

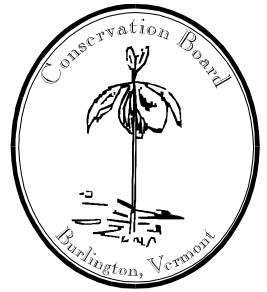
**Burlington Conservation Board
Open Space Subcommittee**

149 Church Street
Burlington, VT 05401

www.burlingtonvt.gov/pz/cb

Telephone: (802) 865-7188
(802) 865-7195 (FAX)

*Matt Moore
Will Flender
Jeff Severson
Zoe Richards*



Open Space Subcommittee Meeting Public Notice

April 6, 2015 at 4:30 PM
Planning and Zoning Conference Room - City Hall Lower Level
149 Church Street

Agenda

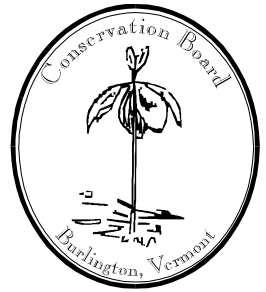
- I. Public Comment**
- II. Acquisition Updates**
 - a. Executive Session**
- III. Stewardship Updates**
- IV. Other Business**

The City of Burlington will not tolerate unlawful harassment or discrimination on the basis of political or religious affiliation, race, color, national origin, place of birth, ancestry, age, sex, sexual orientation, gender identity, marital status, veteran status, disability, HIV positive status or genetic information. The City is also committed to providing proper access to services, facilities, and employment opportunities. For accessibility information or alternative formats, please contact Human Resources Department at 865-7145.

Burlington Conservation Board

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*Matt Moore, Chair
Will Flender, Vice Chair
Scott Mapes
Don Meals
Jeff Severson
Miles Waite
Damon Lane
Zoe Richards
Stephanie Young*



Conservation Board Meeting Public Notice

April 6, 2015 at 5:30 PM
Planning and Zoning Conference Room - City Hall Lower Level
149 Church Street

Agenda

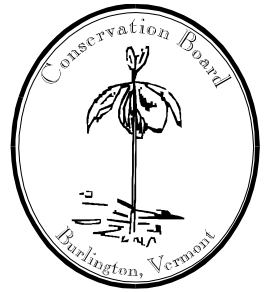
- I. Minutes (5:30) – Accept minutes from March 2, 2015 meeting**
- II. Board Comment (5:35)**
- III. Public Comment (5:45)**
- IV. Open Space Subcommittee (5:50)**
 - 1. Former Burlington College lands update with Jesse Bridges**
 - 2. Executive Session**
- V. Project Review (6:10)**
 - 1. 15-0922CA/MA; 451 Appletree Point Rd (WRL, Ward 4N) Al Senecal**
Demo existing structures, construct new duplex and associated site improvements
 - 2. 15-0923CA/MA; 465 Appletree Point Rd (WRL, Ward 4N) Al Senecal**
Construct new duplex and associated site improvements
 - 3. 15-0809CA/MA; 316-322 Flynn Ave (NMU, Ward 5) G & C Properties**
Remove existing deli building and replace with new mixed use (deli, office, & 9 residential units) building and associated site improvements
- VI. Update & Discussion (6:50)**
 - 1. Vermont Village Green Initiative: Burlington**
 - a. Discussion with UVM senior Amie M Schiller
 - 2. Goals for 2015**
- VII. Adjournment (7:20)**

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Conservation Board Meeting Minutes

Monday, March 2, 2015 – 5:30 pm

Planning & Zoning Conference Room – City Hall Lower Level
149 Church Street

Attendance

- **Board Members:** Zoe Richards (ZR), Miles Waite (MW), Damon Lane (DL), Will Flender (WF)
- **Absent:** Jeff Severson (JS), Scott Mapes (SM), Matt Moore (MM), Stephanie Young (SY)
- **Public:** Bruce Baker, Gregg Doremus, Peter Smiar, Laura Obregon (289 College St) Patrick O'Brien, Paul O'Leary, Errol Briggs, Bryan Courier (140 Grove St) Bill Nedde, Erik Hoekstra, Lani Ravin, and Ted Adams (10 University Pl)
- **Staff:** Scott Gustin (Planning & Zoning), Jesse Bridges (Parks & Recreation)

WF, Vice Chair, called the meeting to order at 5:30 p.m.

Minutes of January 5, 2015

MW noted on pg. 3, 2nd paragraph from bottom, 1st sentence, "... got in" should be replaced with "... was the only one asked to submit a proposal?"

A MOTION was made by DL and SECONDED by ZR:

Accept the minutes of January 5, 2015 as corrected.

Vote: 3-0-2

Board Comment

SG updated the Board on the wildlife assessment by UVM graduate students. They are looking at animal movement (mostly mammals) between Lone Rock Point & Arms Grant area and the Intervale across North Avenue and Rte. 127. They are looking at what species there are, where they are moving, and what might be done to improve wildlife mobility across these two transportation corridors.

MW noted the ongoing VT Environmental Consortium effort to relax standards for dealing with mildly contaminated soils. He's recently learned of a bill in Montpelier (H 269) that may be relevant. There's been some movement to addressing this problem.

Public Comment

None.

Open Space Subcommittee

Jesse Bridges updated the Board relative to the former Burlington College lands. There's an agreement in place for a public process to take place before the permitting process. It involves the landowner, city, and area land trusts. A consultant will be hired to lead the process. This property has long had conservation values. We've had some good conversations with the property owner. There is a lot of opportunity on this property to meet multiple goals. He wants to be sure the Conservation Board is kept engaged and up to speed. When there is a request for acquisition, he wants the Board to be well informed. City policy has long called for development of this property. We'll get the historical and archaeological assessments updated. It has been found that a portion of the beach is indeed included in the property. An initial kick-

The programs and services of the Dept. of Planning and Zoning are accessible to people with disabilities.
For accessibility information call 865-7188 (865-7142 TTY).

off meeting will be focused on values and goals rather than particular site plans. He expects this process to take several months.

ZR said having a third party lead the outreach effort is a good idea. She mentioned the public confusion that resulted from the initial proposal to purchase the development rights – not the property itself.

Mr. Bridges said the process will be open and will encourage a broad range of input. Conservation Board and Parks & Recreation Commission meetings will provide additional forums for folks to weigh in and express their comments.

Mr. Bridges noted that expenses will be shared by the parties involved. He may request utilization of some funds for this effort. WF said that he'll be the point person for the Conservation Board. Nancy Kaplan will be the point person for the Parks & Recreation Commission.

Project Review

1. 15-0656CA/MA; 289 College St (RH, Ward 8) 289 Live/Work, LLC

Addition of 12 residential units to existing mixed use building (office and 1 residential unit) for total of 13 residential units and office use

Bruce Baker, Gregg Doremus, Peter Smiar, and Laura Obregon appeared.

Bruce Baker briefly overviewed the project. It's an older historic building with a newer addition. Its presently commercial use with 1 apartment. He's looking to build a residential addition to the building. Twelve units total, all 1 bedroom units. Parking will be provided behind the building.

Peter Smiar explained the existing stormwater conditions and the proposed management plan. Presently, most runoff comes from the back and down a swale across the neighboring property to South Union Street. Three test pits were dug in the fall. There's a sandier loam on top with a clay layer immediately underneath. Water table was found at 18" to 20". The existing swale will be removed. Runoff will be captured in a detention pipe before then discharging into the city's combined sewer system. An under-drained rain garden will be installed in front. DM, do the detention structures have a fixed orifice? Will there be opportunity to force saturated soils to allow for evapotranspiration? Otherwise, it just drains water through a plant matrix prior to discharge. Mr. Smiar, we'd like it to drain within a day or two. We're not opposed to tweaking it. We could examine the drain time. DM, we'd like to see the water retained a bit longer. Will there be enough light in this location to support a healthy plant community? Something to think about in your plant selection.

MW, has some roof runoff infiltration along the uphill side been considered? Mr. Smiar, yes, but we decided to stay away from it due to the proposed circulation and soil conditions.

Mr. Smiar, the proposed system is designed for the 1 year storm. Assumed 50% meadow for the redeveloped area. MW, has Megan Moir signed off yet? Mr. Smiar, no. She's seen it and has worked with us. He expects final approval soon. SG stated that Ms. Moir deliberately holds off on her final approval pending Conservation Board review.

A MOTION was made by DM and SECONDED by MW:

Approve the stormwater management plan concept. Advise additional control (time) in rain garden to allow for evapotranspiration and carefully select plant species for this shaded location. Needs EPSC approval from Stormwater Administrator.

Vote: 5-0-0

2. 15-0801PD; 140 Grove St (RL, Ward 1) Ireland Grove Street Properties

Final plat review of PUD to demolish existing concrete plant and buildings, construct 19 new residential buildings for 232 residential units, clubhouse, and maintenance building with associated road, parking, and site improvements

Patrick O'Brien, Paul O'Leary, Errol Briggs, and Bryan Courier appeared.

SG noted that this is final plat review. The Board has seen this project at sketch and preliminary plat as well. Items for review include stormwater, wetlands, and riparian corridor. The project includes removing a length of culvert to daylight a portion of Centennial Brook.

Patrick O'Brien noted the existing second site entrance to be removed. This is the portion of the project that will daylight a portion of Centennial Brook. DRB had required them to reevaluate a second access. They've done that and are continuing with the one access. He'd like the Conservation Board's support for this one access. Removing the culvert improves the continuity of green space and associated wildlife movement from the river up towards Centennial Woods. Mr. O'Brien also noted the removal of the proposed overlook along the river. The Board had requested removing that to minimize encroachment along that corridor. He noted that the buildings have been revised to minimize rear garage openings. Doing so minimizes vehicle light pollution projecting into the surrounding wooded areas and river corridor. None of the trails will be illuminated. Just the sidewalks along the streets will be illuminated. DM, LED lights? Mr. O'Brien, yes. He noted that everything within the development site is presently concrete, gravel, asphalt, or building. Much of that will be converted to green.

Mr. O'Brien introduced Errol Briggs, wetland ecologist. DM, describe the process for converting hardpack areas to green. Mr. O'Brien overviewed the project phasing plan. Paul O'Leary said the hard surface will need to be scarified before topsoil will be placed on top. MW, will this involve a net fill or removal? Mr. O'Leary, haven't concluded yet. Material will need to leave the site. MW, have you thought about the mild contamination that may be in the soil? It may not be able to be used as offsite fill. Mr. O'Brien, we're familiar with that as a site contractor.

DL, what property does the path along the river go to? Mr. O'Brien said it had gone to GMP land. We've since bought it. Land will be conveyed to the WVPD as part of this development. Mr. O'Brien said the path along the river exists. An easement for that path to the benefit of WVPD will be executed. The easement will be continued along the river. The path may be extended within that easement by WVPD in the future.

WF asked about the proposed stormwater management system. Mr. O'Leary said that impervious will go from about 10 acres to about 6. There are two watersheds: the Winooski and Centennial. Centennial Brook is an identified impaired waterway. The proposed design collects all stormwater for large storm events in the pond. For smaller events, provision will be made for infiltration. Rain gardens and infiltration trenches will provide infiltration of small storm events. The proposed street network will discharge to the pond.

DM asked where the pond is located. Mr. O'Leary pointed it out on the southeastern end of the parcel. He also mentioned that stormwater improvements will be made relative to the Schmanska parking lot. He went on to describe improvements to the existing pond. A berm will be installed to create a forebay and an outlet structure will be installed.

MW likes the effort for infiltration. Will they be under-drained? Mr. O'Leary, for the most part, no. There will be an underdrain halfway up for the infiltration trenches behind the larger apartment buildings.

A MOTION was made by MW and SECONDED by DM:

Endorse/approve the project as proposed. Support the one entrance plan. Standard EPSC conditions apply.

Vote: 5-0-0

Sketch Plan

1. 15-810SP; 10 University PI (I, Ward 1) UVM / Redstone & American Campus Communities

Sketch plan review of proposed undergraduate student housing on Central Campus

Bill Nedde, Erik Hoekstra, Lani Ravin, and Ted Adams appeared.

Erik Hoekstra noted that Redstone is working with UVM to build this project similar to that done on Redstone Campus. An addition of 699 (net new 308) student beds is proposed. The proposed building footprints are about 14K and 15.5K with an additional 5K footprint for dining facility. A green roof is contemplated for the dining area. Short term bike parking will be provided throughout the site. A long term bike parking facility will be provided as well.

DM, about 40% of the existing green will be developed? Mr. Hoekstra, no. Don't have firm figures, but not that much. Lani Ravin said perhaps a third of the green will be utilized. Mr. Hoekstra noted the buildings will be 6 and 7 stories. Trying to go up versus spreading out.

MW pointed out the close proximity of several large projects. Mr. Hoekstra said discussions are being had as to how to coordinate construction activities among the parties. Bill Nedde said there will be individual site-specific erosion control plans, but there will be an overall coordination. Ms. Ravin noted coordination of construction access and traffic is also under discussion.

Mr. Hoekstra said he is aiming for a fall of '15 construction start and ready for students fall of '17.

Bill Nedde overviewed the site watershed and the north campus stormwater facility which will fully handle stormwater from the site. DM asked about what kind of green roof. Ted Adams replied that a sedum tray roof system is anticipated. It will provide stormwater management, cooling, and protection of roof membrane. DM, public access? Mr. Adams, no.

Mr. Hoekstra said he's aiming to file an application later this month and be back to the Conservation Board in April.

DM said he will be interested in green roof details. WF said he'd be interested in the bike parking facilities. MW suggested reaching out to Plant & Soil Sciences to see if the green roof may be of any research value to them.

Mr. Hoekstra said the proposal is a traditional dorm style with shared facilities. It's for first year students and is intended to de-densify existing campus housing.

Update & Discussion

1. LID coverage credit amendment

SG overviewed the proposed amendment. It is not a bonus, but rather a lot coverage credit for pervious pavements. Depending on the degree of performance of a given pervious pavement system, lot coverage credit of up to 50% is available. In other words, a pervious pavement driveway of 1,000 sf may be counted as only 500 sf coverage. The Conservation Board saw this amendment about a year ago and talked about 2% vs. 5% or greater driveway slopes. This amendment goes with a 5% trigger and leaves it at that. The performance standards are housed in Chapter 26 and should stay there. Pervious pavement systems receiving coverage credit require review by the city's Stormwater Program. A number of folks have inquired with the Planning & Zoning Department as to the status of this amendment. It's time to move this along.

DM asked if the provisions would be retroactive. SG said if you can demonstrate performance measures achieved, the credit can be applied to existing conditions. DM, anybody know who does this type of work? DL & MW suggested a landscape company.

A MOTION by DM seconded by ZR:

Support amendment as proposed.

Vote: 5-0-0

2. Goals for 2015

Defer to April.

Adjournment

The meeting adjourned at 7:21 PM

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175 SUMMIT CIRCLE
SHELBURNE VERMONT

PINE & FLYNN
DEVELOPMENT

EC1

Total 26,426 SF (0.474 Acres)

Acreage			
Total Lot	26,427.9 s.f.	0.61 acre	100%
Paved Area	10,143.7 s.f.	0.23 acre	38.4%
Gravel Parking	4,555.0 s.f.	0.10 acre	17.2%
Building Area	4,741.5 s.f.	0.11 acre	17.9%
Total Impervious	19,440.2 s.f.	0.45 acre	73.6%
PerVIOUS Area	6,987.6 s.f.	0.16 acre	26.4%

_____ *Property/R.O.W. Line*

 _____ *Proposed Property Line*
 _____ *Overhead Utility Line*
 ONE _____

 _____ *Gas Line*
 0 _____
 _____ *Water Line*
 _____ W _____
 _____ *Sanitary Line*
 5 _____
 _____ *Storm Line*
 ST _____

1. "Engle's Farm," plan of the former Farm Estate property by A.R. Dow, JC, dated May, 1899 and recorded in Vol. 120, Pg. 55 of the Burlington City Land Records
2. "Plot of Survey - BGDH Realty, LLC" by Civil Engineering Assoc. Inc. last dated 2/26/07 and recorded in Map Slide 419B of the Burlington City Land Records
3. "Property Survey Plat - G&C Properties, LLC" by Summit

Note: Previous deeds describe the easterly line of this property as being parallel to Pine Street. The referenced 1899 plan shows the easterly line to be parallel with Shelburne Road which coincides with apparent usage.

Horizontal and Vertical information shown hereof are related to NAD 83(2007) and NAVD 88 datums based upon this Station "ANTHONY" and upon Station "PUMP STA PINE" located on the easterly side of Pine St. opposite Lakeside Ave.

"ANTHONY" Elevation = 111.29' NAVD 88

"ANTHONY" Elevation = 111.29' NAVD 88

(IN FEET)

1 inch = 20 ft.

It is noted that no site assessment of hazardous or other waste materials has been made and S.E. takes no responsibility for any materials or conditions that may exist on this site.

The Contractor is to notify Dig-Safe (Tel. 1-800-DIG-SAFE) 48 hours prior to any excavation.

any excavation.

Underground locations shown are drawn from structure to structure or located per City Public Works plans.

All utility services enter this lot through a public right-of-way or recorded easement.



ARCHITECT

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JRMA DESIGN STUDIO, LLP
175 SUMMIT CIRCLE
SHELBURNE VERMONT

CLIENT

PINE & FLYNN

DEVELOPMENT

LOCATION

316 PLYNN AVE CORNER OF PINE & FLYNN
BURLINGTON, VERMONT

OWNER

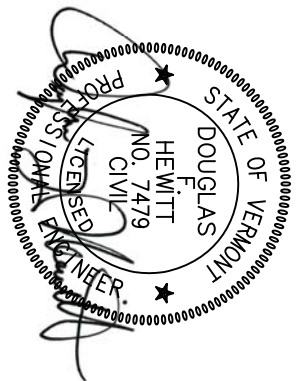
G & C PROPERTIES
BURLINGTON, VERMONT
TEL: 802.343.6789

CONTRACTOR

CIVIL ENGINEER

SUMNER ENGINEERING, INC.
1220 Shelburne Road S2
Shelburne Vermont 05483
(802) 986-4666

STAMP



Issue Date Issue Date

Project

STORMWATER MANAGEMENT
PLAN AND DETAILS

Drawn By: BEG Date: 3/24/15 Scale: N.T.S.

Project No: 8183 Drawn By: BEG Date: 3/24/15 Scale: N.T.S.

Revised

Drawn No.

D3

STORMWATER SYSTEM MAINTENANCE REQUIREMENTS

- The system is to be inspected annually after spring snow melt, prior to June 15th. The inspection shall evaluate the operation and maintenance and condition of the stormwater collection, treatment and control system.
- The stormwater treatment tank is to be inspected monthly and after significant rainfall events.
- The owner shall arrange an annual inspection survey which shall be submitted to the Burlington Department of Public Works and the State of Vermont Stormwater Office by July first of each year. The report shall include the dates and details of all stormwater system maintenance and repairs performed in the previous year.
- The inspection shall include an evaluation of all catch basins, treatment tanks, and natural areas. The features are to be inspected for sediment accumulation and stability.
- Sediment shall be removed from the catch basins when the sediment level is within 10" of the pipe inlet and from the treatment tank when the depth reaches 6".
- Any sediment or erosion observed on the site shall be removed/repaired and full vegetation reestablished.

PROJECT DESCRIPTION

The project consists of the construction of a Multi-Use Building at 316 Flynn Avenue on the lot of the currently operating Pine Street Deli and the associated utilities, parking and landscaping. The improvements will include reconstruction of the adjacent city sidewalks and the installation of a stormwater attenuation and treatment tank. Using the state of Vermont stormwater guidelines, the risk category has been defined as "Low". The site improvements include items that will be phased (building excavation and construction, sidewalk replacement, site grading, utility installation and replacement, etc.) to minimize the time of exposed soils.

EXISTING CONDITIONS

The site runoff from the existing site runs to Englishy Brook via sheet flow, gutter flow, a catch basin in Flynn Avenue and the Outlet drainage pipe in Pine Street. The site has no collection system with all the runoff entering the site via sheet flow and overland flow. The majority of the site is covered by paved parking and rooftops.

Soils -

The soils along the brook are mapped by the NRCS as Munson and Begrade Silty Loams with C & D Hydrologic Soil Groups.

STORMWATER TREATMENT AND DRAINAGE CONSIDERATIONS -

The proposed stormwater treatment methods are the result of space limitations and the poor infiltration properties of the underlying soils. The inclusion of catch basins and roof drain systems create a concentration of runoff to a new culvert to Englishy Brook. The installation of a Flow Attenuator/Sedimentation tank prior to the final discharge is the most efficient method of improving the runoff characteristics of the site. Impermeable portions of the site will continue to drain to the adjacent street systems and runoff directly to Englishy Brook. Site Runoff will continue to enter the City of Burlington Municipal Stormwater system and the adjacent brook (Englishy) via overland flow, gutter flow, on-site and municipal catch basins, storm pipes and a new treatment tank. The overall impermeable area of the site will be reduced by approximately 2,200 sf with 9,000 sf of the new roof and paved surfaces being moved through the treatment tank.

RUNOFF ATTENUATION -

The resulting stormwater design, including the Flow Reducer Tank, based on a TR-55 runoff model, will result in a reduction of the peak design flows for the 1, 2, 10, 25 and 100-year, 24-hour design storms as specified in the table included on the design plans and stormwater management details.

Existing ImperVIOUS Lot Coverage			
Total Lot	26,424 s.f.	0.61 acre	100%
Paved Area	14,697 s.f.	0.34 acre	55.6%
Building Area	4,742 s.f.	0.11 acre	18.0%
Total Coverage	19,439 s.f.	0.45 acre	73.6%

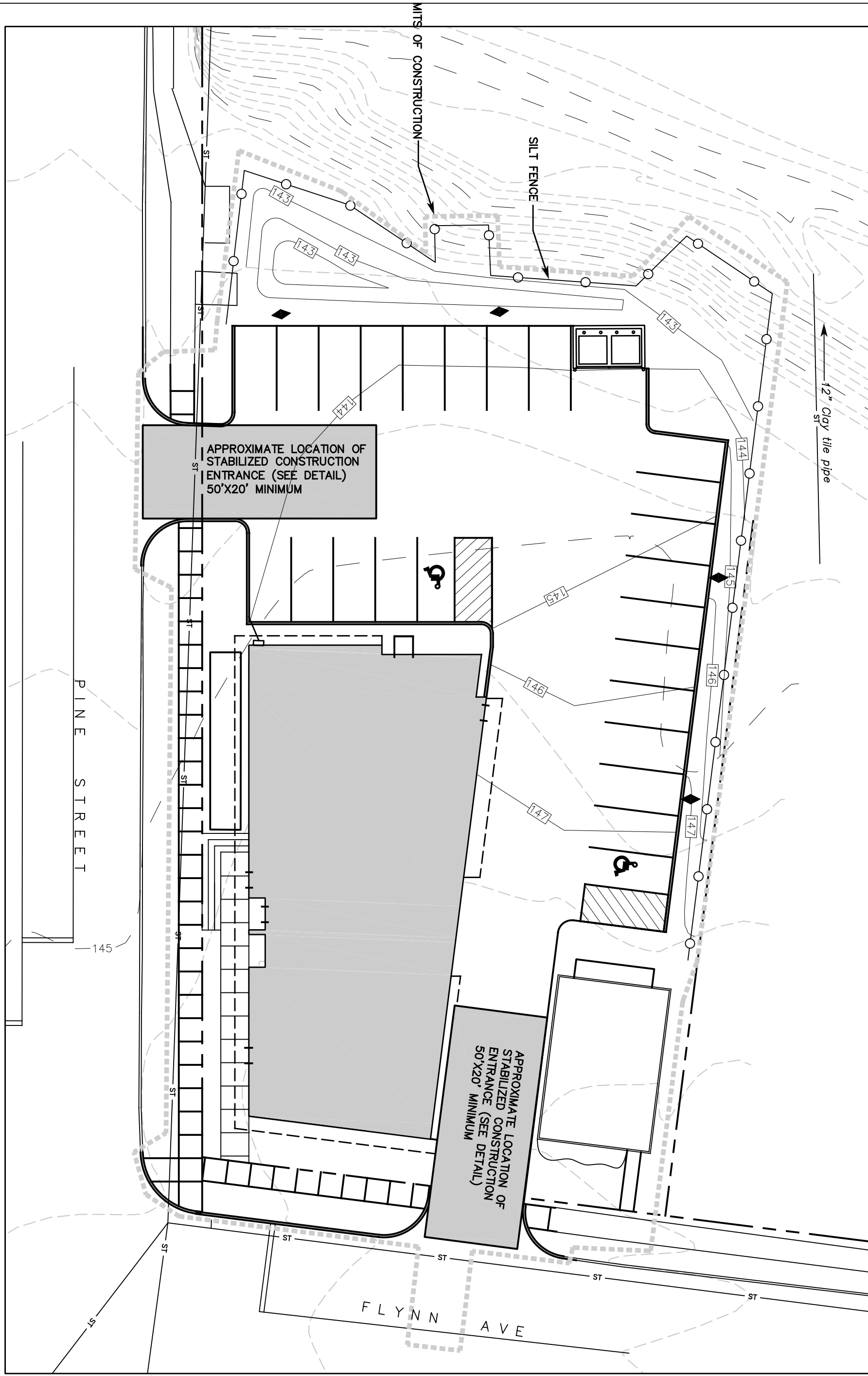
Proposed ImperVIOUS Lot Coverage			
Total Lot	26,424 s.f.	0.61 acre	100%
Paved Area	11,101 s.f.	0.25 acre	42.0%
Building Area	6,119 s.f.	0.14 acre	23.2%
Total Coverage	17,220 s.f.	0.40 acre	65.2%
New ImperVIOUS	-2,219 s.f.	-0.05 acre	-8.4%

ImperVIOUS Surface Management			
Standard	Net New	Redevelop/Existing	
Water Quality	0 s.f.	13,373 s.f.	
Runoff Reduction	0 s.f.	13,373 s.f.	
Q1 Peak Control	0 s.f.	13,373 s.f.	
Q10 Peak Control	0 s.f.	13,373 s.f.	

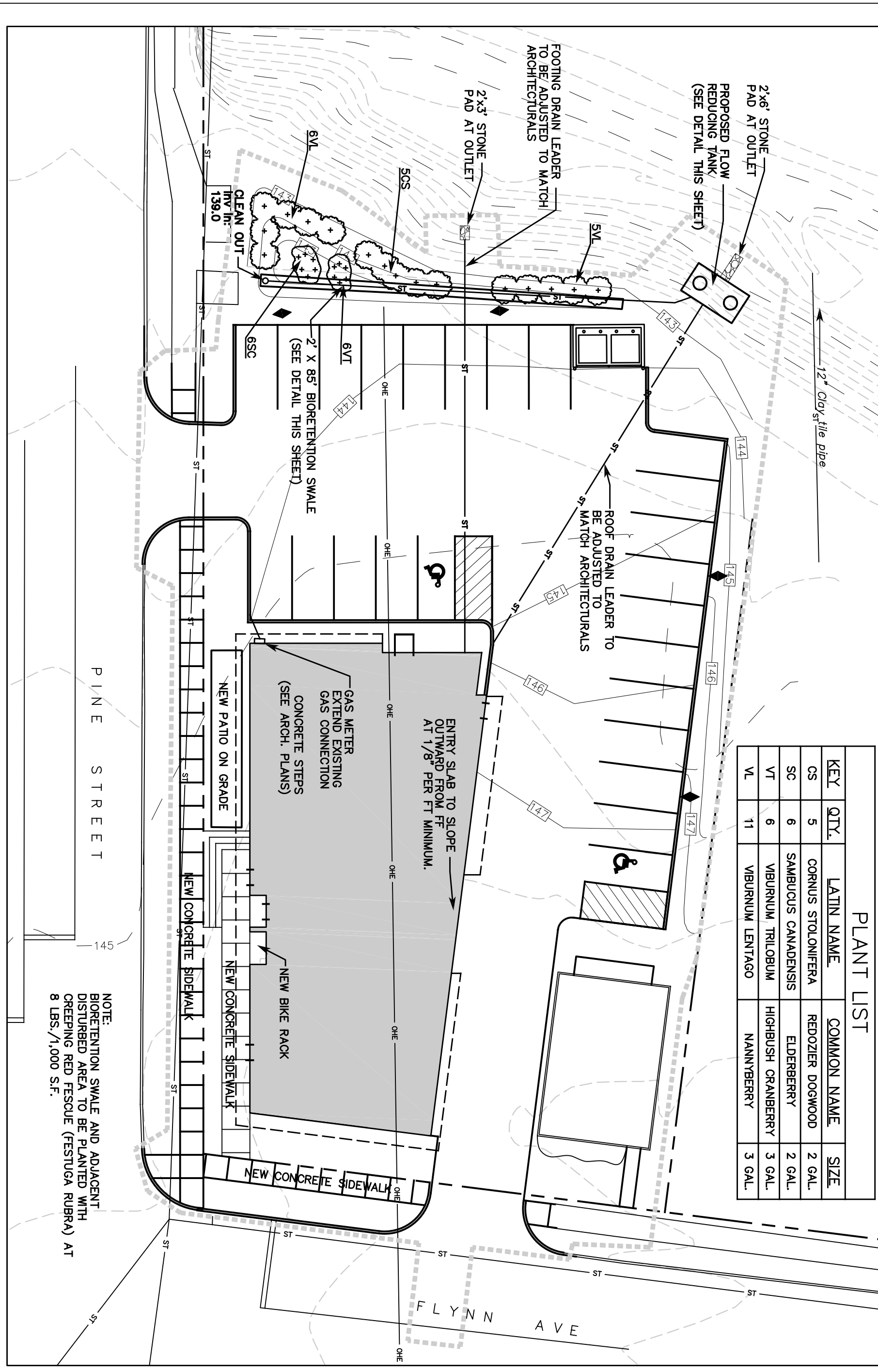
EROSION CONTROL VIEW

GRAPHIC SCALE

20 0 10 20 40 80

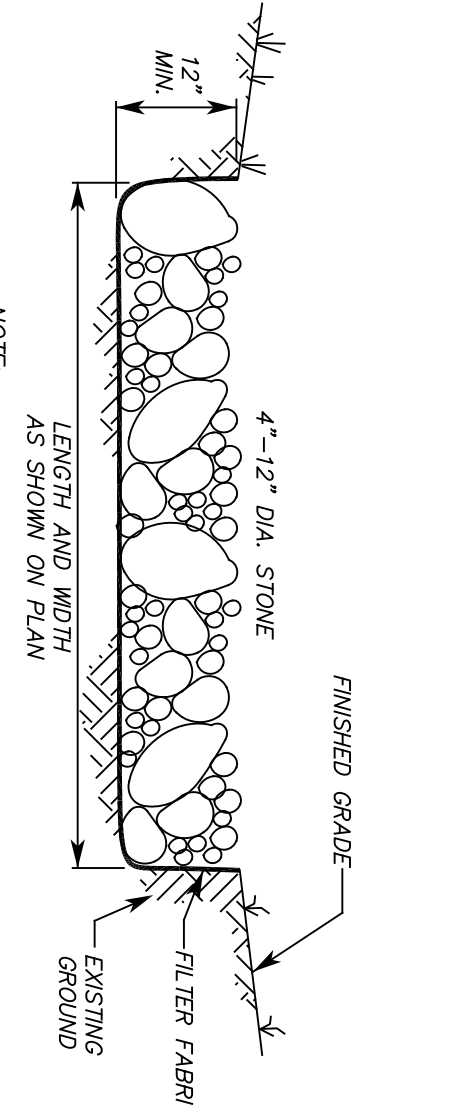


STORMWATER MANAGEMENT VIEW



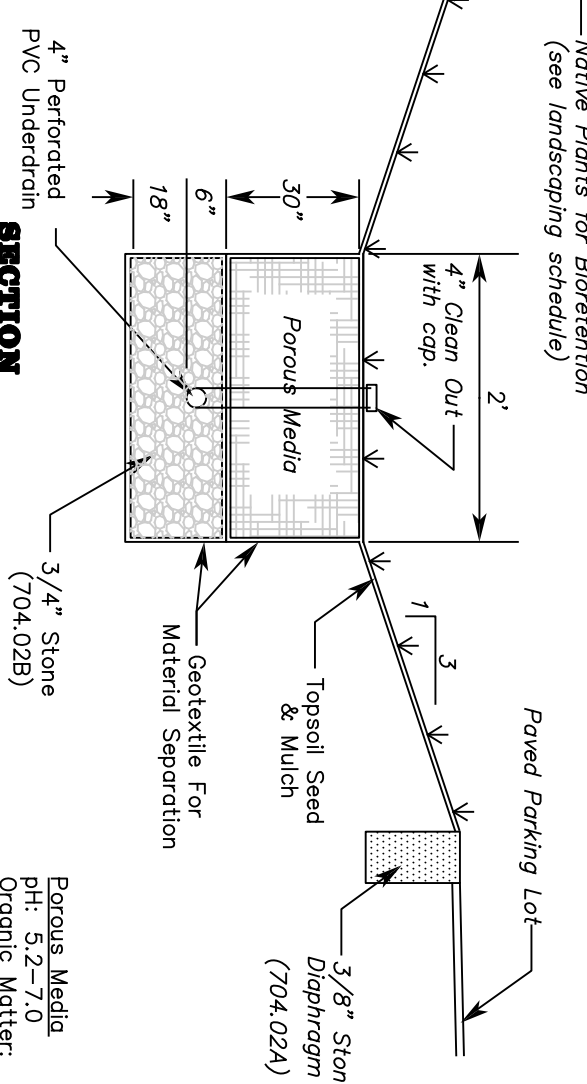
STONE PAD DETAIL

N.T.S.



BIORETENTION SWALE DETAIL

N.T.S.



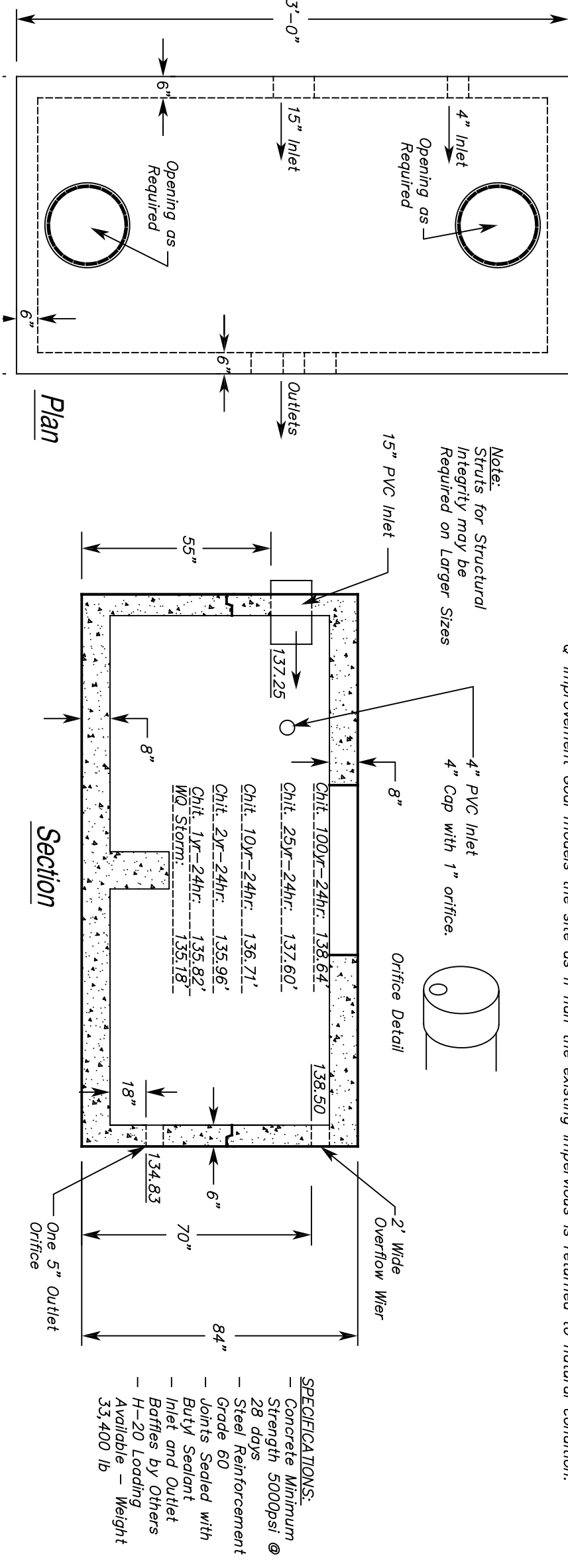
- Void Ratio = 0.4
- Permeability of Bioret Media = 10 Mm/inch
- Max Q For 1" Orifice = 0.07 cfs
- Storage Volume : 2' Wide Swale = 20 CF/L.F.
- 4' Wide Swale = 40 CF/L.F.

Q Into Englishy Brook Before and After Construction

Design Storm	Q-Pre Development	Q-Improvement Goal	Q-Post Development
WQ Storm	0.61 c.f.s.	0.49 c.f.s.	0.18 c.f.s.
Chlt. 1Y-24hr	0.71 c.f.s.	0.75 c.f.s.	0.55 c.f.s.
Chlt. 2Y-24hr	0.83 c.f.s.	0.90 c.f.s.	0.61 c.f.s.
Chlt. 10Y-24hr	1.00 c.f.s.	1.63 c.f.s.	0.86 c.f.s.
Chlt. 25Y-24hr	1.28 c.f.s.	2.42 c.f.s.	1.10 c.f.s.
Chlt. 100Y-24hr	1.63 c.f.s.	3.41 c.f.s.	1.39 c.f.s.

Note: WQ flows based on calculations to maintain the minimum WQ Volume of 0.2"

Q-Improvement Goal models the site as if half the existing impermeous is returned to natural condition.



SECTIONS

Minimum Strength 5000psi @ 28 days

- Steel Reinforcement

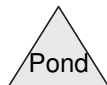
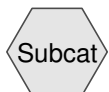
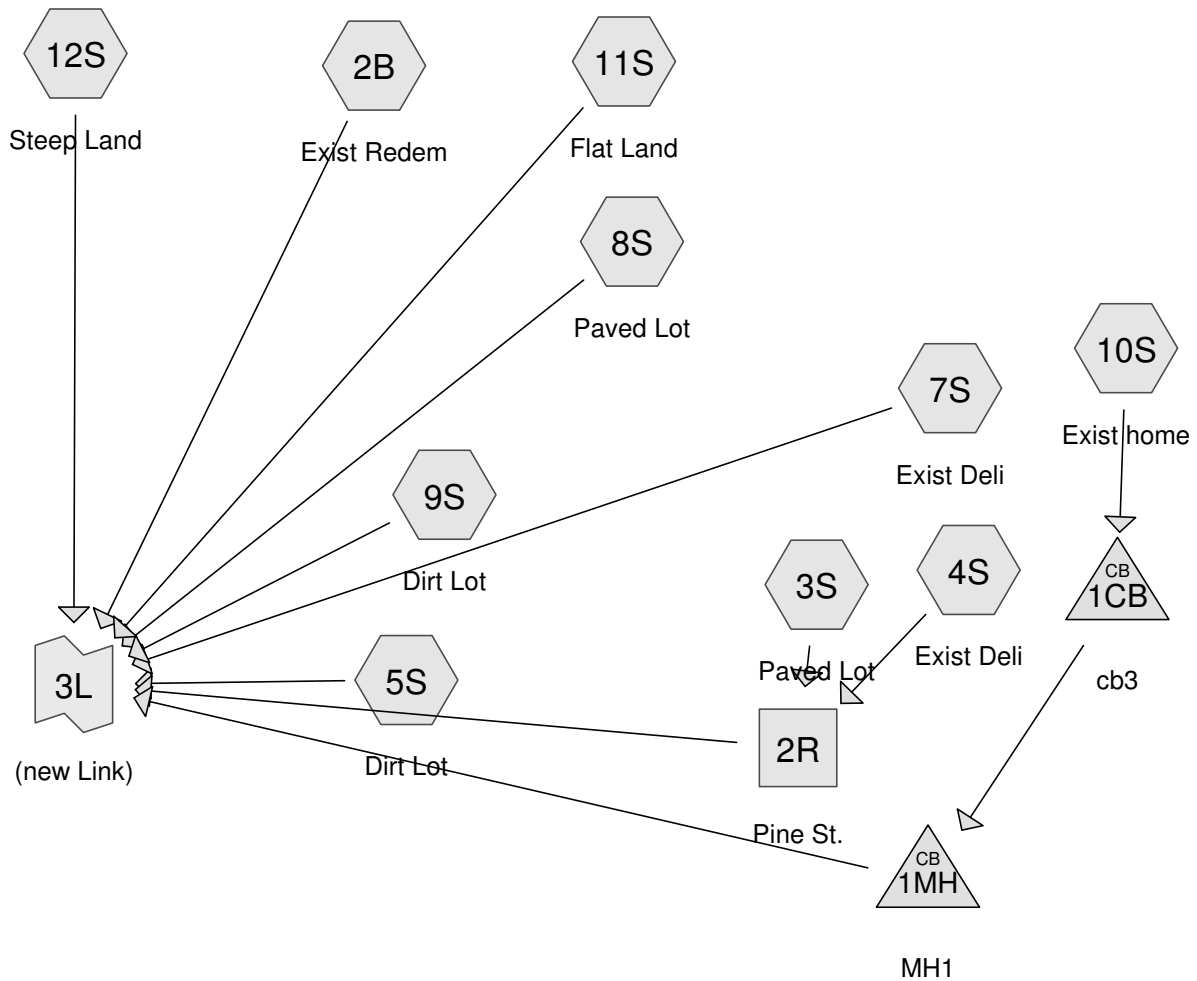
- Joints Sealed with Butyl Sealant

- Buried by Others

- H-20 Loading

- Avoidable - Weight

34,500 lb



8163.01_hydrocad_exist_SEND

Prepared by {enter your company name here}

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Page 2

3/27/2015

Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
0.052	80	>75% Grass cover, Good, HSG D (11S)
0.085	82	Woods/grass comb., Fair, HSG D (12S)
0.131	89	Dirt roads, HSG D (5S,9S)
0.339	98	Paved parking & roofs (2B,3S,4S,7S,8S,10S)
0.607		

8163.01_hydrocad_exist_SEND

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Prepared by {enter your company name here}

Page 3

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3/27/2015

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2B: Exist Redem

Runoff Area=1,060 sf Runoff Depth>2.75"

Flow Length=73' Slope=0.0100 '/' Tc=1.5 min CN=98 Runoff=0.12 cfs 0.006 af

Subcatchment 3S: Paved Lot

Runoff Area=5,744 sf Runoff Depth>2.75"

Flow Length=40' Slope=0.0600 '/' Tc=0.5 min CN=98 Runoff=0.67 cfs 0.030 af

Subcatchment 4S: Exist Deli

Runoff Area=1,394 sf Runoff Depth>2.75"

Flow Length=20' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.16 cfs 0.007 af

Subcatchment 5S: Dirt Lot

Runoff Area=4,555 sf Runoff Depth>1.94"

Flow Length=80' Slope=0.0600 '/' Tc=0.8 min CN=89 Runoff=0.42 cfs 0.017 af

Subcatchment 7S: Exist Deli

Runoff Area=1,394 sf Runoff Depth>2.75"

Flow Length=20' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.16 cfs 0.007 af

Subcatchment 8S: Paved Lot

Runoff Area=4,275 sf Runoff Depth>2.75"

Flow Length=116' Slope=0.0600 '/' Tc=1.1 min CN=98 Runoff=0.49 cfs 0.022 af

Subcatchment 9S: Dirt Lot

Runoff Area=1,142 sf Runoff Depth>1.94"

Flow Length=80' Slope=0.0600 '/' Tc=0.8 min CN=89 Runoff=0.11 cfs 0.004 af

Subcatchment 10S: Exist home

Runoff Area=893 sf Runoff Depth>2.75"

Flow Length=15' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.10 cfs 0.005 af

Subcatchment 11S: Flat Land

Runoff Area=2,263 sf Runoff Depth>1.27"

Flow Length=180' Slope=0.0500 '/' Tc=28.7 min CN=80 Runoff=0.06 cfs 0.006 af

Subcatchment 12S: Steep Land

Runoff Area=3,706 sf Runoff Depth>1.41"

Flow Length=37' Slope=0.5300 '/' Tc=3.2 min CN=82 Runoff=0.25 cfs 0.010 af

Reach 2R: Pine St.

Inflow=0.83 cfs 0.037 af

Outflow=0.83 cfs 0.037 af

Pond 1CB: cb3

Peak Elev=476.30' Inflow=0.10 cfs 0.005 af

18.0" x 242.0' Culvert Outflow=0.10 cfs 0.005 af

Pond 1MH: MH1

Peak Elev=476.30' Inflow=0.10 cfs 0.005 af

18.0" x 242.0' Culvert Outflow=0.10 cfs 0.005 af

Link 3L: (new Link)

Inflow=2.46 cfs 0.114 af

Primary=2.46 cfs 0.114 af

Total Runoff Area = 0.607 ac Runoff Volume = 0.114 af Average Runoff Depth = 2.26"**44.15% Pervious Area = 0.268 ac 55.85% Impervious Area = 0.339 ac**

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Subcatchment 2B: Exist Redem

Runoff = 0.12 cfs @ 11.90 hrs, Volume= 0.006 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
1,060	98	Paved parking & roofs
1,060		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	73	0.0100	0.81		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 3S: Paved Lot

Runoff = 0.67 cfs @ 11.89 hrs, Volume= 0.030 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
5,744	98	Paved parking & roofs
5,744		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	40	0.0600	1.47		Sheet Flow, Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 4S: Exist Deli

Runoff = 0.16 cfs @ 11.89 hrs, Volume= 0.007 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
1,394	98	Paved parking & roofs
1,394		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	1.0000	3.95		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Subcatchment 5S: Dirt Lot

Runoff = 0.42 cfs @ 11.90 hrs, Volume= 0.017 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
4,555	89	Dirt roads, HSG D
4,555		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0600	1.69		Sheet Flow, Dirt Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 7S: Exist Deli

Runoff = 0.16 cfs @ 11.89 hrs, Volume= 0.007 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
1,394	98	Paved parking & roofs
1,394		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	1.0000	3.95		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 8S: Paved Lot

Runoff = 0.49 cfs @ 11.90 hrs, Volume= 0.022 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
4,275	98	Paved parking & roofs
4,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	116	0.0600	1.82		Sheet Flow, Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Subcatchment 9S: Dirt Lot

Runoff = 0.11 cfs @ 11.90 hrs, Volume= 0.004 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
1,142	89	Dirt roads, HSG D
1,142		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0600	1.69		Sheet Flow, Dirt Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 10S: Exist home

Runoff = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
893	98	Paved parking & roofs
893		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	15	1.0000	3.73		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 11S: Flat Land

Runoff = 0.06 cfs @ 12.24 hrs, Volume= 0.006 af, Depth> 1.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
2,263	80	>75% Grass cover, Good, HSG D
2,263		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.7	180	0.0500	0.10		Sheet Flow, Grass woods Woods: Light underbrush n= 0.400 P2= 2.20"

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Subcatchment 12S: Steep Land

Runoff = 0.25 cfs @ 11.94 hrs, Volume= 0.010 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
3,706	82	Woods/grass comb., Fair, HSG D
3,706		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	37	0.5300	0.20		Sheet Flow, Grass woods Woods: Light underbrush n= 0.400 P2= 2.20"

Reach 2R: Pine St.

Inflow Area = 0.164 ac, Inflow Depth > 2.75" for Chit-10yr-24hr event

Inflow = 0.83 cfs @ 11.89 hrs, Volume= 0.037 af

Outflow = 0.83 cfs @ 11.89 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1CB: cb3

Inflow Area = 0.021 ac, Inflow Depth > 2.75" for Chit-10yr-24hr event

Inflow = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af

Outflow = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 476.30' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	476.10'	18.0" x 242.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 474.90' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.10 cfs @ 11.89 hrs HW=476.30' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.10 cfs @ 1.09 fps)**Pond 1MH: MH1**

Inflow Area = 0.021 ac, Inflow Depth > 2.75" for Chit-10yr-24hr event

Inflow = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af

Outflow = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Peak Elev= 476.30' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	476.10'	18.0" x 242.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 474.90' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.10 cfs @ 11.89 hrs HW=476.30' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.10 cfs @ 1.09 fps)**Link 3L: (new Link)**

Inflow Area = 0.607 ac, Inflow Depth > 2.26" for Chit-10yr-24hr event
Inflow = 2.46 cfs @ 11.90 hrs, Volume= 0.114 af
Primary = 2.46 cfs @ 11.90 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2B: Exist Redem

Runoff Area=1,060 sf Runoff Depth>1.75"

Flow Length=73' Slope=0.0100 '/' Tc=1.5 min CN=98 Runoff=0.08 cfs 0.004 af

Subcatchment 3S: Paved Lot

Runoff Area=5,744 sf Runoff Depth>1.75"

Flow Length=40' Slope=0.0600 '/' Tc=0.5 min CN=98 Runoff=0.43 cfs 0.019 af

Subcatchment 4S: Exist Deli

Runoff Area=1,394 sf Runoff Depth>1.75"

Flow Length=20' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.11 cfs 0.005 af

Subcatchment 5S: Dirt Lot

Runoff Area=4,555 sf Runoff Depth>1.03"

Flow Length=80' Slope=0.0600 '/' Tc=0.8 min CN=89 Runoff=0.23 cfs 0.009 af

Subcatchment 7S: Exist Deli

Runoff Area=1,394 sf Runoff Depth>1.75"

Flow Length=20' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.11 cfs 0.005 af

Subcatchment 8S: Paved Lot

Runoff Area=4,275 sf Runoff Depth>1.75"

Flow Length=116' Slope=0.0600 '/' Tc=1.1 min CN=98 Runoff=0.32 cfs 0.014 af

Subcatchment 9S: Dirt Lot

Runoff Area=1,142 sf Runoff Depth>1.03"

Flow Length=80' Slope=0.0600 '/' Tc=0.8 min CN=89 Runoff=0.06 cfs 0.002 af

Subcatchment 10S: Exist home

Runoff Area=893 sf Runoff Depth>1.75"

Flow Length=15' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.07 cfs 0.003 af

Subcatchment 11S: Flat Land

Runoff Area=2,263 sf Runoff Depth>0.55"

Flow Length=180' Slope=0.0500 '/' Tc=28.7 min CN=80 Runoff=0.03 cfs 0.002 af

Subcatchment 12S: Steep Land

Runoff Area=3,706 sf Runoff Depth>0.65"

Flow Length=37' Slope=0.5300 '/' Tc=3.2 min CN=82 Runoff=0.12 cfs 0.005 af

Reach 2R: Pine St.

Inflow=0.54 cfs 0.024 af

Outflow=0.54 cfs 0.024 af

Pond 1CB: cb3

Peak Elev=476.27' Inflow=0.07 cfs 0.003 af

18.0" x 242.0' Culvert Outflow=0.07 cfs 0.003 af

Pond 1MH: MH1

Peak Elev=476.27' Inflow=0.07 cfs 0.003 af

18.0" x 242.0' Culvert Outflow=0.07 cfs 0.003 af

Link 3L: (new Link)

Inflow=1.49 cfs 0.068 af

Primary=1.49 cfs 0.068 af

Total Runoff Area = 0.607 ac Runoff Volume = 0.068 af Average Runoff Depth = 1.34"**44.15% Pervious Area = 0.268 ac 55.85% Impervious Area = 0.339 ac**

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Subcatchment 2B: Exist Redem

Runoff = 0.08 cfs @ 11.90 hrs, Volume= 0.004 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
1,060	98	Paved parking & roofs
1,060		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	73	0.0100	0.81		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 3S: Paved Lot

Runoff = 0.43 cfs @ 11.89 hrs, Volume= 0.019 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
5,744	98	Paved parking & roofs
5,744		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	40	0.0600	1.47		Sheet Flow, Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 4S: Exist Deli

Runoff = 0.11 cfs @ 11.89 hrs, Volume= 0.005 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
1,394	98	Paved parking & roofs
1,394		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	1.0000	3.95		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Subcatchment 5S: Dirt Lot

Runoff = 0.23 cfs @ 11.90 hrs, Volume= 0.009 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
4,555	89	Dirt roads, HSG D
4,555		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0600	1.69		Sheet Flow, Dirt Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 7S: Exist Deli

Runoff = 0.11 cfs @ 11.89 hrs, Volume= 0.005 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
1,394	98	Paved parking & roofs
1,394		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	1.0000	3.95		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 8S: Paved Lot

Runoff = 0.32 cfs @ 11.90 hrs, Volume= 0.014 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
4,275	98	Paved parking & roofs
4,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	116	0.0600	1.82		Sheet Flow, Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Subcatchment 9S: Dirt Lot

Runoff = 0.06 cfs @ 11.90 hrs, Volume= 0.002 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
1,142	89	Dirt roads, HSG D
1,142		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0600	1.69		Sheet Flow, Dirt Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 10S: Exist home

Runoff = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
893	98	Paved parking & roofs
893		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	15	1.0000	3.73		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 11S: Flat Land

Runoff = 0.03 cfs @ 12.25 hrs, Volume= 0.002 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
2,263	80	>75% Grass cover, Good, HSG D
2,263		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.7	180	0.0500	0.10		Sheet Flow, Grass woods Woods: Light underbrush n= 0.400 P2= 2.20"

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Subcatchment 12S: Steep Land

Runoff = 0.12 cfs @ 11.94 hrs, Volume= 0.005 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
3,706	82	Woods/grass comb., Fair, HSG D
3,706		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	37	0.5300	0.20		Sheet Flow, Grass woods Woods: Light underbrush n= 0.400 P2= 2.20"

Reach 2R: Pine St.

Inflow Area = 0.164 ac, Inflow Depth > 1.75" for Chit-1yr-24hr event

Inflow = 0.54 cfs @ 11.89 hrs, Volume= 0.024 af

Outflow = 0.54 cfs @ 11.89 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1CB: cb3

Inflow Area = 0.021 ac, Inflow Depth > 1.75" for Chit-1yr-24hr event

Inflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Outflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 476.27' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	476.10'	18.0" x 242.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 474.90' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.06 cfs @ 11.89 hrs HW=476.26' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.06 cfs @ 0.96 fps)**Pond 1MH: MH1**

Inflow Area = 0.021 ac, Inflow Depth > 1.75" for Chit-1yr-24hr event

Inflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Outflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Peak Elev= 476.27' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	476.10'	18.0" x 242.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 474.90' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.06 cfs @ 11.89 hrs HW=476.26' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.06 cfs @ 0.96 fps)**Link 3L: (new Link)**

Inflow Area = 0.607 ac, Inflow Depth > 1.34" for Chit-1yr-24hr event
Inflow = 1.49 cfs @ 11.90 hrs, Volume= 0.068 af
Primary = 1.49 cfs @ 11.90 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2B: Exist Redem

Runoff Area=1,060 sf Runoff Depth>1.93"

Flow Length=73' Slope=0.0100 '/' Tc=1.5 min CN=98 Runoff=0.08 cfs 0.004 af

Subcatchment 3S: Paved Lot

Runoff Area=5,744 sf Runoff Depth>1.93"

Flow Length=40' Slope=0.0600 '/' Tc=0.5 min CN=98 Runoff=0.48 cfs 0.021 af

Subcatchment 4S: Exist Deli

Runoff Area=1,394 sf Runoff Depth>1.93"

Flow Length=20' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.12 cfs 0.005 af

Subcatchment 5S: Dirt Lot

Runoff Area=4,555 sf Runoff Depth>1.19"

Flow Length=80' Slope=0.0600 '/' Tc=0.8 min CN=89 Runoff=0.27 cfs 0.010 af

Subcatchment 7S: Exist Deli

Runoff Area=1,394 sf Runoff Depth>1.93"

Flow Length=20' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.12 cfs 0.005 af

Subcatchment 8S: Paved Lot

Runoff Area=4,275 sf Runoff Depth>1.93"

Flow Length=116' Slope=0.0600 '/' Tc=1.1 min CN=98 Runoff=0.35 cfs 0.016 af

Subcatchment 9S: Dirt Lot

Runoff Area=1,142 sf Runoff Depth>1.19"

Flow Length=80' Slope=0.0600 '/' Tc=0.8 min CN=89 Runoff=0.07 cfs 0.003 af

Subcatchment 10S: Exist home

Runoff Area=893 sf Runoff Depth>1.93"

Flow Length=15' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.07 cfs 0.003 af

Subcatchment 11S: Flat Land

Runoff Area=2,263 sf Runoff Depth>0.67"

Flow Length=180' Slope=0.0500 '/' Tc=28.7 min CN=80 Runoff=0.03 cfs 0.003 af

Subcatchment 12S: Steep Land

Runoff Area=3,706 sf Runoff Depth>0.78"

Flow Length=37' Slope=0.5300 '/' Tc=3.2 min CN=82 Runoff=0.14 cfs 0.006 af

Reach 2R: Pine St.

Inflow=0.59 cfs 0.026 af

Outflow=0.59 cfs 0.026 af

Pond 1CB: cb3

Peak Elev=476.27' Inflow=0.07 cfs 0.003 af

18.0" x 242.0' Culvert Outflow=0.07 cfs 0.003 af

Pond 1MH: MH1

Peak Elev=476.27' Inflow=0.07 cfs 0.003 af

18.0" x 242.0' Culvert Outflow=0.07 cfs 0.003 af

Link 3L: (new Link)

Inflow=1.67 cfs 0.076 af

Primary=1.67 cfs 0.076 af

Total Runoff Area = 0.607 ac Runoff Volume = 0.076 af Average Runoff Depth = 1.50"**44.15% Pervious Area = 0.268 ac 55.85% Impervious Area = 0.339 ac**

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Subcatchment 2B: Exist Redem

Runoff = 0.08 cfs @ 11.90 hrs, Volume= 0.004 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
1,060	98	Paved parking & roofs
1,060		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	73	0.0100	0.81		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 3S: Paved Lot

Runoff = 0.48 cfs @ 11.89 hrs, Volume= 0.021 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
5,744	98	Paved parking & roofs
5,744		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	40	0.0600	1.47		Sheet Flow, Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 4S: Exist Deli

Runoff = 0.12 cfs @ 11.89 hrs, Volume= 0.005 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
1,394	98	Paved parking & roofs
1,394		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	1.0000	3.95		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Subcatchment 5S: Dirt Lot

Runoff = 0.27 cfs @ 11.90 hrs, Volume= 0.010 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
4,555	89	Dirt roads, HSG D
4,555		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0600	1.69		Sheet Flow, Dirt Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 7S: Exist Deli

Runoff = 0.12 cfs @ 11.89 hrs, Volume= 0.005 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
1,394	98	Paved parking & roofs
1,394		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	20	1.0000	3.95		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 8S: Paved Lot

Runoff = 0.35 cfs @ 11.90 hrs, Volume= 0.016 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
4,275	98	Paved parking & roofs
4,275		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	116	0.0600	1.82		Sheet Flow, Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Subcatchment 9S: Dirt Lot

Runoff = 0.07 cfs @ 11.90 hrs, Volume= 0.003 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
1,142	89	Dirt roads, HSG D
1,142		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0600	1.69		Sheet Flow, Dirt Parking Lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 10S: Exist home

Runoff = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
893	98	Paved parking & roofs
893		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	15	1.0000	3.73		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 11S: Flat Land

Runoff = 0.03 cfs @ 12.25 hrs, Volume= 0.003 af, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
2,263	80	>75% Grass cover, Good, HSG D
2,263		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.7	180	0.0500	0.10		Sheet Flow, Grass woods Woods: Light underbrush n= 0.400 P2= 2.20"

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Subcatchment 12S: Steep Land

Runoff = 0.14 cfs @ 11.94 hrs, Volume= 0.006 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
3,706	82	Woods/grass comb., Fair, HSG D
3,706		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	37	0.5300	0.20		Sheet Flow, Grass woods Woods: Light underbrush n= 0.400 P2= 2.20"

Reach 2R: Pine St.

Inflow Area = 0.164 ac, Inflow Depth > 1.93" for Chitt-2 yr-24hr event

Inflow = 0.59 cfs @ 11.89 hrs, Volume= 0.026 af

Outflow = 0.59 cfs @ 11.89 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1CB: cb3

Inflow Area = 0.021 ac, Inflow Depth > 1.93" for Chitt-2 yr-24hr event

Inflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Outflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 476.27' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	476.10'	18.0" x 242.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 474.90' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.07 cfs @ 11.89 hrs HW=476.27' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.07 cfs @ 0.99 fps)**Pond 1MH: MH1**

Inflow Area = 0.021 ac, Inflow Depth > 1.93" for Chitt-2 yr-24hr event

Inflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Outflow = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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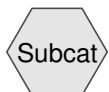
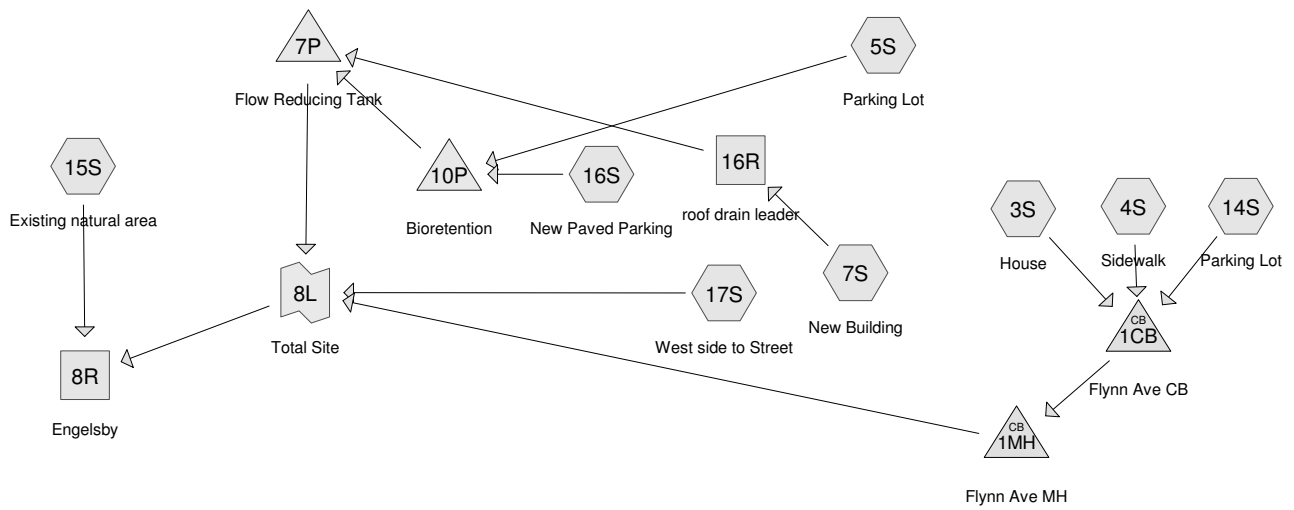
Peak Elev= 476.27' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	476.10'	18.0" x 242.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 474.90' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.07 cfs @ 11.89 hrs HW=476.27' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.07 cfs @ 0.99 fps)**Link 3L: (new Link)**

Inflow Area = 0.607 ac, Inflow Depth > 1.50" for Chitt-2 yr-24hr event
Inflow = 1.67 cfs @ 11.90 hrs, Volume= 0.076 af
Primary = 1.67 cfs @ 11.90 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

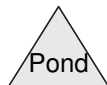
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Subcat



Reach



Pond



Link

Drainage Diagram for 8163.01_hydrocad_prop_SEND
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Area Listing (all nodes)

<u>Area (acres)</u>	<u>CN</u>	<u>Description (subcats)</u>
0.102	73	Brush, Good, HSG D (15S,17S)
0.023	74	>75% Grass cover, Good, HSG C (16S)
0.102	80	>75% Grass cover, Good, HSG D (15S)
0.362	98	Paved parking & roofs (3S,4S,5S,7S,14S,16S,17S)
0.589		

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: House

Runoff Area=868 sf Runoff Depth>2.82"

Flow Length=12' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.10 cfs 0.005 af

Subcatchment 4S: Sidewalk

Runoff Area=38 sf Runoff Depth>2.82"

Flow Length=12' Slope=0.0500 '/' Tc=0.2 min CN=98 Runoff=0.00 cfs 0.000 af

Subcatchment 5S: Parking Lot

Runoff Area=4,443 sf Runoff Depth>2.81"

Flow Length=122' Slope=0.0300 '/' Tc=1.5 min CN=98 Runoff=0.50 cfs 0.024 af

Subcatchment 7S: New Building

Runoff Area=4,600 sf Runoff Depth>2.81"

Flow Length=100' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.51 cfs 0.025 af

Subcatchment 14S: Parking Lot

Runoff Area=1,222 sf Runoff Depth>2.81"

Flow Length=57' Slope=0.0020 '/' Tc=2.3 min CN=98 Runoff=0.13 cfs 0.007 af

Subcatchment 15S: Existing natural area

Runoff Area=8,161 sf Runoff Depth>1.10"

Flow Length=128' Tc=1.8 min CN=77 Runoff=0.44 cfs 0.017 af

Subcatchment 16S: New Paved Parking

Runoff Area=4,329 sf Runoff Depth>2.20"

Flow Length=128' Tc=1.8 min CN=92 Runoff=0.42 cfs 0.018 af

Subcatchment 17S: West side to Street

Runoff Area=2,000 sf Runoff Depth>1.94"

Tc=2.0 min CN=89 Runoff=0.18 cfs 0.007 af

Reach 8R: Engelsby

Avg. Depth=0.60' Max Vel=0.58 fps Inflow=1.30 cfs 0.066 af

n=0.035 L=152.0' S=0.0007 '/' Capacity=396.22 cfs Outflow=1.10 cfs 0.066 af

Reach 16R: roof drain leader

Avg. Depth=0.23' Max Vel=4.73 fps Inflow=0.51 cfs 0.025 af

D=8.0" n=0.010 L=63.0' S=0.0159 '/' Capacity=1.98 cfs Outflow=0.50 cfs 0.025 af

Pond 1CB: Flynn Ave CB

Peak Elev=132.71' Inflow=0.24 cfs 0.011 af

18.0" x 10.0' Culvert Outflow=0.24 cfs 0.011 af

Pond 1MH: Flynn Ave MH

Peak Elev=131.31' Inflow=0.24 cfs 0.011 af

18.0" x 257.0' Culvert Outflow=0.24 cfs 0.011 af

Pond 7P: Flow Reducing Tank

Peak Elev=135.57' Storage=161 cf Inflow=0.52 cfs 0.033 af

Outflow=0.48 cfs 0.030 af

Pond 10P: Bioretention

Peak Elev=138.78' Storage=780 cf Inflow=0.92 cfs 0.042 af

Discarded=0.05 cfs 0.034 af Primary=0.02 cfs 0.008 af Outflow=0.07 cfs 0.042 af

Link 8L: Total Site

Inflow=0.86 cfs 0.049 af

Primary=0.86 cfs 0.049 af

Total Runoff Area = 0.589 ac Runoff Volume = 0.103 af Average Runoff Depth = 2.10"

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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38.62% Pervious Area = 0.228 ac 61.38% Impervious Area = 0.362 ac

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Subcatchment 3S: House

Runoff = 0.10 cfs @ 11.89 hrs, Volume= 0.005 af, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
868	98	Paved parking & roofs
868		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	12	1.0000	3.57		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 4S: Sidewalk

Runoff = 0.00 cfs @ 11.89 hrs, Volume= 0.000 af, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
38	98	Paved parking & roofs
38		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0500	1.08		Sheet Flow, Walk Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 5S: Parking Lot

Runoff = 0.50 cfs @ 11.90 hrs, Volume= 0.024 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
4,443	98	Paved parking & roofs
4,443		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	122	0.0300	1.40		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 7S: New Building

Runoff = 0.51 cfs @ 11.91 hrs, Volume= 0.025 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
4,600	98	Paved parking & roofs
4,600		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0100	0.86		Sheet Flow, roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 14S: Parking Lot

Runoff = 0.13 cfs @ 11.92 hrs, Volume= 0.007 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
1,222	98	Paved parking & roofs
1,222		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	57	0.0020	0.41		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 15S: Existing natural area

Runoff = 0.44 cfs @ 11.92 hrs, Volume= 0.017 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
3,706	73	Brush, Good, HSG D
4,455	80	>75% Grass cover, Good, HSG D
8,161	77	Weighted Average
8,161		Pervious Area

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	60	0.0200	1.03		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"
0.4	30	0.0400	1.18		Sheet Flow, grass Smooth surfaces n= 0.011 P2= 2.20"
0.4	38	0.3400	1.46		Shallow Concentrated Flow, bank Forest w/Heavy Litter Kv= 2.5 fps
1.8	128	Total			

Subcatchment 16S: New Paved Parking

Runoff = 0.42 cfs @ 11.91 hrs, Volume= 0.018 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
3,329	98	Paved parking & roofs
1,000	74	>75% Grass cover, Good, HSG C
4,329	92	Weighted Average
1,000		Pervious Area
3,329		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	60	0.0200	1.03		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"
0.4	30	0.0400	1.18		Sheet Flow, grass Smooth surfaces n= 0.011 P2= 2.20"
0.4	38	0.3400	1.46		Shallow Concentrated Flow, bank Forest w/Heavy Litter Kv= 2.5 fps
1.8	128	Total			

Subcatchment 17S: West side to Street

Runoff = 0.18 cfs @ 11.92 hrs, Volume= 0.007 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

Area (sf)	CN	Description
1,250	98	Paved parking & roofs
750	73	Brush, Good, HSG D
2,000	89	Weighted Average
750		Pervious Area
1,250		Impervious Area

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					Direct Entry, landscape areas

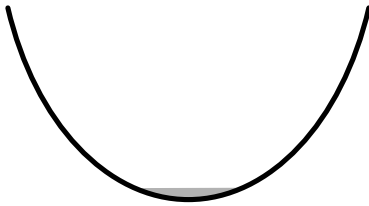
Reach 8R: Engelsby

Inflow Area = 0.589 ac, Inflow Depth > 1.35" for Chit-10yr-24hr event
 Inflow = 1.30 cfs @ 11.92 hrs, Volume= 0.066 af
 Outflow = 1.10 cfs @ 12.04 hrs, Volume= 0.066 af, Atten= 15%, Lag= 6.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 0.58 fps, Min. Travel Time= 4.4 min
 Avg. Velocity= 0.21 fps, Avg. Travel Time= 12.2 min

Peak Storage= 300 cf @ 11.96 hrs, Average Depth at Peak Storage= 0.60'
 Bank-Full Depth= 10.00', Capacity at Bank-Full= 396.22 cfs

20.00' x 10.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
 Length= 152.0' Slope= 0.0007 '/'
 Inlet Invert= 0.10', Outlet Invert= 0.00'

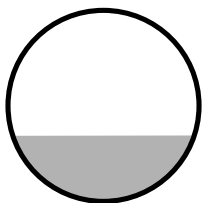
**Reach 16R: roof drain leader**

Inflow Area = 0.106 ac, Inflow Depth > 2.81" for Chit-10yr-24hr event
 Inflow = 0.51 cfs @ 11.91 hrs, Volume= 0.025 af
 Outflow = 0.50 cfs @ 11.92 hrs, Volume= 0.025 af, Atten= 2%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.73 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.41 fps, Avg. Travel Time= 0.7 min

Peak Storage= 7 cf @ 11.91 hrs, Average Depth at Peak Storage= 0.23'
 Bank-Full Depth= 0.67', Capacity at Bank-Full= 1.98 cfs

8.0" Diameter Pipe, n= 0.010 PVC, smooth interior
 Length= 63.0' Slope= 0.0159 '/'
 Inlet Invert= 140.00', Outlet Invert= 139.00'



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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Pond 1CB: Flynn Ave CB

Inflow Area = 0.049 ac, Inflow Depth > 2.81" for Chit-10yr-24hr event
 Inflow = 0.24 cfs @ 11.90 hrs, Volume= 0.011 af
 Outflow = 0.24 cfs @ 11.90 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.24 cfs @ 11.90 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 132.71' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	132.50'	18.0" x 10.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 132.00' S= 0.0500 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.23 cfs @ 11.90 hrs HW=132.71' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 0.23 cfs @ 1.56 fps)

Pond 1MH: Flynn Ave MH

Inflow Area = 0.049 ac, Inflow Depth > 2.81" for Chit-10yr-24hr event
 Inflow = 0.24 cfs @ 11.90 hrs, Volume= 0.011 af
 Outflow = 0.24 cfs @ 11.90 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.24 cfs @ 11.90 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 131.31' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	131.06'	18.0" x 257.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 128.50' S= 0.0100 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.23 cfs @ 11.90 hrs HW=131.31' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 0.23 cfs @ 1.79 fps)

Pond 7P: Flow Reducing Tank

Inflow Area = 0.307 ac, Inflow Depth > 1.28" for Chit-10yr-24hr event
 Inflow = 0.52 cfs @ 11.92 hrs, Volume= 0.033 af
 Outflow = 0.48 cfs @ 11.94 hrs, Volume= 0.030 af, Atten= 7%, Lag= 1.5 min
 Primary = 0.48 cfs @ 11.94 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 135.57' @ 11.94 hrs Surf.Area= 72 sf Storage= 161 cf

Plug-Flow detention time= 59.3 min calculated for 0.030 af (92% of inflow)
 Center-of-Mass det. time= 33.0 min (778.7 - 745.8)

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Volume	Invert	Avail.Storage	Storage Description
#1	133.33'	408 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.33	72	0	0
139.00	72	408	408

Device	Routing	Invert	Outlet Devices
#1	Primary	134.83'	5.0" Vert. Orifice/Grate C= 0.600
#2	Primary	138.50'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.47 cfs @ 11.94 hrs HW=135.55' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.47 cfs @ 3.46 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 10P: Bioretention

Inflow Area = 0.201 ac, Inflow Depth > 2.51" for Chit-10yr-24hr event
 Inflow = 0.92 cfs @ 11.91 hrs, Volume= 0.042 af
 Outflow = 0.07 cfs @ 12.39 hrs, Volume= 0.042 af, Atten= 92%, Lag= 29.3 min
 Discarded = 0.05 cfs @ 11.55 hrs, Volume= 0.034 af
 Primary = 0.02 cfs @ 12.39 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.78' @ 12.39 hrs Surf.Area= 0 sf Storage= 780 cf

Plug-Flow detention time= 88.5 min calculated for 0.042 af (100% of inflow)

Center-of-Mass det. time= 86.4 min (820.5 - 734.0)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	3,000 cf	Custom Stage Data Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0
141.00	3,000	3,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	0.05 cfs Exfiltration at all elevations
#2	Primary	143.00'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Primary	138.00'	1.0" Vert. Orifice/Grate C= 0.600

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Type II 24-hr Chit-10yr-24hr Rainfall=3.20"

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Discarded OutFlow Max=0.05 cfs @ 11.55 hrs HW=138.05' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.02 cfs @ 12.39 hrs HW=138.78' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

↑**3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 4.14 fps)

Link 8L: Total Site

Inflow Area = 0.402 ac, Inflow Depth > 1.47" for Chit-10yr-24hr event

Inflow = 0.86 cfs @ 11.92 hrs, Volume= 0.049 af

Primary = 0.86 cfs @ 11.92 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: House

Runoff Area=868 sf Runoff Depth>1.77"

Flow Length=12' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.07 cfs 0.003 af

Subcatchment 4S: Sidewalk

Runoff Area=38 sf Runoff Depth>1.77"

Flow Length=12' Slope=0.0500 '/' Tc=0.2 min CN=98 Runoff=0.00 cfs 0.000 af

Subcatchment 5S: Parking Lot

Runoff Area=4,443 sf Runoff Depth>1.77"

Flow Length=122' Slope=0.0300 '/' Tc=1.5 min CN=98 Runoff=0.32 cfs 0.015 af

Subcatchment 7S: New Building

Runoff Area=4,600 sf Runoff Depth>1.77"

Flow Length=100' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.33 cfs 0.016 af

Subcatchment 14S: Parking Lot

Runoff Area=1,222 sf Runoff Depth>1.77"

Flow Length=57' Slope=0.0020 '/' Tc=2.3 min CN=98 Runoff=0.09 cfs 0.004 af

Subcatchment 15S: Existing natural area

Runoff Area=8,161 sf Runoff Depth>0.45"

Flow Length=128' Tc=1.8 min CN=77 Runoff=0.18 cfs 0.007 af

Subcatchment 16S: New Paved Parking

Runoff Area=4,329 sf Runoff Depth>1.24"

Flow Length=128' Tc=1.8 min CN=92 Runoff=0.25 cfs 0.010 af

Subcatchment 17S: West side to Street

Runoff Area=2,000 sf Runoff Depth>1.03"

Tc=2.0 min CN=89 Runoff=0.10 cfs 0.004 af

Reach 8R: Engelsby

Avg. Depth=0.45' Max Vel=0.48 fps Inflow=0.74 cfs 0.035 af

n=0.035 L=152.0' S=0.0007 '/' Capacity=396.22 cfs Outflow=0.60 cfs 0.034 af

Reach 16R: roof drain leader

Avg. Depth=0.18' Max Vel=4.18 fps Inflow=0.33 cfs 0.016 af

D=8.0" n=0.010 L=63.0' S=0.0159 '/' Capacity=1.98 cfs Outflow=0.32 cfs 0.016 af

Pond 1CB: Flynn Ave CB

Peak Elev=132.67' Inflow=0.15 cfs 0.007 af

18.0" x 10.0' Culvert Outflow=0.15 cfs 0.007 af

Pond 1MH: Flynn Ave MH

Peak Elev=131.27' Inflow=0.15 cfs 0.007 af

18.0" x 257.0' Culvert Outflow=0.15 cfs 0.007 af

Pond 7P: Flow Reducing Tank

Peak Elev=135.28' Storage=140 cf Inflow=0.34 cfs 0.019 af

Outflow=0.32 cfs 0.017 af

Pond 10P: Bioretention

Peak Elev=138.42' Storage=425 cf Inflow=0.57 cfs 0.025 af

Discarded=0.05 cfs 0.022 af Primary=0.02 cfs 0.004 af Outflow=0.07 cfs 0.025 af

Link 8L: Total Site

Inflow=0.55 cfs 0.028 af

Primary=0.55 cfs 0.028 af

Total Runoff Area = 0.589 ac Runoff Volume = 0.059 af Average Runoff Depth = 1.20"

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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38.62% Pervious Area = 0.228 ac 61.38% Impervious Area = 0.362 ac

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Subcatchment 3S: House

Runoff = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
868	98	Paved parking & roofs
868		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	12	1.0000	3.57		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 4S: Sidewalk

Runoff = 0.00 cfs @ 11.89 hrs, Volume= 0.000 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
38	98	Paved parking & roofs
38		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0500	1.08		Sheet Flow, Walk Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 5S: Parking Lot

Runoff = 0.32 cfs @ 11.90 hrs, Volume= 0.015 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
4,443	98	Paved parking & roofs
4,443		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	122	0.0300	1.40		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Subcatchment 7S: New Building

Runoff = 0.33 cfs @ 11.91 hrs, Volume= 0.016 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
4,600	98	Paved parking & roofs
4,600		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0100	0.86		Sheet Flow, roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 14S: Parking Lot

Runoff = 0.09 cfs @ 11.92 hrs, Volume= 0.004 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
1,222	98	Paved parking & roofs
1,222		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	57	0.0020	0.41		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 15S: Existing natural area

Runoff = 0.18 cfs @ 11.93 hrs, Volume= 0.007 af, Depth> 0.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
3,706	73	Brush, Good, HSG D
4,455	80	>75% Grass cover, Good, HSG D
8,161	77	Weighted Average
8,161		Pervious Area

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	60	0.0200	1.03		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"
0.4	30	0.0400	1.18		Sheet Flow, grass Smooth surfaces n= 0.011 P2= 2.20"
0.4	38	0.3400	1.46		Shallow Concentrated Flow, bank Forest w/Heavy Litter Kv= 2.5 fps
1.8	128	Total			

Subcatchment 16S: New Paved Parking

Runoff = 0.25 cfs @ 11.91 hrs, Volume= 0.010 af, Depth> 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
3,329	98	Paved parking & roofs
1,000	74	>75% Grass cover, Good, HSG C
4,329	92	Weighted Average
1,000		Pervious Area
3,329		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	60	0.0200	1.03		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"
0.4	30	0.0400	1.18		Sheet Flow, grass Smooth surfaces n= 0.011 P2= 2.20"
0.4	38	0.3400	1.46		Shallow Concentrated Flow, bank Forest w/Heavy Litter Kv= 2.5 fps
1.8	128	Total			

Subcatchment 17S: West side to Street

Runoff = 0.10 cfs @ 11.92 hrs, Volume= 0.004 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

Area (sf)	CN	Description
1,250	98	Paved parking & roofs
750	73	Brush, Good, HSG D
2,000	89	Weighted Average
750		Pervious Area
1,250		Impervious Area

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					Direct Entry, landscape areas

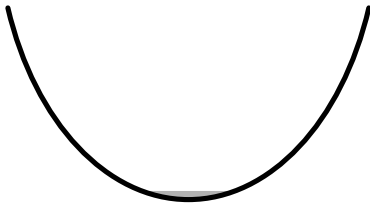
Reach 8R: Engelsby

Inflow Area = 0.589 ac, Inflow Depth > 0.71" for Chit-1yr-24hr event
 Inflow = 0.74 cfs @ 11.93 hrs, Volume= 0.035 af
 Outflow = 0.60 cfs @ 12.06 hrs, Volume= 0.034 af, Atten= 19%, Lag= 7.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 0.48 fps, Min. Travel Time= 5.3 min
 Avg. Velocity = 0.19 fps, Avg. Travel Time= 13.1 min

Peak Storage= 194 cf @ 11.97 hrs, Average Depth at Peak Storage= 0.45'
 Bank-Full Depth= 10.00', Capacity at Bank-Full= 396.22 cfs

20.00' x 10.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
 Length= 152.0' Slope= 0.0007 '/'
 Inlet Invert= 0.10', Outlet Invert= 0.00'

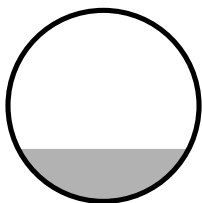
**Reach 16R: roof drain leader**

Inflow Area = 0.106 ac, Inflow Depth > 1.77" for Chit-1yr-24hr event
 Inflow = 0.33 cfs @ 11.91 hrs, Volume= 0.016 af
 Outflow = 0.32 cfs @ 11.92 hrs, Volume= 0.016 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.18 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.23 fps, Avg. Travel Time= 0.9 min

Peak Storage= 5 cf @ 11.91 hrs, Average Depth at Peak Storage= 0.18'
 Bank-Full Depth= 0.67', Capacity at Bank-Full= 1.98 cfs

8.0" Diameter Pipe, n= 0.010 PVC, smooth interior
 Length= 63.0' Slope= 0.0159 '/'
 Inlet Invert= 140.00', Outlet Invert= 139.00'



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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Pond 1CB: Flynn Ave CB

Inflow Area = 0.049 ac, Inflow Depth > 1.77" for Chit-1yr-24hr event
 Inflow = 0.15 cfs @ 11.90 hrs, Volume= 0.007 af
 Outflow = 0.15 cfs @ 11.90 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.15 cfs @ 11.90 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 132.67' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	132.50'	18.0" x 10.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 132.00' S= 0.0500 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.15 cfs @ 11.90 hrs HW=132.67' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 0.15 cfs @ 1.40 fps)

Pond 1MH: Flynn Ave MH

Inflow Area = 0.049 ac, Inflow Depth > 1.77" for Chit-1yr-24hr event
 Inflow = 0.15 cfs @ 11.90 hrs, Volume= 0.007 af
 Outflow = 0.15 cfs @ 11.90 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.15 cfs @ 11.90 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 131.27' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	131.06'	18.0" x 257.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 128.50' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.15 cfs @ 11.90 hrs HW=131.27' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 0.15 cfs @ 1.58 fps)

Pond 7P: Flow Reducing Tank

Inflow Area = 0.307 ac, Inflow Depth > 0.75" for Chit-1yr-24hr event
 Inflow = 0.34 cfs @ 11.92 hrs, Volume= 0.019 af
 Outflow = 0.32 cfs @ 11.94 hrs, Volume= 0.017 af, Atten= 4%, Lag= 1.1 min
 Primary = 0.32 cfs @ 11.94 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 135.28' @ 11.94 hrs Surf.Area= 72 sf Storage= 140 cf

Plug-Flow detention time= 79.1 min calculated for 0.017 af (87% of inflow)
 Center-of-Mass det. time= 39.7 min (778.0 - 738.2)

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Volume	Invert	Avail.Storage	Storage Description
#1	133.33'	408 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.33	72	0	0
139.00	72	408	408

Device	Routing	Invert	Outlet Devices
#1	Primary	134.83'	5.0" Vert. Orifice/Grate C= 0.600
#2	Primary	138.50'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.31 cfs @ 11.94 hrs HW=135.26' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.31 cfs @ 2.29 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 10P: Bioretention

Inflow Area = 0.201 ac, Inflow Depth > 1.51" for Chit-1yr-24hr event
 Inflow = 0.57 cfs @ 11.91 hrs, Volume= 0.025 af
 Outflow = 0.07 cfs @ 12.16 hrs, Volume= 0.025 af, Atten= 88%, Lag= 15.0 min
 Discarded = 0.05 cfs @ 11.65 hrs, Volume= 0.022 af
 Primary = 0.02 cfs @ 12.16 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.42' @ 12.16 hrs Surf.Area= 0 sf Storage= 425 cf

Plug-Flow detention time= 51.1 min calculated for 0.025 af (100% of inflow)

Center-of-Mass det. time= 48.9 min (793.0 - 744.0)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	3,000 cf	Custom Stage Data Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0
141.00	3,000	3,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	0.05 cfs Exfiltration at all elevations
#2	Primary	143.00'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Primary	138.00'	1.0" Vert. Orifice/Grate C= 0.600

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Type II 24-hr Chit-1yr-24hr Rainfall=2.10"

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Discarded OutFlow Max=0.05 cfs @ 11.65 hrs HW=138.05' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.02 cfs @ 12.16 hrs HW=138.42' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

↑ **3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 2.98 fps)

Link 8L: Total Site

Inflow Area = 0.402 ac, Inflow Depth > 0.83" for Chit-1yr-24hr event

Inflow = 0.55 cfs @ 11.92 hrs, Volume= 0.028 af

Primary = 0.55 cfs @ 11.92 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: House

Runoff Area=868 sf Runoff Depth>1.96"

Flow Length=12' Slope=1.0000 '/' Tc=0.1 min CN=98 Runoff=0.07 cfs 0.003 af

Subcatchment 4S: Sidewalk

Runoff Area=38 sf Runoff Depth>1.96"

Flow Length=12' Slope=0.0500 '/' Tc=0.2 min CN=98 Runoff=0.00 cfs 0.000 af

Subcatchment 5S: Parking Lot

Runoff Area=4,443 sf Runoff Depth>1.96"

Flow Length=122' Slope=0.0300 '/' Tc=1.5 min CN=98 Runoff=0.36 cfs 0.017 af

Subcatchment 7S: New Building

Runoff Area=4,600 sf Runoff Depth>1.96"

Flow Length=100' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.36 cfs 0.017 af

Subcatchment 14S: Parking Lot

Runoff Area=1,222 sf Runoff Depth>1.96"

Flow Length=57' Slope=0.0020 '/' Tc=2.3 min CN=98 Runoff=0.09 cfs 0.005 af

Subcatchment 15S: Existing natural area

Runoff Area=8,161 sf Runoff Depth>0.55"

Flow Length=128' Tc=1.8 min CN=77 Runoff=0.22 cfs 0.009 af

Subcatchment 16S: New Paved Parking

Runoff Area=4,329 sf Runoff Depth>1.41"

Flow Length=128' Tc=1.8 min CN=92 Runoff=0.28 cfs 0.012 af

Subcatchment 17S: West side to Street

Runoff Area=2,000 sf Runoff Depth>1.19"

Tc=2.0 min CN=89 Runoff=0.11 cfs 0.005 af

Reach 8R: Engelsby

Avg. Depth=0.48' Max Vel=0.50 fps Inflow=0.84 cfs 0.040 af

n=0.035 L=152.0' S=0.0007 '/' Capacity=396.22 cfs Outflow=0.69 cfs 0.040 af

Reach 16R: roof drain leader

Avg. Depth=0.19' Max Vel=4.29 fps Inflow=0.36 cfs 0.017 af

D=8.0" n=0.010 L=63.0' S=0.0159 '/' Capacity=1.98 cfs Outflow=0.35 cfs 0.017 af

Pond 1CB: Flynn Ave CB

Peak Elev=132.68' Inflow=0.17 cfs 0.008 af

18.0" x 10.0' Culvert Outflow=0.17 cfs 0.008 af

Pond 1MH: Flynn Ave MH

Peak Elev=131.28' Inflow=0.17 cfs 0.008 af

18.0" x 257.0' Culvert Outflow=0.17 cfs 0.008 af

Pond 7P: Flow Reducing Tank

Peak Elev=135.32' Storage=144 cf Inflow=0.37 cfs 0.021 af

Outflow=0.35 cfs 0.019 af

Pond 10P: Bioretention

Peak Elev=138.49' Storage=486 cf Inflow=0.63 cfs 0.028 af

Discarded=0.05 cfs 0.024 af Primary=0.02 cfs 0.004 af Outflow=0.07 cfs 0.028 af

Link 8L: Total Site

Inflow=0.61 cfs 0.031 af

Primary=0.61 cfs 0.031 af

Total Runoff Area = 0.589 ac Runoff Volume = 0.067 af Average Runoff Depth = 1.36"

38.62% Pervious Area = 0.228 ac 61.38% Impervious Area = 0.362 ac

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Subcatchment 3S: House

Runoff = 0.07 cfs @ 11.89 hrs, Volume= 0.003 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
868	98	Paved parking & roofs
868		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	12	1.0000	3.57		Sheet Flow, Roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 4S: Sidewalk

Runoff = 0.00 cfs @ 11.89 hrs, Volume= 0.000 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
38	98	Paved parking & roofs
38		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0500	1.08		Sheet Flow, Walk Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 5S: Parking Lot

Runoff = 0.36 cfs @ 11.90 hrs, Volume= 0.017 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
4,443	98	Paved parking & roofs
4,443		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	122	0.0300	1.40		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Subcatchment 7S: New Building

Runoff = 0.36 cfs @ 11.91 hrs, Volume= 0.017 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
4,600	98	Paved parking & roofs
4,600		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0100	0.86		Sheet Flow, roof Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 14S: Parking Lot

Runoff = 0.09 cfs @ 11.92 hrs, Volume= 0.005 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
1,222	98	Paved parking & roofs
1,222		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	57	0.0020	0.41		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"

Subcatchment 15S: Existing natural area

Runoff = 0.22 cfs @ 11.93 hrs, Volume= 0.009 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
3,706	73	Brush, Good, HSG D
4,455	80	>75% Grass cover, Good, HSG D
8,161	77	Weighted Average
8,161		Pervious Area

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	60	0.0200	1.03		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"
0.4	30	0.0400	1.18		Sheet Flow, grass Smooth surfaces n= 0.011 P2= 2.20"
0.4	38	0.3400	1.46		Shallow Concentrated Flow, bank Forest w/Heavy Litter Kv= 2.5 fps
1.8	128	Total			

Subcatchment 16S: New Paved Parking

Runoff = 0.28 cfs @ 11.91 hrs, Volume= 0.012 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
3,329	98	Paved parking & roofs
1,000	74	>75% Grass cover, Good, HSG C
4,329	92	Weighted Average
1,000		Pervious Area
3,329		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	60	0.0200	1.03		Sheet Flow, parking lot Smooth surfaces n= 0.011 P2= 2.20"
0.4	30	0.0400	1.18		Sheet Flow, grass Smooth surfaces n= 0.011 P2= 2.20"
0.4	38	0.3400	1.46		Shallow Concentrated Flow, bank Forest w/Heavy Litter Kv= 2.5 fps
1.8	128	Total			

Subcatchment 17S: West side to Street

Runoff = 0.11 cfs @ 11.92 hrs, Volume= 0.005 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

Area (sf)	CN	Description
1,250	98	Paved parking & roofs
750	73	Brush, Good, HSG D
2,000	89	Weighted Average
750		Pervious Area
1,250		Impervious Area

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0					Direct Entry, landscape areas

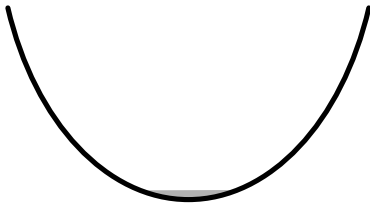
Reach 8R: Engelsby

Inflow Area = 0.589 ac, Inflow Depth > 0.82" for Chitt-2 yr-24hr event
 Inflow = 0.84 cfs @ 11.93 hrs, Volume= 0.040 af
 Outflow = 0.69 cfs @ 12.05 hrs, Volume= 0.040 af, Atten= 18%, Lag= 7.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 0.50 fps, Min. Travel Time= 5.1 min
 Avg. Velocity = 0.20 fps, Avg. Travel Time= 13.0 min

Peak Storage= 214 cf @ 11.97 hrs, Average Depth at Peak Storage= 0.48'
 Bank-Full Depth= 10.00', Capacity at Bank-Full= 396.22 cfs

20.00' x 10.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
 Length= 152.0' Slope= 0.0007 '/'
 Inlet Invert= 0.10', Outlet Invert= 0.00'

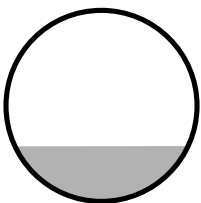
**Reach 16R: roof drain leader**

Inflow Area = 0.106 ac, Inflow Depth > 1.96" for Chitt-2 yr-24hr event
 Inflow = 0.36 cfs @ 11.91 hrs, Volume= 0.017 af
 Outflow = 0.35 cfs @ 11.92 hrs, Volume= 0.017 af, Atten= 2%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.29 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.27 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 11.91 hrs, Average Depth at Peak Storage= 0.19'
 Bank-Full Depth= 0.67', Capacity at Bank-Full= 1.98 cfs

8.0" Diameter Pipe, n= 0.010 PVC, smooth interior
 Length= 63.0' Slope= 0.0159 '/'
 Inlet Invert= 140.00', Outlet Invert= 139.00'



Pond 1CB: Flynn Ave CB

Inflow Area = 0.049 ac, Inflow Depth > 1.96" for Chitt-2 yr-24hr event
 Inflow = 0.17 cfs @ 11.90 hrs, Volume= 0.008 af
 Outflow = 0.17 cfs @ 11.90 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.17 cfs @ 11.90 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 132.68' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	132.50'	18.0" x 10.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 132.00' S= 0.0500 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.17 cfs @ 11.90 hrs HW=132.68' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 0.17 cfs @ 1.43 fps)

Pond 1MH: Flynn Ave MH

Inflow Area = 0.049 ac, Inflow Depth > 1.96" for Chitt-2 yr-24hr event
 Inflow = 0.17 cfs @ 11.90 hrs, Volume= 0.008 af
 Outflow = 0.17 cfs @ 11.90 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.17 cfs @ 11.90 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 131.28' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	131.06'	18.0" x 257.0' long Culvert CMP, square edge headwall, Ke= 0.500 Outlet Invert= 128.50' S= 0.0100 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.17 cfs @ 11.90 hrs HW=131.28' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 0.17 cfs @ 1.62 fps)

Pond 7P: Flow Reducing Tank

Inflow Area = 0.307 ac, Inflow Depth > 0.84" for Chitt-2 yr-24hr event
 Inflow = 0.37 cfs @ 11.92 hrs, Volume= 0.021 af
 Outflow = 0.35 cfs @ 11.94 hrs, Volume= 0.019 af, Atten= 5%, Lag= 1.2 min
 Primary = 0.35 cfs @ 11.94 hrs, Volume= 0.019 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 135.32' @ 11.94 hrs Surf.Area= 72 sf Storage= 144 cf

Plug-Flow detention time= 73.9 min calculated for 0.019 af (88% of inflow)
 Center-of-Mass det. time= 38.4 min (777.1 - 738.8)

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Volume	Invert	Avail.Storage	Storage Description
#1	133.33'	408 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.33	72	0	0
139.00	72	408	408

Device	Routing	Invert	Outlet Devices
#1	Primary	134.83'	5.0" Vert. Orifice/Grate C= 0.600
#2	Primary	138.50'	2.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.34 cfs @ 11.94 hrs HW=135.31' (Free Discharge)

1=Orifice/Grate (Orifice Controls 0.34 cfs @ 2.51 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 10P: Bioretention

Inflow Area = 0.201 ac, Inflow Depth > 1.69" for Chitt-2 yr-24hr event
 Inflow = 0.63 cfs @ 11.91 hrs, Volume= 0.028 af
 Outflow = 0.07 cfs @ 12.22 hrs, Volume= 0.028 af, Atten= 89%, Lag= 18.7 min
 Discarded = 0.05 cfs @ 11.65 hrs, Volume= 0.024 af
 Primary = 0.02 cfs @ 12.22 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.49' @ 12.22 hrs Surf.Area= 0 sf Storage= 486 cf

Plug-Flow detention time= 57.7 min calculated for 0.028 af (100% of inflow)

Center-of-Mass det. time= 55.6 min (797.4 - 741.8)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	3,000 cf	Custom Stage Data Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	0	0
141.00	3,000	3,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	0.05 cfs Exfiltration at all elevations
#2	Primary	143.00'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Primary	138.00'	1.0" Vert. Orifice/Grate C= 0.600

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Type II 24-hr Chitt-2 yr-24hr Rainfall=2.30"

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Discarded OutFlow Max=0.05 cfs @ 11.65 hrs HW=138.06' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.02 cfs @ 12.22 hrs HW=138.49' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

↑**3=Orifice/Grate** (Orifice Controls 0.02 cfs @ 3.21 fps)

Link 8L: Total Site

Inflow Area = 0.402 ac, Inflow Depth > 0.94" for Chitt-2 yr-24hr event

Inflow = 0.61 cfs @ 11.92 hrs, Volume= 0.031 af

Primary = 0.61 cfs @ 11.92 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs



NOTE:
Photo of existing conditions
View from Lake Facing West



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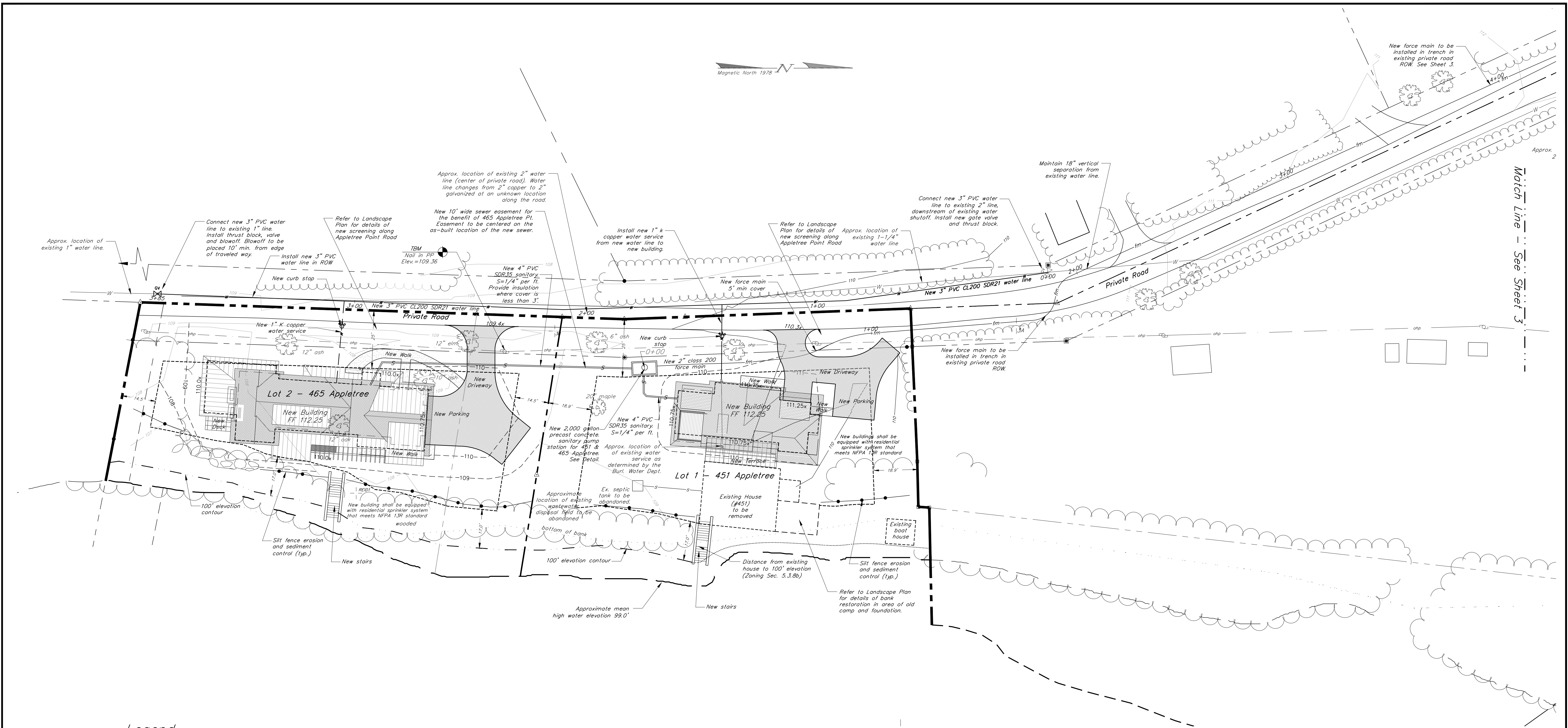
Design:

Senecal Residence
BURLINGTON, VERMONT

465 & 451
Existing Conditions

V2

03/03/15



Legend

- Property line / right of way
- Setback line
- Existing waterline
- Existing sewer line
- Existing gas service
- Existing power pole / line
- High water elevation 99.0
- Bottom of lake shore bank
- Edge of woods
- Traverse point
- New water service
- New gravity sanitary line
- New sanitary force main
- Existing sewer manhole
- Existing storm manhole
- Silt Fence

Existing Lot Coverage

Buildings = 1,347 s.f.
1,347 s.f. / 35,283 s.f. = 3.8% of total lot area

Roads/Driveways = 2,536 s.f.
2,536 s.f. / 35,283 s.f. = 7.2% of total lot area

Total Coverage = $\frac{1,347 + 2,536}{35,283} = 12.0\%$ of total lot area

Proposed Lot Coverage

451 Appletree

Buildings = 1,342 s.f.
1,342 s.f. / 17,865 s.f. = 7.5% of Lot 1

Roads/Driveways = 2,190 s.f.
2,190 s.f. / 17,865 s.f. = 12.3% of Lot 1

Total Coverage = $\frac{1,342 + 2,190}{17,865} = 19.8\%$ of Lot 1

465 Appletree

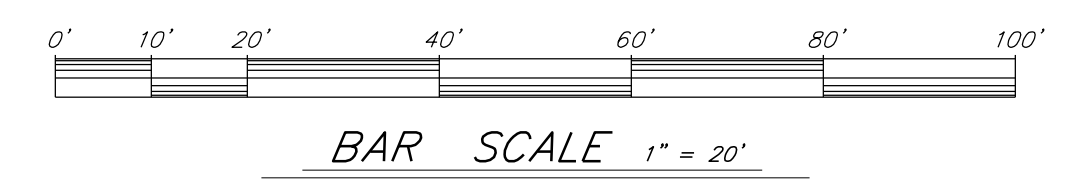
Buildings = 2,512 s.f.
2,512 s.f. / 17,417 s.f. = 14.4% of Lot 2

Roads/Driveways = 2,680 s.f.
2,680 s.f. / 17,417 s.f. = 15.4% of Lot 2

Total Coverage = $\frac{2,512 + 2,680}{17,417} = 29.8\%$ of Lot 2

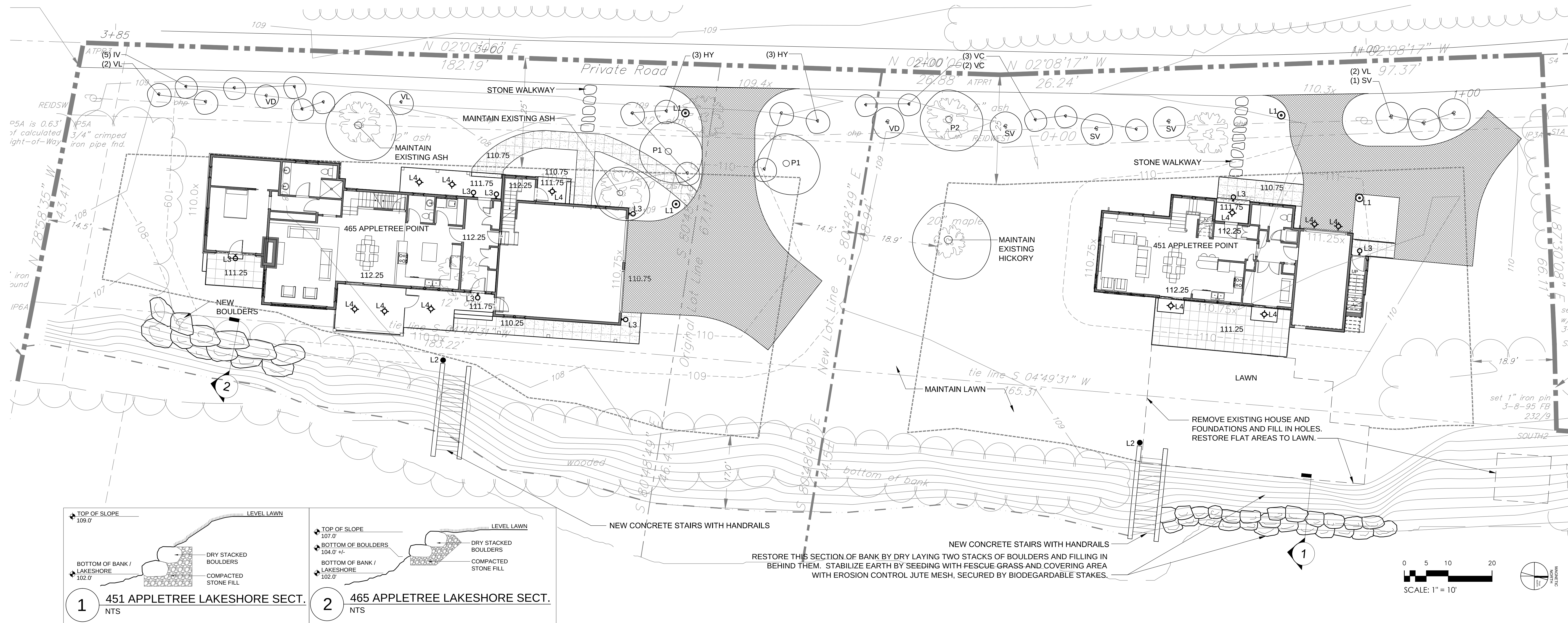
NOTES:

- Krebs and Lansing Consulting Engineers performed a topographic survey on a one-foot contour interval across the project area in 2001 using an assumed datum. Vertical control is NAVD 88.
- The location of existing utilities is not warranted to be exact or complete. Contact DIG SAFE prior to any excavation. It is the responsibility of the Contractor to have an independent locator verify the location of utilities outside the right of way.
- Refer to Landscape Plan prepared by Cynthia Knauff for landscaping and lighting details.
- Refer to Architectural Plans prepared by Brad Rabinowitz, Architect for building related features and entrance details.



Progress Print 2-18-15

Date revised	Description	Checked	Date
Design SWH	Site & Utility Plan Property of Alfred R. & Cheryl Senecal 451 & 465 Appletree Point Road Burlington, Vermont KREBS & LANSING Consulting Engineers, Inc. 164 Main Street, Colchester, Vermont 05446		
Drawn FMP/SWH			
Checked			
Scale 1" = 20'			
Date Feb. 17, 2015			
Project 14132			



PLAN FOR TREE REMOVAL ALONG LAKESHORE



PLANT SCHEDULE FOR SENECALE PROPERTIES				
TREES				
Key	Botanical Name / Common Name	Characteristics	Size	Qty.
P1	Prunus 'Montmorency' or 'Ball' / Cherry	Pink spring bloom, summer cherries	Availability	2
P2	Peach 'Reliance' / Peach	White spring bloom, summer peaches	Availability	1
SHRUBS				
Key	Botanical Name / Common Name	Characteristics	Size	Qty.
HY	Hydrangea paniculata 'Limelight' / Pee Gae Hydrangea	White summer bloom, yellow fall foliage	10g, 3'-4'	6
VD	Viburnum dentatum / Arrowwood / Viburnum	White spring bloom, purple fall foliage and berries	8&8, 4'-5'	2
VL	Viburnum lentana 'Mohican' / Viburnum	White spring bloom, purple fall foliage and berries	8&8, 4'-5'	5
VC	Vaccinium corymbosum / Highbush Blueberry	Summer berries, red fall foliage	5g, 2'-3'-4'	5
SV	Syringa vulgaris 'Charles Joly' / Common Lilac	Fragrant purple spring bloom	8&8, 5'-6'	4
IV	Ilex verticillata 'Winter Red' / Winterberry, Decid. Holly	Red fall foliage, red winter berries	5g, 3'-4'	4
IV	Ilex verticillata 'Jim Dandy' / Male Winterberry	Red fall foliage, red winter berries	5g, 3'-4'	1

LIGHTING LEGEND		
KEY	DESCRIPTION	QTY.
⊙ L1	TEKA POST-MOUNTED LED LIGHT	4
• L2	TEKA BOLLARD LED LIGHT	2
◐ L3	TEKA WALL-MOUNTED LED LIGHT	8
◈ L4	TEKA SURFACE-MOUNTED LED LIGHT	11

Senecal Residences at Appletree Point
Burlington, Vermont

Landscape and Planting Plan

CYNTHIA KNAUF

LANDSCAPE DESIGN INC

215 College Street | Studio 2C | Burlington Vermont 05401

Cynthia@CynthiaKnauf.com | 802.655.0552 | CynthiaKnauf.com

BEAUTY FUNCTION SUSTAINABILITY COLLABORATION

ARCHITECT
Brad Robinson, Architect
200 Main Street, Burlington, Vermont 05401
Tel: (802) 658-0430 / Fax: (802) 863-6876
Email: office@bradrobinsnowarchitect.com

DATE: March 2, 2015

SCALE: 1" = 10'-0"

DRAWN BY: AC

L1.0



Burlington Department of Public Works

Stormwater Program

234 Penny Lane (Water Plant)

Burlington, VT 05401

PH: 802-540-1748 Email: mmoir@burlingtonvt.gov



Small Project Erosion Prevention & Sediment Control Plan

This questionnaire, at a minimum, is required to accompany all zoning or building permit applications **which involve 400 sq. ft. or more of land disturbance**. Please also provide a site plan indicating the locations of all erosion prevention and sediment control measures (silt fence, hay bales etc).

Properties with greater than 2500 sq. ft. of total impervious surfaces, that are adding more impervious, will also be required to comply with additional long term stormwater management requirements.

1. Project Location 451 Appletree Point Road
2. Brief Project Description (i.e. house foundation, swimming pool)
The proposed project entails the demolition of the existing camp and construction of a residential duplex with associated driveway and utility installation.
3. Owner Name: Alfred & Cheryl Senecal
4. Owner Mailing Address: 60 Upper Main Street, Essex Junction, VT 05452
5. Owner Phone: 802-999-9179 6. Owner email: nsenecal@omegarealtyvt.com
7. Contractor Name: Omega Electric Construction Co. Inc.
8. Contractor Phone: 802-862-0517 9. Contractor Email: asenecal@omegavt.com
10. Estimated Project Start Date June 2015 Estimated End Date November 2015
11. Area of Land Disturbance 7,900 sq. ft.
12. Total proposed (existing + new) amount of impervious: 3,532 sq. ft.
13. Estimated distance in feet from disturbance to nearest:
 - a. City Sidewalk or Street 515 ft
 - b. Drainage Ditch 500 ft
 - c. Catch Basin (storm drain) 620 ft
 - d. Lake/River/Stream 10 ft
14. Site plan/sketch MUST BE ATTACHED showing the following:
 - ☒ Limits of disturbance
 - ☒ Direction of stormwater flow on site
 - ☐ Location of stockpiles (if any)
 - ☒ Location of sediment control BMP's (silt fence etc.)

EPSC QUESTIONNAIRE (See last page for typical solutions to these questions)

A) Nature of all site disturbances (check all that apply):

- ☒ Underground utility trench(es) ☒ curb cut/driveway ☒ foundation ☒ cut/fill/regrading ☒ landscaping
- ☐ other _____

B) Do you anticipate the need for any dewatering of excavations during the construction? ☐ Yes ☒ No

- If yes, how will the pumped water be managed or filtered to prevent the discharge of dirty water?

C) Will excavated soil be stockpiled on the site? ☒ Yes ☐ No

- If yes, how long will the stockpile be on site? (i.e. 1 day, 1 week) Up to 2 months;

How do you propose to control erosion of the stockpile? Stockpiled soil will be spread on site. Excess soil from foundation excavation will be ringed in silt fence while stored. The soil will eventually be used to achieve finish grades around the site.

- If no, where is the ultimate disposal of excess soil? _____

D) How do you propose to prevent sediment from leaving the site and entering nearby city sidewalks/streets and storm drains and/or lakes, rivers and streams? (see page 4 for examples)

Sediment will be prevented from leaving the site by a combination of a stabilized construction entrance (streets), and silt fence installed along the contour at the top of the slope adjacent to Lake Champlain.

E) Do you plan to park construction vehicles on or disturb City owned property like the greenbelt area? ☐ Yes ☒ No

- If yes, tell us how you agree to repair all disturbances or damage to City owned property and provide a written approval from the City allowing construction vehicles to park on City owned property.

- If no, then please monitor all construction and visitor vehicles and advise all not to park on City owned property.

F) How do you propose to either prevent or clean sediment generated from construction vehicles and activities that becomes deposited on City streets, sidewalks, or bikepaths and how frequently this will be done.

The city street is over 650 feet away from the site entrance. Therefore, we do not anticipate sediment being tracked onto City streets or walks. However, Appletree Point Road will be inspected at the end of each work day and swept if necessary.

G) Will stockpiles or disturbed soils be present and/or exposed after Nov. 1st of any construction year? ☐ Yes ☒ No

- If yes, tell us how you plan to stabilize any stockpile and/or disturbed soils.

Do you agree to abide by the following conditions?

☒Y ☐N Applicant will call 540-1748 or email mmoir@burlingtonvt.gov at least 24 hours prior to initiating earth disturbance and submit the **name and contact (cell phone and email) of the erosion control coordinator for the project**

☒Y ☐N Applicant will post the notice in a visible location

☒Y ☐N I acknowledge that it is the responsibility of the owner and his/her representatives to ensure that:

- sediment does not enter surface water bodies (streams, ditches, ponds, lakes, wetlands etc.)
- sediment does not enter City conveyance infrastructure (catch basins, sewers etc.) and
- All sediment must be removed from the city ROW (sidewalks and roadways) by the end of each work day.

☒Y ☐N Sediment control measures will be installed prior to the initiation of earth disturbance.

☒Y ☐N During the non-winter construction season (April 15 – November 1): After an initial **14 day** period of initial disturbance, temporary or permanent stabilization (mulching, erosion control matting or tarps for stockpiles, or other approved method) of exposed areas and stockpiles will occur at the end of each work day unless:

- Earthwork is to continue in the area within the next 24 hours **and** there is NO liquid precipitation forecast for the next 24 hours; or
- If work is occurring in a self contained excavation (no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation or utility trenches.

- ☒ Y ☐ N During the winter construction period from November 1 to April 15, any **new disturbance** must be temporarily or permanently stabilized (mulching, erosion control matting or tarps for stockpiles, or other approved method) will occur at the end of each work day unless:
- Earthwork is to continue in the area within the next 24 hours **and** there is NO liquid precipitation forecast for the next 24 hours; or
 - If work is occurring in a self-contained excavation (no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation or utility trenches)
- ☒ Y ☐ N The perimeter of the site and all BMPs will be inspected at the **end of each workday** to ensure that sediment will not leave the site. If sediment has travelled beyond the site boundary, it shall be swept up or otherwise removed and deposited on-site in an upgradient area at the **end of each work day**.
- ☒ Y ☐ N The owner and his/her representatives shall abide by the best management practices (BMPs) indicated in this plan and conditions and in the Vermont DEC Low Risk Site Handbook for Erosion Prevention and Sediment Control (2006). Contact 802-540-1748 for a hard copy or go to the web:
http://vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf
- ☒ Y ☐ N **If soils will be exposed after November 1st and winter construction has not been permitted the project will notify DPW prior to October 15th.** If the project is completed during the winter months, an additional inspection will be required to ensure that the site is buttoned up for the winter.
- ☒ Y ☐ N Within 48 hours of reaching final grading, the exposed soil will be seeded and mulched or covered with erosion control matting (for slopes steeper than 3:1 or high wind prone areas). Erosion control matting is preferred.
- ☒ Y ☐ N The owner will contact DPW to schedule a stabilization inspection when site work is finished and stabilization measures (seeding and mulching or matting) have been installed.

AGREEMENT

By filling out and signing this plan, I agree to abide by the terms and conditions outlined above. Failure to follow this plan can result in a stop work order by the City of Burlington, fines, or both.

By: ☐ Owner ☐ Contractor ☒ Architect/Engineer

Scott Homsted, P.E. #7983

Name

Signature

3/31/15

Date

Additional Conditions of Approval:

Required Compliance Items:

- Notification of start/identification of EPSC responsible party
- Winter Stabilization Inspection (if applicable)
- Final Stabilization

AN EROSION PREVENTION AND SEDIMENT CONTROL PLAN

FOR THE PROJECT AT:

HAS BEEN FILED WITH THE CITY OF BURLINGTON
STORMWATER MANAGEMENT PROGRAM IN ACCORDANCE
WITH CHAPTER 26 OF THE BURLINGTON CODE OF ORDINANCES

THIS REQUIRES THAT MEASURES BE INSTALLED OR TAKEN TO
PREVENT SEDIMENT FROM LEAVING THE SITE AND ENTERING
WATERWAYS AND IMPACTING CITY INFRASTRUCTURE
(RIGHT OF WAY AND STORMDRAINS)

FOR QUESTIONS OR TO REPORT SEDIMENT LEAVING THE SITE
CALL 802-540-1748

This notice to be posted in full view at all times during earth
disturbance. Additional conditions on attached.

Plan Approved by: _____ Date: _____
Megan J. Moir, CPESC, CPSWQ

TYPICAL SOLUTIONS TO PREVENT OR CONTROL SEDIMENT AND EROSION

STOCKPILES

- Cover small stockpiles with a tarp when not being used.
- Install silt fencing or other appropriate devices around the stockpiles to filter sediment.
- Cover stockpiles with straw or other approved mulching material.
- Plan to remove any unusable material as soon as possible from the site to an approved location.
- Plant grass and mulch stockpiles that will be on site for more than 14 days.
- Cover, vegetate or install erosion matting on stockpiles that will remain disturbed over the winter.

DISTURBED AREAS

- Maintain vegetated buffers around disturbed areas.
- Install silt fencing or other appropriate device to filter sediment washing off from disturbed areas. Remember that the bottom of the silt fence must be “keyed in” (dug into ground) to work correctly.
- To prevent sediment from running off your site via your driveway (or other paved areas where you can’t install silt fence) use a row of hay bales or tube sand.
- Cover disturbed areas as soon as possible with straw or other approved mulching material. Use erosion control matting in high wind, traffic or slopes steeper than 3:1 (horizontal to vertical), and follow the manufacturer’s guidelines staple the matting down.
- Plant grass and mulch or use erosion control matting all disturbed areas that will remain exposed for more than 14 days.
- Cover, vegetate or install erosion matting on areas that will remain disturbed over the winter.
- Protect ditches, catch basins or water bodies off-site by using silt fencing, gravel check dams or other approved sediment control methods.

CONSTRUCTION VEHICLES

- Do not park construction vehicles on City owned green space. Vehicles disturb vegetation and compact the soil, thereby reducing its ability to infiltrate stormwater. Any green belt disturbance will need to be permanently stabilized with grass seed and erosion control matting.
- Prevent sediment from leaving the project by cleaning the tires of vehicles, or use clean gravel at project access points to clean tires.
- Sweep city streets, sidewalks and bikepaths daily or as needed to remove sediment transported from the project.

RESOURCES

The Vermont Handbook for Erosion Prevention and Sediment Control at:

http://vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf

The City of Burlington Stormwater Program Page at

<http://www.dpw.ci.burlington.vt.us/stormwater/>

The City of Burlington Conservation Board Stormwater and Erosion Control Fact sheet at

<http://www.ci.burlington.vt.us/planning/cb/stormwater/management.html>

Burlington Department of Public Works**Stormwater Program**

234 Penny Lane

Burlington, VT 05401

P.O. Box 878 (05402)

PH: 802-540-1748 Email: mmoir@burlingtonvt.gov

Residential (R1 & R2) Stormwater Management Plan

This questionnaire is required for single family detached dwellings or duplex properties where additional impervious surface is proposed and the total lot impervious surface area is greater than 2500 sq. ft. This form should be submitted directly to the DPW Stormwater Program above. If you need help completing this form, please contact mmoir@ci.burlington.vt.us or 540-1748 for technical assistance.

**YOU MUST INCLUDE A SKETCH OR SITE PLAN OF YOUR EXISTING AND PROPOSED SITE AND
INCLUDE THE EXISTING AND PROPOSED FLOW PATHS OF STORMWATER ON YOUR PROPERTY**

Project Location: 451 Appletree Point Road

Impact Review: Impervious Surface Area Breakdown

Impact Review: Impervious Surface Area Breakdown	Area (sq. ft.)	
Type of Surface	Existing	Proposed
Total impervious surface	<u>2,949</u>	<u>3,532</u>
Change in Total impervious surface	<u>583</u>	
Connected Impervious Surfaces		
Rooftop area that drains to impervious surface and runoff reaches city street or property boundary	<u>0</u>	<u>0</u>
Driveway area that drains directly to city street or property boundary	<u>0</u>	<u>0</u>
Walkway/Patio/Deck/other area that drains to impervious surface and runoff reaches city street or property boundary	<u>0</u>	<u>0</u>
Total connected impervious	<u>0</u>	<u>0</u>
Change in total connected impervious (proposed – existing)	<u>0</u>	
Disconnected Impervious Surfaces		
Rooftop area that drains to pervious surface where runoff soaks in	<u>1,347</u>	<u>1,342</u>
Driveway area that drains to pervious surface where runoff soaks in before reaching the city street or the property boundary (or a driveway made of pervious material)	<u>1,602</u>	<u>2,050</u>
Walkway/Patio/Deck/Other area that drains to pervious surface where runoff soaks in before reaching the city street or the property boundary (or is made of pervious material)	<u>0</u>	<u>140</u>
Total disconnected impervious	<u>2,949</u>	<u>3,532</u>

Impervious surfaces are areas that prevent the infiltration of water into the ground and shall include, but not be limited to, roofs, patios, garages, storage sheds and similar structures. Impervious surfaces also include compacted dirt and gravel surfaces. Decks that allow water to seep through onto pervious surfaces can be considered disconnected.

Pervious surfaces are areas such as grass, clean gravel, pervious concrete, permeable pavers that allow water to infiltrate rather than runoff.

Change in total disconnected impervious (proposed – existing)	583
---	-----

Mitigation Review:

The Burlington Stormwater Program reserves the right to request that specific measures or a specified volume of stormwater runoff be mitigated based on the overall impact of connected impervious on the site.

Is this a new home (including tear down and replacement)? Yes ☒ No ☐

If yes, complete information below and contact mmoir@ci.burlington.vt.us or 540-1748 for a required technical assistance meeting.

If no, please feel free to contact the Burlington Stormwater Program for additional technical assistance, but at a minimum, you must complete the information requested below:

How will increased stormwater runoff from any increase in impervious surface be managed to the maximum extent practicable? For information regarding these and other stormwater management practices visit:

http://www.vtwaterquality.org/stormwater/htm/sw_LID.htm

- ☐ Removal of other impervious surface balances out addition
- ☐ Installation of green roof will minimize runoff from rooftop
- ☒ Runoff from rooftops will be directed to pervious green space
- ☐ Runoff from rooftops will be directed to rain barrels* for storage and gradual release or use
- ☐ Runoff from impervious surfaces will be directed to a rain garden*
- ☐ Driveway is/will be permeable (permeable pavers, grass pavers, pervious gravel driveway)
 - ☐ Walkways is/will be permeable (permeable pavers, grass pavers, pervious gravel driveway)
 - ☐ Driveway impervious surface and connectivity has been/will be minimized with use of strip driveway (2 strips of asphalt with grass strip down middle)
- ☒ Connected Impervious surface has been minimized (please explain)
Runoff from driveways will sheet flow over lawn and vegetated areas prior to reaching Lake Champlain
- ☐ Other, please attach explanation

OWNER AGREEMENT

I attest that the information above is correct to the best of my understanding and that I will install the measures I have indicated or manage the runoff in a way to minimize the amount of stormwater runoff from my property. I understand that the City has the right to inspect my property to ensure that the measures have been installed and that failure to abide by the measures above may constitute a violation of Chapter 26 and my authorization to discharge stormwater to the City Stormwater conveyance system.

By:

Al Senecal

Printed Name



Signature

3-31-15

Date

Plan Approved by: Megan J. Moir, CPESC, CPSWQ

Date: _____

* Visit www.ci.burlington.vt.us/stormwater/getinvolved for stormwater workshops and/or rebate opportunities that may assist in the installation/purchase of these stormwater management measures.

Burlington Department of Public Works

Stormwater Program

234 Penny Lane

Burlington, VT 05401

Mail: P.O. Box 878, Burlington, VT 05402

PH: 802.540.1748 Fax 802.864.8233 Email: mmoir@burlingtonvt.gov



Stormwater Management Plan Definitions

Stormwater Questionnaire Definitions:

Disconnected impervious = runoff from this type of impervious (paved, unpaved parking, roof top, driveway, walkway) that drains to a vegetated surface (pervious) and has a reasonable chance of soaking in before it gets to the property line.

- examples
 - runoff that comes off a drip line and lands on grassed surface or planting bed
 - runoff that goes to a gutter, but where the downspout drains to a vegetated area
 - runoff that goes into a rain barrel where the rain barrel is attached to a hose that is used on pervious
 - a driveway or walkway which is graded in such a way that the runoff goes off the side onto grassy area

Connected impervious = runoff from this type of impervious (paved, unpaved parking, rooftop, driveway, walkway) that drains to another impervious surface and therefore DOES NOT have a reasonable chance of soaking in before it gets to the property line.

- examples
 - runoff that comes off a drip line and lands on paved surface which drains to the roadway or City sidewalk or another property
 - runoff that goes to a gutter, but where the downspout drains to the driveway or parking area
 - a driveway or walkway which is graded (sloped) towards the City Road or sidewalk

* Visit www.ci.burlington.vt.us/stormwater/getinvolved for stormwater workshops and/or rebate opportunities that may assist in the installation/purchase of these stormwater management measures.



Burlington Department of Public Works

Stormwater Program

234 Penny Lane (Water Plant)

Burlington, VT 05401

PH: 802-540-1748 Email: mmoir@burlingtonvt.gov



Small Project Erosion Prevention & Sediment Control Plan

This questionnaire, at a minimum, is required to accompany all zoning or building permit applications **which involve 400 sq. ft. or more of land disturbance**. Please also provide a site plan indicating the locations of all erosion prevention and sediment control measures (silt fence, hay bales etc).

Properties with greater than 2500 sq. ft. of total impervious surfaces, that are adding more impervious, will also be required to comply with additional long term stormwater management requirements.

1. Project Location 465 Appletree Point Road
2. Brief Project Description (i.e. house foundation, swimming pool)
The proposed project entails the construction of a residential duplex with associated driveway and utility installation.
3. Owner Name: Alfred & Cheryl Senecal
4. Owner Mailing Address: 60 Upper Main Street, Essex Junction, VT 05452
5. Owner Phone: 802-999-9179 6. Owner email: nsenecal@omegarealtyvt.com
7. Contractor Name: Omega Electric Construction Co. Inc.
8. Contractor Phone: 802-862-0517 9. Contractor Email: asenecal@omegavt.com
10. Estimated Project Start Date June 2015 Estimated End Date November 2015
11. Area of Land Disturbance 9,200 sq. ft.
12. Total proposed (existing + new) amount of impervious: 5,192 sq. ft.
13. Estimated distance in feet from disturbance to nearest:
 - a. City Sidewalk or Street 675 ft
 - b. Drainage Ditch 650 ft
 - c. Catch Basin (storm drain) 760 ft
 - d. Lake/River/Stream 10 ft
14. Site plan/sketch MUST BE ATTACHED showing the following:
 - ☒ Limits of disturbance
 - ☒ Direction of stormwater flow on site
 - ☐ Location of stockpiles (if any)
 - ☒ Location of sediment control BMP's (silt fence etc.)

EPSC QUESTIONNAIRE (See last page for typical solutions to these questions)

A) Nature of all site disturbances (check all that apply):

- ☒ Underground utility trench(es) ☒ curb cut/driveway ☒ foundation ☒ cut/fill/regrading ☒ landscaping
- ☐ other _____

B) Do you anticipate the need for any dewatering of excavations during the construction? ☐ Yes ☒ No

- If yes, how will the pumped water be managed or filtered to prevent the discharge of dirty water?

C) Will excavated soil be stockpiled on the site? ☒ Yes ☐ No

- If yes, how long will the stockpile be on site? (i.e. 1 day, 1 week) Up to 2 months;

How do you propose to control erosion of the stockpile? Stockpiled soil will be spread on site. Excess soil from foundation excavation will be ringed in silt fence while stored. The soil will eventually be used to achieve finish grades around the site.

- If no, where is the ultimate disposal of excess soil? _____

D) How do you propose to prevent sediment from leaving the site and entering nearby city sidewalks/streets and storm drains and/or lakes, rivers and streams? (see page 4 for examples)

Sediment will be prevented from leaving the site by a combination of a stabilized construction entrance (streets), and silt fence installed along the contour at the top of the slope adjacent to Lake Champlain.

E) Do you plan to park construction vehicles on or disturb City owned property like the greenbelt area? ☐ Yes ☒ No

- If yes, tell us how you agree to repair all disturbances or damage to City owned property and provide a written approval from the City allowing construction vehicles to park on City owned property.

- If no, then please monitor all construction and visitor vehicles and advise all not to park on City owned property.

F) How do you propose to either prevent or clean sediment generated from construction vehicles and activities that becomes deposited on City streets, sidewalks, or bikepaths and how frequently this will be done.

The city street is over 800 feet away from the site entrance. Therefore, we do not anticipate sediment being tracked onto City streets or walks. However, Appletree Point Road will be inspected at the end of each work day and swept if necessary.

G) Will stockpiles or disturbed soils be present and/or exposed after Nov. 1st of any construction year? ☐ Yes ☒ No

- If yes, tell us how you plan to stabilize any stockpile and/or disturbed soils.

Do you agree to abide by the following conditions?

☒Y ☐N Applicant will call 540-1748 or email mmoir@burlingtonvt.gov at least 24 hours prior to initiating earth disturbance and submit the **name and contact (cell phone and email) of the erosion control coordinator for the project**

☒Y ☐N Applicant will post the notice in a visible location

☒Y ☐N I acknowledge that it is the responsibility of the owner and his/her representatives to ensure that:

- sediment does not enter surface water bodies (streams, ditches, ponds, lakes, wetlands etc.)
- sediment does not enter City conveyance infrastructure (catch basins, sewers etc.) and
- All sediment must be removed from the city ROW (sidewalks and roadways) by the end of each work day.

☒Y ☐N Sediment control measures will be installed prior to the initiation of earth disturbance.

☒Y ☐N During the non-winter construction season (April 15 – November 1): After an initial **14 day** period of initial disturbance, temporary or permanent stabilization (mulching, erosion control matting or tarps for stockpiles, or other approved method) of exposed areas and stockpiles will occur at the end of each work day unless:

- Earthwork is to continue in the area within the next 24 hours **and** there is NO liquid precipitation forecast for the next 24 hours; or
- If work is occurring in a self contained excavation (no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation or utility trenches.

- ☒ Y ☐ N During the winter construction period from November 1 to April 15, any **new disturbance** must be temporarily or permanently stabilized (mulching, erosion control matting or tarps for stockpiles, or other approved method) will occur at the end of each work day unless:
- Earthwork is to continue in the area within the next 24 hours **and** there is NO liquid precipitation forecast for the next 24 hours; or
 - If work is occurring in a self-contained excavation (no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation or utility trenches)
- ☒ Y ☐ N The perimeter of the site and all BMPs will be inspected at the **end of each workday** to ensure that sediment will not leave the site. If sediment has travelled beyond the site boundary, it shall be swept up or otherwise removed and deposited on-site in an upgradient area at the **end of each work day**.
- ☒ Y ☐ N The owner and his/her representatives shall abide by the best management practices (BMPs) indicated in this plan and conditions and in the Vermont DEC Low Risk Site Handbook for Erosion Prevention and Sediment Control (2006). Contact 802-540-1748 for a hard copy or go to the web:
http://vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf
- ☒ Y ☐ N **If soils will be exposed after November 1st and winter construction has not been permitted the project will notify DPW prior to October 15th.** If the project is completed during the winter months, an additional inspection will be required to ensure that the site is buttoned up for the winter.
- ☒ Y ☐ N Within 48 hours of reaching final grading, the exposed soil will be seeded and mulched or covered with erosion control matting (for slopes steeper than 3:1 or high wind prone areas). Erosion control matting is preferred.
- ☒ Y ☐ N The owner will contact DPW to schedule a stabilization inspection when site work is finished and stabilization measures (seeding and mulching or matting) have been installed.

AGREEMENT

By filling out and signing this plan, I agree to abide by the terms and conditions outlined above. Failure to follow this plan can result in a stop work order by the City of Burlington, fines, or both.

By: ☐ Owner ☐ Contractor ☒ Architect/Engineer

Scott Homsted, P.E. #7983

Name

Signature

3/31/15

Date

Additional Conditions of Approval:

Required Compliance Items:

- Notification of start/identification of EPSC responsible party
- Winter Stabilization Inspection (if applicable)
- Final Stabilization

AN EROSION PREVENTION AND SEDIMENT CONTROL PLAN

FOR THE PROJECT AT:

HAS BEEN FILED WITH THE CITY OF BURLINGTON
STORMWATER MANAGEMENT PROGRAM IN ACCORDANCE
WITH CHAPTER 26 OF THE BURLINGTON CODE OF ORDINANCES

THIS REQUIRES THAT MEASURES BE INSTALLED OR TAKEN TO
PREVENT SEDIMENT FROM LEAVING THE SITE AND ENTERING
WATERWAYS AND IMPACTING CITY INFRASTRUCTURE
(RIGHT OF WAY AND STORMDRAINS)

FOR QUESTIONS OR TO REPORT SEDIMENT LEAVING THE SITE
CALL 802-540-1748

This notice to be posted in full view at all times during earth
disturbance. Additional conditions on attached.

Plan Approved by: _____ Date: _____
Megan J. Moir, CPESC, CPSWQ

TYPICAL SOLUTIONS TO PREVENT OR CONTROL SEDIMENT AND EROSION

STOCKPILES

- Cover small stockpiles with a tarp when not being used.
- Install silt fencing or other appropriate devices around the stockpiles to filter sediment.
- Cover stockpiles with straw or other approved mulching material.
- Plan to remove any unusable material as soon as possible from the site to an approved location.
- Plant grass and mulch stockpiles that will be on site for more than 14 days.
- Cover, vegetate or install erosion matting on stockpiles that will remain disturbed over the winter.

DISTURBED AREAS

- Maintain vegetated buffers around disturbed areas.
- Install silt fencing or other appropriate device to filter sediment washing off from disturbed areas. Remember that the bottom of the silt fence must be “keyed in” (dug into ground) to work correctly.
- To prevent sediment from running off your site via your driveway (or other paved areas where you can’t install silt fence) use a row of hay bales or tube sand.
- Cover disturbed areas as soon as possible with straw or other approved mulching material. Use erosion control matting in high wind, traffic or slopes steeper than 3:1 (horizontal to vertical), and follow the manufacturer’s guidelines staple the matting down.
- Plant grass and mulch or use erosion control matting all disturbed areas that will remain exposed for more than 14 days.
- Cover, vegetate or install erosion matting on areas that will remain disturbed over the winter.
- Protect ditches, catch basins or water bodies off-site by using silt fencing, gravel check dams or other approved sediment control methods.

CONSTRUCTION VEHICLES

- Do not park construction vehicles on City owned green space. Vehicles disturb vegetation and compact the soil, thereby reducing its ability to infiltrate stormwater. Any green belt disturbance will need to be permanently stabilized with grass seed and erosion control matting.
- Prevent sediment from leaving the project by cleaning the tires of vehicles, or use clean gravel at project access points to clean tires.
- Sweep city streets, sidewalks and bikepaths daily or as needed to remove sediment transported from the project.

RESOURCES

The Vermont Handbook for Erosion Prevention and Sediment Control at:

http://vtwaterquality.org/stormwater/docs/construction/sw_low_risk_site_handbook.pdf

The City of Burlington Stormwater Program Page at

<http://www.dpw.ci.burlington.vt.us/stormwater/>

The City of Burlington Conservation Board Stormwater and Erosion Control Fact sheet at

<http://www.ci.burlington.vt.us/planning/cb/stormwater/management.html>

Burlington Department of Public Works**Stormwater Program**

234 Penny Lane

Burlington, VT 05401

P.O. Box 878 (05402)

PH: 802-540-1748 Email: mmoir@burlingtonvt.gov

Residential (R1 & R2) Stormwater Management Plan

This questionnaire is required for single family detached dwellings or duplex properties where additional impervious surface is proposed and the total lot impervious surface area is greater than 2500 sq. ft. This form should be submitted directly to the DPW Stormwater Program above. If you need help completing this form, please contact mmoir@ci.burlington.vt.us or 540-1748 for technical assistance.

**YOU MUST INCLUDE A SKETCH OR SITE PLAN OF YOUR EXISTING AND PROPOSED SITE AND
INCLUDE THE EXISTING AND PROPOSED FLOW PATHS OF STORMWATER ON YOUR PROPERTY**

Project Location: 465 Appletree Point Road

Impact Review: Impervious Surface Area Breakdown

Impact Review: Impervious Surface Area Breakdown	Area (sq. ft.)	
Type of Surface	Existing	Proposed
Total impervious surface	934	5,192
Change in Total impervious surface	4,258	
Connected Impervious Surfaces		
Rooftop area that drains to impervious surface and runoff reaches city street or property boundary	0	0
Driveway area that drains directly to city street or property boundary	0	0
Walkway/Patio/Deck/other area that drains to impervious surface and runoff reaches city street or property boundary	0	0
Total connected impervious	0	0
Change in total connected impervious (proposed – existing)	0	
Disconnected Impervious Surfaces		
Rooftop area that drains to pervious surface where runoff soaks in	0	2,512
Driveway area that drains to pervious surface where runoff soaks in before reaching the city street or the property boundary (or a driveway made of pervious material)	934	2,265
Walkway/Patio/Deck/Other area that drains to pervious surface where runoff soaks in before reaching the city street or the property boundary (or is made of pervious material)	0	415
Total disconnected impervious	934	5,192

Impervious surfaces are areas that prevent the infiltration of water into the ground and shall include, but not be limited to, roofs, patios, garages, storage sheds and similar structures. Impervious surfaces also include compacted dirt and gravel surfaces. Decks that allow water to seep through onto pervious surfaces can be considered disconnected.

Pervious surfaces are areas such as grass, clean gravel, pervious concrete, permeable pavers that allow water to infiltrate rather than runoff.

Change in total disconnected impervious (proposed – existing)**4,258****Mitigation Review:**

The Burlington Stormwater Program reserves the right to request that specific measures or a specified volume of stormwater runoff be mitigated based on the overall impact of connected impervious on the site.

Is this is a new home (including tear down and replacement)? Yes ☒ No ☐

If **yes**, complete information below and contact mmoir@ci.burlington.vt.us or 540-1748 for a required technical assistance meeting.

If **no**, please feel free to contact the Burlington Stormwater Program for additional technical assistance, but at a minimum, you must complete the information requested below:

How will increased stormwater runoff from any increase in impervious surface be managed to the maximum extent practicable? For information regarding these and other stormwater management practices visit:

http://www.vtwaterquality.org/stormwater/htm/sw_LID.htm

- ☐ Removal of other impervious surface balances out addition
 - ☐ Installation of green roof will minimize runoff from rooftop
 - ☒ Runoff from rooftops will be directed to pervious green space
 - ☐ Runoff from rooftops will be directed to rain barrels* for storage and gradual release or use
 - ☐ Runoff from impervious surfaces will be directed to a rain garden*
 - ☐ Driveway is/will be permeable (permeable pavers, grass pavers, pervious gravel driveway)
 - ☐ Walkways is/will be permeable (permeable pavers, grass pavers, pervious gravel driveway)
 - ☐ Driveway impervious surface and connectivity has been/will be minimized with use of strip driveway (2 strips of asphalt with grass strip down middle)
 - ☒ Connected Impervious surface has been minimized (please explain)
- Runoff from driveways will sheet flow over lawn and vegetated areas prior to reaching Lake Champlain
- ☐ Other, please attach explanation

OWNER AGREEMENT

I attest that the information above is correct to the best of my understanding and that I will install the measures I have indicated or manage the runoff in a way to minimize the amount of stormwater runoff from my property. I understand that the City has the right to inspect my property to ensure that the measures have been installed and that failure to abide by the measures above may constitute a violation of Chapter 26 and my authorization to discharge stormwater to the City Stormwater conveyance system.

By:

Al Senecal
Printed Name


Signature

3-31-15

Date

Plan Approved by: Megan J. Moir, CPESC, CPSWQ

Date: _____

* Visit www.ci.burlington.vt.us/stormwater/getinvolved for stormwater workshops and/or rebate opportunities that may assist in the installation/purchase of these stormwater management measures.

Burlington Department of Public Works

Stormwater Program

234 Penny Lane

Burlington, VT 05401

Mail: P.O. Box 878, Burlington, VT 05402

PH: 802.540.1748 Fax 802.864.8233 Email: mmoir@burlingtonvt.gov



Stormwater Management Plan Definitions

Stormwater Questionnaire Definitions:

Disconnected impervious = runoff from this type of impervious (paved, unpaved parking, roof top, driveway, walkway) that drains to a vegetated surface (pervious) and has a reasonable chance of soaking in before it gets to the property line.

- examples
 - runoff that comes off a drip line and lands on grassed surface or planting bed
 - runoff that goes to a gutter, but where the downspout drains to a vegetated area
 - runoff that goes into a rain barrel where the rain barrel is attached to a hose that is used on pervious
 - a driveway or walkway which is graded in such a way that the runoff goes off the side onto grassy area

Connected impervious = runoff from this type of impervious (paved, unpaved parking, rooftop, driveway, walkway) that drains to another impervious surface and therefore DOES NOT have a reasonable chance of soaking in before it gets to the property line.

- examples
 - runoff that comes off a drip line and lands on paved surface which drains to the roadway or City sidewalk or another property
 - runoff that goes to a gutter, but where the downspout drains to the driveway or parking area
 - a driveway or walkway which is graded (sloped) towards the City Road or sidewalk

* Visit www.ci.burlington.vt.us/stormwater/getinvolved for stormwater workshops and/or rebate opportunities that may assist in the installation/purchase of these stormwater management measures.

Scott Gustin

From: Amie Schiller <aschill1@uvm.edu>
Sent: Friday, March 06, 2015 2:42 PM
To: Scott Gustin
Cc: Jen Francis; David E. White
Subject: Re: Burlington: Vermont Village Greens Initiative

Hi Mr. Gustin and Ms. Francis!

Thanks again for your quick response! Optimally, I'd love the opportunity to meet with both of you, or all three of you at once- if that's possible? This might be a good first step, allowing the three of us to decide whether or not this is a good article to be placed on the agenda for April 6th? Does that make sense?

Ms. Francis- I am referring to our beautiful City Hall Park! The other 8 locations are: Bristol's Village Green, Middlebury's Village Park, New Haven's Village Park, Burlington's City Hall Park, Jericho Center's Town Green, Shelburne's Village Green, Barre's Vermont City Park, Barre's Currier Park, and Waterbury's Rusty Parker Memorial Park!

My intent of this project overall, is to raise awareness of these greens in our towns. They're a really important part of our colonial history dating back to Colonel Benning Wentworth's Land Grants, which created the townships in the past- and should persist heartily into the future!

I really look forward to talking with you both after I get back from my trip! Please keep in touch about this meeting time! I hope we can work something out!

Amie M. Schiller
Rubenstein Steward
Rubenstein School of Environment and Natural Resources
B.S. Wildlife and Fisheries Biology
University of Vermont, 2015
<http://www.linkedin.com/in/amiemschiller>

On Feb 26, 2015, at 9:34 AM, Scott Gustin <SGustin@burlingtonvt.gov> wrote:

Hi Amie,

If you're looking to meet with the Conservation Board, they meet the 1st Monday of every month at 5:30 PM in City Hall. They meet again this coming Monday, March 2. They always have a public comment period on their agenda. If you'd like a more extensive discussion with the Board, I could place your project as a specific agenda item for their April 6 meeting. If those times don't work, I'm happy to meet with you one of the days you've noted below.

Scott

Scott Gustin, AICP, CFM
Senior Planner
Dept. of Planning & Zoning
149 Church Street

Burlington, VT 05401
(802) 865-7189

From: Jen Francis
Sent: Wednesday, February 25, 2015 12:26 PM
To: 'Amie M Schiller'
Cc: Scott Gustin; David E. White
Subject: RE: Burlington: Vermont Village Greens Initiative

Hi Amie,

Sounds like an interesting project! By village green are you referring to Burlington's City Hall Park? Want to ensure we are thinking about the same location... Can you share your other 8 test pilot site locations? In terms of meeting availability, I can generally make Tuesdays and Wednesdays after 1:45 work, but not Thursdays.

Best,

<image001.png>

Jen Francis, CPRP, LEED AP

Parks Comprehensive Planner
Burlington Parks, Recreation & Waterfront
645 Pine Street
Burlington, VT 05401
(802) 864-0123

<image002.jpg><image003.jpg><image004.jpg>
@BTVparks

-----Original Message-----

From: Amie M Schiller [<mailto:aschill1@uvm.edu>]
Sent: Wednesday, February 25, 2015 11:53 AM
To: Jen Francis; Scott Gustin; David E. White
Subject: Burlington: Vermont Village Greens Initiative

Dear Burlington Parks Planner, Conservation Commission Members, and Director of Planning and Zoning,

My name is Amie Schiller and I am senior student at the University of Vermont. I am working on the Vermont Village Green Initiative with the Vermont Department of Housing and Community Development and the Vermont Urban & Community Forestry Program. The Village Green Initiative, researches, documents, and promotes the cultural, environmental, and historical importance of Vermont's village greens across Vermont. Since the fall of 2013, I have been coordinating students in community service-learning courses to collect ethnographic, historic, and environmental data, from nine "pilot study" village greens, and then compiling a comprehensive report detailing the benefits of the village greens to their respective communities.

The Initiative has also identified all of Vermont's 148 village greens across the state, and can be viewed on the interactive map on the Agency of Natural Resources Natural Resource Atlas and a report with seven Vermont village green case studies in central Vermont.

You are receiving this email because your village green in Burlington was one of our pilot sites. As my senior capstone project this semester, I need to meet with community leaders in your town to share the initial findings derived from the report, as well as identify additional resources that may help with future planning and management of each town's village greens into the future. In addition, I will be co-presenting a webinar in April with Richard Amore and Elise Schadler on the Vermont Village Greens Initiative to share the project with the general public.

I'd love to personally meet with you, or a group of your community leaders (conservation commission, planning commission, or other group) in your offices the Tuesday, Wednesday, or Thursday afternoon (after 1:45) of March 16th, or the same time during the week of March 23rd, or the same time during the week of March 30th. Additionally if you feel like you are not the correct community leader to address this project, I'd appreciate it if you could send me the names and contact information of people you think I should be in communication with.

Thank you for your time, and I hope to meet with you soon.

Sincerely,

Amie M. Schiller
Vermont Village Greens Initiative Intern

Supporting Documents and webpages

ANR's Urban and Community Forestry Website:
<http://www.vtcommunityforestry.org/celebrate/village-greens>

DHCD's Village Green Initiative Website:
http://accd.vermont.gov/strong_communities/opportunities/revitalization/village_greens/

Village Green Comprehensive Report:
http://www.vtcommunityforestry.org/sites/default/files/pictures/vermont_village_greens_report.pdf

Village Green Maps of all 148 Greens:
http://accd.vermont.gov/strong_communities/opportunities/revitalization/village_greens/maps#village_green_maps

MEMORANDUM

To: Michael Alvanos
From: Jeffrey Severson, Consulting Ecologist
Date: April 1, 2015
Re: Wetland Evaluation for the Pine and Flynn Project

A small wetland is located on property owned by the City of Burlington to the north of the Pine and Flynn Project area. The wetland occupies a narrow swale along the margin toe of slope of the steep bank on the south side of Englesby Brook. The western end of the swale drains towards an eroded channel created by stormwater discharge routed towards Englesby Brook from an existing storm outfall. The location and configuration of the wetland nearest the Project location is shown on the Site Plan (Sheet S1) for the Pine and Flynn Project prepared by Summit Engineering.

The wetland boundaries nearest the project site were delineated on July 8, 2011 following the methodology outlined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands and supplemental regional guidance issued by the U.S. Army Corps of Engineers. The wetland delineation was reviewed and approved by Julie Foley, District Wetlands Ecologist for the Vermont Department of Environmental Conservation, on July 12, 2011.

Wetlands in the Englesby Brook floodplain have been historically impacted and compromised over time by a variety of human activities and disturbances. The floodplain in the vicinity of the Project area has been fragmented and impacted by the construction of several man-made features, including Pine Street to the west, a recent stormwater retention basin to the east, and a stormwater outfall and associated discharge. The narrow wetland "sliver" in question comprises a relatively small percentage of the Englesby Brook floodplain. The Englesby Floodplain is characterized by thick sedimentary deposits upgradient from the Pine Street culvert, through which Englesby Brook has subsequently down cut.

Wetland functions were evaluated following the criteria outlined in the Vermont Wetland Rules. The functional criteria are outlined on the attached copy of the Vermont Wetland Evaluation Form. These functions include:

Water Storage for Flood Water and Storm Runoff
Surface and Ground Water Protection
Fish Habitat
Wildlife Habitat

Exemplary Wetland Natural Community
Rare, Threatened, and Endangered Species Habitat
Education and Research in Natural Science
Recreational Value and Economic Benefits
Open Space and Aesthetics
Erosion Control through Binding and Stabilizing the Soil.

- Water Storage for Flood Water and Storm Runoff: The wetland is located in a relatively shallow, low volume swale that does not provide significant water storage capacity. The wetland drains westward towards an eroded channel created by stormwater discharge routed towards Englesby Brook from an existing storm outfall. The project will not alter the wetland's limited water storage capacity.
- Surface and Ground Water Protection: The wetland is not significant for surface water quality protection due to its relatively small size and volume, and its compromised outlet adjacent to an existing storm outfall. The bulk of surface water quality protection along this section of Englesby Brook is provided by the stormwater detention basin constructed upgradient from the wetland and project area.
- Fish Habitat : The wetland is not characterized by permanent standing water and does not provide fish habitat.
- Wildlife Habitat: The Englesby Brook corridor segment where the wetland is located has been fragmented by historical human activity and disturbance and does not provide significant habitat for any wetland-dependent wildlife species.
- Exemplary Wetland Natural Community: The wetland is not an example of an exemplary wetland natural community.
- Rare, Threatened, and Endangered Species Habitat: The wetland does not provide habitat for any known RT&E species.
- Education and Research in Natural Science: The wetland is located adjacent to Champlain Elementary School, however, it has no known history of use for education or research.
- Recreational Value and Economic Benefits: There is no evidence that the wetland is used for recreation and it provides no known economic benefits.
- Open Space and Aesthetics: The wetland is not readily observable by the public and is visually indistinguishable from the adjacent upland section of the Englesby floodplain.
- Erosion Control through Binding and Stabilizing the Soil: The wetland sliver is sparsely vegetated, with relatively few plant roots to bind and stabilize the soil. The wetland sliver is located along the floodplain margin and does not directly abut the stream.

The wetland was not found to be significant for any of the 10 wetland functions outlined in the Vermont Wetland Rules. Julie Foley, District Wetlands Ecologist for VT DEC, confirmed that the small floodplain wetlands proximal to the Project location are Class Three wetlands that are not significant for any of the wetland functions outlined in the Vermont Wetland Rules.

The project will not have an adverse impact on the wetland or any significant wetland functions:

1. The wetland is not significant for any wetland functions.
2. The project avoids the wetland entirely.
3. Work within the wooded corridor along Englesby Brook is restricted to the construction of a stormwater pipe and outfall designed to minimize the potential for runoff-related erosion.

VERMONT WETLAND EVALUATION FORM

Project Name: _____ Project #: _____

Date: _____ Investigator: _____

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff <input style="float: right;" type="checkbox"/>	6. Rare, Threatened, and Endangered Species Habitat <input style="float: right;" type="checkbox"/>
2. Surface & Ground Water Protection <input style="float: right;" type="checkbox"/>	7. Education and Research in Natural Sciences <input style="float: right;" type="checkbox"/>
3. Fish Habitat <input style="float: right;" type="checkbox"/>	8. Recreational Value and Economic Benefits <input style="float: right;" type="checkbox"/>
4. Wildlife Habitat <input style="float: right;" type="checkbox"/>	9. Open Space and Aesthetics <input style="float: right;" type="checkbox"/>
5. Exemplary Wetland Natural Community <input style="float: right;" type="checkbox"/>	10. Erosion Control through Binding and Stabilizing the Soil <input style="float: right;" type="checkbox"/>

Note:

- o **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- o **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- o **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- o **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- o **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- o **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - o The wetland is mapped on the VSWI map
 - o The wetland is contiguous to a VSWI mapped wetland
 - o The wetland meets the presumptions of significance under Section 4.6
 - o The wetland has a preliminary determination that it is Class II

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1. Water Storage for Flood Water and Storm Runoff

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Constricted outlet or no outlet and an unconstricted inlet.
- ☐ Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- ☐ If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- ☐ Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- ☐ Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- ☐ Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
- ☐ Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
- ☐ Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
- ☐ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- ☐ History of downstream flood damage to public or private property.
- ☐ Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - ☐ 1. Developed public or private property.
 - ☐ 2. Stream banks susceptible to scouring and erosion.
 - ☐ 3. Important habitat for aquatic life.
- ☐ The wetland is large in size and naturally vegetated.

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- ☐ Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - ☐ 1. A large amount of impervious surface in urbanized areas.
 - ☐ 2. Relatively impervious soils.
 - ☐ 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Constricted or no outlets.
 - ☐ Low water velocity through dense, persistent vegetation.
 - ☐ Hydroperiod permanently flooded or saturated.
 - ☐ Wetlands in depositional environments with persistent vegetation wider than 20 feet.
 - ☐ Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
 - ☐ Presence of seeps or springs.
 - ☐ Wetland contains a high amount of microtopography that helps slow and filter surface water.
 - ☐ Position in the landscape indicates the wetland is a headwaters area.
 - ☐ Wetland is adjacent to surface waters.
 - ☐ Wetland recharges a drinking water source.
 - ☐ Water sampling indicates removal of pollutants or nutrients.
 - ☐ Water sampling indicates retention of sediments or organic matter.
 - ☐ Fine mineral soils and alkalinity not low.
 - ☐ The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- ☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - ☐ Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- ☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- ☐ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- ☐ Current use in the wetland results in disturbance that compromises this function.
- ☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - ☐ The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - ☐ The wetland provides flows to Class A surface waters.
 - ☐ The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - ☐ The wetland is large in size and naturally vegetated.

3. Fish Habitat

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - ☐ Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - ☐ Documented or professionally judged spawning habitat for northern pike.
 - ☐ Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - ☐ The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - ☐ Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - ☐ Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - ☐ Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - ☐ Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - ☐ Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - ☐ Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - ☐ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - ☐ Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - ☐ 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- ☐ Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- ☐ Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- ☐ Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- ☐ Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - ☐ 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - ☐ 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - ☐ 3. Located adjacent to a lake, pond, river or stream;
 - ☐ 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - ☐ 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - ☐ 6. One of the following:
 - ☐ i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ☐ ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - ☐ iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- ☐ Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- ☐ Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- ☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - ☐ The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- ☐ The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- ☐ The current use in the wetland results in frequent cutting, mowing or other disturbance.
- ☐ The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- ☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - ☐ The wetland complex is large in size and high in quality.
 - ☐ The habitat has the potential to support several species based on the assessment above.
 - ☐ Wetland is associated with an important wildlife corridor.
 - ☐ The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- ☐ Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- ☐ Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - ☐ Deep peat accumulation reflecting a long history of wetland formation;
 - ☐ Forested wetlands displaying very old trees and other old growth characteristics;
 - ☐ A wetland natural community that is at the edge of the normal range for that type;

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- ☐ A wetland mosaic containing examples of several to many wetland community types; or
- ☐ A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - ☐ There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - ☐ There is credible documentation that threatened or endangered species have been present in past 10 years;
 - ☐ There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - ☐ There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- ☐ Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - ☐ Owned by or leased to a public entity dedicated to education or research.
 - ☐ History of use for education or research.
 - ☐ Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- ☐ Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - ☐ Used for, or contributes to, recreational activities.
 - ☐ Provides economic benefits.
 - ☐ Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - ☐ Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Can be readily observed by the public; and
 - ☐ Possesses special or unique aesthetic qualities; or
 - ☐ Has prominence as a distinct feature in the surrounding landscape;
 - ☐ Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- ☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - ☐ Erosive forces such as wave or current energy are present and any of the following are present as well:
 - ☐ Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - ☐ Good interspersion of persistent emergent vegetation and water along course of water flow.
 - ☐ Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- ☐ Lake fetch and waves
- ☐ High current velocities
- ☐ Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- ☐ The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.

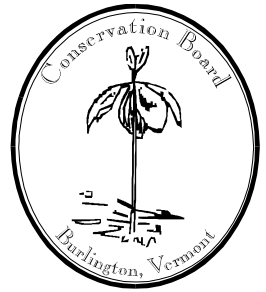
☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- ☐ The stream contains high sinuosity.
- ☐ Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

Burlington Conservation Board

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Will Flender, Vice Chair
Scott Mapes
Don Meals
Jeff Severson
Miles Waite
Damon Lane
Zoe Richards
Stephanie Young



Conservation Board Meeting Minutes

Monday, March 2, 2015 – 5:30 pm

Planning & Zoning Conference Room – City Hall Lower Level
149 Church Street

Attendance

- **Board Members:** Don Meals (DM), Zoe Richards (ZR), Miles Waite (MW), Damon Lane (DL), Will Flender (WF), Jeff Severson (JS), Scott Mapes (SM), Matt Moore (MM), Stephanie Young (SY)
- **Absent:** None.
- **Public:** Craig Smith (Rock Point), Brad Rabinowitz, Scott Homested, Nicole Senecal (451 & 465 Appletree Point Rd), Michael Alvanos, Brandy Alvanos, John Rooney, Doug Hewitt (316-322 Flynn Ave)
- **Staff:** Scott Gustin (Planning & Zoning), Dan Cahill, Jesse Bridges (Parks & Recreation)

MM, Chair, called the meeting to order at 5:30 p.m.

Minutes of March 2, 2015

DM noted that he was present at the meeting but not noted as such.

A MOTION was made by MM and SECONDED by WF:

Accept the minutes of March 2, 2015 as corrected.

Vote: 4-0-4

Board Comment

DM noted his driveway estimate for pervious grass with Hollywood strips was about \$15K. He hopes to get 4 other bids. DL said deep excavation will be needed to remove the compaction.

(MW appeared at 5:33 PM)

Public Comment

None.

Open Space Subcommittee

Craig Smith (Rock Point) appeared for this item.

MM, is executive session needed for the Rock Point item? JS stated it should be used.

A MOTION was made by WF and SECONDED by DM:

Enter into executive session.

Vote: 9-0-0

A MOTION was made by DM and SECONDED by WF:

Exit executive session.

Vote: 9-0-0

A MOTION was made by MW and SECONDED by JS:

The programs and services of the Dept. of Planning and Zoning are accessible to people with disabilities.
For accessibility information call 865-7188 (865-7142 TTY).

Allow expenditure of Conservation Legacy Fund monies for the appraisal of the property at Rock Point.

Discussion of legacy fund acquisition versus other expenses. Broad discussion needed. Not incorporated on the fly in this motion.

Vote: 9-0-0

Jesse Bridges updated the BCB relative to the former Burlington College land on North Avenue.

Mr. Bridges stated that since the last BCB meeting, the partners have convened and have hired Sasaki Associates to manage the public outreach process. It will involve an initial public meeting with promotion beforehand. They are looking at meeting locations proximal to the property. In addition to the public process with Sasaki, BCB and Parks & Rec will continue to provide opportunities for public comment. Big picture items/themes will be the focus of the initial Sasaki effort. A framework will be developed from this and presented in a second round of public outreach for further refinement and details. Hoping to kick off the process soon. He will let the BCB know dates when established. He'll be coming back to BCB with a request for BCLF money (~ 20K) relative to this property. This property is a long standing priority of the city's.

MW, the city's \$20K is part of an overall \$60K planning effort? Mr. Bridges, yes. He'll share the proposal once ready. MM, what can we expect the BCB's role to be? Mr. Bridges, there will be a city working group. WF has been the BCB's contact. Parks & Rec Dept. and Commission and CEDO have been involved. It's a dual role for BCB – for planning & acquisition and for development review. Mr. Bridges requested keeping the property on the BCB's agenda for the next few months. He wants multiple opportunities for people to provide public input. Direct neighborhood outreach as well. MM wants to have a clear understanding of the BCB's role and an ability to convey that to the public. SM, who is BCB's designated member? WF stated that he is. MM said he recused early on due to Housing VT's participation in the development of the property.

Project Review

1. 15-0922CA/MA; 451 Appletree Point Rd (WRL, Ward 4N) AI Senecal

Demo existing structures, construct new duplex and associated site improvements

2. 15-0923CA/MA; 465 Appletree Point Rd (WRL, Ward 4N) AI Senecal

Construct new duplex and associated site improvements

Brad Rabinowitz, Nicole Senecal, and Scott Homested appeared.

SG suggested reviewing these two applications together and separating them only if a problem arises with one and not the other.

JS stated that he's worked for the property owner in the past but is not involved with these two applications.

Scott Homested overviewed the project. There is presently a camp and boathouse on one of the properties. They will be demolished. Two duplexes are proposed – essentially like single family homes with accessory apartments. They've received their state WWP's. They will connect to municipal sewer. EPSC and stormwater questionnaires have been submitted to the city's stormwater staff. Runoff will travel across pervious ground surface.

Regarding the state shoreland protection program, Mr. Homested has worked with Kevin Burke at VT DEC. He said that Mr. Burke thinks delegation of the state program to the city will happen very soon. He is holding onto the pending application depending on the delegation to the city. If need be, he'll seek the state approval. SG noted the status of the pending delegation agreement and related changes to the city's regulations. Basically, DEC wants the city to change its lakeshore buffer base to 95.5' rather than

the present 100' elevation, and DEC wants the purpose statement of the buffer zone to more inclusively refer to preservation of natural characteristics like the duff layer and under story. SM said the city and state evaluations are very similar. He'd encourage proceeding with the state review. You don't want to be left with the process taking longer than it needs to. Mr. Homestead said that the narrow width of the lots entails more of a qualitative performance analysis of the proposed development.

DM noted two new areas of boulder walls. Mr. Homestead said the two areas are eroded presently – one is where the existing camp is. DM, what is the rest of the shoreline like now? Is there any sheet piling? Mr. Homestead, no. SM, is fill needed to get these elevations? Mr. Homestead, no. BR, the site is pretty flat.

A MOTION was made by WF and SECONDED by DM:

Recommend approval of both applications.

Vote: 9-0-0

3. 15-0809CA/MA; 316-322 Flynn Ave (NMU, Ward 5) G & C Properties

Remove existing deli building and replace with new mixed use (deli, office, & 9 residential units) building and associated site improvements

Michael Alvanos, Brandy Alvanos, John Rooney, and Doug Hewitt appeared.

JS recused from Board participation on this item. He has been retained by the applicant as a wetlands consultant.

SG noted this item is a major impact review. Review will touch on Englesby brook corridor, wetlands, and stormwater.

Michael Alvanos overviewed the project. The site currently contains a deli, bottle return, and 3-unit building. The present building does not address the future needs of the property. Prior sketch plans were larger, too large for the property. Nine residential and two commercial units are in the present proposal.

Doug Hewitt addressed impacts to Englesby. He has worked with Megan Moir relative to stormwater and EPSC. Moving forward with those. For protection of Englesby, one of the key features is that overall impervious area will be reduced. New building runoff will be attenuated through a detention structure prior to discharge. A bio-retention structure will attenuate parking lot runoff prior to discharge. The site was modeled as if 50% of impervious surface was removed. It will entail substantial benefit to Englesby. He pointed out a nearby wetland. It was determined to be of low value by VT DEC. It is upstream of the development site. Only the buffer zone reaches into the development site.

MW, where is the northern property line? Mr. Hewitt noted the property line in the center of the brook. It's seen as a class 3 wetland by VT DEC, but the city has a 100' buffer zone. Mr. Alvanos reiterated that there is not presently any stormwater management onsite. The proposal will be an improvement for Englesby.

SM, will all roof runoff go into the detention structure? Mr. Hewitt, yes. SM, the site plan notes a pad at the NE corner of the building. Mr. Hewitt, that's a footing drain. SM suggested a level spreader outlet for the detention structure. Without one, there may be some erosion. Mr. Hewitt said he'd consider doing so.

DM asked about the wetlands. There was a statement that the wetlands had never been used for educational purposes. His daughter had been involved in educational use of the wetland. JS, much of this area is a sediment-clogged floodplain. The brook has downcut through the sediment here. What may have been formerly a wetland has largely been lost. JS said it's on the wetlands map as a class 2. He and Julie Foley found that it did not have any significant functions. That's why no state wetlands permit is needed. He noted that there are other wetlands further away from this development site.

WF, what about bike parking? Mr. Alvanos noted the bike parking tucked under the front overhang – 4 or 5 bikes. Within the building, covered bike parking will be provided for the residents. There will be at least 9 spaces inside for the 9 residential units.

MM, what about vehicle parking? Minimum parking? Is a waiver needed? Mr. Alvanos said that 24 spaces are proposed. Twelve are needed for the residential units. The rest are for the deli and office. He noted that there will be opportunity for shared parking among the uses. Mr. Alvanos noted that a new green belt will be installed along Pine Street. SM noted the green square between the parking area and the patio may be quickly compacted by pedestrian traffic. Mr. Alvanos noted that the DAB had the same concern. A walkway will be installed.

MW recommended against deciduous trees along the proposed bioretention structure. Mr. Hewitt said the plantings here will be revised. MW said to expect the unexpected when you start digging. You may not be able to use it as backfill.

A MOTION was made by MW and SECONDED by DL:

Recommend approval as presented with recommendation for utilization of a level spreader for stormwater discharge.

Vote: 7-0-1

Update & Discussion

1. Vermont Village Green Initiative: Burlington

Discussion with UVM senior Amie M Schiller

(WF left at 7:00 PM)

Amie Schiller handed out information relative to VT Village Greens and City Hall Park. An assessment of trees in the park, their value, and ecosystem services was provided and explained by Ms. Schiller. The i-Tree summary provided in the hand-out noted that the trees sequester 303,533 lbs of carbon annually.

SM noted that she may also want to look at the tree canopy relative to its stormwater capture. Ms. Schiller said that may be accounted for in the i-Tree assessment. She went on to address the funding directory assembled as part of this village green assessment.

MW asked if the schematics were done by a UVM class. Ms. Schiller, yes. MW, did any of them think the fountain might be removed? Ms. Schiller, they all focused on building around the fountain.

(SM left at 7:15 PM)

DM, did you know that city hall park was originally round? Ms. Shiller, no. JS, said he was struck at the economic value of the services provided. DM, any discussion of City Hall Park needs to account for the farmers' market.

2. Goals for 2015

MW, assist transferring the wastewater permit process to the City of Burlington.

DM, review articles of BCLF and how funding may be expended.

DL, discussion of the energy code. Who enforces/administers it? VT has an up-to-date energy code.

The large projects get assistance from BED. The smaller ones don't. MM said that in his experience, a lot is built to, or above, code.

DM, shoreland protection delegation.

SY, staying involved in the former Burlington College lands outreach, planning, conservation, and development process.

MW, relative to urban fill, there is pending state legislation to make disposal easier. Stay abreast of it.

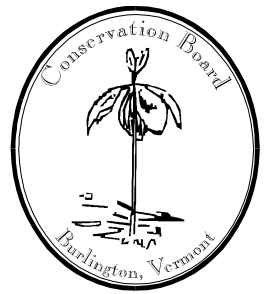
Adjournment

The meeting adjourned at 7:24 PM

Burlington Conservation Board Open Space Subcommittee

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Matt Moore
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Open Space Subcommittee Meeting Minutes

Monday, April 6, 2015 – 4:30 pm
Planning & Zoning Conference Room – City Hall Lower Level
149 Church Street

Attendance

- **Subcommittee Members:** Will Flender (WF), Zoe Richards (ZR), Jeff Severson (JS), Matt Moore (MM)
- **Absent:** None
- **Public:** None
- **Staff:** Scott Gustin (Planning & Zoning) Dan Cahill (Parks & Recreation)

Public Comment

None

Acquisition Updates

The subcommittee entered executive session at 4:40 PM.

The subcommittee exited executive session at 5:10 PM.

Dan Cahill provided a stewardship update for the subcommittee.

Adjournment

5:30 PM.