	0
☒ C, Pasture, Flat	.2645	☐ PARKING/STEEP	0
☐ C, Pasture, Mod	0	☐ POND	0
☐ C, Pasture, Steep	0	☐ Porous Pavement	0
☐ C, Lawn, Flat	0		
☐ C, Lawn, Mod	0		
☐ C, Lawn, Steep	0		
☐ SAT, Forest, Flat	0		
☐ SAT, Forest, Mod	0		
☐ SAT, Forest, Steep	0		

Pervious Total 0.2645 Acres

Impervious Total 0.494 Acres

Basin Total 0.7585 Acres

Precipitation Gage 2 - <UNK> | Quilcene Auto Assign Gages

Deselect Zero Select By: GO

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Lot A Proposed Basin Characteristics for Basin That Discharges to Rain Garden.

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File Edit View Help Summary Report

Basin Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 20 Y 0

Wed 11:51 a - Pre Plat - Copy - Finish Mitigated

RG1 Mitigated

Subbasin Name: RG1 ☐ Designate as Bypass for POC

Flows To : Surface Surface RG1 Interflow Surface RG1 Groundwater

Area in Basin ☒ Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
☒ C. Forest, Flat	0	☒ ROADS/FLAT	.107
☒ C. Pasture, Flat	0	☒ ROOF TOPS/FLAT	0
		☒ SIDEWALKS/FLAT	0

Pervious Total 0 Acres

Impervious Total 0.107 Acres

Basin Total 0.107 Acres

Precipitation Gage 2 - <UNK> | Quilcene Auto Assign Gages

Deselect Zero Select By: GO

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Lot A Proposed Rain Garden Dimensions and Performance

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Bioswale Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 20 Y 12

Wed 11:51 a - Pre Plat - Copy - Finish Mitigated

RG1 Mitigated

Facility Name RG1

Downstream Connection

Outlet 1 Vault 1 Outlet 2 0 Outlet 3 0

☐ Use simple Bioretention Quick Swale Size Water Quality Size Facility

☒ Underdrain Used

Underdrain Diameter(ft) 0.5 Offset(in)

Orifice Diameter(in) 0.5

Flow Through Underdrain (ac-ft) 20.88

Total Outflow (ac-ft) 22.648

Percent Through Underdrain 92.2

WQ Percent Filtered 92.2

Bioretention Bottom Elevation 0

Bioretention Dimensions

Bioretention Length (ft) 13.000

Bioretention Bottom Width (ft) 10.000

Freeboard (ft) 0.500

Over-road Flooding (ft) 0.000

Effective Total Depth (ft) 3.25

Bottom slope of bioretention.(0-1) 0.000

☐ Sidewall Invert Location.

Front and Back side slope (H/V) 0.000

Left Side Slope (H/V) 0.000

Right Side Slope (H/V) 0.000

Material Layers for

	Layer 1	Layer 2	Layer 3
Depth (ft)	0.250	1.500	0.000
Soil Layer 1	ASTM 100		
Soil Layer 2	SMMw/w 12 in/hr		
Soil Layer 3	GRAVEL		

Edit Soil Types

KSat Safety Factor

☐ None ☐ 2 ☒ 4

Facility Dimension Diagram

Riser Outlet Structure

Outlet Structure Data

Riser Height Above bioretention surface (ft) 1

Riser Diameter (in) 6

Riser Type Flat

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Bioretention Volume at Riser Head (ac-ft) .007

Show Bioretention Open Table

Native Infiltration NO

Total Inflow ac-ft 22.921

Precipitation on Facility (acre-ft) 0.662

Evaporation from Facility (acre-ft) 0.273

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Lot A Proposed Detention Vault Dimensions

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File Edit View Help Summary Report

Vault Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 0 Y 24

Wed 11:51 a - Pre Plat - Copy - Finish Mitigated

Vault 1 Mitigated

Facility Name Vault 1

Downstream Connection

☐ Precipitation Applied to Facility

☐ Evaporation Applied to Facility

Facility Dimensions

Length (ft) 110

Width (ft) 20

Effective Depth (ft) 8

Outlet 1 0

Outlet 2 0

Outlet 3 0

Auto Vault Quick Vault

☐ Fixed Width For Auto Vault

Facility Dimension Diagram

Outlet Structure Data

Riser Height (ft) 7.5

Riser Diameter (in) 12

Riser Type Flat

Notch Type

Infiltration NO

Orifice Number Diameter Height (in) (ft)

1 0.7 0.5

2 0.6 4

3 0.85 6

Vault Volume at Riser Head (ac-ft) .377

Show Vault Table Close Table

Initial Volume 0

Tide Gate Time Series Demand

Determine Outlet With Tide Gate

☐ Use Tide Gate

Tide Gate Elevation (ft) 0

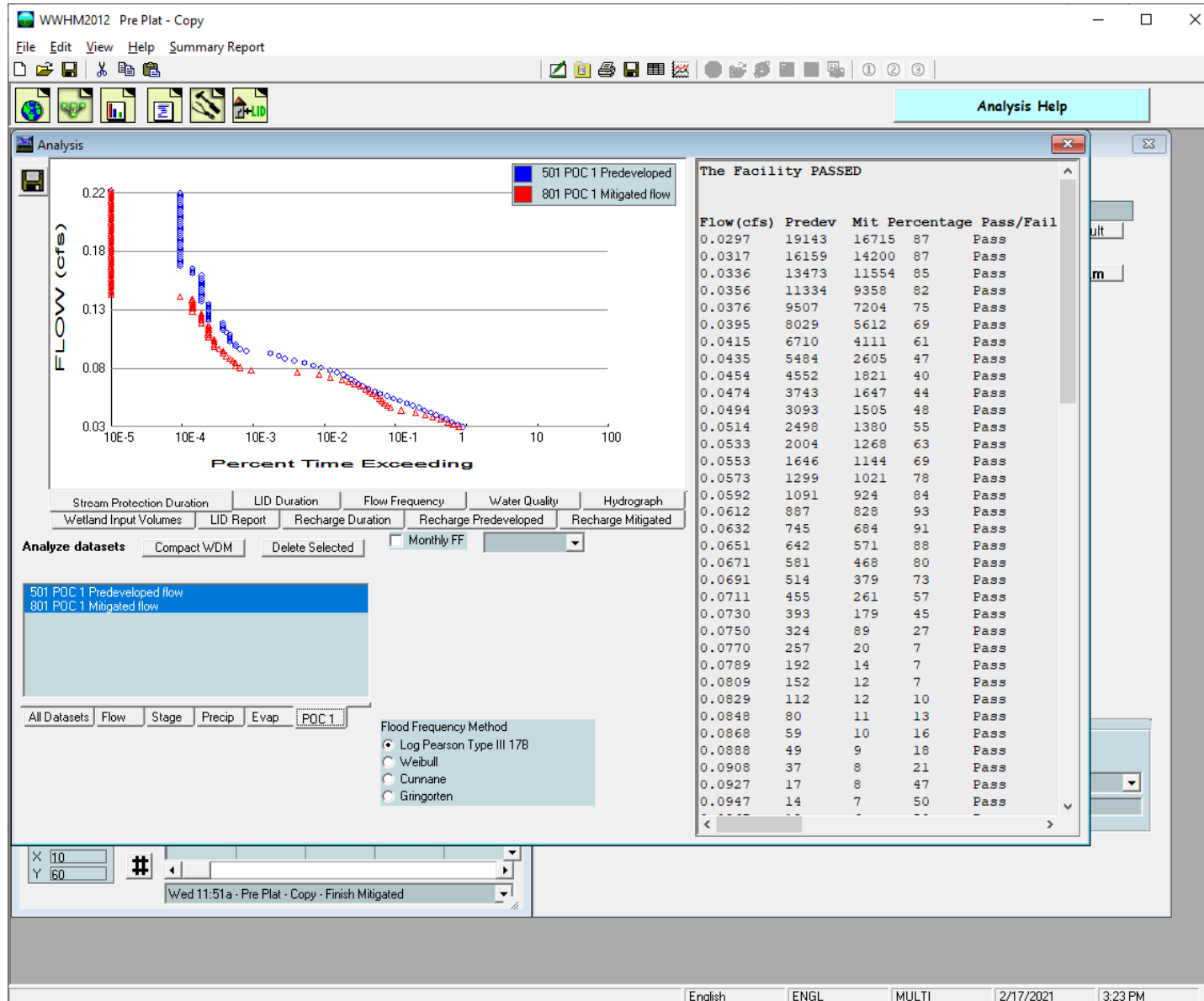
Downstream Connection

Overflow Elevation (ft) 0

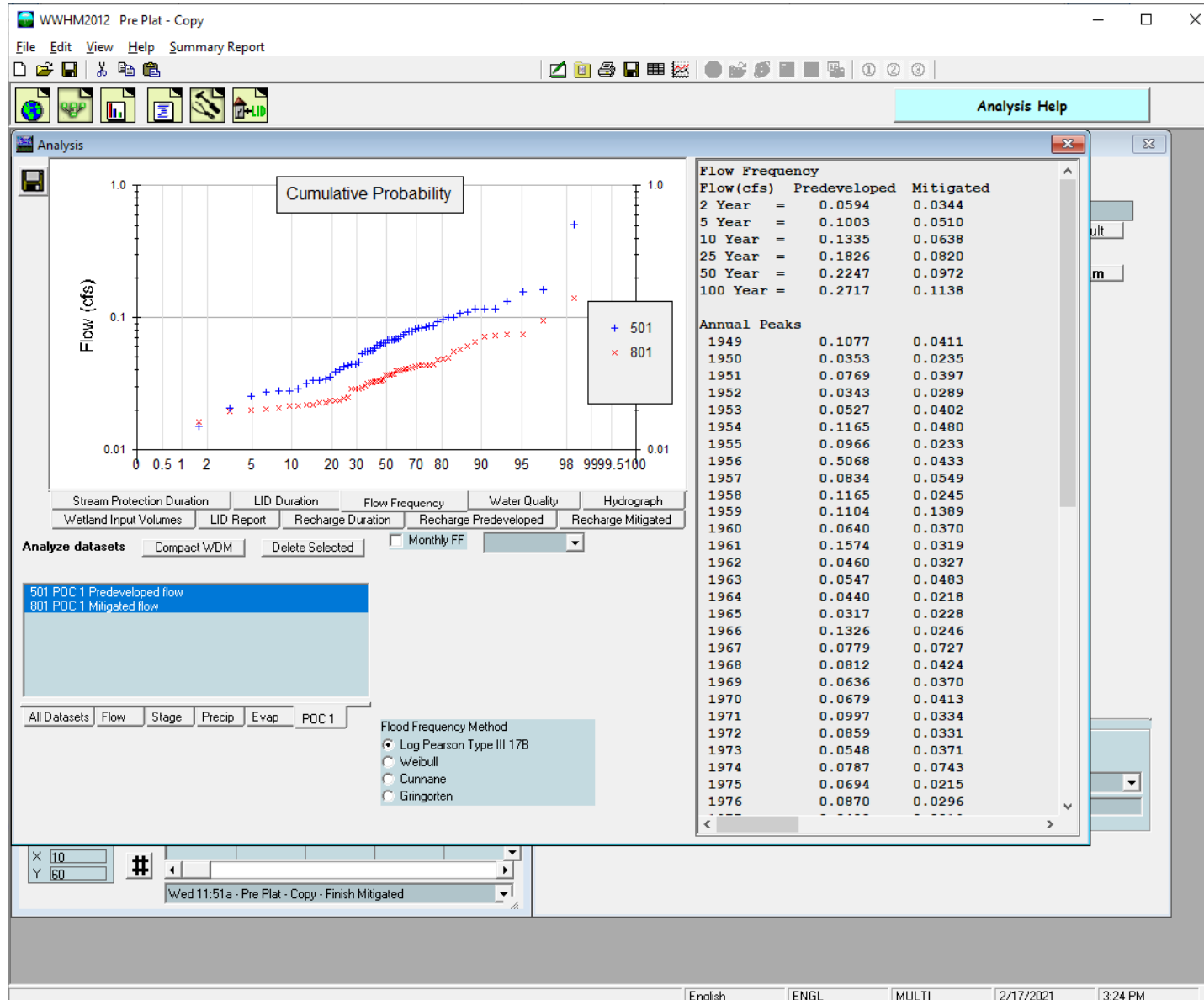
Iterations 0

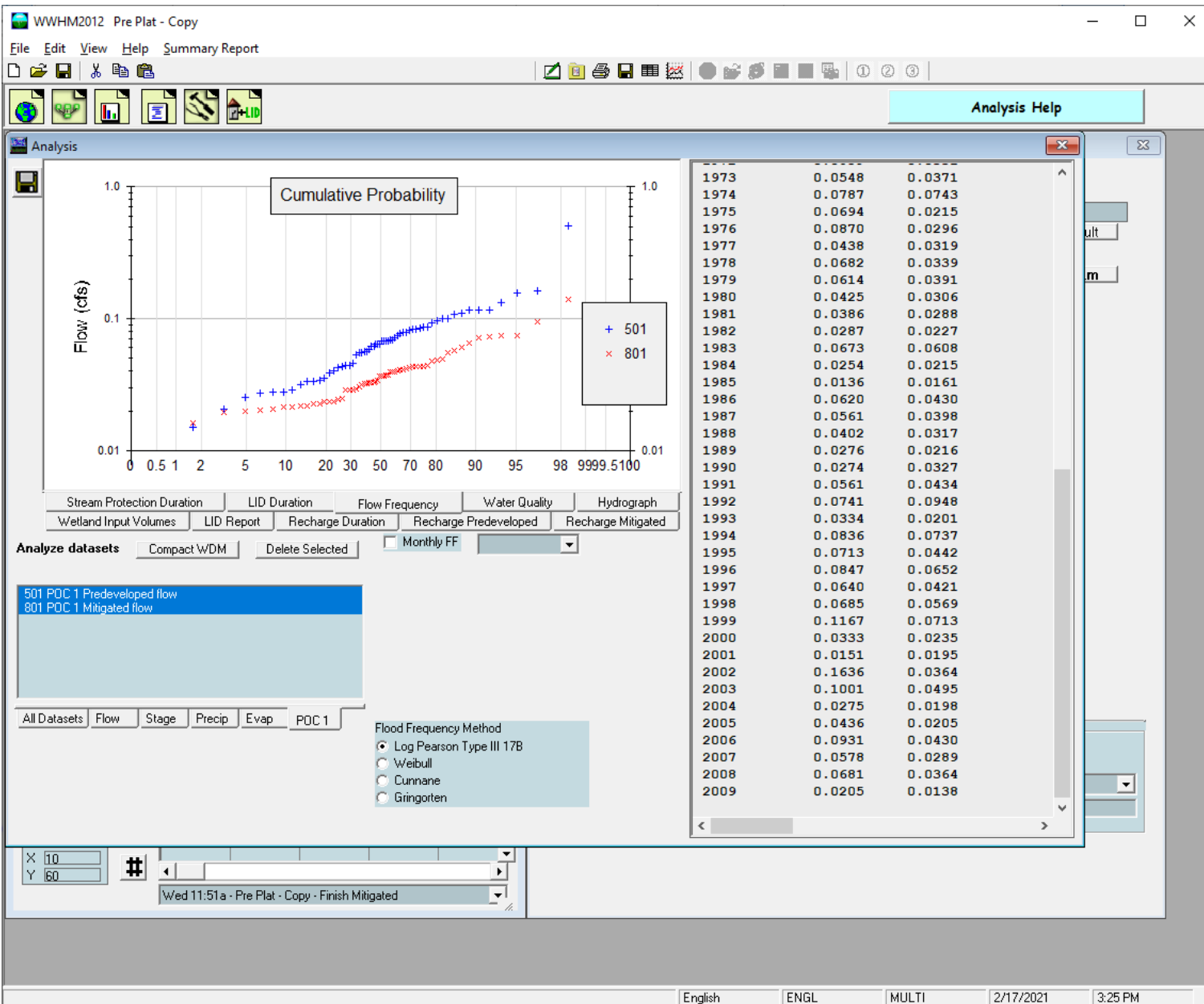
English ENGL MULTI 2/17/2021 3:23 PM

Lot A Flow Control Duration Performance

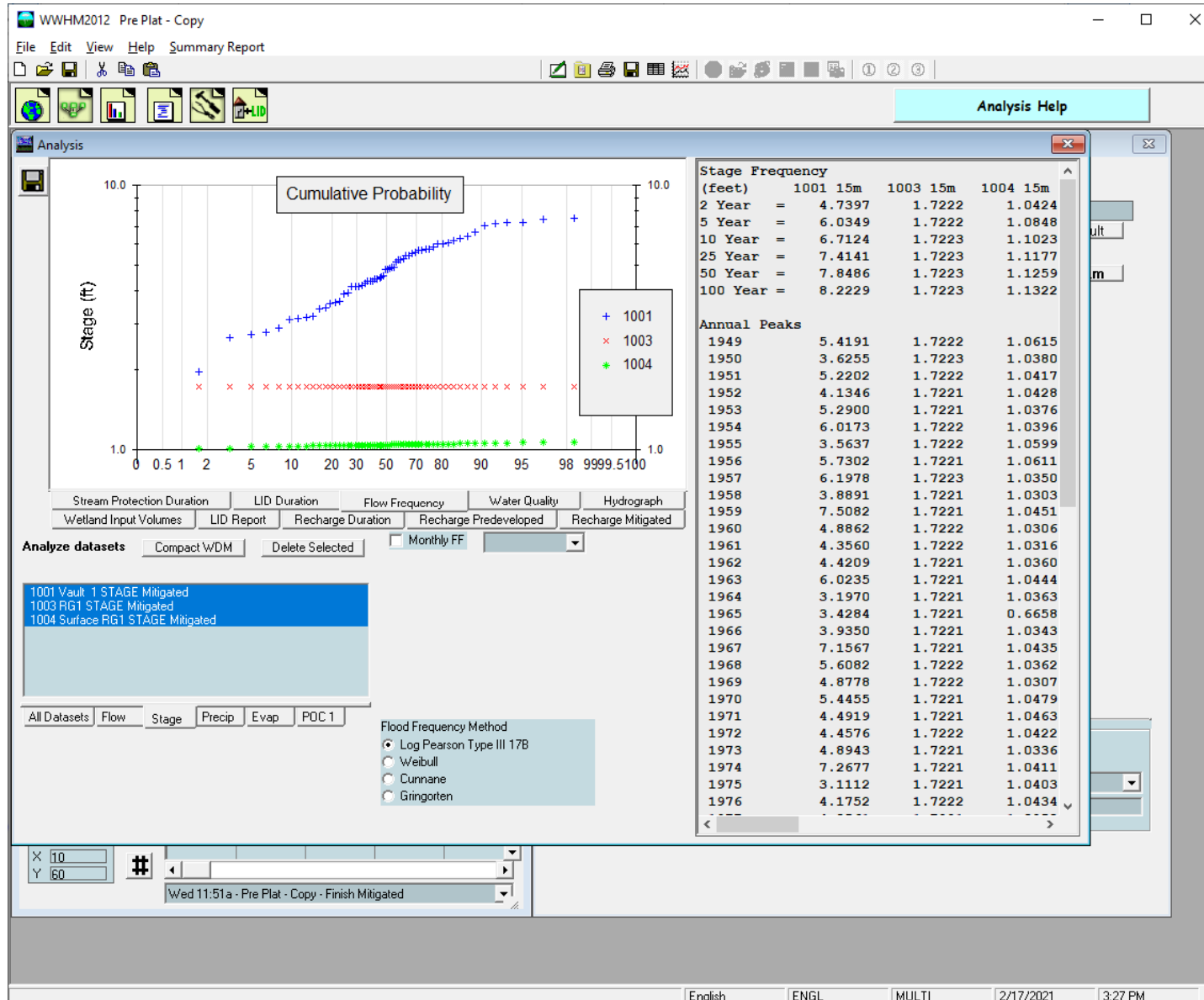


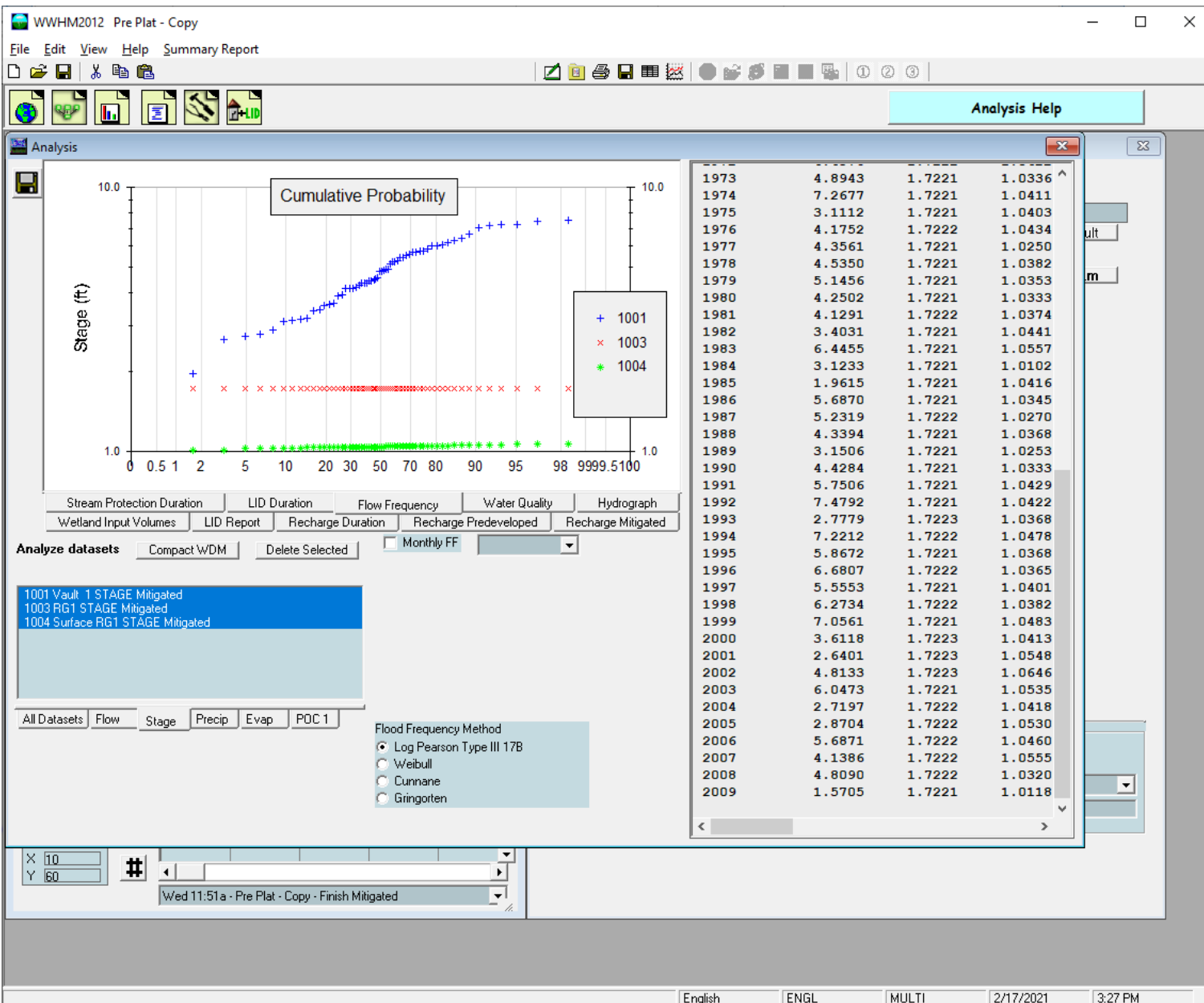
Lot A Peak Flows From Site Predeveloped Vs. Developed





Lot A Maximum Stage in Detention Vault and Rain Garden





Lot D Stormfilter 1 Basin Characteristics

Western Washington Hydrology Model 2012

File Edit View Help Summary Report

Basin Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

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Move Elements

Save x,y Load x,y

X 0 Y 0

Thu 2:28p - default[5] - Finish Mitigated

Basin 1 Mitigated

Subbasin Name: SF1 ☐ Designate as Bypass for POC:

Flows To: Surface Interflow Groundwater

Area in Basin

☐ Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
☐ A/B, Forest, Flat	0	☒ ROADS/FLAT	0.057
☐ A/B, Forest, Mod	0	☐ ROADS/MOD	0
☐ A/B, Forest, Steep	0	☐ ROADS/STEEP	0
☐ A/B, Pasture, Flat	0	☐ ROOF TOPS/FLAT	0
☐ A/B, Pasture, Mod	0	☐ DRIVEWAYS/FLAT	0
☐ A/B, Pasture, Steep	0	☐ DRIVEWAYS/MOD	0
☐ A/B, Lawn, Flat	0	☐ DRIVEWAYS/STEEP	0
☐ A/B, Lawn, Mod	0	☐ SIDEWALKS/FLAT	0
☐ A/B, Lawn, Steep	0	☐ SIDEWALKS/MOD	0
☐ C, Forest, Flat	0	☐ SIDEWALKS/STEEP	0
☐ C, Forest, Mod	0	☐ PARKING/FLAT	0
☐ C, Forest, Steep	0	☐ PARKING/MOD	0
☐ C, Pasture, Flat	0	☐ PARKING/STEEP	0
☐ C, Pasture, Mod	0	☐ POND	0
☐ C, Pasture, Steep	0	☐ Porous Pavement	0
☐ C, Lawn, Flat	0		
☐ C, Lawn, Mod	0		
☐ C, Lawn, Steep	0		
☐ SAT, Forest, Flat	0		
☐ SAT, Forest, Mod	0		
☐ SAT, Forest, Steep	0		

Pervious Total 0 Acres

Impervious Total 0.057 Acres

Basin Total 0.057 Acres

Deselect Zero Select By: GO

English ENGL MULTI 2/18/2021 2:33 PM

Lot D Stormfilter 2 Basin Characteristics

Western Washington Hydrology Model 2012

File Edit View Help Summary Report

Basin Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 20 Y 0

Thu 2:28p - default[5] - Finish Mitigated

Basin 2 Mitigated

Subbasin Name: SF2 ☐ Designate as Bypass for POC:

Flows To: Surface Interflow Groundwater

Area in Basin

☐ Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
☐ A/B, Forest, Flat	0	☒ ROADS/FLAT	.057
☐ A/B, Forest, Mod	0	☐ ROADS/MOD	0
☐ A/B, Forest, Steep	0	☐ ROADS/STEEP	0
☐ A/B, Pasture, Flat	0	☐ ROOF TOPS/FLAT	0
☐ A/B, Pasture, Mod	0	☐ DRIVEWAYS/FLAT	0
☐ A/B, Pasture, Steep	0	☐ DRIVEWAYS/MOD	0
☐ A/B, Lawn, Flat	0	☐ DRIVEWAYS/STEEP	0
☐ A/B, Lawn, Mod	0	☐ SIDEWALKS/FLAT	0
☐ A/B, Lawn, Steep	0	☐ SIDEWALKS/MOD	0
☐ C, Forest, Flat	0	☐ SIDEWALKS/STEEP	0
☐ C, Forest, Mod	0	☐ PARKING/FLAT	0
☐ C, Forest, Steep	0	☐ PARKING/MOD	0
☐ C, Pasture, Flat	0	☐ PARKING/STEEP	0
☐ C, Pasture, Mod	0	☐ POND	0
☐ C, Pasture, Steep	0	☐ Porous Pavement	0
☐ C, Lawn, Flat	0		
☐ C, Lawn, Mod	0		
☐ C, Lawn, Steep	0		
☐ SAT, Forest, Flat	0		
☐ SAT, Forest, Mod	0		
☐ SAT, Forest, Steep	0		

Pervious Total 0 Acres

Impervious Total 0.057 Acres

Basin Total 0.057 Acres

Deselect Zero Select By: GO

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Lot D Stormfilter 1 Water Quality Flow Rate

Western Washington Hydrology Model 2012

File Edit View Help Summary Report

Analysis Help

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0114

Standard Flow Rate (cfs) 0.0141

Off-Line BMP

Standard Flow Rate (cfs) 0.0082

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected ☐ Monthly FF

801 POC 1 Mitigated flow

Evap POC 1 POC 2

All Datasets Flow Stage Precip

Flood Frequency Method

- ☒ Log Pearson Type III 17B
- ☐ Weibull
- ☐ Cunnane
- ☐ Gringorten

X 0 Y 0 # Thu 2:28p - default[5] - Finish Mitigated

Basin Total 0.037 Acres

Deselect Zero Select By: GO

English ENGL MULTI 2/18/2021 2:35 PM

Lot D Stormfilter 2 Water Quality Flow Rate

Western Washington Hydrology Model 2012

File Edit View Help Summary Report

Analysis Help

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0114

Standard Flow Rate (cfs) 0.0141

Off-Line BMP

Standard Flow Rate (cfs) 0.0082

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected ☐ Monthly FF

802 POC 2 Mitigated flow

Evap POC 1 POC 2

All Datasets Flow Stage Precip

Flood Frequency Method

- ☒ Log Pearson Type III 17B
- ☐ Weibull
- ☐ Cunnane
- ☐ Gringorten

X 0 Y 0 # Thu 2:28p - default[5] - Finish Mitigated

Basin Total 0.037 Acres

Deselect Zero Select By: GO

English ENGL MULTI 2/18/2021 2:36 PM