

**CITY OF LEWISTON**  
**PLANNING BOARD MEETING**  
Monday, February 26, 2018 – 5:30 P.M.  
City Council Chambers – First Floor  
Lewiston City Building  
27 Pine Street, Lewiston, ME

## **AGENDA**

**I. ROLL CALL**

**II. ADJUSTMENTS TO THE AGENDA**

**III. CORRESPONDENCE**

**IV. PUBLIC HEARINGS:**

An application submitted by Davis Land Surveying, LLC on behalf of Louis W. Ouellette for the construction of a new 6-unit apartment building for the elderly at 153 East Avenue.

**V. OTHER BUSINESS:**

a) Any other business Planning Board Members may have relating to the duties of the Lewiston Planning Board.

**VI. READING OF THE MINUTES:** Motion to adopt the February 12, 2018 draft minutes

**VII. ADJOURNMENT**



## CITY OF LEWISTON

### Department of Planning & Code Enforcement

**TO: Planning Board**  
**FROM: David Hediger, City Planner**  
**DATE: February 22, 2018**  
**RE: February 26, 2018 Agenda Item IV(a)**

**An application submitted by Davis Land Surveying, LLC on behalf of Louis W. Ouellette for the construction of a new six unit apartment building for the elderly at 153 East Avenue.**

Davis Land Surveying, LLC has submitted an application on behalf of Louis W. Ouellette for the construction of a six unit apartment building for the elderly at 153 East Avenue. This vacant property of 19,906 square feet (0.46 acres) consists of an existing paved driveway. A residential structure on the property was demolished in 2010. The site contains no severe slopes or natural resources. The property is located in the Office Residential (OR) district in which multi-family dwelling are allowed as a permitted use. Therefore, review of this project does not require any zoning map or code amendments with review limited to the Planning Board. The project consists of a single structure with six dwelling units for residents 55 years of age and older. The building will be two stories with a 5-12 pitched roof, the structure not to exceed 35' in height. There will be two units plus indoor parking for six vehicles on the first floor. There will be four units on the second floor

This project is subject to the development review criteria of Article XIII, Section 4. The project is technically a subdivision, too, consisting of three or more residential units and therefore, is also subject to Article XIII, Section 5. The application and plans address the applicable criteria of each section. Staff notes the following with respect to the application:

- 1) The OR district requires a minimum net lot area of 3,000 square feet of land per dwelling unit. Given the lot size of 19,906 square feet, no more than the six units proposed may be developed on the site.
- 2) Access to the site will utilize and improve upon the existing driveway. The applicant has provided a sight distance analysis from a professional engineer indicating this location meets city and MDOT requirement for available sight distance based upon the posted speed limit of 30 miles-per-hour.
- 3) The code requires 0.5 spaces per unit for elderly housing. Therefore, this project requires at least three parking spaces. The site will provide a total of nine parking spaces. Six of those spaces will be located in garages within the multi-family structure; three spaces will be provided outside.
- 4) The applicant has designed the site so that no additional drainage enters abutting properties. Any additional stormwater from the site has been designed to drain to a large swale in the front of the property that will outlet into a storm drain connected to the existing stormwater line on East Avenue. The proposed improvements have been reviewed the satisfaction of city staff. Staff is recommending a note be added to the cover sheet that prior to any certificate of occupancy being issued that evidence of a final inspection of the stormwater

system be provided to the city by the designing engineer along with a written statement indicating that the stormwater system and all site improvements have been completed in accordance with the approved plans.

- 5) Lighting has been shown on the plan. While a detail is not required, the code requires that lighting must be shielded or full cut off fixtures. Staff recommends this be noted on the plan.
- 6) To meet buffering requirements, the applicant is proposing a 6' stockade fence be erected along the northern and southern property lines abutting 6 and 8 Boston Avenue and 157 East Avenue. The property to the east at 209 Webster and south at 151 East Avenue are owned by the applicant and will not be buffered. The plans also show a 10' wide "no cut buffer zone" along 6 and 8 Boston Avenue. The OR district requires a 10' yard (i.e. vegetated area) along side and rear property lines; however, does not require that it not be cut or maintained. It appears the applicant is looking to maintain as much of the existing woody vegetation along this property line as possible for the abutters and his residents.
- 7) There are no natural resources (i.e. wetlands or streams) on this property and therefore, no proposed alterations requiring DEP approval.
- 8) All applicable space and bulk requirements of the OR district have been met and satisfied.
- 9) The project has been referenced as elderly housing. The applicant has added a note to the cover sheet that this development is intended for 55+ elderly housing and that any change of use of the property will require city approval. Staff requested this note in-part to address any change in occupancy of the dwelling units, for which the code may require additional parking and revisions to drainage improvements.
- 10) The application consists of two site plans: one included as part of the plan set by Terradyn Consultants, LLC and the other by Davis Land Surveying, LLC. They are nearly identical with the exception that the Davis plan has been prepared for recording at the registry of deeds. Staff recommends the Davis plan (which is the subdivision plan) be amended to include the above referenced note indicating that this development is intended for 55+ elderly housing, as this is the plan to be recorded at the registry of deeds.
- 11) All other review comments from city staff have been addressed to staff's satisfaction with revisions provided by the applicant.

City staff has no additional comments at this time. Staff recommends approval of the proposed project, with the following conditions:

1. A note is added to the cover sheet that prior to any certificate of occupancy being issued that evidence of a final inspection of the stormwater system be provided to the city by the designing engineer along with a written statement indicating that the stormwater system and all site improvements have been completed in accordance with the approved plans.
2. The Davis Land Surveying, LLC site plan be amended to note that this development is intended for 55+ elderly housing and that any change of use of the property will require city approval
3. That a note or detail be provided indicating any site lighting must be shielded or full cut off fixtures.

### **ACTION NECESSARY**

Make a motion that the application submitted by Davis Land Surveying, LLC on behalf of Louis W. Ouellette for the construction of a new 6-unit apartment building for the

elderly at 153 East Avenue meets all of the necessary criteria contained in the Zoning and Land Use Code, including, but not limited to Article XIII, Section 4 and Section 5 of the Zoning and Land Use Code, and that approval be granted (including, if any, specific conditions raised by the Planning Board or staff).

**6 UNIT ELDERLY HOUSING PROJECT  
SUBDIVISION APPLICATION**

**PREPARED FOR:  
Louis Ouellette  
P.O. Box 607  
Sabattus, Maine 04280**

**Regarding property located on**

**153 East Avenue  
Lewiston, Maine 04240**

Prepared by:  
**DAVID LAND SURVEYING**

Stuart A. Davis  
Professional Land Surveyor #2208  
64 Old County Road  
Oxford, Maine 04270

February 26, 2018

**Table of Contents:**

Exhibit 1	Application, Check List & Development Standards
Exhibit 2	Authorization Letter
Exhibit 3	Tax Map 175
Exhibit 4	Deed Book 7739, Page 91
Exhibit 5	Sight Distance Report
Exhibit 6	Abutters List
Exhibit 7	Flood Map
Exhibit 8	Topo Map

**Project Plans:**

Exhibit A	Existing Condition Plan
Exhibit B	Proposed Improvements Plan

**Davis Land Surveying, LLC**  
64 Old County Road  
Oxford, Maine 04270

(207)345-9991 office  
(207) 345-9996 fax  
(207) 240-9949 cell  
Email: [davissurveying@yahoo.com](mailto:davissurveying@yahoo.com)  
[www.davislandsurveying.net](http://www.davislandsurveying.net)

---

January 2, 2017

City of Lewiston  
Planning Board  
27 Pine Street  
Lewiston, Maine 04240

RE: 6 Unit Elderly Housing Project

Dear Planning Board Members,

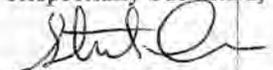
Enclosed please find an Application (Exhibit 1) with exhibits on behalf of Louis W. Ouellette regarding property at 153 East Avenue in Lewiston, Maine. The project parcel of land containing 19,906 sq.ft. or 0.46 acres as described in Deed Book 7739, Page 91 (Exhibit 3) and being shown as Lot 10 on Tax Map 175 (Exhibit 2). The property lies in the Office Residential Zone per the City of Lewiston Land Use Code. The property is also being shown on a plan of a "Existing Conditions - Site Plan" for Louise W. Ouellette" dated September 17, 2017 (Exhibit A) and also a plan of "Proposed Improvements - Site Plan" for Louis W. Ouellette dated September 17, 2017 (Exhibit B). The property is the Androscoggin River Watershed, but not an impaired watershed.

Included in the package are plans and supporting documents along with a sight distance report for the existing ingress and egress onto property. The Storm water portion of the project is provided in a separate package.

The proposed multiple dwelling subdivision consists of 6 units. The property has 66.95' frontage on East Avenue. The proposed 6 Unit Elderly Housing Project/Subdivision was designed in conjunction with and all proposed developed to be based on the City of Lewiston Land Use Code - Article XIII.

The property has no known wetlands associated with said property and none of the property is in a Federally Designated Special Flood Hazard Zone as shown on FIRM 23001C0327E (Exhibit 7).

Respectfully Submitted,



Stuart Davis PLS - Agent

#### **Sec. 4. Approval criteria.**

The following criteria are to be used by the staff review committee and the planning board in judging applications for development review and shall serve as minimum requirements for approval of the application. The application shall be approved unless the staff review committee or the planning board determines that the applicant has failed to meet one or more of these standards. In all instances, the burden of proof shall be on the applicant and such burden of proof shall include the production of evidence sufficient to warrant a finding that all applicable criteria have been met.

(a) Utilization of the site. The plan for the development will reflect the natural capabilities of the site to support development. Buildings, lots and support facilities will be clustered in those portions of the site that have the most suitable conditions for development. Environmentally sensitive areas such as wetlands, steep slopes, floodplains and unique natural features will be maintained and preserved to the maximum extent. Natural drainage areas will be preserved to the maximum extent. **See Site & Storm Water Plans**

(b) Traffic movement into and out of the development area. The developer has made adequate provision for traffic movement of all types into and out of the development area. Vehicular access to the site will be on roads which have adequate capacity to accommodate the additional traffic generated by the development. Intersections on major access routes to the site within one-half mile of any entrance road which are functioning at a level of service of C or better prior to the development will function at a minimum at level of service C after development. If any intersection is functioning at a level of service D or lower prior to the development, the project will not reduce the current level of service. If a development is located in the highway business (HB), community business (CB), centreville (CV), mill (M), riverfront (RF), urban enterprise (UE), office service (OS), office residential (OR), and industrial (I) districts, which are designated as growth areas within the comprehensive plan, and the plan has been found by the state to be consistent with the growth management program under Title 30-A, Chapter 187, the planning board or staff review committee shall require improvements to the level of traffic service only if the level of service adjacent to or in the vicinity of the development is or would be level of service E or F, as determined by the City of Lewiston's Engineering Department and/or LACTS. In these cases, improvements shall be required so as to bring the traffic service to, at minimum, level of service D. All level of service determinations shall be made in accordance with the "Highway Capacity Manual" (3rd Ed. 1994), and as described in the site plan review and design guidelines. Before granting approval for any development, the planning board or staff review committee shall determine that any traffic increase attributable to the proposed development will not result in unreasonable congestions or unsafe conditions on a road in the vicinity of the proposed development. **See Traffic Study**

The applicant shall provide to the City of Lewiston with an analysis of traffic movement of all types into and out of the development area and with a statement of recommended findings on traffic issues, after consulting, as necessary, with the Maine Department of Transportation (MDOT), the City of Lewiston Engineering Department, and the Lewiston-Auburn Comprehensive Traffic Study (LACTS). The reviewing body may require this analysis to be done by a registered professional engineer. In all cases where the passenger car equivalents at peak hour is 100 or greater, the project must be reviewed by the planning board and a registered professional engineer shall prepare the analysis and recommendations. In all instances, the city shall discuss with the applicant and their representatives the scope of impact evaluation required for the proposed development to be studied, what other agencies need to be consulted, and what other information is required. In making its determination under this subsection, the planning board or staff review committee shall consider the analysis and recommendations provided by the applicant as well as those submitted by the Maine Department of Transportation (MDOT), the City of Lewiston Engineering Department, and the Lewiston-Auburn Comprehensive Traffic Study (LACTS), as applicable. Where required by state law, the applicant shall provide notice to affected abutting municipalities. The planning board or staff review committee may approve a development not meeting this requirement if the applicant demonstrates that: **See Traffic Study**

(1) A public agency has committed funds to construct the improvements necessary to bring the level of access to this standard; **N/A**

(2) The applicant will assume financial responsibility for the improvements necessary to bring the level of service to this standard and will guarantee the completion of the improvements within one year of approval of the project. **N/A**

(c) Access into the site. Vehicular access into the development will provide for safe and convenient access. **See Site Plans**

Grades, intersections, access and sight distances shall be in accordance with the City of Lewiston's Policy for the Design and Construction of Streets and Sidewalks. **See Site Plans**

(d) Internal vehicular circulation. The layout of the site will provide for the safe movement of passenger, service and emergency vehicles through the site. **See Site Plans**

(1) Nonresidential projects will provide a clear route for delivery vehicles with appropriate geometric design to allow turning and backing for WB-40 vehicles. **See Site Plans**

(2) Clear routes of access will be provided and maintained for emergency vehicles to all portions of the site and will be posted with appropriate signage. **See Site Plans**

(3) The layout and design of parking areas will provide for safe and convenient circulation of vehicles throughout the lot and will prohibit vehicles from backing out onto a street. **See Site Plans**

(4) All streets will be designed to harmonize with the topographic and natural features of the site. The road network will provide for vehicular and pedestrian safety, all season emergency access, snow storage and delivery and collection services. **See Site Plans**

a. Residential streets will be curved whenever practicable to the extent necessary to avoid conformity of lot appearance. **See Site Plans**

b. Culs-de-sac and loop streets are encouraged so that through traffic on residential streets is minimized. Similarly, to the extent practicable, driveway access to collector or arterial streets will be minimized to facilitate the free flow of traffic and avoid traffic hazards. **N/A**

c. Streets will be designed to provide for proper continuation of streets from adjacent development and for proper projection of streets into adjacent unsubdivided and open land. Where the developer owns substantial contiguous land that is not part of the proposed development, the planning board may require a conceptual layout of streets to serve the contiguous land. This layout will not be binding, but shall provide an indication of how the contiguous area can be served in relation to the proposed development. **N/A**

d. Wherever existing or planned streets, topographical features, and public safety permit, streets will run in east-west directions, and lots on a north-south axis, to maximize access to direct sunlight for solar energy systems. The character, extent, width, and grade of all streets will be considered in their relation to existing or planned streets. **N/A**

(5) Where a development borders an existing narrow road (below standards set in this Code for public streets) or when the comprehensive plan indicates plans for realignment or widening of a road that would require use of some of the land in the development, the applicant shall be required to show areas for widening or realigning such roads on the plan, marked "Reserved for Road Realignment (or Widening) Purposes. N/A

" It shall be mandatory to indicate such reservation on the plan when a proposed widening or realignment is shown on the official map. Land reserved for such purposes may not be counted in satisfying setback or yard or area requirements of the zoning districts. **See Site Plans**

(6) Where a development abuts or contains an existing or proposed arterial street, the board may require marginal access streets (street parallel to arterial street providing access to adjacent lots), reverse frontage lots (that is, frontage on a street other than the existing or proposed arterial street) with screen planting contained in a nonaccess reservation along the rear property line, or such other treatment(s) as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic. N/A

(e) Pedestrian circulation. The development plan will provide for a system of pedestrian circulation within the development. This system will connect with existing sidewalks if they exist in the vicinity of the project. The pedestrian network may be located either in the street right-of-way or outside of the right-of-way in open space or recreation areas. The system will be designed to link residential units with recreational and commercial facilities, other common facilities, school bus stops and existing sidewalks in the neighborhood. Sidewalks shall meet the standards identified in the City of Lewiston's Policy for the Design and Construction of Streets and Sidewalks. **See Site Plans**

(f) Stormwater management. Adequate provisions shall be made for the disposal of all stormwater collected on streets, parking areas, roofs or other impervious surfaces through a stormwater drainage system which will not have adverse impacts on abutting or downstream properties. All projects disturbing less than one acre shall be designed to meet the requirements of this subsection 4(f). All projects including one acre or more of disturbed land shall meet the requirements of this subsection 4(f) and the requirements of the Site Location of Development Law, 38 MRSA, 481--490, the Maine Stormwater Management Law, 38 M.R.S.A. Section 420- D, and regulations promulgated there under, specifically Rules 500, 501, and 502, as amended on August 12, 2015.

At the discretion of the director of public works or his/her designee he/she may waive the above requirements, based on a finding that a particular site will have no significant runoff. **See Site Plans**

The plan will demonstrate the disposal of stormwater on the land at the site of development, and do so through the wise use of the natural features of the site. Stormwater runoff systems will infiltrate, detain or retain water falling on the site such that the rate of flow from the site does not exceed that which would occur in the predevelopment state for a storm of intensity equal to at least a 2-, 10-, and 25-year storm, with a duration equal to the time of concentration. **See Storm Water Plans**

The stormwater quantity calculations must be in accordance with acceptable engineering practice. Acceptable stormwater methodologies and models include but are not limited to TR-20-Computer Program for Project Formulation--Hydrology, Second Edition, U.S. Department of Agriculture, Soil Conservation Service (May 1983); TR-55-Urban Hydrology for Small Watersheds, Second Edition, U.S. Department of Agriculture, Soil Conservation Service (June 1986); TR-55 Microcomputer Program, Version 2.0, (January 15, 1990); and HEC- 1 Flood Hydrology Package, U.S. Army Corps of Engineers. Any methodology other than those listed must have prior approval from the director of public works or his/her designee. Use of the 25-year, 24-hour storm as a design standard in this chapter is not intended to prohibit appropriate use of the rational method. The outlet structures of each detention basin must be designed to control 24-hour storms of 2-, 10-, and 25-year frequencies. Each detention basin must be constructed with an emergency spillway designed to independently convey the unrouted runoff from a 25-year, 24-hour storm event.

Additionally, a waiver from these standards may be granted by the director of public works or his/her designee in the cases specifically identified below:

a. Discharge to the Androscoggin River. A project conveys stormwater exclusively in a manmade piped or open drainage system directly into the Androscoggin River. Areas of the project or adjoining properties to be flooded during the 2-, 10-, and 25-year, 24-hour storms must be identified and easements secured, if necessary. A project that changes the flow-type (example: sheet to shallow concentrated), changes the flow channel, or increases the stormwater discharge must secure easements on the intervening property that meet the easement and covenant requirements following in this section.

The discharge may not result in erosion of any upland or freshwater wetlands. The director of public works or his/her designee may allow a waiver if it is determined that the increase in peak flow from the site will not significantly affect the peak flow of the receiving waters or result in unreasonable adverse impact on the river.

b. Public stormwater system. A project discharges its stormwater flow into the City of Lewiston Stormwater System, when the applicant has adequately demonstrated to the director of public works or his/her designee that it has the capacity to accommodate increases in flow.

The director of public works or his/her designee may allow an insignificant increase in the peak flow from the site or in the peak flow of the receiving waters, if it is determined that the increase cannot be avoided by reasonable changes in project design or density and does not significantly impact abutters or city property.

(2) If the outflow volume is greater than that for the undeveloped site, the developer will demonstrate that downstream channel or system capacity is sufficient to carry the flow without adverse effects, or will be responsible for the improvements to provide the required increase in capacity.

(3) All natural drainage ways will be preserved at their natural gradients and will not be filled or converted to a closed system except as approved by the director of public works or his/her designee and appropriate state agencies.

(4) The design of stormwater drainage systems will insure the acceptance and disposal of stormwater runoff based on quantities calculated per subsection 4(f)(1) above, without damage to streets, adjacent properties or downstream properties.

(5) The design of the storm drainage systems will be fully cognizant of upstream runoff which must pass over or through the site to be developed. The system will be designed to pass upstream flows, based on quantities calculated per subsection 4(f)(1) above, from the land, as fully developed, without surcharging the system.

(6) The maximum length for carrying open stormwater in a street gutter prior to intake at a catch basin will be three hundred feet. No stormwater will be permitted to drain on the surface across a street or across an intersection.

(7) The storm drainage system to serve a proposed development will be designed and installed in accordance with the plans and specifications prepared by a professional engineer, unless waived at the discretion of the director of public works or his/her designee.

(8) The developer will maintain and inspect all components of the stormwater runoff system unless the system is formally accepted by the city, or is placed under the jurisdiction of a legally created property owners association whose charter and powers require maintenance of the system, with adequate financing to carry out this responsibility.

Any approved plans must include a statement as to who will be responsible for said maintenance and inspections. The components of the stormwater run-off system shall include, but not be limited to, detention ponds, level spreaders, inlet and outlet protection and structures, swales, etc., and the piping unless the piping is under an accepted city street. For piping under accepted city streets, at the time of street acceptance, the piping shall become the property and maintenance responsibility of the city. An easement shall be provided to the city for the maintenance of this piping. In addition, a separate access easement for all other stormwater runoff components shall be provided to the city for emergency purposes.

(9) The biological and chemical properties of the receiving waters will not be degraded by the stormwater runoff from the development site. The use of oil and grease traps in manholes, the use of on-site vegetated waterways, and the reduction in use of deicing salts and fertilizers may be required, especially where the development stormwater discharges into a gravel aquifer area or other water supply source.

(10) The filling of wetlands on-site will be conducted only in accordance with applicable federal and state law and regulations, including the Natural Resources Protection Act. (g) Erosion control. For all projects, building and site designs and street layouts will fit and utilize existing topography and desirable natural surroundings to the fullest extent possible. Filling, excavation and earth moving activity will be kept to a minimum.

Parking lots on sloped areas will be terraced to avoid undue cuts and fills, and the need for retaining walls. Natural vegetation will be preserved and protected wherever possible. Erosion and sedimentation control measures shall comply with the Maine Erosion and Sedimentation Law, 38 M.R.S.A. § 420-C, and regulations promulgated thereunder, as amended, both during construction and continuously after construction is complete. In addition, erosion and sedimentation measures consistent with the Maine Erosion and Sedimentation Control BMPs, Pub. No. DEPLW0588, published by the Maine Department of Environmental Protection (March 2003) shall be implemented. **See Storm Water Report & Plans**

(1) Storage of fill materials within 50 feet of the banks of any stream, intermittent or perennial or water body will not be allowed.

(2) The top of a cut or the bottom of a fill will not be closer than ten feet from a property line.

(3) Removal of topsoil from any lot will not be allowed, except for that removed from areas to be occupied by buildings, paving or other surfaces that will not be revegetated, or unless in conformance with the performance standards for earth material removal set forth in article XII of this Code. **See Storm Water Report & Plans**

(h) Water supply. The development will be provided with a system of water supply that provides each use with an adequate supply of water meeting the standards of the State of Maine for drinking water. A water system shall be designed and constructed in accordance with the City of Lewiston's Policy for the Design and Construction of Streets and Sidewalks. Developments and projects that will be provided by private water supplies shall demonstrate sufficient water is available for the reasonably foreseeable needs of the development or project. **City Water**

(i) Sewage disposal. A sanitary sewer system will be installed at the expense of the developer, or, if in the opinion of the planning board, service by a sanitary sewer system is not feasible, the board may allow individual underground waste disposal systems to be used. A sewer system shall be designed and constructed in accordance with the City of Lewiston's Policy for the Design and Construction of Streets and Sidewalks. **City Sewer**

(j) Utilities. The development will be provided with electrical and telephone service adequate to meet the anticipated use of the project. **To be provided by contractor**

(1) Each utility system has adequate capacity to service the proposed development. **To be provided by contractor**

(2) All overhead utility poles and lines will be located to minimize potential safety hazards and visual impact to the public. Similarly, transformer boxes, meters, pumping stations and other components of the utility system located above ground will be located so as not to be unsightly or hazardous to the public and will be landscaped or otherwise buffered so as to screen the components from public view. **See Site Plans**

(k) Natural features. The landscape will be preserved in its natural state insofar as practical by minimizing tree removal, disturbance and compaction of soil and by retaining existing vegetation insofar as practical during construction. **See Site Plans**

(1) Extensive grading and filling will be avoided as far as possible. **See Site Plans**

(2) Cutting of trees on the northerly borders of the development will be avoided to the extent possible to retain a natural wind buffer. **See Site Plans**

(3) The planning board or staff review committee may require a shadow study if it believes the proposed development may interfere with the solar access of adjacent properties. **N/A**

(4) If there has been excessive natural vegetation removal from the site since the adoption of the current zoning and land use code prior to the submittal of an application for development review, the planning board or staff review committee may require a regeneration plan to be submitted by a registered forester and to be implemented to revegetate that portion of the site not directly impacted by the proposed development. For the purposes of this section, excessive is defined as the removal of more than 60 percent of trees from a property, either in number of stems or area of tree cover, in any ten-year period. **See Site Plans**

(l) Groundwater protection. The proposed site development and use will not adversely impact either the quality or quantity of groundwater available to abutting properties or public water supply systems. Projects involving common on-site water supply or sewage disposal systems with a capacity of 2,000 gallons per day or greater have demonstrated that the groundwater at the property line will comply, following development, with the standards for safe drinking water as established by the State of Maine. (m) Water and air pollution. The proposed development will not result in undue water or air pollution. (n) Exterior lighting. The proposed development will provide for adequate exterior lighting to provide for the safe use of the development in nighttime hours. **See Site Plans**

(1) All exterior lighting will be designed and shielded to avoid undue adverse impact on neighboring properties and rights-of-way. **See Site Plans**

(2) Lighting will be provided, at a minimum, in the following areas:

- a. Entrances to facilities and recreation areas;
- b. Street intersections;
- c. Pedestrian crossings; and
- d. Entrance roads.

(o) Waste disposal. The proposed development will provide for adequate disposal of solid wastes and hazardous wastes. **See Site Plans – Dumpster on site**

(1) All solid waste will be disposed of at a licensed disposal facility having adequate capacity to accept the project's wastes. **N/A**

(2) All hazardous wastes will be disposed of at a licensed hazardous waste disposal facility and evidence of a contractual arrangement with the facility has been submitted. **N/A**

(p) Lot layout. **See Site Plans**

(q) Landscaping. The development plan will provide for landscaping to define street edges, break up parking areas, soften the appearance of the development and protect abutting properties from adverse impacts of the development. **See Site Plans**

(1) The landscaping plan will comply with the guidelines contained in the City of Lewiston's Site Plan Review and Design Guidelines as amended. **See Site Plans**

(r) Shoreland relationship. The development will not adversely affect the water quality or shoreline of any adjacent water body. The development plan will provide for access to abutting navigable water bodies for the use of residents of the development. **N/A**

(s) Open space. The development plan will provide for recreation areas and open space to meet the needs of residents and users of the development. **N/A**

(1) For projects involving the construction of ten or more new residential dwelling units, a portion of the site shall be set aside as permanent open space or recreational land. **N/A**

(2) The size of the area to be set aside for open space shall be based upon the following: **N/A**

a. Dwelling units exclusively for occupancy by persons 55 years or older--None. **N/A**

b. Dwelling units with less than two rooms designed or used for sleeping--Three hundred fifty square feet per dwelling unit. **N/A**

c. Dwelling units with two rooms designed or used for sleeping--Seven hundred square feet per dwelling unit. **N/A**

d. Dwelling units with three or more rooms designed or used for sleeping--One thousand square feet per dwelling unit. e. For mobile home parks, the size of the area to be set aside shall be no less than ten percent of the combined area of the individual lots within the mobile home park. **N/A**

(3) No portion of the site used to meet the minimum lot size or minimum lot area per dwelling unit requirements shall be used toward meeting this requirement. This shall include the required open space in a clustered residential development. **See Site Plans**

(4) The area to be set aside for open space shall be shown on the development plan and marked "Reserved for Recreation and/or Conservation Purposes". **N/A**

(5) The open space provided to meet this requirement shall be owned and managed by one of the following methods: **N/A**

a. Continued ownership by the project owner for developments involving rental housing, mobile home parks and similar situations where the development remains under single ownership; or

b. Ownership by a condominium or lot owners association for developments involving the creation of separate lots, condominiums or other situations where the development is owned by a number of entities; or

c. Dedication of the land to the City of Lewiston as public park land; or

d. Transfer, with permanent restrictions, to a land trust or other recognized conservation organization. **N/A**

(6) The planning board shall approve the arrangements for the ownership, control and maintenance of the open space as part of the approval of the final plan. No changes in the ownership or management of the open space shall be made without planning board approval. The arrangements for the ownership and management, if the open space is not to be dedicated to the city, shall provide for at least the following:

- a. That the area shall be permanently maintained as open space.
- b. That there shall be no transfer of the open space separately from the remainder of the development without approval of the planning board.
- c. That there shall be no division of the property.
- d. That no structures or buildings other than those shown on the approved plan shall be erected in the open space.
- e. That any agricultural or forestry activity be carried out in accordance with an approved plan of action. N/A

(7) The land designated as open space shall meet the following requirements: N/A

a. The site shall have pedestrian access from a public street or private road and shall be of such size, shape, and topography as to be usable for open space or recreation purposes, with at least 50 percent of the land to be suitable to be used for active recreation, including, but not limited to, softball fields, swimming pools, tennis courts, bicycle paths, tot lots and hard surface court games.

b. Parcels which can be combined with existing city-owned property, dedicated open space on adjacent parcels, or with possible future land dedications shall be given priority.

c. The land will be maintained in a usable condition and retained in a natural state to the maximum extent practicable. All clearing, grading and material placement or removal shall be carried out in accordance with the approved landscape plan and under the supervision of the city engineer and code enforcement officials.

(t) Technical and financial capacity. The applicant has demonstrated that he has the financial and technical capacity to carry out the project in accordance with this Code and the approved plan.

(1) The applicant has submitted evidence from a financial institution or other source of project funding that demonstrates that adequate resources are available to complete the project in accordance with the approved plans.

(u) Buffering. The development will provide for the buffering of adjacent uses where there is a transition from one type of use to another use and to screen service and storage areas. The buffer areas required by the district regulations will be improved and maintained in accordance with the standards set forth in the City of Lewiston's Site Plan Review and Design Guidelines. **See Site Plans**

(v) Compliance with district regulations. The applicant has established that the development will be consistent with the district regulations of article XI. **See Site Plans**

(w) Design consistent with performance standards. The applicant has so designed the development as to make it probable that the development and its use will comply with performance standards of article XII, insofar as they maybe applicable. (Ord. No. 89-3, 4-7-89; Ord. No. 90-10, 10-4-90; Ord. No. 92-12, 6-4-92; Ord. No. 92-18, 9-10-92; Ord. No. 99-11, 5-20-99; Ord. No. 99-15, 8-12-99; Ord. No. 00-5, 5-4-00; Ord. No. 01-23, 2-7-02; Ord. No. 05-21, 1-19-06; Ord. No. 06-17, 2-8-07; Ord. No. 07-02, 3-22-07; Ord. No. 08-08, 10-2-08; Ord. No. 16- 12, 12-15-16) **See Site Plans**

**Sec. 5. Coordination with state subdivision law.**

To the extent that the following standards are not contained in article XIII, section 4, said standards shall be applicable to the review and approval of subdivisions:

(1) Will not result in undue water or air pollution. In making this determination, it shall at least consider: the elevation of land above sea level and its relation to the floodplains; the nature of soils and sub-soils and their ability to adequately support waste disposal; the slope of the land and its effect on effluents; the availability of streams for disposal of effluents; and the applicable state and local health and water resources regulations.

**See Storm Water Report Plans**

(2) Has sufficient water available for the reasonably foreseeable needs of the subdivision.

**City Water – See Storm Water Plans**

(3) Will not cause an unreasonable burden on an existing water supply, if one is to be utilized. **See Storm Water Plans**

(4) Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result. **See Storm Water Plans**

(5) Will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highways or public roads, existing or proposed. **See Site Distance Report**

(6) Will provide for adequate sewage waste disposal. **City Sewer**

(7) Will not cause an unreasonable burden on the ability of a municipality to dispose of solid waste and sewage, if municipal services are to be utilized. **Dumpster – See Site Plan**

(8) Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline. **N/A**

(9) Is in conformance with this Code and the city's comprehensive plan. **Yes**

(10) The subdivider has adequate financial and technical capacity to meet the above stated standards. **To be provided by Owner/Contractor**

(11) Whenever situated, in whole or in part, within 250 feet of any pond, lake, river or tidal waters, will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water. **N/A**

(12) Will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater. **See Storm Water Plans**

(13) The subdivider will determine, based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, whether the subdivision is in a flood-prone area. If the subdivision, or any part of it, is in such an area the subdivider will determine the 100-year flood elevation and flood hazard boundaries within the subdivision. The proposed subdivision plan shall include a condition of plat approval requiring that principal structures on lots in the subdivision shall be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation. **N/A - See Flood Maps**

(14) Will not interfere unreasonably with the solar access of existing buildings or adjacent parcels. **N/A**

February 22, 2018

Mr. David Hediger, City Planner  
City of Lewiston  
27 Pine Street  
Lewiston, ME 04240

**Comment Response: 153 East Avenue**

**Comment Responses:**

We are pleased to provide responses to comments that were raised in regard to 153 East Avenue. We have listed the comments below. Our responses are directly below each comment and are shown in *italics*

**Planning and Code Enforcement Comments**

1. Prior to any certificate of occupancy being issued:
  - a. Evidence of a final inspection of the storm water system shall be provided to the city by the designing engineer along with a written statement indicating that the storm water system and all site improvements have been completed in accordance with the approved plans.

*Response: Comment acknowledged.*

2. Cover sheet needs a signature block for the Planning Board's approval.

*Response: The signature block was added to the cover sheet.*

3. Note must be added to the cover sheet that referencing the plans expiration of approval: see Article XIII, Section 11(a)(1).

*Response: Note was added to the cover sheet.*

4. Need a letter signed by owner, acknowledging agent of project, etc.

*Response: See response from Stuart Davis.*

5. Stormwater report: page one refers to existing conditions draining to a small pond. Is this the wetland area as delineated in by Sebago? Consider revising language.

*Response: Language was revised in stormwater report.*

6. Sheet 2:
- a. Shows a 10' no cut buffer. Survey shows 15'. Revise plans accordingly. While a buffer is needed (see below), you are indicating no existing vegetation will be removed.

*Response: The 10' buffer will remain. Survey will be updated to match.*

- b. Note 7 regarding parking should include space available in garages.

*Response: Note was updated to include spaces available in garages.*

7. Street trees: recognizing sight distance is limited, any plantings should be set back to maintain safe visibility. Plantings must be shown on the plan. Street trees 2.5" caliper are required ever 50': see Article XIII, Section (4)(I).

*Response: Street trees were added to plans.*

8. Buffering: code references buffering needed when there is a change of use. Southern and northern property lines (Whitten, Nickerson, and Giguere) require opaque 6' high fencing and/or staggered row of evergreen plantings 3'-5' upon planting. If southern buffer is being maintained

*Response: Fencing was added to the plans along the southern and northern property lines.*

9. The project has been referenced as elderly housing and references the applicable parking requirements. It should be noted on the plan that this project is being proposed for elderly housing (55+?) and any change of use of the property will require city approval. The concern is if the property were to change to unrestricted occupancy of the dwelling units that the code may require additional parking which may require revisions to drainage improvements. Applicant may also want to consider as a condition of approval prior to any certificate of occupancy being issued that a deed restriction has been placed on the property limiting its use to elderly housing (i.e. housing for individuals 55 years of age and older).

*Response: A note was added to the cover sheet.*

10. Application/narrative must speak to each of the development review criteria contained in Article XIII, Section 4 including, but not limited to:
- a. Lighting must be shielded or full cut off fixtures.
  - b. Letter needed referencing financial capacity.

*Response: See response from Stuart Davis.*

11. Application must reference subdivision criteria of Article XIII, Section 5.

*Response: See response from Stuart Davis.*

12. Plan set must include survey plan.

*Response: See response from Stuart Davis.*

13. Application pages must be updated:

- Project data: building area/lot coverage existing is 0.00; please revise.
- Parking spaces: total should include space being provided in garage (i.e. 3 surface spaces and ? garage spaces).
- Zoning summary page: update parking and indicate that it is not in an impaired watershed.
- Signature of applicant or representative is needed.

*Response: See response from Stuart Davis.*

#### **Public Works Comments**

1. All water materials installed within the right of way of East Avenue will be purchased through the City.

*Response: Added as note 7 under waterline installation notes on sheet 3.*

2. The City will perform the tap on the existing 12" watermain, the contractor will be responsible to excavate the main, shore the hole, and install the sleeve on the main.

*Response: Added as note 8 under waterline installation notes on sheet 3.*

3. The connection to the existing sewer manhole in East Avenue shall be cored and booted.

*Response: Added as note on sheet 3.*

4. The shut off for the 2" water service shall be located in the right of way for East Avenue.

*Response: Shut off for the 2" water service was moved.*

5. A rip rap bowl should be installed at the inlet of the 15" Stormdrain.

*Response: A rip rap bowl was added at the inlet of the 15" stormdrain.*

6. A detail for the proposed drain manhole should be added to the plans.

*Response: Detail was added to the plans.*

7. A detail for the connection to the existing sewer manhole should be added to the plans indicating the cored and booted connection.

*Response: Detail was added to the plans.*

8. Trench restoration in East Avenue shall include 18" of Subbase Gravel, 6" of Base Gravel, 4" of Hot Mix Asphalt 19.0mm, and 2" of Hot Mix Asphalt 12.5mm.

*Response: Added as note 17 under utility construction notes on sheet 3.*

9. Select backfill for all stormdrain and sewer services in the right of way shall be ¾" crushed stone to 8" above the pipe.

*Response: Added as note 18 under utility construction notes on sheet 3.*

10. A note on the Sewer/Foundation Drain Service connection indicates that sump pumps it shall include a check valve. Sump Pumps cannot be connected to the City sewer system.

*Response: Note was removed.*

Prepared by:

Katy J. Bouchard, P.E.  
Terradyn Consultants, LLC



### Zoning Summary

1. Property is located in the Office Residential District (ORD) zoning district.

2. Parcel Area: 0.46 acres / 19,906 square feet(sf).

Regulations	<u>Required/Allowed</u>	<u>Provided</u>
Min Lot Area	<u>7,500 sq.ft.</u>	<u>19,906 sq.ft.</u>
Street Frontage	<u>50</u>	<u>66.28'</u>
Min Front Yard	<u>20</u>	<u>20'</u>
Min Rear Yard	<u>15</u>	<u>15'</u>
Min Side Yard	<u>15</u>	<u>15'</u>
Max. Building Height	<u>35</u>	
Use Designation	<u>residential</u>	
Parking Requirement	<u>0.5 space/ per unit 3</u>	
Total Parking:	<u>3</u>	
Overlay zoning districts (if any):	<u>N/A</u>	
Urban impaired stream watershed?	YES/NO If yes, watershed name <u>Androscoggin River</u>	

## DEVELOPMENT REVIEW APPLICATION SUBMISSION

**Submission shall include payment of fee and fifteen (15) complete packets containing the following materials:**

1. Full size plans containing the information found in the attached sample plan checklist.
2. Application form that is completed and signed.
3. Cover letter stating the nature of the project.
4. All written submittals including evidence of right, title and interest.
5. Copy of the checklist completed for the proposal listing the material contained in the submitted application.

**Refer to the application checklist for a detailed list of submittal requirements.**

L/A's development review process and requirements have been made similar for convenience and to encourage development. Each City's ordinances are available online at their prospective websites:

**Auburn:** [www.auburnmaine.org](http://www.auburnmaine.org) under City Departments/ Planning and Permitting/Land Use Division/Zoning Ordinance

**Lewiston:** <http://www.ci.lewiston.me.us/clerk/ordinances.htm> Refer to Appendix A of the Code of Ordinances

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, I certify that the City's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

**This application is for development review only; a Performance Guarantee, Inspection Fee, Building Permit Application and other associated fees and permits will be required prior to construction.**

Signature of Applicant: 	Date: <u>2-22-18</u>
--	-------------------------



# Development Review Checklist

City of Auburn Planning and Permitting Department  
City of Lewiston Department of Planning and Code Enforcement



**THE FOLLOWING INFORMATION IS REQUIRED WHERE APPLICABLE TO BE SUBMITTED FOR AN APPLICATION TO BE COMPLETE**

PROJECT NAME: Louis W. Ouellette

PROPOSED DEVELOPMENT ADDRESS and PARCEL #: 153 East Avenue, Lewiston, Maine  
Map 175, Lot 10

Required Information		Check Submitted		Applicable Ordinance	
		Applicant	Staff	Lewiston	Auburn
<b>Site Plan</b>					
	Owner's Names/Address	Address Needed			
	Names of Development	X			
	Professionally Prepared Plan	X			
	Tax Map or Street/Parcel Number	X			
	Zoning of Property	X			
	Distance to Property Lines	X			
	Boundaries of Abutting land	X			
	Show Setbacks, Yards and Buffers	X			
	Airport Area of Influence (Auburn only)	N/A			
	Parking Space Calcs	X			
	Drive Openings/Locations	X			
	Subdivision Restrictions	N/A			
	Proposed Use	X			
	PB/BOA/Other Restrictions	N/A			
	Fire Department Review				
	Open Space/Lot Coverage	N/A			
	Lot Layout (Lewiston only)	X			
	Existing Building (s)	X			
	Existing Streets, etc.	X			
	Existing Driveways, etc.	X			
	Proposed Building(s)	X			
	Proposed Driveways	X			
<b>Landscape Plan</b>					
	Greenspace Requirements	N/A			
	Setbacks to Parking	X			
	Buffer Requirements	X			
	Street Tree Requirements	N/A			

	Screened Dumpsters	X		
	Additional Design Guidelines	N/A		
	Planting Schedule	N/A		
<b>Stormwater &amp; Erosion Control Plan</b>		N/A		
	Compliance w/ chapter 500	X		
	Show Existing Surface Drainage	X		
	Direction of Flow	X		
	Location of Catch Basins, etc.	X		
	Drainage Calculations	X		
	Erosion Control Measures	X		
	Maine Construction General Permit	N/A		
	Bonding and Inspection Fees	N/A		
	Post-Construction Stormwater Plan	X		
	Inspection/monitoring requirements	X		
	Third Party Inspections (Lewiston only)	N/A		
<b>Lighting Plan</b>		N/A		
	Full cut-off fixtures			
	Meets Parking Lot Requirements	X		
<b>Traffic Information</b>		N/A		
	Access Management			
	Signage			
	PCE – Trips in Peak Hour			
	Vehicular Movements			
	Safety Concerns			
	Pedestrian Circulation			
	Police Traffic			
	Engineering Traffic			
<b>Utility Plan</b>				
	Water	X		
	Adequacy of Water Supply			
	Water main extension agreement			
	Sewer	X		
	Available city capacity			
	Electric			
	Natural Gas			
	Cable/Phone			
<b>Natural Resources</b>				
	Shoreland Zone	N/A		
	Flood Plain	N/A		
	Wetlands or Streams	N/A		
	Urban Impaired Stream	N/A		
	Phosphorus Check	N/A		
	Aquifer/Groundwater Protection	N/A		
	Applicable State Permits	N/A		

	No Name Pond Watershed (Lewiston only)	N/A			
	Lake Auburn Watershed (Auburn only)	N/A			
	Taylor Pond Watershed (Auburn only)	N/A			
<b>Right Title or Interest</b>					
	Verify	X			
	Document Existing Easements, Covenants, etc.	Deed			
<b>Technical &amp; Financial Capacity</b>		N/A			
	Cost Est./Financial Capacity	N/A			
	Performance Guarantee				
<b>State Subdivision Law</b>		X			
	Verify/Check	X			
	Covenants/Deed Restrictions	N/A			
	Offers of Conveyance to City	N/A			
	Association Documents	N/A			
	Location of Proposed Streets & Sidewalks	X			
	Proposed Lot Lines, etc.	X			
	Data to Determine Lots, etc.	X			
	Subdivision Lots/Blocks	N/A			
	Specified Dedication of Land	N/A			
<b>Additional Subdivision Standards</b>		N/A			
	Single-Family Cluster (Lewiston only)				
	Multi-Unit Residential Development (Lewiston only)	X			
	Mobile Home Parks				
	Private Commercial or Industrial Subdivisions (Lewiston only)				
	PUD (Auburn only)				
<b>A jpeg or pdf of the proposed site plan</b>					
<b>Final sets of the approved plans shall be submitted digitally to the City, on a CD or DVD, in AutoCAD format R 14 or greater, along with PDF images of the plans for archiving</b>					

## PROJECT DATA

The following information is required where applicable, in order to complete the application.

**IMPERVIOUS SURFACE AREA/RATIO**

Existing Total Impervious Area	1,146.5	sq. ft.
Proposed Total Paved Area	5,558.4	sq. ft.
Proposed Total Impervious Area	9,758.4	sq. ft.
Proposed Impervious Net Change	8,611.9	sq. ft.
Impervious surface ratio existing	0.06	% of lot area
Impervious surface ratio proposed	49	% of lot area

**BUILDING AREA/ LOT COVERAGE**

Existing Building Footprint	None	sq. ft.
Proposed Building Footprint	4,200	sq. ft.
Proposed Building Footprint Net change	4,200	sq. ft.
Existing Total Building Floor Area	N/A	sq. ft.
Proposed Total Building Floor Area	4,200	sq. ft.
Proposed Building Floor Area Net Change	4,200	sq. ft.
New Building	4,200	sq. ft.
Building Area/ Lot coverage existing	1,146.5	sq. ft.
Building Area/ Lot coverage proposed	9,758.4	sq. ft.

**ZONING**

Existing	OR
Proposed	N/A

**RESIDENTIAL, IF APPLICABLE**

Existing Number of Residential Units	NONE
Proposed Number of Residential Units	6
Subdivision, Proposed Number of Lots	6 UNITS

**PARKING SPACES**

Existing Number of Parking Spaces	N/A
Proposed Number of Parking Spaces	9
Required Number of Parking Spaces	3
Number of Handicapped Parking Spaces	1

**ESTIMATED COST OF PROJECT**

**DELEGATED REVIEW AUTHORITY CHECKLIST**

**SITE LOCATION OF DEVELOPMENT AND STORMWATER MANAGEMENT**

Existing Impervious Area	1,146.5	sq. ft.
Proposed Disturbed Area	9,758.4	sq. ft.
Proposed Impervious Area	9,758.4	sq. ft.

1. *If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with MDEP.*
2. *If the proposed impervious area is greater than one acre including any impervious area created since 11/16/05, then the applicant shall apply for a MDEP Stormwater Management Permit, Chapter 500, with the City.*
3. *If total impervious area (including structures, pavement, etc) is greater than 3 acres since 1971 but less than 7 acres, then the applicant shall apply for a Site Location of Development Permit with the City. If more than 7 acres then the application shall be made to MDEP unless determined otherwise.*
4. *If the development is a subdivision of more than 20 acres but less than 100 acres then the applicant shall apply for a Site Location of Development Permit with the City. If more than 100 acres then the application shall be made to MDEP unless determined otherwise.*



Warranty Deed

Arthur Ouellette, Jr. of Lewiston, Androscoggin County, Maine, for consideration paid, grants to Louis W. Ouellette with a mailing address of P.O. Box 607, Sabattus, Maine 04280, with Warranty Covenants, all of his remaining interest in and to a certain lot or parcel of land, with any buildings thereon, situated in Lewiston, Androscoggin County, Maine, bounded and described as follows, to wit:

Commencing at the intersection of the southeasterly line of East Avenue with the northeasterly line of Boston Avenue; thence in a southeasterly direction, along the northeasterly line of Boston Avenue, one hundred five-tenths (100.5) feet, to an iron pin set in the ground and land now or formerly of one Blanche Alice Dionne; thence in a northeasterly direction along the line of the said Dionne, ninety-one and five tenths (91.5) feet, to another iron pin set in the ground; thence in a westerly direction along line of land formerly of David Caron, about one hundred eighteen (118) feet, to an iron pin set in the ground on the southeasterly line of East Avenue; thence in a southwesterly direction, along the southeasterly line of East Avenue; forty-nine (49) feet, to the point of intersection of said southeasterly line of East Avenue with the northeasterly line of Boston Avenue, said point being the point of commencement.

Also another certain lot or parcel of land, with the buildings thereon, situated in Lewiston, Androscoggin County, Maine, bounded and described as follows, to-wit:

Commencing at a point on the southeasterly line of East Avenue, said point being the northwesterly corner of the lot hereinabove described; thence in a northeasterly direction, along the southeasterly line of East Avenue, forty-nine (49) feet, to an iron pin set in the ground; thence in a southeasterly direction, one hundred seventeen (117) feet, to another iron pin set in the ground; thence in a southwesterly direction, sixteen and five tenths (16.5) feet, to another iron pin set in the ground at the northeasterly corner of the lot of land hereinabove described; thence in a westerly direction along the line of land hereinabove described, about one hundred eighteen (118) feet, to the southeasterly line of East Avenue, and the point of commencement.

Being the same premises described in a deed from Louis E. Gosselin and Annette F. Gosselin to Arthur Ouellette, Jr. and Lorraine Ouellette as joint tenants dated July 30, 1957 recorded in Book 764, Page 526 of the Androscoggin County Registry of Deeds. Lorraine Ouellette has since deceased.

MAINE REAL ESTATE  
TRANSFER TAX PAID

4

In Witness Whereof, the Grantor has set his hand and seal on this 2<sup>nd</sup> day of July, 2009.

L. O. Visbar  
Witness

Arthur Ouellette, Jr.  
Arthur Ouellette, Jr.

State of Maine  
Androscoggin, SS.

July 2, 2009

Then personally appeared the above-named **Arthur Ouellette, Jr.** and acknowledged the foregoing instrument to be his free act and deed.

Before me,  
K. Alexander Visbaras  
K. Alexander Visbaras, Attorney-at-Law

ANDROSCOGGIN COUNTY  
Yna M. Chouinard  
REGISTER OF DEEDS

# SEBAGO

T E C H N I C S

CIVIL ENGINEERING SURVEYING LANDSCAPE ARCHITECTURE

## Memorandum

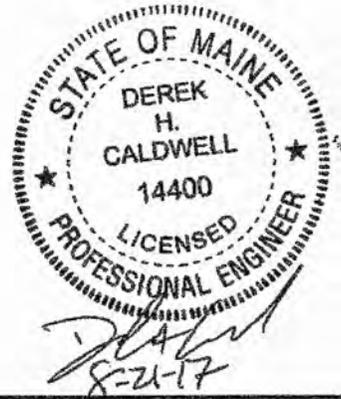
17318

**To:** Louis Ouellette  
LOCBID Construction, Inc.

**From:** Derek Caldwell, P.E., PTOE

**Date:** August 21, 2017

**Subject:** Sight Distance Analysis  
153 East Avenue, Lewiston



A sight distance analysis has been completed for the proposed development driveway to be located at 153 East Avenue in Lewiston, Maine. It is our understanding that the proposed driveway is to be in the approximate location of the existing drive.

East Avenue is a four lane roadway functionally classified as an urban principal arterial under MaineDOT jurisdiction. The roadway has a posted speed limit of 30 miles per hour. The following table shows the required sight distances for driveways as stated in the MaineDOT Highway Driveway and Entrance Rules.

**MaineDOT Sight Distance Guidelines**

<i>Posted Speed (MPH)</i>	<i>Required Sight Distance (feet)</i>
20	155
25	200
30	250
35	305
40	360
45	425
50	495
55	570

Available sight distance was measured at the existing driveway location on August 18, 2017 in accordance with MaineDOT standards. Sight distance was measured to be 340 feet when looking to the left and 260 feet looking to the right. Tree limbs were observed when looking right, that if became

overgrown, may further obstruct sight distance in this direction. Based upon these measurements, the proposed driveway exceeds the required available sight distance of 250 feet for a roadway with a speed limit of 30 miles per hour.

**Figure 1: Sight Distance Looking Left**

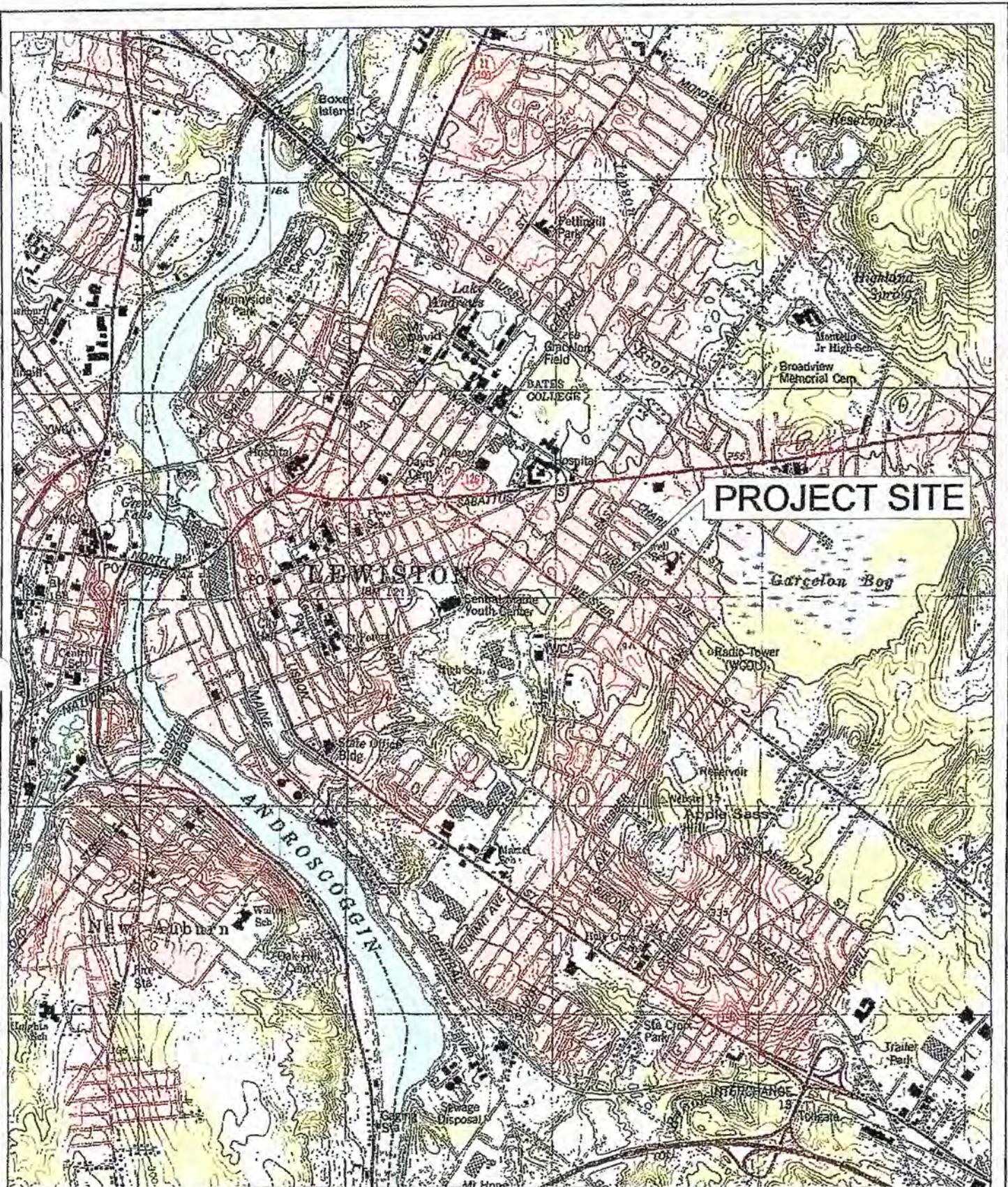


Figure 2: Sight Distance Looking Right



<u>First Name</u>	<u>Last Name</u>	<u>Address Line 1</u>	<u>City</u>	<u>State</u>	<u>Zip Code</u>	<u>Tax Map</u>	<u>Tax Lot</u>
Louis	Ouellette	P.O Box 607	Sabattus	ME	04280	175	10
Leo	Binette	161 East Ave	Lewiston	ME	04240	175	7
D+D Properties LLC.		P.O Box 7065	Lewiston	ME	04243	175	8
Normand	Giguere	157 East Ave	Lewiston	ME	04240	175	9
Louis	Ouellette	P.O Box 607	Sabattus	ME	04280	175	11
Stephen & Brigitte	Whitten	6 Boston Ave	Lewiston	ME	04240	175	12
William & Linda	Nickerson	8 Boston Ave	Lewiston	ME	04240	175	13
Daniel	Burgess	77 Sanders Rd	Livermore	ME	04253	175	14





**PROJECT SITE**

SHEET DESCRIPTION  
 U.S.G.S. QUADRANGLE MAP  
 153 EAST AVENUE  
 PREPARED FOR  
 MR. LOUIS OUELLETTE  
 P.O. BOX 607  
 SABATTUS, MAINE 04280



P.O. Box 339  
 111 Elderberry Lane  
 New Gloucester, ME 04260  
 Office: (207) 926-5111  
 Fax: (207) 221-1317  
[www.terradynconsultants.com](http://www.terradynconsultants.com)

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

JOB NO.  
 1744  
 DATE  
 12/13/2017  
 SCALE  
 1"=2000'

FIGURE  
 1  
 OF  
 1



February 21, 2018

David Hediger, City Planner  
Department of Planning & Code Enforcement  
City of Lewiston  
27 Pine Street  
Lewiston, ME 04240-7201

Re: Louis Ouellette  
BIDLOC Investments, LLC – 153 East Avenue

Dear David:

We understand Louis Ouellette and BIDLOC Investments, LLC are working on permitting to construct a 6 unit building for elderly housing at 153 East Avenue, Lewiston. Louis has demonstrated the ability to successfully manage this sort of building project many times in past years.

This loan officer has worked with Louis Ouellette, and his companies including BIDLOC Investments, LLC, for 9 years. We look forward to learning more about this project, and working with Louis on a financing package to complete this project as outlined in the permit application.

If you have questions, or need further information, I can be reached at 207-333-4551.

Very truly yours,

MECHANICS SAVINGS BANK

A handwritten signature in blue ink, appearing to read "JoAnne P. Campbell".

JoAnne P. Campbell  
Senior Vice President  
Commercial Lending & Private Banking

## **STORMWATER MANAGEMENT PLAN**

**153 East Avenue  
Lewiston, Maine**

The following Stormwater Management Plan has been prepared for the 153 East Avenue Project to evaluate stormwater runoff and erosion control. The project consists of the creation of one 6-unit apartment building located at 153 East Avenue in Lewiston, Maine.

### **Site Calculations**

Total Property Area	0.46 Ac (+/-)
Total Impervious Area	0.22 Ac
Total Developed Area	0.32 Ac

### **Existing Conditions**

The development parcel is located at 153 East Avenue, across the street from Lewiston High School in Lewiston, Maine. The site is approximately 1/2 acre and was previously developed. A copy of the U.S.G.S. Quadrangle Map is attached to this submittal.

The proposed development area is located on a slope of approximately 6%. The site is located in the Androscoggin River watershed. The entirety of the property drains to a wetland area located in the center of a block surrounded by East Avenue, Webster Street, Moody Street and Boston Avenue. There is an existing pipe outlet of unknown size that connects into the existing stormwater system along East Avenue. For modeling purposes, the pipe was assumed to be 15" in diameter with an invert of 149.50 ft.

### **Proposed Development**

The applicant proposes to build a 6-unit apartment building. The apartment building will be accessed from a 125' long driveway. The site is graded to collect a majority of the stormwater from the new impervious areas in a swale located in the front of the apartment building. The swale will outlet into a new storm drain basin which will be installed along an existing storm drain line along East Avenue.

### **Flooding**

The development area is not located within an area of flood hazard according to the Federal Insurance Rate Maps 23001C0327E. See attached map.

### **Modeling Assumptions**

The onsite stormwater facilities were sized utilizing the USDA Soil Conservation Service (SCS) TR-20 Runoff Simulation Model, as contained in the HydroCAD computer software program (Version 9.0). Runoff curve numbers were determined for each direct watershed by measuring the area of each hydrologic soil group within each type of land cover. Weighted curve numbers were then calculated using curve numbers for various cover types and hydrologic soil groups, assuming “good” conditions as defined in U.S Soil Conservation Service (SCS) publications. Times of concentration and travel times were determined from site topographic maps in accordance with SCS procedures. A maximum length of 150 feet was used for sheet flow.

All of the watersheds’ peak runoff rates were analyzed for the 2, 10, and 25-year frequency, 24-hour duration storm events. A Type III rainfall distribution was applied to these storms. The rainfall amounts for Androscoggin County are as follows:

<b>Storm Frequency Precipitation (in./24 hr)</b>	
2-year	3.0
10-year	4.3
25-year	5.4

### **Onsite Soils**

The development area and offsite soils were delineated from the Cumberland County Medium Intensity Soil Survey as shown on the Soil Data Viewer on the NRCS website (See attached map). The soil survey reports the watershed soils are generally hydrologic group B soils with a small swath of hydrologic group C soils on the southern end of the Watershed along Boston Avenue. All parcels along Boston Avenue were modeled as hydrologic group C soils, while the rest of the watershed was modeled as hydrologic group B soils. See attached map. The soils are listed below:

<b>Soil Name</b>	<b>Hydrologic Soil Group</b>
Belgrade	B
Hartland	B
Paxton	C
Woodbridge	C

**Water Quantity (Flooding Standard)**

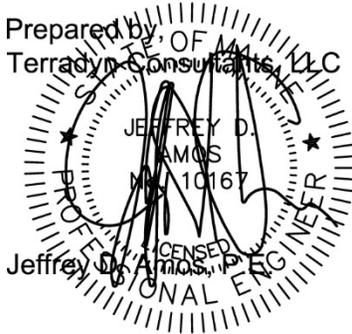
The following table summarizes the results of stormwater calculations for the design storm events for the project areas. Calculations and computer modeling sheets are provided with this report.

Table 1 - Stormwater Runoff Summary Table Pre-Development vs. Post-Development						
Study Point #	2Yr/24Hr (cfs)		10Yr/24Hr (cfs)		25Yr/24Hr (cfs)	
	Pre	Post	Pre	Post	Pre	Post
1	1.54	1.47	3.07	2.93	4.15	4.08

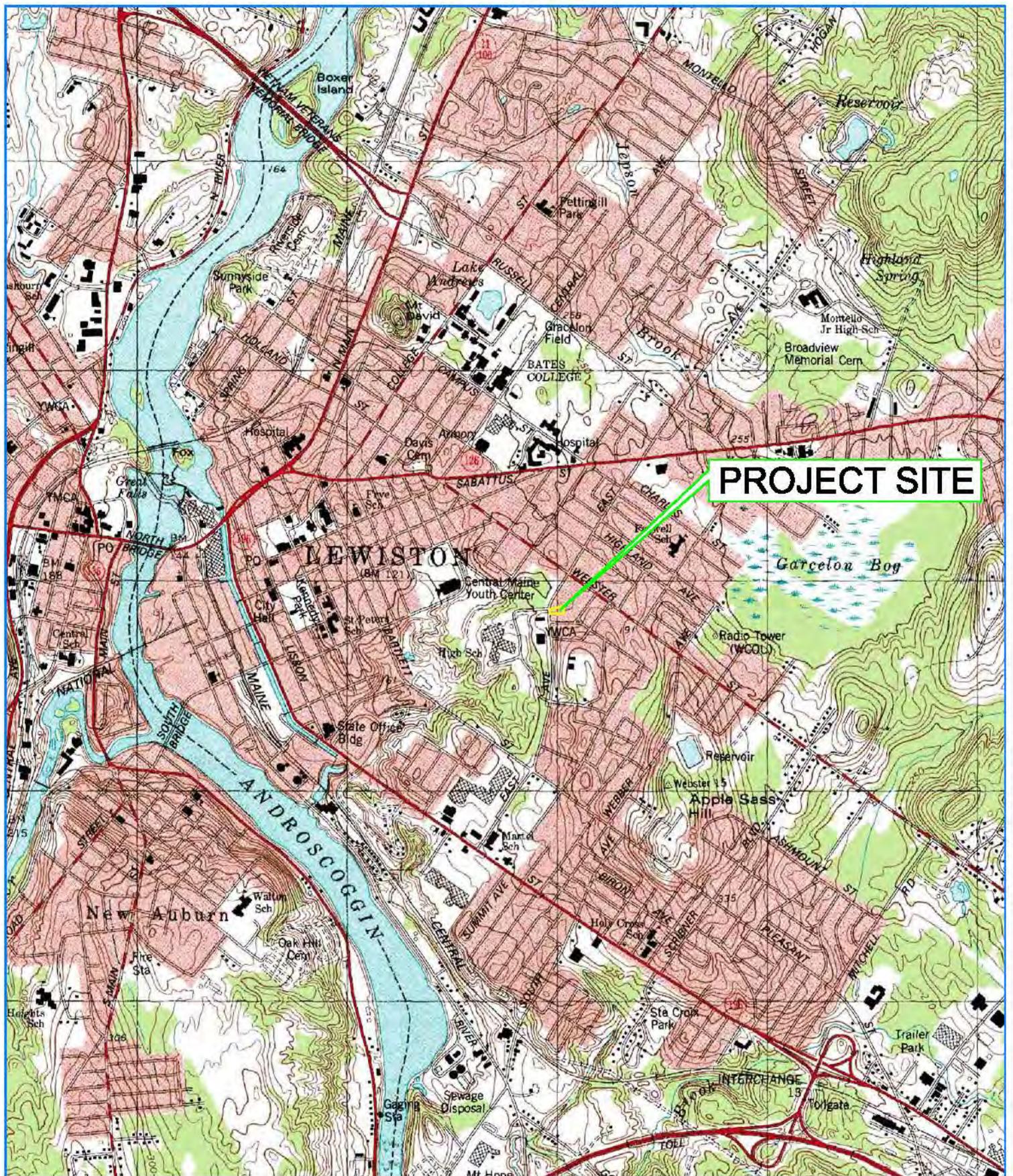
As the above result table shows, the post-development flow rates for the 2, 10, and 25-year/24 hour design storm events are all less than the pre-development flow rates.

**Summary**

Based on the results of this evaluation, the proposed stormwater design is not expected to cause flooding, erosion or other significant adverse effects downstream of the site.



- Attached:
- U.S.G.S. Quadrangle Map
  - FEMA Flood Map
  - NRCS Medium Intensity Soil Survey
  - Pre-Development Hydrocad Calculations
  - Post Development Hydrocad Calculations
  - Pre & Post Development Watershed Maps
  - Maintenance & Inspection of Stormwater Facilities
  - Housekeeping Plan



**SHEET DESCRIPTION**  
 U.S.G.S. QUADRANGLE MAP  
 153 EAST AVENUE  
 PREPARED FOR  
 MR. LOUIS OUELLETTE  
 P.O. BOX 607  
 SABATTUS, MAINE 04280

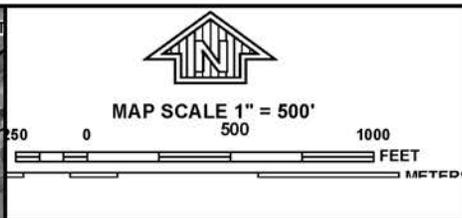


**TERRADYN**  
 CONSULTANTS, LLC

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

P.O. Box 339  
 111 Elderberry Lane  
 New Gloucester, ME 04260  
 Office: (207) 926-5111  
 Fax: (207) 221-1317  
 www.terradyconsultants.com

<b>JOB NO.</b>	1744	<b>FIGURE</b>	1
<b>DATE</b>	12/13/2017		
<b>SCALE</b>	1"=2000'	<b>OF</b>	1



**NFP** PANEL 0327E

**FIRM**  
FLOOD INSURANCE RATE MAP  
ANDROSCOGGIN COUNTY, MAINE  
(ALL JURISDICTIONS)

PANEL 327 OF 470  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUBURN, CITY OF	230001	0327	E
LEWISTON, CITY OF	230004	0327	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
23001C0327E  
**EFFECTIVE DATE**  
JULY 8, 2013

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

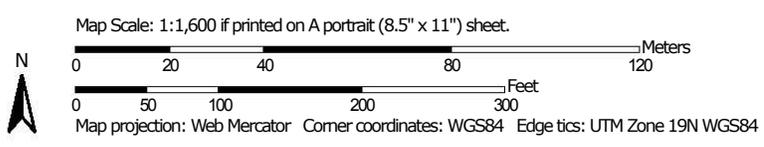
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

JOINS PANEL 0329

Hydrologic Soil Group—Androscoggin and Sagadahoc Counties, Maine



Soil Map may not be valid at this scale.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons

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

#### Soil Rating Lines

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

#### Soil Rating Points

 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available

### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine  
 Survey Area Data: Version 18, Sep 14, 2017

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

Date(s) aerial images were photographed: Apr 18, 2012—Nov 1, 2016

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

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 2 to 8 percent slopes	B	2.3	33.4%
HfB	Hartland very fine sandy loam, 2 to 8 percent slopes	B	2.1	30.5%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	B	1.4	20.5%
PbB	Paxton loam, 2 to 8 percent slopes	C	1.1	15.1%
WrB	Woodbridge loam, 0 to 8 percent slopes	C	0.0	0.6%
<b>Totals for Area of Interest</b>			<b>7.0</b>	<b>100.0%</b>

## Description

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

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

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

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

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

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

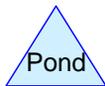
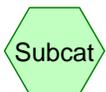
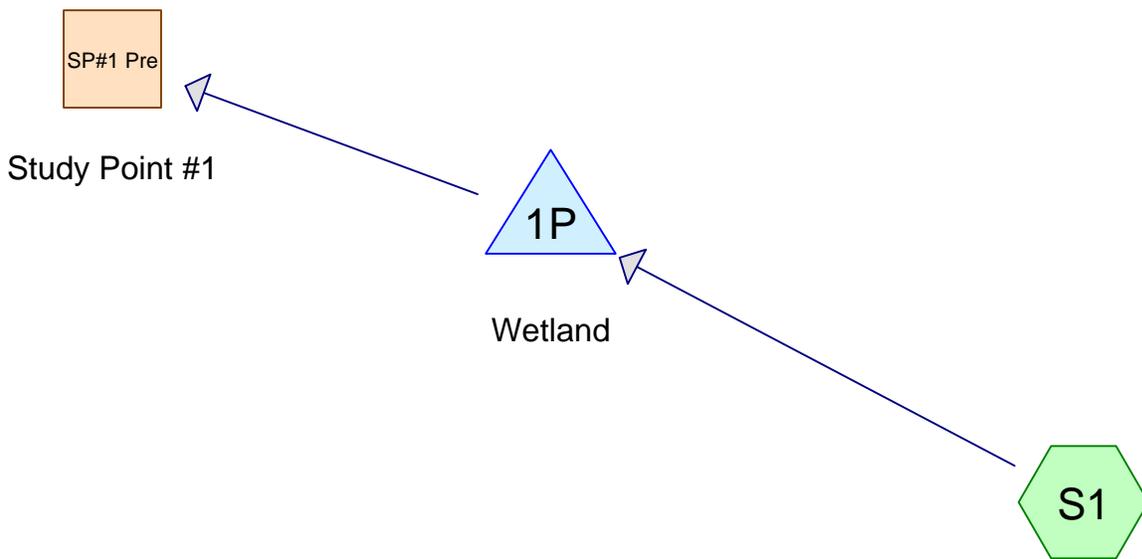
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher



# 1744 PRE & POST - Updated 2-6-2018

Prepared by {enter your company name here}

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Printed 2/7/2018

Page 2

## Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.392	70	Woods, Good, HSG C (S1)
0.482	80	1/2 acre lots, 25% imp, HSG C (S1)
3.124	83	1/4 acre lots, 38% imp, HSG C (S1)
0.300	98	Water Surface, 0% imp, HSG C (S1)
<b>5.298</b>		<b>TOTAL AREA</b>

**1744 PRE & POST - Updated 2-6-2018**

Prepared by {enter your company name here}

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Printed 2/7/2018

Page 3

**Soil Listing (selected nodes)**

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
<b>5.298</b>	HSG C	S1
0.000	HSG D	
0.000	Other	
5.298		<b>TOTAL AREA</b>

**1744 PRE & POST - Updated 2-6-2018**

Prepared by {enter your company name here}

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Printed 2/7/2018

Page 4

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)
1	1P	249.50	249.00	70.0	0.0071	0.018	15.0	0.0

**1744 PRE & POST - Updated 2-6-2018**

Type III 24-hr 2-Year Rainfall=3.00"

Prepared by {enter your company name here}

Printed 2/7/2018

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Page 5

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

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment S1:**

Runoff Area=230,774 sf 24.68% Impervious Runoff Depth>1.14"  
Flow Length=320' Tc=39.9 min CN=80 Runoff=3.76 cfs 0.502 af

**Reach SP#1 Pre: Study Point #1**

Inflow=1.54 cfs 0.461 af  
Outflow=1.54 cfs 0.461 af

**Pond 1P: Wetland**

Peak Elev=250.25' Storage=8,155 cf Inflow=3.76 cfs 0.501 af  
15.0" Round Culvert n=0.018 L=70.0' S=0.0071 '/ Outflow=1.54 cfs 0.462 af

**Total Runoff Area = 5.298 ac Runoff Volume = 0.502 af Average Runoff Depth = 1.14"**  
**75.32% Pervious = 3.990 ac 24.68% Impervious = 1.308 ac**

**Summary for Subcatchment S1:**

Runoff = 3.76 cfs @ 12.57 hrs, Volume= 0.502 af, Depth> 1.14"

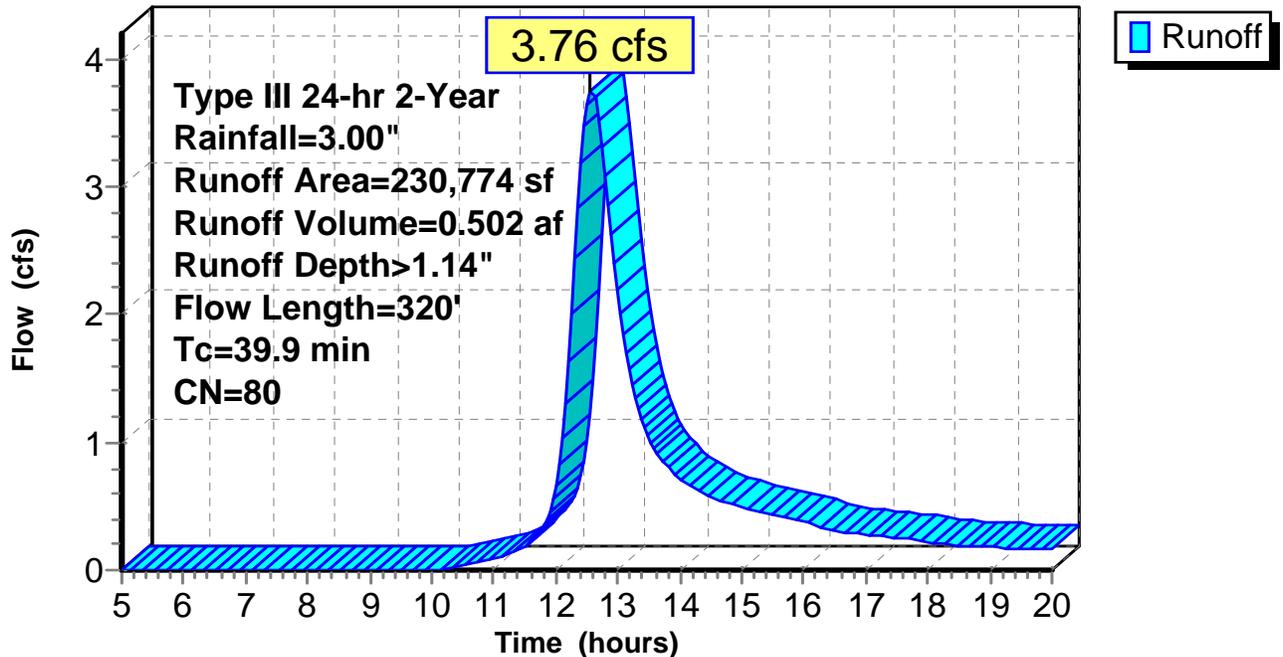
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.00"

Area (sf)	CN	Description
60,637	70	Woods, Good, HSG C
136,066	83	1/4 acre lots, 38% imp, HSG C
21,000	80	1/2 acre lots, 25% imp, HSG C
13,071	98	Water Surface, 0% imp, HSG C
230,774	80	Weighted Average
173,819		75.32% Pervious Area
56,955		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.2	150	0.0530	0.07		<b>Sheet Flow, A-B</b> Woods: Dense underbrush n= 0.800 P2= 3.00"
3.7	170	0.0240	0.77		<b>Shallow Concentrated Flow, C-D</b> Woodland Kv= 5.0 fps
39.9	320	Total			

**Subcatchment S1:**

**Hydrograph**



### Summary for Reach SP#1 Pre: Study Point #1

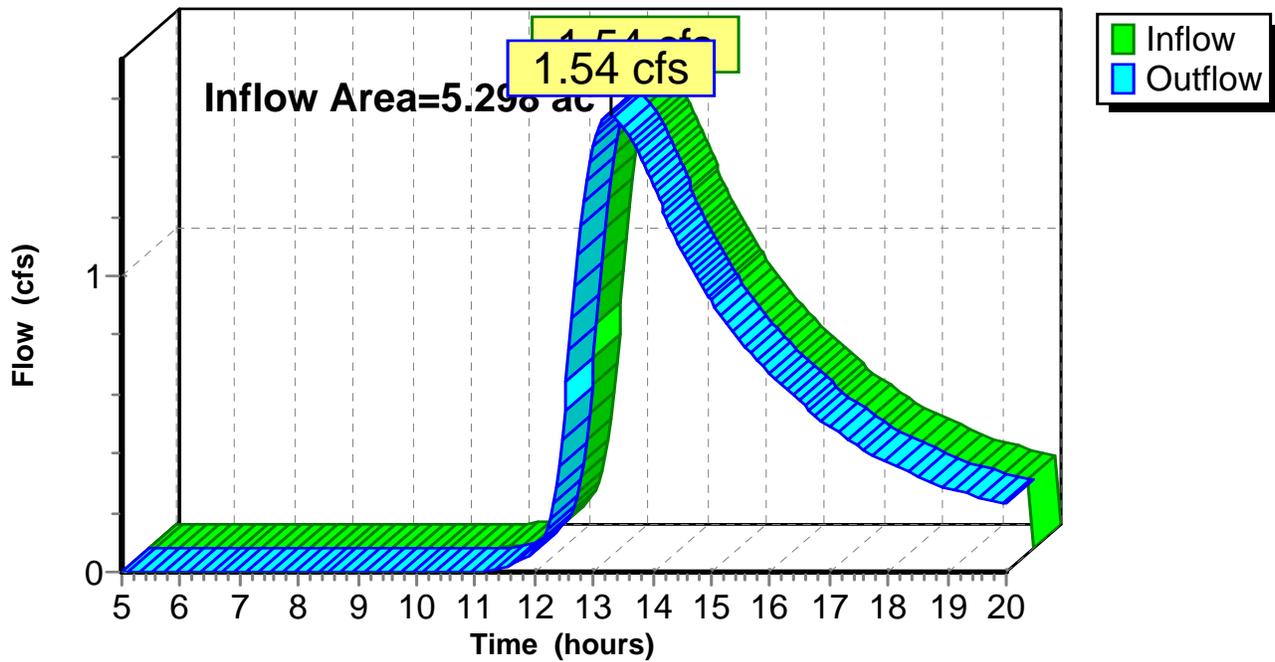
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.298 ac, 24.68% Impervious, Inflow Depth > 1.04" for 2-Year event  
Inflow = 1.54 cfs @ 13.24 hrs, Volume= 0.461 af  
Outflow = 1.54 cfs @ 13.29 hrs, Volume= 0.461 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach SP#1 Pre: Study Point #1

#### Hydrograph



**Summary for Pond 1P: Wetland**

Inflow Area = 5.298 ac, 24.68% Impervious, Inflow Depth > 1.13" for 2-Year event  
 Inflow = 3.76 cfs @ 12.57 hrs, Volume= 0.501 af  
 Outflow = 1.54 cfs @ 13.24 hrs, Volume= 0.462 af, Atten= 59%, Lag= 39.8 min  
 Primary = 1.54 cfs @ 13.24 hrs, Volume= 0.462 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 250.25' @ 13.24 hrs Surf.Area= 15,839 sf Storage= 8,155 cf

Plug-Flow detention time= 92.5 min calculated for 0.462 af (92% of inflow)  
 Center-of-Mass det. time= 68.3 min ( 900.2 - 831.9 )

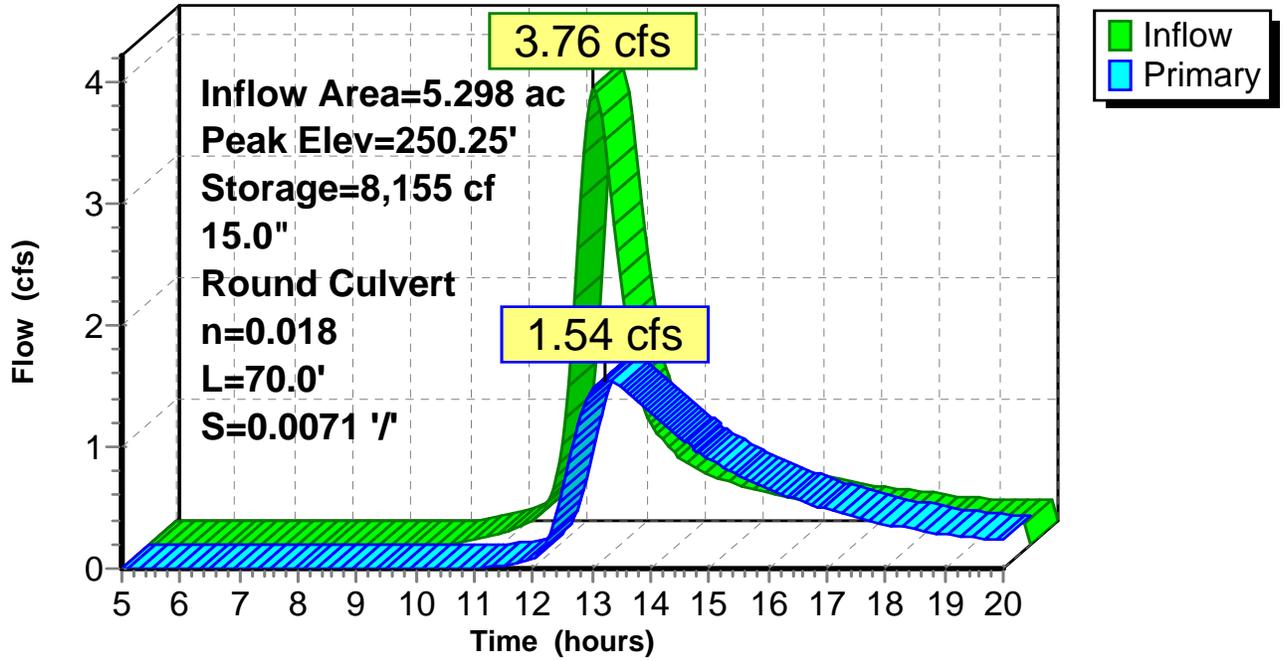
Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	45,552 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	3,294	0	0
250.00	14,254	4,387	4,387
252.00	26,911	41,165	45,552

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	<b>15.0" Round Culvert (Assumed)</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 249.00' S= 0.0071 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

**Primary OutFlow** Max=1.54 cfs @ 13.24 hrs HW=250.25' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Assumed) (Barrel Controls 1.54 cfs @ 2.88 fps)

Pond 1P: Wetland

Hydrograph



**1744 PRE & POST - Updated 2-6-2018**

Type III 24-hr 10-Year Rainfall=4.30"

Prepared by {enter your company name here}

Printed 2/7/2018

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Page 10

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

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment S1:**

Runoff Area=230,774 sf 24.68% Impervious Runoff Depth>2.11"  
Flow Length=320' Tc=39.9 min CN=80 Runoff=7.01 cfs 0.931 af

**Reach SP#1 Pre: Study Point #1**

Inflow=3.07 cfs 0.873 af  
Outflow=3.07 cfs 0.873 af

**Pond 1P: Wetland**

Peak Elev=250.65' Storage=15,009 cf Inflow=7.01 cfs 0.930 af  
15.0" Round Culvert n=0.018 L=70.0' S=0.0071 '/ Outflow=3.07 cfs 0.874 af

**Total Runoff Area = 5.298 ac Runoff Volume = 0.931 af Average Runoff Depth = 2.11"**  
**75.32% Pervious = 3.990 ac 24.68% Impervious = 1.308 ac**

**Summary for Subcatchment S1:**

Runoff = 7.01 cfs @ 12.56 hrs, Volume= 0.931 af, Depth> 2.11"

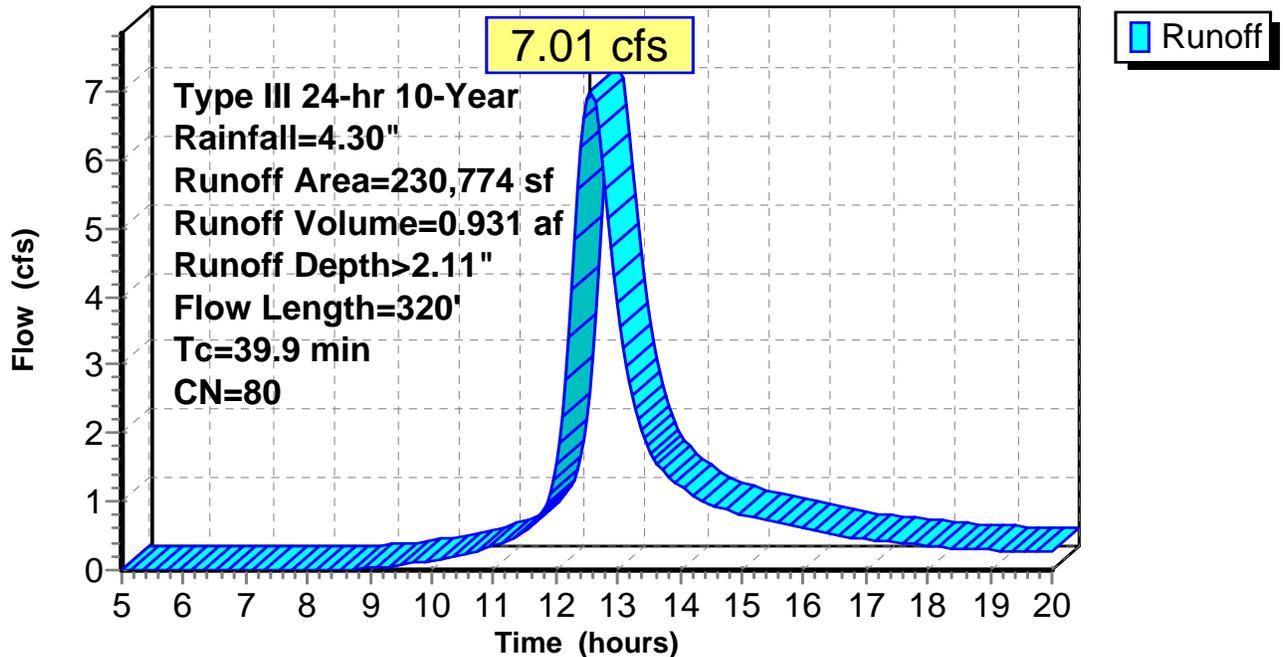
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-Year Rainfall=4.30"

Area (sf)	CN	Description
60,637	70	Woods, Good, HSG C
136,066	83	1/4 acre lots, 38% imp, HSG C
21,000	80	1/2 acre lots, 25% imp, HSG C
13,071	98	Water Surface, 0% imp, HSG C
230,774	80	Weighted Average
173,819		75.32% Pervious Area
56,955		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.2	150	0.0530	0.07		<b>Sheet Flow, A-B</b> Woods: Dense underbrush n= 0.800 P2= 3.00"
3.7	170	0.0240	0.77		<b>Shallow Concentrated Flow, C-D</b> Woodland Kv= 5.0 fps
39.9	320	Total			

**Subcatchment S1:**

**Hydrograph**



### Summary for Reach SP#1 Pre: Study Point #1

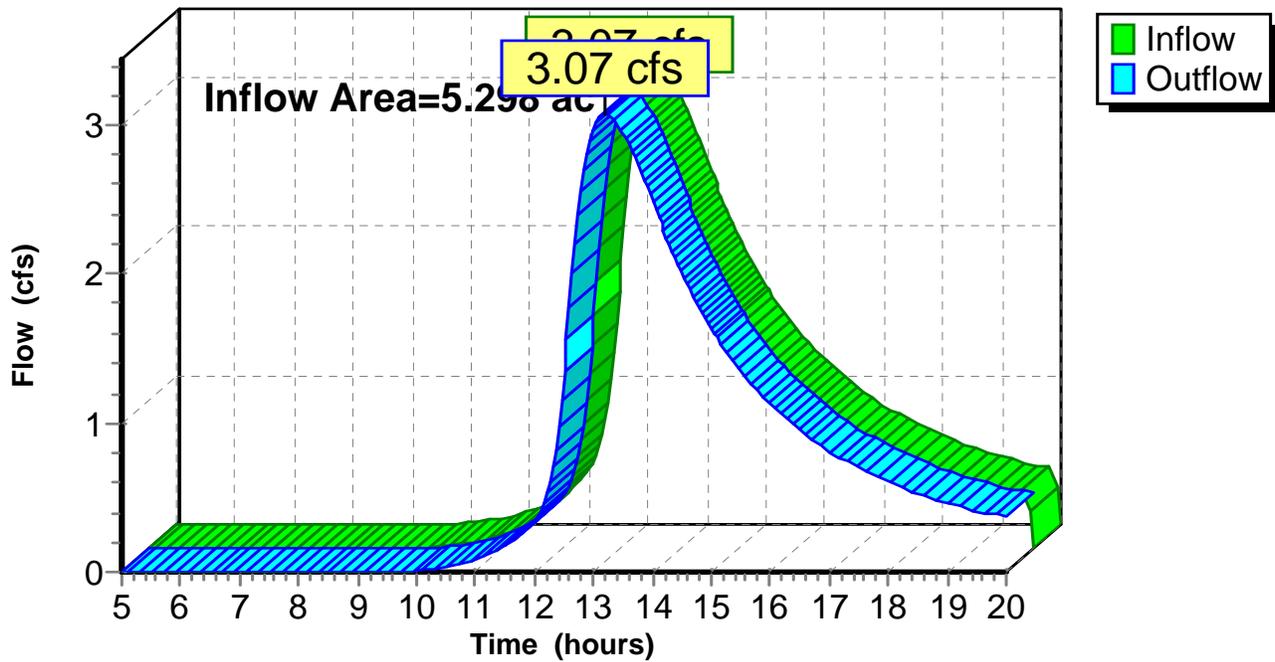
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.298 ac, 24.68% Impervious, Inflow Depth > 1.98" for 10-Year event  
Inflow = 3.07 cfs @ 13.16 hrs, Volume= 0.873 af  
Outflow = 3.07 cfs @ 13.21 hrs, Volume= 0.873 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach SP#1 Pre: Study Point #1

#### Hydrograph



**Summary for Pond 1P: Wetland**

Inflow Area = 5.298 ac, 24.68% Impervious, Inflow Depth > 2.11" for 10-Year event  
 Inflow = 7.01 cfs @ 12.56 hrs, Volume= 0.930 af  
 Outflow = 3.07 cfs @ 13.16 hrs, Volume= 0.874 af, Atten= 56%, Lag= 36.3 min  
 Primary = 3.07 cfs @ 13.16 hrs, Volume= 0.874 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 250.65' @ 13.16 hrs Surf.Area= 18,374 sf Storage= 15,009 cf

Plug-Flow detention time= 85.8 min calculated for 0.874 af (94% of inflow)  
 Center-of-Mass det. time= 66.3 min ( 884.9 - 818.6 )

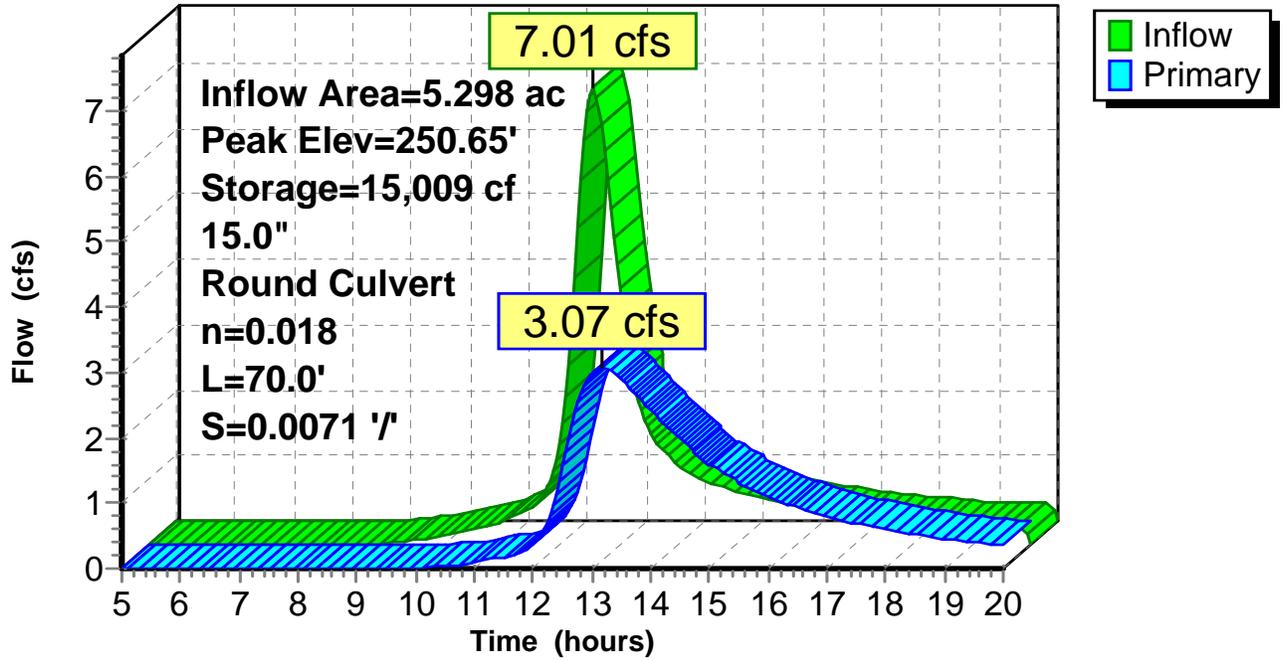
Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	45,552 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	3,294	0	0
250.00	14,254	4,387	4,387
252.00	26,911	41,165	45,552

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	<b>15.0" Round Culvert (Assumed)</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 249.00' S= 0.0071 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

**Primary OutFlow** Max=3.07 cfs @ 13.16 hrs HW=250.65' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Assumed) (Barrel Controls 3.07 cfs @ 3.39 fps)

Pond 1P: Wetland

Hydrograph



**1744 PRE & POST - Updated 2-6-2018**

Type III 24-hr 25-Year Rainfall=5.40"

Prepared by {enter your company name here}

Printed 2/7/2018

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Page 15

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

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment S1:**

Runoff Area=230,774 sf 24.68% Impervious Runoff Depth>3.00"  
Flow Length=320' Tc=39.9 min CN=80 Runoff=9.93 cfs 1.325 af

**Reach SP#1 Pre: Study Point #1**

Inflow=4.15 cfs 1.253 af  
Outflow=4.15 cfs 1.253 af

**Pond 1P: Wetland**

Peak Elev=250.99' Storage=21,540 cf Inflow=9.93 cfs 1.324 af  
15.0" Round Culvert n=0.018 L=70.0' S=0.0071 '/ Outflow=4.15 cfs 1.255 af

**Total Runoff Area = 5.298 ac Runoff Volume = 1.325 af Average Runoff Depth = 3.00"**  
**75.32% Pervious = 3.990 ac 24.68% Impervious = 1.308 ac**

**Summary for Subcatchment S1:**

Runoff = 9.93 cfs @ 12.55 hrs, Volume= 1.325 af, Depth> 3.00"

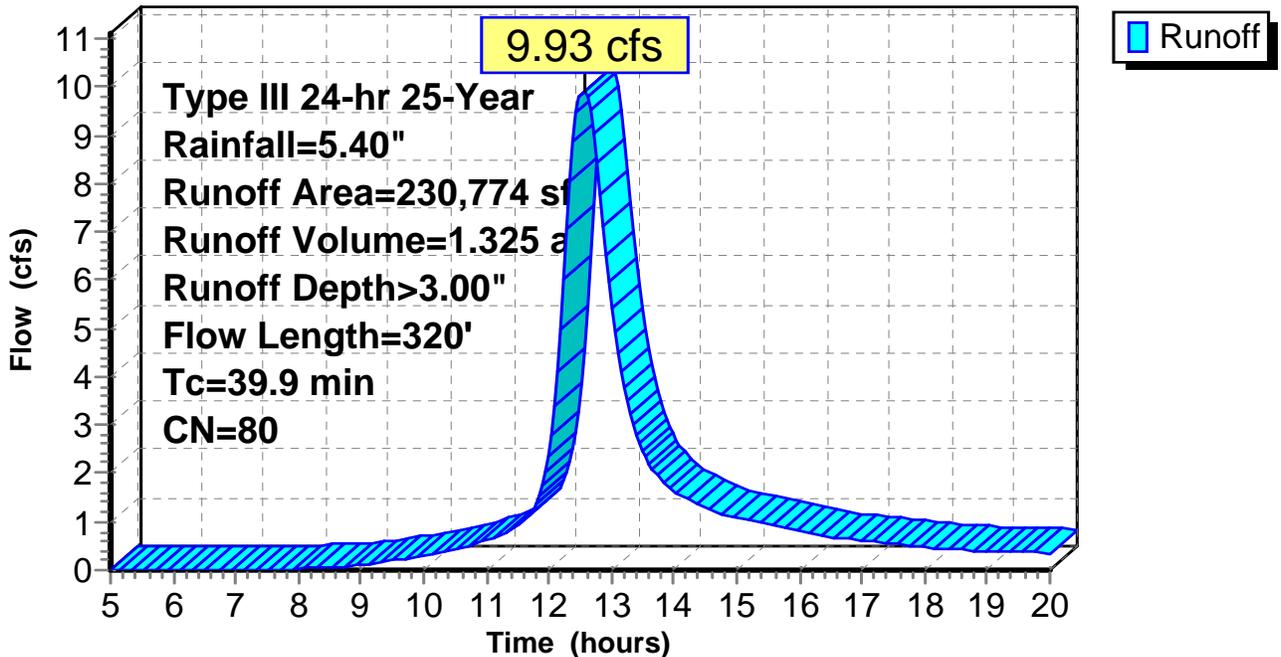
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=5.40"

Area (sf)	CN	Description
60,637	70	Woods, Good, HSG C
136,066	83	1/4 acre lots, 38% imp, HSG C
21,000	80	1/2 acre lots, 25% imp, HSG C
13,071	98	Water Surface, 0% imp, HSG C
230,774	80	Weighted Average
173,819		75.32% Pervious Area
56,955		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.2	150	0.0530	0.07		<b>Sheet Flow, A-B</b> Woods: Dense underbrush n= 0.800 P2= 3.00"
3.7	170	0.0240	0.77		<b>Shallow Concentrated Flow, C-D</b> Woodland Kv= 5.0 fps
39.9	320	Total			

**Subcatchment S1:**

**Hydrograph**



### Summary for Reach SP#1 Pre: Study Point #1

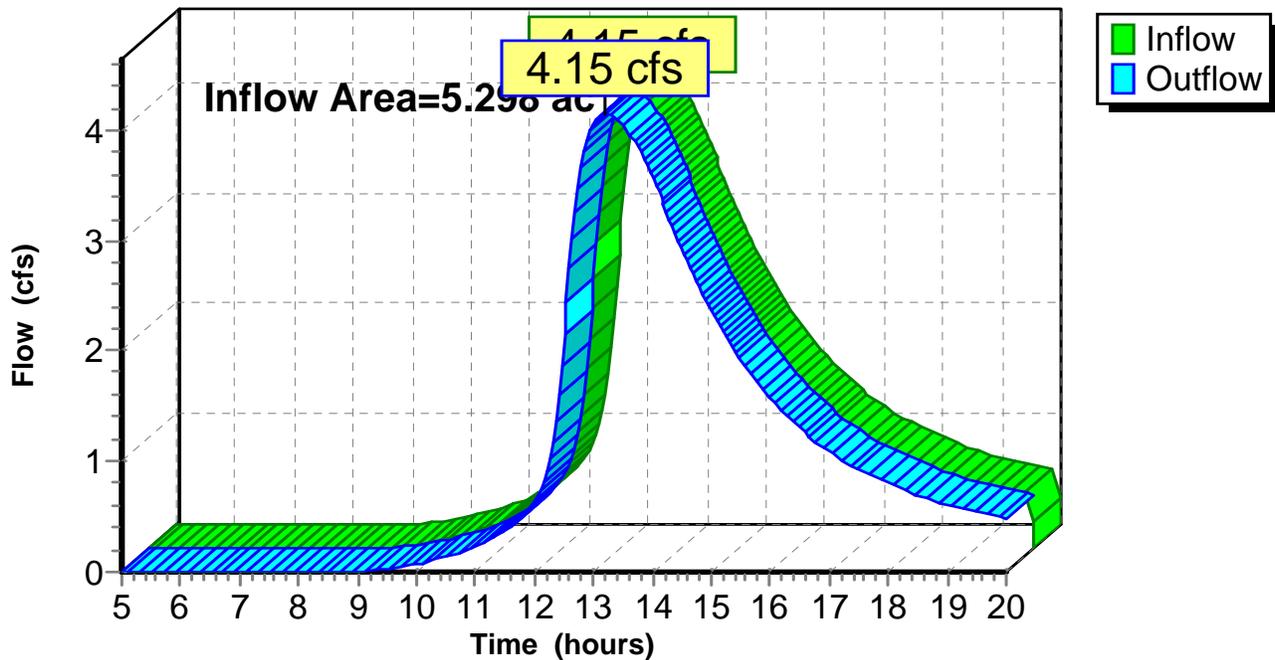
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.298 ac, 24.68% Impervious, Inflow Depth > 2.84" for 25-Year event  
Inflow = 4.15 cfs @ 13.17 hrs, Volume= 1.253 af  
Outflow = 4.15 cfs @ 13.22 hrs, Volume= 1.253 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach SP#1 Pre: Study Point #1

#### Hydrograph



**Summary for Pond 1P: Wetland**

Inflow Area = 5.298 ac, 24.68% Impervious, Inflow Depth > 3.00" for 25-Year event  
 Inflow = 9.93 cfs @ 12.55 hrs, Volume= 1.324 af  
 Outflow = 4.15 cfs @ 13.17 hrs, Volume= 1.255 af, Atten= 58%, Lag= 37.3 min  
 Primary = 4.15 cfs @ 13.17 hrs, Volume= 1.255 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 250.99' @ 13.17 hrs Surf.Area= 20,501 sf Storage= 21,540 cf

Plug-Flow detention time= 84.7 min calculated for 1.251 af (94% of inflow)  
 Center-of-Mass det. time= 67.2 min ( 878.0 - 810.7 )

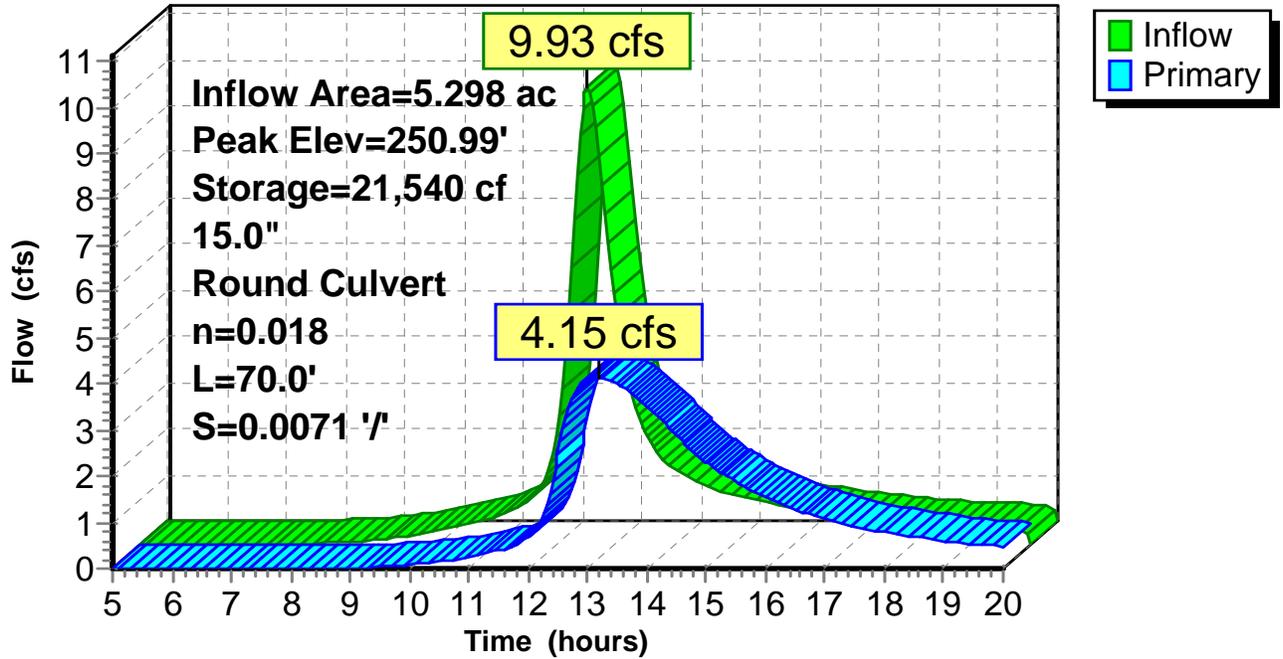
Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	45,552 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	3,294	0	0
250.00	14,254	4,387	4,387
252.00	26,911	41,165	45,552

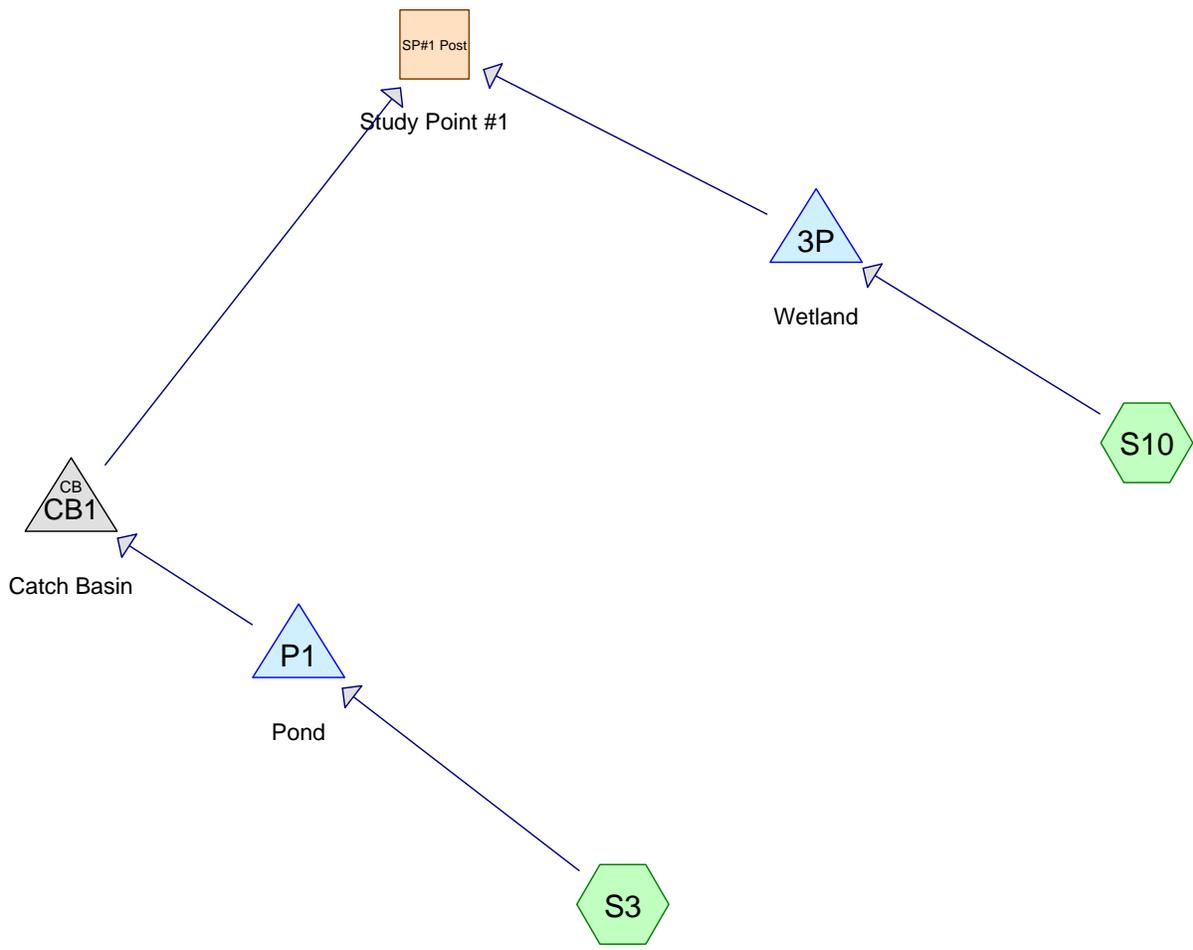
Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	<b>15.0" Round Culvert (Assumed)</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 249.00' S= 0.0071 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

**Primary OutFlow** Max=4.15 cfs @ 13.17 hrs HW=250.99' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Assumed) (Barrel Controls 4.15 cfs @ 3.59 fps)

Pond 1P: Wetland

Hydrograph

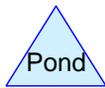




Subcat



Reach



Pond



Link

**Drainage Diagram for 1744 PRE & POST - Updated 2-6-2018**  
 Prepared by {enter your company name here}, Printed 2/7/2018  
 HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

# 1744 PRE & POST - Updated 2-6-2018

Prepared by {enter your company name here}

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Printed 2/7/2018

Page 2

## Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.392	70	Woods, Good, HSG C (S10)
0.008	72	Woods/grass comb., Good, HSG C (S3)
0.091	74	>75% Grass cover, Good, HSG C (S3)
0.215	80	1/2 acre lots, 25% imp, HSG C (S10)
3.124	83	1/4 acre lots, 38% imp, HSG C (S10, S3)
0.120	98	Paved parking (S3)
0.048	98	Roofs (S3)
0.300	98	Water Surface, 0% imp, HSG C (S10)
<b>5.298</b>		<b>TOTAL AREA</b>

**1744 PRE & POST - Updated 2-6-2018**

Prepared by {enter your company name here}

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Printed 2/7/2018

Page 3

**Soil Listing (selected nodes)**

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
5.130	HSG C	S10, S3
0.000	HSG D	
0.168	Other	S3
<b>5.298</b>		<b>TOTAL AREA</b>

**1744 PRE & POST - Updated 2-6-2018**

Prepared by {enter your company name here}

Printed 2/7/2018

HydroCAD® 9.00 s/n 03654 © 2009 HydroCAD Software Solutions LLC

Page 4

**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)
1	3P	249.50	249.00	70.0	0.0071	0.018	15.0	0.0
2	CB1	255.75	248.00	293.0	0.0265	0.009	24.0	0.0
3	P1	257.00	256.00	28.0	0.0357	0.009	15.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS  
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment S10:** Runoff Area=203,678 sf 23.65% Impervious Runoff Depth>1.14"  
Flow Length=320' Tc=39.9 min CN=80 Runoff=3.31 cfs 0.443 af

**Subcatchment S3:** Runoff Area=27,096 sf 48.75% Impervious Runoff Depth>1.55"  
Flow Length=283' Tc=14.5 min CN=86 Runoff=0.92 cfs 0.080 af

**Reach SP#1 Post: Study Point #1** Inflow=1.47 cfs 0.485 af  
Outflow=1.47 cfs 0.485 af

**Pond 3P: Wetland** Peak Elev=250.19' Storage=7,264 cf Inflow=3.31 cfs 0.442 af  
15.0" Round Culvert n=0.018 L=70.0' S=0.0071 '/ Outflow=1.34 cfs 0.407 af

**Pond CB1: Catch Basin** Peak Elev=256.19' Inflow=0.90 cfs 0.080 af  
24.0" Round Culvert n=0.009 L=293.0' S=0.0265 '/ Outflow=0.90 cfs 0.080 af

**Pond P1: Pond** Peak Elev=257.51' Storage=232 cf Inflow=0.92 cfs 0.080 af  
15.0" Round Culvert n=0.009 L=28.0' S=0.0357 '/ Outflow=0.90 cfs 0.080 af

**Total Runoff Area = 5.298 ac Runoff Volume = 0.523 af Average Runoff Depth = 1.18"**  
**73.40% Pervious = 3.889 ac 26.60% Impervious = 1.409 ac**

**Summary for Subcatchment S10:**

Runoff = 3.31 cfs @ 12.57 hrs, Volume= 0.443 af, Depth> 1.14"

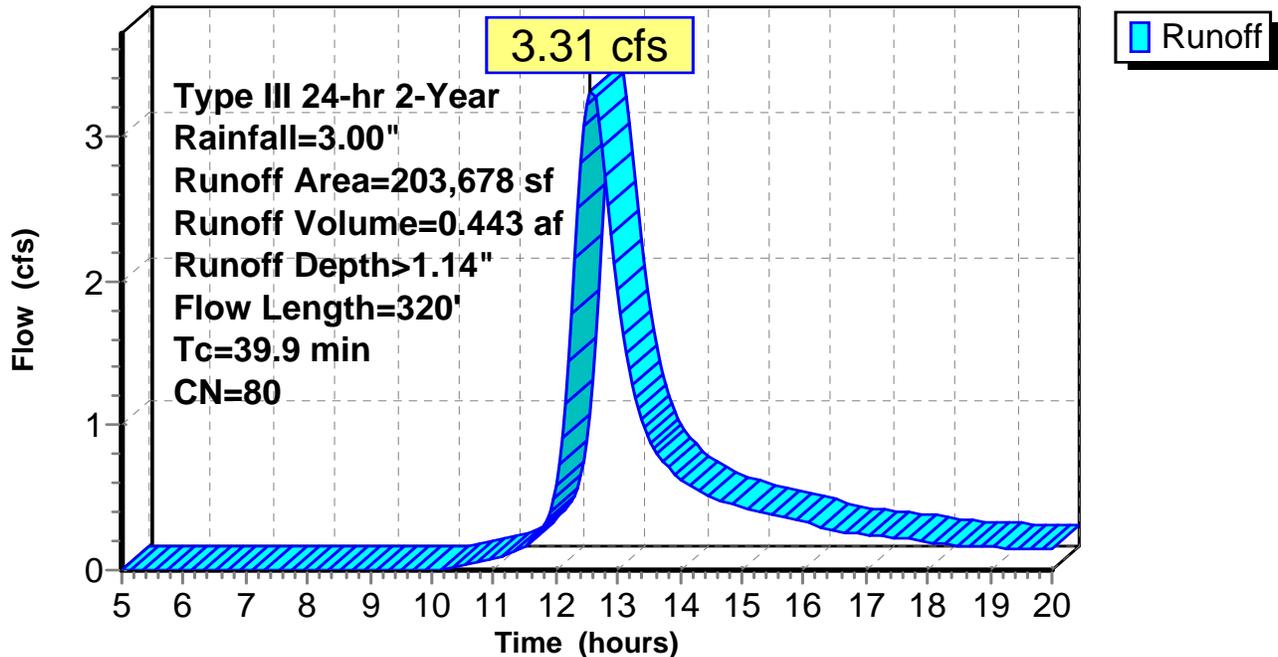
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.00"

Area (sf)	CN	Description
60,637	70	Woods, Good, HSG C
120,600	83	1/4 acre lots, 38% imp, HSG C
9,370	80	1/2 acre lots, 25% imp, HSG C
13,071	98	Water Surface, 0% imp, HSG C
203,678	80	Weighted Average
155,508		76.35% Pervious Area
48,171		23.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.2	150	0.0530	0.07		<b>Sheet Flow, A-B</b> Woods: Dense underbrush n= 0.800 P2= 3.00"
3.7	170	0.0240	0.77		<b>Shallow Concentrated Flow, C-D</b> Woodland Kv= 5.0 fps
39.9	320	Total			

**Subcatchment S10:**

**Hydrograph**



**Summary for Subcatchment S3:**

Runoff = 0.92 cfs @ 12.20 hrs, Volume= 0.080 af, Depth> 1.55"

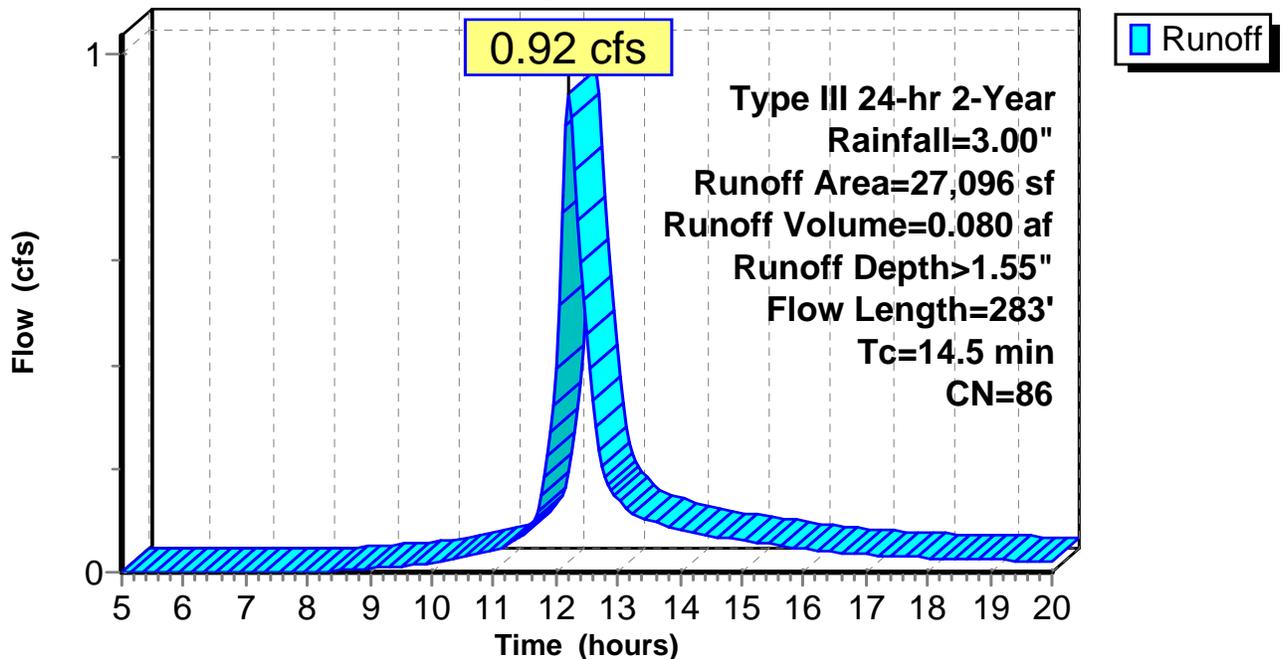
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-Year Rainfall=3.00"

Area (sf)	CN	Description
* 5,232	98	Paved parking
344	72	Woods/grass comb., Good, HSG C
3,954	74	>75% Grass cover, Good, HSG C
15,466	83	1/4 acre lots, 38% imp, HSG C
* 2,100	98	Roofs
27,096	86	Weighted Average
13,887		51.25% Pervious Area
13,209		48.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	137	0.0474	0.17		<b>Sheet Flow, A-B</b> Grass: Dense n= 0.240 P2= 3.00"
0.4	76	0.0260	3.27		<b>Shallow Concentrated Flow, B-C</b> Paved Kv= 20.3 fps
0.7	70	0.0143	1.79		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
14.5	283	Total			

**Subcatchment S3:**

**Hydrograph**



### Summary for Reach SP#1 Post: Study Point #1

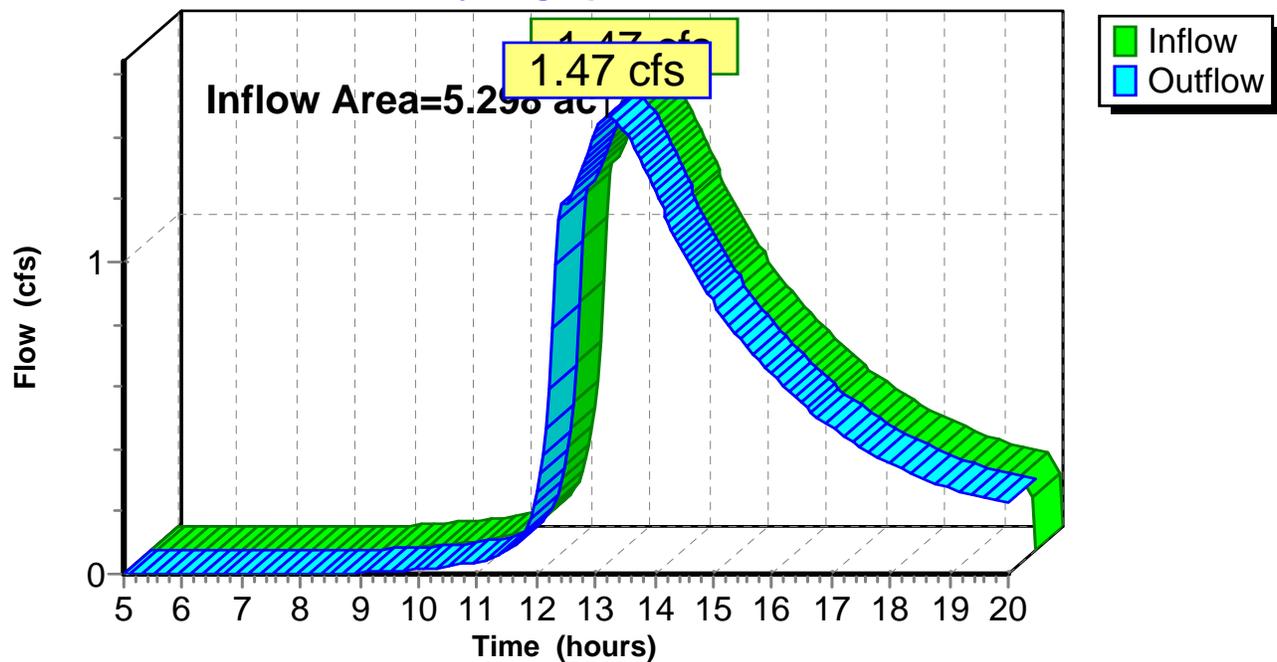
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.298 ac, 26.60% Impervious, Inflow Depth > 1.10" for 2-Year event  
Inflow = 1.47 cfs @ 13.17 hrs, Volume= 0.485 af  
Outflow = 1.47 cfs @ 13.22 hrs, Volume= 0.485 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach SP#1 Post: Study Point #1

#### Hydrograph



**Summary for Pond 3P: Wetland**

Inflow Area = 4.676 ac, 23.65% Impervious, Inflow Depth > 1.13" for 2-Year event  
 Inflow = 3.31 cfs @ 12.57 hrs, Volume= 0.442 af  
 Outflow = 1.34 cfs @ 13.25 hrs, Volume= 0.407 af, Atten= 59%, Lag= 40.3 min  
 Primary = 1.34 cfs @ 13.25 hrs, Volume= 0.407 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 250.19' @ 13.25 hrs Surf.Area= 15,479 sf Storage= 7,264 cf

Plug-Flow detention time= 94.3 min calculated for 0.407 af (92% of inflow)  
 Center-of-Mass det. time= 69.3 min ( 901.2 - 831.9 )

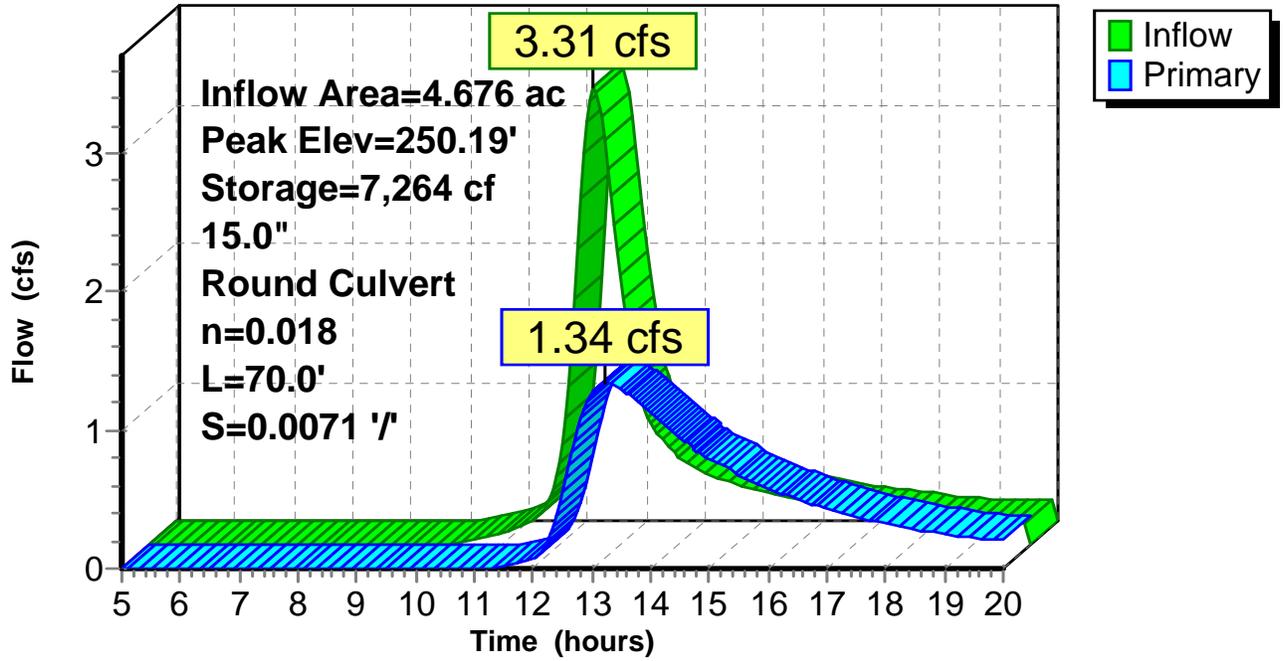
Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	45,552 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	3,294	0	0
250.00	14,254	4,387	4,387
252.00	26,911	41,165	45,552

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	<b>15.0" Round Culvert (Assumed)</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 249.00' S= 0.0071 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

**Primary OutFlow** Max=1.34 cfs @ 13.25 hrs HW=250.19' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Assumed) (Barrel Controls 1.34 cfs @ 2.78 fps)

Pond 3P: Wetland

Hydrograph



### Summary for Pond CB1: Catch Basin

[57] Hint: Peaked at 256.19' (Flood elevation advised)

Inflow Area = 0.622 ac, 48.75% Impervious, Inflow Depth > 1.54" for 2-Year event  
 Inflow = 0.90 cfs @ 12.27 hrs, Volume= 0.080 af  
 Outflow = 0.90 cfs @ 12.32 hrs, Volume= 0.080 af, Atten= 0%, Lag= 3.0 min  
 Primary = 0.90 cfs @ 12.32 hrs, Volume= 0.080 af

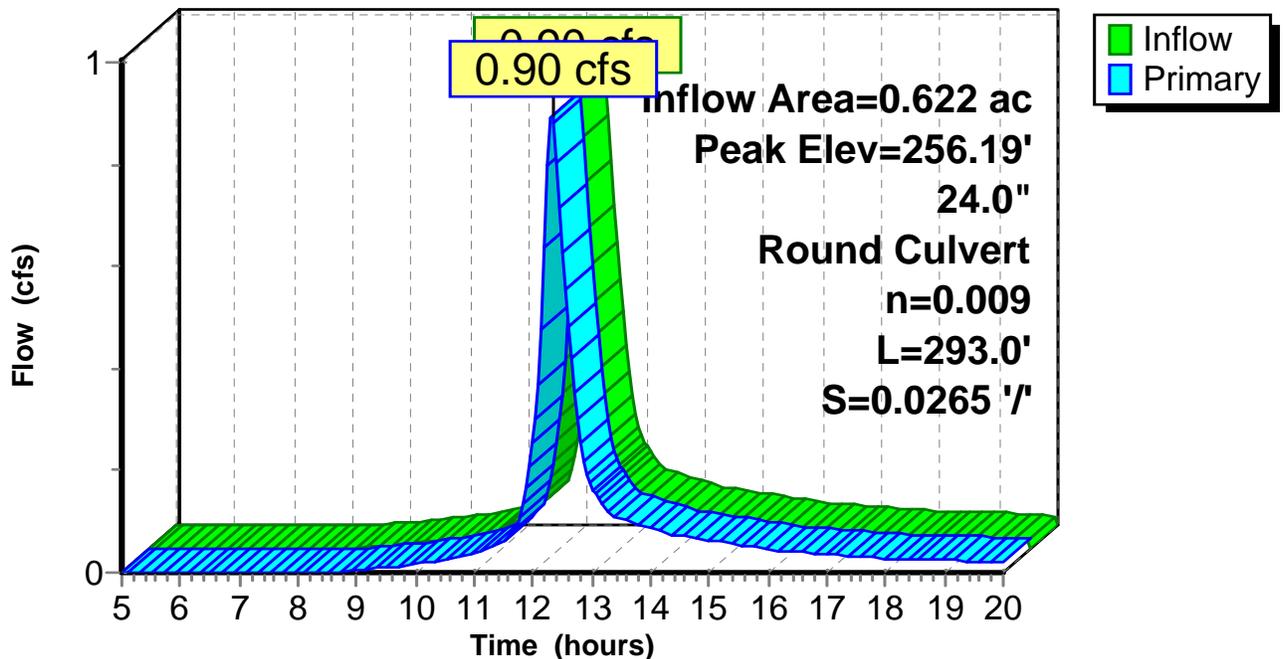
Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 256.19' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	255.75'	<b>24.0" Round Culvert</b> L= 293.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 248.00' S= 0.0265 '/ Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

**Primary OutFlow** Max=0.89 cfs @ 12.32 hrs HW=256.18' TW=0.00' (Dynamic Tailwater)  
 ↳ **1=Culvert** (Inlet Controls 0.89 cfs @ 1.77 fps)

### Pond CB1: Catch Basin

#### Hydrograph



**Summary for Pond P1: Pond**

Inflow Area = 0.622 ac, 48.75% Impervious, Inflow Depth > 1.54" for 2-Year event  
 Inflow = 0.92 cfs @ 12.20 hrs, Volume= 0.080 af  
 Outflow = 0.90 cfs @ 12.27 hrs, Volume= 0.080 af, Atten= 3%, Lag= 4.0 min  
 Primary = 0.90 cfs @ 12.27 hrs, Volume= 0.080 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 257.51' @ 12.27 hrs Surf.Area= 812 sf Storage= 232 cf  
 Flood Elev= 258.25' Surf.Area= 1,875 sf Storage= 1,222 cf

Plug-Flow detention time= 5.5 min calculated for 0.080 af (99% of inflow)  
 Center-of-Mass det. time= 4.7 min ( 800.9 - 796.2 )

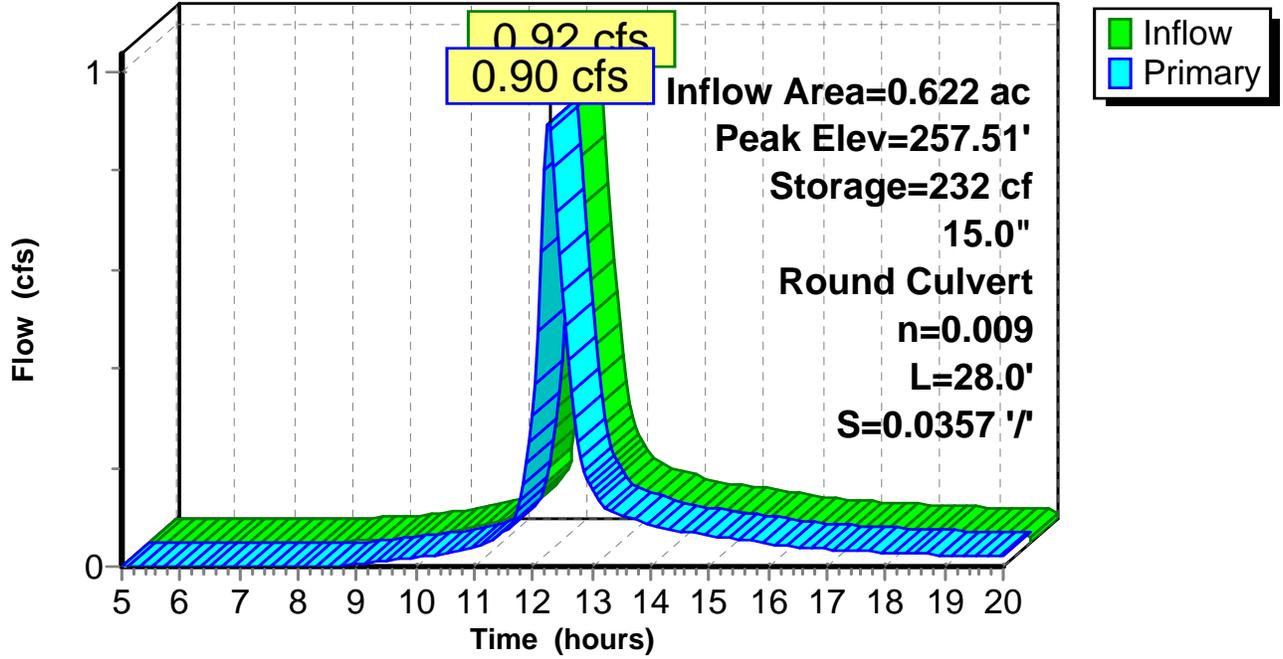
Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,050 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	100	0	0
258.00	1,500	800	800
259.00	3,000	2,250	3,050

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	<b>15.0" Round Culvert</b> L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 256.00' S= 0.0357 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

**Primary OutFlow** Max=0.89 cfs @ 12.27 hrs HW=257.50' TW=256.17' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 0.89 cfs @ 1.91 fps)

**Pond P1: Pond**

**Hydrograph**



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS  
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment S10:** Runoff Area=203,678 sf 23.65% Impervious Runoff Depth>2.11"  
Flow Length=320' Tc=39.9 min CN=80 Runoff=6.19 cfs 0.822 af

**Subcatchment S3:** Runoff Area=27,096 sf 48.75% Impervious Runoff Depth>2.64"  
Flow Length=283' Tc=14.5 min CN=86 Runoff=1.56 cfs 0.137 af

**Reach SP#1 Post: Study Point #1** Inflow=2.93 cfs 0.905 af  
Outflow=2.93 cfs 0.905 af

**Pond 3P: Wetland** Peak Elev=250.56' Storage=13,321 cf Inflow=6.19 cfs 0.821 af  
15.0" Round Culvert n=0.018 L=70.0' S=0.0071 '/' Outflow=2.71 cfs 0.770 af

**Pond CB1: Catch Basin** Peak Elev=256.32' Inflow=1.50 cfs 0.136 af  
24.0" Round Culvert n=0.009 L=293.0' S=0.0265 '/' Outflow=1.50 cfs 0.136 af

**Pond P1: Pond** Peak Elev=257.68' Storage=389 cf Inflow=1.56 cfs 0.137 af  
15.0" Round Culvert n=0.009 L=28.0' S=0.0357 '/' Outflow=1.50 cfs 0.137 af

**Total Runoff Area = 5.298 ac Runoff Volume = 0.958 af Average Runoff Depth = 2.17"**  
**73.40% Pervious = 3.889 ac 26.60% Impervious = 1.409 ac**

**Summary for Subcatchment S10:**

Runoff = 6.19 cfs @ 12.56 hrs, Volume= 0.822 af, Depth> 2.11"

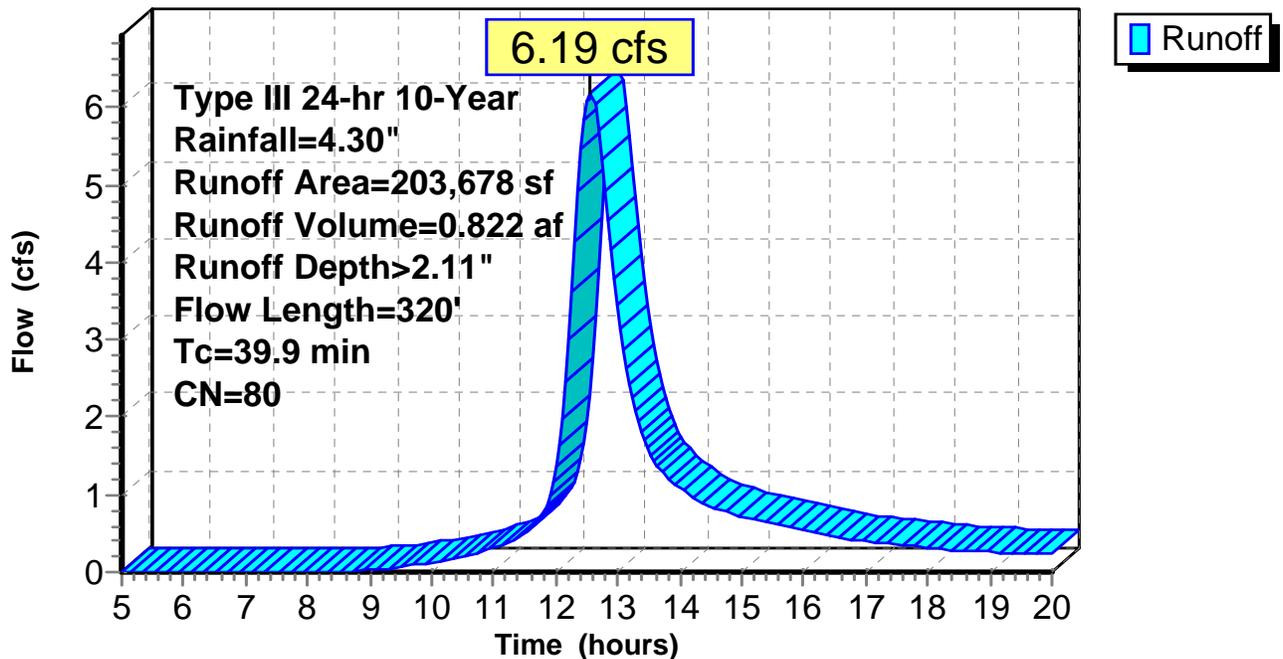
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.30"

Area (sf)	CN	Description
60,637	70	Woods, Good, HSG C
120,600	83	1/4 acre lots, 38% imp, HSG C
9,370	80	1/2 acre lots, 25% imp, HSG C
13,071	98	Water Surface, 0% imp, HSG C
203,678	80	Weighted Average
155,508		76.35% Pervious Area
48,171		23.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.2	150	0.0530	0.07		<b>Sheet Flow, A-B</b> Woods: Dense underbrush n= 0.800 P2= 3.00"
3.7	170	0.0240	0.77		<b>Shallow Concentrated Flow, C-D</b> Woodland Kv= 5.0 fps
39.9	320	Total			

**Subcatchment S10:**

**Hydrograph**



**Summary for Subcatchment S3:**

Runoff = 1.56 cfs @ 12.20 hrs, Volume= 0.137 af, Depth> 2.64"

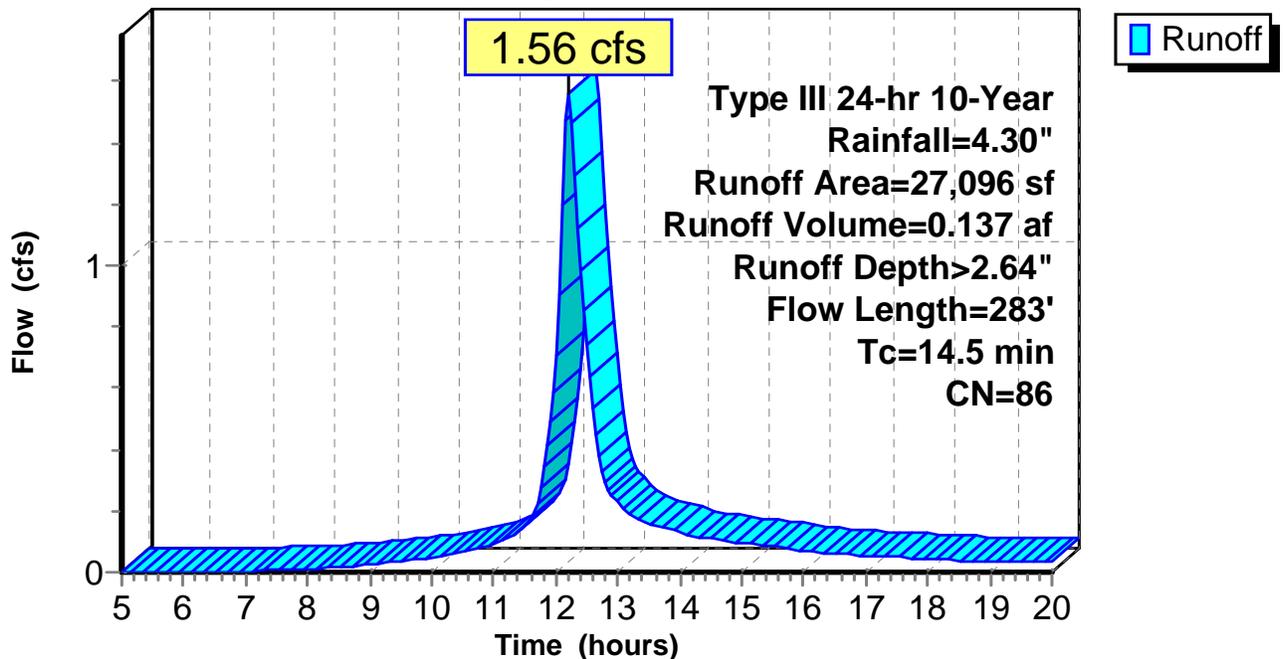
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.30"

Area (sf)	CN	Description
* 5,232	98	Paved parking
344	72	Woods/grass comb., Good, HSG C
3,954	74	>75% Grass cover, Good, HSG C
15,466	83	1/4 acre lots, 38% imp, HSG C
* 2,100	98	Roofs
27,096	86	Weighted Average
13,887		51.25% Pervious Area
13,209		48.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	137	0.0474	0.17		<b>Sheet Flow, A-B</b> Grass: Dense n= 0.240 P2= 3.00"
0.4	76	0.0260	3.27		<b>Shallow Concentrated Flow, B-C</b> Paved Kv= 20.3 fps
0.7	70	0.0143	1.79		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
14.5	283	Total			

**Subcatchment S3:**

**Hydrograph**



### Summary for Reach SP#1 Post: Study Point #1

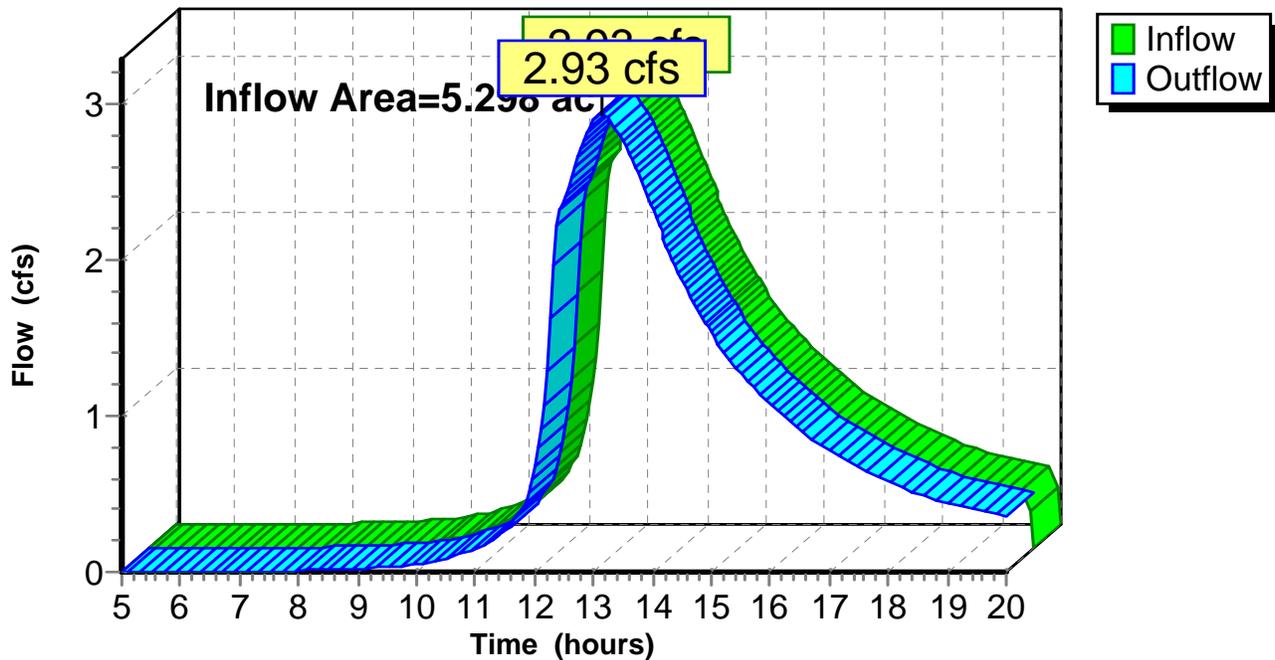
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.298 ac, 26.60% Impervious, Inflow Depth > 2.05" for 10-Year event  
Inflow = 2.93 cfs @ 13.10 hrs, Volume= 0.905 af  
Outflow = 2.93 cfs @ 13.15 hrs, Volume= 0.905 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach SP#1 Post: Study Point #1

#### Hydrograph



**Summary for Pond 3P: Wetland**

Inflow Area = 4.676 ac, 23.65% Impervious, Inflow Depth > 2.11" for 10-Year event  
 Inflow = 6.19 cfs @ 12.56 hrs, Volume= 0.821 af  
 Outflow = 2.71 cfs @ 13.16 hrs, Volume= 0.770 af, Atten= 56%, Lag= 36.2 min  
 Primary = 2.71 cfs @ 13.16 hrs, Volume= 0.770 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 250.56' @ 13.16 hrs Surf.Area= 17,783 sf Storage= 13,321 cf

Plug-Flow detention time= 87.1 min calculated for 0.770 af (94% of inflow)  
 Center-of-Mass det. time= 67.0 min ( 885.6 - 818.6 )

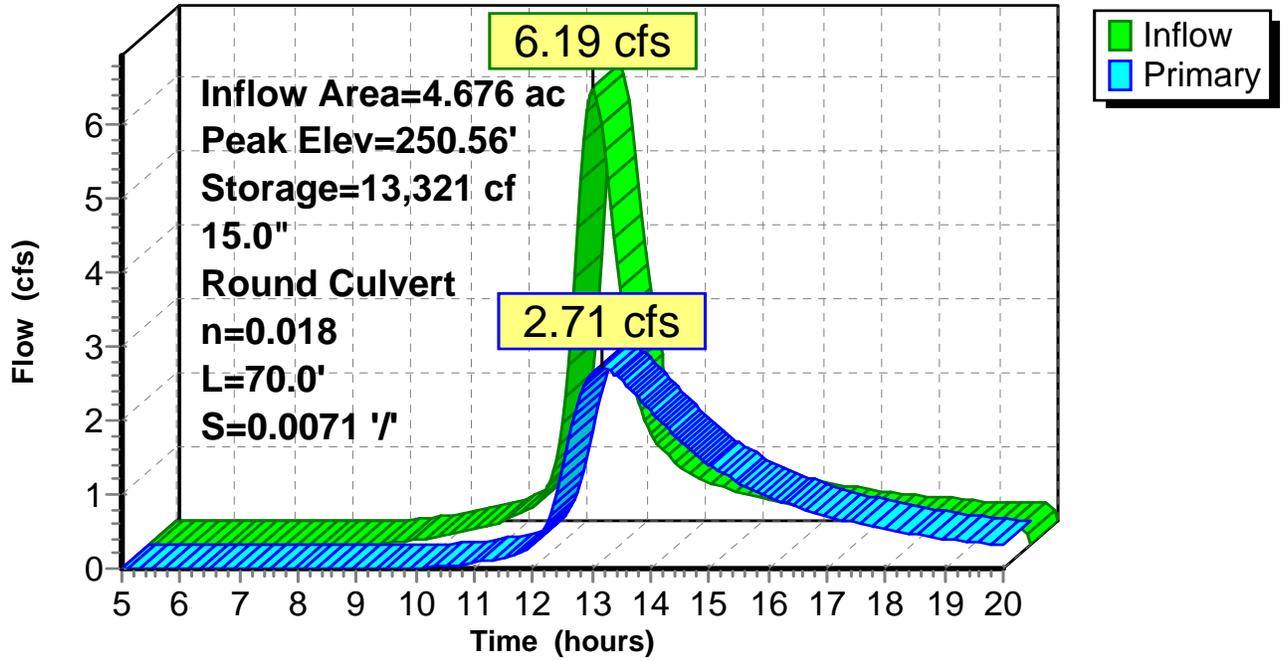
Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	45,552 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	3,294	0	0
250.00	14,254	4,387	4,387
252.00	26,911	41,165	45,552

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	<b>15.0" Round Culvert (Assumed)</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 249.00' S= 0.0071 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

**Primary OutFlow** Max=2.71 cfs @ 13.16 hrs HW=250.56' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Assumed) (Barrel Controls 2.71 cfs @ 3.30 fps)

Pond 3P: Wetland

Hydrograph



**Summary for Pond CB1: Catch Basin**

[57] Hint: Peaked at 256.32' (Flood elevation advised)

Inflow Area = 0.622 ac, 48.75% Impervious, Inflow Depth > 2.63" for 10-Year event  
 Inflow = 1.50 cfs @ 12.27 hrs, Volume= 0.136 af  
 Outflow = 1.50 cfs @ 12.32 hrs, Volume= 0.136 af, Atten= 0%, Lag= 3.0 min  
 Primary = 1.50 cfs @ 12.32 hrs, Volume= 0.136 af

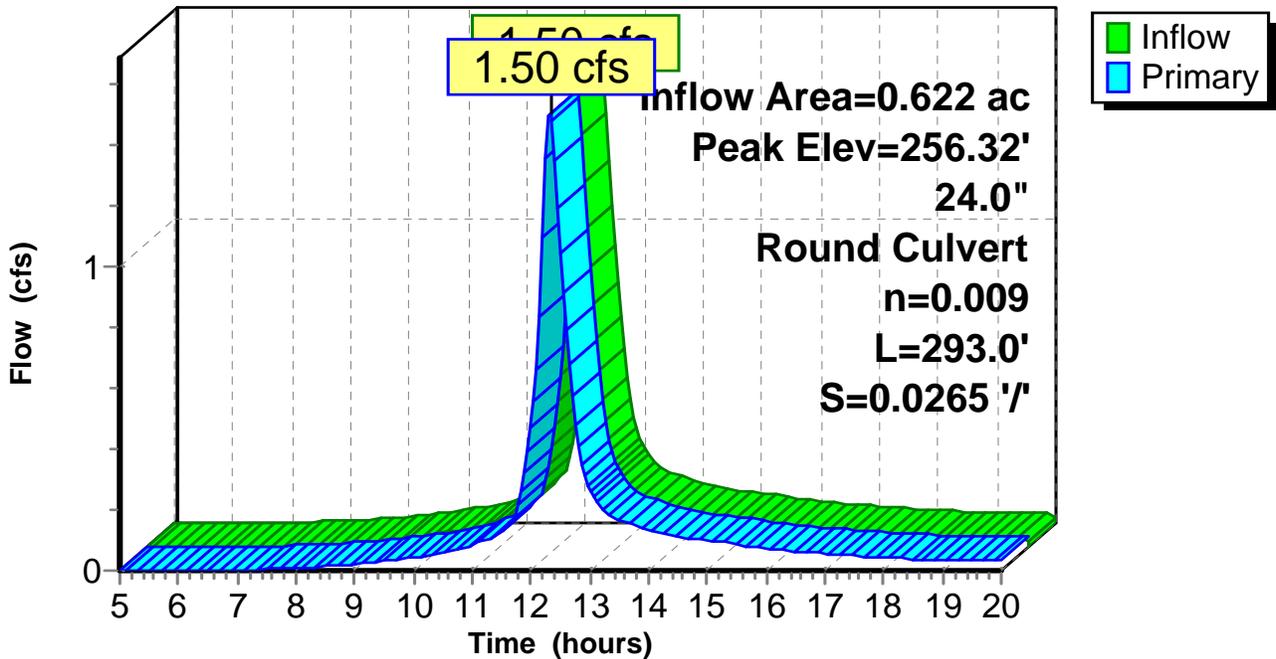
Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 256.32' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	255.75'	<b>24.0" Round Culvert</b> L= 293.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 248.00' S= 0.0265 '/ Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

**Primary OutFlow** Max=1.48 cfs @ 12.32 hrs HW=256.32' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.48 cfs @ 2.02 fps)

**Pond CB1: Catch Basin**

**Hydrograph**



**Summary for Pond P1: Pond**

Inflow Area = 0.622 ac, 48.75% Impervious, Inflow Depth > 2.64" for 10-Year event  
 Inflow = 1.56 cfs @ 12.20 hrs, Volume= 0.137 af  
 Outflow = 1.50 cfs @ 12.27 hrs, Volume= 0.137 af, Atten= 4%, Lag= 4.2 min  
 Primary = 1.50 cfs @ 12.27 hrs, Volume= 0.137 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 257.68' @ 12.27 hrs Surf.Area= 1,049 sf Storage= 389 cf  
 Flood Elev= 258.25' Surf.Area= 1,875 sf Storage= 1,222 cf

Plug-Flow detention time= 5.2 min calculated for 0.136 af (100% of inflow)  
 Center-of-Mass det. time= 4.5 min ( 788.4 - 783.8 )

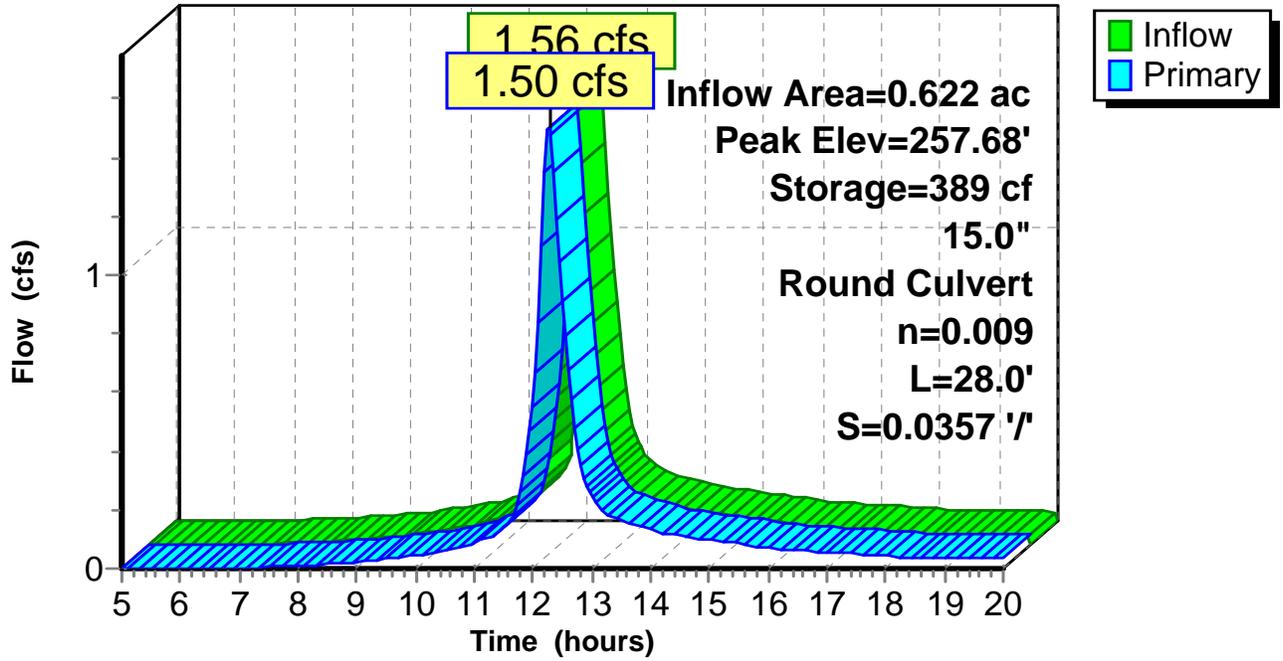
Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,050 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	100	0	0
258.00	1,500	800	800
259.00	3,000	2,250	3,050

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	<b>15.0" Round Culvert</b> L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 256.00' S= 0.0357 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

**Primary OutFlow** Max=1.48 cfs @ 12.27 hrs HW=257.67' TW=256.30' (Dynamic Tailwater)  
 ↑**1=Culvert** (Inlet Controls 1.48 cfs @ 2.20 fps)

Pond P1: Pond

Hydrograph



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS  
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment S10:** Runoff Area=203,678 sf 23.65% Impervious Runoff Depth>3.00"  
Flow Length=320' Tc=39.9 min CN=80 Runoff=8.77 cfs 1.170 af

**Subcatchment S3:** Runoff Area=27,096 sf 48.75% Impervious Runoff Depth>3.61"  
Flow Length=283' Tc=14.5 min CN=86 Runoff=2.11 cfs 0.187 af

**Reach SP#1 Post: Study Point #1** Inflow=4.08 cfs 1.290 af  
Outflow=4.08 cfs 1.290 af

**Pond 3P: Wetland** Peak Elev=250.86' Storage=18,927 cf Inflow=8.77 cfs 1.168 af  
15.0" Round Culvert n=0.018 L=70.0' S=0.0071 '/' Outflow=3.79 cfs 1.106 af

**Pond CB1: Catch Basin** Peak Elev=256.42' Inflow=2.01 cfs 0.187 af  
24.0" Round Culvert n=0.009 L=293.0' S=0.0265 '/' Outflow=2.01 cfs 0.187 af

**Pond P1: Pond** Peak Elev=257.80' Storage=533 cf Inflow=2.11 cfs 0.187 af  
15.0" Round Culvert n=0.009 L=28.0' S=0.0357 '/' Outflow=2.01 cfs 0.187 af

**Total Runoff Area = 5.298 ac Runoff Volume = 1.357 af Average Runoff Depth = 3.07"**  
**73.40% Pervious = 3.889 ac 26.60% Impervious = 1.409 ac**

**Summary for Subcatchment S10:**

Runoff = 8.77 cfs @ 12.55 hrs, Volume= 1.170 af, Depth> 3.00"

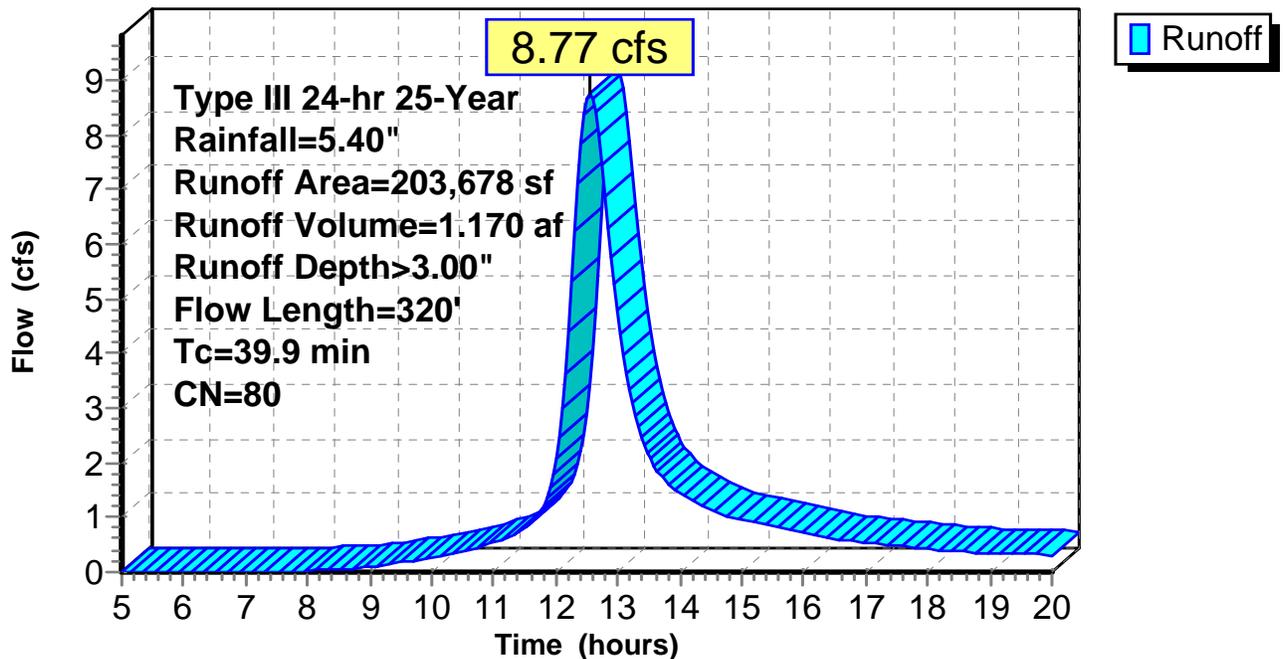
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.40"

Area (sf)	CN	Description
60,637	70	Woods, Good, HSG C
120,600	83	1/4 acre lots, 38% imp, HSG C
9,370	80	1/2 acre lots, 25% imp, HSG C
13,071	98	Water Surface, 0% imp, HSG C
203,678	80	Weighted Average
155,508		76.35% Pervious Area
48,171		23.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.2	150	0.0530	0.07		<b>Sheet Flow, A-B</b> Woods: Dense underbrush n= 0.800 P2= 3.00"
3.7	170	0.0240	0.77		<b>Shallow Concentrated Flow, C-D</b> Woodland Kv= 5.0 fps
39.9	320	Total			

**Subcatchment S10:**

**Hydrograph**



**Summary for Subcatchment S3:**

Runoff = 2.11 cfs @ 12.20 hrs, Volume= 0.187 af, Depth> 3.61"

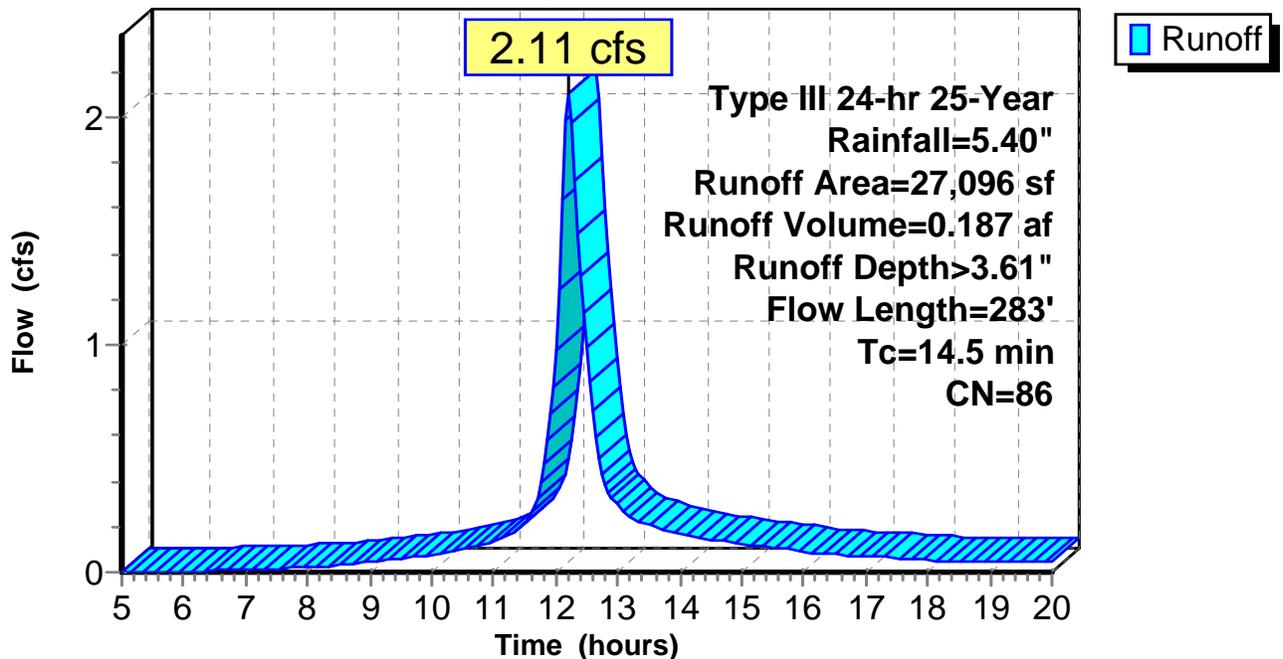
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.40"

Area (sf)	CN	Description
* 5,232	98	Paved parking
344	72	Woods/grass comb., Good, HSG C
3,954	74	>75% Grass cover, Good, HSG C
15,466	83	1/4 acre lots, 38% imp, HSG C
* 2,100	98	Roofs
27,096	86	Weighted Average
13,887		51.25% Pervious Area
13,209		48.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	137	0.0474	0.17		<b>Sheet Flow, A-B</b> Grass: Dense n= 0.240 P2= 3.00"
0.4	76	0.0260	3.27		<b>Shallow Concentrated Flow, B-C</b> Paved Kv= 20.3 fps
0.7	70	0.0143	1.79		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
14.5	283	Total			

**Subcatchment S3:**

**Hydrograph**



### Summary for Reach SP#1 Post: Study Point #1

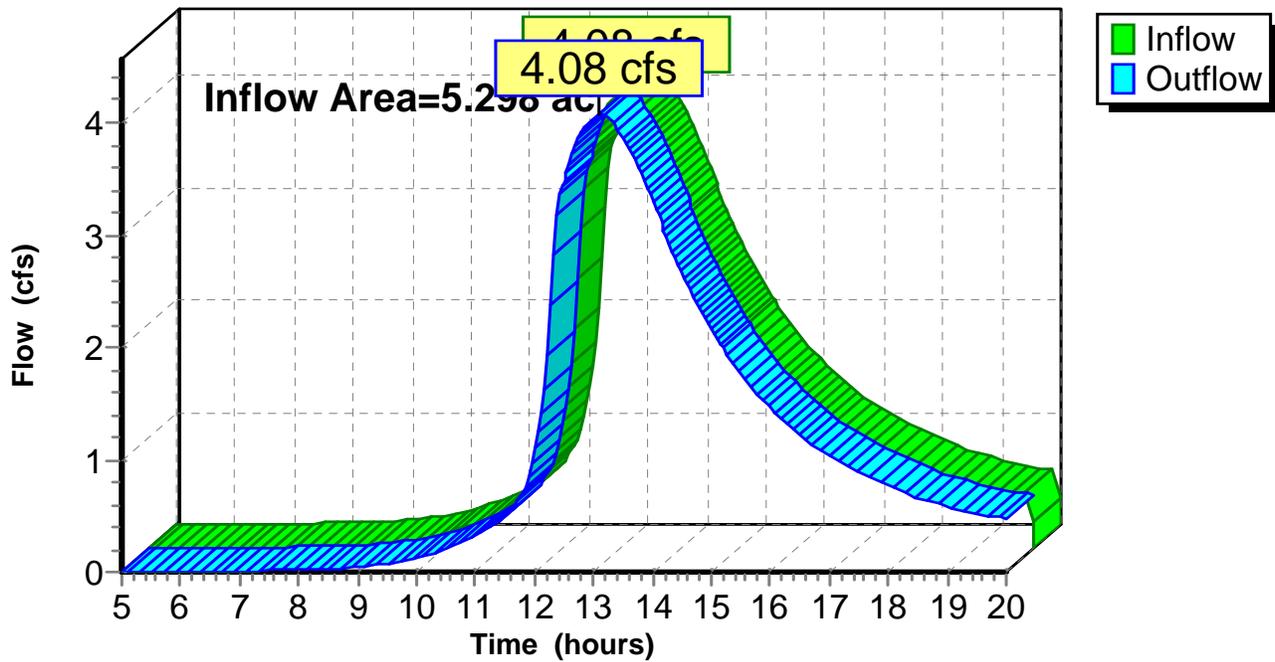
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.298 ac, 26.60% Impervious, Inflow Depth > 2.92" for 25-Year event  
Inflow = 4.08 cfs @ 13.07 hrs, Volume= 1.290 af  
Outflow = 4.08 cfs @ 13.12 hrs, Volume= 1.290 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach SP#1 Post: Study Point #1

#### Hydrograph



**Summary for Pond 3P: Wetland**

Inflow Area = 4.676 ac, 23.65% Impervious, Inflow Depth > 3.00" for 25-Year event  
 Inflow = 8.77 cfs @ 12.55 hrs, Volume= 1.168 af  
 Outflow = 3.79 cfs @ 13.15 hrs, Volume= 1.106 af, Atten= 57%, Lag= 36.1 min  
 Primary = 3.79 cfs @ 13.15 hrs, Volume= 1.106 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 250.86' @ 13.15 hrs Surf.Area= 19,678 sf Storage= 18,927 cf

Plug-Flow detention time= 84.7 min calculated for 1.102 af (94% of inflow)  
 Center-of-Mass det. time= 66.9 min ( 877.6 - 810.7 )

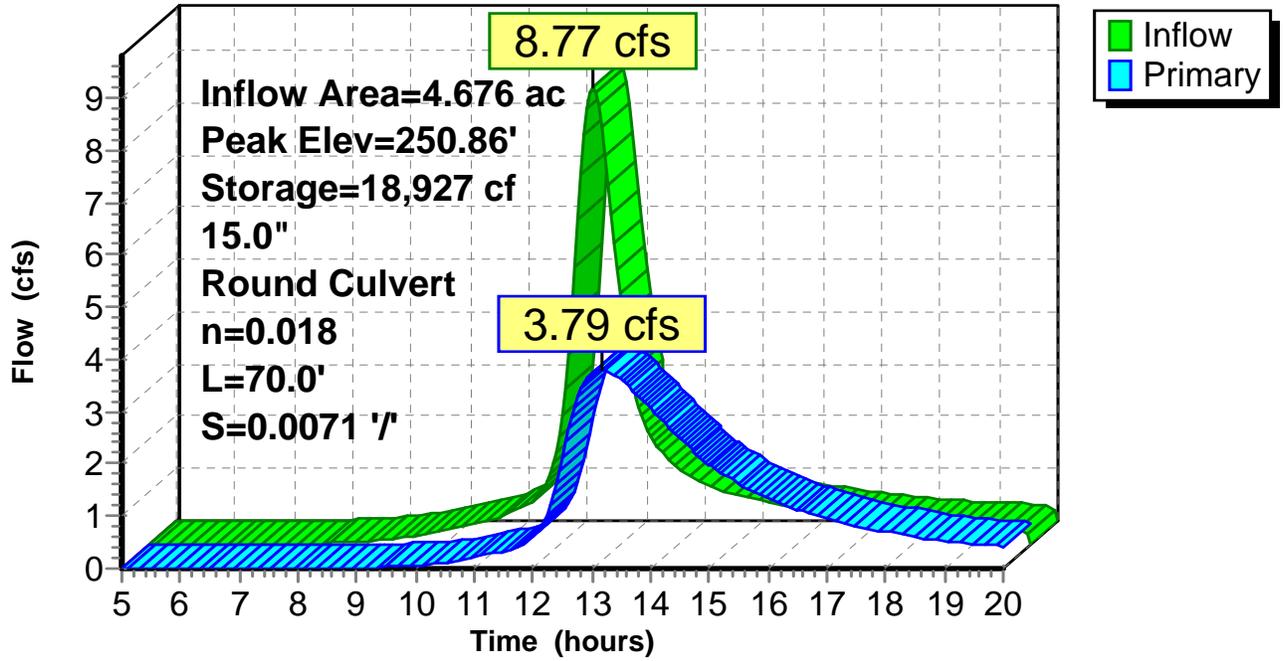
Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	45,552 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	3,294	0	0
250.00	14,254	4,387	4,387
252.00	26,911	41,165	45,552

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	<b>15.0" Round Culvert (Assumed)</b> L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 249.00' S= 0.0071 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

**Primary OutFlow** Max=3.79 cfs @ 13.15 hrs HW=250.86' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Assumed) (Barrel Controls 3.79 cfs @ 3.54 fps)

Pond 3P: Wetland

Hydrograph



### Summary for Pond CB1: Catch Basin

[57] Hint: Peaked at 256.42' (Flood elevation advised)

Inflow Area = 0.622 ac, 48.75% Impervious, Inflow Depth > 3.60" for 25-Year event  
 Inflow = 2.01 cfs @ 12.27 hrs, Volume= 0.187 af  
 Outflow = 2.01 cfs @ 12.32 hrs, Volume= 0.187 af, Atten= 0%, Lag= 3.0 min  
 Primary = 2.01 cfs @ 12.32 hrs, Volume= 0.187 af

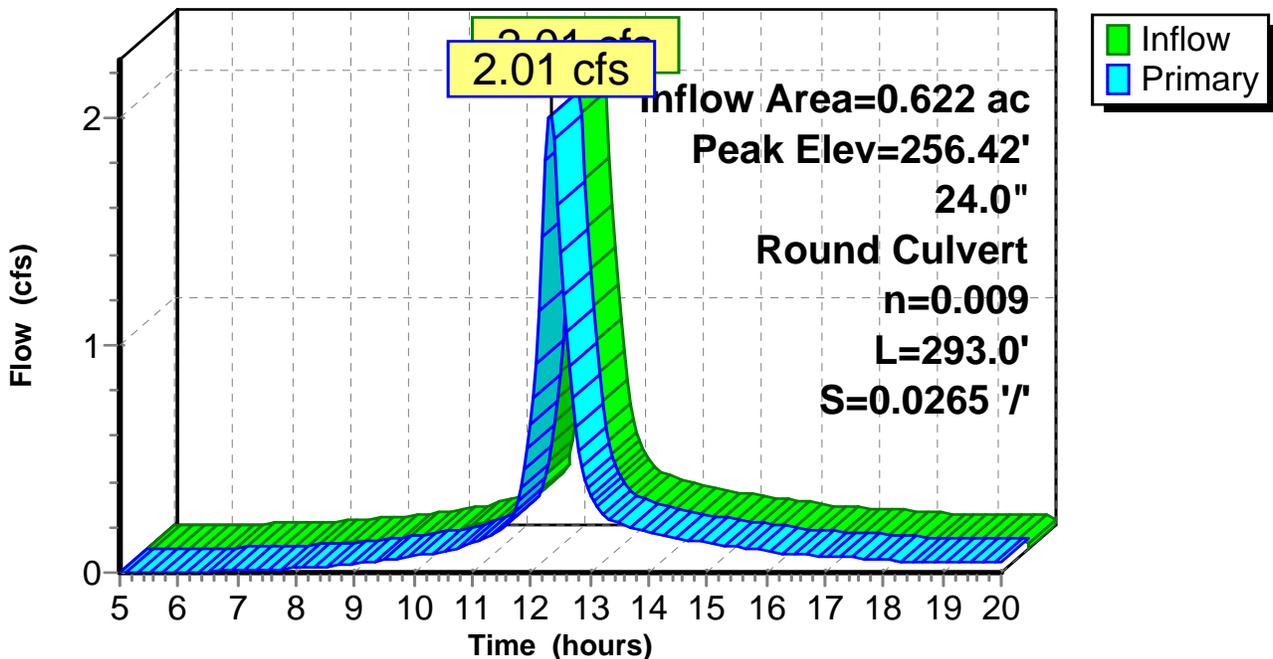
Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 256.42' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	255.75'	<b>24.0" Round Culvert</b> L= 293.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 248.00' S= 0.0265 '/ Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

**Primary OutFlow** Max=1.99 cfs @ 12.32 hrs HW=256.41' TW=0.00' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.99 cfs @ 2.19 fps)

### Pond CB1: Catch Basin

#### Hydrograph



**Summary for Pond P1: Pond**

Inflow Area = 0.622 ac, 48.75% Impervious, Inflow Depth > 3.61" for 25-Year event  
 Inflow = 2.11 cfs @ 12.20 hrs, Volume= 0.187 af  
 Outflow = 2.01 cfs @ 12.27 hrs, Volume= 0.187 af, Atten= 4%, Lag= 4.4 min  
 Primary = 2.01 cfs @ 12.27 hrs, Volume= 0.187 af

Routing by Sim-Route method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 257.80' @ 12.27 hrs Surf.Area= 1,226 sf Storage= 533 cf  
 Flood Elev= 258.25' Surf.Area= 1,875 sf Storage= 1,222 cf

Plug-Flow detention time= 5.0 min calculated for 0.187 af (100% of inflow)  
 Center-of-Mass det. time= 4.5 min ( 780.9 - 776.4 )

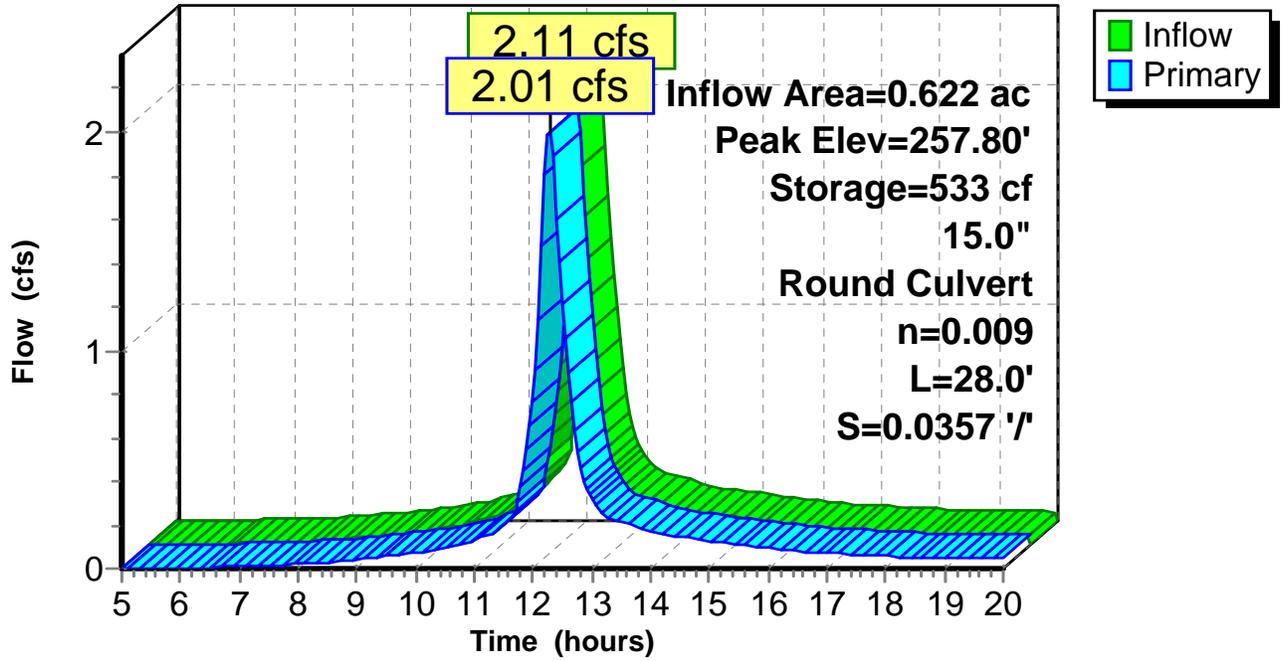
Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	3,050 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	100	0	0
258.00	1,500	800	800
259.00	3,000	2,250	3,050

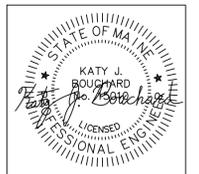
Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	<b>15.0" Round Culvert</b> L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 256.00' S= 0.0357 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

**Primary OutFlow** Max=1.99 cfs @ 12.27 hrs HW=257.80' TW=256.39' (Dynamic Tailwater)  
 ↑1=Culvert (Inlet Controls 1.99 cfs @ 2.40 fps)

Pond P1: Pond

Hydrograph



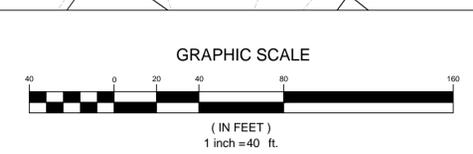


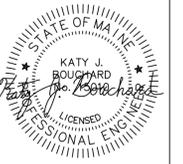
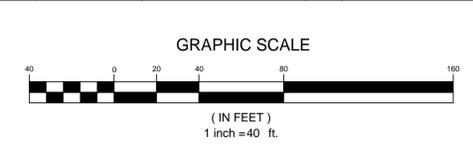
NO.	DATE	REVISIONS	BY

P.O. Box 339  
 111 Elderberry Lane  
 New Gloucester, ME 04260  
 Office: (207) 926-5111  
 Fax: (207) 221-1317  
 www.terradynconsultants.com

**TERRADYN**  
 CONSULTANTS, LLC  
 Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION <b>153 EAST AVE. LEWISTON, ME</b> <b>PRE WATERSHED</b>	
JOB NO.	SHEET
1744	1
DATE	OF
2-7-2018	2
SCALE	
1"=40'	





NO.	DATE	REVISIONS	BY

P.O. Box 339  
 111 Elderberry Lane  
 New Gloucester, ME 04260  
 Office: (207) 926-5111  
 Fax: (207) 221-1317  
 www.terradynconsultants.com

**TERRADYN**  
 CONSULTANTS, LLC

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION <b>153 EAST AVE. LEWISTON, ME</b> <b>POST WATERSHED</b>	
JOB NO.	SHEET
1744	1
DATE	OF
2-7-2018	2
SCALE	
1"=40'	

PREPARED FOR  
**MR. LOUIS OUELLETTE**  
 P.O. BOX 697  
 SABATTUS, MAINE 04280

## **MAINTENANCE PLAN OF STORMWATER MANAGEMENT FACILITIES**

**FOR:**

**153 EAST AVENUE**

**LEWISTON, MAINE**

**Project Developer:** Louis Ouellette  
P.O. Box 607  
Sabattus, ME 04280

**Responsible Party:** Louis Ouellette  
P.O. Box 607  
Sabattus, ME 04280

### **List of Stormwater Measures:**

Conveyance & Distribution System (Stormwater Channels & Culverts)  
Roadways & Parking Surfaces  
Maintenance

### **Introduction:**

The owner or operator of the proposed project will be responsible for the maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book. Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5 year time span. The maintenance log book will be made available to the DEP upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

### **Inspection & Maintenance Tasks:**

Inspections should be performed by qualified erosion control professional. NOTE: The following instructions are excerpts from the Maine Department of Environmental Protection's *Stormwater Management for Maine, Volume III BMPs Technical Design Manual*, dated January 2006.

## Conveyance & Distribution Systems: (Stormwater Channels & Culverts, etc.)

### 1. Inspection schedule:

- a. Inspect ditches, swales and other open stormwater channels in the spring, in late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, to control vegetated growth that could obstruct flow, and to repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side-slopes.
- b. Inspect culverts in the spring, in late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.
- c. Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

**2. Mowing:** Grass should not be trimmed extremely short, as this will reduce the filtering effect of the swale (MPCA, 1989). The cut vegetation should be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale. The mowed height of the grass should be 2-4 inches taller than the maximum flow depth of the design water quality storm. A minimum mow height of 6 inches is generally recommended (Galli, 1993).

**3. Erosion:** It is important to install erosion and sediment control measures to stabilize this area as soon as possible and to retain any organic matter in the bottom of the trench.

**4. Fertilization:** Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.

**5. Sediment Removal:** The level of sediment deposition in the channel should be monitored regularly, and removed from grassed channels before permanent damage is done to the grassed vegetation, or if infiltration times are longer than 12 hours. Sediment should be removed from riprap channels when it reduces the capacity of the channel.

**Roadways & Parking Surfaces:**

Paved surfaces shall be swept or vacuumed at least twice annually in the Spring to remove all Winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events.

## **Maine Department of Environmental Protection Maintenance Criteria: Vegetated Swales**

**Mowing:** Grass should not be trimmed extremely short, as this will reduce the filtering effect of the swale (MPCA, 1989). The cut vegetation should be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale. The mowed height of the grass should be 2-4 inches taller than the maximum flow depth of the design water quality storm. A minimum mow height of 6 inches is generally recommended (Galli, 1993).

**Routine Maintenance and Inspection:** The area should be inspected for failures following heavy rainfall and repaired as necessary for newly formed channels or gullies, reseeding/sodding of bare spots, removal of trash, leaves and/or accumulated sediments, the control of woody or other undesirable vegetation and to check the condition and integrity of the check dams.

**Aeration:** The buffer strip may require periodic mechanical aeration to restore infiltration capacity. This aeration must be done during a time when the area can be reseeded and mulched prior to any significant rainfall.

**Erosion:** It is important to install erosion and sediment control measures to stabilize this area as soon as possible and to retain any organic matter in the bottom of the trench.

**Fertilization:** Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.

**Sediment Removal:** The level of sediment deposition in the channel should be monitored regularly, and removed from grassed channels before permanent damage is done to the grassed vegetation, or if infiltration times are longer than 12 hours. Sediment should be removed from riprap channels when it reduces the capacity of the channel.

## **Maine Department of Environmental Protection Maintenance Criteria: General Maintenance for All Infiltration Measures.**

1. **Fertilization:** Fertilization of the area over the infiltration bed should be avoided unless absolutely necessary to establish vegetation.
2. **Snow Storage Prohibited:** Snow removed from any on-site or off-site areas may not be stored over an infiltration area, with the exception of storage on pavement alternatives approved by the department.
3. **Monitoring and Inspections:** Inspect the infiltration system several times in the first year of operation and at least annually thereafter. Conduct the inspections after large storms to check for surface ponding at the inlet that may indicate clogging. Water levels in the observation well should be recorded over several days after the storm to ensure that the system drains within 72 hours after filling.
4. **Pollution-Control Devices:** Pollution-control devices such as oil-water separators, skimmers, and booms must be inspected regularly to determine if they need to be cleaned or replaced.
5. **Sediment Removal and Maintenance of System Performance:** Sediment must be removed from the system at least annually to prevent deterioration of system performance. The pre-treatment inlets should be checked periodically and cleaned out when accumulated sediment occupies more than 10% of available capacity. This can be done manually or by a vacuum pump. Inlet and outlet pipes should be checked for clogging. Accumulated grease and oil from separator devices should be removed frequently and disposed of in accordance with applicable state and local regulations. The system must be rehabilitated or replaced if its performance is degraded to the point that applicable stormwater standards are not met.
6. **Pretreatment Buffer Strips:** If a grass buffer strip is used in conjunction with the infiltration BMP it should be inspected regularly. Growth should be vigorous and dense. Bare spots or eroded areas should be repaired and/or re-seeded or re-sodded. Watering and/or fertilization should be provided during the first few months after the strip is established, and may periodically be needed in times of drought. Grass filter strips should be mowed regularly to prevent the uncontrolled growth of briars and weeds. Filter strips in residential or commercial areas will need to be mowed more frequently, but filter strip performance will be impaired if the grass is cut too short. Lawn clippings should be removed to prevent them from clogging the BMP.
7. **Observation Wells, Measure of Sediment Accumulation, and Points of Access for Sediment Removal:** Observation wells to determine the system's performance and access points to allow for the removal of accumulated sediment must be included in the design of infiltration systems. Dry wells and infiltration basins must have staff gauges, marked rods, or similar instrumentation to measure the accumulation of sediment and determine how quickly the system drains after a storm. The maintenance plan must indicate the expected rate of drainage Chapter 6 Infiltration BMPs Volume III: BMPs Technical Design Manual Page 6-7 of the infiltration system and provide for removal of sediment from the infiltration system.

8. Groundwater Monitoring: Groundwater quality monitoring may be required as part of the system maintenance to demonstrate that pollutant removal practices are effective. Groundwater quality monitoring will generally be required for activities infiltrating water from areas of heavy turf-chemical use, such as golf courses and certain athletic fields, and large connected impervious areas, such as parking lots and runways. Groundwater quality monitoring will generally not be required for systems infiltrating water from lawn areas and other vegetated areas, residential developments, playing fields, and roofs of residential and commercial structures.

9. Groundwater Testing: Groundwater should be analyzed quarterly for indicator parameters such as pH, specific conductance, dissolved oxygen, and chloride. Zinc has been found to be a stable heavy metal and should also be measured quarterly; it tends to appear anywhere from two to ten years after operation of large systems. Sampling for diesel-range and gasoline range organics, BTEX and MTBE, should be performed if draining large impervious areas of urbanized areas.

10. Deed: A commitment to regularly maintain privately-owned trenches will have to be legally conditioned in the property deed, development permit, or home-owner association agreement.

#### **Specific Maintenance for Infiltration Basins.**

1. Basin Inspections: Inspections of infiltration basins should be conducted on a semiannual basis. In addition, brief inspections should always be conducted following major storms. Timely maintenance of infiltration basins is critical, as poor maintenance practices can result in loss of infiltration capacity. Records should be kept of all maintenance operations to help plan future work and identify problem areas.

2. Drainage Area Inspections: Inspect the basin's drainage area semi-annually for eroding soil and other sediment sources. Repair eroding areas using appropriate erosion control BMPs immediately. Control sediment sources, such as stockpiles of winter sand, by removing them from the basin's drainage area or surrounding them with sediment control BMPs.

3. Mowing: A basin with a turf lining should have its side-slopes and floor mowed at least twice a year to prevent woody growth. Mowing operations may be difficult since the basin floor may remain wet for extended periods. If a low maintenance vegetation is used, basin mowing can be performed in the normally dry months. Clippings should be removed to minimize the amount of organic material accumulating in the basin.

4. Pedestrian Access: Limit access to turf lined basins to passive recreational activities (such as an employee lunch area). Do not use the basin for a playing field, as heavy foot traffic can compact the soil surface.

## **Maine Department of Environmental Protection Maintenance Criteria: General Maintenance for All Infiltration Measures.**

1. **Fertilization:** Fertilization of the area over the infiltration bed should be avoided unless absolutely necessary to establish vegetation.
2. **Snow Storage Prohibited:** Snow removed from any on-site or off-site areas may not be stored over an infiltration area, with the exception of storage on pavement alternatives approved by the department.
3. **Monitoring and Inspections:** Inspect the infiltration system several times in the first year of operation and at least annually thereafter. Conduct the inspections after large storms to check for surface ponding at the inlet that may indicate clogging. Water levels in the observation well should be recorded over several days after the storm to ensure that the system drains within 72 hours after filling.
4. **Pollution-Control Devices:** Pollution-control devices such as oil-water separators, skimmers, and booms must be inspected regularly to determine if they need to be cleaned or replaced.
5. **Sediment Removal and Maintenance of System Performance:** Sediment must be removed from the system at least annually to prevent deterioration of system performance. The pre-treatment inlets should be checked periodically and cleaned out when accumulated sediment occupies more than 10% of available capacity. This can be done manually or by a vacuum pump. Inlet and outlet pipes should be checked for clogging. Accumulated grease and oil from separator devices should be removed frequently and disposed of in accordance with applicable state and local regulations. The system must be rehabilitated or replaced if its performance is degraded to the point that applicable stormwater standards are not met.
6. **Pretreatment Buffer Strips:** If a grass buffer strip is used in conjunction with the infiltration BMP it should be inspected regularly. Growth should be vigorous and dense. Bare spots or eroded areas should be repaired and/or re-seeded or re-sodded. Watering and/or fertilization should be provided during the first few months after the strip is established, and may periodically be needed in times of drought. Grass filter strips should be mowed regularly to prevent the uncontrolled growth of briars and weeds. Filter strips in residential or commercial areas will need to be mowed more frequently, but filter strip performance will be impaired if the grass is cut too short. Lawn clippings should be removed to prevent them from clogging the BMP.
7. **Observation Wells, Measure of Sediment Accumulation, and Points of Access for Sediment Removal:** Observation wells to determine the system's performance and access points to allow for the removal of accumulated sediment must be included in the design of infiltration systems. Dry wells and infiltration basins must have staff gauges, marked rods, or similar instrumentation to measure the accumulation of sediment and determine how quickly the system drains after a storm. The maintenance plan must indicate the expected rate of drainage Chapter 6 Infiltration BMPs Volume III: BMPs Technical Design Manual Page 6-7 of the infiltration system and provide for removal of sediment from the infiltration system.

8. Groundwater Monitoring: Groundwater quality monitoring may be required as part of the system maintenance to demonstrate that pollutant removal practices are effective. Groundwater quality monitoring will generally be required for activities infiltrating water from areas of heavy turf-chemical use, such as golf courses and certain athletic fields, and large connected impervious areas, such as parking lots and runways. Groundwater quality monitoring will generally not be required for systems infiltrating water from lawn areas and other vegetated areas, residential developments, playing fields, and roofs of residential and commercial structures.

9. Groundwater Testing: Groundwater should be analyzed quarterly for indicator parameters such as pH, specific conductance, dissolved oxygen, and chloride. Zinc has been found to be a stable heavy metal and should also be measured quarterly; it tends to appear anywhere from two to ten years after operation of large systems. Sampling for diesel-range and gasoline range organics, BTEX and MTBE, should be performed if draining large impervious areas of urbanized areas.

10. Deed: A commitment to regularly maintain privately-owned trenches will have to be legally conditioned in the property deed, development permit, or home-owner association agreement.

### **Specific Maintenance for Infiltration Trenches.**

#### 1. Maintaining a Surface Trench

a. Inlet Maintenance: Remove any fallen leaves and other debris from the trench's surface inlet at least every fall after leaf drop and every spring after snow melt. If left in place, the trash and leaves will clog the trench inlet.

b. Rehabilitation: Clogging in a surface trench is most likely to occur near the top of the trench between the top layer of stone and the protective layer of filter fabric. Relieve this surface logging by carefully removing the top layer of stone, removing the clogged filter fabric, installing new fabric, and replacing the top layer of stone. If the old stone is reused, it should be washed to remove any fine sediment prior to being placed back in the trench.

#### 2. Maintaining a Subsurface Trench

a. Inlet Maintenance: Check the pretreatment inlets to an underground trench at least annually and clean-out any sediment, trash, oil, and grease when these materials deplete more than 10% of the inlet structure's capacity.

b. Rehabilitation: Clogging of an underground infiltration trench is likely to occur at the bottom of the trench. Relieve this clogging by excavating away any pavement, turf, and soil over the trench; removing the existing stone and perforated pipe; and rebuilding the trench. Scarify the soil at the bottom of the trench with a tiller or dig-out this soil and replace it with a six-inch layer of sand. The old stone in the trench can be reused if it is washed prior to reinstalling it in the trench.



## HOUSEKEEPING NOTES

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1-800-482-0777 WHICH IS AVAILABLE 24 HOURS A DAY. FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1-800-452-4664 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENT'S WEBSITE AT : [HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGSPILLRESP/](http://www.maine.gov/dep/spills/emergspillresp/)

2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.
3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEEPED IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.
4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

NOTE: TO PREVENT THESE MATERIALS FROM BECOMING A SOURCE OF POLLUTANTS, CONSTRUCTION AND POST-CONSTRUCTION ACTIVITIES RELATED TO A PROJECT MAY BE REQUIRED TO COMPLY WITH APPLICABLE PROVISION OF RULES RELATED TO SOLID, UNIVERSAL, AND HAZARDOUS WASTE, INCLUDING, BUT NOT LIMITED TO, THE MAINE SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT RULES; MAINE HAZARDOUS WASTE MANAGEMENT RULES; MAINE OIL CONVEYANCE AND STORAGE RULES; AND MAINE PESTICIDE REQUIREMENTS.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE

CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

NOTE: DEWATERING CONTROLS ARE DISCUSSED IN THE "MAINE EROSION AND SEDIMENT CONTROL BMPs, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION."

6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
  - (a) DISCHARGES FROM FIREFIGHTING ACTIVITY;
  - (b) FIRE HYDRANT FLUSHINGS;
  - (c) VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
  - (d) DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND SECTION 3 ABOVE;
  - (e) ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
  - (f) PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
  - (g) UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
  - (h) UNCONTAMINATED GROUNDWATER OR SPRING WATER;
  - (i) FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
  - (j) UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN SECTION 5 ABOVE);
  - (k) POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
  - (l) LANDSCAPE IRRIGATION.
7. UNAUTHORIZED NON-STORMWATER DISCHARGES . MAINE DEP APPROVAL UNDER CHAPTER 500 DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH SECTION 6. SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:

- (a) WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
- (b) FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
- (c) SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
- (d) TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

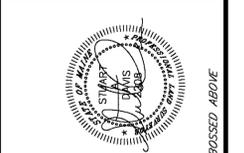


**LEGEND**

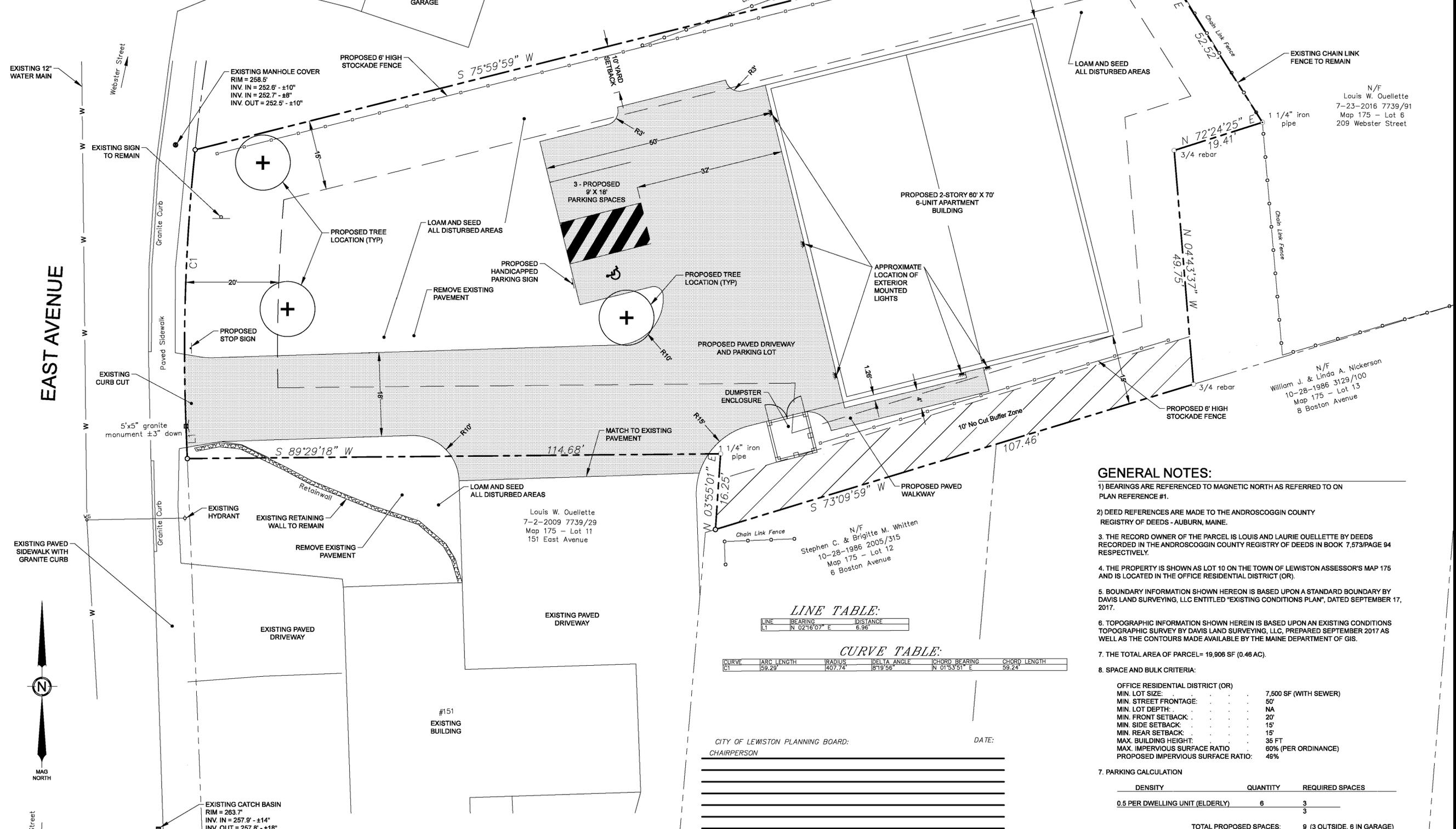
- ⊙ 5/8" CAPPED REBAR SET
- 5/8" REBAR - UNLESS OTHERWISE NOTED
- ⊕ SPRINKLER VALVE
- ⊙ LIGHT POLE
- ⊕ STORM DRAIN
- ⊕ CHAIN LINK FENCE
- ⊕ CATCH BASIN
- RIGHT OF WAY/ABUTTING LOT LINES NOW OR FORMERLY
- N/F

**REFERENCES:**

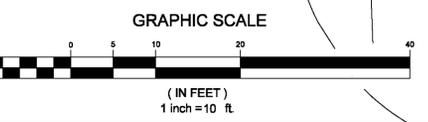
- 1) PLAN OF PROPERTY DATED JULY 13, 1983 FOR PRISCILLA BAZINET BY A L & H ENGINEERING CORP. - LEWISTON, MAINE.
- 2) PLAN OF "HIGHLAND TERRACE" DATED JULY 13, 1896 FOR EOMUKO M. WARREN BY J. JONES ENG. - LEWISTON, MAINE. RECORDED IN PLAN BOOK 2, PAGE 1-A.
- 3) MDT RIGHT OF WAY MAP DATED APRIL 1975 - D.O.T. FILE 1-104 SHEET 3 OF 11 RECORDED IN PLAN BOOK 28, PAGE 84.
- 4) CITY OF LEWISTON TAX MAP 175.



**CERTIFICATION:**  
 TO THE BEST OF MY KNOWLEDGE, I HAVE USED PRIMARY AND PRUDENT CONDUCT EXPECTED OF PROFESSIONAL LAND SURVEYORS AND THE RESULTS SHOWN HERE REPRESENT THE LICENSEE'S RESPONSIBILITY TO THE PUBLIC AS REQUIRED UNDER THE STANDARDS OF PRACTICE AS SET FORTH IN THE MEASUREMENTS AND SURVEYING PRACTICE ACT, SURVEYORS TITLE 33, CHAPTER 171 DATED APRIL, 2001.  
 EXCEPT AS FOLLOWS:  
 1) NO WRITTEN REPORT TO DATE.  
 2) NO DEED DESCRIPTION TO DATE.  
 PLAN PREPARED BY: S.A.B.  
 PLAN CHECKED BY: \_\_\_\_\_ THIS PLAN IS NOT VALID UNLESS EMBOSSED ABOVE



**EAST AVENUE**



**RECORDING INFORMATION:**

ANDROSCOGGIN COUNTY REGISTRY OF DEEDS - STATE OF MAINE  
 RECEIVED \_\_\_\_\_ AT \_\_\_\_\_ HOUR \_\_\_\_\_ MIN. \_\_\_\_\_ M.  
 AND RECORDED IN PLAN BOOK \_\_\_\_\_, PAGE \_\_\_\_\_  
 ATTEST \_\_\_\_\_ REGISTRAR

**LINE TABLE:**

LINE	BEARING	DISTANCE
L1	N 02°16'07" E	6.98

**CURVE TABLE:**

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	59.29'	407.74'	8°19'56"	N 01°53'51" E	59.24'

CITY OF LEWISTON PLANNING BOARD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHAIRPERSON

CONDITIONS OF APPROVAL: \_\_\_\_\_ DATE: \_\_\_\_\_

**GENERAL NOTES:**

- 1) BEARINGS ARE REFERENCED TO MAGNETIC NORTH AS REFERRED TO ON PLAN REFERENCE #1.
- 2) DEED REFERENCES ARE MADE TO THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS - AUBURN, MAINE.
- 3) THE RECORD OWNER OF THE PARCEL IS LOUIS AND LAURIE OUELLETTE BY DEEDS RECORDED IN THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS IN BOOK 7,573/PAGE 94 RESPECTIVELY.
- 4) THE PROPERTY IS SHOWN AS LOT 10 ON THE TOWN OF LEWISTON ASSESSOR'S MAP 175 AND IS LOCATED IN THE OFFICE RESIDENTIAL DISTRICT (OR).
- 5) BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON A STANDARD BOUNDARY BY DAVIS LAND SURVEYING, LLC ENTITLED "EXISTING CONDITIONS PLAN", DATED SEPTEMBER 17, 2017.
- 6) TOPOGRAPHIC INFORMATION SHOWN HEREIN IS BASED UPON AN EXISTING CONDITIONS TOPOGRAPHIC SURVEY BY DAVIS LAND SURVEYING, LLC, PREPARED SEPTEMBER 2017 AS WELL AS THE CONTOURS MADE AVAILABLE BY THE MAINE DEPARTMENT OF GIS.
- 7) THE TOTAL AREA OF PARCEL= 19,908 SF (0.46 AC).
- 8) SPACE AND BULK CRITERIA:

OFFICE RESIDENTIAL DISTRICT (OR)	CRITERIA	VALUE
MIN. LOT SIZE:		7,500 SF (WITH SEWER)
MIN. STREET FRONTAGE:		50'
MIN. LOT DEPTH:		NA
MIN. FRONT SETBACK:		20'
MIN. SIDE SETBACK:		15'
MIN. REAR SETBACK:		15'
MAX. BUILDING HEIGHT:		35 FT
MAX. IMPERVIOUS SURFACE RATIO:		60% (PER ORDINANCE)
PROPOSED IMPERVIOUS SURFACE RATIO:		48%

**7. PARKING CALCULATION**

DENSITY	QUANTITY	REQUIRED SPACES
0.5 PER DWELLING UNIT (ELDERLY)	6	3
		3
<b>TOTAL PROPOSED SPACES:</b>		<b>9 (3 OUTSIDE, 6 IN GARAGE)</b>

**OWNER OF RECORD:**

Louis & Laurie Ouellette  
 11-4-2008 7573/94  
 Map 175 - Lot 10  
 153 East Avenue

**AREA:**  
 19,905.50 sq. ft.  
 0.45 Acres

**DAVIS LAND SURVEYING, LLC**  
 64 OLD COUNTY ROAD  
 OXFORD, MAINE 04270

William J. & Linda A. Nickerson  
 10-28-1986 3129/100  
 Map 175 - Lot 13  
 8 Boston Avenue

PROPOSED IMPROVEMENTS  
**SITE PLAN**

153 East Avenue - Lewiston, Maine  
**Louis W. Ouellette**  
 P.O. BOX 607 - Sabattus, Maine 04280

FILE: 315 JOB NO.: 17053 DISC: SUR 2017

February 22, 2018

Mr. David Hediger, City Planner  
City of Lewiston  
27 Pine Street  
Lewiston, ME 04240

**Comment Response: 153 East Avenue**

**Comment Responses:**

We are pleased to provide responses to comments that were raised in regard to 153 East Avenue. We have listed the comments below. Our responses are directly below each comment and are shown in *italics*

**Planning and Code Enforcement Comments**

1. Prior to any certificate of occupancy being issued:
  - a. Evidence of a final inspection of the storm water system shall be provided to the city by the designing engineer along with a written statement indicating that the storm water system and all site improvements have been completed in accordance with the approved plans.

*Response: Comment acknowledged.*

2. Cover sheet needs a signature block for the Planning Board's approval.

*Response: The signature block was added to the cover sheet.*

3. Note must be added to the cover sheet that referencing the plans expiration of approval: see Article XIII, Section 11(a)(1).

*Response: Note was added to the cover sheet.*

4. Need a letter signed by owner, acknowledging agent of project, etc.

*Response: See response from Stuart Davis.*

5. Stormwater report: page one refers to existing conditions draining to a small pond. Is this the wetland area as delineated in by Sebago? Consider revising language.

*Response: Language was revised in stormwater report.*

6. Sheet 2:
  - a. Shows a 10' no cut buffer. Survey shows 15'. Revise plans accordingly. While a buffer is needed (see below), you are indicating no existing vegetation will be removed.

*Response: The 10' buffer will remain. Survey will be updated to match.*

- b. Note 7 regarding parking should include space available in garages.

*Response: Note was updated to include spaces available in garages.*

7. Street trees: recognizing sight distance is limited, any plantings should be set back to maintain safe visibility. Plantings must be shown on the plan. Street trees 2.5" caliper are required ever 50': see Article XIII, Section (4)(I).

*Response: Street trees were added to plans.*

8. Buffering: code references buffering needed when there is a change of use. Southern and northern property lines (Whitten, Nickerson, and Giguere) require opaque 6' high fencing and/or staggered row of evergreen plantings 3'-5' upon planting. If southern buffer is being maintained

*Response: Fencing was added to the plans along the southern and northern property lines.*

9. The project has been referenced as elderly housing and references the applicable parking requirements. It should be noted on the plan that this project is being proposed for elderly housing (55+?) and any change of use of the property will require city approval. The concern is if the property were to change to unrestricted occupancy of the dwelling units that the code may require additional parking which may require revisions to drainage improvements. Applicant may also want to consider as a condition of approval prior to any certificate of occupancy being issued that a deed restriction has been placed on the property limiting its use to elderly housing (i.e. housing for individuals 55 years of age and older).

*Response: A note was added to the cover sheet.*

10. Application/narrative must speak to each of the development review criteria contained in Article XIII, Section 4 including, but not limited to:
  - a. Lighting must be shielded or full cut off fixtures.
  - b. Letter needed referencing financial capacity.

*Response: See response from Stuart Davis.*

11. Application must reference subdivision criteria of Article XIII, Section 5.

*Response: See response from Stuart Davis.*

12. Plan set must include survey plan.

*Response: See response from Stuart Davis.*

13. Application pages must be updated:

- Project data: building area/lot coverage existing is 0.00; please revise.
- Parking spaces: total should include space being provided in garage (i.e. 3 surface spaces and ? garage spaces).
- Zoning summary page: update parking and indicate that it is not in an impaired watershed.
- Signature of applicant or representative is needed.

*Response: See response from Stuart Davis.*

### **Public Works Comments**

1. All water materials installed within the right of way of East Avenue will be purchased through the City.

*Response: Added as note 7 under waterline installation notes on sheet 3.*

2. The City will perform the tap on the existing 12" watermain, the contractor will be responsible to excavate the main, shore the hole, and install the sleeve on the main.

*Response: Added as note 8 under waterline installation notes on sheet 3.*

3. The connection to the existing sewer manhole in East Avenue shall be cored and booted.

*Response: Added as note on sheet 3.*

4. The shut off for the 2" water service shall be located in the right of way for East Avenue.

*Response: Shut off for the 2" water service was moved.*

5. A rip rap bowl should be installed at the inlet of the 15" Stormdrain.

*Response: A rip rap bowl was added at the inlet of the 15" stormdrain.*

6. A detail for the proposed drain manhole should be added to the plans.

*Response: Detail was added to the plans.*

7. A detail for the connection to the existing sewer manhole should be added to the plans indicating the cored and booted connection.

*Response: Detail was added to the plans.*

8. Trench restoration in East Avenue shall include 18" of Subbase Gravel, 6" of Base Gravel, 4" of Hot Mix Asphalt 19.0mm, and 2" of Hot Mix Asphalt 12.5mm.

*Response: Added as note 17 under utility construction notes on sheet 3.*

9. Select backfill for all stormdrain and sewer services in the right of way shall be ¾" crushed stone to 8" above the pipe.

*Response: Added as note 18 under utility construction notes on sheet 3.*

10. A note on the Sewer/Foundation Drain Service connection indicates that sump pumps it shall include a check valve. Sump Pumps cannot be connected to the City sewer system.

*Response: Note was removed.*

Prepared by:

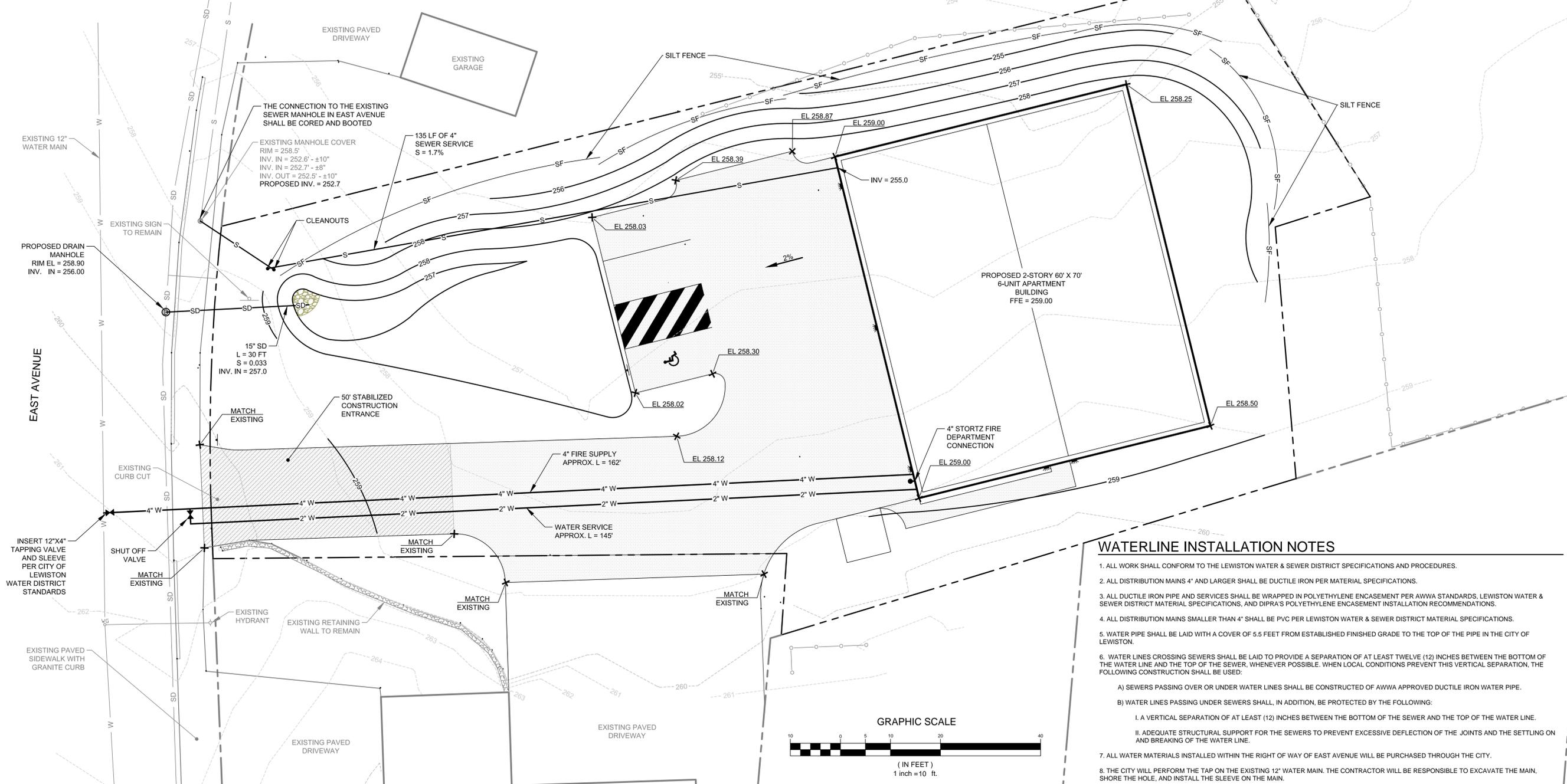
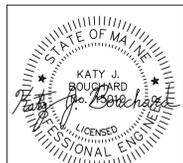
Katy J. Bouchard, P.E.  
Terradyn Consultants, LLC





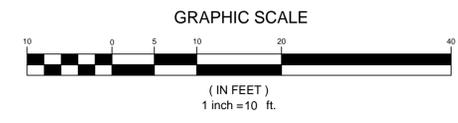
# UTILITY CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS 'EXISTING' WHICH ARE NOT FOUND IN THE FIELD.
4. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
6. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.
7. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
8. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
9. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH 'MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES' PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2004 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
10. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
11. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS 'MEMBER' UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.
12. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.
13. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
14. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
15. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
16. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A M.D.O.T. PERMIT AS WELL AS PERMITS FROM THE TOWN AS APPLICABLE.
17. TRENCH RESTORATION IN EAST AVENUE SHALL INCLUDE 18" OF SUBBASE GRAVEL, 6" OF BASE GRAVEL, 4" OF HOT MIX ASPHALT 19.0 MM, AND 2" OF HOT MIX ASPHALT 12.5 MM.
18. SELECT BACKFILL FOR ALL STORMDRAIN AND SEWER SERVICES IN THE RIGHT OF WAY SHALL BE 3/4" CRUSHED STONE TO 8" ABOVE THE PIPE.



## WATERLINE INSTALLATION NOTES

1. ALL WORK SHALL CONFORM TO THE LEWISTON WATER & SEWER DISTRICT SPECIFICATIONS AND PROCEDURES.
2. ALL DISTRIBUTION MAINS 4" AND LARGER SHALL BE DUCTILE IRON PER MATERIAL SPECIFICATIONS.
3. ALL DUCTILE IRON PIPE AND SERVICES SHALL BE WRAPPED IN POLYETHYLENE ENCASUREMENT PER AWWA STANDARDS, LEWISTON WATER & SEWER DISTRICT MATERIAL SPECIFICATIONS, AND DIPRA'S POLYETHYLENE ENCASMENT INSTALLATION RECOMMENDATIONS.
4. ALL DISTRIBUTION MAINS SMALLER THAN 4" SHALL BE PVC PER LEWISTON WATER & SEWER DISTRICT MATERIAL SPECIFICATIONS.
5. WATER PIPE SHALL BE LAID WITH A COVER OF 5.5 FEET FROM ESTABLISHED FINISHED GRADE TO THE TOP OF THE PIPE IN THE CITY OF LEWISTON.
6. WATER LINES CROSSING SEWERS SHALL BE LAID TO PROVIDE A SEPARATION OF AT LEAST TWELVE (12) INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER, WHENEVER POSSIBLE. WHEN LOCAL CONDITIONS PREVENT THIS VERTICAL SEPARATION, THE FOLLOWING CONSTRUCTION SHALL BE USED:
  - A) SEWERS PASSING OVER OR UNDER WATER LINES SHALL BE CONSTRUCTED OF AWWA APPROVED DUCTILE IRON WATER PIPE.
  - B) WATER LINES PASSING UNDER SEWERS SHALL, IN ADDITION, BE PROTECTED BY THE FOLLOWING:
    - I. A VERTICAL SEPARATION OF AT LEAST (12) INCHES BETWEEN THE BOTTOM OF THE SEWER AND THE TOP OF THE WATER LINE.
    - II. ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF THE JOINTS AND THE SETTLING ON AND BREAKING OF THE WATER LINE.
7. ALL WATER MATERIALS INSTALLED WITHIN THE RIGHT OF WAY OF EAST AVENUE WILL BE PURCHASED THROUGH THE CITY.
8. THE CITY WILL PERFORM THE TAP ON THE EXISTING 12" WATER MAIN. THE CONTRACTOR WILL BE RESPONSIBLE TO EXCAVATE THE MAIN, SHORE THE HOLE, AND INSTALL THE SLEEVE ON THE MAIN.



NO.	DATE	REVISIONS	APP'D BY

P.O. Box 339  
 111 Elderberry Lane  
 New Gloucester, ME 04260  
 Office: (207) 926-5111  
 Fax: (207) 221-1317  
 www.terradynconsultants.com

**TERRADYN**  
 CONSULTANTS, LLC

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION <b>153 EAST AVE. LEWISTON, ME                  GRADING &amp; UTILITY PLAN</b>	
PREPARED FOR <b>MR. LOUIS OUELLETTE</b> P.O. BOX 697 SABATTUS, MAINE 04280	SHEET <b>3</b> OF <b>6</b>
JOB NO. 1744 DATE 2-21-2018 SCALE 1"=10'	SHEET <b>3</b> OF <b>6</b>





