



Town of York Police Department

New Public Safety Building
& Access Road

Application for Final Site Plan Review

5th June 2014



Submitted to:
Town of York Planning Board

Submitted by:
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Table of Contents

1. Project Narrative & Clarifications

Attachments

Attachment 1 - Building Plans and Renderings

Attachment 2 - Surveyor's Report

Attachment 3 - CMP Crossing Agreement

Attachment 4 - Water Main Extension Engineering Correspondence

Attachment 5 - York Beach Fire Department Correspondence

Attachment 6 - Response to Review Comments

Attachment 7 - Response to Traffic Engineer Comments

Attachment 8 - Responses to Utility District Review Comments

Attachment 9 - Stormwater Report Addendum 3 - Revised

Project Narrative

Background:

The 2009 update to the Town of York Comprehensive Plan highlighted significant deficiencies in the existing Town Police Department facility. These included a lack of sufficient space, lack of adequate parking, poor handicapped accessibility and fire code and safety concerns. The need for a new Police Station to better serve the needs of the town, and to accommodate future growth projections is clearly stated in the Municipal Capacity - Inventory & Analysis section of the document. The town, assisted by professional consultants has investigated a number of alternative sites in order to establish a feasible and appropriate location for the new facility. The site between Ridge Road and Route 1 was selected as the most suitable available site by the town in 2010. Subsequent preliminary design and permitting investigations were undertaken to establish site constraints and budget costs for the development. The conceptual level design and cost information was presented to town residents in May 2011, in the form of two referendum questions asking for funding for the design and construction of the connector road and the police station. In both cases the votes were in favor of the projects.

Existing Site:

The site for the new police station and connector road is located between Ridge Road and Route 1, adjacent to the York Wild Kingdom property. The entire property is approximately 56 acres in size, including a small 1.9 acre triangular shaped parcel on the north side of the York Wild Kingdom property. The address of the property is 1051 US Route 1 and it is shown on The Town of York GIS Map as Assessing ID 134-101, Parcel ID 0094-0077. The property spans three separate zones in the town. The northwest portion of the site (towards Route 1) is in the RT1-4 zone. The central portion of the property is in the GEN-3 zone and the southeast portion of the property (towards Ridge Road) is in the RES-7 zone. The site of the new police station facility spans the GEN-3 and RES-7 zones. Municipal offices are an allowed use in both of these zones. The Shoreland Zone mapping shows a Mixed Use Shoreland Zone associated with the largest (central) wetland on the project site. There is also a small area of Shoreland Zone at the Ridge Road end of the site.

The topography of the site is gently rolling with typical slopes of between 2% and 10%, upland areas sloping towards intermittent drainage features that occur throughout the property. Subsurface soil conditions at the site typically comprise topsoil, marine deposits, sandy loams and glacial till. Groundwater is expected to be within three to four feet of the surface at most locations and shallow ledge was observed in a number of preliminary probes and borings that were recently undertaken at the site. Maine Geological Survey information indicates that underlying bedrock in the area is igneous granite and metamorphic schist.

A number of the drainage features on the site are associated with protected natural resources. A freshwater wetland delineation was originally undertaken by Stantec (then Woodlot Alternatives) in 2007. In 2011 further work was undertaken at the site to verify the previously delineated wetland edges and to identify and characterize a number of vernal pools that were identified in the proximity of the site. The identified natural resource boundaries and buffers were used in developing the designs for the connector road alignment and the police station. The natural resource inventory plan contained in the Comprehensive Plan shows the site to be outside any mapped un-fragmented habitat areas. The closest of these is a <250 acre area shown to the north of the York Wild Kingdom.

The project site is within the Coastal Watershed-Central according to the Surface Waters and watersheds map in the Comprehensive Plan. This is further identified as Subwatershed C6 in

the build-out analysis completed for the town in 2001. There is a single flood plain on the property associated with the most easterly drainage feature. A flood zone A (no elevation) is delineated on FEMA Flood Insurance Rate Map Community Panel Number 230159 0026D. The flood plain in this area is associated with a coastal storm surge event, and the resulting inland incursion of floodwaters rather than a freshwater (riverine) flood event.

Project Design:

The basic elements and technical aspects of the project design have not changed since it was originally proposed under the previous review submission in 2012. The proposed development consists of two parts. The first is the new through road between Route 1 and Ridge Road to provide access to the police station and to serve as a new roadway connection to York Beach, and the second is building/site development at the police station site.

Low Impact Development Design

The latest update to the Comprehensive Plan (Volume I, Section 3.22) proposes the adoption of a Green Enterprise Recreation Overlay District in this part of York. The proposed language for this district emphasizes the need for sustainable low-impact design approaches, the need to provide for pedestrian and non-vehicular traffic, the desire to support existing businesses, and the wish to protect natural habitats and surface water quality to the maximum practical degree. The design for the police station site and new connector road considers these important planning priorities and incorporates low impact design (LID) techniques to many aspects of the project.

The road alignment is designed to avoid and minimize impacts to natural resources to the maximum practical extent, while maintaining a safe and functional thoroughfare that will meet the needs of the police department and provide congestion relief for the York Beach area. Stormwater treatment for runoff from the road is provided through the use of LID Best Management Practices (BMPs), including stormwater buffers, filter strips and bioretention cells. The roadway corridor includes an eight-foot wide multi-use trail that is separated from the vehicular roadway by a five foot wide grass esplanade. The multi-use trail will be paved from Ridge Road to the Police Station site to facilitate year-round pedestrian and bicycle access. From the police station to Route 1 the trail will be stone dust and will be suitable for the expected seasonal use of this connection.

The police station building is being designed to meet LEED® Silver standards, reflecting the importance that is being given to energy efficiency and environmental footprint throughout the design and construction processes. A geothermal heat recovery system is planned for the building, and the structure has been oriented to maximize solar potential. The site plan for the police station provides the town ordinance minimum required parking spaces to reduce the impervious footprint, and further LID BMPs are used for stormwater treatment in and around the new facility. These include filtering roof drip strips, Bioretention cells and underdrained filters, all of which will aid in reducing runoff from developed areas and providing water quality treatment for any discharge from the site. It is hoped that this project will set the standard for further development of this important area of York and encourage similar techniques to be used in future proposals.

Connector Road:

In order to allow for efficient access to all part of town, the YPD must be able to access the York Beach community as well as Route 1. To achieve this, a roughly 4,800 LF connecting road between these two points will be constructed within a new Right-Of-Way. The horizontal and vertical geometry of the road has been designed to meet Town of York Collector Street standards, while meeting the goal of avoiding and minimizing impacts to adjacent natural

resources to the maximum extent practical. The road will have a paved width of 24 feet with reinforced shoulders at each side. Turning lanes will be provided at the intersection with Route 1, with two outward lanes extending approximately 200-feet onto the site. In addition, a six-foot wide paved shoulder is provided at the intersection approach, and a further three-feet of unpaved reinforced edge. This will allow additional space for emergency vehicles to pass when the road is congested. The road structure will be typical bituminous pavement, with a section of 21" aggregate subbase, 3" crushed aggregate base and a total of 4" of hot bituminous pavement (1½" and 2½"). No curbing is proposed, with the exception of a small section of road at the approach to the Ridge Road intersection. Curbing is provided at this location to provide separation between the road and sidewalk where a full width esplanade cannot be accommodated. Crossing culverts will be constructed at locations where the new road crosses the existing drainage features on the property. Where culvert crossings are located on delineated streams, the culverts will be oversized to accommodate a natural "bed" in the invert of the pipe.

An 8ft wide multi-use trail will be constructed along the new road alignment, connecting Ridge Road to the police station site. The sidewalk will be constructed with a minimum of 10" of crushed aggregate base and 2" of hot bituminous pavement. A stone dust pedestrian/bicycle path will be constructed through the remainder of the property, connecting the police station to US Route 1.

The third party Traffic Review Engineer has indicated that further traffic analysis, including summer traffic counts and license plate surveys would be beneficial to informing the final design of the Route 1 and Connector Road intersection. The town is proposing to construct the Connector Road under this application, but not to open it to traffic pending receipt of this information and finalization of the design. The project will return to the Planning Board for further approval prior to opening the road, once the final design for the intersection has been reviewed.

Alternative Alignments

A number of alternative routes and design criteria were explored for the new Connector Road before the design presented in this application was chosen. These included an option to connect to the York Wild Kingdom Road. However, this could not be achieved in a cost effective manner that met the objectives of the town and the abutting property owner. In addition, a number of alternative alignments based on the current Route 1 connection location and using different design criteria were explored. The presented design represents most favorable environmental alternative and one that meets the key objectives of the project in the most cost effective manner.

Police Station Site

The police station site is located on a small knoll to the east side of the new access road, approximately 1,000 feet from Ridge Road, allowing easy access to both Route 1 and the York Beach area. The York Police Department building is an approximately 18,000 SF building that will provide appropriate accommodations for police station staff in a modern, energy efficient environment. The design of the building provides a structure which is, first and foremost, a response to functional needs of the department. Operational needs have determined the configuration of the building areas with respect to each other, and internally. The shape of the building has been driven by the desire of the town to have a building with sloped roofs. The designers' efforts have aimed to avoid a flat roof area by making bays of enclosed areas with a width of approximately 65'. With a 6/12 roof, this results in a ridge approximately 32' above the eaves. It should be noted that the orientation of the building has been located to

maximize the solar orientation and facilitate the possible addition of solar collectors in the future.

Access and Parking:

The police station will be accessed at two locations from the new through road. The westerly access will be for staff, cruisers and official visitors, and the easterly access will be for the public. The Town of York code requirement for parking for this type of facility is established as five spaces for every 1,000 SF of useable floor area. The building has a total floor area of 18,000SF+/-, with 3,600SF+/- allocated to the sallyport garage, mechanical space and storage space. The resultant usable floor area is 14,400SF+/-, giving a parking requirement of 72 parking spaces. While the initial program suggested more parking than that, the LEED Silver requirement has led to a decision not to seek that additional parking. All parking shall be 90 degrees to access aisles.

Traffic

The project comprises the construction of new public safety building to house the current York Police Department facilities. The existing Police Station is located a short distance away in the same area of town at 36 Main Street. As such, it will not generate any *additional* traffic in the town, or on the local road network. The project also includes construction of a new Connector Road between Route 1 and Ridge Road. This will provide additional infrastructure to alleviate congestion on other adjacent routes. The project is thus expected to be of net benefit to traffic circulation on the local road network. Please note that the traffic analysis undertaken for this application assumes that the Connector Road will not be opened to the Route 1 connection. *The third party Traffic Review Engineer has indicated that further traffic analysis, including summer traffic counts and license plate surveys would be beneficial to informing the final design of the Route 1 and Connector Road intersection. The town is proposing to construct the Connector Road under this application, but not to open it to traffic pending receipt of this information and finalization of the design. The project will return to the Planning Board for further approval prior to opening the road, once the final design for the intersection has been reviewed.*

Utilities:

Power and communications -The new facility will be served by three-phase power from the CMP system in Ridge Road. The new service will run underground from the street to the police station site. A pad-mounted transformer will be installed adjacent to the new Police Station with ongoing secondary service to the building. Communications and cable conduits will be installed in the same trench as the electrical service to the specifications of the governing utilities.

Sewer - Sewer service for the new Police Station will be provided by York Sewer District. A new gravity sewer extension will be constructed as part of this project. The new sewer will connect to the existing system in Caddy's Way, across land recent purchased by York Sewer District. It will extend into the site, serving the new police station facility and continuing up the Connector Road to provide potential future sewer access to abutting property owners.

Water - Water service to the site will be provided by the York Water District. A new 8" Ductile Iron diameter water main will be constructed between Ridge Road and the Police Station site to provide fire and domestic supply. York Water District has also indicated that a loop to the end of the main in Caddy's Way may be beneficial to overall system performance, and that consideration should be given to sizing the new main for expected future growth in the area. Domestic and fire services for the new facility will be tapped off the new service main. A fire

hydrant will be installed in the roadway adjacent to the new building to provide external fire-fighting protection.

Stormwater Management

Stormwater from the newly developed areas of the site and roadway will be captured and treated in accordance with the State of Maine Chapter 500 Stormwater Law. Small Bioretention cells and vegetated buffers will be used to treat runoff from the new roadway. Filtering drip strips and bioretention cells in and adjacent to parking lots and around the building will treat runoff from these areas. In addition, a number of areas alongside the road will be utilized as Stormwater Buffers. These areas will be deed restricted in accordance with MDEP requirements.

The stormwater management BMPs are primarily designed to treat runoff from developed areas for water quality. However, in addition to this primary function, they will also serve to slow and detain runoff so that flows to downstream resources are not increased. The new Connector Road will cross several drainageways that convey runoff from upstream areas to the west of the site, across the property in a generally easterly direction. Surface flows in these drainageways will be conveyed under the new road in a series of culvert crossings. The culverts will be sized to convey the peak design 100-year flood flow at each location. At two locations, the crossings are defined as natural streams. In these cases the culvert crossings will be oversized and constructed with a natural "bed" within the pipe to maintain the hydraulic conditions at either side of the crossing.

In addition to the permanent measures described above, a comprehensive array of temporary soil erosion and sediment control measures are proposed to protect the site and downstream resources during construction of the project. Soil erosion BMPs are shown on the accompanying plans and notes.

Landscaping and Lighting

A preliminary landscaping plan has been developed for the site to create an attractive environment around the new police station facility and supplement the existing vegetation that will remain around the site perimeters. Some additional plantings are also proposed around the new entrance to the Connector Road from US Route 1. Lighting for the police station parking lot is designed to provide safe and adequate lighting without intruding on adjacent properties, or the adjacent roadway.

Historic Resources

Project review letters were sent to Maine Historic Preservation Commission and York Historic District. Both agencies have reviewed the project and no impacts to historical resources are anticipated

Fire Department Review

An initial meeting was held with Chief Bridges on October 26th 2011 during the first review of this project. Further correspondence was undertaken throughout the development of the plans during the previous permitting of the project. Further correspondence has been sent to the fire department as part of this review process and we are currently awaiting a response.

Natural Resources

Natural resource protection was one of the primary objectives considered during the evolution of the concept design for the new facility and connector road. The design was developed to achieve the program goals while avoiding natural resources impacts and, where unavoidable, minimizing those impacts.

After selection of the site, existing conditions information was gathered including mapping of natural resources and the associated regulatory setbacks. The mapping information was used to develop a preliminary design that met appropriate site and safe road alignment guidelines, while avoiding and minimizing natural resource impacts to the greatest practicable extent.

Preliminary meetings were held with natural resource consultants and regulators at the State and Federal levels during development of the design to ensure that the design objectives could be met, and that the project would meet the criteria required by the relevant permit guidelines. A pre-application meeting with State and Federal regulators set parameters for mitigation of the potential wetland and vernal pool buffer impacts. A mitigation plan, designed to address the impacts was developed and submitted with the state and federal permit applications. The project design limits all proposed direct wetland impacts to the Right-of-Way associated with the new road. The majority of these are associated with necessary crossings of drainage features on the site. There are no wetland impacts on any single lot (existing, or proposed). Some areas of unauthorized clearing occurred at the site following previous project approval and the start of construction. Restoration of these areas is included as part of this submission and described in the section below

Restoration of Previously Impacted Areas

Following previous approval of this project, significant areas of unauthorised clearing occurred at the site. These areas were outside the limits of disturbance shown on the project plans, or presented in previous permit applications. The plans submitted with this application include details of proposed restoration and re-planting in these areas, in order to bring the site into conformance with current State and Federal permits, and to resolve locally administered Shoreland Permit violations. The plans and supporting documents in this submission give priority to restoration activities and include safeguards to ensure that no clearing is undertaken without prior approval.

Permitting

The project has a current USACE Programmatic General Permit. A permit amendment will be required with revised plans showing the Communication Tower, the associated stormwater facilities, and revised sewer service location. Implementation of the Buffer Restoration Plan will be required to achieve compliance with the permit.

The project has a current Maine Department of Environmental Protection Natural Resource Protection Act Permit. An Amendment will be required to cover the addition of the Communication Tower, the associated stormwater facilities and the revised sewer service location. Implementation of the Buffer Restoration Plan will be required to achieve compliance with the permit.

In addition to the Site Plan Review, Shoreland Permit Review and Wetlands Permit Review that will be undertaken by the Planning Board, the project design needs to address the local Shoreland Permit violations to the satisfaction of the Code Enforcement Office. A Flood Hazard Development Permit will also be required to authorize the proposed flood plain crossing at the Ridge Road end of the Connector Road.

Construction Sequence

New construction on the project will give priority to tasks required to restore areas that were subject to previous unauthorized clearing. These areas will be cleared of debris, planted and stabilized in order achieve conformance with previously issued permits and resolve recorded violations.

1. Prior to construction all clearing limits and limits of disturbance shown on the project plans shall be clearly staked in the field for approval by the Project Engineer. No clearing or cutting shall be undertaken until the limits have been approved.
2. All stormwater buffers shown on the plans and referenced in the project approvals shall be clearly survey located and marked with rebar pins at each corner, as required by the conditions of the Maine DEP permit issued for the project. Temporary fencing shall be erected to clearly delineate these areas during construction.
3. Site construction will begin with processing of the existing rock debris pile that is adjacent to the impacted vernal pool.
4. Rock will be removed from the top of the debris pile until such time as it is sufficiently stable to remove the area of rock closest to the vernal pool. Rock from the stockpile will be processed and used as granular borrow on the project site.
5. As soon as it is safe and practical, rock debris will be removed from the restoration area within 100 feet of the wetland edge associated with the impacted vernal pool.
6. The stockpile of loam and woody debris adjacent to the vernal pool will be spread across the restoration area, as described in the Buffer Restoration Plan. Excess material will be moved out of the restoration area and re-used on the site.
7. The addition of organic material, grading and stabilization of the restoration area shall be undertaken at the earliest possible opportunity so that seeding and planting can take place while construction of other aspects of the project continues.
8. As soon as base grades have been established and the restoration area has been stabilized, perimeter fencing shall be erected with signs identifying it as a protected natural resource area.
9. Restoration of plantings shall be undertaken under the supervision of the project wetland scientist.
10. Construction of the remainder of the project shall continue once the restoration area is stabilized and adequately protected.

Waiver Requests

The applicant respectfully requests the following waivers from the Town of York Site Plan and Subdivision Regulations;

1. Section 6.4.14.2 requires street cross sections every fifty feet along the entire street proposed in the development. The applicant requests a waiver from this provision on the following grounds. The proposed street cross section is relatively uniform throughout the length and has only three different section configurations. These are clearly shown on the site plan and details. In our opinion this information, along with the detailed road profile information clearly shows the alignment, elevations and sections required for accurate construction of the road. Adding repeated similar cross sections along the length of the road would be redundant. This waiver request was granted by the Planning Board on May 6th 2014.
2. Section 6.3.32 requires that a High Intensity Soil Survey be submitted indicating the suitability of the soil conditions for the uses proposed. The applicant requests a waiver from this requirement on the grounds that a high intensity soil survey is neither warranted nor appropriate for this type of development. Maine DEP requires Class A High Intensity Soil Surveys for only two classes of projects. The first is for a specific area of land that is to be used for wastewater disposal, or disposal of other wastes. The second is for residential and commercial subdivisions that utilize on-site wastewater disposal and have lot areas of less than two acres. The primary reason for undertaking a High Intensity Soil Survey is to determine the capability of surficial soils to accept, treat and disperse relatively high intensity waste disposal functions. The

proposed project will be connected to municipal sewer and will not include any on-site disposal of waste materials. Therefore, this information will not be helpful or relevant to the development. A geotechnical investigation has been undertaken to determine depth to bedrock, soil bearing capacity and other physical parameters for use in the design of the building foundation and pavement sections. This waiver request was granted by the Planning Board on May 6th 2014.

3. Section 9.5.9 of the Town of York Site Plan and Subdivision Regulations states that the maximum centerline grade of a road shall be 2% within 75 feet of an intersection. This waiver request was discussed at the Planning Board meeting on May 6th 2014 at which time the Board requested a more complete narrative request. The revised narrative is provided below;

The applicant requests a waiver from the ordinance standard on the grounds that this would result in excessive fills in the gully crossing at the intersection approach on the Connector Road. In addition to adding unnecessary cost to the project, this would also raise the height of the embankments at the gully and stream crossings, and hence add to the impacts to the adjacent wetland areas. As noted during the engineering review of this project, the design road grade at the approach to the Route 1 intersection exceeds the standard in Section 9.5.9 of the Town of York Zoning Ordinance. The grade is held for a distance of approximately 40 feet from the intersection before transitioning into a crest vertical curve. The grade along the vertical curve increases to a maximum of 3.8% at a distance of seventy-five feet from the intersection. The vertical curve is required to steepen the grade as the road approaches a significant drainage gully at approximate road STA 8+50. There is a very short tangent between the crest vertical curve and the following sag vertical curve that traverses the gully, leaving no room to extend the first curve without impacting the second one. The lengths of these vertical curves are governed by design criteria for safe driving conditions. Extending the 2% grade out for the full required 75 feet from the intersection would require raising the road grade over the entire approach to the drainage gully (approximately 800 feet). This would require additional fill along the entire affected length, including at the crossing, which would extend the embankment footprint into the adjacent wetland areas on either side. This would be both costly and result in greater environmental impacts at the wetland crossing.

The American Association of State Highway and Transportation Officials (AASHTO) design manual - A policy on Geometric Design of Highways and Streets (AASHTO 2004) recommends a maximum grade of 3% in the vicinity of intersections where this is practical. The manual goes on to state that "Where existing conditions make such designs too expensive, grade should not exceed 6% at the intersection approach." The reasoning behind these criteria is that the accelerating and stopping distances for vehicles on a grade of 3% differ little from the corresponding distances on the level. This standard is applied for two reasons. Firstly, to ensure that decelerating vehicles approaching an un-signalized intersection have sufficient distance to safely stop. Secondly, and more relevant in this case, that accelerating vehicles leaving the stopped position are not unduly delayed by a significant rising grade - this could potentially increase conflicts with vehicles travelling on the intersecting roadway. The current design falls well within the parameters recommended in the referenced AASHTO guide and good engineering practice.

4. Section 7.18.6 requires that proper and complete monumentation shall be installed prior to final approval of the application. The applicant requests a waiver from this provision on the grounds that monumentation of the new road right-of-way will be

subject to possible damage by construction traffic and earth moving operations. Some of the proposed monuments are located in areas where significant grade change is proposed. It is proposed that monumentation be installed in these areas as soon as earthwork is complete. The Planning Board granted a waiver from this section on May 6th 2014, with the condition that monumentation will be installed around the perimeter of property prior to final approval. Road monumentation will be allowed to be placed once the construction of the road is completed.

Summary

The new York Police Station project is designed to address the significant deficiencies in the current facility described in the Comprehensive Plan. The location for the project has been selected as the most appropriate available site and the preliminary design has been tailored to meet appropriate road safety and design standards while avoiding and minimizing impacts to natural resources. The new building and associated facilities will benefit the community and allow the police department to better serve the Town of York over the coming years.

The following drawings are included with this application:

SURVEY PLANS - BY BH2M

1	STANDARD BOUNDARY SURVEY PLAN	<i>Revised 06-03-14</i>
2	STANDARD BOUNDARY SURVEY PLAN	<i>Revised 06-03-14</i>
3	EXISTING CONDITIONS PLAN	<i>Revised 04-03-14</i>
4	EXISTING CONDITIONS PLAN	<i>Revised 04-03-14</i>
5	EXISTING CONDITIONS PLAN	<i>Revised 04-03-14</i>

SITE PLANS - BY SMRT, Inc.

G1001	COVER SHEET	<i>Revised 06-05-14</i>
C-001	SITE LEGENDS & NOTES	<i>Revised 06-05-14</i>
C-002	REGULATORY NOTES	<i>Revised 06-05-14</i>
	SITE CONTEXT AND ZONING PLAN	<i>Added 04-18-14</i>
C-110	DEVELOPABLE ACREAGE PLAN	<i>Added 06-05-14</i>
CP101	ROAD GEOMETRY PLAN	<i>Revised 06-05-14</i>
CP102	ROAD PLAN AND PROFILE	<i>Revised 06-05-14</i>
CP103	ROAD PLAN AND PROFILE	<i>Revised 06-05-14</i>
CP104	ROAD PLAN AND PROFILE	<i>Revised 06-05-14</i>
CP105	ROAD PLAN AND PROFILE	<i>Revised 04-03-14</i>
CP106	ROAD GEOMETRY PLANS	<i>Added 06-05-14</i>
CP107	SUPERELEVATION TABLES	<i>Added 06-05-14</i>
CP501	SITE DETAILS	
CP502	SITE DETAILS	<i>Revised 06-05-14</i>
CP503	SITE DETAILS	
CP504	CULVERT CROSSING DETAIL STA 43+66	<i>Added 04-18-14</i>
CE001	EROSION CONTROL NOTES	
CE110	EROSION CONTROL PLAN	<i>Revised 06-05-14</i>
CE501	EROSION CONTROL DETAILS	
CG110	GRADING AND DRAINAGE PLAN	<i>Revised 06-05-14</i>
CG501	GRADING AND DRAINAGE DETAILS	
CG502	GRADING AND DRAINAGE DETAILS	
CG503	GRADING AND DRAINAGE DETAILS	<i>Added 06-05-14</i>
ES101	ELECTRICAL SITE/LIGHTING PLAN	
LP101	PLANTING & LANDSCAPING PLAN	
LP501	PLANTING DETAILS, NOTES & SCHEDULE	
RC101	RESTORATION PLAN	<i>Revised 06-05-14</i>
RC102	RESTORATION PLAN	<i>Revised 06-05-14</i>
GU001	UTILITY PLAN COVER SHEET	<i>Added 06-05-14</i>
CU101	UTILITY PLAN AND PROFILE	<i>Revised 06-05-14</i>
CU102	UTILITY PLAN AND PROFILE	<i>Revised 06-05-14</i>
CU103	UTILITY PLAN AND PROFILE	<i>Revised 06-05-14</i>
CU104	UTILITY PLAN AND PROFILE	<i>Revised 06-05-14</i>
CU110	UTILITY PLAN	<i>Revised 06-05-14</i>
CU501	UTILITY DETAILS	
CU502	UTILITY DETAILS	<i>Revised 06-05-14</i>
	YORK WATER DISTRICT STANDARD DETAILS	<i>Added 06-05-14</i>

<u>SEWER PLANS BY CLD CONSULTING ENGINEERS</u>		
1	COVER SHEET	Added 06-05-14
2	PLAN AND PROFILE	10-31-13
3	PLAN AND PROFILE	10-31-13
4	PLAN AND PROFILE	10-31-13
5	DETAILS	10-31-13



Image taken from Delorme Maps

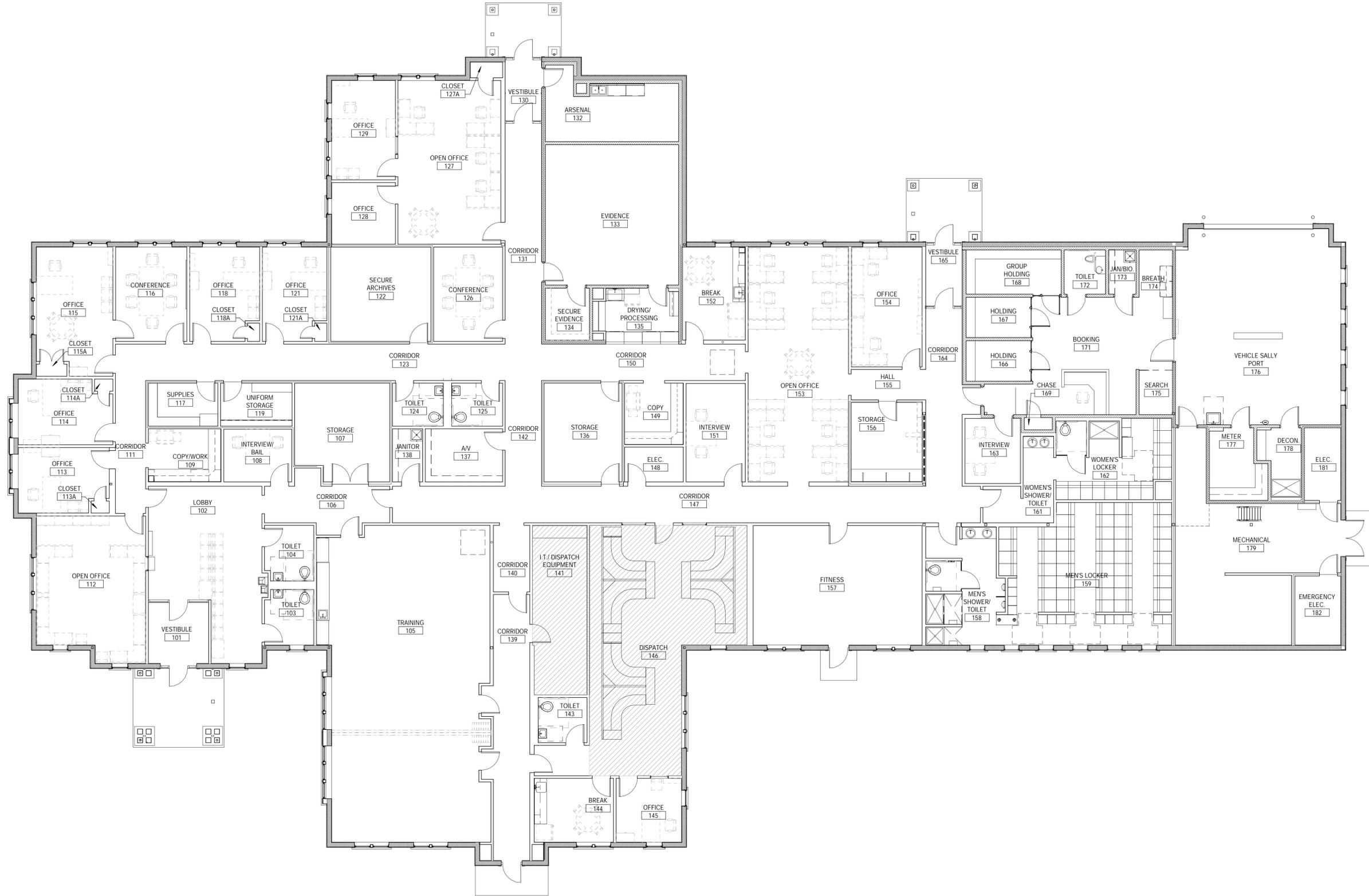


York Police Department
New Public Safety Building &
Connector Road

Project No. 06122-10
December 2011

Site Location Plan

Attachment 1 - Building Plans and Renderings





Attachment 2 - Surveyor's Report

SURVEY REPORT

STANDARD BOUNDARY SURVEY LAND OF THE INHABITANTS OF THE TOWN OF YORK U.S. ROUTE ONE AND RIDGE ROAD YORK, MAINE

June 3, 2014

SURVEY OBJECTIVES:

To explain the boundary line discrepancy between land of The Inhabitants of the Town of York and York Wild Kingdom, Inc. in two areas shown on the plan titled "Standard Boundary Survey Plan, Land of the Inhabitants of the Town of York, Route One & Ridge Road, York, Maine", dated November 2011 as revised through 05/10/14, by Berry Huff McDonald Milligan, Inc., Sheets 1 & 2.

CLIENT

The Town of York
Robert G. Yandow, Town Manager
186 York Street
York, Maine 03909

SUBJECT PARCELS:

The parcels of land involved in area of the boundary line discrepancy were conveyed in two separate Deeds and shown on the York Tax Map #140 as Lot #101.

AREA 1:

The first parcel, Parcel 3 as shown on aforementioned plan Sheet 1, was conveyed to the Inhabitants of the Town of York by Donald Blinn by Deed Book 15881, Page 388 on June 15, 2010. This parcel was conveyed to Donald Blinn by Deed Book 3164, Page 12 (2nd parcel) from Samuel Spector dated September 16, 1983.

AREA 2:

The second parcel was conveyed to The Inhabitants of the Town of York by Samuel Horn, Noreen Horn, Dewey Horn and Harry Horn by Deed Book 15871, Page 326 on May 20, 2010. This parcel was conveyed to the Horn's by Rhoda Iris Freeland by Deed Book 2536, Page 280, dated January 17, 1979.

YORK WILD KINGDOM, INC. PARCELS:

The York Wild Kingdom, Inc. land is shown on the York Tax Map #140 as Lot 010. The parcel was conveyed to York Wild Kingdom, Inc. by the York Beach Amusement Corporation by Deed Book 2730, Page 293 on November 28, 1980. The parcels in question are referenced in the Deed as Parcel 3 (previous Deed Book 1240, Page 566), Parcel 4 (previous Deed Book 1240, Page 567) and Parcel 5 (previous Deed Book 1240, Page 568).

PLAN REFERENCES:

- A. Standard Boundary Survey for Harry H. Norton, Sr. and Roger R. Norton III, Ridge Road, York, Maine, dated July 1995 by Anderson Livingston Engineers, Inc.
- B. Standard Boundary Survey Plan, Land of The Inhabitants of the Town of York, Route One, Ridge Road, York Maine, dated November 2011 as revised through 3/10/14, by Berry Huff McDonald Milligan, Inc..
- C. Boundary Plan for Land of York Wild Kingdom, Inc., Railroad Avenue, York, Maine, dated 9/1//13, by Civil Consultants, Job #13-167.

AREA 1 BOUNDARY LINE DISCREPANCY

As shown on the Plan Reference B (Sheet 1), the boundary line in question is the northeasterly boundary of the land of the Inhabitants of the Town of York and the southwesterly boundary of the York Wild Kingdom, Inc..

DEED RESEARCH (AREA 1)

Per the Deed of the Inhabitants of the Town of York (15881/388 – parcel 2), the northeasterly boundary line is described as being “90 feet more or less from a corner of a stonewall (shown on Plan), along a wire fence to land formerly of Albert Talpey, now of York Wild Kingdom, thence running southeasterly by and along land of York Wild Kingdom 1400 feet more or less to a fence corner and land of Horn. Thence turning and running southwesterly by land of said Horn 600 feet more or less to wire fence and land now or formerly of Roger Norton”.

Per the Deed of the York Wild Kingdom, Inc. (2730 / 295 – parcel 5), the southwesterly boundary line is described as being “westerly 300 feet from the northeasterly corner of land now or formerly of Albert Talpey, directly adjacent to a brook, thence running southerly to a point which is 300 feet westerly from the southwesterly corner of a lot now or formerly of John Paul, thence continuing in a southerly direction to the northwesterly corner of land formerly of Stacy, thence running easterly along land of Stacy 300 feet more or less”.

PHYSICAL EVIDENCE (AREA 1):

No physical evidence was found (ie. wire fence, stonewall, etc.) by either survey along the common boundary line of the Inhabitants of the Town of York and York Wild Kingdom, Inc..

The point of beginning of the Town of York deed, corner of stonewall, and York Wild Kingdom, Inc. deed, corner of wire fence, were found. Also, the wire fence called for along land of Horn was located. The southwesterly corner of land formerly of John Paul, an existing 1 1/4" iron pipe was located. This is the point used by Civil Consultants to determine "the point which is 300 feet westerly from the southwesterly corner of land of Paul".

The problem with this point created by Civil Consultants is that an angle point was created in the common line. Both deeds, in my opinion, describe a line that is straight. The Town's deed describes the line as being "southeasterly by and along the land of York Wild Kingdom, Inc. 1400 feet more or less to fence corner" (remains of wire fence found). The York Wild Kingdom, Inc. deed describes the common boundary line as "southerly to a point which is 300 feet westerly from the southwesterly corner of a lot of John Paul, thence continuing in a southerly direction to northwesterly corner of Stacy". The use of the word continuing in my opinion means the boundary line is extended or prolonged without interruption or angle in the boundary line.

CONCLUSION: (AREA 1):

As shown on both plans, the common boundary line between the land of the Inhabitants of the Town of York and York Wild Kingdom, Inc. is interpreted differently by both surveyors. Each surveyor relied mainly on their respective subject parcel's deeds to create the boundaries shown on both plans. The recommended solution to the current boundary discrepancy would be a Boundary Line Agreement to a common line agreeable to both parties.

AREA 2 BOUNDARY LINE DISCREPANCY:

As shown on Plan Reference B (Sheet 2), the boundary line in question is the northeasterly boundary line of The Inhabitants of the Town of York and the southwesterly boundary line of the York Wild Kingdom, Inc.. Each surveyor held the existing capped 1" iron pipe found (PLS #1197) near an existing 18" white pine with barbed wire as the point of beginning in the respective subject deeds, but differed in the direction of the boundary line.

DEED RESEARCH (AREA 2):

Per the deeds of The Inhabitants of the Town of York (deed Book 15871, Page 326) previous deed to Horn's (Deed Book 2536, Page 280) and the Deed to York Wild Kingdom, Inc. (Deed Book 2730, Page 293 – Parcel 3), the common boundary line description is the same. The common boundary line is described "Beginning at a large pine tree, said pine trees being 607 feet northeasterly from the easterly side of the Central Maine Power Right of Way and said pine tree being also at the corner of land now or formerly of Roger Norton" (see Plan Reference C). "thence running in a northwesterly direction parallel with the centerline of the Central Maine Power Transmission Line N 36°-39'W to land now or formerly of Raymond Stacy and Mabel Donahue". The Town of York Deed Continues to read "turning and running in a southwesterly direction by and along a wire fence and brook for 607 feet to a point on the border of the Central Maine Power Right of Way".

PHYSICAL EVIDENCE AREA 2:

As previously mentioned a capped 1" iron pipe was found (PLS #1197) near an 18" white pine with barbed wire and was held by both surveys as the point of beginning called for in both deeds. This capped 1" iron pipe found was determined to be 575.94 feet from the northeasterly sideline (Deeds "easterly") of the Central Maine Power Company Right of Way, not the 607 feet called for in the deeds.

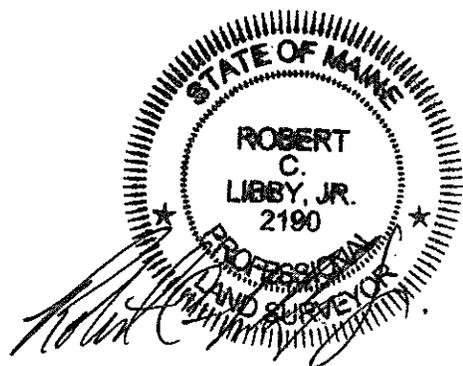
A 2" iron pipe was found near an existing brook at the northeasterly corner of land formerly of Horn, now of the Inhabitants of the Town of York. This 2" iron pipe was held as the corner of the land of the Inhabitants of the Town of York by the BH2M survey. This 2" iron pipe was not held as the common boundary line by the Civil Consultants Survey. Instead, the Civil Consultants Survey held a boundary line parallel to the northeasterly ("easterly") sideline of the Central Maine Power Company Right of Way. This creates a corner that is 17.96 feet southwesterly of the corner held by the BH2M survey.

The 2" iron pipe found was determined to be 593.30 feet from the northeasterly sideline of the Central Maine Power Company Right of Way sideline, not the 607 feet called for in the Horn Deed. Also, this 2" iron pipe was located near remains of existing wire fence and an existing brook per the Horn deed call.

The BH2M Survey held this 2" iron pipe (set by Surveyor Frank Emery) as the subject parcel (Town of York) corner. A boundary line parallel to the Central Maine Power Company Right of Way was not held, similar to the distances of 607 feet not being held. Both are interpreted to be more or less, and the common boundary line shown on the BH2M Survey is more or less parallel (0°-36' different).

CONCLUSION AREA 2:

The common boundary line between the land of The Inhabitants of the Town of York and York Wild Kingdom, Inc. is interpreted differently by both surveyors. It is recommended that both parties agree upon a common boundary line.



Attachment 3 - CMP Crossing Agreement



**CENTRAL MAINE
POWER**

June 4, 2014

Robert G. Yandow, Town Manager
Town of York
186 York Street
York, Maine 03909

RE: 50 ft. Wide Road Crossing, York, Maine
CMP's transmission corridor designated Section 139
between Poles 108-109 & Poles 87-86

Dear Mr. Yandow:

Central Maine Power Company (CMP) has completed its review and approved your request for a 50 ft wide road crossing over CMP's transmission corridor designated Section 139 between poles 108-109, and poles 87-86, in the Town of York, Maine.

Pending final corporate approval and payment in the amount of \$3250.00, CMP will convey a Permanent Use Agreement.

Should you have any questions, please feel free to contact me.

Best regards,

Patricia Larrivee, Analyst
Real Estate Services
Central Maine Power Company
83 Edison Drive
Augusta, Maine 04336
patricia.larrivee@cmpco.com
(207) 621-6524

83 Edison Drive, Augusta, ME 04336
Telephone 800.750.4000, Fax 207.621.3881
www.cmpco.com



Attachment 4 - Water Main Extension Correspondence

Andrew Johnston

From: Daniel J. Flaig <daniel.flaig@wright-pierce.com>
Sent: Tuesday, March 06, 2012 8:07 AM
To: Andrew Johnston
Cc: Jason Bernier; 'dneumann@yorkwaterdistrict.org'
Subject: RE: York Police Station Review

Thank you. I'll let you know if we need any additional information.

Dan

From: Andrew Johnston [<mailto:ajohnston@smrtinc.com>]
Sent: Tuesday, February 28, 2012 7:59 AM
To: Daniel J. Flaig
Cc: Jason Bernier; dneumann@yorkwaterdistrict.org
Subject: RE: York Police Station Review

Hi Dan,

I think I have everything that you need at this point. Some of these are from our plumbing engineer (Jason Bernier), so please copy him if you need any further clarification.

The finished floor elevation of the building is 24.0ft (NGVD 1929)

The highest plumbing fixture is a dry sprinkler head 18 feet above the finished floor of the building (i.e. elevation 42.0')

The sprinkler demand is 288gpm at this fixture plus 100gpm external flow. The residual pressure requirement is 16psi.

We have estimated the water demand using current usage figures for the police station provided by YWD. These indicated a maximum quarterly use of 6,600cu.ft. between June 1, 2011 and September 1, 2011. This equates to approximately 540gpd. We have allowed for a 33% increase in demand due to the number of fixtures in the new facility and the reasonable expectation of increased use. This gives us a use estimate of approximately 720gpd. Please note that elements of the plumbing design for the building will be governed by code requirements rather than actual demand.

Please feel free to drop me a line or give me a call if you need any further information.

Regards,
Andrew

Andrew D. Johnston, PE,
CEng., CEnv., C.WEM, MCIWEM, LEED AP
Senior Civil Engineer
www.smrtinc.com
144 Fore Street, PO Box 618 Portland, Maine 04104
p 207.772.3846 f 207.772.1070

From: Daniel J. Flaig [<mailto:daniel.flaig@wright-pierce.com>]
Sent: Thursday, February 23, 2012 1:21 PM

To: Andrew Johnston
Cc: Jason Bernier; 'Don Neumann'
Subject: RE: York Police Station Review

That is fine Andrew.

Dan

From: Andrew Johnston [<mailto:ajohnston@smrtinc.com>]
Sent: Thursday, February 23, 2012 1:20 PM
To: Daniel J. Flaig
Cc: Jason Bernier
Subject: RE: York Police Station Review

Hi Dan,

Our plumbing engineer will be back in the office tomorrow and I will get answers to these over to you then if that is OK.

Regards,
Andrew

Andrew D. Johnston, PE,
CEng., CEnv., C.WEM, MCIWEM, LEED AP
Senior Civil Engineer
www.smrtinc.com
144 Fore Street, PO Box 618 Portland, Maine 04104
p 207.772.3846 f 207.772.1070

From: Daniel J. Flaig [<mailto:daniel.flraig@wright-pierce.com>]
Sent: Tuesday, February 21, 2012 11:16 AM
To: Andrew Johnston
Cc: 'Don Neumann'
Subject: York Police Station Review

Hi Andrew,

I am completing the design review for York Water District to extend the water main to serve the planned new police station in York. Below is a summary of the information I need to complete our review.

- highest building plumbing fixture elevation
- facility water demand projections
- building sprinkler system water demand and residual pressure requirements

This information will be used to estimate available fire flow and pressure under various system operating conditions to confirm recommended water main size.

thanks,

Dan

Daniel J. Flaig, P.E. | Project Manager
Wright-Pierce | Water, Wastewater & Infrastructure Engineers

www.wright-pierce.com

99 Main Street | Topsham, ME 04086
Tel 207.798.3776 | Fax 207.729.8414

Celebrating 60 Years of Engineering Excellence

Attachment 5 - York Beach Fire Department Correspondence



May 23rd 2014

Fire Chief David Bridges
York Beach Fire Department
18 railroad Avenue
York, Maine 03909

Re: York Police Department - New Public Safety Building and Connector Road

Dear Chief Bridges:

On behalf of our client, the Town of York, we are writing to request confirmation that York Beach Fire District review and comment on the referenced new development proposal.

The project comprises the development of property off Ridge Road, adjacent to the York Wild Kingdom to construct a new public safety building for the York Police Department and the associated access, parking and utility infrastructure. The new facility will connect the existing York Water District system in Ridge Road via a new main along the Connector Road and a new loop connection to the system in Caddy's Way. A fire hydrant will be provided at the front of the new police station building. A plan showing the proposed configuration is attached for your review.

As you are probably aware, this project was previously permitted in 2012, but construction was halted shortly after the start. The layout of the project remains very similar to the previous design, with the addition of a cellular and emergency communications tower in the vicinity of the new police station building. During the recent project review, it was noted by the third party planning reviewer that there was no formal approval letter from the fire department on file. We have enclosed two plans from a larger plan set showing the general layout of the proposed site. We would be grateful if you could review the attached information and let us know if require any additional information in order to complete your review, or if you have any comments on the project. We would be happy to schedule a meeting to review the full plans and details with you at any time. In the meantime, if you have any questions please feel free to contact me by phone or email. Thank you very much for your attention to this request. We look forward to hearing from you.

Sincerely,
SMRT

A handwritten signature in black ink, appearing to read "A. Johnston", is written over the typed name.

Andrew D. Johnston, PE, CEng, CEnv, MCIWEM
Senior Civil Engineer

144 Fore Street
P.O. Box 618
Portland, ME 04104
p 207.772.3846 f 207.772.1070 email: ajohnston@smrtinc.com

cc: DVL, Rob Yandow, File 06122/27

Enclosure

Attachment 6 - Responses to Review Comments

Town of York Police Department
New Public Safety Facility

Engineering Review
Responses to Review Comments

SMRT has received Engineering review comments from SMPDC and Ransom Consulting Engineers and Scientists and Traffic Engineering comments from Ty Lin International. These are based on plans and supporting information issued for York Planning Board Preliminary Site Plan Review and dated 04-23-2014. The following responses are offered to the review comments, and describe the changes that will be made to the plans. Original comments are shown in bold, with responses in standard text. Please note that additional responses to traffic review comments are included in a separate letter from Gorrill-Palmer Consulting Engineers, Inc.

The engineering review has focused on the requirements of Articles 4 and 6. Comments will refer to specific article paragraphs where appropriate. Other comments are listed based on plan sheet numbering with remaining comments provided on the Stormwater Report. While these comments may be very detailed for preliminary review, Ransom feels that if these are not addressed now, they may be missed in the construction documents and may result in change orders costing the Town a lot of money.

Article 4 Site plan and subdivision regulations review

Paragraph 4.3.A.3 - While it is understood that the application is the Town of York, the plans do not list them as the applicant.

Response: The Town of York is listed as the Owner/Applicant on the revised plan set cover sheet (Sheet GI001).

Paragraph 4.4 - Match lines shall be provided on plans requiring multiple sheets.

Response: Match lines have been added on the road plan and profile sheets to denote where these apply.

Paragraph 4.8 -During the final approval process, the plans shall be provided with signature blocks for the planning board, town departments and water and sewer districts. Conditions of approval and requested waivers shall be placed on the plans.

Response: Approval blocks have been added to the plan sheets as required and conditions of approval and waivers have been added to the Regulatory Notes sheet (Sheet C-002).

Article 6 Submissions

Paragraph 6.3.2.F - A Locus Map shall be provided on the plan.

Response: Locus plans have been added to the two Boundary Survey sheets.

Paragraph 6.3.3.A.1 - Road frontages for Route 1 and Ridge Road shall be shown on the plan.

Response: A plan has been added to the set showing the developable acreage calculation and road frontage measurements at either end of the site (Sheet C-110).

Paragraph 6.3.3.A.4 - Locations of ledge outcroppings shall be shown.

Response: Locations of ledge outcroppings are shown on the new Sheet C-110.

Paragraph 6.3.3.A.5 - Land not suitable for development based on Paragraph 7.4.1 and Paragraph 7.4.2 shall be shown.

Response: Land not suitable for development is shown, along with area measurements on new Sheet C-110.

Paragraph 6.3.3.D.4 - Zoning and flood plain boundaries shall be shown.

Response: Zoning and flood plain boundaries are shown on the Site Context and Zoning Sheet. They are also shown on the revised Existing Conditions plan sheets.

Paragraph 6.3.5.a - The capacity to serve letter from the York Water District (YWD) indicates that their engineers, Wright Pierce, need to review the plans.

Response: It is our understanding that Wright-Pierce has reviewed the plans for the proposed water main extensions and are satisfied with the information provided. Correspondence relating to this is included with this submission.

Paragraph 6.3.5.b - The YWD has requested the sprinkler demand for fire protection.

Response: We have provided this information to the Engineer working on behalf of York Water District and have received no further requests to date. Correspondence relating to this is included with this submission.

A copy of the Paragraph 6.3.5.d - The Fire Department's questions were addressed in an email response, but there is not a formal approval letter from the Fire Department.

Response: We have written to the Fire Department to request further confirmation that they have no objections to the proposed development and are awaiting a response. A copy of our letter dated is included with this submission.

Paragraph 6.3.5.e - See comments under Stormwater Management Report.

Response: See responses under referenced section.

Paragraph 6.3.5.f - Refer to comments provided by TY Lin International.

Response: A separate response letter addressing these comments has been provided by the Applicant's Traffic Engineer. The letter is included with this submission.

Paragraph 6.3.5.g - The plans should include a Space and Bulk Requirement table to show that the parcel meets all standards including parking.

Response: A space a bulk table has been added to the plan set cover sheet (Sheet GI001).

Paragraph 6.3.8 - The applicant will need to address TY Lin's comments regarding the traffic impacts.

Response: A separate response letter addressing these comments has been provided by the Applicant's Traffic Engineer. The letter is included with this submission.

Paragraph 6.3.24.1 - The plans refer to the sewer design by CLD Engineering, though those plans were not included for review.

Response: A copy of the CLD Engineering sewer design plans is included with this submission.

Paragraph 6.3.25.1 - The plans for the water main and service design need to be reviewed by York Water District's consultant, Wright Pierce.

Response: It is our understanding that Wright-Pierce has reviewed the plans for the proposed water main extensions. Correspondence relating to this is included with this submission.

Paragraph 6.3.27 - The stormwater management report comments are presented separately at the end of this review.

Response: Please see responses in the referenced section.

Paragraph 6.3.28 - Sewer, water, and stormwater utility comments are contained within the Plan Sheet Review to follow.

Response: No response required.

Paragraph 6.3.33 - See 6.3.8 above.

Response: No response required.

Paragraph 6.3.34 - Waivers shall be noted on final plans.

Response: Waivers have been added to the Regulatory Notes sheet (Sheet C-002).

Plan Sheet Review - General Comments

1. Plans will require Planning Board signature block and all town departments and utilities must sign final plans.

Response: Approval blocks have been added to the plan sheets.

2. All conditions of Approval must be noted on plans.

Response: Conditions of approval have been noted on the Regulatory Notes sheet (Sheet C-002)

3. All waivers granted must be noted on plans.

Response: Waivers have been added on the Regulatory Notes sheet (Sheet C-002)

Sheet CP101

1. The road geometry tables do not correspond with the plan.

Response: All road geometry tables have been updated to reflect the latest road plan and profile information.

Sheet CP102

1. The entrance grade off of Route 1 exceeds 2% for the first 75 feet as required by Paragraph 9.5.9 for a collector street. The applicant shall present justification for this exceedence.

Response: The Applicant has provided further justification for this waiver request in the narrative provided as part of this submission

2. The silt fence location is not consistent with the grading limits.

Response: The silt fence has been adjusted to be consistent with the grading limits shown on the plans.

3. All Bioretention Cells shall be labeled.

Response: All bioretention cells are labeled on the revised plan sheets.

4. Culverts shall be shown in profile with their size, material, length, and slope.

Response: All culverts are shown in profile, with their size, material, length and slope on new sheet CG503.

5. Pavement/curb radii shall be shown at the intersection.

Response: Pavement and curb radii at the intersections, and details are shown on new sheet CP106.

6. Curve data needs to be provided on plans to determine if they meet the requirements of Paragraph 9.5.9.

Response: Geometry tables showing horizontal and vertical curve geometry are included on revise Sheet CP101.

7. The shaded area in the profile between Sta 2+25 and 3+60 needs to be explained.

Response: The shaded areas on the profile plans indicate areas where more than five feet of fill will be added to accomplish the finished road grade. These have been labeled to clarify the intent.

8. The plan has an errant A1/CP501 cross reference.

Response: The reference has been updated.

9. The bioretention cells shown do not label the underdrain or catch basins and cannot be correlated with the details.

Response: The bioretention cell labels have been updated to clarify the intent.

10. The shoulder filters with underdrain to not specify an outlet point.

Response: Labels have been added to indicate the outlet points of all underdrains.

11. A plan reference, A13/CG502 for riprap slope, does not indicate riprap.

Response: Riprap is shown at labeled locations on the revised plan sheets.

12. All riprap aprons and plunge pools should be labeled on the plans and refer to details.

Response: Culvert details and notes have been updated to show plunge pools at all inlet and outlet locations.

13. Right of way monumentation is not shown consistently and some appear to be missing.

Response: Monumentation has been removed from the plan and profile view sheets. This is shown on the Boundary Survey plans.

14. Super elevation tables should be provided.

Response: Superelevation tables and cross section are provided on new sheet CP107

Sheet CP103

1. Many of the comments for CP102 apply to CP103.

Response: See response above.

2. The shoulder filter strip does not show any underdrain.

Response: Underdrains have been added at the filter sections. These are also shown in the profile view for clarity.

Sheet CP104

1. Many of the comments for CP102 apply to CP104.

Response: See response above.

2. The underdrain from Sta 31+25 to 36+25 is not labeled with inverts and pipe sizes.

Response: Labels have been added to the underdrain piping.

3. The silt fence location is not consistent with the grading limits.

Response: The silt fence has been adjusted to be consistent with the grading limits shown on the plans.

Sheet CP105

1. Many of the comments for CP102 apply to CP105

Response: See response above.

2. The shaded area in the profile between Sta 42+40 to 44+00 needs to be explained.

Response: The shaded areas on the profile plans indicate areas where more than five feet of fill will be added to accomplish the finished road grade. These have been labeled to clarify the intent.

3. The underdrain from Sta 36+00 to 42+00 is not labeled with inverts and pipe sizes.

Response: Labels have been added to the underdrain piping.

4. All culverts shall be labeled with size, material, length, slope and inverts.

Response: All culverts are shown in profile, with their size, material, length and slope on new sheet CG503.

5. The silt fence location is not consistent with the grading limits.

Response: The silt fence has been adjusted to be consistent with the grading limits shown on the plans.

6. All riprap aprons and plunge pools should be labeled on the plans and refer to details.

Response: Culvert details and notes have been updated to show plunge pools at all inlet and outlet locations.

7. The roadway drainage drains across the esplanade and sidewalk onto the Police Station site. The esplanade is not being used as a soil filter strip.

Response: The road and shoulder grading has been revised to direct drainage to an additional filter strip. A Type 'F' catch basin is also provided to capture excess surface runoff at this location.

8. The stream culvert crossing retaining wall should be labeled and detailed.

Response: The culvert crossing at STA 43+66+/- is detailed on sheet CP504

Sheet CP110

1. The plan shows a future expansion (NIC) to the garage. Was the building addition taken into consideration within the stormwater management?

Response: Yes, the full impervious area was used in the stormwater calculations. The full footprint of the shed has been shown more clearly on the revised plan sheet, with a note indicating that all of the structure may not be constructed.

2. Will there be any fence between the Wild Kingdom parking lot and the Police Station?

Response: Yes. This is shown on the revised plan sheet.

3. The ADA parking reference D13/CO501 refers to the wrong detail.

Response: The reference has been confirmed at D13/CP501.

Sheet CP501

1. The road Bituminous Pavement detail- D9, exceeds collector standards.

Response: No response necessary.

Sheet CP502

1. A super elevation road section should be provided.

Response: A superelevation road section is provided along with the superelevation tables on new sheet CP107.

2. A note on the road section refers to geometry tables for super elevation at curves, though no tables were found.

Response: Please see response to comment above.

3. The road sections note a gravel shoulder, but loam is shown.

Response: The hatching on the detail has been amended to clarify the intent.

4. The dumpster slab should be detailed.

Response: The detail for the dumpster pad is shown on Sheet CU501. The reference label has been revised to reflect this.

Sheet CP503

No comments.

Sheet CE001

No comments.

Sheet CE110

1. The silt fence location is not consistent with the grading limits.

Response: The silt fence has been adjusted to be consistent with the grading limits shown on the plans.

2. The southeast area notes to strip loam, regrade, loam, seed, and stabilize with a temporary erosion control blanket. The area is not shown with any new grading. Why disturb this area just to revegetate it?

Response: The grade in this area is being lowered to offset the fill in the floodplain due to the road crossing at STA 43+66+/- . Further explanation will be given for this is the Floodplain Permit application.

3. The silt fence is shown to encroach into the fenced area of the Wild Kingdom.

Response: The silt fence has been adjusted at the referenced location.

Sheet CE501

No comments.

Sheet CG110

1. The grading at the southwest corner of the Wild Kingdom parking lot indicates that the knoll within the parking lot being removed, yet no notes or erosion control is shown.

Response: A note has been added on sheet CE110 to address this area.

2. Stormdrain pipes shall be shown with lengths and slopes.

Response: A table has been added to the plan showing the lengths and slopes of the storm drain piping.

3. Bioretention Cell 9 shows no data for the catch basin and stormdrain outlet. There is no underdrain shown in the basin.

Response: Underdrain has been added in Bioretention B-9.

Sheet CG501

1. The Bioretention detail for B-6 inverts do not match the plan.

Response: The inverts have been adjusted to correspond.

2. Bioretention cells B-8, B-100, and B-101 could not be found on the plans.

Response: Labels for the referenced basins have been added on the plans.

Sheet CG502

No comments.

Sheet ES101

No comments.

Sheet LP101

No comments.

Sheet LP501

No comments.

Sheet RC101

1. The planting plan refers to Stantec's plan for the upper and lower areas. The number of planting and locations are not shown.

Response: The planting notes and details from the Stantec plan have been added on the revised RC101.

2. Buffers B-4 and B-5 are not shown with a planting schedule. Stantec's report only address B-4.

Response: Restorative plantings are proposed for B-4 and these are shown on the revised plan sheet. There are no additional plantings proposed for B-5 as the impacts to this buffer were considered too minor to warrant this.

3. Is there any plantings for B-1, B-2 and B-3?

Response: There were no significant impacts to Buffers B-1, B-2 or B-3 and no restorative plantings are planned.

Sheet RC102

1. What is the plan for restoring Wetland 3 and Buffer B-12?

Buffer B-12 will be re-located within the area to be re-planted. The remediation of the incursion into the wetland has been completed in accordance with the plan approved by USACE an MDEP.

Sheet CU101

1. This sheet refers to plans by CLD Engineering.

Response: The plans by CLD Engineering are included with this submission.

2. This plan should show matchlines.

Response: Match lines have been added on this sheet.

Sheet CU102

1. The plan does not show underdrain on the right side as the note in the profile indicates.

Response: The note has been revised to remove this reference.

2. This plan should show matchlines.

Response: Match lines are shown on this plan. The match to sheet CU104 is noted as the match line would run through the valving and water main labels on this sheet.

3. This sheet refers to plans by CLD Engineering.

Response: The plans by CLD Engineering are included with this submission.

Sheet CU103

1. This sheet refers to plans by CLD Engineering.

Response: The plans by CLD Engineering are included with this submission.

Sheet CU104

1. Should the shut off for the Police Station water service be on the Right of Way?

Response: The water main shut off valves are shown within the ROW.

2. The Caddy's Way branch service refers to plans by CLD Engineering.

Response: The plans by CLD Engineering are included with this submission.

Sheet CU110

1. Where does the secondary electrical trench go out by the garage?

Response: This line has been revised and is shown extending for a connection to the tower compound, and a service to the garage building.

2. Note 3 refers to HDPE sewer force main. Where is this?

Response: The note has been removed from the plan.

Sheet CU501

No comments.

Sheet CU502

1. All water main and service details shall be approved by York Water District.

Response: A note to this effect has been added.

STORM WATER MANAGEMENT REPORT

1. In general, the calculations look accurate for the watersheds shown on Sheet C12-Post Development Watershed Plan. However, the watershed areas do not match the revised grading shown on CP102 and CG110 in regards to the bio-retention basins. The calculations need to be re-evaluated in these areas.

Response: the calculations have been updated, as has the summary for Addendum 3 to the Stormwater Report.

2. The Water Quality calculations do not represent all bio-retention basins. The new basins that were added near Route 1 and behind the Police Station garage need to be evaluated and calculations provided.

Response: Calculations for all areas are provided in revised Addendum 3. The project is divided into linear and non-linear portions of the project for the water quality assessment, as required by MDEP.

3. The water quality plan C122 does not match Sheet CP102.

Response: The water quality plans have been updated to show the latest grading and drainage.

4. The water quality plan C124 does not match Sheet CG110

Response: The water quality plans have been updated to show the latest grading and drainage.

TRAFFIC ENGINEERING REVIEW COMMENTS

The following traffic engineering review comments were received from Ty Lin International. The Applicants traffic engineer has responded to the majority of the review comments under a separate cover. These responses cover the comments not addressed in that letter.

1. The proposed Access Road typical section illustrates two 12-foot travel lanes. If there is expected use of the road by bicyclists, shoulder space should be provided. The provision of an 8-ft wide sidewalk should not preclude the need for on-road bicycle accommodations.

Response: The Access Road is designed to meet town Collector Street standards and was developed in consultation with town planning staff. The multi-use trail adjacent to the road provides accommodation for the minimal bicycle traffic expected on this route.

2. If the 8 foot sidewalk is being designed as a shared use facility, the 8 foot width should be carefully reviewed. National standards suggest a minimum width of 10 feet. It is noted that in rare circumstances a reduced width of 8 feet may be used.

Response: The design width of the proposed multi-use trail was carefully reviewed with town staff and guidelines from national agencies were consulted. The FHWA guidelines for shared use path width recommend a standard width of ten feet, but also state that "A minimum of 2.44m (8ft) may be used on shared use paths that will have limited use." This item was discussed at the Planning Board meeting on May 6th 2014. It was agreed that the eight foot width is suitable given the minimal bicycle traffic expected on this route.

3. It is unclear how the sidewalk will transition from the Access Road to ridge Road, particularly how it complies with ADA requirements.

Response: A tip down and flush pavement is proposed at the radius on the approach to ridge road. The sidewalk continues around the corner onto Ridge Road, with the hope of a future sidewalk continuing along the street to the York Beach area.

Attachment 7 - Response to Traffic Review Comments



May 29, 2014

Mr. Andrew Johnston, PE
SMRT
144 Fore Street
PO Box 618
Portland, ME 04104

Subject: Response to Peer Review Comments on
Traffic Assessment for Proposed Police Station
York, Maine

Dear Andrew,

Thank you for providing the Peer review comments from TY Lin International dated March 27, 2014. Our response to the comments relative to the traffic assessment are presented below. We assume your office will respond to the site related comments in the letter as we have noted below. We have also received the memo to the York Planning Board dated 4/23/2014 from Lee Jay Feldman which incorporated the comments from Mr. Errico with respect to traffic. For your convenience, each standard/comment is repeated followed by our response.

Comment: *The traffic assessment prepared by GPCEI does not include the construction of the Access Road to Route 1 (all movements from the Police Station enter and exit via Ridge Road and through traffic between Ridge Road and Route 1 is not permitted at this time). The Site Plan illustrates the construction of the Access Road fully between Ridge Road and Route 1 and thus the application materials are inconsistent from a program perspective. It would be my suggestion that the Site Plan materials be revised such that it only includes the construction of the Access Road to the Police Station with appropriate turnaround design provisions (cul-de-sac or hammerhead layout). This recommendation is base on the fact that acceptable traffic data for evaluating realistic peak season traffic impacts at the Route 1 intersection cannot be collected until the summer. An amended application or new application would then be submitted after a credible traffic study is completed, and if deemed acceptable, include the construction of the Access Road from the Police Station to Route 1.*

Response: The plans have been revised such that access though to Route 1 is not completed. Our office will be collecting traffic data in July to assess the future connection through to Route 1 which is not part of this application.

Standard: *1.2.5 Traffic. The development 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, and if the proposed development requires driveways or entrances onto a state or state-aid highway located outside the urban compact area of an urban compact municipality as defined by Title 23 §754, the Maine Department of Transportation has provided documentation indicating that the driveways or entrances conform to Title 23 §704 and any rules adopted under that section;*

Mr. Andrew Johnston, PE
May 29, 2014
Page 2 of 8

TY Lin Comment: Based upon the information contained in the traffic assessment, it is my professional opinion that the proposed project will not cause unreasonable congestion or safety issues.

GPCEI Response: No response required

Standard: 1.2.19 Impact on Adjoining Municipality. For any proposed development that crosses municipal boundaries, the proposed development will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality in which part of the development is located.

TY Lin Comment: No impacts are anticipated.

GPCEI Response: No response required

Standard: 6.3.33 For Site Plans or Subdivision Plans involving 40 or more parking spaces or projected to generate more than 400 vehicle trips per day, a traffic impact analysis, prepared by a Registered Professional Engineer with at least 3 years experience in traffic engineering, shall be submitted. The analysis shall indicate the expected average daily vehicular trips, peak hour volumes, access conditions at the site, distribution of traffic, types of vehicles expected, effect upon the level of service of the street giving access to the site and neighboring streets which may be affected, and recommended improvements to maintain the required level of service on the affected streets. Trip generation rates used shall be the mean value reported in Table 3 of Development and Application of Trip Generation Rates, Kellerco, Inc. published by the Federal Highway Administration, January, 1985. (MAJOR)

TY Lin Comment: A traffic assessment has been prepared for the project. It should be noted that the trip generation for the project was based upon employee information at the Police Station. The Institute of Transportation Engineers (ITE) does not provide data for a Police Station.

GPCEI Response: No response required

Standard: 8.1.1 Provision shall be made for vehicular access to the development and circulation within the development in such a manner as to safeguard against hazards to traffic and pedestrians in existing streets and within the development, to avoid traffic congestion on any street and to provide safe and convenient circulation on public streets and within subdivisions. More specifically, access and circulation shall conform to the standards and design criteria in this Article, as well as Article 9.

TY Lin Comment: Access to the development is well planned and meets Town Standards.

GPCEI Response: No response required

Standard: 8.1.2 The vehicular access to the subdivision shall be arranged to avoid traffic congestion of existing local residential streets.

Mr. Andrew Johnston, PE
May 29, 2014
Page 3 of 8

TY Lin Comment: Not Applicable

GPCEI Response: No response required

Standard: 8.1.3 Where a lot has frontage on two or more streets, the access to the lot shall be provided from the street where there is lesser potential for traffic congestion and lesser potential for hazards to traffic and pedestrians. In general, all new driveways should access from the new subdivision street, rather than an existing street, so as to minimize curb cuts on the more heavily traveled street.

TY Lin Comment: Not Applicable

GPCEI Response: No response required

Standard: 8.1.4 The street giving access to the development, and neighboring streets which can be expected to carry traffic to and from the development, shall have sufficient traffic carrying capacity and shall be suitably improved by the developer to accommodate the amount and types of traffic generated by the proposed development. No development shall increase the volume: capacity ratio of any street above 0.8 nor reduce the street's Level of Service to "D" or below, as defined by the most recent edition of the Highway Capacity Manual (published by the Transportation Research Board).

TY Lin Comment: As noted in the traffic assessment, level of service 'B' conditions is projected at the Ridge Road intersection with the Access Road during the time period evaluated. Accordingly this standard is met.

GPCEI Response: No response required

Standard 8.1.5 Where necessary to safeguard against hazards to traffic and pedestrians and/or to avoid traffic congestion, provision shall be made for turning lanes, traffic directional islands, frontage streets, and traffic controls within public streets. Traffic control devices shall conform to the most recent edition of the Manual on Uniform Traffic Control Devices (MUTCD), unless otherwise specified in Subsection 8.4.

TY Lin Comment: The intersection of the Access Road and Ridge Road provides for separate left and right lanes exiting the site. The applicant has evaluated warrants for a left-turn lane on Ridge Road. The analysis indicates a left-turn lane is not warranted. Accordingly, I find this standard to be met.

GPCEI Response: No response required

Standard: 8.1.6 Access to the development shall be of a design and have sufficient capacity to avoid queuing of entering vehicles on any street.

TY Lin Comment: The project has been designed to avoid queuing issues, accordingly I find this standard to be met.

Mr. Andrew Johnston, PE
May 29, 2014
Page 4 of 8

GPCEI Response: No response required

Standard: *8.1.7 Where topographical and other conditions allow, provisions shall be made for circulation access connections to adjoining lots of similar existing or potential use. These shall be required:*

8.1.7.1 When such access connection will facilitate fire protection services; or

8.1.7.2 When such access will enable the public to travel between two existing or potential uses, generally open to the public, without the need to travel upon a street outside the development.

TY Lin Comment: *The Police Station driveways seem reasonable. The lot at the northeast corner of the Ridge Road intersection should have primarily access/egress movements via the proposed Access Road. The plans illustrate a future curb cut, but removal or turn limitations should be considered for the Ridge Road driveway.*

GPCEI Response: The lot at the northeast corner of Ridge Road and the intersection was shown with a future driveway for informational purposes and is not included as part of this application. Should development be proposed on the lot, access and potential restriction would be considered at that time.

Standard 8.1.8 *All non-residential sites shall provide off-street loading facilities sufficient to meet the need of the use. The loading facility shall be located and designed so that delivery vehicles can be parked completely on site. The loading area shall not obstruct on-site traffic flow, but may allow for temporary use or blocking of some on-site parking spaces.*

TY Lin Comment: *The site plan appears to meet this standard.*

GPCEI Response: No response required

Standard: 8.2 SITE PLAN DRIVEWAY DESIGN STANDARDS

8.2.2 Access design shall be based on the estimated volume using the access classification defined below.

- Low Volume Access Less than 25 vehicle trips per day.*
- Medium Volume Access Any access that is not a low volume or a high volume access.*
- High Volume Access Peak hour volume of 400 vehicles or greater.*

TY Lin Comment: *Based upon the traffic assessment the project will generate 33 peak hour trips and therefore is classified as a Medium Volume Access*

GPCEI Response: No response required

Standard: 8.2.3 Sight Distances - *Accesses shall be designed in profile and grading and shall be located to provide the required sight distance measured along the street in each direction. Sight distances shall be measured from the driver's seat of a vehicle standing on that portion of the exit with the front of the vehicle a minimum of 10 feet behind the curb line or edge of shoulder, with*

Mr. Andrew Johnston, PE
May 29, 2014
Page 5 of 8

the height of the eye 3 ½ feet, to the top of an object 4 ¼ feet above the pavement. A sight distance of ten feet for each mile per hour of posted speed limit shall be maintained or provided. Where necessary, corner lots shall be cleared of all growth and sight obstructions, including ground excavation, to achieve the required visibility.

TY Lin Comment: The traffic assessment assumes use of MaineDOT sight distance standards, which is 200 feet for a roadway with a posted speed limit of 25MPH. The applicant shall confirm that 250 feet of sight distance will be provided (the Town's standard).

GPCEI Response: The available sight distance exceeds 250 feet as shown on the SMRT plans.

Standard: *8.2.4 Vertical Alignment - Accesses shall be flat enough to prevent the dragging of any vehicle undercarriage. Accesses shall have vertical of alignments which conform to current Maine Department of Transportation driveway standards. In addition, low volume accesses shall not have, at any point, a slope greater than 15%, and medium and high volume accesses shall not have, at any point, a slope greater than 8%.*

TY LIN Comment: This standard appears to be met.

GPCEI Response: No response required

Standard: *8.2.6 Medium Volume Accesses; 8.2.6.1 Angle of Intersection - Medium volume accesses may be either one-way or two-way operation and shall intersect the street at an angle as nearly equaling 90 degrees as site conditions permit. Under special site conditions, the Planning Board may waive this requirement to no less than 70 degrees.*

TY LIN Comment: One of the proposed driveways will intersect the Access Road at a 90 degree angle. The second driveway is close to a 90 degree angle and thus I find this standard to be met.

GPCEI Response: No response required

Standard: *8.2.6.2 Curb Radius - Curb radius will vary depending on whether the access is one-way or two-way operation. On a two-way access the curb radii shall be no less than 15 feet and no more than 30 feet. One one-way accesses, the curb radii shall be no less than 15 and no more than 30 feet for right turns into and out of the site, with a 5 foot radius on the opposite curb.*

TY Lin Comment: The project proposes 25-foot radii and thus the project meets this standard.

GPCEI Response: No response required

Standard: *8.2.6.3 Access Width - On a two-way access the width shall be no less than 24 feet and no more than 36 feet. However, where truck traffic is anticipated, the width may be no more than 40 feet. On a one-way access the width shall be no less than 16 feet and no more than 20 feet.*

Mr. Andrew Johnston, PE
May 29, 2014
Page 6 of 8

TY Lin Comment: The project is proposing two 24-foot wide driveways and accordingly the project meets this standard.

GPCEI Response: No response required

Standard: 8.3 ACCESS LOCATION AND SPACING

8.3.1 Minimum Corner Clearance - Corner clearance shall be measured from the point of tangency (PT) for the corner to the point of tangency for the access. In general the developer should provide the maximum practical corner clearance possible based on site constraints. Minimum corner clearances are listed below based upon access or minor street volume and intersection type.

TY Lin Comment: The proposed driveway nearest Ridge Road is greater than 50 feet away and accordingly this standard is met.

GPCEI Response: No response required

Standard 8.3.2 Access Spacing - Accesses and street intersections shall be separated from adjacent accesses, streets and property lines as indicated in the table below, in order to allow major through routes to effectively serve their primary function of conducting through traffic. The distance shall be measured from the access point of tangency to the access point of tangency for spacing between accesses and from the access point of tangency to a projection of the property line at the edge of the roadway for access spacing to the property line.

TY Lin Comment: The proposed driveways have separation in excess of 75 feet and no adjacent driveways are within 75 feet. This standard is met.

GPCEI Response: No response required

Standard 8.3.3 Number of Accesses - The maximum number of accesses onto a single street is controlled by the available site frontage and the table above. In addition, the following criteria shall limit the number of accesses independent of frontage length.

8.3.3.2 No medium or high volume traffic generator shall have more than two two-way accesses or three accesses in total onto a single roadway.

TY Lin Comment: Two access drives are proposed and thus this standard is met.

GPCEI Response: No response required

TY Lin General Comments on the Traffic Assessment and Site Plan

Comment: *As noted in the traffic assessment, the Institute of Transportation Engineers Trip Generation Manual does not provide data for a Police Station. The applicant estimated traffic levels from projected staff levels. The applicant has estimated the AM peak hour to be the worst-case trip generating time period. The applicant should provide documentation on why the morning*

Mr. Andrew Johnston, PE
May 29, 2014
Page 7 of 8

is the highest trip generation period. Given the level of traffic volumes expected, it is unlikely the conclusions of the assessment will change.

GPCEI Response: No response required

Comment: Existing traffic volumes were based upon Saturday traffic counts conducted in the summer of 2010. While these volumes are somewhat old, I suspect they would not be significantly different and thus would not change the conclusions of the assessment. Town staff should confirm that area changes since 2010 have not significantly impacted traffic volumes on Ridge Road.

GPCEI Response: The only traffic counts published for the Town of York since 2010 by the MaineDOT were in 2012 on US Route 1 0.5 miles north of Pine Hill Road which showed a slight decline in traffic from an Average Annual Daily Traffic volume of 9430 vehicles in 2010 to 9170 in 2012. The 2010 counts utilized were collected on a sunny Saturday in the summertime and therefore should be conservative for use in this study.

Comment: The applicant used an AM peak hour trip generation estimate with an estimated Saturday PM peak hour volume on Ridge Road. This analysis likely provides a worst-case assessment of traffic conditions entering the site, but underestimates delay from the Access Road in the afternoon. While I don't expect the conclusions to change, the applicant should provide a response to this comment. While I suspect the Saturday time period is the highest volume time period, some documentation or feedback from the Town confirming this is suggested.

GPCEI Response: Our office completed the York Beach Traffic Circulation Study in 2010 and the consensus of the Town at that time was the peak days occurred on Saturdays during the summer months which was why we utilized these volumes in the study. Our office superimposed the AM volumes on the Saturday peak volumes because we felt this would represent a worst condition as it relates to the left turn into the site. While PM exiting volumes may be higher, separate left and right turn lanes exiting the site will be provided and the driveway would not warrant signalization at Ridge Road for the police station.

Comment: Based upon the traffic volume estimate in the assessment, I concur that a left-turn lane is not warranted on Ridge Road at the Access Road. I would note that if the Access Road is connected to Route 1, the left-turn warrant analysis will need to be revised.

GPCEI Response: Our office concurs with this comment.

Comment: The proposed Access Road typical section illustrates two 12-foot travel lanes. If there is expected use of the road by bicyclists, shoulder space should be provided. The provision of an 8-foot sidewalk should not preclude the need for on-road bicycle accommodations.

GPCEI Response: SMRT to respond

Comment: If the 8-foot sidewalk is being designed to be a shared-use facility, the 8-foot width should be carefully reviewed. National standards suggest a minimum width of 10 feet. It is noted that in rare circumstances a reduced width of 8 feet may be used.

Mr. Andrew Johnston, PE
May 29, 2014
Page 8 of 8

GPCEI Response: SMRT to respond

Comment: The plans do not indicate the installation of STOP signs and STOP bars at the driveways and the Access Road approach to Ridge Road. It is also unclear what pavement markings will be implemented on the Access Road, particularly at the Ridge Road intersection.

GPCEI Response: SMRT has added the pavement markings to the plan

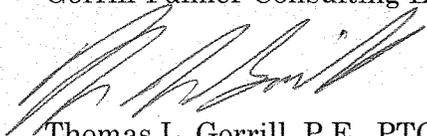
Comment: It is unclear how the sidewalk will transition from the Access Road to Ridge Road, particularly how it complies with ADA requirements.

GPCEI Response: SMRT to respond

Please contact me if you have any questions.

Sincerely,

Gorrill-Palmer Consulting Engineers, Inc.



Thomas L. Gorrill, P.E., PTOE
Principal

Attachment 8 - Responses to Utility District Review Comments

Town of York Police Department
New Public Safety Facility

Utility District Review
Responses to Review Comments

SMRT has received review comments from CLD Consulting Engineers related to the water and sewer utilities associated with the project. These are based on plans and supporting information issued for York Planning Board Preliminary Site Plan Review 3-14-14, Revised 4-18-14. The following responses are offered to the review comments, and describe the changes that will be made to the plans. Original comments are shown in bold, with responses in standard text.

General Comments:

a. Cover Sheet GI001 is different from the cover sheet previously reviewed, in October, 2013. This previously reviewed cover sheet was entitled "York Police Station & New Access Road Utility Plans & Profiles York, Maine Issued for Final Review 11-18-13" and was specific to the plans associated with the utilities and included a number of utility notes. The current cover sheet is a general cover sheet for the entire project and does not include any notes. It appears that the notes on the previous cover sheet were not transferred to a different location and are missing from the current plan set. It is recommended that the previous cover sheet be added to the overall plan set prior to Sheet CU101.

Response: The previous cover sheet has been added in the plan set in front of Sheet CU101, as requested along with the notes, which also appear elsewhere in the plan set. The date on the utility cover sheet has been amended to match the other cover sheet at the front of the plan set.

b. The revision block on the current plan set does not match the previously reviewed utility plan set entitled "York Police Station & New Access Road Utility Plans & Profiles York, Maine Issued for Final Review 11-18-13." All of the current "CU" series plan sheets' revision blocks are blank whereas the previous plans were up to Revision 3 dated 12-09-13. Without consistent revision blocks, it is difficult to ensure that all the previous updates are still accounted for.

Response: The previous revisions have been added to the utility plan sheets, as requested.

c. The Connector Road Sewer Extension plans by CLD Consulting Engineers, Inc. are missing from the plan set reviewed. It was previously agreed by SMRT Inc. to include the Connector Road Sewer Extension plans within the full police station plan set.

Response: The Connector Road Sewer Extension plans by CLD Consulting Engineers, Inc. are included in the package for final review.

d. It is recommended that the York Water District's standard detail sheet be added to the plan set to ensure that the Contractor complies with the District's standards of practice. The standard detail sheet is attached in PDF format.

Response: The York Water District standard detail sheet has been added to the end of the plan set submitted for final review.

2. Sheet C-001:

a. Utility Note 1 calls for the Contractor to "provide and install materials necessary to complete utility features and design unless otherwise indicated," however, the York Water District will be supplying the water utility materials.

Response: The note has been amended to indicate that York Water District will be supplying the water utility materials.

b. The York Water District and the York Sewer District should be added to Utility Note 6 to be notified in advance of any utility service interruptions.

Response: The utility districts have been added to the notification parties in Utility Note 6.

c. Add the following to Utility Note 10: "Contractor shall coordinate and receive approval for all connections, temporary servicing and bypassing from the appropriate utility district prior to any work. No work shall be performed without the supervision of the appropriate utility district."

Response: The requested text has been added to the referenced note.

3. Sheet C-002

a. Field Change Plan Note: Add "Any proposed field changes related to, or which affect, the utility design must be approved by the appropriate utility company."

Response: The requested text has been added to the referenced note.

b. Blasting Plan Note: Add the York Water District and the York Sewer District to the notification list.

Response: The requested text has been added to the referenced note.

c. Pre-Construction Meeting Note: Add the York Water District and the York Sewer District to the attendee list or add a Pre-Construction Utility Meeting, to which the Districts would be invited.

Response: The requested text has been added to the referenced note.

d. Occupancy Permits: Add that a Certification of Completion from the York Water District and the York Sewer District is required prior to issuance of an occupancy permit.

Response: The requested text has been added to the referenced note.

4. Sheet CU102: Temporary chlorination point label references Sheet GI001 for notes. No notes are on Sheet GI001.

Response: The previous cover sheet has been added to the plan set, as requested. The note now references this sheet.

5. Sheet CU103: Temporary chlorination point label references Sheet GI001 for notes. No notes are on Sheet GI001.

Response: The previous cover sheet has been added to the plan set, as requested. The note now references this sheet.

6. Sheet CU104:

a. Temporary chlorination point label references Sheet GI001 for notes. No notes are on Sheet GI001.

Response: The previous cover sheet has been added to the plan set, as requested. The note now references this sheet.

b. Detail label for the 6" and 4" water service references E13 and H13 on Sheet CU501. Actual details are located on CU502 and labeled A12 and H13.

Response: The label has been revised to reference the detail locations.

c. The 50-foot wide utility easement on the York Sewer District property is no longer shown on the Caddy's Way Branch Water Line Plan. This should be added back to the plan.

Response: The easement has been added back to the plan sheet. This was removed prior to the previous review and approval of the plans in December 2013.

7. Sheet CU110:

a. The label for the end of the water main on the Connector Road is pointing to the wrong location.

Response: The end of the leader has been re-positioned.

b. Remove the following note: "Provide MJ plug and 2" blowoff at end of 6" line per YWD standards. Last two lengths of 6" line before plug shall be MJ pipe." and replace with: "Install 2" blowoff prior to 6"-4" reducing tee fitting. Last two length of 6" line before reducing tee shall be MJ pipe." and reference detail A12 on Sheet CU502. Adjust leader to proper location.

Response: The note has been revised, as requested.

c. Remove the following note: "6x6 anchor tee & 6" valve"

Response: This note was removed in response to previous engineering review comments.

d. General Note 2 calls references CP204 and CP205. These sheets are not included in the plan set.

Response: This note was removed in response to previous engineering review comments.

e. General Note 3 describes an HDPE sewer force main. There is no force main associated with the current design.

Response: This note was removed in response to previous engineering review comments.

8. Sheet CU502: Add the following to the Water Notes: "All water utility materials to be supplied by the York Water District."

Response: The note has been added, as requested.

Attachment 9 - Stormwater Report Addendum 3 - Revised June 2014

**Addendum Number 3 to
STORM WATER MANAGEMENT REPORT**

**The Town of York Police Department
New Public Safety Building and Connector Road**
1051 US Route 1, York, Maine



Prepared by:
SMRT, Inc
144 Fore Street
Portland, ME

Original Report Issued: February 2012

Addendum 3: March 2014
Revised June 2014

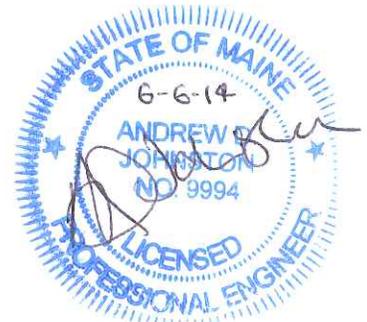


TABLE OF CONTENTS

1 ADDENDUM DESCRIPTION 3
2 STORM WATER QUANTITY ANALYSIS 3
3 STORM WATER QUALITY ANALYSIS 4
4 CONCLUSIONS..... 7
5 REFERENCES 7

Updated Figures C-120
C-121
C-121A
C-122
C-123
C-124

Appendix 1 - HydroCAD Analysis Results - Summary at Impacted Design Points

Appendix 2 - Water Quality Calculations

1 ADDENDUM DESCRIPTION

This addendum covers minor revisions that have been made to the stormwater plan to accommodate the addition of a new communications tower on the police station site, and cover changes that resulted from unauthorized clearing of an area that was not shown on the original permitted plans. There have also been some minor grading revisions in the area of the police station building, as a result of peer review comments. The addition of the tower results in a minor increase in the impervious area on the site. A substantial portion of the cleared area will be restored to the previous condition of mixed woods and scrub as part of a Vernal Pool Buffer Restoration Plan developed by Stantec. However, some of the area will not be restored to the previous wooded cover and will be restored as meadow. The clearing also impacted the area previously approved for Stormwater Buffer #12, requiring revisions to the stormwater model and water quality treatment calculations. The minor grading revisions result in changes to the water quality subcatchment boundaries, but have no significant impact on the overall runoff analysis.

All of the significant changes described in this Addendum are within Subcatchments 202C and 202D and impact the areas in the model that drain to Design Point 2. Minor changes to areas draining to Design Point 1 have no significant impact on the overall runoff analysis, as shown in the summary table. The model has been adjusted to reflect the plan changes and the pre-development and post-development analyses of areas contributing to Design Point 2 are included with this addendum. The peak runoff rates have also been updated for Design Point 1, although these represent changes to the second decimal point of the previously calculated values.

The modifications to the cover conditions are small in relation to the overall affected subcatchment areas, and improved provisions are made for water quality treatment and detention of peak flows in the affected areas. As a result, the predicted peak flows under design storm conditions at Design Point 1 and Design Point 2 remain below the pre-development values for all of the analyzed storms. The updated values are shown in the revised table on the following page. Minor revisions have also been made to the water quality calculations to reflect these changes and updated calculation tables and plan sheets are included with this submission.

2 STORM WATER QUANTITY ANALYSIS

The revisions to the model include the following:

1. Addition of the new communications tower and 7,200 associated impervious (gravel) area at the base of the structure. An expanded bioretention cell is provided adjacent to the tower to provide adequate water quality treatment for the area. This expands Subcatchment 202C to encompass the added areas.
2. Addition of approximately 74,000sf of grass lawn area within Subcatchment 202D. The entire cleared area will be re-graded as part of the Buffer Restoration Plan, and all remaining areas (within 100-feet of the Vernal Pool and stream associated wetlands) will be restored to wooded/brush conditions.
3. Design Point 2 is moved to where runoff from this area joins Briley Brook, just under the covered bridge. This allows runoff from Design Point 3, some 250ft upstream to be added to determine the overall impact of on-site runoff to the stream, and allow comparison of the pre-development and post-development runoff rates to this point.

The calculations demonstrate that there will be no increase in peak runoff for any of the design storm events at Design Point 1 or Design Point 2. The results are summarized in the table below;

Table 1 - Peak Runoff Values - Design Points 1 and 2

Design Storm	Peak Runoff Design Point 1 (cfs)		Peak Runoff Design Point 2 (cfs)	
	Pre-Development	Post-Development	Pre-Development	Post-Development
2-Year	12.08	11.90	25.51	25.43
10-Year	22.59	22.27	60.15	52.74
25-Year	27.63	27.34	79.20	62.44
50-Year	30.03	29.76	88.98	66.80
100-Year	34.26	34.08	109.00	74.60

3 STORM WATER QUALITY ANALYSIS

Water quality treatment for runoff from the tower area is provided by and expanded bioretention cell (B-9) located just to the west of the area.

Water quality treatment for the majority of the cleared area that will be restored as meadow in Subcatchment 202D, in addition to the area captured by the culvert under the roadway at the crest of the curve will be treated by a new Stormwater Buffer 12, located in the restored wooded buffer area. This buffer has been designed as a buffer with a stone bermed level lip spreader, in accordance with State of Maine Chapter 500 Stormwater Regulations and Stormwater Management for Maine - BMP Technical Design Manual.

The bioretention cell has been added to the overall water quality treatment table for the non-linear portions of the project. The Chapter 500 Stormwater General Standards require treatment of greater than 95% of contributing impervious area greater than 80% of the developed area of this part of the project. The calculations demonstrate that the project continues to meet the required standards.

The new buffer area has been added to the Road Treatment Areas table. The Chapter 500 Stormwater General Standards require treatment of greater than 75% of contributing impervious area greater than 50% of the developed area of the linear portions of the project. The calculations demonstrate that the project continues to meet the required standards.

The changes are reflected in the table shown below, and in the calculations included in revised Appendix-2

NON-LINEAR PORTION OF PROJECT						
York Police Department New Public Safety Building, Maine						
Site Development Areas						
Water Quality Volume Summary						
Subcatchment Area	Impervious	Landscaped	Developed	WQV required	WQV Provided	BMP
204E	6775	20325	27100	1863	2912	B-100
204F	12805	38415	51220	3521	3584	B-101
211	418	4009	4427	253	880	B-14
212	531	6626	7157	265	904	B-12
213	9940	10760	20700	1187	1591	B-6
214	225	5575	5800	205	680	B-10
215	44144	25811	69955	4539	5300	B-11
216	19200	0	19200	1600	1832	DRIP STRIP
202C	14430	8712	23142	1493	4901	B-9
Untreated	5325	15075	20400			Untreated
TOTAL TREATED	108468	120233	228701			
BMP General Standard Calculation						
	Impervious	Landscaped	Developed			
NEW DEVELOPED AREA	113793	135308	249101			
TREATED AREAS	108468	120233	228701			
PERCENT TREATED	95.3%	88.9%	91.8%			

York Police Department - New Public Safety Facility and Connector Road					
Stormwater General Standard Calculation					
Road Treatment Areas					
Area	Treated impervious	Treated developed	BMP	Untreated impervious	Untreated developed
A-1	4600	5855	B-3		
A-2	6200	10069	Bioretention B-1	0	0
E-1	0	0			2873
A-3	10800	10800	Filter Strip 1		
A-4	5300	7065	B-2		
A-5	0	0		2730	3930
A-6	7900	8967	B-3		
A-7	19600	19600	Filter Strip 2		
E-2	0	0			5100
A-8	2200	0	B-3	0	
A-9	5900	8296	B-2		
A-10	5200	8458	B-2		
A-11	0	0		5720	7710
A-12	0	0		2470	3010
A-13	5400	7776	B-2		
A-14	3100	6400	B-2		
A-15	3900	6844	Bioretention B-4		
A-15A	7900	7900	Filter Strip 3		
A-16	0	0		8300	11203
A-17	13900	13900	B-3		
A-18	4700	12283	B-2		
E-3	0	0			2386
A-19	8600	0	Filter Strip 4	0	
A-20	3960	5790	B-2		
A-21	2650	5082	B-2		
A-22	7940	12145	B-1	0	0
A-23	0	0		2840	4340
A-100	0	13367	B-1	0	0
A-101	0	0		0	55848
A-24	0	0		6893	6893
A-25	0	0		6768	7443
A-26	900	6372	Filter Strip 5A		
A-27	5959	6484	Bioretention B-6		
A-28	0	0		8929	8929
A-29	6922	8432	Filter Strip 5		
A-30	9268	11630	Bioretention B-8		
TOTAL	152799	203515		44650	119665
% TREATED	IMPERVIOUS	DEVELOPED			
	77.39%	62.97%			
B1 = Buffer with Stone Bermed Level Lip Spreader					
B2 = Ditch Turnout Buffer					
B3 = Buffer Adjacent to Downhill Side of Road					

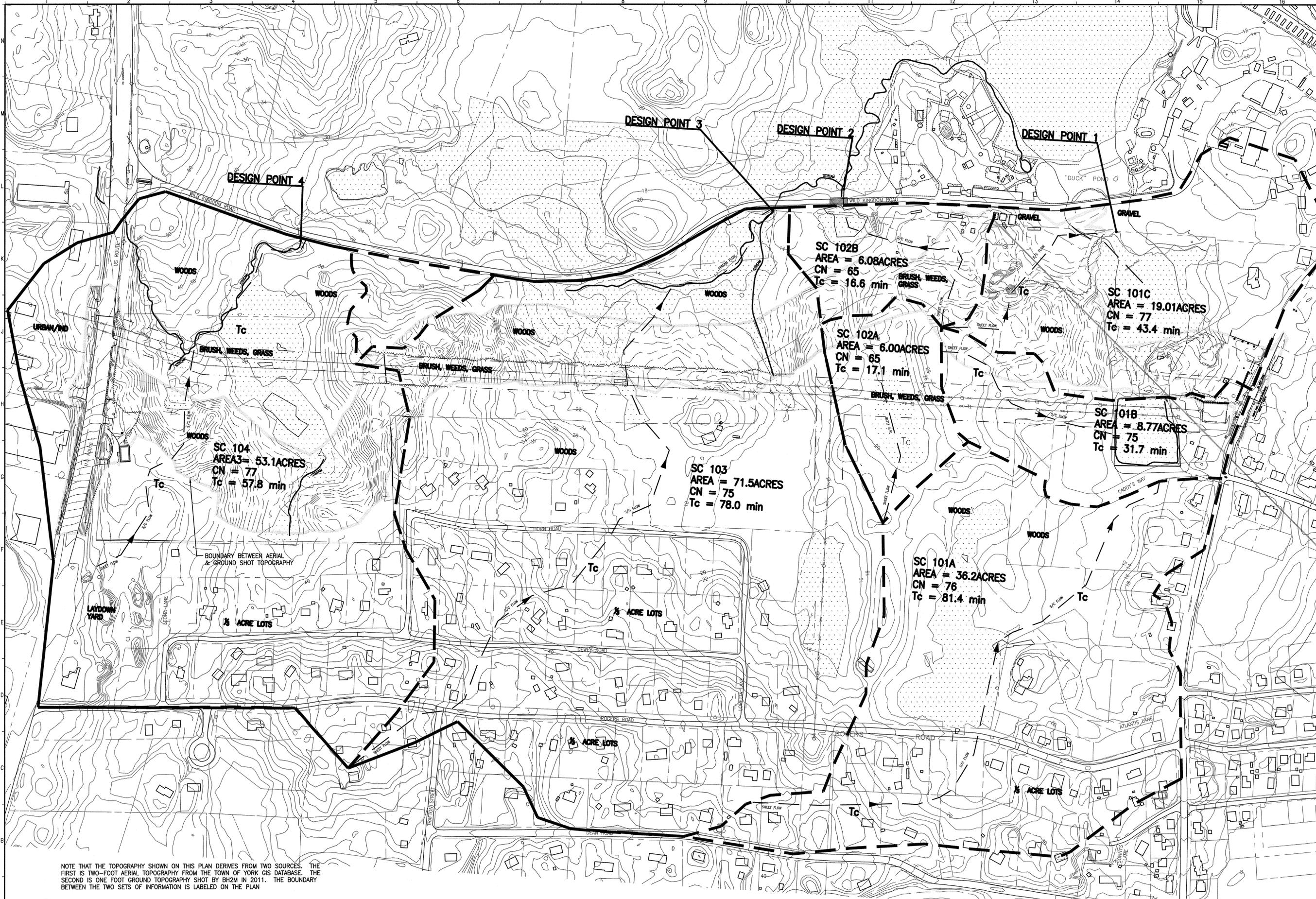
4 CONCLUSIONS

The modifications to the originally permitted project will have no significant impact on the water quality or water quantity analyses presented in the original stormwater report. The stormwater management system for the project will not result in an increase in peak runoff from the site under design storm conditions. Water quality treatment is provided in accordance with current local and state standards.

5 REFERENCES

- Stormwater Management for Maine: (MEDEP, January 2006, and as amended)
- The Soil Survey of Cumberland County, Maine
- Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices (CCSWCD/MEDEP)
- NRCS Technical Release 378
- NRCS Web Soil Survey

Updated Figures



NOTE THAT THE TOPOGRAPHY SHOWN ON THIS PLAN DERIVES FROM TWO SOURCES. THE FIRST IS TWO-FOOT AERIAL TOPOGRAPHY FROM THE TOWN OF YORK GIS DATABASE. THE SECOND IS ONE FOOT GROUND TOPOGRAPHY SHOT BY BH2M IN 2011. THE BOUNDARY BETWEEN THE TWO SETS OF INFORMATION IS LABELED ON THE PLAN

A1 PRE-DEVELOPMENT WATERSHED PLAN
SCALE 1" = 120'

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fax. (207) 772-1070
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1051 US ROUTE 1
YORK, MAINE

REVISED FOR RE-PERMITTING
5-28-14

YORK POLICE DEPARTMENT
1051 US ROUTE 1
YORK, MAINE

REV	DESCRIPTION	DATE
3	RE-ISSUED FOR PERMITTING	05-28-14
2	RE-ISSUED FOR PERMITTING	03-14-14
1	ADD DATE AND ISSUE STATUS	05-03-12
0	ISSUED FOR PERMITTING	05-03-12

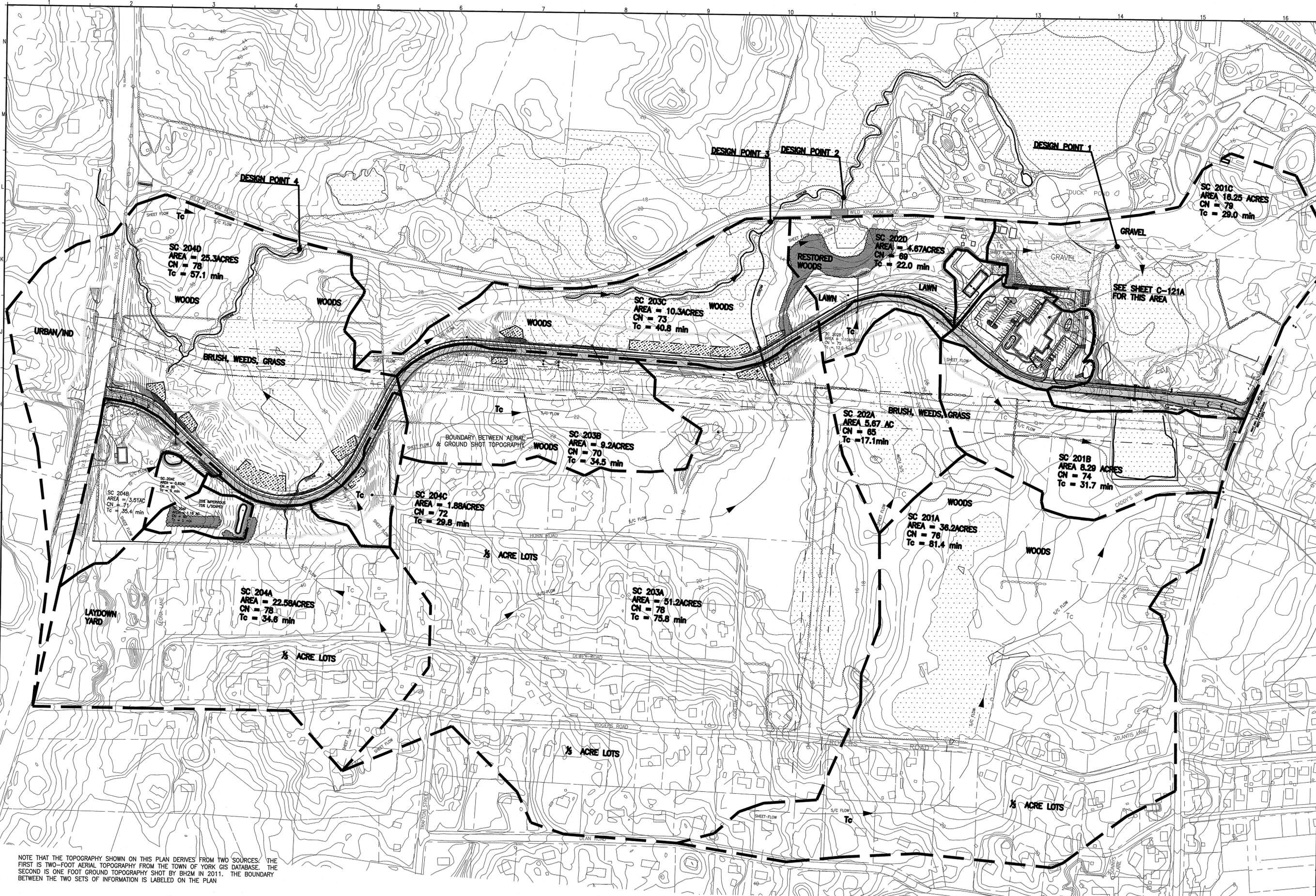
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0" 1"

SCALE: 1" = 150'

PROJECT MANAGER: ORL
JC/DRAWN BY: WSM
A/E OF RECORD: ADJ
CAD FILE: C-120-06122
PROJECT NO: 06122
DATE:
SHEET TITLE:
PREDEVELOPMENT WATERSHED PLAN

SHEET No.
C-120
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PROGRESS PRINT

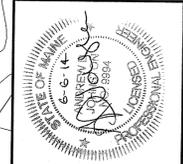


NOTE THAT THE TOPOGRAPHY SHOWN ON THIS PLAN DERIVES FROM TWO SOURCES: THE FIRST IS TWO-FOOT AERIAL TOPOGRAPHY FROM THE TOWN OF YORK GIS DATABASE. THE SECOND IS ONE FOOT GROUND TOPOGRAPHY SHOT BY BH2M IN 2011. THE BOUNDARY BETWEEN THE TWO SETS OF INFORMATION IS LABELED ON THE PLAN

A1 POST-DEVELOPMENT WATERSHED PLAN
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5-28-14

REV	DESCRIPTION	DATE
4	REVISED FOR RE-PERMITTING	05-28-14
3	REVISED FOR RE-PERMITTING	03-14-14
2	REVISED FOR ADDITIONAL CLEARING	08-30-12
1	ISSUED FOR FINAL APPROVAL	08-12-12
0	ISSUED FOR PERMITTING	05-03-12

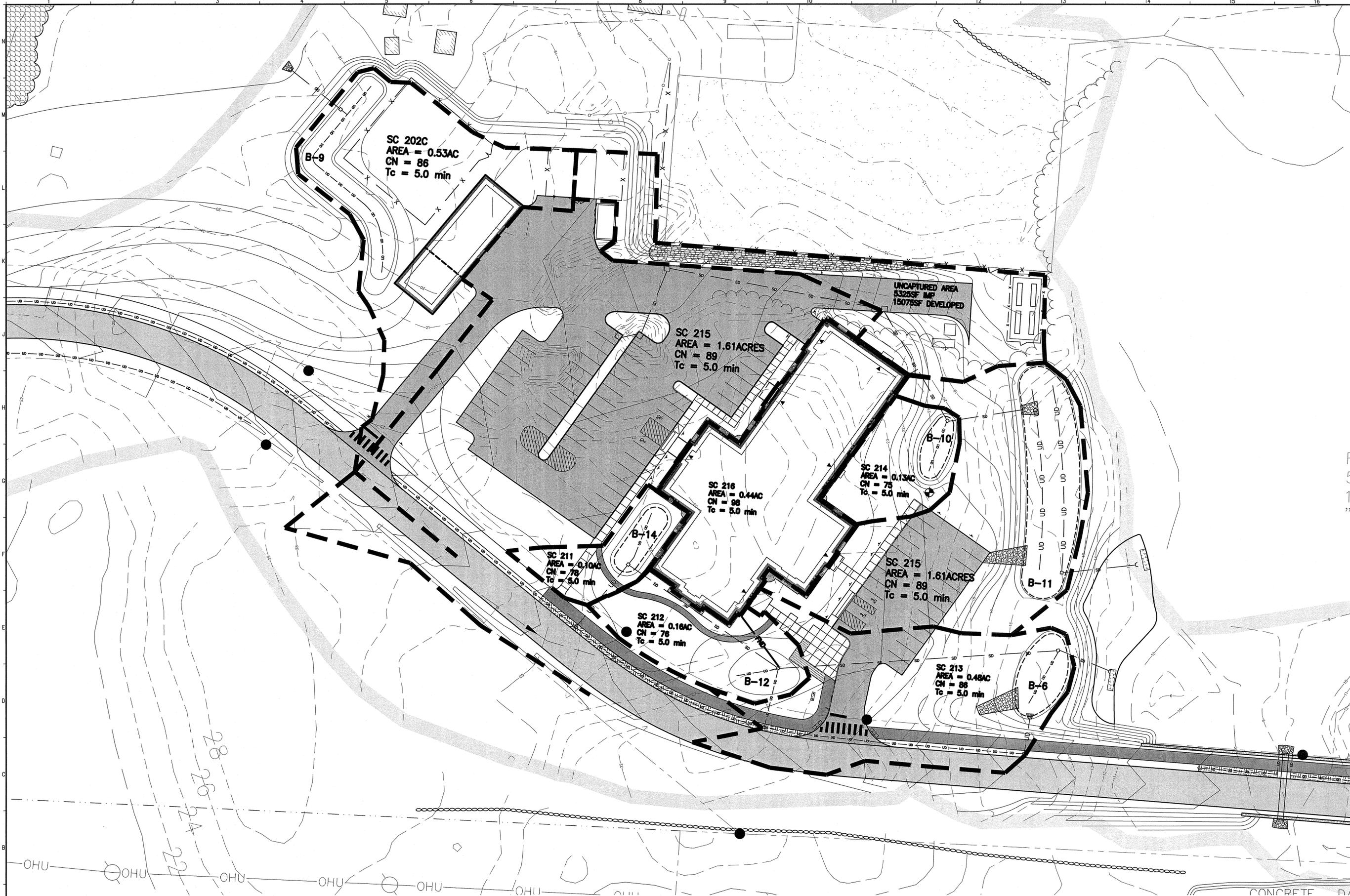
GRAPHIC SCALE:
0' 1" = 150'

PROJECT MANAGER: DRL
JC/DRAWN BY: WSM
A/E OF RECORD: ADJ
CAD FILE: C-121-06122
PROJECT NO: 06122
DATE:

SHEET TITLE:
POST-DEVELOPMENT WATERSHED PLAN

SHEET No. **C-121**
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PROGRESS PRINT



SC 202C
 AREA = 0.53AC
 CN = 86
 Tc = 5.0 min

SC 215
 AREA = 1.61ACRES
 CN = 89
 Tc = 5.0 min

UNCAPTURED AREA
 5325SF IMP
 15075SF DEVELOPED

SC 216
 AREA = 0.44AC
 CN = 88
 Tc = 5.0 min

SC 214
 AREA = 0.13AC
 CN = 75
 Tc = 5.0 min

SC 211
 AREA = 0.10AC
 CN = 78
 Tc = 5.0 min

SC 215
 AREA = 1.61ACRES
 CN = 89
 Tc = 5.0 min

SC 212
 AREA = 0.16AC
 CN = 78
 Tc = 5.0 min

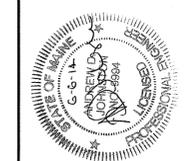
SC 213
 AREA = 0.48AC
 CN = 88
 Tc = 5.0 min

A1 POST-DEVELOPMENT SITE AREAS WATERSHED PLAN

SCALE 1" = 120'

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 5-28-14

REV	DESCRIPTION	DATE

GRAPHIC SCALE:
 0" 1"

SCALE: 1" = 30'
 PROJECT MANAGER: DRL
 JC/DRAWN BY: WSM
 A/E OF RECORD: AD
 CAD FILE: C-121-06123
 PROJECT NO: 06122
 DATE: 06/12/14

SHEET TITLE:
 SITE AREAS
 POST-DEVELOPMENT
 WATERSHED PLAN

SHEET No.
 C-121A

PROGRESS PRINT

York Police Department New Public Safety Building, Maine
Site Development Areas
Water Quality Volume Summary

Subcatchment Area	Impervious	Landscaped	Developed	WQV required	WQV Provided	BMP
204E	6775	20325	27100	1863	2912	B-100
204F	12805	38415	51220	3521	3584	B-101
211	1520	4280	5800	404	880	B-14
212	5800	10340	16140	828	904	B-12
213	8060	11740	19800	1063	1591	B-6
214	225	5575	5800	205	680	B-10
215	45600	26800	72400	4693	5300	B-11
216	19200	0	19200	1600	1832	DRIP STRIP
202C	10240	4400	14640	1000	1670	B-9
Untreated	4580	6440	11020			Untreated
TOTAL TREATED	110225	121875	232100			

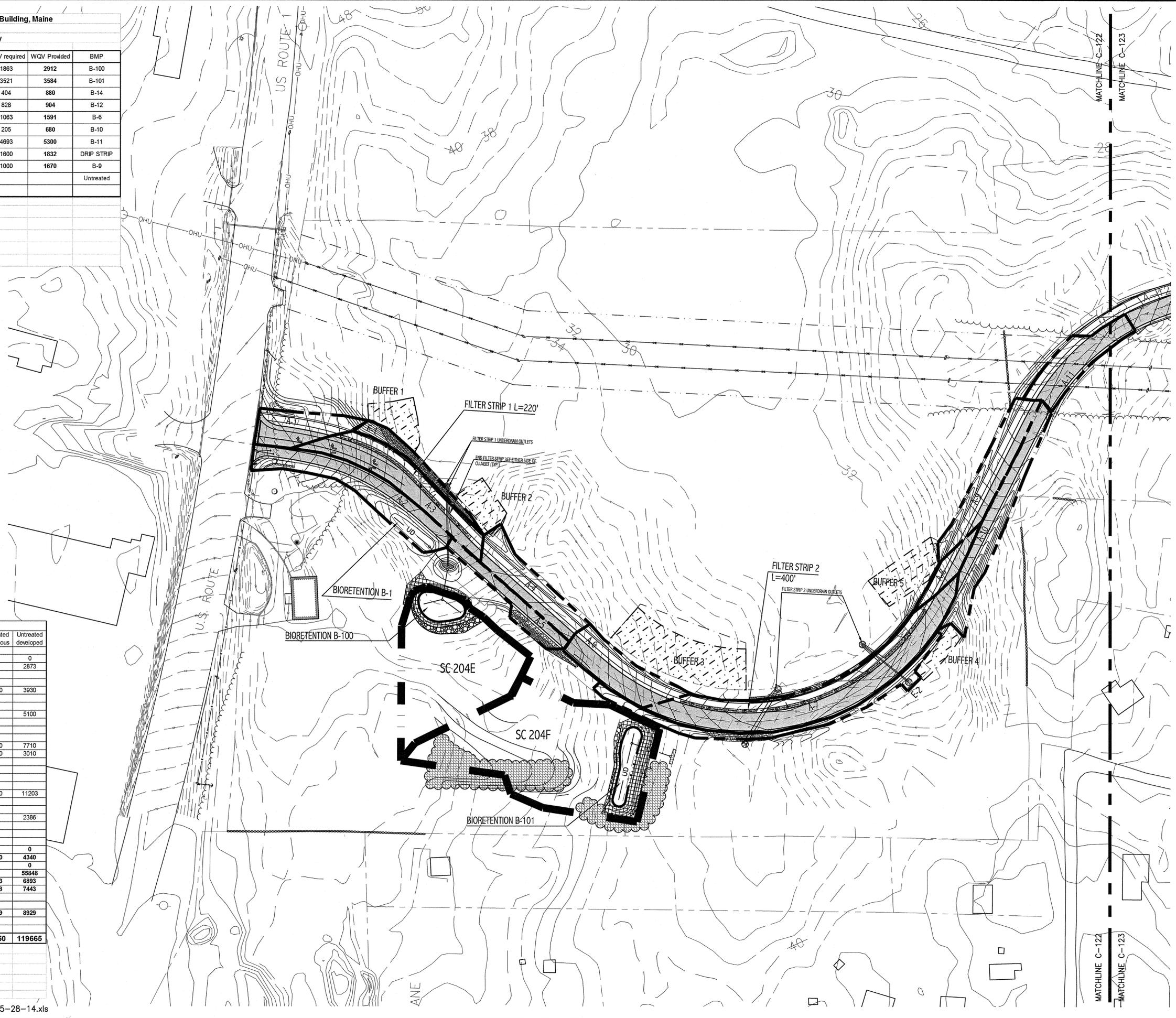
BMP General Standard Calculation			
	Impervious	Landscaped	Developed
NEW DEVELOPED AREA	114805	128315	243120
TREATED AREAS	110225	121875	232100
PERCENT TREATED	96.0%	95.0%	95.5%

Road Treatment Areas					
Area	Treated impervious	Treated developed	BMP	Untreated impervious	Untreated developed
A-1	4600	5855	B-3		
A-2	6200	10069	Bioretention B-1	0	0
E-1	0	0			2873
A-3	10800	10800	Filter Strip 1		
A-4	5300	7065	B-2		
A-5	0	0		2730	3930
A-6	7900	8967	B-3		
A-7	19600	19600	Filter Strip 2		
E-2	0	0			5100
A-8	2200	0	B-3	0	
A-9	5900	8296	B-2		
A-10	5200	8458	B-2		
A-11	0	0		5720	7710
A-12	0	0		2470	3010
A-13	5400	7776	B-2		
A-14	3100	6400	B-2		
A-15	3900	6844	Bioretention B-4		
A-15A	7900	7900	Filter Strip 3		
A-16	0	0		8300	11203
A-17	13900	13900	B-3		
A-18	4700	12283	B-2		
E-3	0	0			2386
A-19	8600	0	Filter Strip 4	0	
A-20	3960	5790	B-2		
A-21	2650	5082	B-2		
A-22	7940	12145	B-1	0	0
A-23	0	0		2840	4340
A-100	0	13367	B-1	0	0
A-101	0	0		0	55848
A-24	0	0		6893	6893
A-25	0	0		6768	7443
A-26	900	6372	Filter Strip 5A		
A-27	5959	6484	Bioretention B-6		
A-28	0	0		8929	8929
A-29	6922	8432	Filter Strip 5		
A-30	9268	11630	Bioretention B-8		
TOTAL	152799	203515		44650	119665

% TREATED	IMPERVIOUS	DEVELOPED
	77.39%	62.97%

B1 = Buffer with Stone Bermed Level Lip Spreader
 B2 = Ditch Turnout Buffer
 B3 = Buffer Adjacent to Downhill Side of Road

WQ ROAD-REV 5 05-28-14.xls



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CURRENT ISSUE STATUS:

NO.	DESCRIPTION	DATE
5	REVISED FOR RE-PERMITTING	05-28-14
4	REVISED FOR ADDITIONAL CLEARING	08-30-12
3	REVISED PER REVIEW COMMENTS	05-14-12
2	REVISED PER REVIEW COMMENTS	05-03-12
1	REVISED PER MEP REVIEW COMMENTS	04-25-12
0	ISSUED FOR DEP. PERMITTING	02-03-12

GRAPHIC SCALE: 1" = 60'

SCALE: 1" = 60'

PROJECT MANAGER: DRL
 JC/DRAWN BY: WSM
 A/E OF RECORD: ADJ.
 CAD FILE: C-122-06122
 PROJECT NO: 06122
 DATE: 05-28-14
 SHEET TITLE:
WATER QUALITY PLAN
 SHEET No. C-122

PROGRESS PRINT



Road Treatment Areas					
Area	Treated impervious	Treated developed	BMP	Untreated impervious	Untreated developed
A-1	4600	5855	B-3		
A-2	6200	10069	Bioretention B-1	0	0
E-1	0	0			2873
A-3	10800	10800	Filter Strip 1		
A-4	5300	7065	B-2		
A-5	0	0		2730	3930
A-6	7900	6967	B-3		
A-7	19600	19600	Filter Strip 2		
E-2	0	0			5100
A-8	2200	0	B-3	0	
A-9	5900	8296	B-2		
A-10	5200	8458	B-2		
A-11	0	0		5720	7710
A-12	0	0		2470	3010
A-13	5400	7776	B-2		
A-14	3100	6400	B-2		
A-15	3900	6844	Bioretention B-4		
A-15A	7900	7900	Filter Strip 3		
A-16	0	0		8300	11203
A-17	13900	13900	B-3		
A-18	4700	12283	B-2		
E-3	0	0			2386
A-19	8600	0	Filter Strip 4	0	
A-20	3960	5790	B-2		
A-21	2650	5082	B-2		
A-22	7940	12145	B-1	0	0
A-23	0	0		2840	4340
A-100	0	13367	B-1	0	0
A-101	0	0		0	55848
A-24	0	0		6993	6993
A-25	0	0		6768	7443
A-26	900	6372	Filter Strip 5A		
A-27	5959	6484	Bioretention B-6		
A-28	0	0		8929	8929
A-29	6922	8432	Filter Strip 5		
A-30	9268	11630	Bioretention B-8		
TOTAL	152799	203515		44650	119665

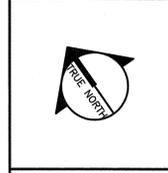
% TREATED	IMPERVIOUS	DEVELOPED
	77.39%	62.97%

B1 = Buffer with Stone Bermed Level Lip Spreader
 B2 = Ditch Turnout Buffer
 B3 = Buffer Adjacent to Downhill Side of Road

WQVROAD-REV5 05-28-14.xls

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5-28-14

REV	DESCRIPTION	DATE
4	REVISED FOR RE-PERMITTING	5-28-14
3	REVISED PER REVIEW COMMENTS	5-14-12
2	REVISED PER MDEP REVIEW COMMENTS	5-03-12
1	REVISED FOR DEP PERMITTING	4-25-12
0	ISSUED FOR DEP PERMITTING	2-03-12

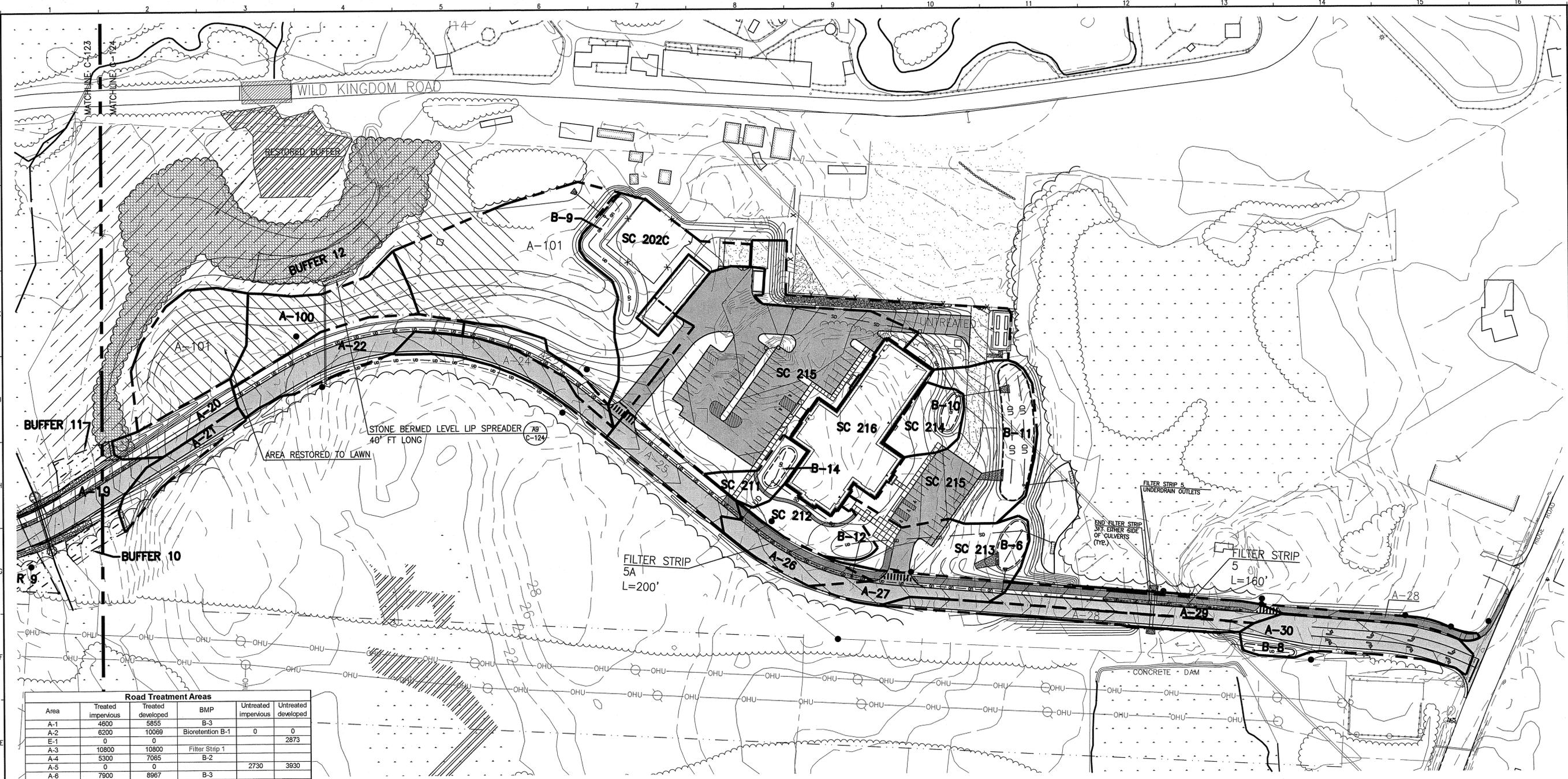
GRAPHIC SCALE:
 0" = 1'

SCALE: 1" = 60'

PROJECT MANAGER: DRL
 JC/DRAWN BY: WSM
 A/E OF RECORD: ADJ
 CAD FILE: C-123-06122
 PROJECT NO: 06122
 DATE: 05/28/14
 SHEET TITLE:
WATER QUALITY PLAN

SHEET No. **C-123**

PROGRESS PRINT



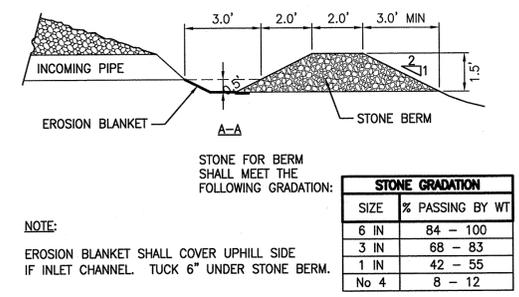
Road Treatment Areas					
Area	Treated impervious	Treated developed	BMP	Untreated impervious	Untreated developed
A-1	4600	5855	B-3		
A-2	6200	10069	Bioretention B-1	0	0
E-1	0	0	B-2		2873
A-3	10800	10800	Filter Strip 1		
A-4	5300	7065	B-2		
A-5	0	0		2730	3930
A-6	7900	8967	B-3		
A-7	19600	19600	Filter Strip 2		
E-2	0	0			5100
A-8	2200	0	B-3		0
A-9	5900	8296	B-2		
A-10	5200	8458	B-2		
A-11	0	0		5720	7710
A-12	0	0		2470	3010
A-13	5400	7776	B-2		
A-14	3100	6400	B-2		
A-15	3900	6844	Bioretention B-4		
A-15A	7900	7900	Filter Strip 3		
A-16	0	0		8300	11203
A-17	13900	13900	B-3		
A-18	4700	12283	B-2		
E-3	0	0			2386
A-19	8600	0	Filter Strip 4		
A-20	3960	5790	B-2		
A-21	2650	5082	B-2		
A-22	7940	12145	B-1		
A-23	0	0		2840	4340
A-100	0	13367	B-1		
A-101	0	0		0	55848
A-24	0	0		6893	6893
A-25	0	0		6768	7443
A-26	900	6372	Filter Strip 5A		
A-27	5959	6484	Bioretention B-6		
A-28	0	0		8929	8929
A-29	6922	8432	Filter Strip 5		
A-30	9268	11630	Bioretention B-8		
TOTAL	152799	203515		44650	119665

Site Development Areas Water Quality Volume Summary						
Subcatchment Area	Impervious	Landscaped	Developed	WQV required	WQV Provided	BMP
204E	6775	20325	27100	1863	2912	B-100
204F	12805	38415	51220	3521	3584	B-101
211	1520	4280	5800	404	880	B-14
212	5800	10340	16140	828	904	B-12
213	8060	11740	19800	1083	1591	B-6
214	225	5575	5800	205	680	B-10
215	45600	26800	72400	4693	5300	B-11
216	19200	0	19200	1600	1832	DRIP STRIP
202C	16650	10138	26788	1725	4901	B-9
Untreated	4580	6440	11020			Untreated
TOTAL TREATED	116635	127613	244248			

BMP General Standard Calculation			
	Impervious	Landscaped	Developed
NEW DEVELOPED AREA	121215	134053	255268
TREATED AREAS	116635	127613	244248
PERCENT TREATED	96.2%	95.2%	95.7%

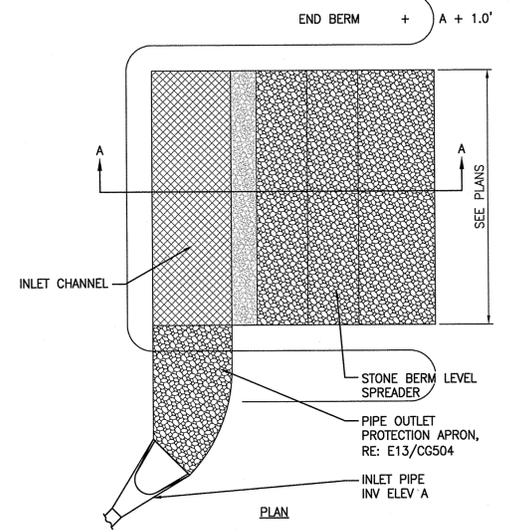
% TREATED	IMPERVIOUS	DEVELOPED
77.39%	62.97%	

B1 = Buffer with Stone Bermed Level Lip Spreader
 B2 = Ditch Turnout Buffer
 B3 = Buffer Adjacent to Downhill Side of Road



STONE GRADATION	
SIZE	% PASSING BY WT
6 IN	84 - 100
3 IN	68 - 83
1 IN	42 - 55
No 4	8 - 12

A9 STONE BERMED LEVEL LIP SPREADER
 NOT TO SCALE



WQ ROAD-REV 5-28-14.xls

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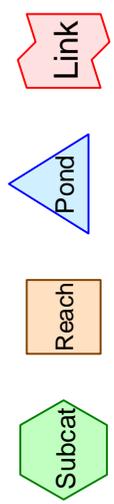
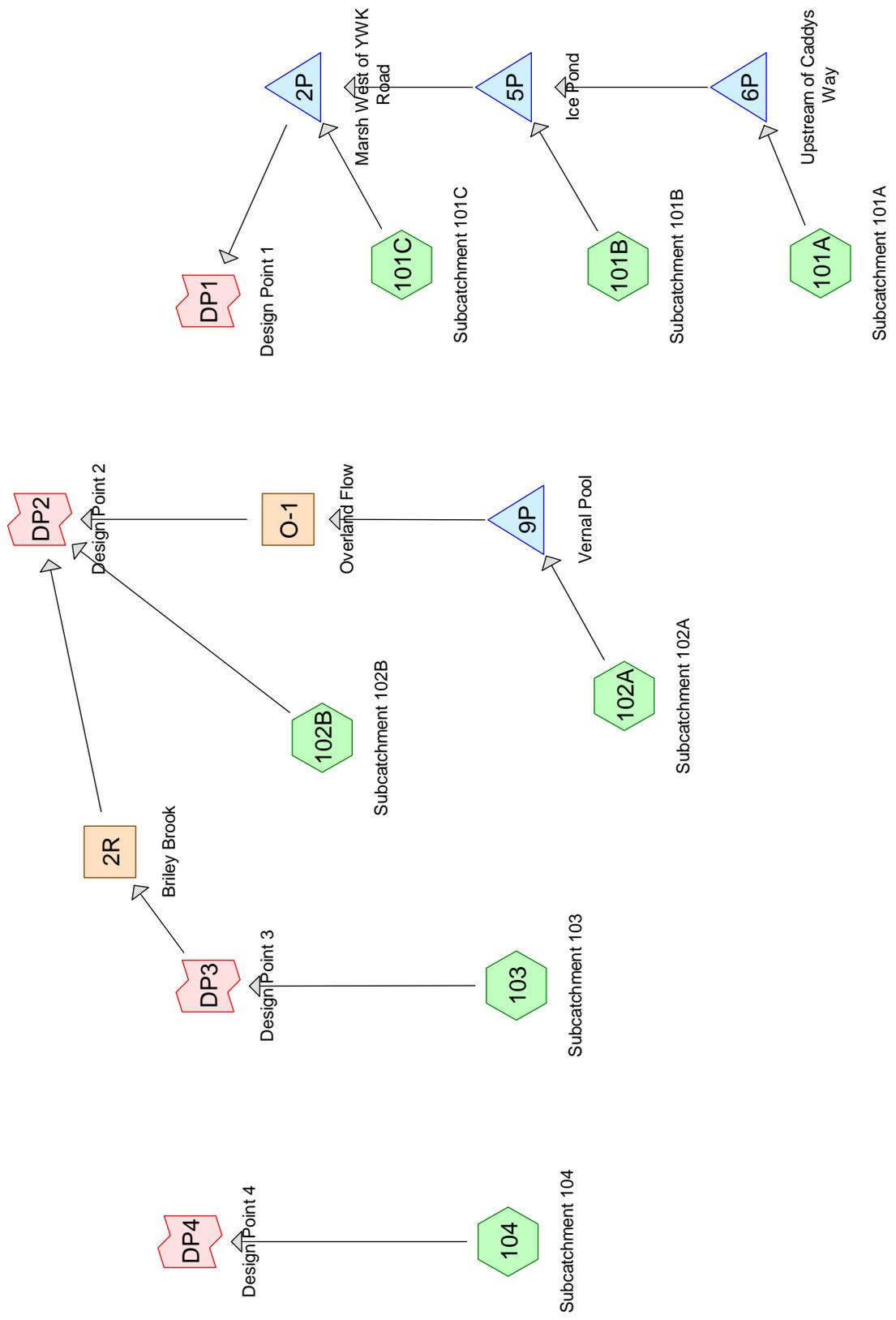
REVISOR: FOR RE-PERMITTING
 5-28-14

NO.	DESCRIPTION	DATE	ISSUE STATUS
4	REVISED FOR RE-PERMITTING	05-28-14	
3	REVISED FOR RE-PERMITTING	03-14-14	
2	REVISED FOR ADDITIONAL CLEANING	08-30-12	
1	REVISED PER REVIEW COMMENTS	05-03-12	
0	ISSUED FOR PERMITTING	03-29-12	

GRAPHIC SCALE: 1" = 60'

SCALE: PROJECT MANAGER: DRL
 JC/DRAWN BY: WSM
 A/E OF RECORD: ADJ
 CAD FILE: C-124-06122
 PROJECT NO: 06122
 DATE: SHEET TITLE: WATER QUALITY PLAN
 SHEET No: C-124

PROGRESS PRINT



Routing Diagram for York PD-Pre-Dev-2014
 Prepared by SMRT Inc.
 HydroCAD® 10.00 s/n 00729 © 2012 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.37' Max Vel=2.47 fps Inflow=25.17 cfs 5.726 af
L=250.0' S=0.0050 '/ Capacity=90.70 cfs Outflow=25.01 cfs 5.726 af

Link DP1: Design Point 1

Inflow=12.08 cfs 17.427 af
Primary=12.08 cfs 17.427 af

Link DP2: Design Point 2

Inflow=25.51 cfs 5.996 af
Primary=25.51 cfs 5.996 af

Link DP3: Design Point 3

Inflow=25.17 cfs 5.726 af
Primary=25.17 cfs 5.726 af

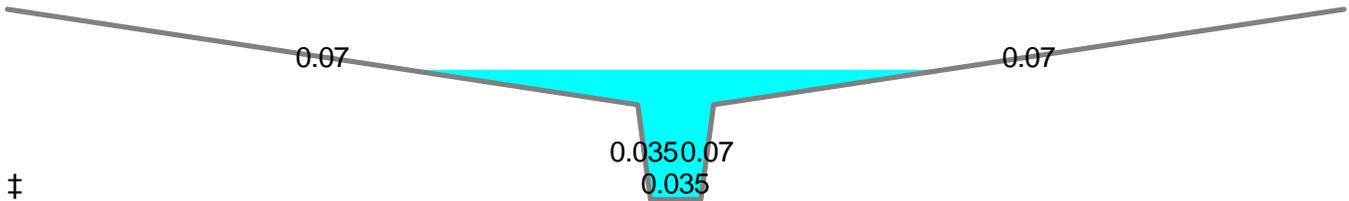
Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 0.96" for 2-Year Storm event
 Inflow = 25.17 cfs @ 13.10 hrs, Volume= 5.726 af
 Outflow = 25.01 cfs @ 13.19 hrs, Volume= 5.726 af, Atten= 1%, Lag= 5.1 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.61 fps, Avg. Travel Time= 6.8 min

Peak Storage= 3,482 cf @ 13.19 hrs
 Average Depth at Peak Storage= 1.37'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'



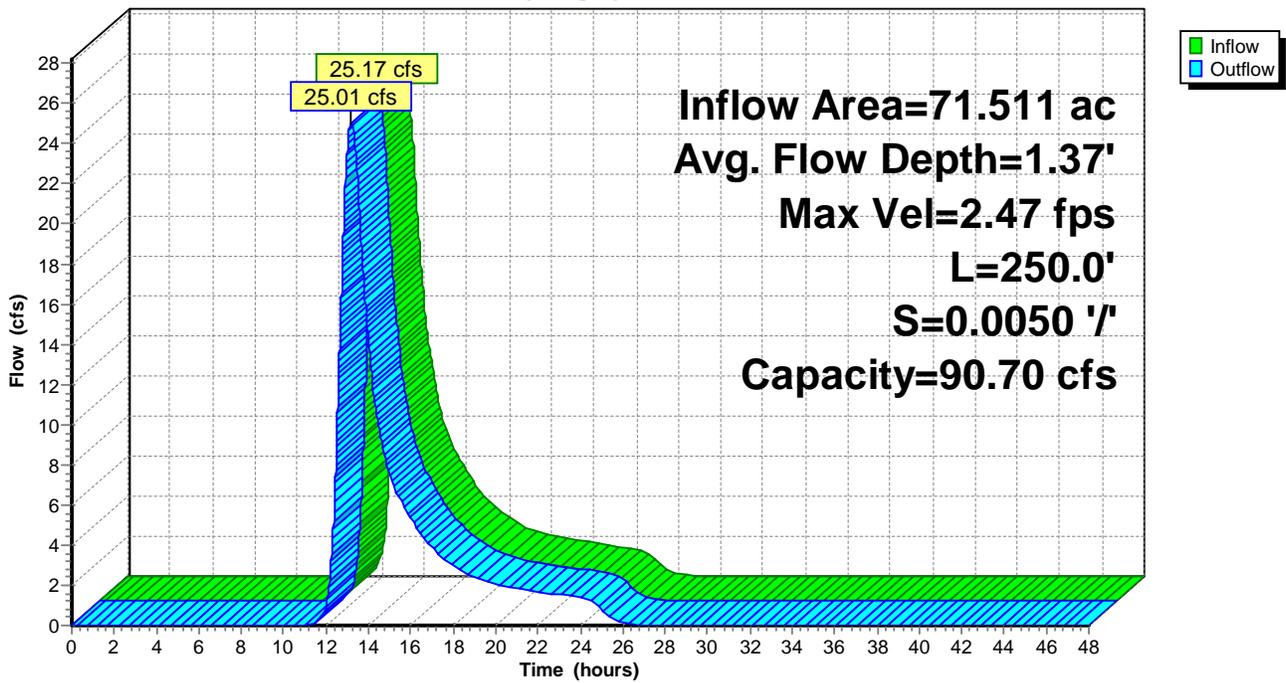
‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



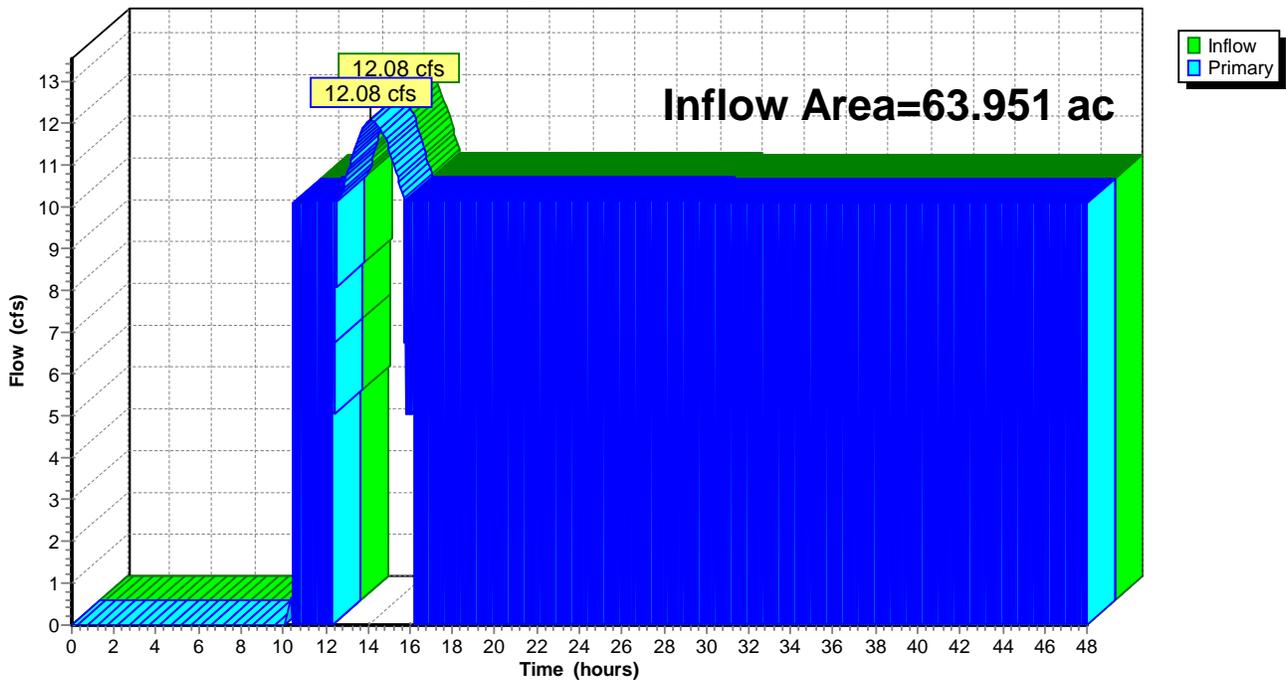
Summary for Link DP1: Design Point 1

Inflow Area = 63.951 ac, 11.63% Impervious, Inflow Depth > 3.27" for 2-Year Storm event
Inflow = 12.08 cfs @ 14.15 hrs, Volume= 17.427 af
Primary = 12.08 cfs @ 14.16 hrs, Volume= 17.427 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



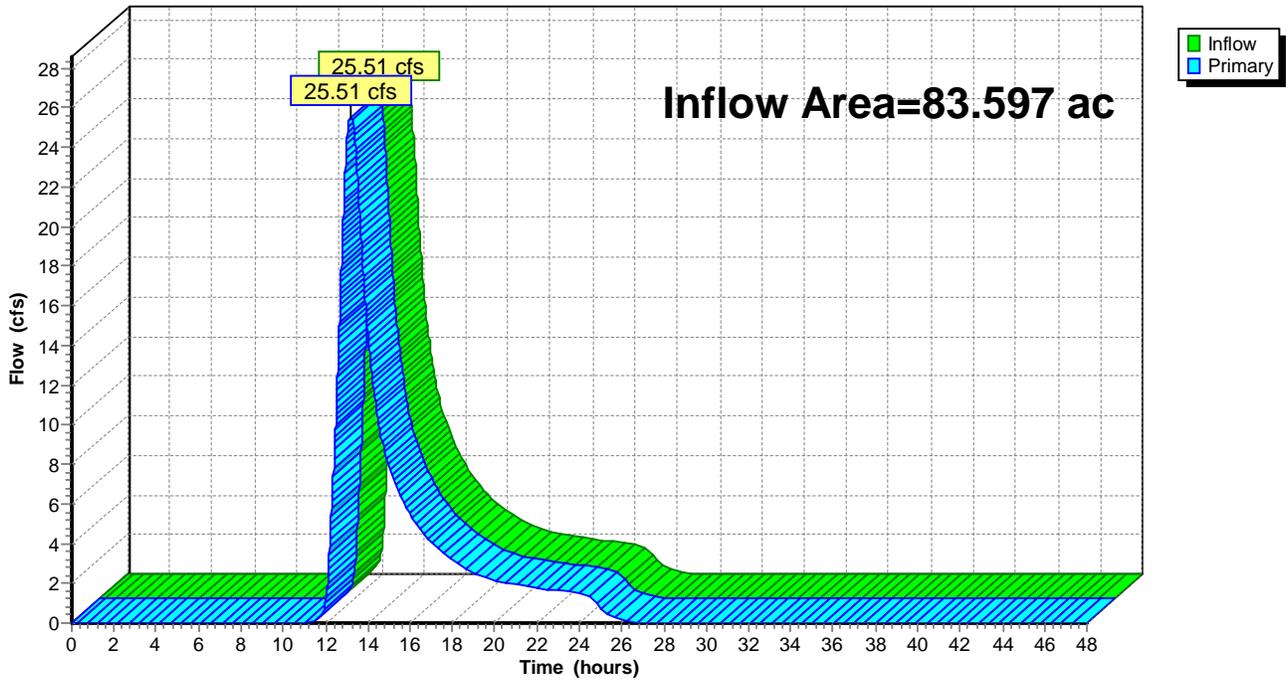
Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 0.86" for 2-Year Storm event
Inflow = 25.51 cfs @ 13.18 hrs, Volume= 5.996 af
Primary = 25.51 cfs @ 13.19 hrs, Volume= 5.996 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



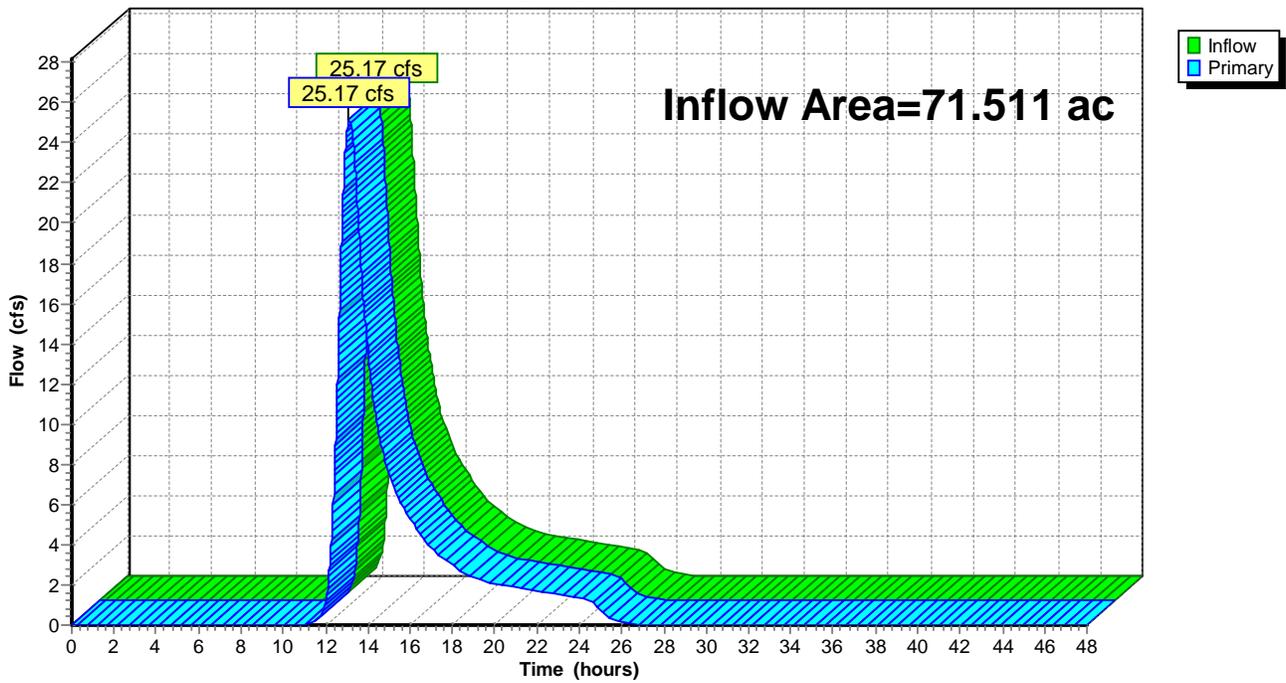
Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 0.96" for 2-Year Storm event
Inflow = 25.17 cfs @ 13.09 hrs, Volume= 5.726 af
Primary = 25.17 cfs @ 13.10 hrs, Volume= 5.726 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.77' Max Vel=2.47 fps Inflow=59.15 cfs 12.687 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=58.83 cfs 12.687 af

Link DP1: Design Point 1

Inflow=22.59 cfs 23.042 af
Primary=22.59 cfs 23.042 af

Link DP2: Design Point 2

Inflow=60.15 cfs 13.433 af
Primary=60.15 cfs 13.433 af

Link DP3: Design Point 3

Inflow=59.15 cfs 12.687 af
Primary=59.15 cfs 12.687 af

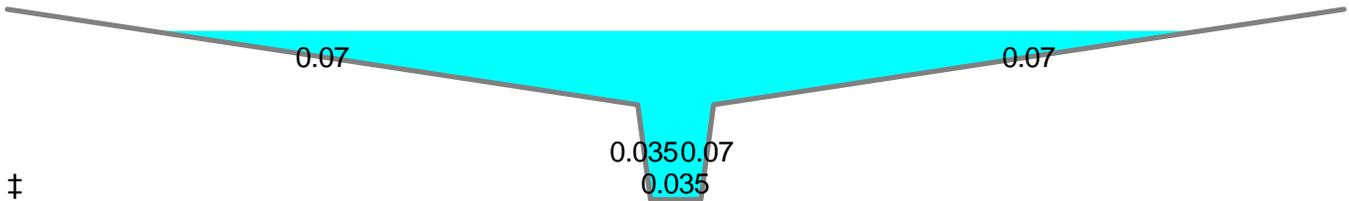
Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.13" for 10-Year Storm event
 Inflow = 59.15 cfs @ 13.10 hrs, Volume= 12.687 af
 Outflow = 58.83 cfs @ 13.13 hrs, Volume= 12.687 af, Atten= 1%, Lag= 2.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.72 fps, Avg. Travel Time= 5.8 min

Peak Storage= 9,891 cf @ 13.13 hrs
 Average Depth at Peak Storage= 1.77'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

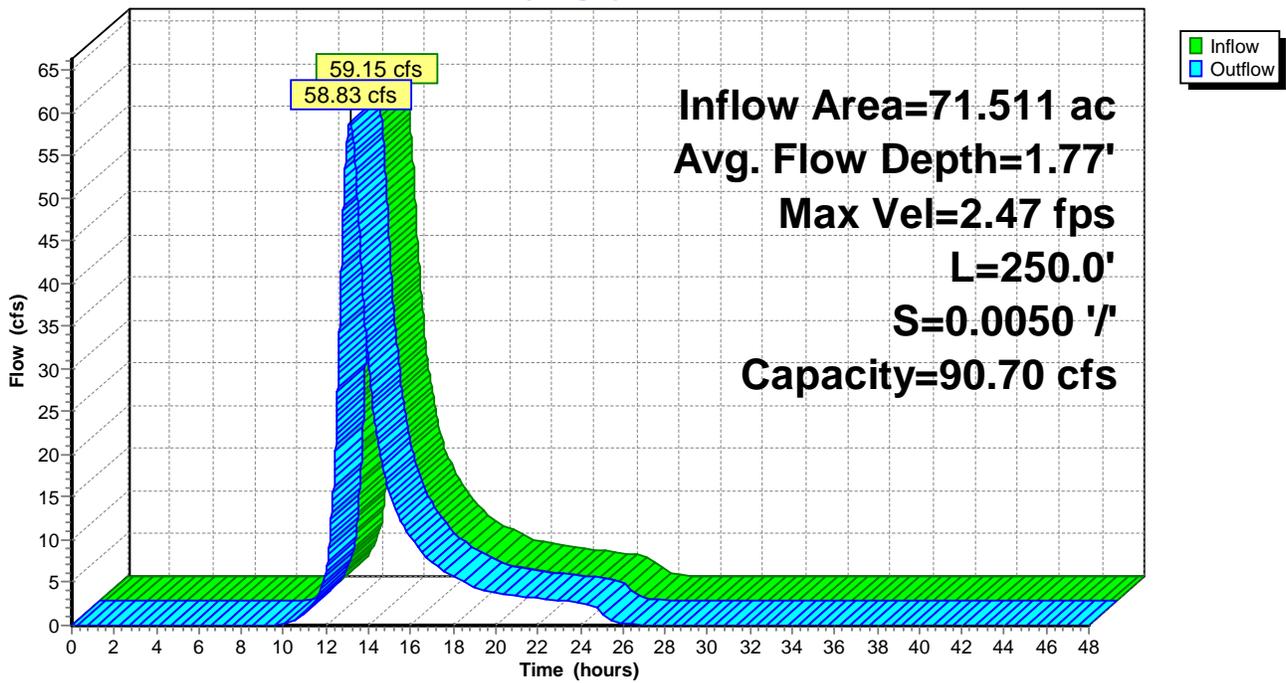


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



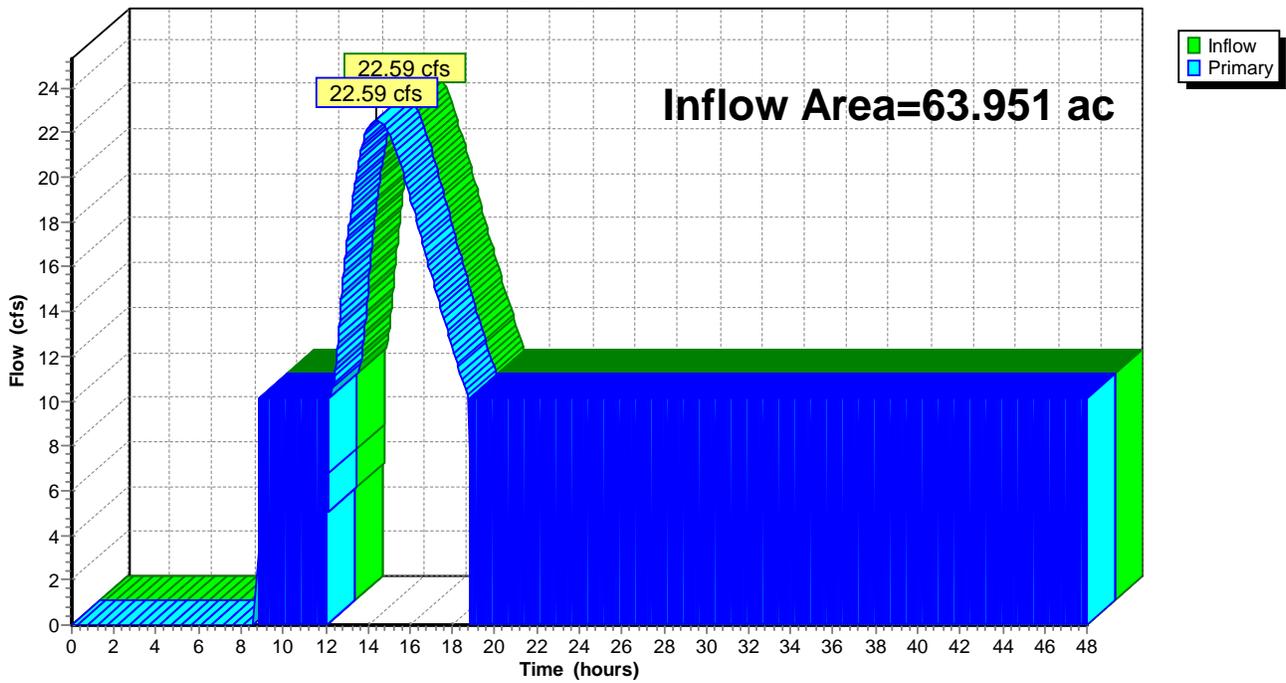
Summary for Link DP1: Design Point 1

Inflow Area = 63.951 ac, 11.63% Impervious, Inflow Depth > 4.32" for 10-Year Storm event
Inflow = 22.59 cfs @ 14.40 hrs, Volume= 23.042 af
Primary = 22.59 cfs @ 14.41 hrs, Volume= 23.042 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



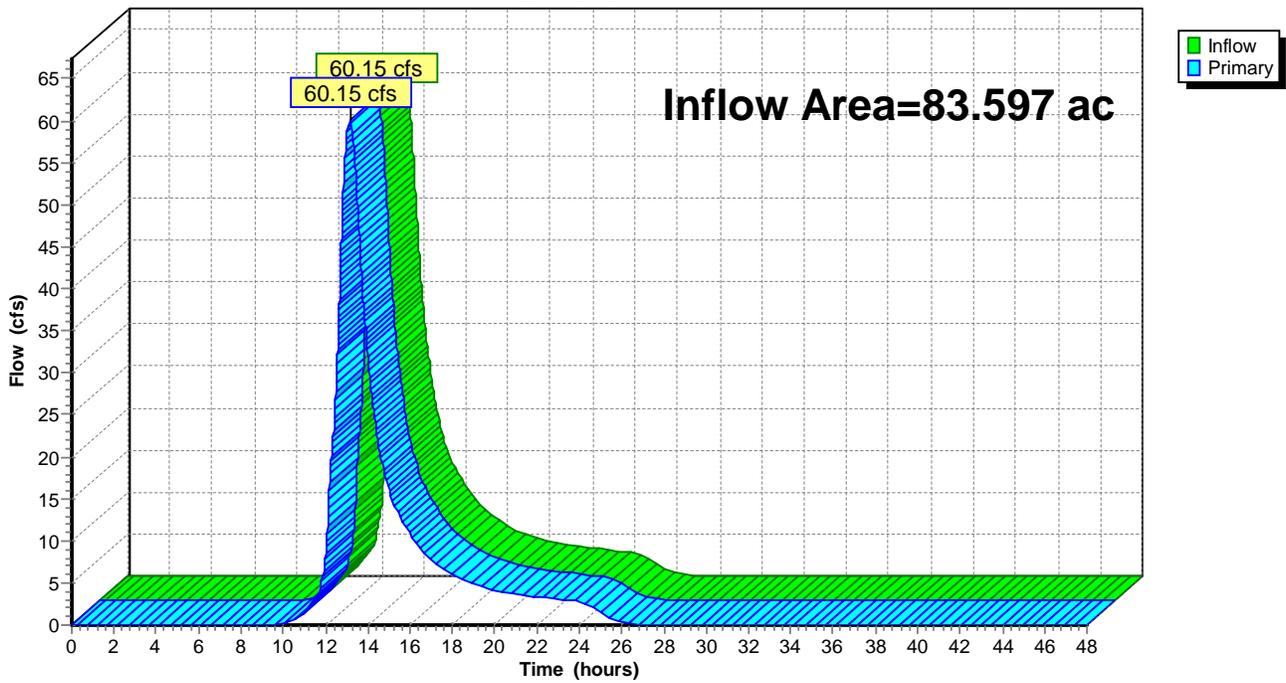
Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 1.93" for 10-Year Storm event
Inflow = 60.15 cfs @ 13.12 hrs, Volume= 13.433 af
Primary = 60.15 cfs @ 13.13 hrs, Volume= 13.433 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



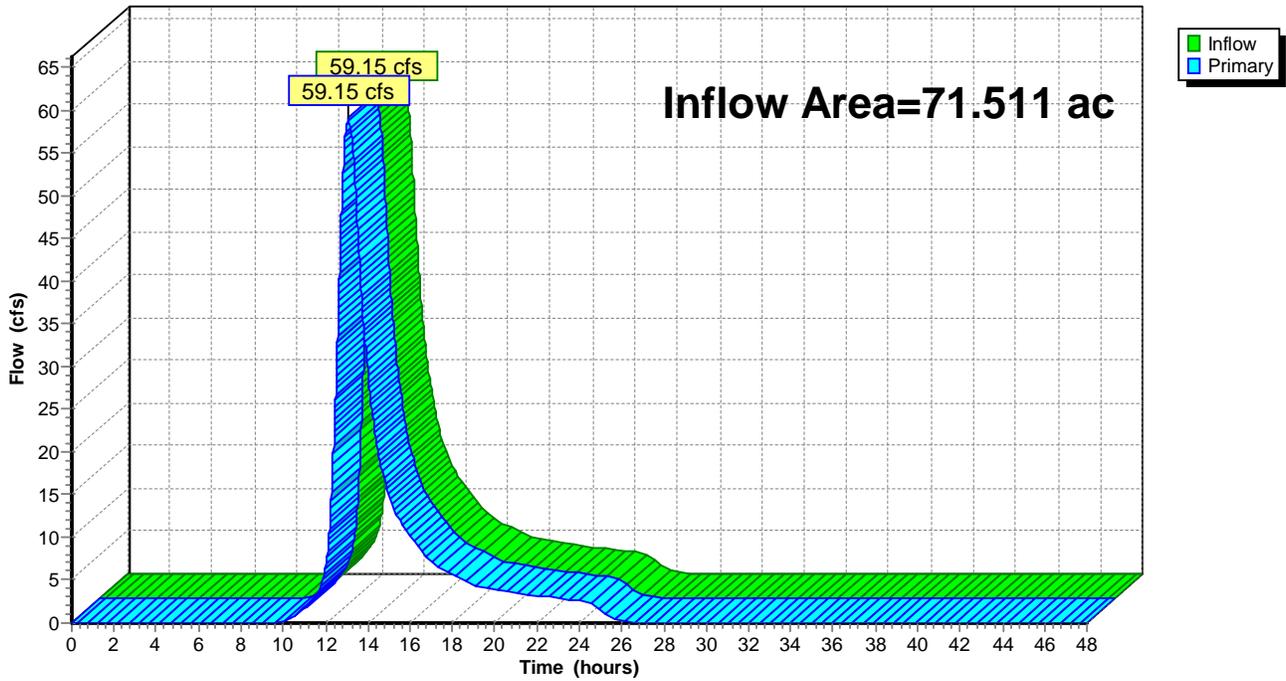
Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.13" for 10-Year Storm event
Inflow = 59.15 cfs @ 13.09 hrs, Volume= 12.687 af
Primary = 59.15 cfs @ 13.10 hrs, Volume= 12.687 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.91' Max Vel=2.47 fps Inflow=77.75 cfs 16.551 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=77.44 cfs 16.551 af

Link DP1: Design Point 1

Inflow=27.63 cfs 26.254 af
Primary=27.63 cfs 26.254 af

Link DP2: Design Point 2

Inflow=79.20 cfs 17.581 af
Primary=79.20 cfs 17.581 af

Link DP3: Design Point 3

Inflow=77.75 cfs 16.551 af
Primary=77.75 cfs 16.551 af

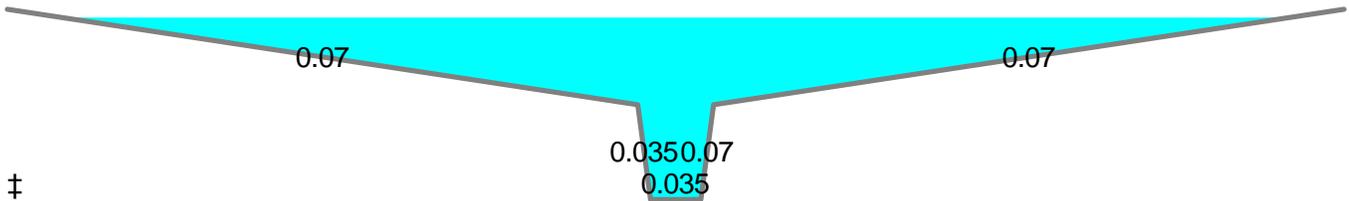
Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.78" for 25-Year Storm event
 Inflow = 77.75 cfs @ 13.09 hrs, Volume= 16.551 af
 Outflow = 77.44 cfs @ 13.12 hrs, Volume= 16.551 af, Atten= 0%, Lag= 1.6 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.76 fps, Avg. Travel Time= 5.5 min

Peak Storage= 13,082 cf @ 13.12 hrs
 Average Depth at Peak Storage= 1.91'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

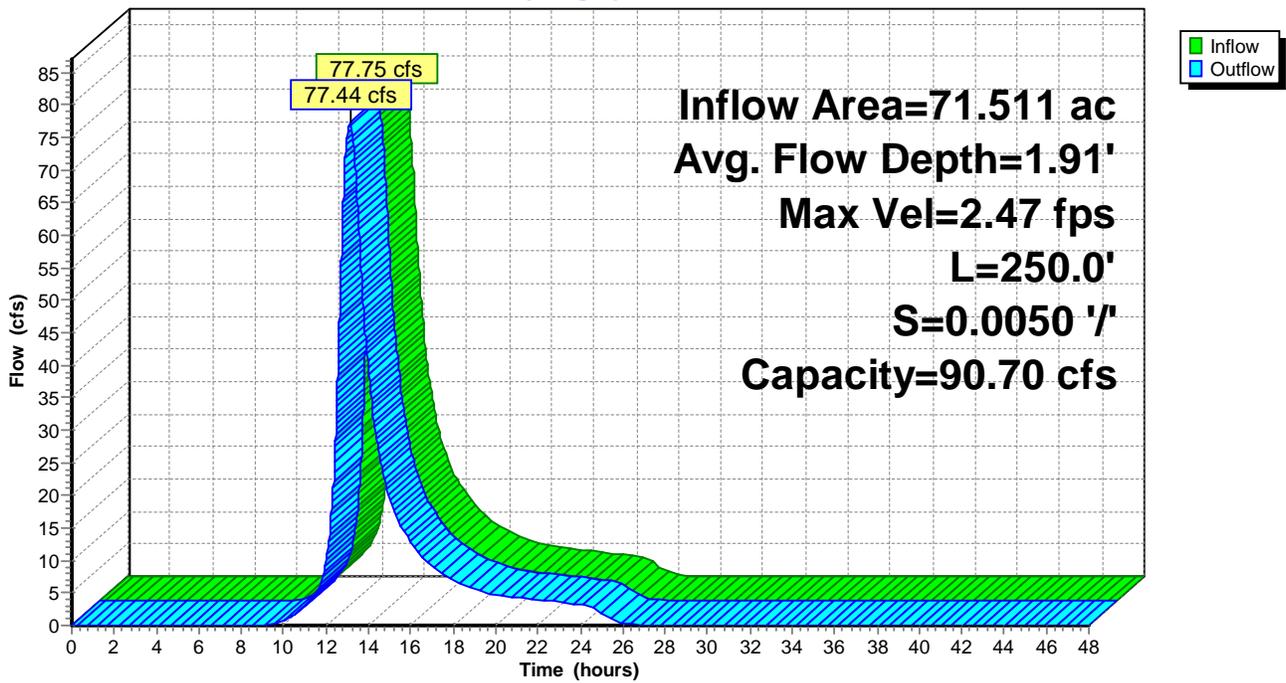


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



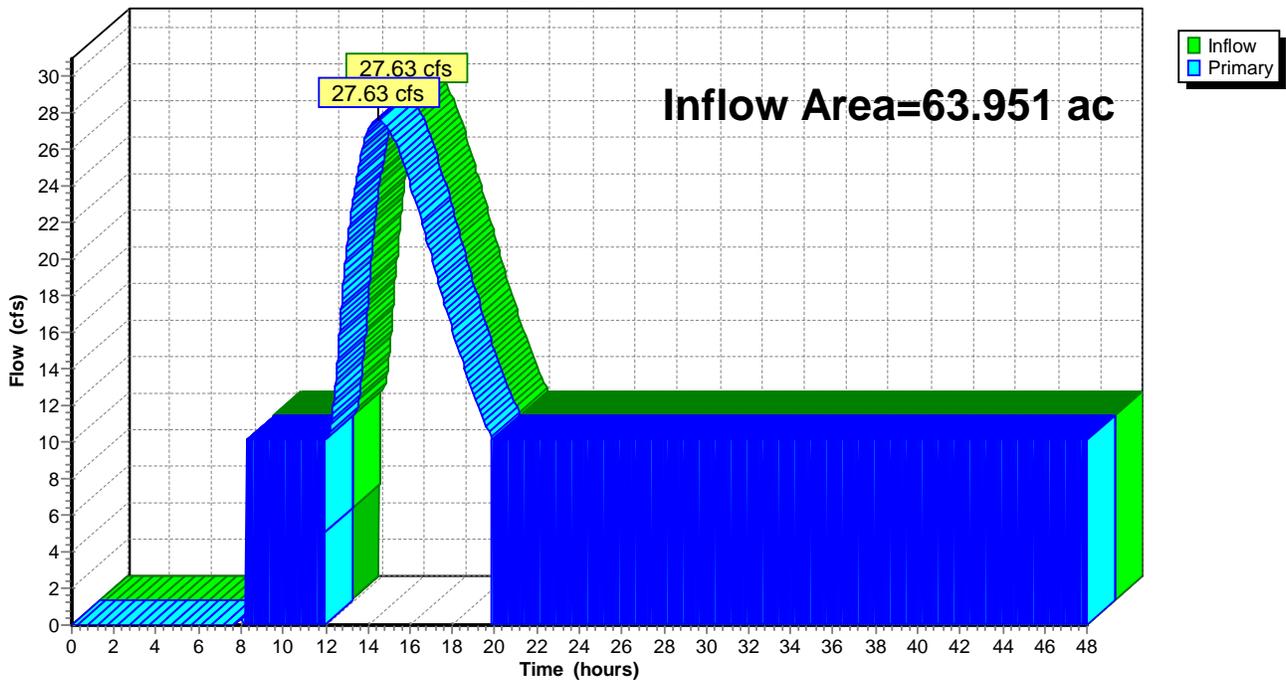
Summary for Link DP1: Design Point 1

Inflow Area = 63.951 ac, 11.63% Impervious, Inflow Depth > 4.93" for 25-Year Storm event
Inflow = 27.63 cfs @ 14.47 hrs, Volume= 26.254 af
Primary = 27.63 cfs @ 14.48 hrs, Volume= 26.254 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



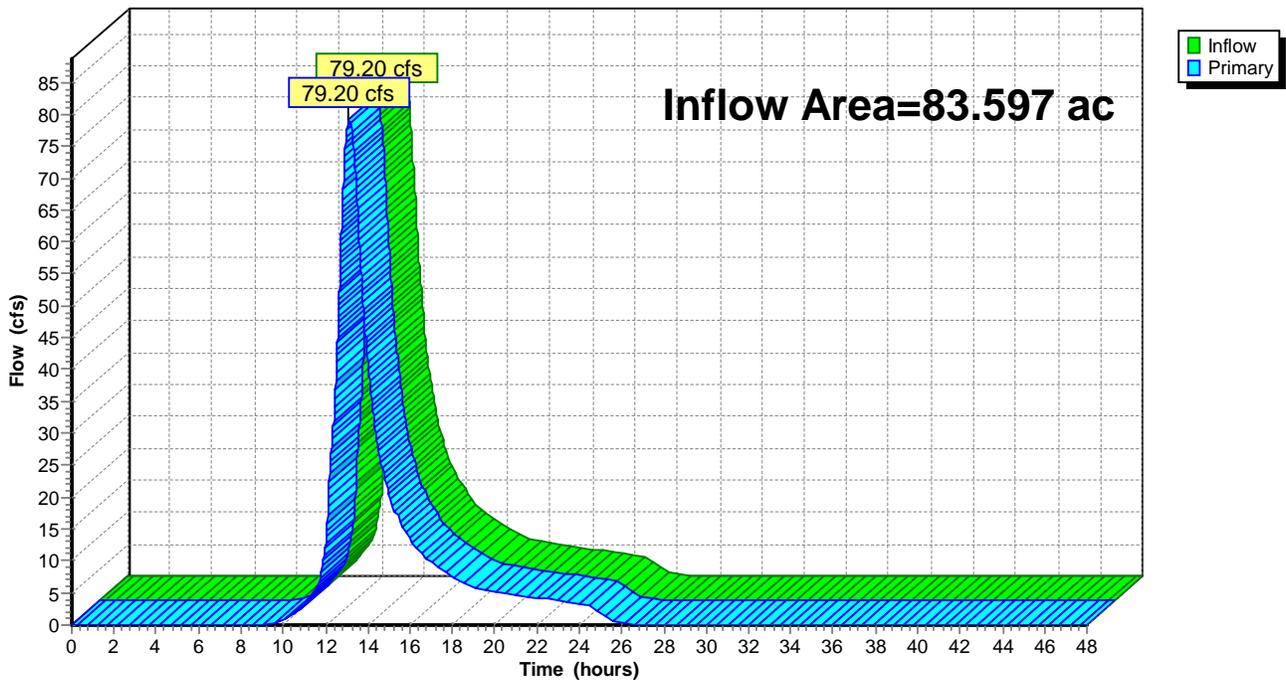
Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 2.52" for 25-Year Storm event
Inflow = 79.20 cfs @ 13.12 hrs, Volume= 17.581 af
Primary = 79.20 cfs @ 13.13 hrs, Volume= 17.581 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



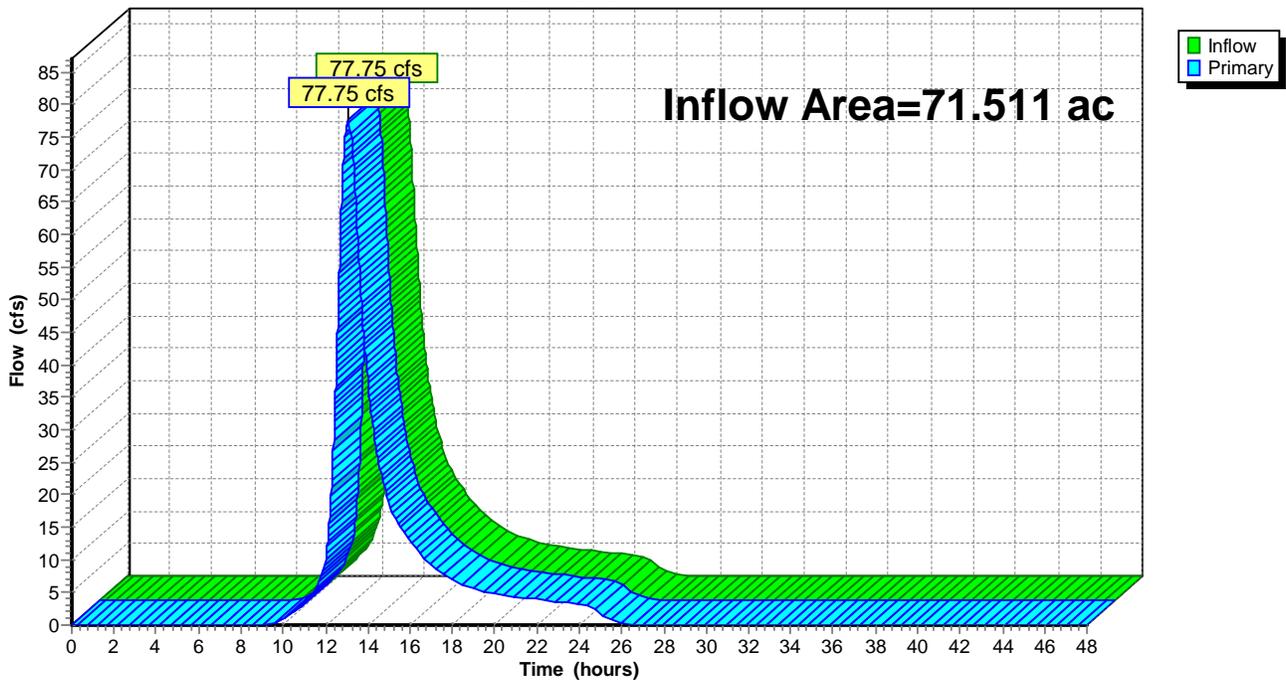
Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.78" for 25-Year Storm event
Inflow = 77.75 cfs @ 13.08 hrs, Volume= 16.551 af
Primary = 77.75 cfs @ 13.09 hrs, Volume= 16.551 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.98' Max Vel=2.47 fps Inflow=87.28 cfs 18.547 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=86.99 cfs 18.547 af

Link DP1: Design Point 1

Inflow=30.03 cfs 27.951 af
Primary=30.03 cfs 27.951 af

Link DP2: Design Point 2

Inflow=88.98 cfs 19.728 af
Primary=88.98 cfs 19.728 af

Link DP3: Design Point 3

Inflow=87.28 cfs 18.547 af
Primary=87.28 cfs 18.547 af

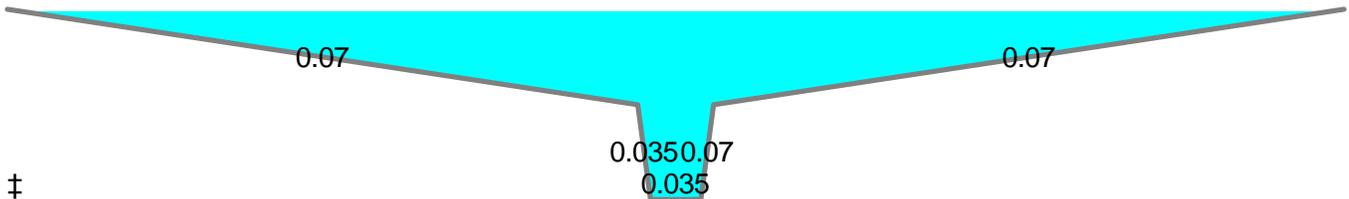
Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.11" for 50-Year Storm event
 Inflow = 87.28 cfs @ 13.09 hrs, Volume= 18.547 af
 Outflow = 86.99 cfs @ 13.12 hrs, Volume= 18.547 af, Atten= 0%, Lag= 1.5 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 5.4 min

Peak Storage= 14,652 cf @ 13.12 hrs
 Average Depth at Peak Storage= 1.98'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

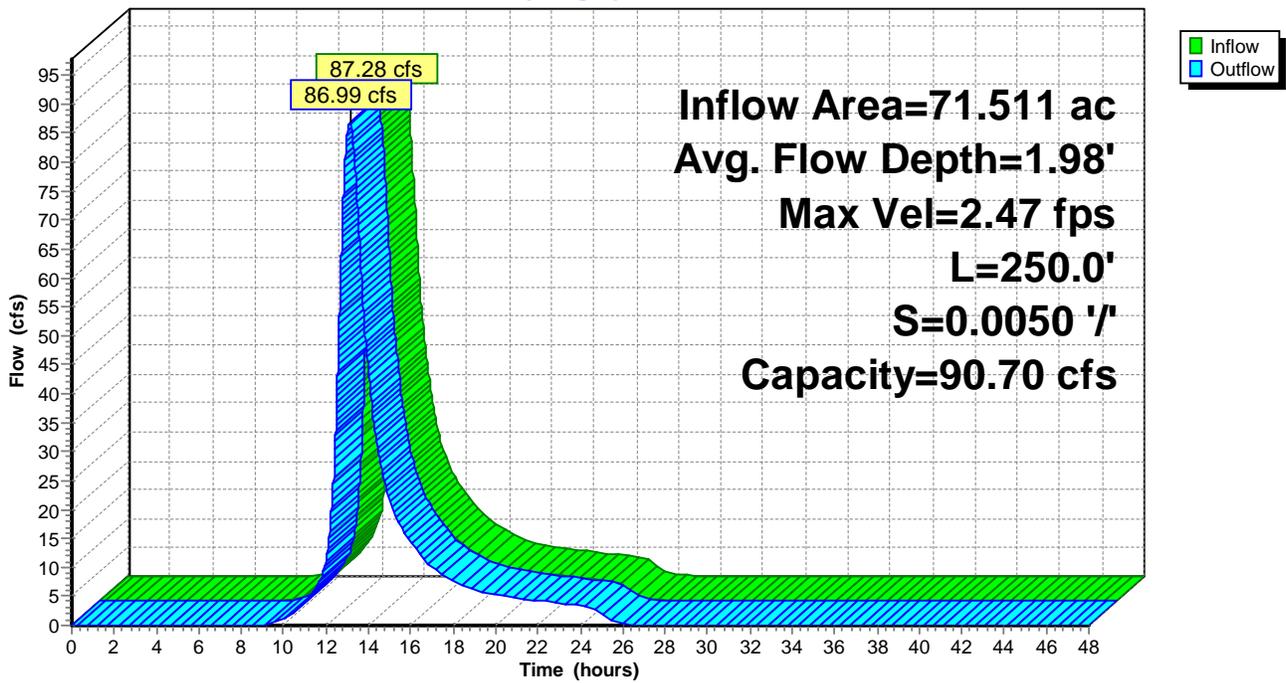


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



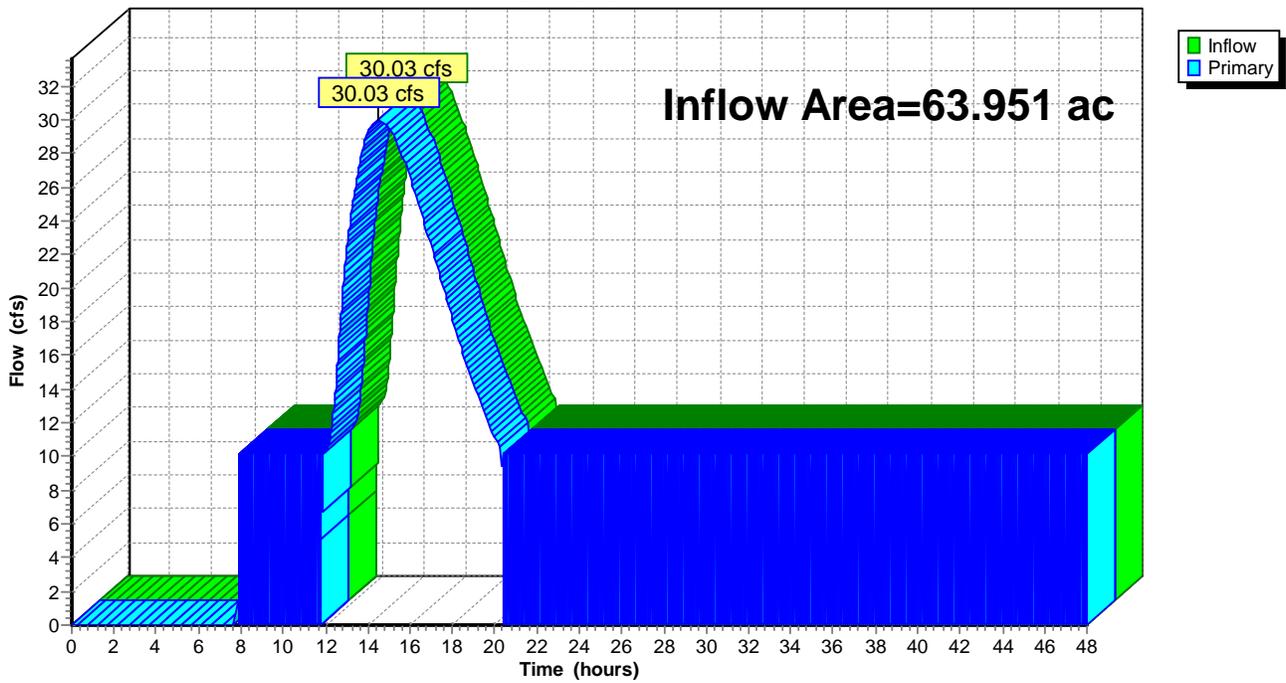
Summary for Link DP1: Design Point 1

Inflow Area = 63.951 ac, 11.63% Impervious, Inflow Depth > 5.24" for 50-Year Storm event
Inflow = 30.03 cfs @ 14.51 hrs, Volume= 27.951 af
Primary = 30.03 cfs @ 14.52 hrs, Volume= 27.951 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



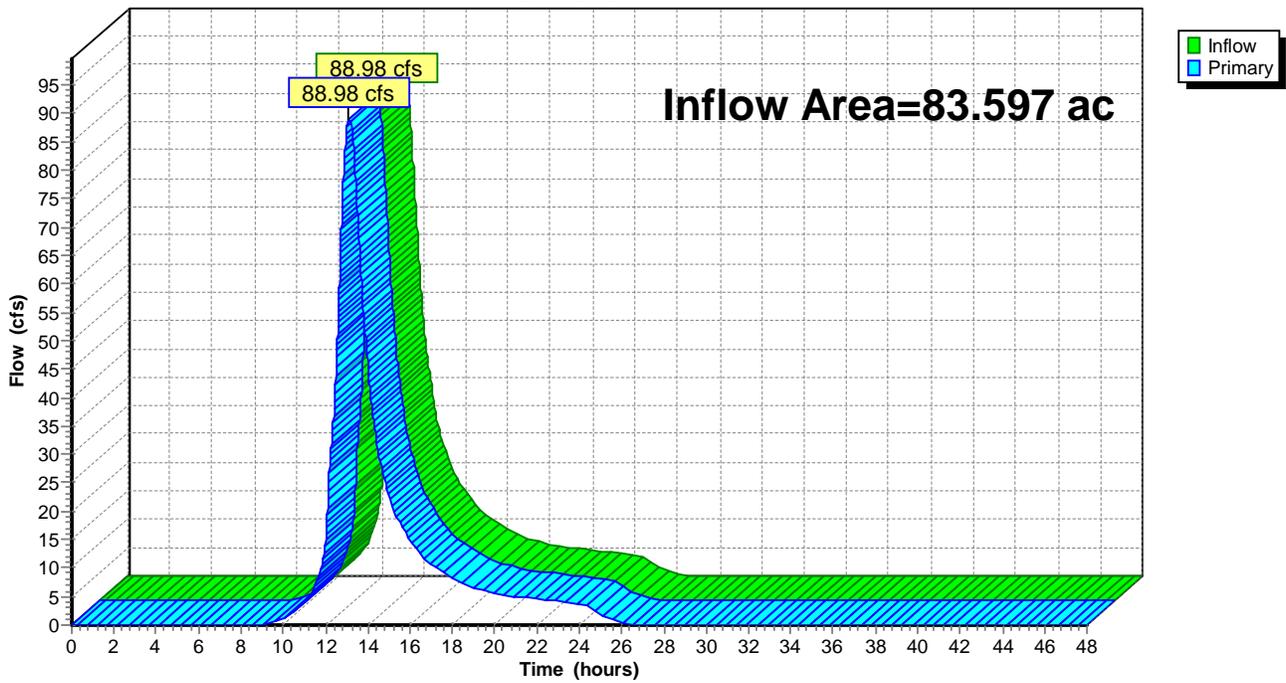
Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 2.83" for 50-Year Storm event
Inflow = 88.98 cfs @ 13.11 hrs, Volume= 19.728 af
Primary = 88.98 cfs @ 13.12 hrs, Volume= 19.728 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



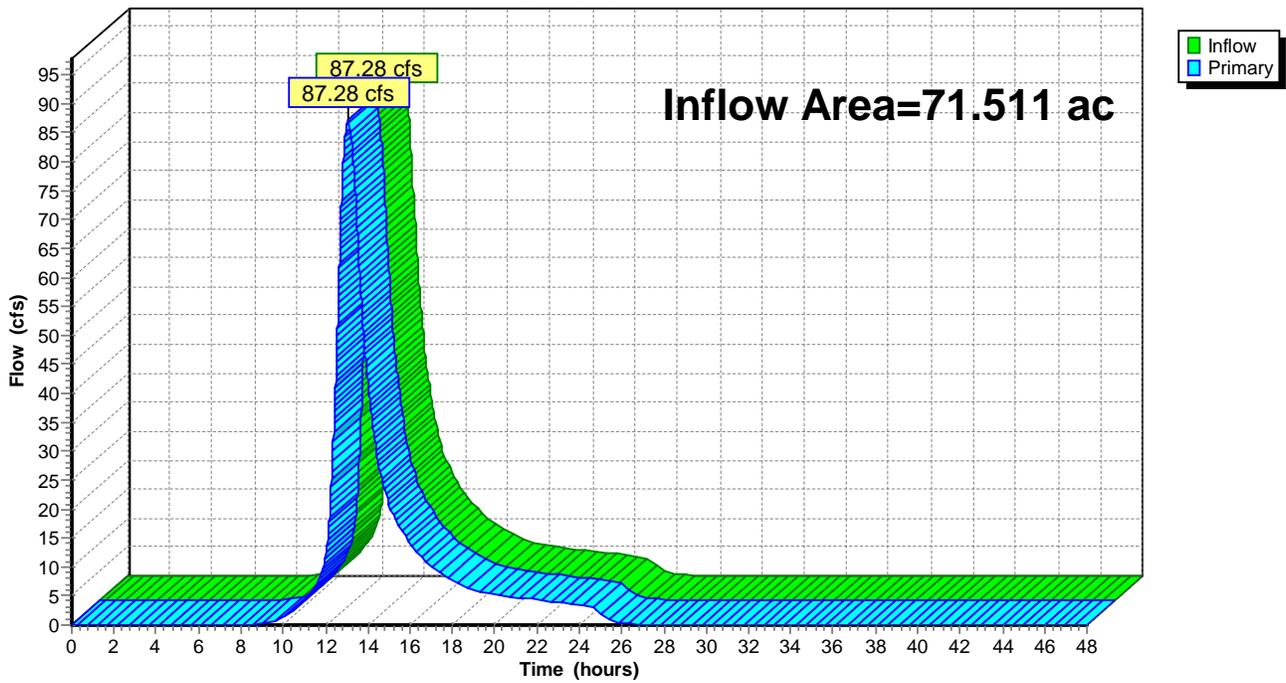
Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.11" for 50-Year Storm event
Inflow = 87.28 cfs @ 13.08 hrs, Volume= 18.547 af
Primary = 87.28 cfs @ 13.09 hrs, Volume= 18.547 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=2.08' Max Vel=2.47 fps Inflow=106.70 cfs 22.639 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=106.54 cfs 22.639 af

Link DP1: Design Point 1

Inflow=34.26 cfs 31.441 af
Primary=34.26 cfs 31.441 af

Link DP2: Design Point 2

Inflow=109.00 cfs 24.146 af
Primary=109.00 cfs 24.146 af

Link DP3: Design Point 3

Inflow=106.70 cfs 22.639 af
Primary=106.70 cfs 22.639 af

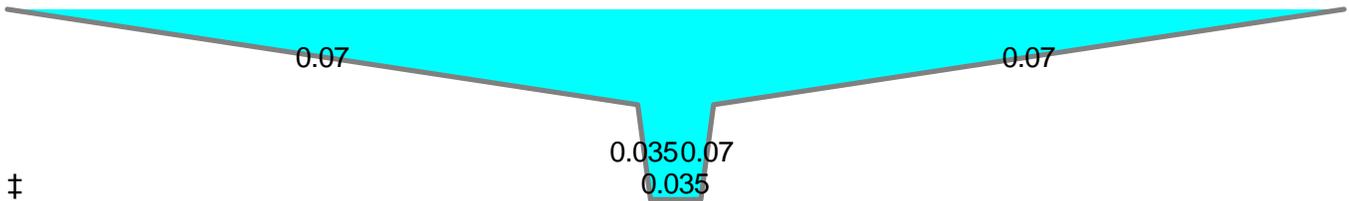
Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.80" for 100-Year Storm event
 Inflow = 106.70 cfs @ 13.09 hrs, Volume= 22.639 af
 Outflow = 106.54 cfs @ 13.11 hrs, Volume= 22.639 af, Atten= 0%, Lag= 1.1 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 5.2 min

Peak Storage= 17,272 cf @ 13.11 hrs
 Average Depth at Peak Storage= 2.08'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

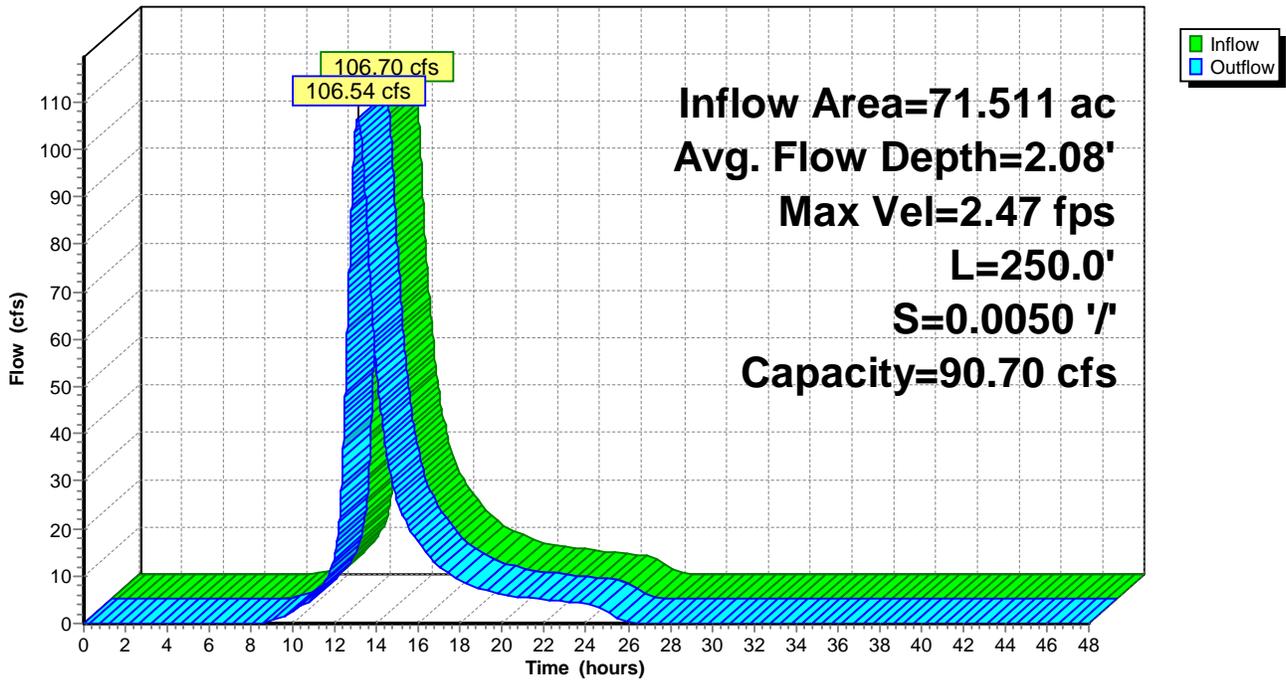


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



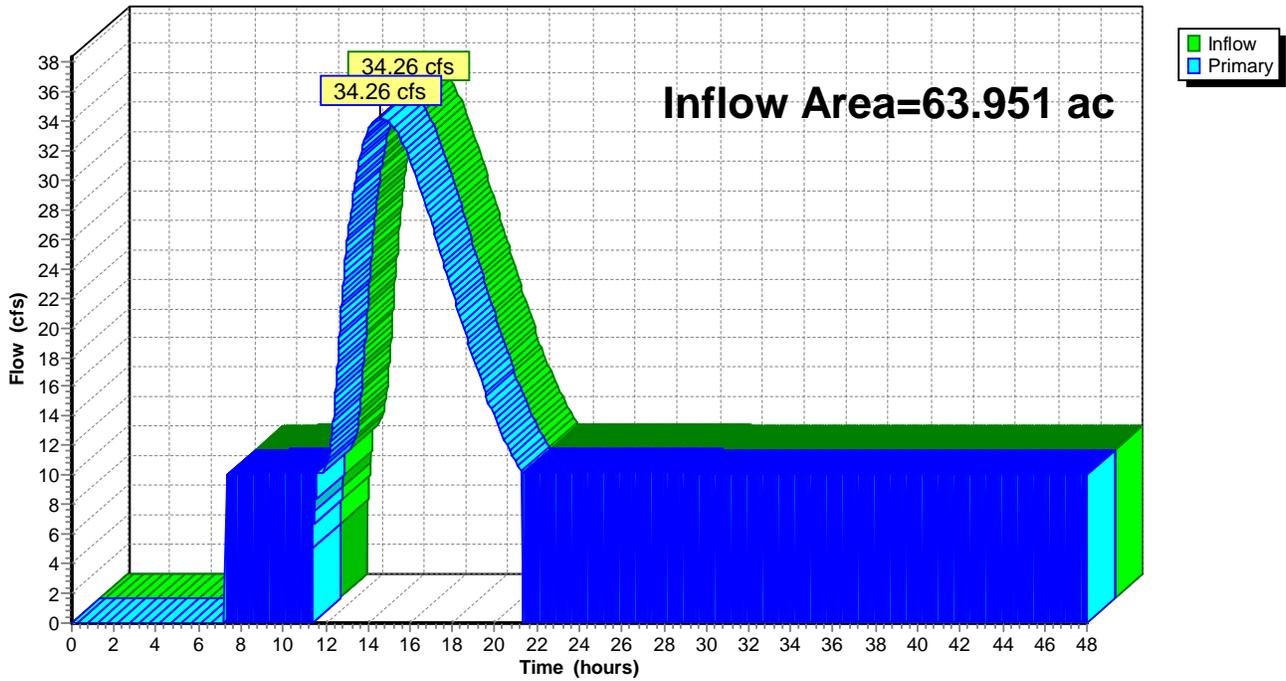
Summary for Link DP1: Design Point 1

Inflow Area = 63.951 ac, 11.63% Impervious, Inflow Depth > 5.90" for 100-Year Storm event
Inflow = 34.26 cfs @ 14.61 hrs, Volume= 31.441 af
Primary = 34.26 cfs @ 14.62 hrs, Volume= 31.441 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



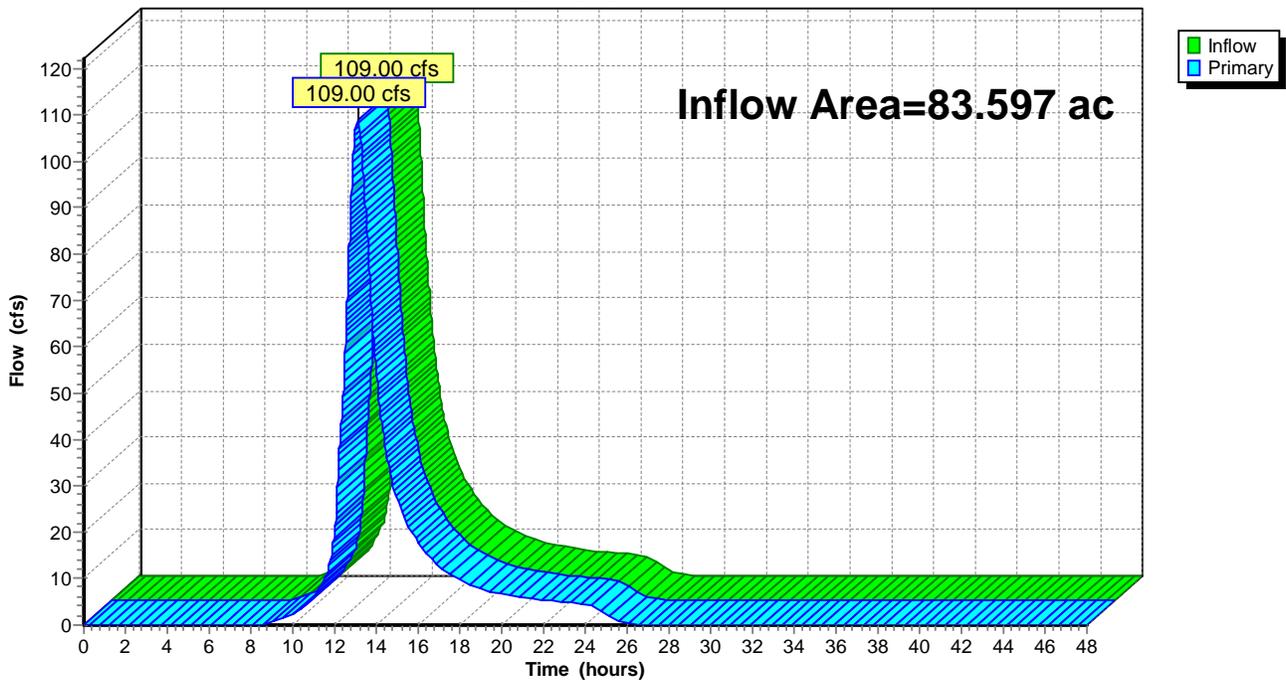
Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 3.47" for 100-Year Storm event
Inflow = 109.00 cfs @ 13.11 hrs, Volume= 24.146 af
Primary = 109.00 cfs @ 13.12 hrs, Volume= 24.146 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



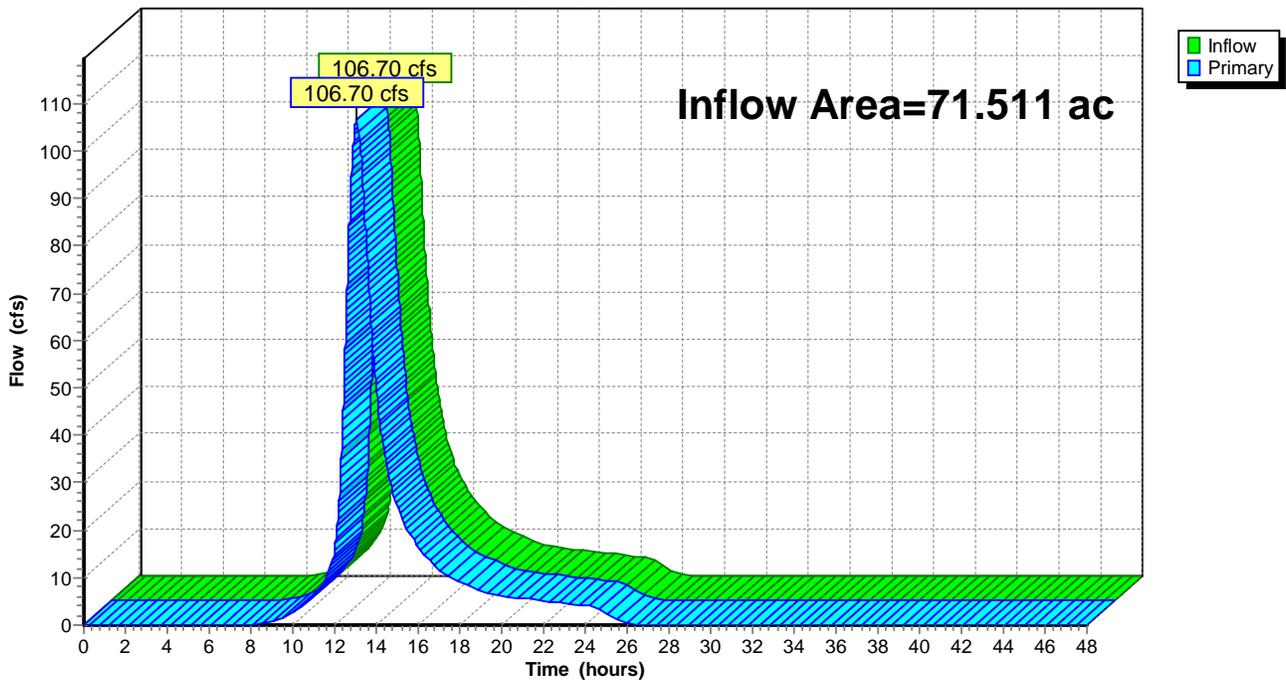
Summary for Link DP3: Design Point 3

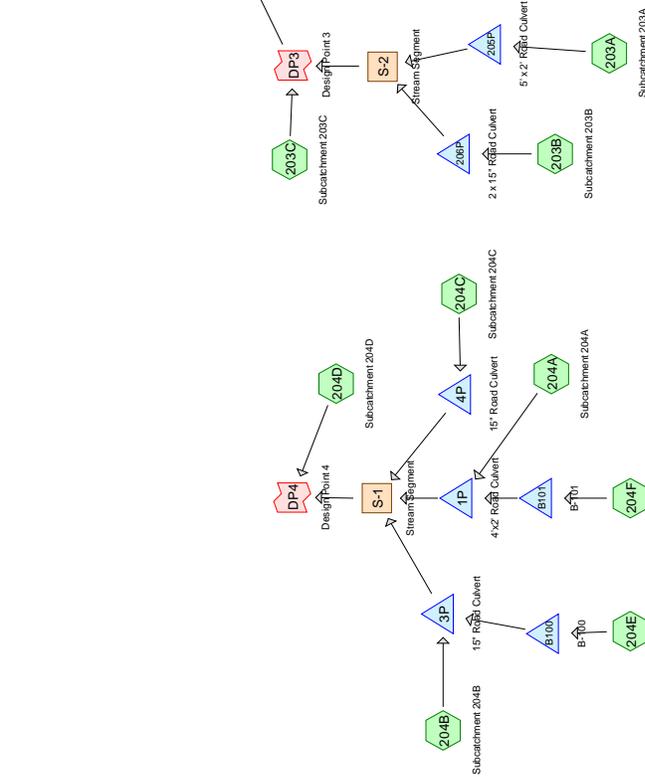
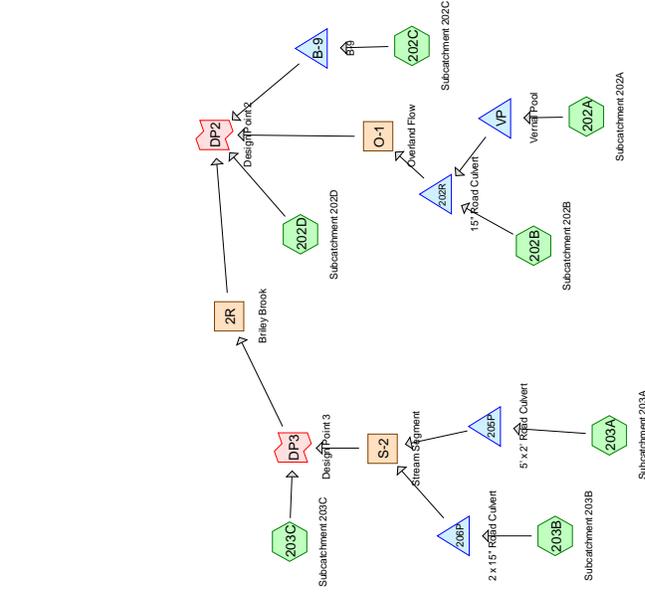
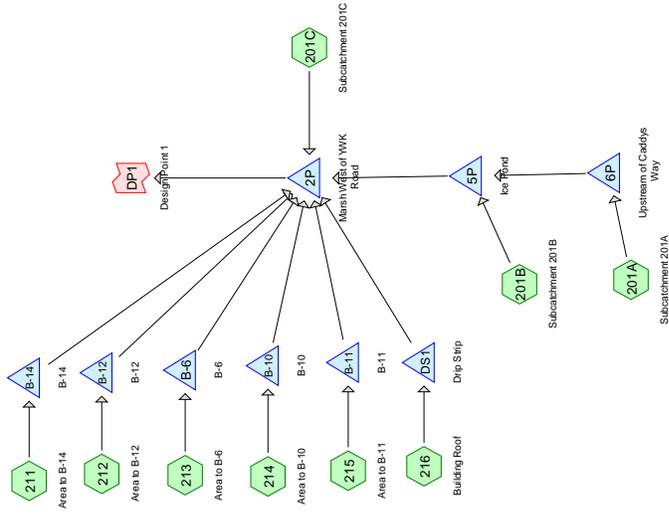
Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.80" for 100-Year Storm event
Inflow = 106.70 cfs @ 13.08 hrs, Volume= 22.639 af
Primary = 106.70 cfs @ 13.09 hrs, Volume= 22.639 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

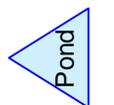
Hydrograph





Routing Diagram for York PD-Post-Dev-2014
 Prepared by SMRT Inc.

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.36' Max Vel=2.47 fps Inflow=24.77 cfs 6.131 af
L=250.0' S=0.0050 '/ Capacity=90.70 cfs Outflow=24.68 cfs 6.131 af

Link DP1: Design Point 1

Inflow=11.90 cfs 21.348 af
Primary=11.90 cfs 21.348 af

Link DP2: Design Point 2

Inflow=25.43 cfs 6.531 af
Primary=25.43 cfs 6.531 af

Link DP3: Design Point 3

Inflow=24.77 cfs 6.131 af
Primary=24.77 cfs 6.131 af

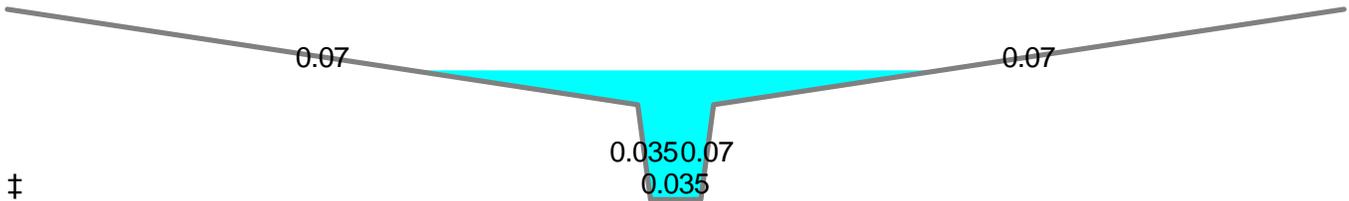
Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 1.03" for 2-Year Storm event
 Inflow = 24.77 cfs @ 13.28 hrs, Volume= 6.131 af
 Outflow = 24.68 cfs @ 13.33 hrs, Volume= 6.131 af, Atten= 0%, Lag= 3.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.70 fps, Avg. Travel Time= 5.9 min

Peak Storage= 3,415 cf @ 13.33 hrs
 Average Depth at Peak Storage= 1.36'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

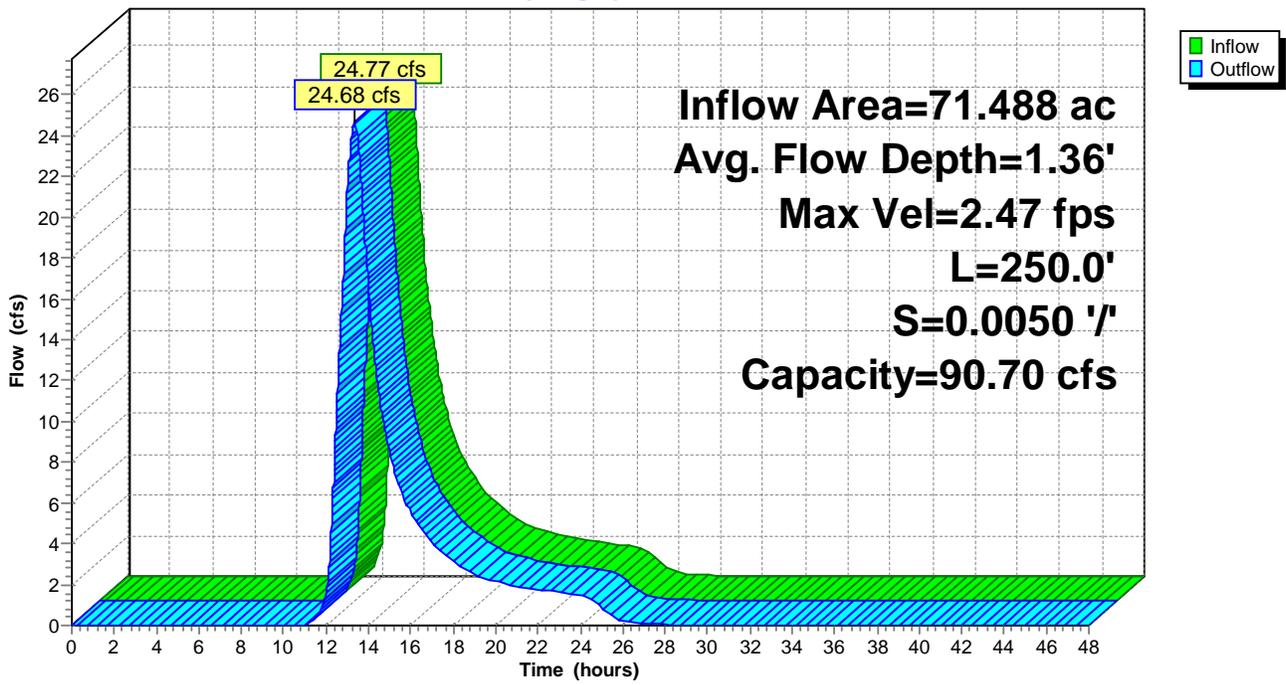


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



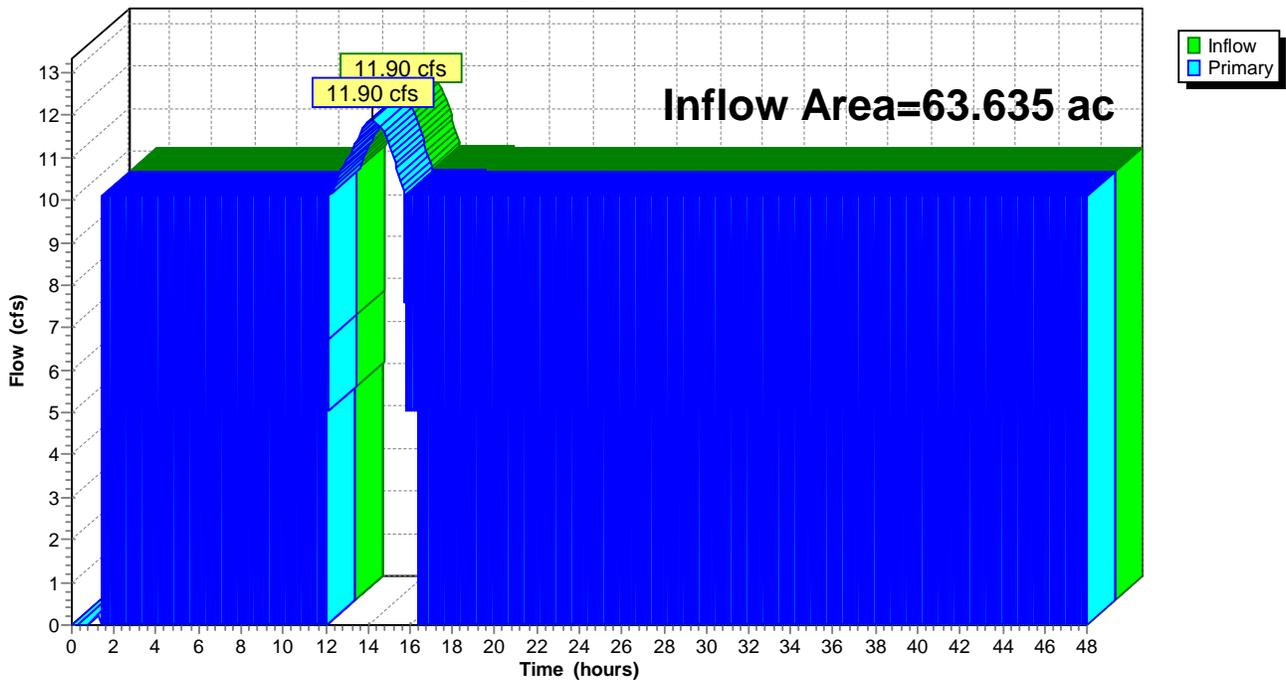
Summary for Link DP1: Design Point 1

Inflow Area = 63.635 ac, 14.89% Impervious, Inflow Depth > 4.03" for 2-Year Storm event
Inflow = 11.90 cfs @ 14.19 hrs, Volume= 21.348 af
Primary = 11.90 cfs @ 14.20 hrs, Volume= 21.348 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



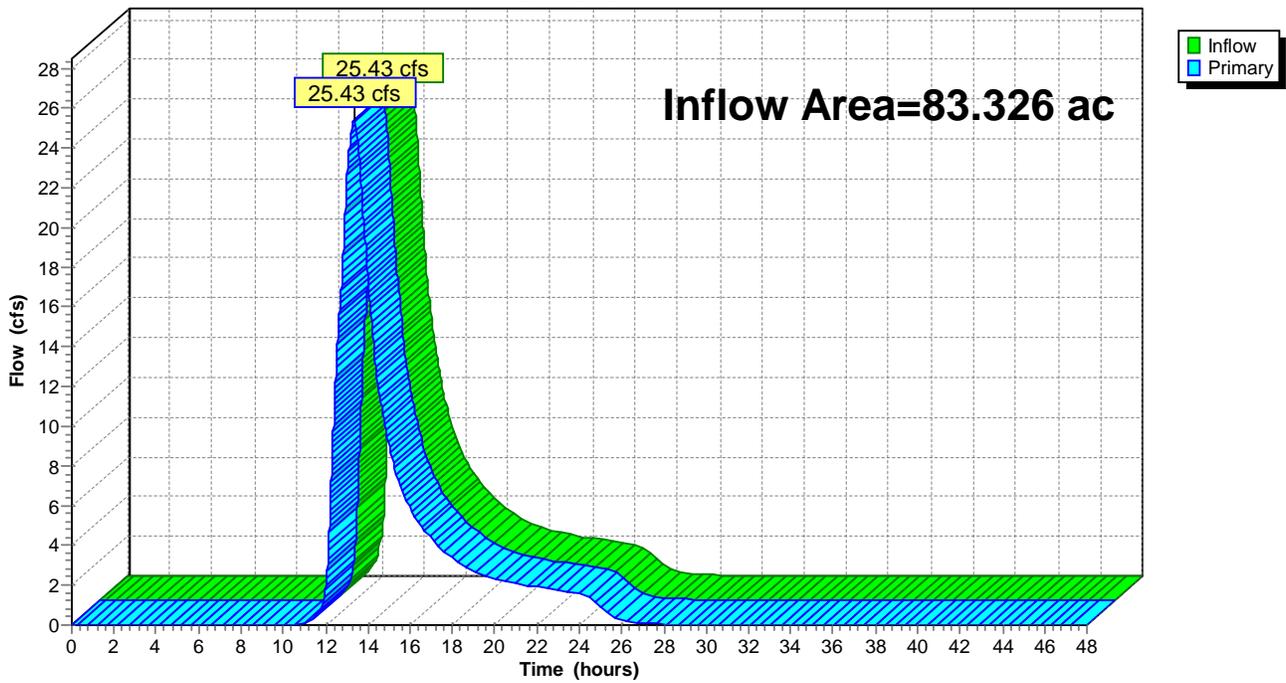
Summary for Link DP2: Design Point 2

Inflow Area = 83.326 ac, 15.06% Impervious, Inflow Depth = 0.94" for 2-Year Storm event
Inflow = 25.43 cfs @ 13.33 hrs, Volume= 6.531 af
Primary = 25.43 cfs @ 13.34 hrs, Volume= 6.531 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



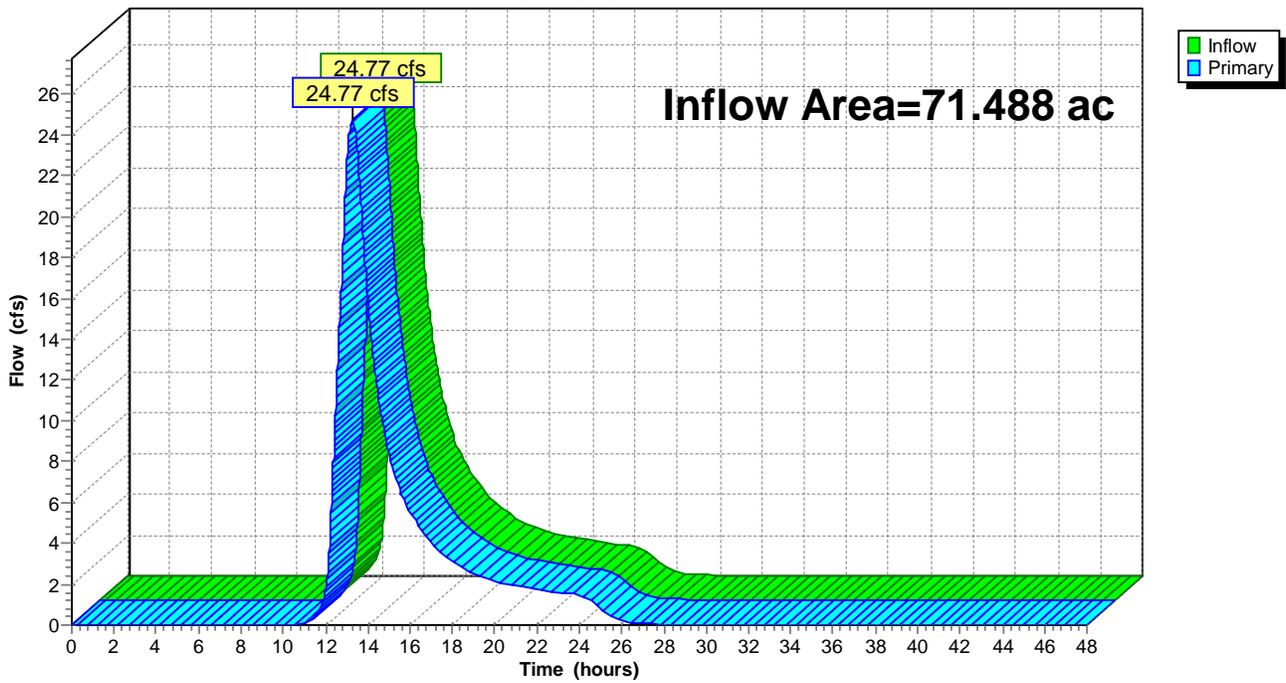
Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 1.03" for 2-Year Storm event
Inflow = 24.77 cfs @ 13.27 hrs, Volume= 6.131 af
Primary = 24.77 cfs @ 13.28 hrs, Volume= 6.131 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.71' Max Vel=2.47 fps Inflow=51.36 cfs 13.279 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=51.32 cfs 13.279 af

Link DP1: Design Point 1

Inflow=22.27 cfs 26.498 af
Primary=22.27 cfs 26.498 af

Link DP2: Design Point 2

Inflow=52.74 cfs 14.222 af
Primary=52.74 cfs 14.222 af

Link DP3: Design Point 3

Inflow=51.36 cfs 13.279 af
Primary=51.36 cfs 13.279 af

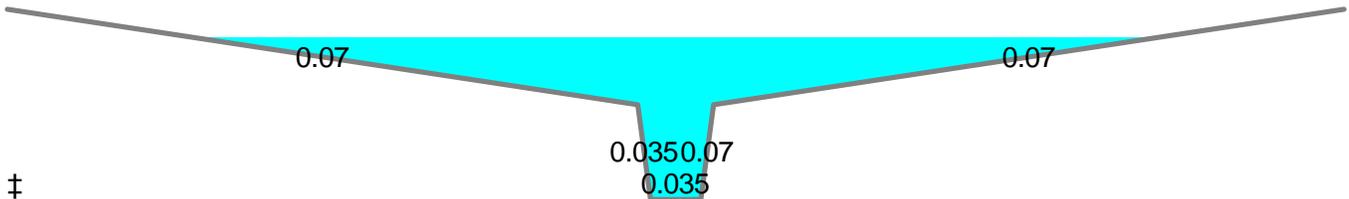
Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.23" for 10-Year Storm event
 Inflow = 51.36 cfs @ 13.29 hrs, Volume= 13.279 af
 Outflow = 51.32 cfs @ 13.34 hrs, Volume= 13.279 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.80 fps, Avg. Travel Time= 5.2 min

Peak Storage= 8,542 cf @ 13.34 hrs
 Average Depth at Peak Storage= 1.71'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'



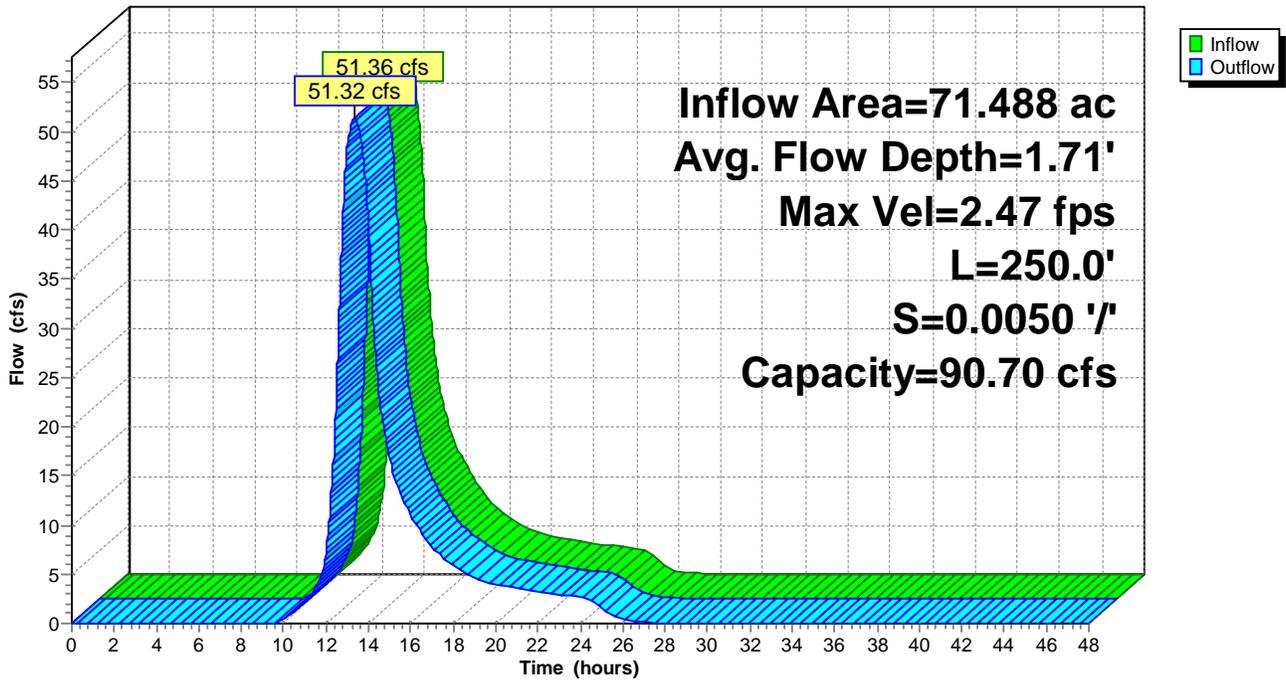
‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



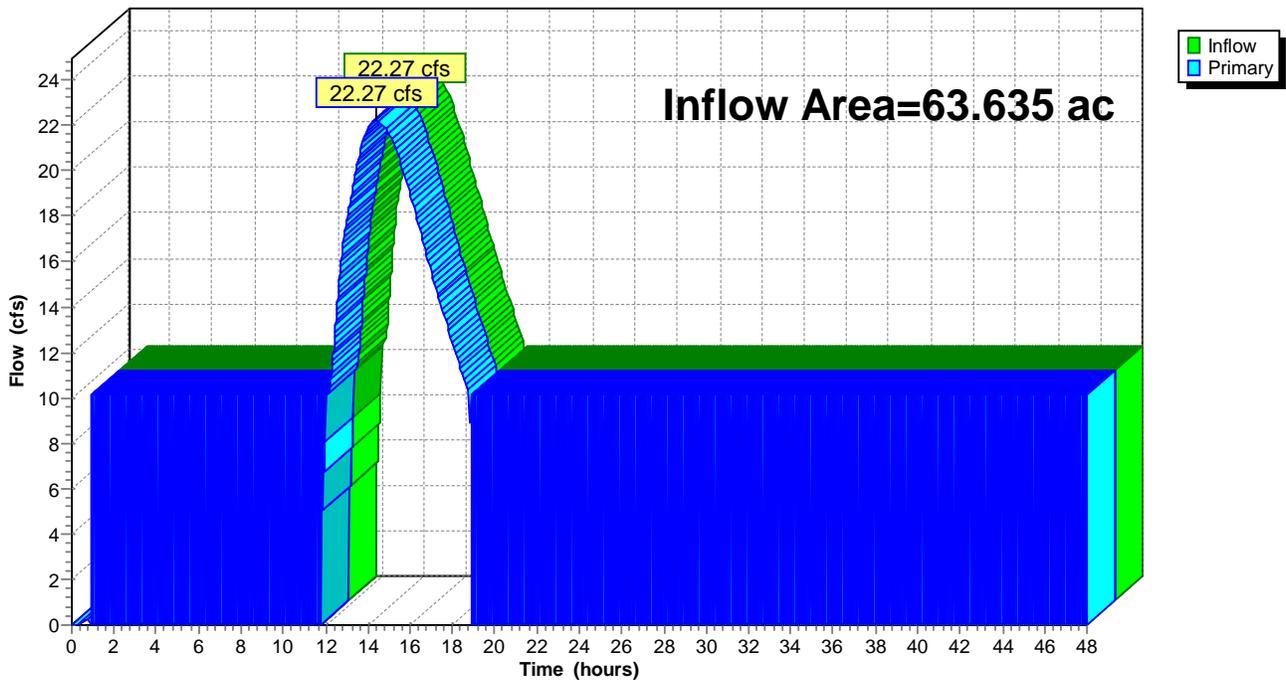
Summary for Link DP1: Design Point 1

Inflow Area = 63.635 ac, 14.89% Impervious, Inflow Depth > 5.00" for 10-Year Storm event
Inflow = 22.27 cfs @ 14.40 hrs, Volume= 26.498 af
Primary = 22.27 cfs @ 14.41 hrs, Volume= 26.498 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



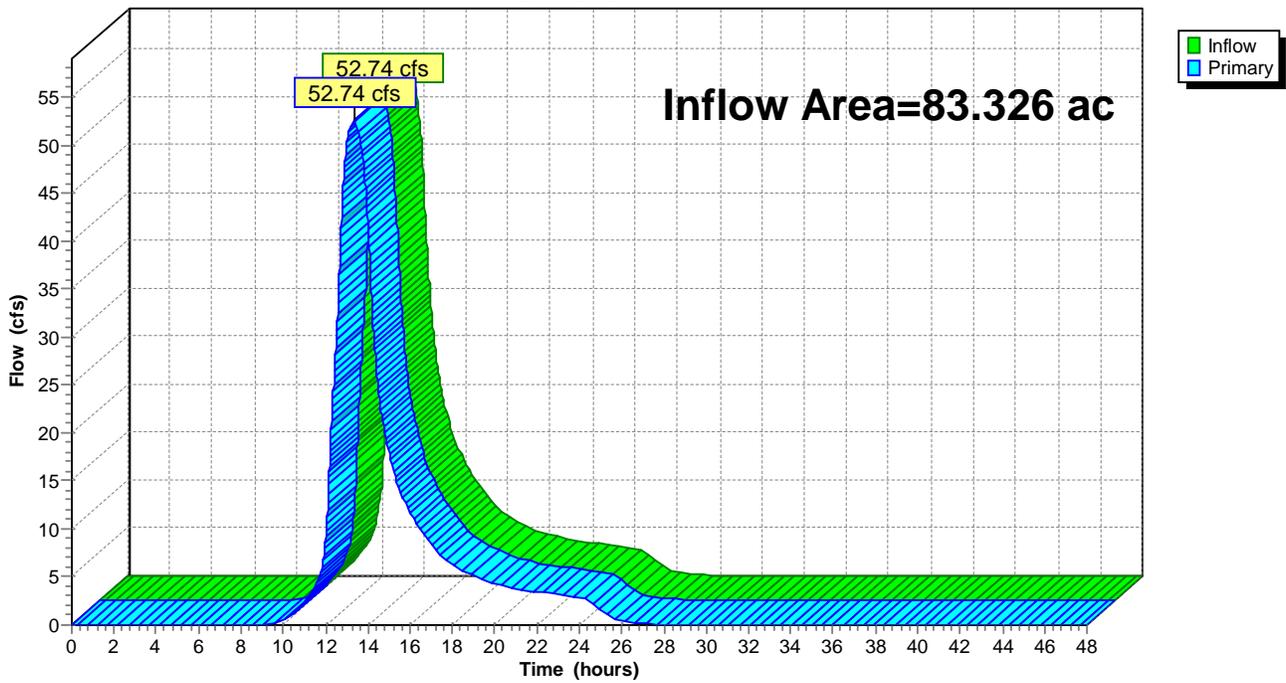
Summary for Link DP2: Design Point 2

Inflow Area = 83.326 ac, 15.06% Impervious, Inflow Depth = 2.05" for 10-Year Storm event
Inflow = 52.74 cfs @ 13.32 hrs, Volume= 14.222 af
Primary = 52.74 cfs @ 13.33 hrs, Volume= 14.222 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



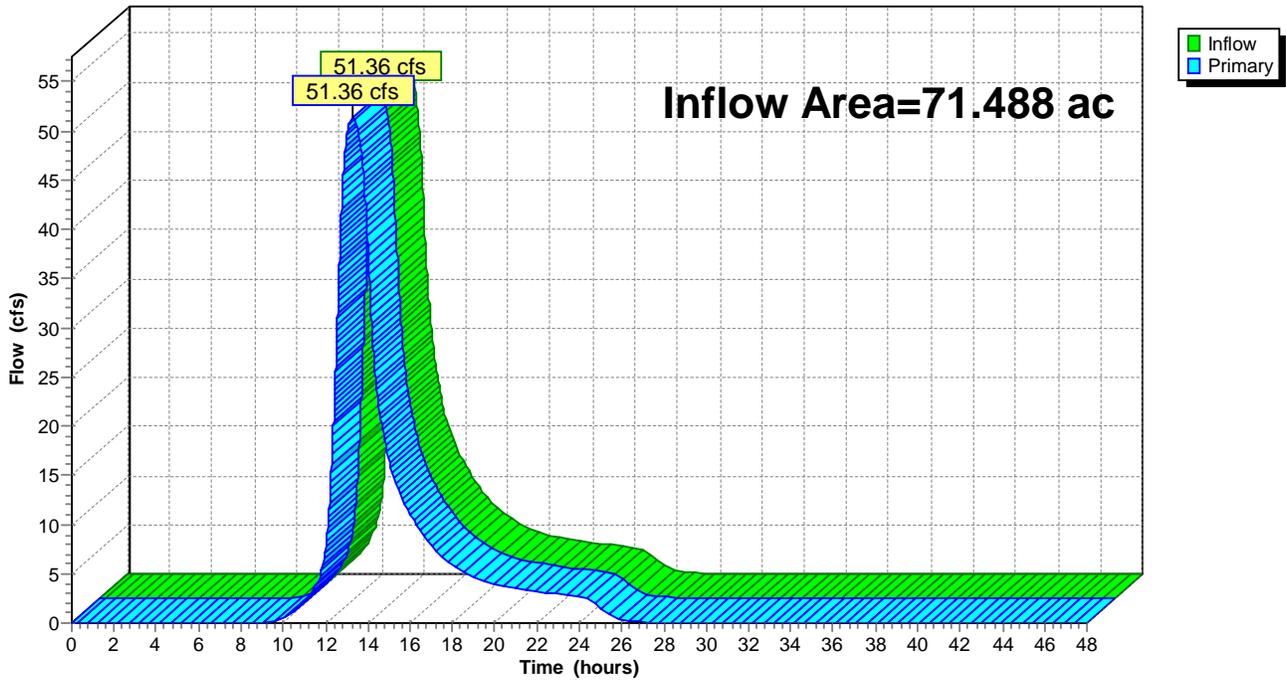
Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.23" for 10-Year Storm event
Inflow = 51.36 cfs @ 13.28 hrs, Volume= 13.279 af
Primary = 51.36 cfs @ 13.29 hrs, Volume= 13.279 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.79' Max Vel=2.47 fps Inflow=60.71 cfs 17.212 af
L=250.0' S=0.0050 '/ Capacity=90.70 cfs Outflow=60.67 cfs 17.212 af

Link DP1: Design Point 1

Inflow=27.34 cfs 29.550 af
Primary=27.34 cfs 29.550 af

Link DP2: Design Point 2

Inflow=62.44 cfs 18.465 af
Primary=62.44 cfs 18.465 af

Link DP3: Design Point 3

Inflow=60.71 cfs 17.212 af
Primary=60.71 cfs 17.212 af

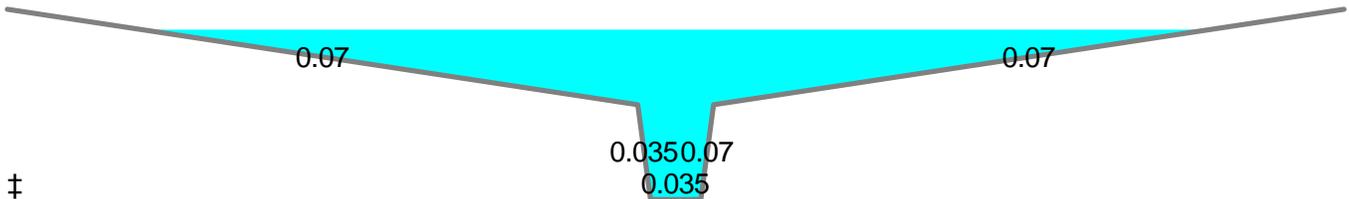
Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.89" for 25-Year Storm event
 Inflow = 60.71 cfs @ 13.31 hrs, Volume= 17.212 af
 Outflow = 60.67 cfs @ 13.36 hrs, Volume= 17.212 af, Atten= 0%, Lag= 3.2 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 5.0 min

Peak Storage= 10,215 cf @ 13.36 hrs
 Average Depth at Peak Storage= 1.79'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

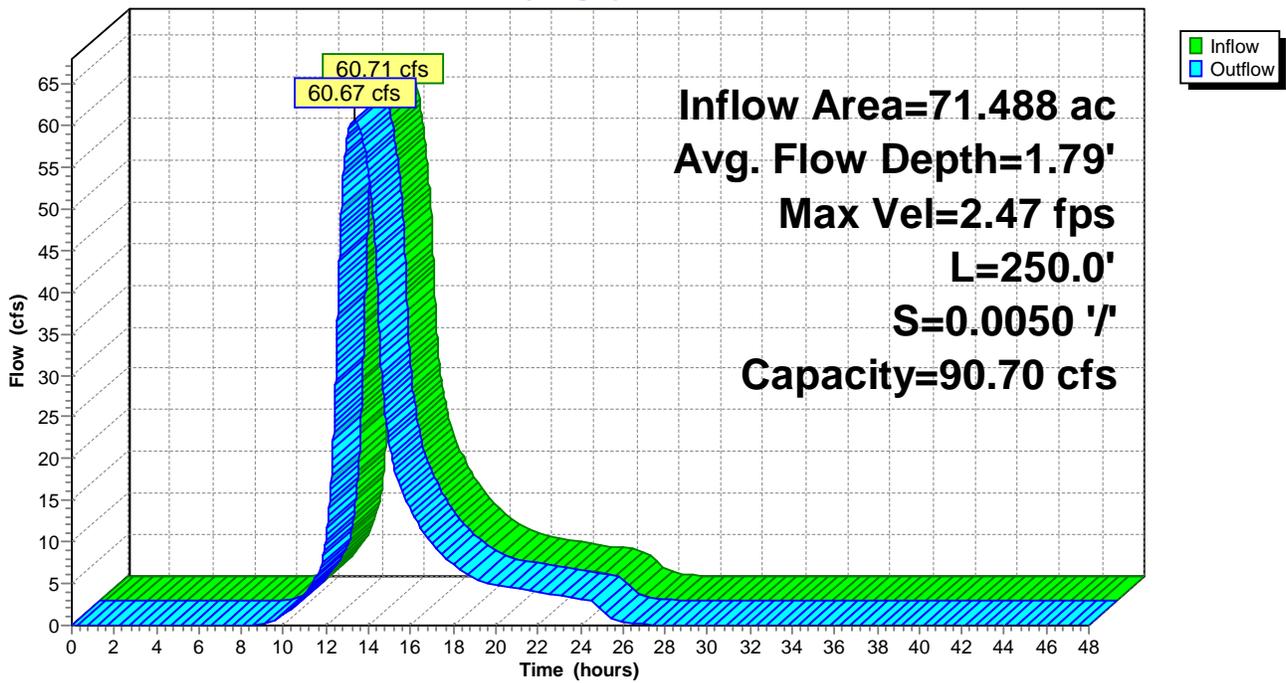


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



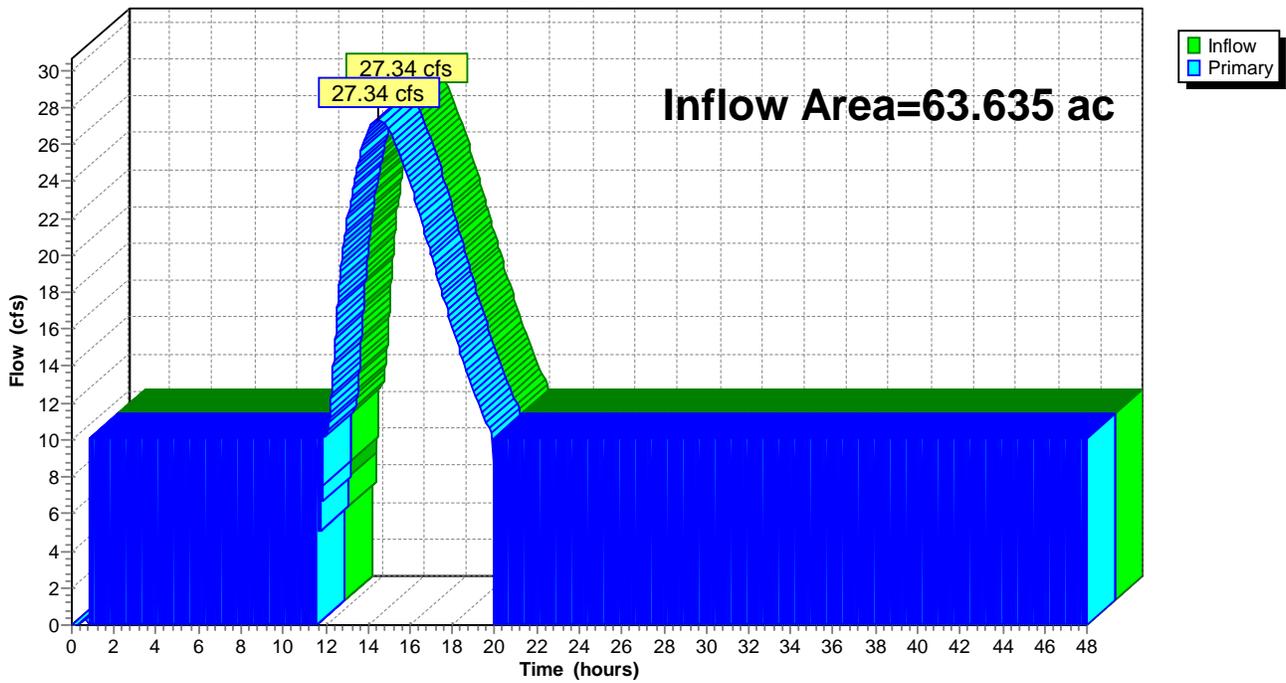
Summary for Link DP1: Design Point 1

Inflow Area = 63.635 ac, 14.89% Impervious, Inflow Depth > 5.57" for 25-Year Storm event
Inflow = 27.34 cfs @ 14.46 hrs, Volume= 29.550 af
Primary = 27.34 cfs @ 14.47 hrs, Volume= 29.550 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



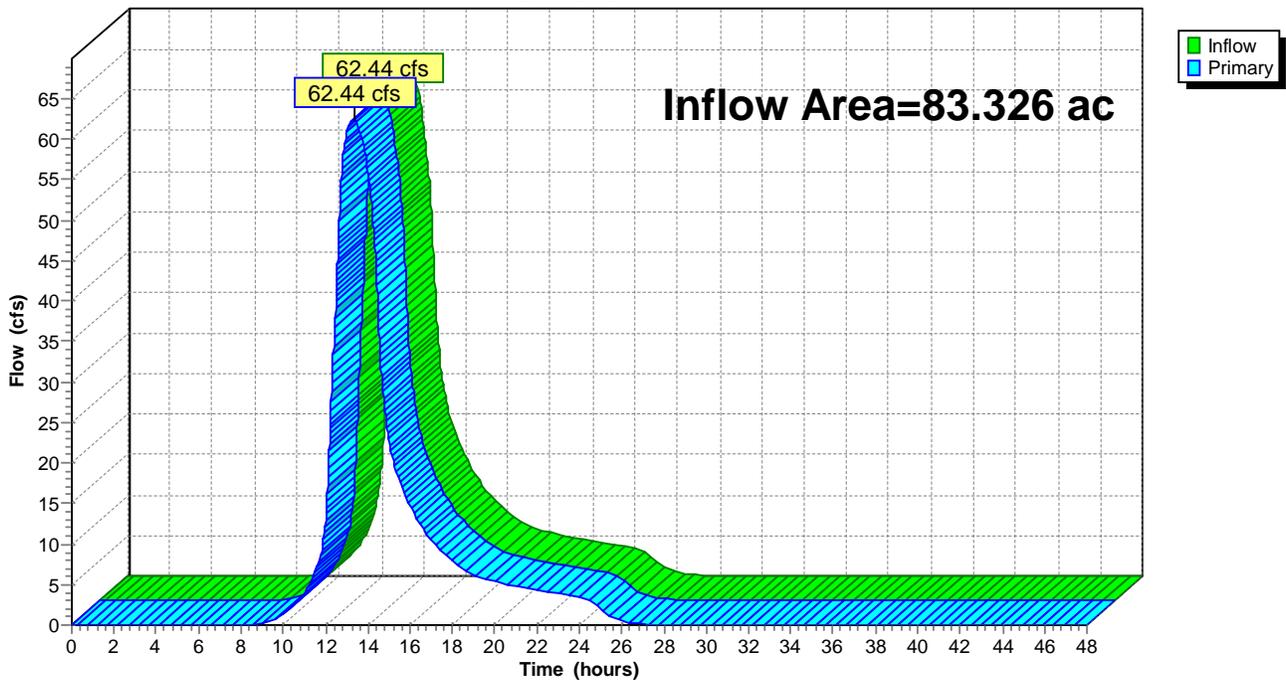
Summary for Link DP2: Design Point 2

Inflow Area = 83.326 ac, 15.06% Impervious, Inflow Depth = 2.66" for 25-Year Storm event
Inflow = 62.44 cfs @ 13.32 hrs, Volume= 18.465 af
Primary = 62.44 cfs @ 13.33 hrs, Volume= 18.465 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



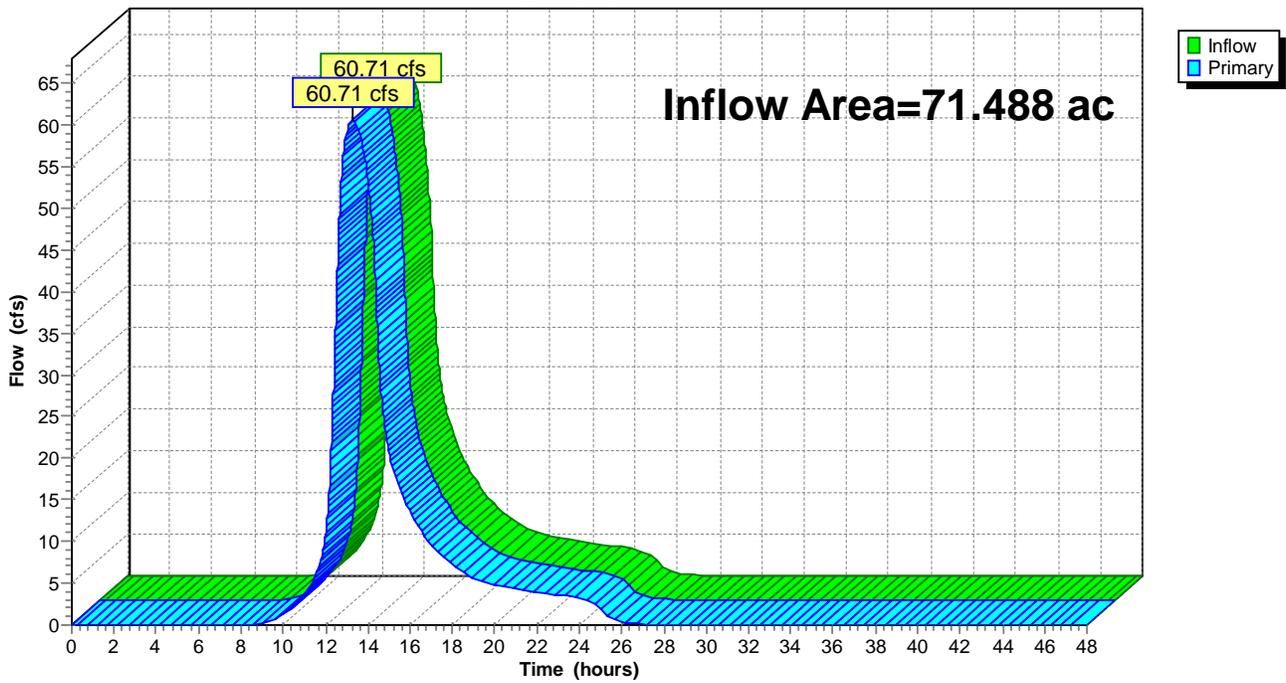
Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.89" for 25-Year Storm event
Inflow = 60.71 cfs @ 13.30 hrs, Volume= 17.212 af
Primary = 60.71 cfs @ 13.31 hrs, Volume= 17.212 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.82' Max Vel=2.47 fps Inflow=64.87 cfs 19.238 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=64.84 cfs 19.238 af

Link DP1: Design Point 1

Inflow=29.76 cfs 31.156 af
Primary=29.76 cfs 31.156 af

Link DP2: Design Point 2

Inflow=66.80 cfs 20.653 af
Primary=66.80 cfs 20.653 af

Link DP3: Design Point 3

Inflow=64.87 cfs 19.238 af
Primary=64.87 cfs 19.238 af

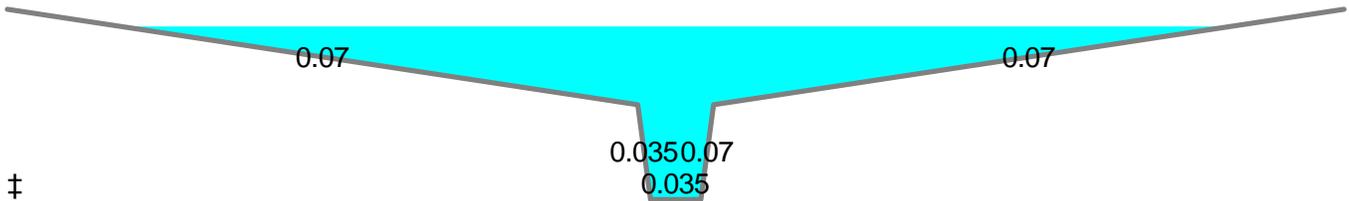
Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.23" for 50-Year Storm event
 Inflow = 64.87 cfs @ 13.31 hrs, Volume= 19.238 af
 Outflow = 64.84 cfs @ 13.37 hrs, Volume= 19.238 af, Atten= 0%, Lag= 3.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 4.9 min

Peak Storage= 10,941 cf @ 13.37 hrs
 Average Depth at Peak Storage= 1.82'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

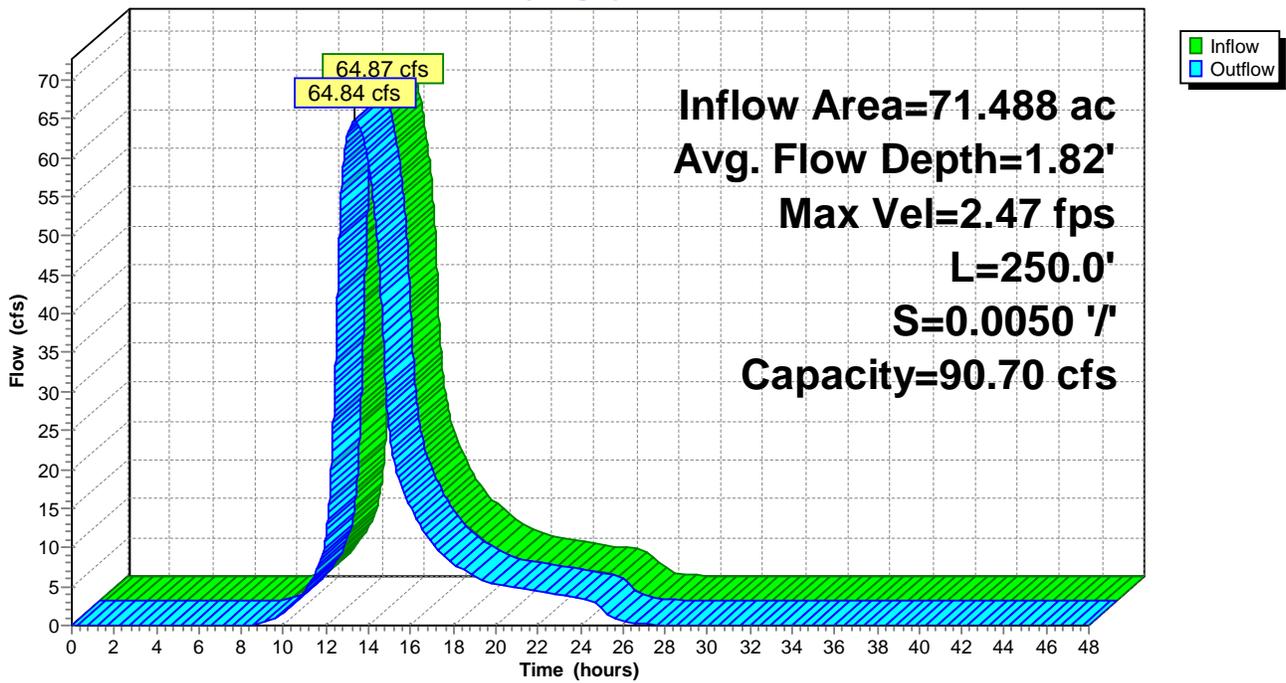


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



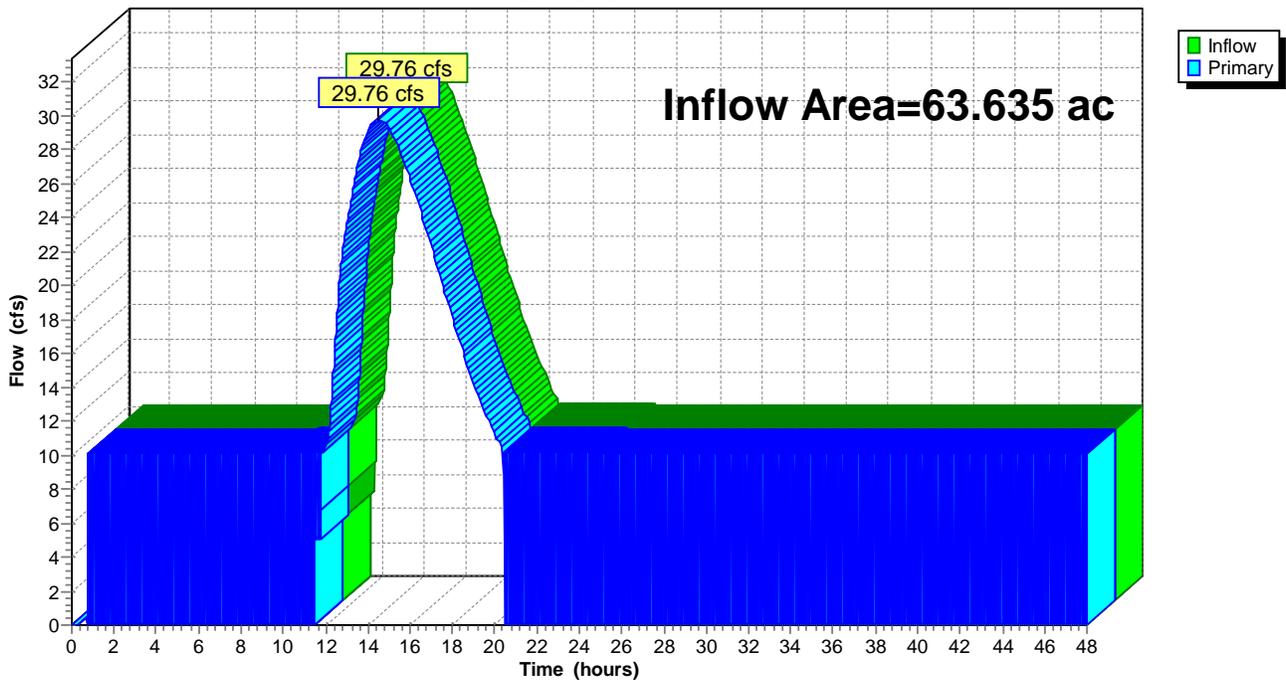
Summary for Link DP1: Design Point 1

Inflow Area = 63.635 ac, 14.89% Impervious, Inflow Depth > 5.88" for 50-Year Storm event
Inflow = 29.76 cfs @ 14.50 hrs, Volume= 31.156 af
Primary = 29.76 cfs @ 14.51 hrs, Volume= 31.156 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



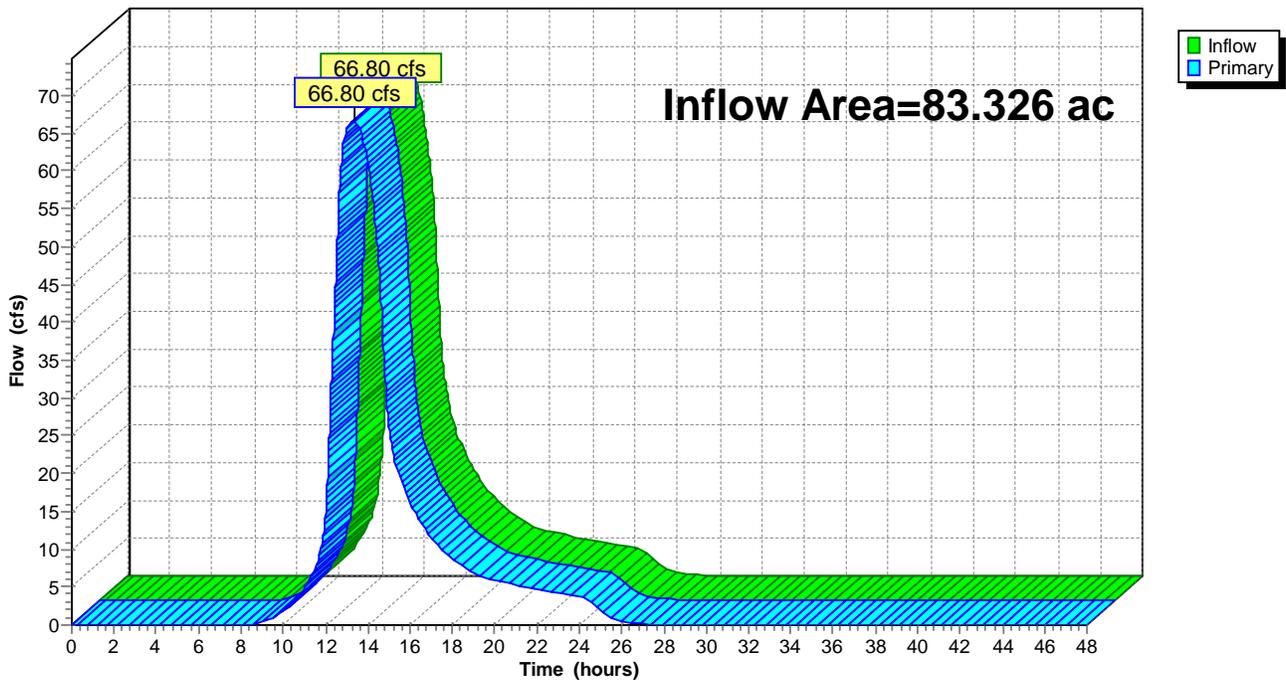
Summary for Link DP2: Design Point 2

Inflow Area = 83.326 ac, 15.06% Impervious, Inflow Depth = 2.97" for 50-Year Storm event
Inflow = 66.80 cfs @ 13.32 hrs, Volume= 20.653 af
Primary = 66.80 cfs @ 13.33 hrs, Volume= 20.653 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



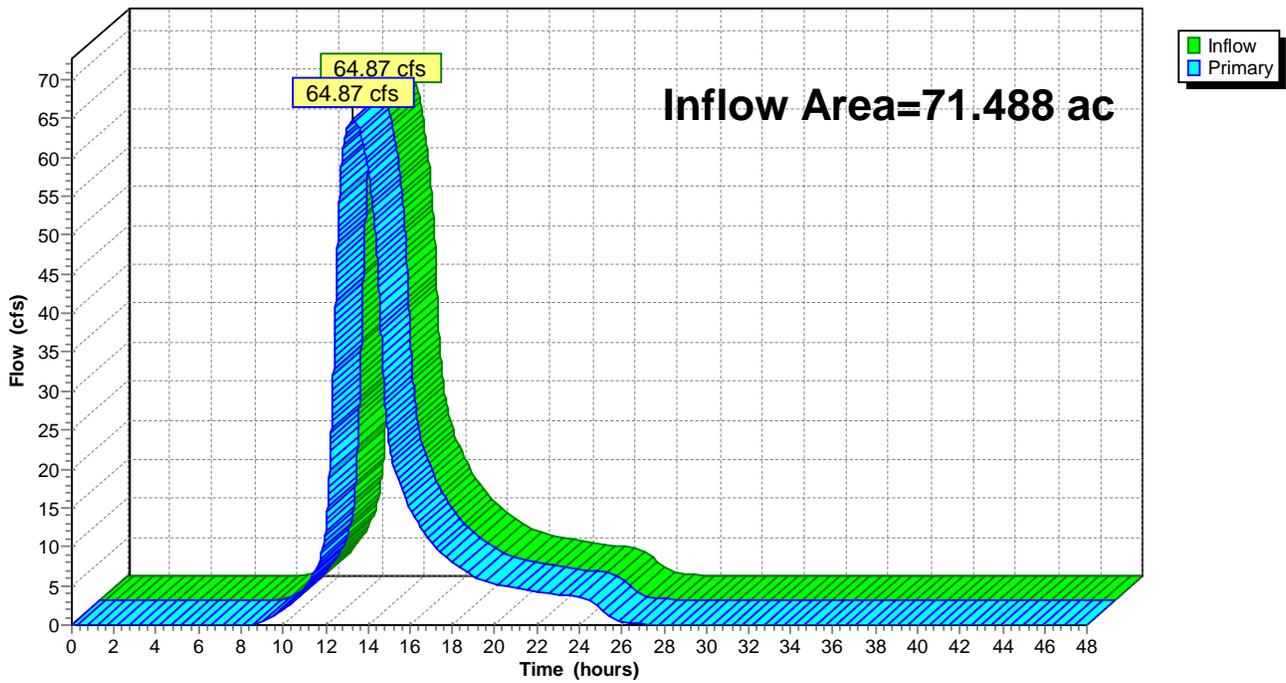
Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.23" for 50-Year Storm event
Inflow = 64.87 cfs @ 13.30 hrs, Volume= 19.238 af
Primary = 64.87 cfs @ 13.31 hrs, Volume= 19.238 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS

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

Reach 2R: Briley Brook

Avg. Flow Depth=1.88' Max Vel=2.47 fps Inflow=72.23 cfs 23.384 af
L=250.0' S=0.0050 '/ Capacity=90.70 cfs Outflow=72.20 cfs 23.384 af

Link DP1: Design Point 1

Inflow=34.08 cfs 34.538 af
Primary=34.08 cfs 34.538 af

Link DP2: Design Point 2

Inflow=74.60 cfs 25.142 af
Primary=74.60 cfs 25.142 af

Link DP3: Design Point 3

Inflow=72.23 cfs 23.384 af
Primary=72.23 cfs 23.384 af

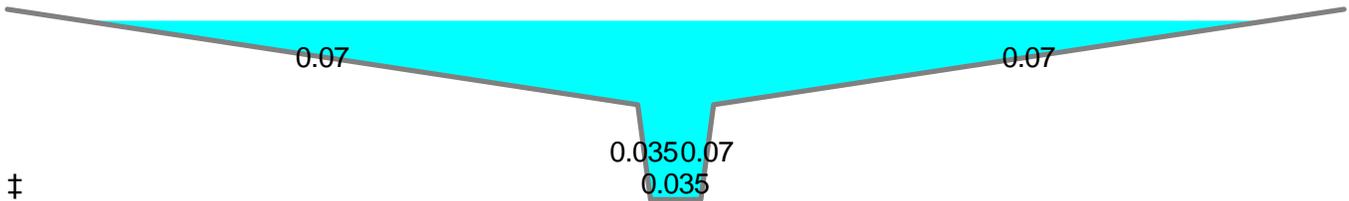
Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.93" for 100-Year Storm event
 Inflow = 72.23 cfs @ 13.30 hrs, Volume= 23.384 af
 Outflow = 72.20 cfs @ 13.34 hrs, Volume= 23.384 af, Atten= 0%, Lag= 2.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 0.89 fps, Avg. Travel Time= 4.7 min

Peak Storage= 12,203 cf @ 13.34 hrs
 Average Depth at Peak Storage= 1.88'
 Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
 Flow calculated by Manning's Subdivision method
 Inlet Invert= 13.25', Outlet Invert= 12.00'

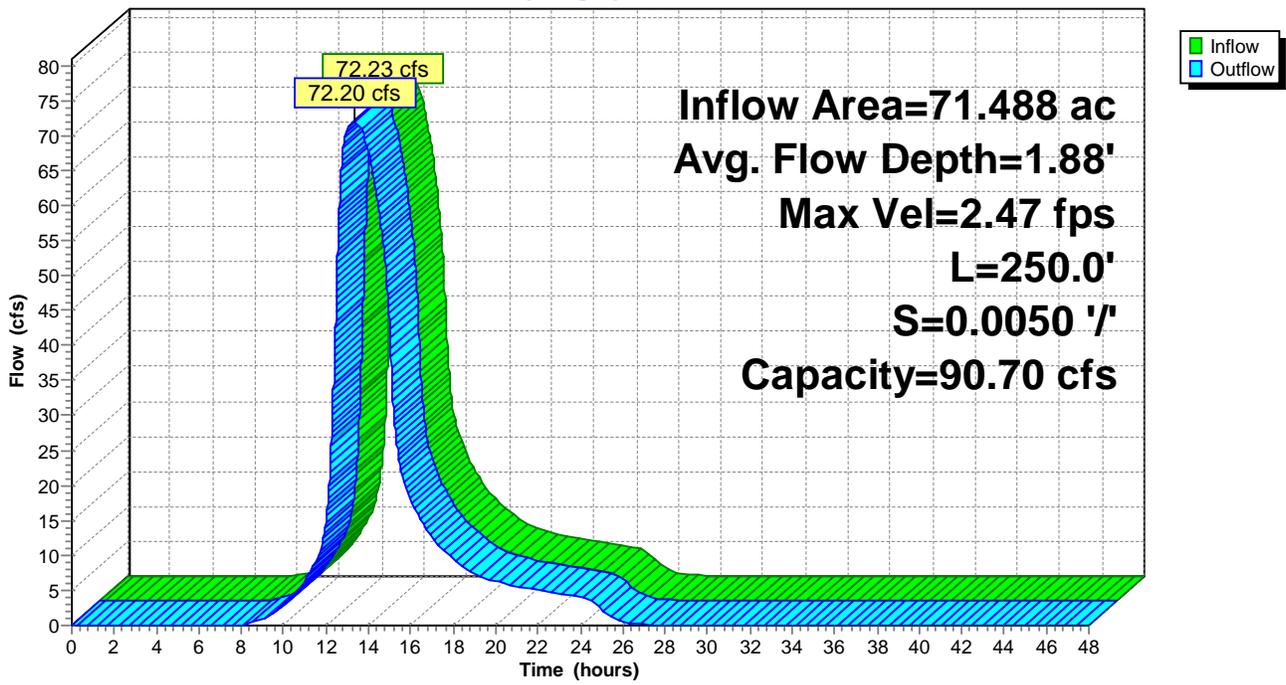


Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	2.00	0.00		
50.00	1.00	1.00	0.070	
51.00	0.00	2.00	0.035	
55.00	0.00	2.00	0.035	
56.00	1.00	1.00	0.070	
106.00	2.00	0.00	0.070	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	4.0	0	0.00
1.00	5.0	6.8	1,250	12.32
2.00	61.0	106.8	15,250	90.70

Reach 2R: Briley Brook

Hydrograph



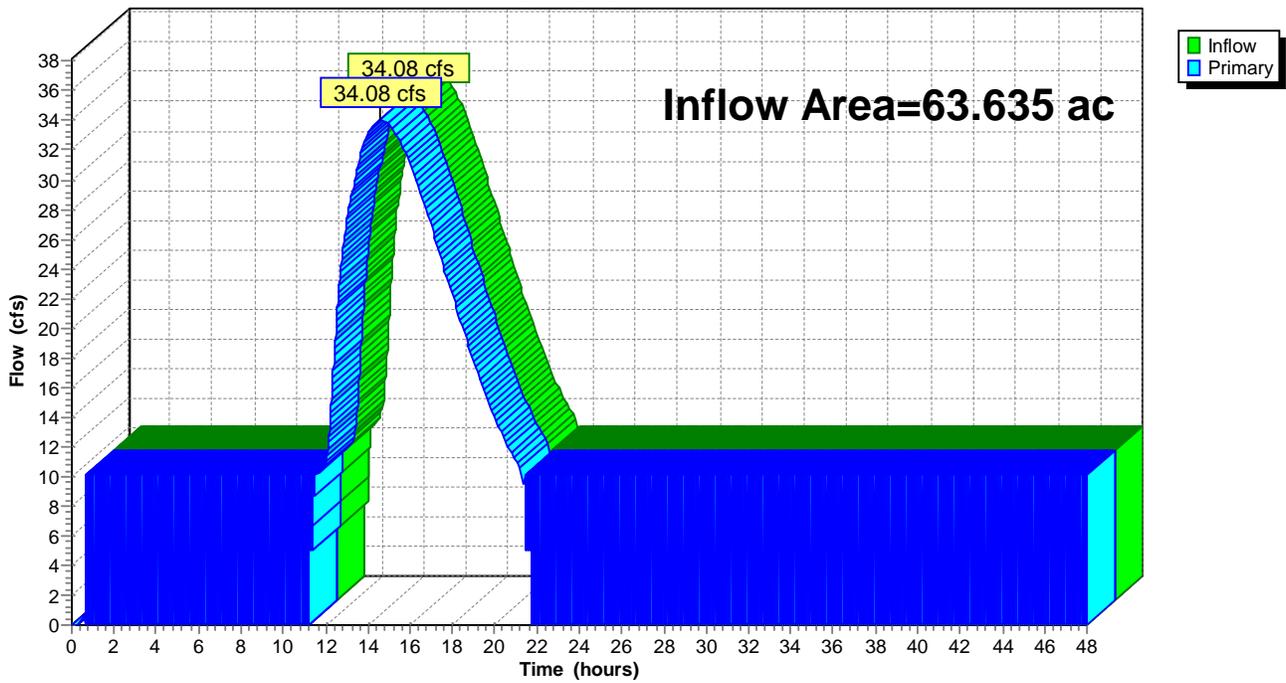
Summary for Link DP1: Design Point 1

Inflow Area = 63.635 ac, 14.89% Impervious, Inflow Depth > 6.51" for 100-Year Storm event
Inflow = 34.08 cfs @ 14.60 hrs, Volume= 34.538 af
Primary = 34.08 cfs @ 14.61 hrs, Volume= 34.538 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP1: Design Point 1

Hydrograph



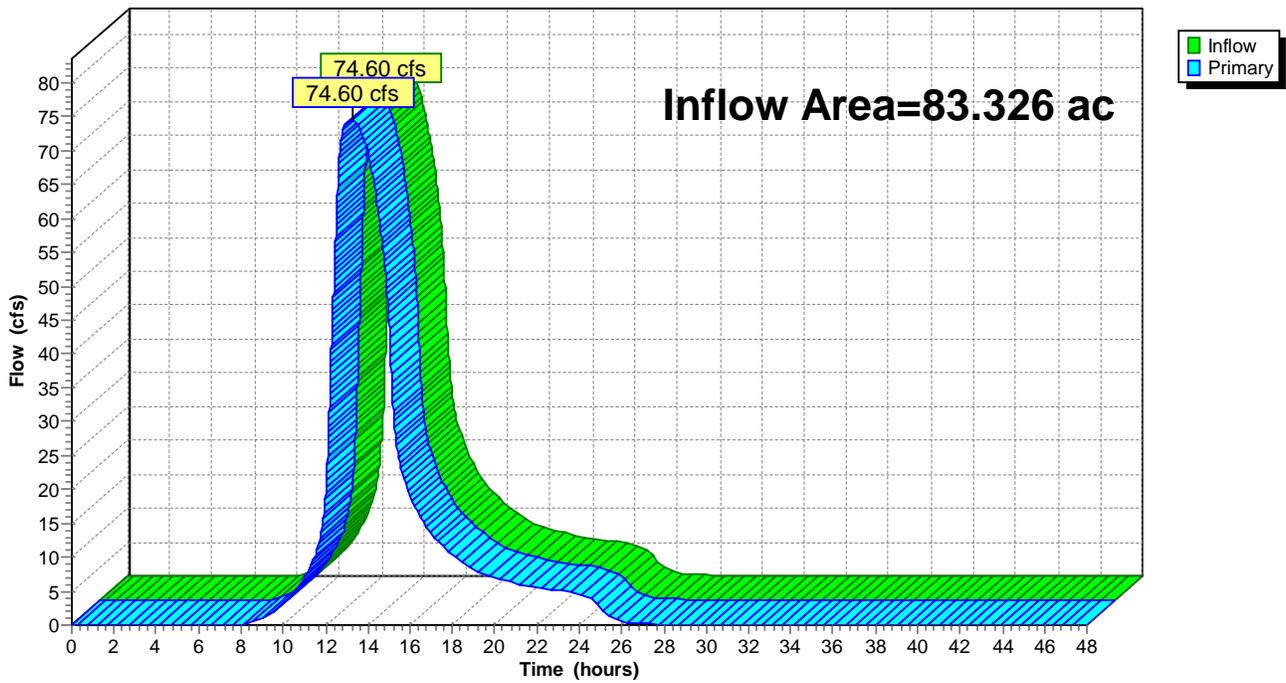
Summary for Link DP2: Design Point 2

Inflow Area = 83.326 ac, 15.06% Impervious, Inflow Depth = 3.62" for 100-Year Storm event
Inflow = 74.60 cfs @ 13.24 hrs, Volume= 25.142 af
Primary = 74.60 cfs @ 13.25 hrs, Volume= 25.142 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP2: Design Point 2

Hydrograph



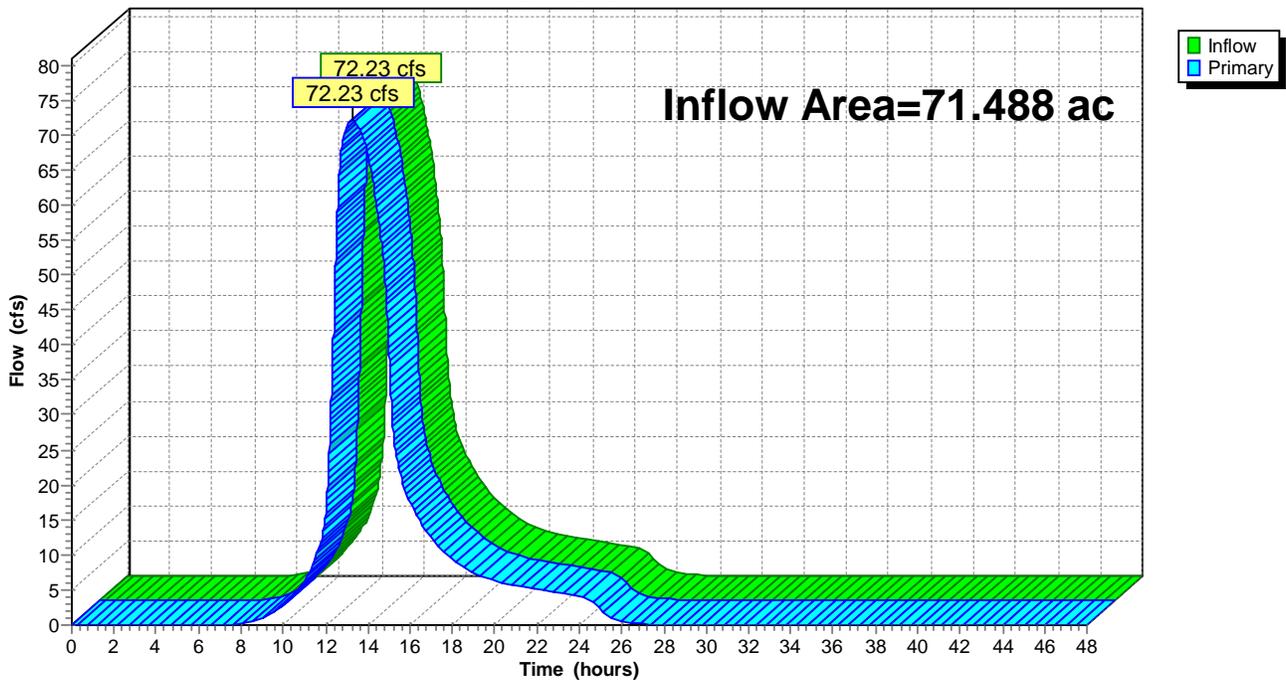
Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.93" for 100-Year Storm event
Inflow = 72.23 cfs @ 13.29 hrs, Volume= 23.384 af
Primary = 72.23 cfs @ 13.30 hrs, Volume= 23.384 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP3: Design Point 3

Hydrograph



NON-LINEAR PORTION OF PROJECT

**York Police Department New Public Safety Building, Maine
Site Development Areas
Water Quality Volume Summary**

Subcatchment Area	Impervious	Landscaped	Developed	WQV required	WQV Provided	BMP
204E	6775	20325	27100	1863	2912	B-100
204F	12805	38415	51220	3521	3584	B-101
211	418	4009	4427	253	880	B-14
212	531	6626	7157	265	904	B-12
213	9940	10760	20700	1187	1591	B-6
214	225	5575	5800	205	680	B-10
215	44144	25811	69955	4539	5300	B-11
216	19200	0	19200	1600	1832	DRIP STRIP
202C	14430	8712	23142	1493	4901	B-9
Untreated	5325	15075	20400			Untreated
TOTAL TREATED	108468	120233	228701			

BMP General Standard Calculation			
	Impervious	Landscaped	Developed
NEW DEVELOPED AREA	113793	135308	249101
TREATED AREAS	108468	120233	228701
PERCENT TREATED	95.3%	88.9%	91.8%

**York Police Department - New Public Safety Facility and Connector Road
Stormwater General Standard Calculation**

Road Treatment Areas					
Area	Treated impervious	Treated developed	BMP	Untreated impervious	Untreated developed
A-1	4600	5855	B-3		
A-2	6200	10069	Bioretention B-1	0	0
E-1	0	0			2873
A-3	10800	10800	Filter Strip 1		
A-4	5300	7065	B-2		
A-5	0	0		2730	3930
A-6	7900	8967	B-3		
A-7	19600	19600	Filter Strip 2		
E-2	0	0			5100
A-8	2200	0	B-3	0	
A-9	5900	8296	B-2		
A-10	5200	8458	B-2		
A-11	0	0		5720	7710
A-12	0	0		2470	3010
A-13	5400	7776	B-2		
A-14	3100	6400	B-2		
A-15	3900	6844	Bioretention B-4		
A-15A	7900	7900	Filter Strip 3		
A-16	0	0		8300	11203
A-17	13900	13900	B-3		
A-18	4700	12283	B-2		
E-3	0	0			2386
A-19	8600	0	Filter Strip 4	0	
A-20	3960	5790	B-2		
A-21	2650	5082	B-2		
A-22	7940	12145	B-1	0	0
A-23	0	0		2840	4340
A-100	0	13367	B-1	0	0
A-101	0	0		0	55848
A-24	0	0		6893	6893
A-25	0	0		6768	7443
A-26	900	6372	Filter Strip 5A		
A-27	5959	6484	Bioretention B-6		
A-28	0	0		8929	8929
A-29	6922	8432	Filter Strip 5		
A-30	9268	11630	Bioretention B-8		
TOTAL	152799	203515		44650	119665

%TREATED	IMPERVIOUS	DEVELOPED
	77.39%	62.97%

B1 = Buffer with Stone Bermed Level Lip Spreader

B2 = Ditch Turnout Buffer

B3 = Buffer Adjacent to Downhill Side of Road

Buffer Criteria

Area	Buffer	B-1 Buffer with Stone Bermed Level Lip Spreader 0-8%			
		Impervious	Landscaped	Flow Length	Berm Length
A-22 and A-100	Buffer 12	7940	25512	100	36

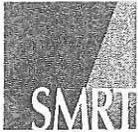
Area	Buffer	B-2 Ditch Turnout Buffer			
		0-8% Slope	9-15% Slope	Road Length	Req'd Buffer
A-4	Buffer 2	7%	8.50%	175	60
A-9	Buffer 5			200	72
A-10	Buffer 4	4%		200	60
A-13	Buffer 7	8%		180	60
A-14	Buffer 6	7%		120	60
A-18	Buffer 9	3%		290	75
A-20	Buffer 11	4%		140	60
A-21	Buffer 10	5%		150	60

Area	Buffer	B-3 Buffer Adjacent to Downhill Side of Road			
		No. of lanes	Forest	Meadow	Req'd Buffer
A-1	Buffer 1	2	x		55
A-6	Buffer 3	2	x		55
A-17	Buffer 8	1	x		35
A-23	Buffer 12	1	x		35

BMP Sizing Criteria

BMP	Impervious	Landscaped	Developed	WQV required	WQV Provided
Bioretention B-1	6200	3869	10069	968	1070
Bioretention B-4	3900	2944	6844	635	880
Bioretention B-8	9268	2362	11630	851	904
Filter Strip 1	10800	0	10800	900	924
Filter Strip 2	19600	0	19600	1633	1680
Filter Strip 3	7900	0	7900	658	840
Filter Strip 4	8600	0	8600	717	840
Filter Strip 5A	900	6372	7272	287	840
Filter Strip 5	6922	0	6922	577	672

Water quality volume provided in Bioretention cells equals one foot of storage over the base area - this includes a maximum of 6" of storage in the cell and 6" storage allowance in the media

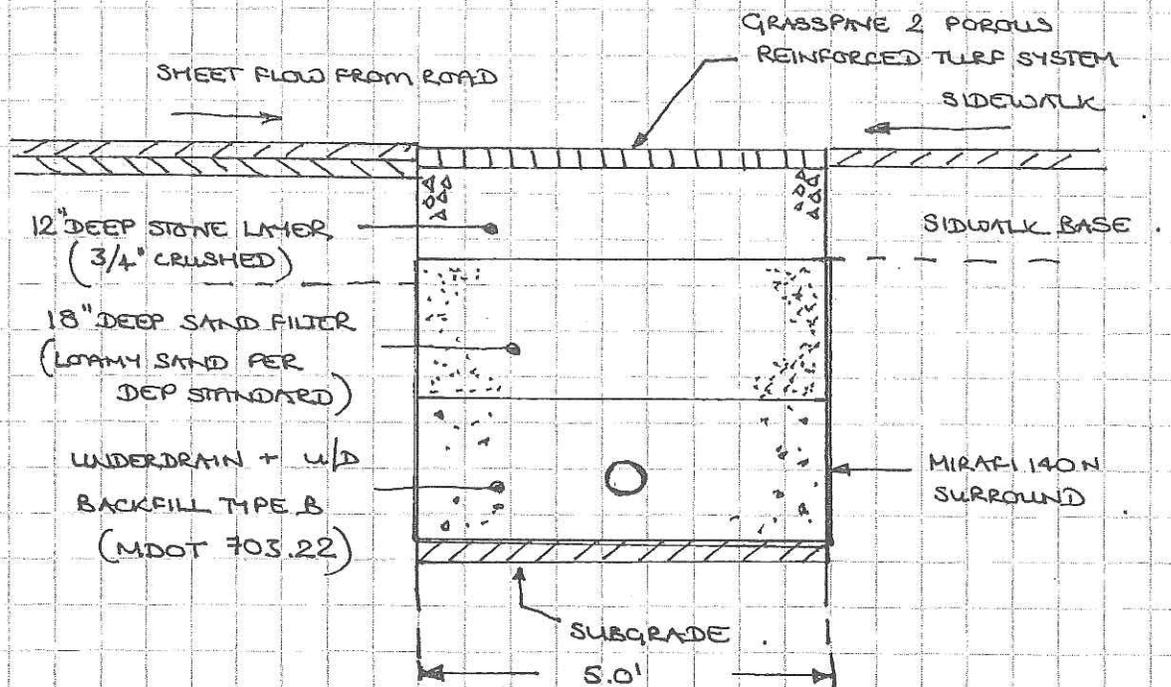


UNDERDRAINED SUB-SURFACE SAND FILTER DESIGN

STRIP FILTERS HAVE BEEN DESIGNED TO CAPTURE AND TREAT ROAD RUNOFF AT FIVE LOCATIONS ON THE SITE.

THE FILTERS CONSIST OF A REINFORCED TURF FILTER STRIP FIVE FEET WIDE AT THE EDGE OF PAVEMENT WITH A STONE STORAGE RESERVOIR AND AN UNDERDRAINED TREATMENT SAND FILTER.

RUNOFF WILL ENTER THE FILTER STRIP BY SHEET FLOW AND INFILTRATE INTO THE STONE STORAGE RESERVOIR AND HENCE INTO THE FILTER MEDIA. AN UNDERDRAIN BENEATH THE FILTER WILL ALLOW TREATED WATER TO EXIT TO DOWNSTREAM RECEIVING AREAS.



THE BMP WILL PROVIDE 6" EQUIVALENT STORAGE DEPTH IN THE MEDIA AND 4" EQUIVALENT IN THE STORAGE LAYER.

$$\text{TOTAL VOLUME} = 10" \times 5.0' = 4.2 \text{ CUFT / FT}$$