

Augusta Planning Board Material for:

Augusta Kingdom Hall of Jehovah's Witnesses; Addendum II

Date: May 22, 2014

At the May 10, 2014 Planning Board meeting the Board requested some clarification and additional information. This addendum and the attached plans are intended to provide that information.

This package includes:

- **Revise sheet C-1:** Sheet has been revised to show 18' wide road with 2 foot shoulders and widened entrance for first 30' of the entrance as recommended by the City Engineer.
- **Revised sheet C-2:** Storm water detention area has been relocated to avoid conflict with subsurface disposal field and to meet setback requirements. Grading has been adjusted to accommodate these modifications.
- **Revised sheet C-3:** Lighting plan has been revised to show results of fixture changes requested by City during initial review.
- **Revised sheet C-4:** Road cross section detail has been modified to show shoulders on driveway.
- **Revised sheet C-7:** Post development storm water plan has been modified to reflect the changed grading and ground cover at storm water detention area and subsurface disposal field.

Letter sized items

- Revised lighting cut sheets to replace the two fixture types which were not full cut-off fixtures.
- Details on the species of plants to be used for the buffers and a commitment not to use invasive species
- Additional information demonstrating compliance with Aesthetic, Cultural and Natural Values (Section 4.4.1.8 of LUO)
- Driveway width waiver request
- Letter regarding vernal pool investigation on the site.
- Letter addressing impervious cover and revised HydroCad calculations reflecting the post-development grading modifications around the septic field.

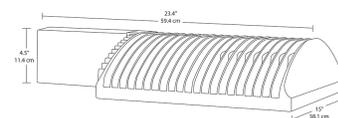
ALED4T78N

Luminaire A-2

Specification Grade Area lights available in IES Type IV distributions. For use in parking lots, roadways, pathways and general area lighting. Mounts to 4" square steel poles at 15-25'. Designed to replace 250W Metal Halide Area Lights. Patent Pending thermal management system. 5 Year Warranty.

Color: Bronze

Weight: 32.0 lbs



LED Info

Watts: 78W
 Color Temp: 4000K (Neutral)
 Color Accuracy: 82
 L70 Lifespan: 100000
 LM79 Lumens: 6,673
 Efficacy: 84 LPW

Driver Info

Type: Constant Current
 120V: 0.66A
 208V: 0.41A
 240V: 0.35A
 277V: 0.30A
 Input Watts: 79W
 Efficiency: 98%

Main parking lot lights

Technical Specifications

UL Listing:

Suitable for wet locations as a downlight.

Lumen Maintenance:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

IES Classification:

The Type IV distribution (also known as a Forward Throw) is especially suited for mounting on the sides of buildings and walls, and for illuminating the perimeter of parking areas. It produces a semiCircular distribution with essentially the same candlepower at lateral angles from 90° to 270°.

Effective Projected Area:

EPA = 0.75

LEDs:

Six (6) multi-chip, 13W, high-output, long-life LEDs.

Driver:

Constant Current, Class 2, 2000mA, 100-277V, 50-60Hz, 1.1A, Power Factor 99%

THD:

4.4% at 120V, 12.8% at 277V

Ambient Temperature:

Suitable for use in 40°C ambient temperatures.

Surge Protection:

4kV

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Thermal Management:

Superior heat sinking with external Air-Flow fins.

Housing:

Die cast aluminum housing, lens frame and mounting arm.

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2008.

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High temperature silicone gaskets.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Surge Protector:

ALED78 is available with a 6kV surge protector (SP6). SP6 available .

Green Technology:

Mercury and UV free.

ALED4T78N - continued

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label.

Replacement:

The ALED78 replaces 250W Metal Halide Area Lights.

California Title 24:

ALED78 complies with California Title 24 building and electrical codes.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Patents:

The ALED design is protected by patents in the U.S. Pat. 668,370, Canada Pat. 144956, China ZL201230100154.X, and Mexico Pat. 38423. Pending patents in Taiwan.

For use on LEED Buildings:

IDA Dark Sky Approval means that this fixture can be used to achieve LEED Credits for Light Pollution Reduction.

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.



PS4-11-25D2

Square steel poles drilled for 2 Area Lights at 180°. Designed for ground mounting. Poles are stocked nationwide for quick shipment. Protective packaging ensures poles arrive at the job site good as new.

Color: Bronze

Weight: 168.0 lbs

Lamp Info

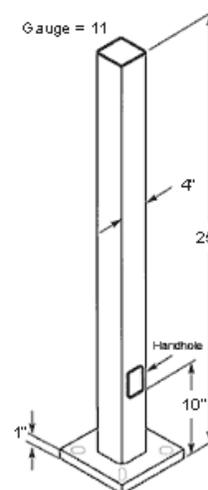
Type: N/A
Watts: 0W
Shape/Size: N/A
Base: N/A
ANSI: N/A
Hours: 0
Lamp Lumens: 0
Efficacy: N/A

Ballast Info

Type: N/A
120V: N/A
208V: N/A
240V: N/A
277V: N/A
Input Watts: 0W
Efficiency: N/A



For use with Luminaire A-2



Technical Specifications

CSA Listed:

Suitable for wet locations.

Shaft:

46,000 p.s.i. minimum yield.

Hand Holes:

Reinforced with grounding lug and removable cover.

Base Plates:

36,000 p.s.i. minimum yield.

Shipping Protection:

All poles are shipped in individual corrugated cartons to prevent finish damage.

Color:

Bronze powder coating.

Terms of Sale:

Pole Terms of Sale is available .

Height:

25 FT.

Weight:

168 lbs.

Gauge:

11

Wall Thickness:

1/8".

Shaft Size:

4".

Hand Hole Dimensions:

3" x 6".

Bolt Circle:

9".

Base Dimension:

10".

Anchor Bolt:

Galvanized anchor bolts and galvanized hardware and anchor bolt template. All bolts have a 3" hook.

Anchor Bolt Templates:

WARNING Template must be printed on 11" x 17" sheet for actual size. CHECK SCALE BEFORE USING. Templates shipped with anchor bolts and available .

Pre-Shipped Anchor Bolts:

Bolts can be pre-shipped upon request for additional freight charge.

MaxEPA's/Max Weights:

70MPH 4.5 ft_/135 lb

80MPH 2.3 ft_/80 lb

90MPH 0.8 ft_/35 lb.

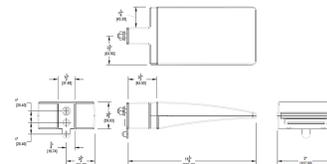
ALED13N

ALED Area Light mounts to 4" square steel poles at 15-20'. 1 to 4 ALEDs can be mounted to each pole. IESNA Full Cutoff, Fully shielded optics. 5 year warranty.

Luminaire B-1

Color: Bronze

Weight: 3.3 lbs



LED Info

Watts: 13W
 Color Temp: 4000K (Neutral)
 Color Accuracy: 86
 L70 Lifespan: 100000
 LM79 Lumens: 673
 Efficacy: 45 LPW

Driver Info

Type: Constant Current
 120V: 0.13A
 208V: 0.08A
 240V: 0.07A
 277V: 0.06A
 Input Watts: 15W
 Efficiency: 87%

For driveway lights to be installed at owner's option.

Technical Specifications

UL Listing:

Suitable for wet locations.

Lumen Maintenance:

The LED will deliver 70% of its initial lumens at 100,000 hours of operation.

IES Classification:

The Type III distribution is ideal for roadway, general parking, and other area lighting applications where a larger pool of lighting is required. It is intended to be located near the side of the area, allowing the light to project outward and fill the area.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. See our full warranty .

Housing:

Precision die cast aluminum housing, lens frame.

Gaskets:

High temperature silicone.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

RAB LEDs are Mercury and UV free.

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label.

Color Consistency:

7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2008.

Effective Projected Area:

EPA = 0.2

Ambient Temperature:

Suitable for use in 50°C (122°F) ambient temperatures.

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Driver:

Multi-chip 13W high output long life LED Driver
 Constant Current, Class 2 100V - 277V, 50/60 Hz.

Surge Protection:

4KV

Patents:

The design of the ALED is protected by patents pending in Canada, U.S., China and Taiwan.

ALED13N - continued

Equivalency:

The ALED13 is Equivalent in delivered lumens to a 50W Metal Halide Area Light.

HID Replacement Range:

The ALED13 can be used to replace 35 - 70W Metal Halide Area Lights based on delivered lumens.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.

PS4-11-10D2

Square steel poles drilled for 2 Area Lights at 180°. Designed for ground mounting. Poles are stocked nationwide for quick shipment. Protective packaging ensures poles arrive at the job site good as new.

Color: Bronze

Weight: 73.0 lbs

Lamp Info

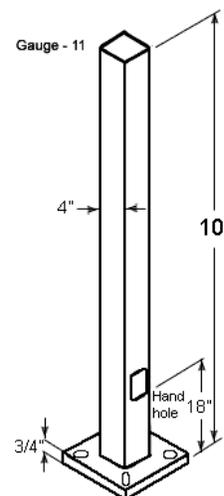
Type: N/A
Watts: 0W
Shape/Size: N/A
Base: N/A
ANSI: N/A
Hours: 0
Lamp Lumens: 0
Efficacy: N/A

Ballast Info

Type: N/A
120V: N/A
208V: N/A
240V: N/A
277V: N/A
Input Watts: 0W
Efficiency: N/A



For Luminaire B-1



Technical Specifications

CSA Listed:

Suitable for wet locations.

Shaft:

46,000 p.s.i. minimum yield.

Hand Holes:

Reinforced with grounding lug and removable cover.

Base Plates:

Slotted base plates 36,000 p.s.i.

Shipping Protection:

All poles are shipped in individual corrugated cartons to prevent finish damage.

Color:

Bronze powder coating.

Terms of Sale:

Pole Terms of Sale is available .

Height:

10 FT.

Weight:

73 lbs.

Gauge:

11

Wall Thickness:

1/8".

Shaft Size:

4".

Hand Hole Dimensions:

3" x 5".

Bolt Circle:

8-9".

Base Dimension:

8".

Anchor Bolt:

Galvanized anchor bolts and galvanized hardware and anchor bolt template. All bolts have a 3" hook.

Anchor Bolt Templates:

WARNING Template must be printed on 11" x 17" sheet for actual size. CHECK SCALE BEFORE USING. Templates shipped with anchor bolts and available .

Pre-Shipped Anchor Bolts:

Bolts can be pre-shipped upon request for additional freight charge.

MaxEPA's/Max Weights:

70MPH 27.6 ft_/690 lb
80MPH 21.1 ft_/530 lb
90MPH 16.4 ft_/410 lb
100MPH 13.1 ft_/330 lb
110MPH 10.5 ft_/265 lb
120MPH 8.6 ft_/215 lb
130MPH 7.0 ft_/175 lb
140MPH 5.8 ft_/145 lb
150MPH 4.8 ft_/120 lb.

Juno

Project: _____

Fixture Type: _____

Location: _____

Contact/Phone: _____

6" IC 600 LUMEN LED DOWNLIGHT NEW CONSTRUCTION

IC22LEDG4 RECESSED HOUSING

**HYPERBOLIC TRIMS**

PRODUCT DESCRIPTION

Dedicated LED, Air-Loc® sealed new construction housing with integral light engine • Shallow housing allows for fit in 2 x 6 construction • Can be completely covered with insulation • Fully sealed housing stops infiltration and exfiltration of air, reducing heating and air cooling costs without the use of additional gaskets • LED housing is designed to provide 50,000 hours of life and is compatible with many standard Juno trims • 5 year limited warranty on LED components.

ENVIRONMENTALLY FRIENDLY, ENERGY EFFICIENT

- No harmful ultraviolet or infrared wavelengths
- No lead or mercury
- Comparable light output to 65W BR30 incandescent

PRODUCT SPECIFICATIONS

LED Light Engine LED array integrated to thermally conductive housing provides uninterrupted heat transfer to ensure long life of the LED • Replaceable light engine mounts directly to housing and incorporates the latest generation, high lumen output LED array • LEDs are binned within a 3-step MacAdam Ellipse exceeding ENERGY STAR® requirements for superior fixture to fixture color uniformity • 2700K, 3000K, 3500K or 4100K color temperature available • 90 CRI minimum.

Hyperbolic Optical System Unique hyperbolic reflector shape optimized for small, directional LED source provides unique aperture appearance with reduced brightness • NMCT™ nano mixing chamber (provided with trim) with high reflectance white finish coupled with a high transmission diffusing lens conceals the LED and integrates with the hyperbolic trim to create a low glare, efficient system producing over 600 lumens using less than 12W*.

Aesthetic Trim Selections Patent pending hyperbolic reflector available in clear Alzak®, wheat haze, black Alzak® and white • Shadow free, knife edge design blends seamlessly into ceiling • Installs with torsion springs.

LED Driver Choice of dedicated 120 volt driver or universal voltage driver that accommodates input voltages from 120-277 volts AC at 50/60Hz • Power factor > 0.9 at 120V input • 120 volt only dimmable with the use of most incandescent, magnetic low voltage and electronic low voltage wall box dimmers • Universal voltage driver is dimmable with the use of most 0-10V wall dimmers • For a list of compatible dimmers, see [JUNOICLED-DIM](#) • Mounted between the j-box and housing for easy access and cool operation.

Life Rated for 50,000 hours at 70% lumen maintenance.

Labels ENERGY STAR® Qualified when used with select trims • Certified to the high efficacy requirements of California T24 with select trims • UL listed for U.S. and Canada through-branch wiring, damp locations • Union made • UL and cUL.

Testing All reports are based on published industry procedures; field performance may differ from laboratory performance.

Product specifications subject to change without notice.

HOUSING FEATURES

Housing Designed for use in IC (insulated ceiling) or non-IC construction • Aluminum housing sealed for Air-Loc® compliance • Housing is vertically adjustable to accommodate up to a 2" ceiling thickness.

Junction Box Pre-wired junction box provided with (5) ½" and (1) ¾" knockouts, (4) knockouts for 12/2 or 14/2 NM cable and ground wire • UL listed and cUL listed for through-branch wiring, maximum 8 #12 branch circuit conductors • Junction box provided with removable access plates • Knockouts equipped with pryout slots • Quick connect electrical connectors supplied as standard for fast, secure installation.

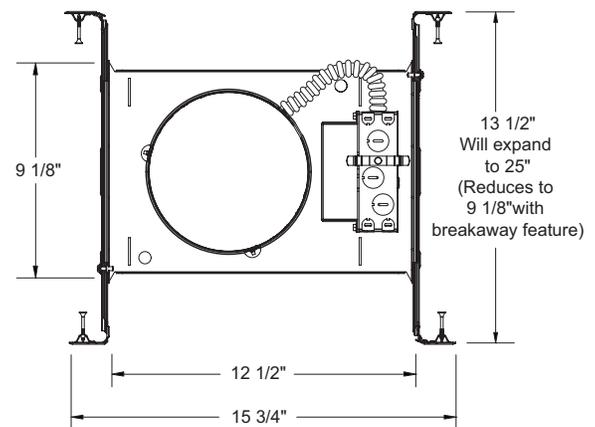
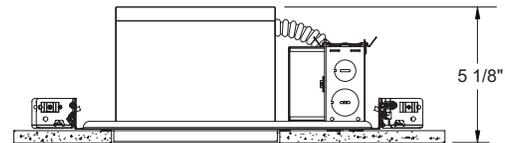
Mounting Frame 22-gauge die-formed galvanized steel mounting frame • Rough-in section (junction box, mounting frame, housing and bar hangers) fully assembled for ease of installation.

Real Nail 3 Bar Hangers Telescoping Real Nail 3® system permits quick placement of housing anywhere within 24" O.C. joists or suspended ceilings • Includes removable nail for repositioning of fixture in wood joist construction • Integral T-bar notch and clip for suspended ceilings • Design covered under Patents US5,505,419 and D552,969.

* Nominal input wattage @ 120-volt operation with dedicated 120-volt driver under stable operating conditions.



DIMENSIONS



6 7/8" CEILING CUTOUT

ELECTRICAL DATA

Dedicated 120V Only Driver Option

120V	
Input Power	11.7W (+/-5%)
Input Current	0.10A
Frequency	50/60Hz
EMI/RFI	FCC Title 47 CFR, Part 15, Class B (residential)
Minimum starting temp	-25°C

ELECTRICAL DATA

Universal Voltage

	120V	277V
Input Power	12.5W (+/-5%)	12.6W (+/-5%)
Input Current	0.11A	0.05A
Frequency	50/60Hz	50/60Hz
EMI/RFI	FCC Title 47 CFR, Part 15, Class A (commercial)	FCC Title 47 CFR, Part 15, Class A (commercial)
Minimum starting temp	-40°C	-40°C

6" IC 600 LUMEN LED DOWNLIGHT NEW CONSTRUCTION

IC22LEDG4 RECESSED HOUSING HYPERBOLIC TRIMS

ORDERING INFORMATION: Housing and trim each ordered separately.

Example: **IC22LEDG4-3K-1**

Housing	Color Temperature	Input Voltage
IC22LEDG4	27K 2700K 3K 3000K 35K 3500K 41K 4100K	1 Dedicated 120V Only (Forward Phase + ELV dimmable) U Universal Voltage, 120-277V (0-10V dimmable)

Example: **27HYP2-HZ-WH**

Trim/Description		
	27HYP2-C-WH 27HYP2-B-WH ¹ 27HYP2-W-WH 27HYP2-HZ-WH 27HYP2-WHZ-WH 27HYP2-WHZ-ABZ	Clear Alzak® Black Alzak® White Haze Wheat Haze Wheat Haze

¹ Not ENERGY STAR® Qualified or T24 certified

Trim Size: 7⁵/₈" O.D.

Trim Finish: ABZ - Classic Aged Bronze, WH - White.

Alzak is a registered trademark of Alcoa Corp.

Note: In Canada when insulation is present, Type IC fixtures must be used.

PHOTOMETRIC REPORT

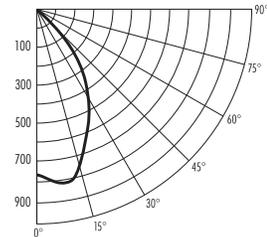
Test Report #: PTO2141402

Catalog No: IC22LEDG4-35K

with 27HYP2-C-WH Trim
and standard wide flood optic

Luminaire Spacing Criterion: 0.98

Luminaire LPW: 63



CANDLEPOWER DISTRIBUTION (Candelas)

Degrees Vertical	0°
0	776
5	810
15	752
25	550
35	253
45	53
55	0
65	0
75	0
85	0
90	0

Multiplier: 27K - 0.89
3K - 0.94
41K - 1.03

AVERAGE INITIAL FOOTCANDLES

Multiple Units (Square Array, 60'x60' room)

Ceiling 80% Wall 50% Floor 20%

Spacing	RCR1	RCR3	RCR5
4.0'	51	45	39
5.0'	33	29	25
6.0'	23	20	17
7.0'	18	16	14
8.0'	15	13	11
9.0'	11	10	9
10.0'	8	7	6

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixture
0-30°	535	N/A	72.3
0-40°	695	N/A	93.9
0-60°	740	N/A	100.0
0-90°	740	N/A	100.0

INITIAL FOOTCANDLES

(One Unit, 11.8W, 60.7° Beam)

Distance to Illuminated Plane (Feet)	Footcandles Beam Center	Beam Diameter
4	43.1	4.7'
6	19.2	7.0'
8	10.8	11.7'
10	6.9	16.7'

LUMINANCE (Average cd/m²)

Degrees	Average Luminance
45	4105
55	0
65	0
75	0
85	0

PHOTOMETRIC REPORT

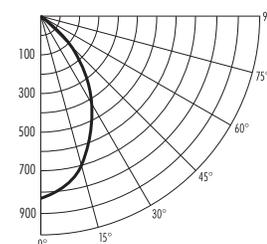
Test Report #: PTO2141403

Catalog No: IC22LEDG4-35K

with 27HYP2-HZ-WH Trim
and standard wide flood optic

Luminaire Spacing Criterion: 0.908

Luminaire LPW: 61



CANDLEPOWER DISTRIBUTION (Candelas)

Degrees Vertical	0°
0	838
5	822
15	705
25	528
35	255
45	55
55	0
65	0
75	0
85	0
90	0

Multiplier: 27K - 0.89
3K - 0.94
41K - 1.03

AVERAGE INITIAL FOOTCANDLES

Multiple Units (Square Array, 60'x60' room)

Ceiling 80% Wall 50% Floor 20%

Spacing	RCR1	RCR3	RCR5
4.0'	50	43	38
5.0'	32	28	24
6.0'	22	19	17
7.0'	18	16	14
8.0'	14	12	11
9.0'	11	9	8
10.0'	8	7	6

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixture
0-30°	514	N/A	71.2
0-40°	674	N/A	93.3
0-60°	722	N/A	100.0
0-90°	722	N/A	100.0

INITIAL FOOTCANDLES

(One Unit, 11.8W, 59.8° Beam)

Distance to Illuminated Plane (Feet)	Footcandles Beam Center	Beam Diameter
4	52.4	4.6'
6	23.3	6.9'
8	13.1	9.2'
10	8.4	11.5'

LUMINANCE (Average cd/m²)

Degrees	Average Luminance
45	4291
55	10
65	0
75	0
85	0

Fixtures tested to IES recommended standard for solid state lighting per LM-79-08. Photometric performance on a single unit represents a baseline of performance for the fixture. Results may vary in the field.



1300 S. Wolf Road • Des Plaines, IL 60018 • Phone (847) 827-9880 • Fax (847) 827-2925

220 Chrysler Drive • Brampton, Ontario • Canada L6S 6B6 • Phone (905) 792-7335 • Fax (905) 792-0064

Visit us at www.junolightinggroup.com

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LNC SERIES

Cat.#	
Job	Type



HUBBELL
Outdoor Lighting

Approvals

SPECIFICATIONS

Intended Use:

The compact LED LNC is designed for entry/perimeter illumination for safety, security and identity. Typical mounting height is up to 12 feet with 40ft fixture spacing (without acrylic diffuser) and 30ft spacing with acrylic diffuser installed. Photocontrol option is available to provide dusk-to-dawn control for additional energy savings.

Construction:

Decorative die-cast aluminum housing and door. Rugged design protects internal components and provides excellent thermal management for long life – 60,000 hours minimum LED life at L96 rating per IESNA TM-21-11. Powder paint finishes provide lasting appearance in outdoor environments.

Optics/Electrical

LED:

Drivers are 120-277V, 50/60Hz 5000K/70 CRI Type III and Type IV lenses provide wide lateral spread. 0-10V dimming 120-277V only.

- LNC5L – 5 LEDs, 12.6w, .11 amp max, 967 lumens, Type III only
- LNC7L – 7 LEDs, 16.4w, .14 amp max, 1389 lumens, Type III or IV
- LNC9L – 9 LEDs, 20.6w, .18 amp max, 1745 lumens, Type III or IV
- Minimum operating temperature is -40°C/-40°F

Lenses:

Full cut-off distribution; Ambient diffuser included, use for applications near entrances or locations where reduced brightness is desired.

Installation:

Quick mount adapter provides quick installation, designed for both recessed box or surface conduit wiring. Fits 4" square junction box.

Listings:

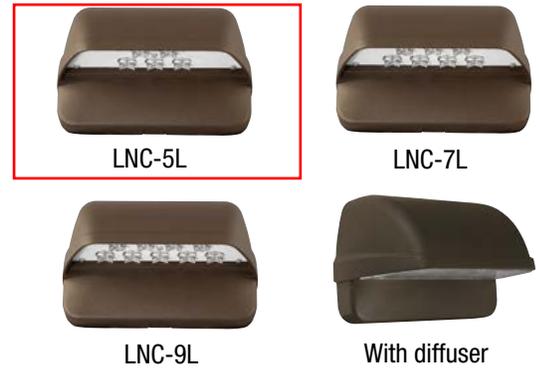
Listed and labeled to UL 1598 for wet locations, 25° C ambient environments. Some models meet DesignLights Consortium (DLC) qualifications, consult DLC website for more details: <http://www.designlights.org/QPL>

- IES Progress Award Winner - 2012

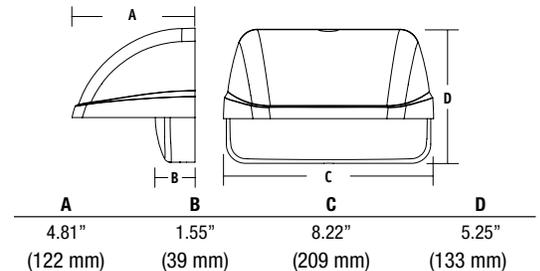
Warranty:

Five year limited warranty (for more information visit: <http://www.hubbelloutdoor.com/resources/warranty/>)

PRODUCT IMAGE(S)



DIMENSIONS



SHIPPING INFORMATION

Catalog Number	G.W(kg)/CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
LNC-5LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-7LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-9LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2

CERTIFICATIONS/LISTINGS



ORDERING INFORMATION LNC-5L and LNC-7L/9L (Order tree below)

CATALOG NUMBER	WATTAGE	NUMBER OF LEDS	VOLTAGE	LUMENS ¹	LIFE ²	CCT	WEIGHT LBS. (KG)
LNC-5LU-5K	12.6w	5	120-277V	967	60,000hrs	5000k	4.0 (1.8)
LNC-5LU-5K-PC	12.6w	5	120V	967	60,000hrs	5000k	4.0 (1.8)

1 Acrylic diffuser accessory lumen output is 650 with increased uniformity in the Type III distribution
2 Projected per IESNA TM-21-11

ORDERING EXAMPLE: LNC-9LU-5K-3-1-PC1

SERIES	NUMBER OF LEDS/SOURCE/VOLTAGE	CCT	IES DISTRIBUTION	FINISH	OPTIONS
LNC Laredo Cut-off	7LU 7 LEDs, Universal voltage 120-277V 9LU ³ 9 LEDs, Universal voltage 120-277V	3K 3000K nominal, 70 CRI 4K 4200K nominal, 70 CRI 5K ³ 5000K nominal	3 ³ Type III 4 ³ Type IV	1 Bronze 2 Black 3 Gray 4 White 5 Platinum	PC(X) ¹ Button photocontrol, replace X with voltage, specify 1-120V, 2-208V, 3-240V, 4-277V

1 When PC is ordered, input must match PC voltage
2 Amber LEDs only available on 7LU and 9LU configurations, 350 mA only
3 DesignLights Consortium (DLC) qualified 5/7/9 models 5K only



Hubbell Outdoor Lighting • 701 Millennium Boulevard • Greenville, SC 29607 • Phone: 864-678-1000
Due to our continued efforts to improve our products, product specifications are subject to change without notice.

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LAREDO LNC-SPEC 4/14

LIGHTING FACTS

Hubbell Outdoor Lighting

LED lighting facts
A Program of the U.S. DOE

Light Output (Lumens)	820
Watts	12.7
Lumens per Watt (Efficacy)	64

Color Accuracy Color Rendering Index (CRI)	77
---	-----------

Light Color
Correlated Color Temperature (CCT)

5353 (Daylight)

Warm White Bright White Daylight

2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the Label Reference Guide.

Registration Number: A25K-LA63GB (12/28/2011)
Model Number: LNC-SLU-5K
Type: Outdoor wall pack

Hubbell Outdoor Lighting

LED lighting facts
A Program of the U.S. DOE

Light Output (Lumens)	1147
Watts	16.4
Lumens per Watt (Efficacy)	69

Color Accuracy Color Rendering Index (CRI)	73
---	-----------

Light Color
Correlated Color Temperature (CCT)

5052 (Daylight)

Warm White Bright White Daylight

2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the Label Reference Guide.

Registration Number: A25K-XRVPLM (3/7/2012)
Model Number: LNC-7LU-9K-3
Type: Outdoor wall pack

Hubbell Outdoor Lighting

LED lighting facts
A Program of the U.S. DOE

Light Output (Lumens)	1460
Watts	20.6
Lumens per Watt (Efficacy)	70

Color Accuracy Color Rendering Index (CRI)	73
---	-----------

Light Color
Correlated Color Temperature (CCT)

5050 (Daylight)

Warm White Bright White Daylight

2700K 3000K 4500K 6500K

All results are according to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the Label Reference Guide.

Registration Number: A25K-6675TZ (3/7/2012)
Model Number: LNC-SLU-9K-3
Type: Outdoor wall pack

AUGUSTA KINGDOM HALL

RE: LANDSCAPE PLANTING CONSIDERATIONS

Introduction

1. All plantings are to be in accordance with common acceptable trade practice and installation procedures.
2. No plantings are to be of an invasive or potentially invasive nature as listed by the Maine Department of Agriculture, Conservation, and Forestry. Examples of excluded species are, but not limited to: Purple loose Strife, Japanese Barberry, Privet, Burning Bush, Western Lupine, and Norway Maple.
3. Priority to be given to use of native site vegetation where possible or practical. Including transplantation when deemed beneficial.

Buffer Plantings

Below is a listing of typical species types to be used for each buffer planting. More than one variety may be used of the same Species. This is not intended to be a restrictive listing, but a general guide of types used. Additional Species and Varieties may be used but are limited to the above guidelines and Augusta Maine Ordinances pertaining to bufferyard plantings.

Canopy Trees:

1. Black Gum- *Nyssa Sylvatica*
2. Green Ash- *Fraxus Pennsylvanica*
3. Paper Birch- *Betula Papyrifera*
4. Pin Oak- *Quercus Palustris*
5. Red Maple- *Acer Rubrum*
6. River Birch- *Betula Nigra*
7. Swamp Oak- *Quercus Bicolor*

Evergreen Trees:

1. Balsam Fir- *Abies Balsamea*
2. Black Spruce- *Picea Mariana*
3. Eastern Hemlock- *Tsuga Canadensis*
4. Eastern White Pine- *Pinus Strobus*
5. Northern White Cedar- *Thuja Occidentalis*
6. White Spruce- *Picea Glauca*

Understory Trees:

1. American Beech- *Fagus Grandifolia*
2. American Hornbeam- *Carpinus Caroliniana*
3. Crabapple- *Malus (Various)*
4. Eastern Serviceberry- *Amelanchier Canadensis*
5. Staghorn Sumac- *Rhus Typhinus*

Evergreen Shrub:

1. Canadian Yew- *Taxus Canadensis*
2. Common Juniper- *Juniperus Communis*
3. Creeping Juniper- *Juniperus Horizontalis* (Various)

Deciduous Shrub:

1. American Elder- *Sambucus Canadensis*
2. Arrowwood Viburnum- *Viburnum Lantanoides*
3. Buttonbush- *Cephalanthus Occidentalis*
4. Grey Dogwood- *Cornus Racemosa*
5. Highbush Blueberry- *Vaccinium Corymbosum*
6. Highbush Cranberry- *Viburnum*
7. Pussy Willow- *Salix Discolor*
8. Red Twig Dogwood- *Cornus Sericca*
9. Summer sweet- *Clethra Alnifolia*



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LePAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

May 20, 2014

Alina Watt
Hedefine Engineering & Design, Inc.
P.O. Box 668
Ellsworth, ME 04605

Re: Rare and exemplary botanical features in proximity to: Augusta Kingdom Hall of Jehovah's Witnesses, Augusta, Maine

Dear Ms. Watt:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received May 20, 2014 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Augusta, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

Letter to Alina Watt, Hedefine Engineering & Design, Inc.
Comments RE: Augusta Kingdom Hall of Jehovah's Witnesses
May 20, 2014
Page 2 of 2

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,



Don Cameron
Ecologist
Maine Natural Areas Program
207-287-8041
don.s.cameron@maine.gov

Rare & Exemplary Botanical Features within 4 miles of

Project: # Augusta Kingdom Hall of Jehovah's Witnesses, Augusta, Maine

Scientific Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
<i>Allium canadense</i>	SC	S2	G5	1983-07-14	4	Forested wetland
<i>Carex alopecoidea</i>	PE	SH	G5	1916-07-06	2	Forested wetland
<i>Carex atherodes</i>	E	S1	G5	2007-08-13	4	Coastal non-tidal wetland (non-forested, wetland)
<i>Carex atherodes</i>	E	S1	G5	2007-08-13	5	Coastal non-tidal wetland (non-forested, wetland)
<i>Cryptotaenia canadensis</i>	PE	SH	G5	1936-07	4	Hardwood to mixed forest (forest, upland)
<i>Cryptotaenia canadensis</i>	PE	SH	G5	1916-08-18	3	Hardwood to mixed forest (forest, upland)
<i>Cyperus squarrosus</i>	SC	S2	G5	2012-09-28	11	Non-tidal rivershore (non-forested, seasonally wet)
<i>Elymus hystrix</i>	SC	S3	G5	1916-08-18	12	Hardwood to mixed forest (forest, upland)
<i>Elymus hystrix</i>	SC	S3	G5	1905-08-05	11	Hardwood to mixed forest (forest, upland)
<i>Galearis spectabilis</i>	E	S1	G5	1915-08-12	12	Hardwood to mixed forest (forest, upland)
Hemlock - hardwood pocket swamp	<null >	S2	G5	2005-06-15	14	Forested wetland
<i>Juncus alpinoarticulatus</i> ssp. nodulosus	SC	S3	G5T5?	1916-07-06	6	Non-tidal rivershore (non-forested, seasonally wet)

Project: # Augusta Kingdom Hall of Jehovah's Witnesses, Augusta, Maine

Scientific Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
<i>Phryma leptostachya</i>	PE	SH	G5	1916-08	4	Hardwood to mixed forest (forest, upland)
<i>Platanthera flava</i> var. <i>herbiola</i>	SC	S2	G4T4Q	1916-07-06	21	Non-tidal rivershore (non-forested, seasonally wet)
<i>Salix interior</i>	E	S1	G5	2012-09-28	4	Non-tidal rivershore (non-forested, seasonally wet)

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered and Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>

Species Summary Table

Your name: Maine Regional Building Committee of Jehovah’s Witnesses – Alina Watt, PE

Project name used in IPaC: Augusta Kingdom Hall of Jehovah’s Witnesses

Date: May 14, 2014

<p>Step 2 Listed or candidate species that are likely present according to the Official Species List from IPaC? “No Species” or IPaC species list Bald eagle nests from Step 4.</p>	<p>Step 2 Is your action area in critical habitat (only for Canada lynx or Atlantic salmon)? Yes or No</p>	<p>Step 3A Is suitable habitat for listed or candidate species present in your action area? “suitable habitat present” “suitable habitat not present” “Don’t know”</p>	<p>Step 3B Does the species occur in your action area? “Species present” “Species not present” “Don’t know”</p>	<p>Step 4 Is your project likely to take or disturb eagles and require an Eagle Act permit? “Will not disturb” “May disturb” “Don’t know”</p>	<p>Step 5 Determinations for the Endangered Species Act – only Federal agencies complete this column “No effect” “May effect”</p>	<p>Notes and Documentation (provide additional information if needed)</p>
Atlantic Salmon Critical Habitat	Yes	Suitable habitat not present (no wetland impact)	Species not present	Will not disturb		See Atlantic Salmon critical habitat map, planning species list

Notes:



U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

Maine Ecological Services Field Office
17 GODFREY DRIVE, SUITE 2
ORONO, ME 4473
(207) 866-3344
<http://www.fws.gov/mainefieldoffice/index.html>

Project Name:

Augusta Kingdom Hall of Jehovah's Witnesses



U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Location Map:



Project Counties:

Kennebec, ME

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-69.6860652 44.3356237, -69.6956783 44.334887, -69.6983433 44.3347289, -69.6983658 44.3416813, -69.6902527 44.3420727, -69.6822071 44.3392488, -69.6860652 44.3356237)))

Project Type:

Development



Natural Resources of Concern

Endangered Species Act Species List ([USFWS Endangered Species Program](#))

There are a total of 1 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Fishes	Status		Has Critical Habitat	Contact
Atlantic salmon (<i>Salmo salar</i>) Population: Expanded Gulf of Maine DPS	Endangered	species info	Final designated critical habitat	Maine Ecological Services Field Office

Critical habitats within your project area: ([View all critical habitats within your project area on one map](#))

The following critical habitats lie fully or partially within your project area.

Fishes	Critical Habitat Type
Atlantic salmon (<i>Salmo salar</i>) Population: Expanded Gulf of Maine DPS	Final designated critical habitat

FWS National Wildlife Refuges ([USFWS National Wildlife Refuges Program](#))

There are no refuges found within the vicinity of your project.

FWS Migratory Birds ([USFWS Migratory Bird Program](#))

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the [Bald and Golden Eagle Protection Act](#) (16 U.S.C. 668). The Service's [Birds of Conservation Concern \(2008\)](#) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).



U.S. Fish and Wildlife Service

Natural Resources of Concern

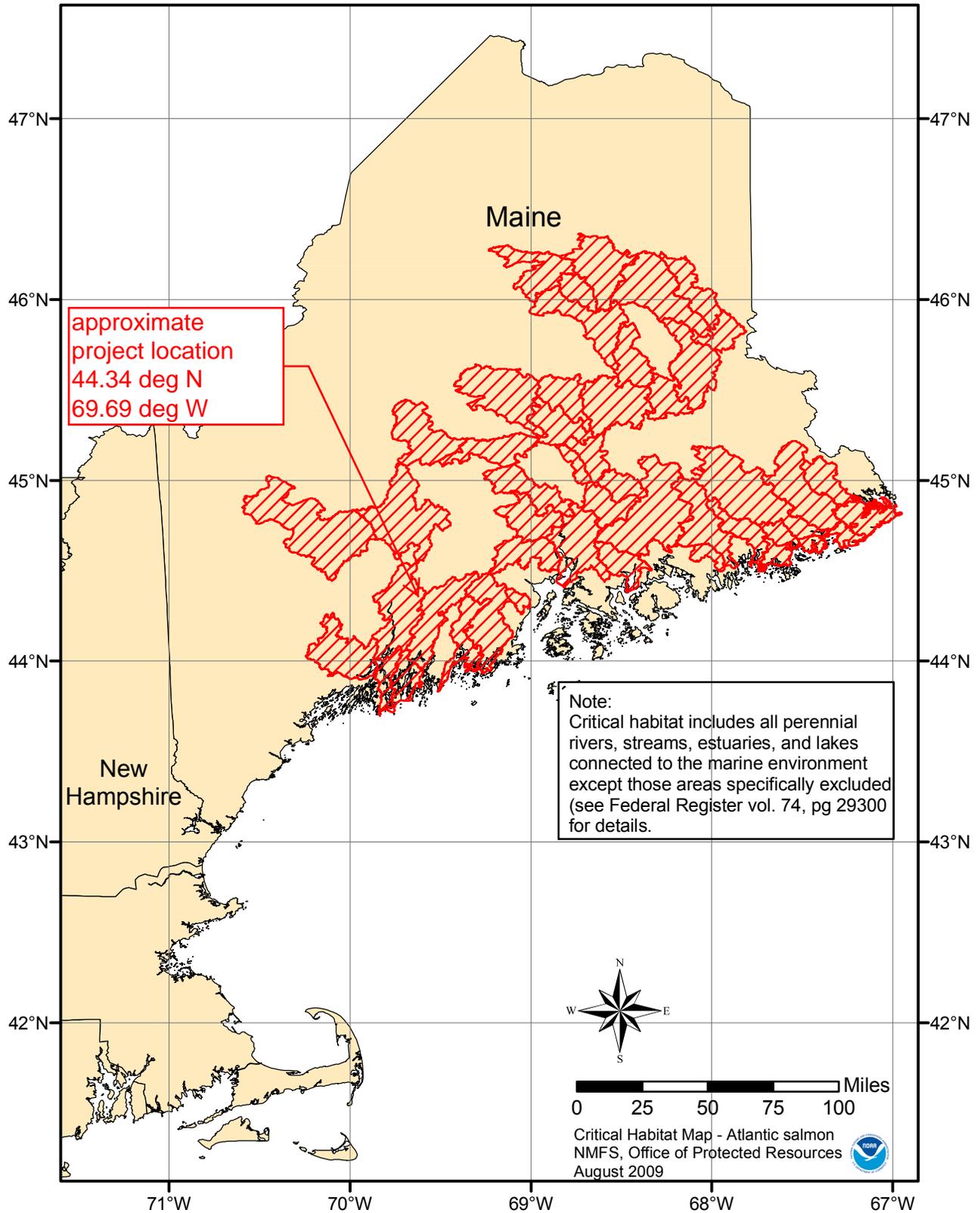
Migratory bird information is not available for your project location.

NWI Wetlands ([USFWS National Wetlands Inventory](#)).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

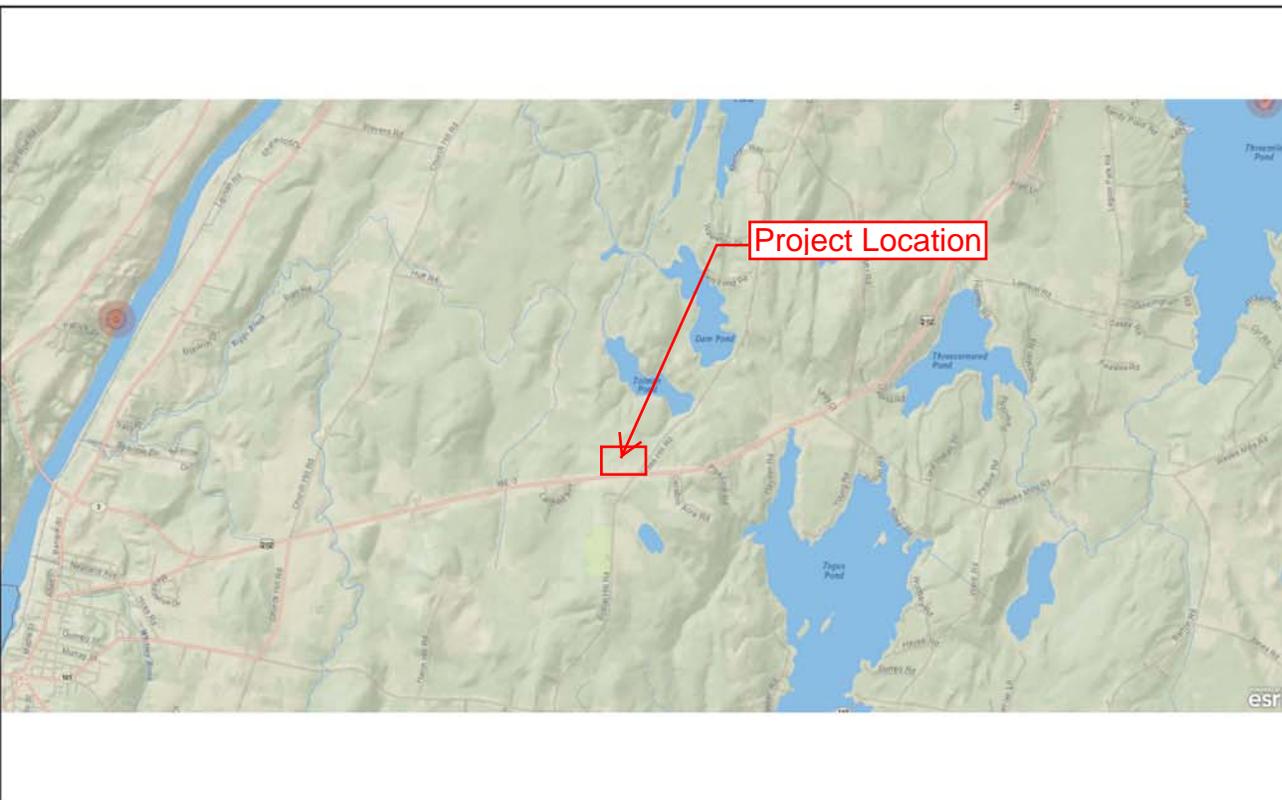
IPaC is unable to display wetland information at this time.

Atlantic Salmon Critical Habitat



Maine Bald Eagle Nest Locations and Buffer Zones

Documented Intact Bald Eagle Nests in the State of Maine

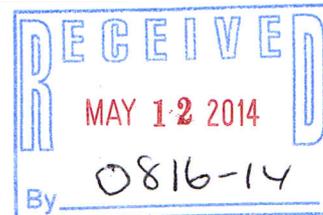


National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Maine Regional Building Committee

of Jehovah's Witnesses

Design/Engineering Department



May 8, 2014

Mr. Earle G. Shettleworth, Jr., Director
Maine Historic Preservation Commission
65 State House Station
Augusta, ME 04333-0065

Subject: August Kingdom Hall of Jehovah's Witnesses, Augusta, Maine

Dear Mr. Shettleworth:

The Augusta Congregation of Jehovah's Witnesses is in the process of applying for planning board approval from the City of Augusta for the construction of a new Kingdom Hall. The proposed building is a place of worship, to be located near the intersection of Cross Hill Road and Route 3. Access to the site will be from Cross Hill Road. A project location map with a brief description of the project has been included for your information.

We request your review of the proposed location of this project so that you may assist us in ensuring that our construction activities will be consistent with the Historic Preservation Commission goals. Any other information you may wish to provide regarding environmental or historical impacts or suggestions for mitigating impacts will be appreciated and taken into consideration.

We would appreciate a response within 30 days. If you need any further information or wish to discuss our project, please contact me at (207) 664-0930.

Sincerely,

Hedefine Engineering & Design, Inc.

Alina Watt, PE, LEED AP
Project Engineer

Enclosures: location map with project description

KH/Augusta/MHPC letter.doc

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney,
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission

5/21/14
Date

Location Map

Augusta Kingdom Hall of Jehovah's Witnesses



Project Description:

The Augusta Kingdom Hall of Jehovah's Witnesses is proposing to construct a new place of worship. The proposed building will be single-story, wood-framed structure with an attached one-bedroom apartment, associated parking, access drive, and utilities. The site is located in Augusta, Maine, with frontage on both Route 3 (North Belfast Ave) and Cross Hill Road. The access drive will be off Cross Hill Road.

Driveway Standard Waiver Request

The Augusta Congregation of Jehovah's Witnesses requests a waiver regarding the proposed driveway width. As the driveway exceeds 100 feet in length the ordinance requires that the driveway meet the requirements of the Technical Standards Handbook. The standard used for a place of worship has been proposed as an "Industrial Commercial Street" which requires a 32 foot wide travel way. This proposed width is completely out of character for the area and would result in a massive impact to the site. It also seems to be intended for heavy commercial uses where significant truck traffic would be expected. The requirement for a street of that size does not seem reasonable for this land use.

The applicant proposes instead to provide a driveway meeting the standards for a "Private Road: Lane" which require an 18 foot travel way plus 2 foot shoulders. This would also meet the requirements of NFPA 1 which requires an unobstructed width of no less than 20 feet. Based on comments by the City Engineer they propose to increase the width of the drive to 24 feet for the first 30 feet of driveway to facilitate turning movements at the entrance.

The applicant proposes that this drive standard is more reasonable considering the type and volume of traffic anticipated on the site. The access drive is intended for the sole use of the applicant and fits into the character of the land and neighborhood.



MAIN-LAND

DEVELOPMENT
CONSULTANTS, INC.

ENGINEERS, SURVEYORS, SCIENTISTS

P.O. BOX Q LIVERMORE FALLS, ME 04254

TEL: (207) 897-6752/FAX: (207) 897-5404

WWW.MAIN-LANDDCI.COM

May 20, 2014

Eero Hedefine
Hedefine Engineering
Ellsworth, Maine 04605

Re: Possible Vernal Pool - Augusta Kingdom Hall, Cross Hill Road, Augusta

Dear Mr. Hedefine:

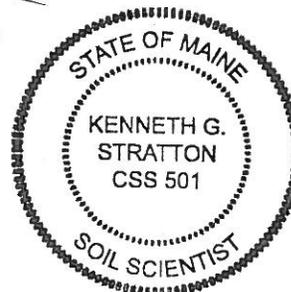
You asked that I clarify the status of a pool of water that exists on the parcel being developed for the Augusta Kingdom Hall. This parcel is located in the northwesterly corner of the intersection of Cross Hill Road and North Belfast Avenue (Route 3) in Augusta. When this parcel was first being considered for a Kingdom Hall site, I conducted a field review to verify soil conditions and to check for other features such as wetlands and vernal pools.

I did examine the pool in question and found that it is a man-made pool, not one that formed in a natural depression in the land. That is one of the key determinants for a regulated vernal pool – that it has formed in a natural depression and not one that is man-made. There is considerable evidence around the pool on the Kingdom Hall property that it is a man-made feature, and very likely served as a farm pond many years ago. But again, the requirements for identification of a regulated vernal pool under the Natural Resources Protection Act (NRPA) are clear about the pool being in a naturally formed feature in the landscape.

On many occasions, I have joined with staff of the Maine Department of Environmental Protection (MDEP) to assess the status of spring pools or vernal pools. Based on these types of field exercises and years of experience, I have no question about the pool on this property in Augusta – it is not a regulated vernal pool.

Respectfully,

Kenneth G. Stratton CSS 501 LSE 157
Certified Soil Scientist
Licensed Site Evaluator



**Storm Water Management Report: Revised
Augusta Kingdom Hall of Jehovah's Witnesses**

May 22, 2014

The site plan was revised with regard to a widened entrance, configuration of the subsurface disposal fields and a stormwater detention area. Revised post development calculations were run in HydroCad for subcatchments affected. The revised calculations are provided and summarized below:

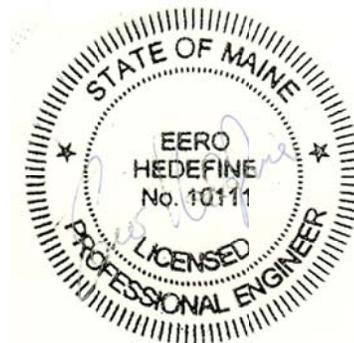
Stormwater Quantity

The analysis uses three discharge points which coincide for pre- and post-development conditions. All flows are analyzed for the 2 and 25-year storm events. The following table shows the changes in peak flow rates in cubic feet per second (cfs) between pre and post development conditions:

Peak Runoff Rates at Discharge Points for Various Rainfall Events:

<u>Model Node</u>		<u>2-yr (cfs)</u>	<u>25-yr (cfs)</u>
Link #1:	Pre-Devel.	1.25	3.39
	Post-Devel.	1.03	1.74
Link #2:	Pre-Devel.	1.51	4.08
	Post-Devel.	1.44	3.96
Link #3:	Pre-Devel.	1.71	4.64
	Post-Devel.	1.67	4.53

Additionally, the Board requested confirmation that the site is designed to be less than the 1 acre threshold of impervious area which would require a full MDEP Storm water permit. We have verified the area of impervious cover (as defined by MDEP) to be under the threshold at 0.9 acres.





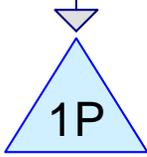
SUBCATCHMENT 1



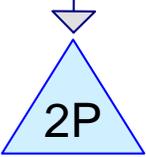
SUBCATCHMENT 2



SUBCATCHMENT 3



(new Pond)



new pond



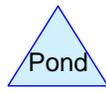
LINK 1



LINK 2



LINK 3



Drainage Diagram for AUGUSTA POST
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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.303	72	Woods/grass comb., Good, HSG C (2S)
0.891	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S)
2.832	76	Woods/grass comb., Fair, HSG C (1S, 3S)
0.863	98	Paved parking, HSG C (1S, 2S)
0.130	98	Roofs, HSG C (1S, 2S)
6.018		TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
6.018	HSG C	1S, 2S, 3S
0.000	HSG D	
0.000	Other	
6.018		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	2S	0.00	0.00	145.0	0.0270	0.013	12.0	0.0	0.0
2	1P	362.20	362.00	30.0	0.0067	0.013	8.0	0.0	0.0
3	2P	360.60	360.00	25.0	0.0240	0.013	8.0	0.0	0.0

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

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT1 Runoff Area=64,405 sf 25.36% Impervious Runoff Depth>1.21"
Flow Length=401' Tc=11.5 min CN=81 Runoff=1.86 cfs 0.149 af

Subcatchment 2S: SUBCATCHMENT2 Runoff Area=105,948 sf 25.38% Impervious Runoff Depth>1.09"
Flow Length=499' Tc=13.7 min CN=79 Runoff=2.57 cfs 0.221 af

Subcatchment 3S: SUBCATCHMENT3 Runoff Area=91,802 sf 0.00% Impervious Runoff Depth>0.92"
Flow Length=355' Tc=18.0 min CN=76 Runoff=1.67 cfs 0.162 af

Pond 1P: (new Pond) Peak Elev=363.11' Storage=1,390 cf Inflow=1.86 cfs 0.149 af
Primary=1.03 cfs 0.145 af Secondary=0.00 cfs 0.000 af Outflow=1.03 cfs 0.145 af

Pond 2P: new pond Peak Elev=361.88' Storage=1,875 cf Inflow=2.57 cfs 0.221 af
Primary=1.44 cfs 0.217 af Secondary=0.00 cfs 0.000 af Outflow=1.44 cfs 0.217 af

Link 1L: LINK 1 Inflow=1.03 cfs 0.145 af
Primary=1.03 cfs 0.145 af

Link 2L: LINK 2 Inflow=1.44 cfs 0.217 af
Primary=1.44 cfs 0.217 af

Link 3L: LINK 3 Inflow=1.67 cfs 0.162 af
Primary=1.67 cfs 0.162 af

Total Runoff Area = 6.018 ac Runoff Volume = 0.532 af Average Runoff Depth = 1.06"
83.51% Pervious = 5.026 ac 16.49% Impervious = 0.992 ac

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

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Summary for Subcatchment 1S: SUBCATCHMENT 1

Runoff = 1.86 cfs @ 12.17 hrs, Volume= 0.149 af, Depth> 1.21"

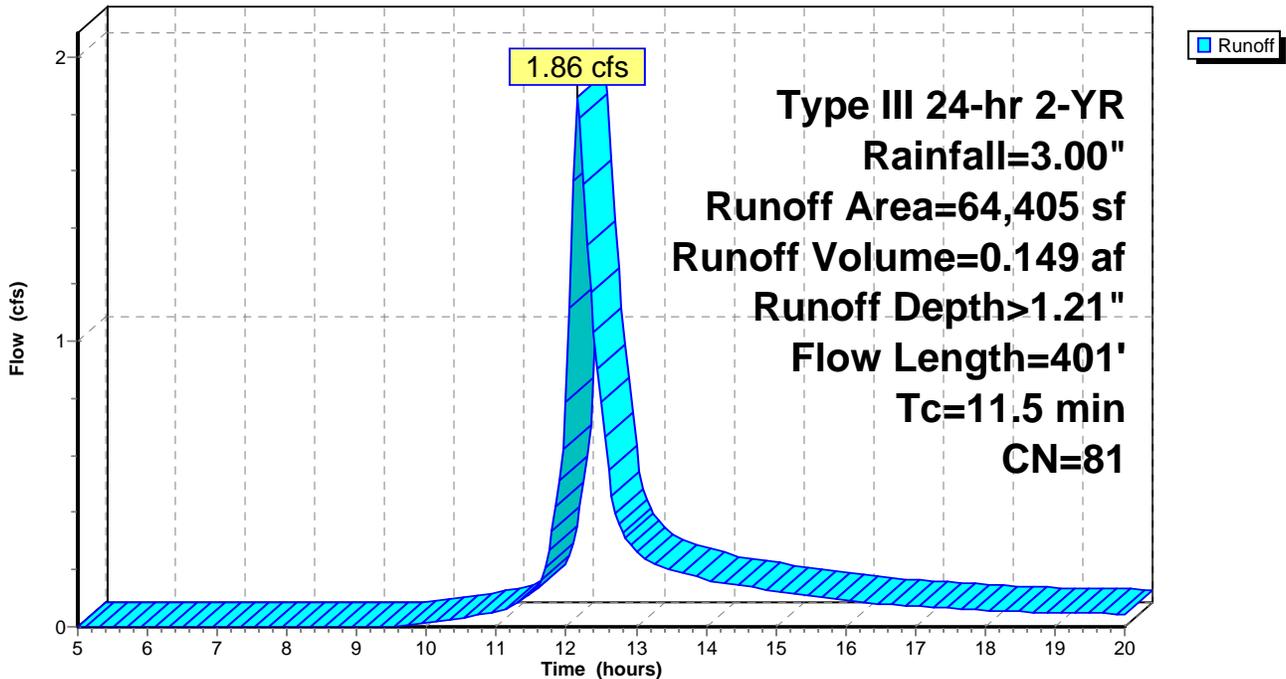
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.00"

Area (sf)	CN	Description
13,095	98	Paved parking, HSG C
3,237	98	Roofs, HSG C
11,787	74	>75% Grass cover, Good, HSG C
36,286	76	Woods/grass comb., Fair, HSG C
64,405	81	Weighted Average
48,073		74.64% Pervious Area
16,332		25.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0250	0.17		Sheet Flow, SF Grass: Short n= 0.150 P2= 2.70"
1.7	301	0.0406	3.02		Shallow Concentrated Flow, SCF Grassed Waterway Kv= 15.0 fps
11.5	401	Total			

Subcatchment 1S: SUBCATCHMENT 1

Hydrograph



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

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Summary for Subcatchment 2S: SUBCATCHMENT 2

Runoff = 2.57 cfs @ 12.20 hrs, Volume= 0.221 af, Depth> 1.09"

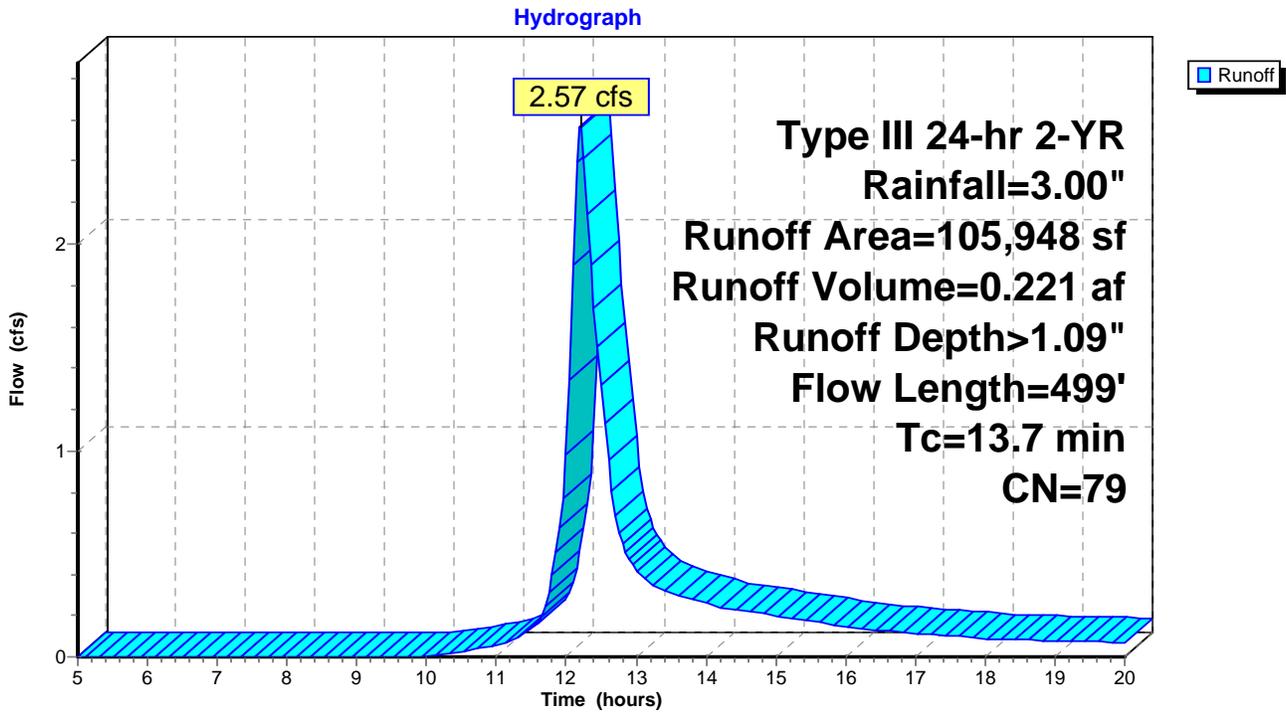
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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

Area (sf)	CN	Description
24,478	98	Paved parking, HSG C
2,413	98	Roofs, HSG C
22,291	74	>75% Grass cover, Good, HSG C
56,766	72	Woods/grass comb., Good, HSG C
105,948	79	Weighted Average
79,057		74.62% Pervious Area
26,891		25.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0150	0.14		Sheet Flow, SF Grass: Short n= 0.150 P2= 2.70"
0.5	116	0.0770	4.16		Shallow Concentrated Flow, SCF Grassed Waterway Kv= 15.0 fps
0.3	145	0.0270	7.45	5.85	Pipe Channel, PC 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.9	138	0.0280	2.51		Shallow Concentrated Flow, SCF Grassed Waterway Kv= 15.0 fps
13.7	499	Total			

Subcatchment 2S: SUBCATCHMENT 2



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

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Summary for Subcatchment 3S: SUBCATCHMENT 3

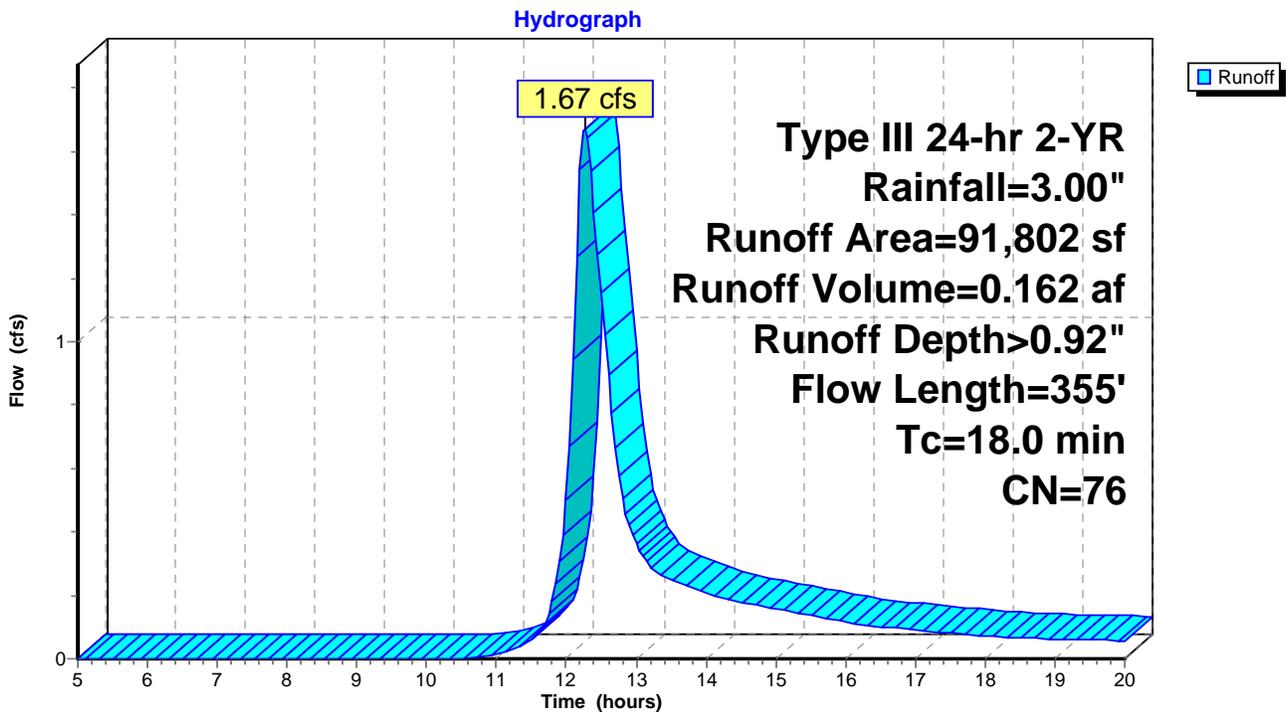
Runoff = 1.67 cfs @ 12.27 hrs, Volume= 0.162 af, Depth> 0.92"

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

Area (sf)	CN	Description
4,732	74	>75% Grass cover, Good, HSG C
87,070	76	Woods/grass comb., Fair, HSG C
91,802	76	Weighted Average
91,802		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0700	0.12		Sheet Flow, SF Woods: Light underbrush n= 0.400 P2= 2.70"
3.8	255	0.0500	1.12		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
18.0	355	Total			

Subcatchment 3S: SUBCATCHMENT 3



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

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Summary for Pond 1P: (new Pond)

Inflow Area = 1.479 ac, 25.36% Impervious, Inflow Depth > 1.21" for 2-YR event
 Inflow = 1.86 cfs @ 12.17 hrs, Volume= 0.149 af
 Outflow = 1.03 cfs @ 12.40 hrs, Volume= 0.145 af, Atten= 45%, Lag= 14.3 min
 Primary = 1.03 cfs @ 12.40 hrs, Volume= 0.145 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 363.11' @ 12.40 hrs Surf.Area= 1,967 sf Storage= 1,390 cf

Plug-Flow detention time= 30.1 min calculated for 0.145 af (97% of inflow)
 Center-of-Mass det. time= 20.2 min (828.2 - 808.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	362.20'	4,254 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
362.20	1,263	137.0	0	0	1,263	
363.00	1,704	156.0	1,182	1,182	1,721	
364.00	4,685	491.0	3,071	4,254	18,972	

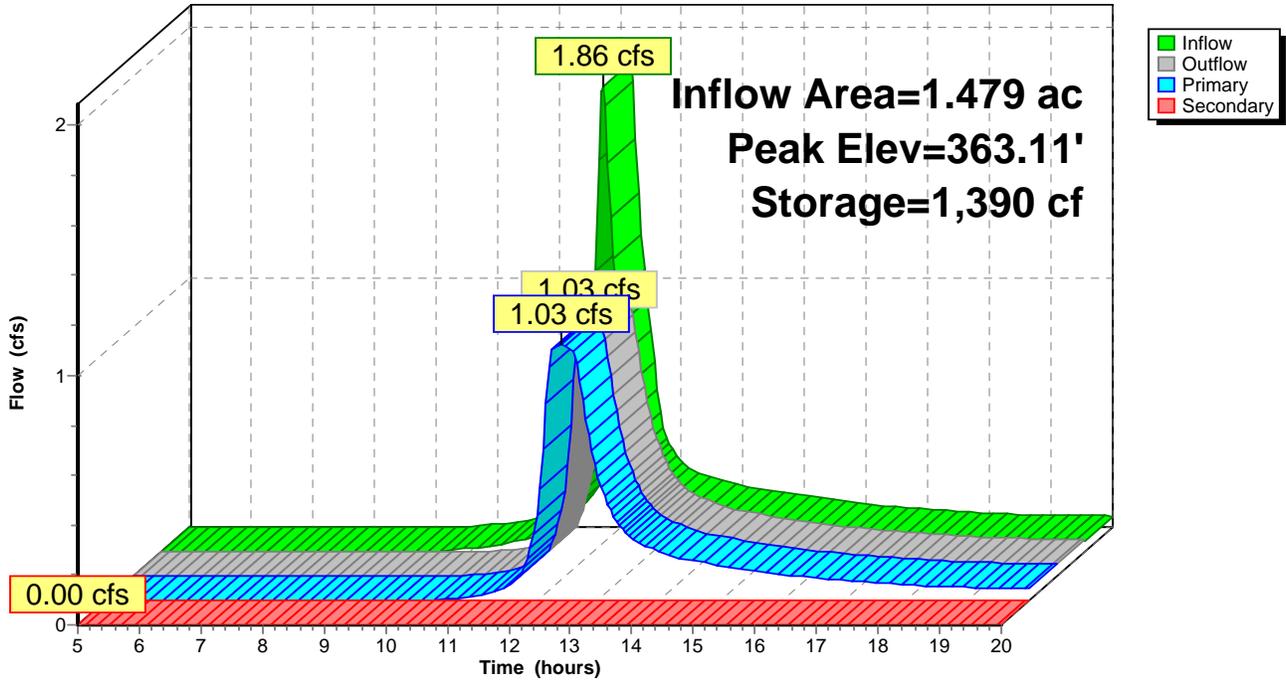
Device	Routing	Invert	Outlet Devices
#1	Primary	362.20'	8.0" Round 8" HDPE L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 362.20' / 362.00' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	364.00'	15.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.03 cfs @ 12.40 hrs HW=363.11' (Free Discharge)
 ↳1=8" HDPE (Barrel Controls 1.03 cfs @ 2.94 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=362.20' (Free Discharge)
 ↳2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: (new Pond)

Hydrograph



Summary for Pond 2P: new pond

Inflow Area = 2.432 ac, 25.38% Impervious, Inflow Depth > 1.09" for 2-YR event
 Inflow = 2.57 cfs @ 12.20 hrs, Volume= 0.221 af
 Outflow = 1.44 cfs @ 12.47 hrs, Volume= 0.217 af, Atten= 44%, Lag= 15.9 min
 Primary = 1.44 cfs @ 12.47 hrs, Volume= 0.217 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 361.88' @ 12.47 hrs Surf.Area= 1,960 sf Storage= 1,875 cf

Plug-Flow detention time= 21.6 min calculated for 0.217 af (98% of inflow)
 Center-of-Mass det. time= 15.6 min (830.3 - 814.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	360.60'	7,308 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
360.60	958	175.0	0	0	958	
361.00	1,307	216.0	451	451	2,236	
362.00	2,062	273.0	1,670	2,121	4,468	
362.50	2,477	282.0	1,133	3,255	4,889	
363.00	4,102	446.0	1,628	4,882	14,391	
363.50	5,642	457.0	2,426	7,308	15,213	

Device	Routing	Invert	Outlet Devices
#1	Primary	360.60'	8.0" Round Culvert L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 360.60' / 360.00' S= 0.0240 1/8" Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	362.90'	8.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.44 cfs @ 12.47 hrs HW=361.88' (Free Discharge)

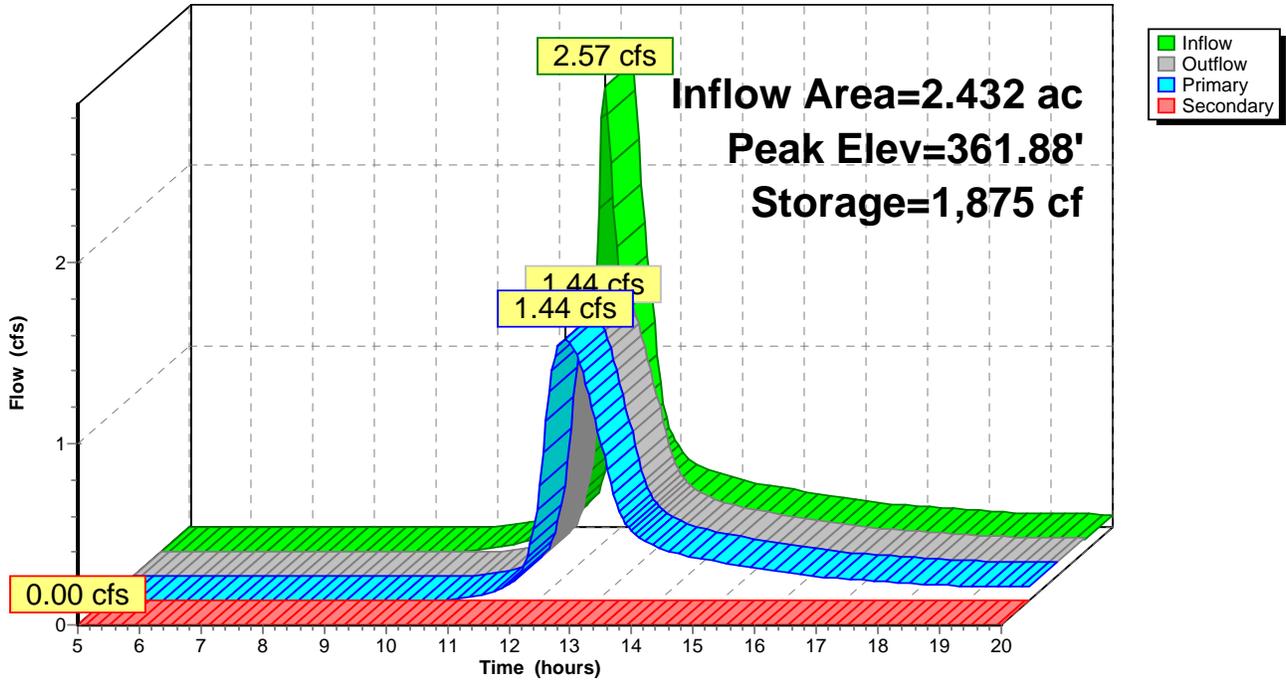
↑**1=Culvert** (Inlet Controls 1.44 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=360.60' (Free Discharge)

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

Pond 2P: new pond

Hydrograph



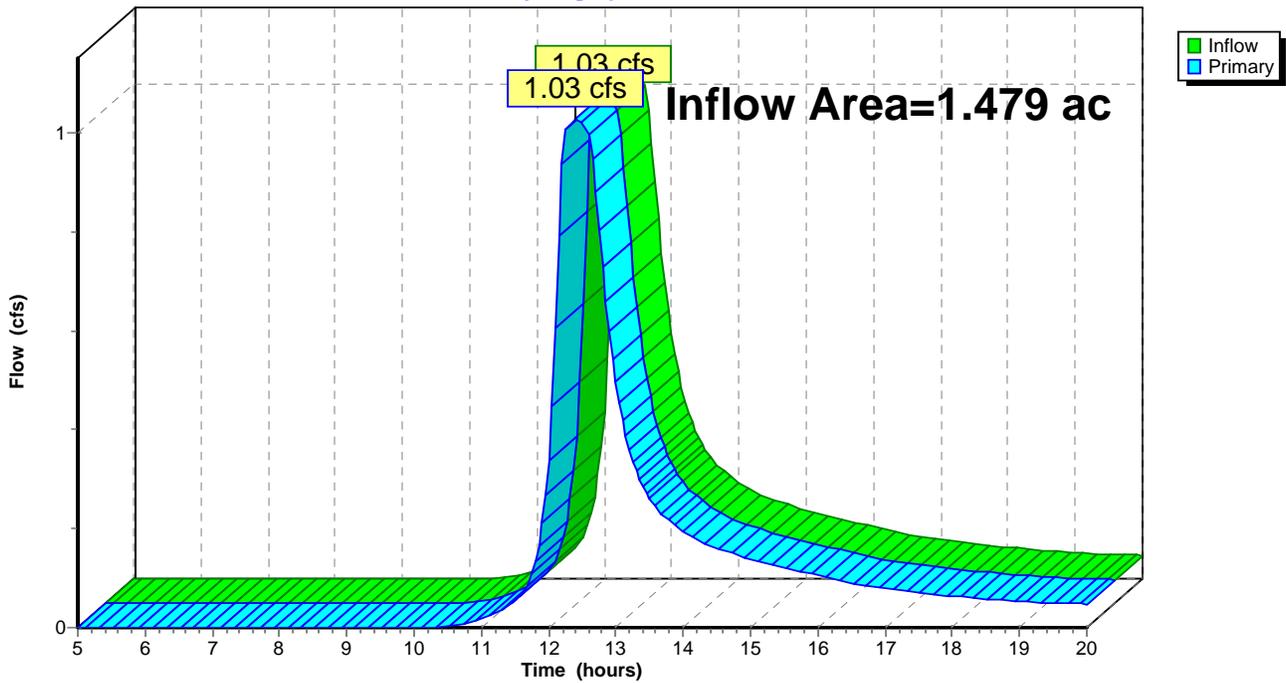
Summary for Link 1L: LINK 1

Inflow Area = 1.479 ac, 25.36% Impervious, Inflow Depth > 1.18" for 2-YR event
Inflow = 1.03 cfs @ 12.40 hrs, Volume= 0.145 af
Primary = 1.03 cfs @ 12.40 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min

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

Link 1L: LINK 1

Hydrograph



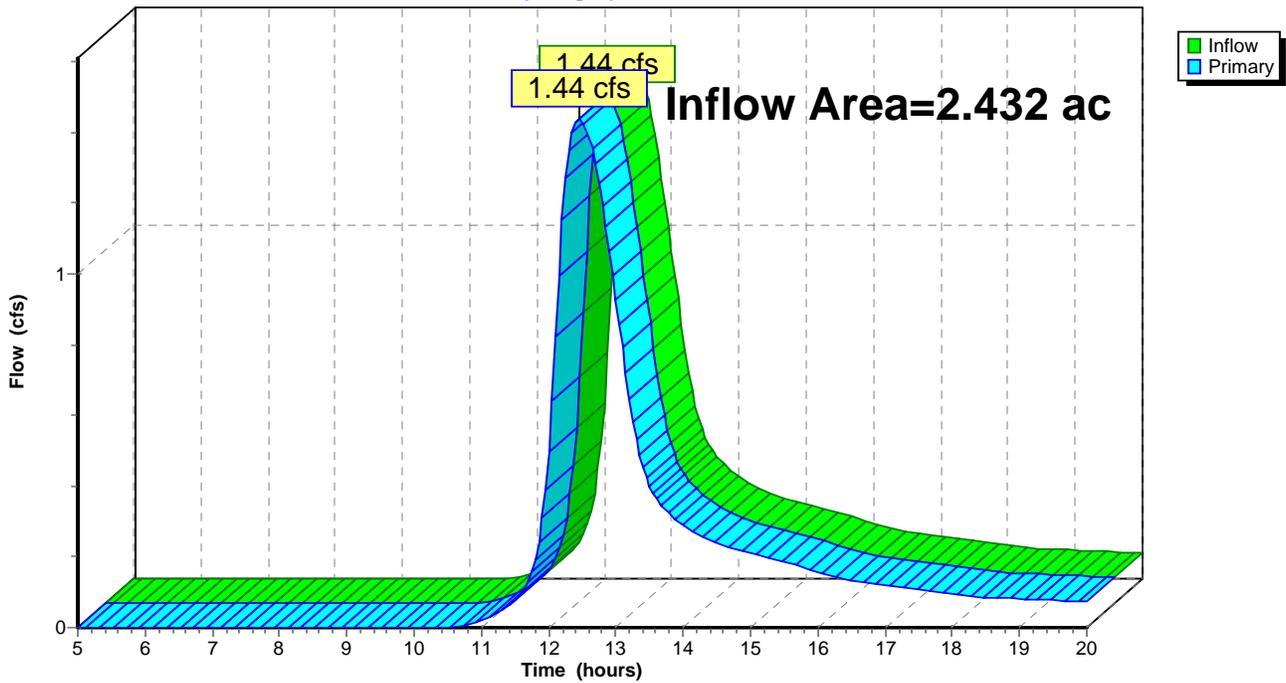
Summary for Link 2L: LINK 2

Inflow Area = 2.432 ac, 25.38% Impervious, Inflow Depth > 1.07" for 2-YR event
Inflow = 1.44 cfs @ 12.47 hrs, Volume= 0.217 af
Primary = 1.44 cfs @ 12.47 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min

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

Link 2L: LINK 2

Hydrograph



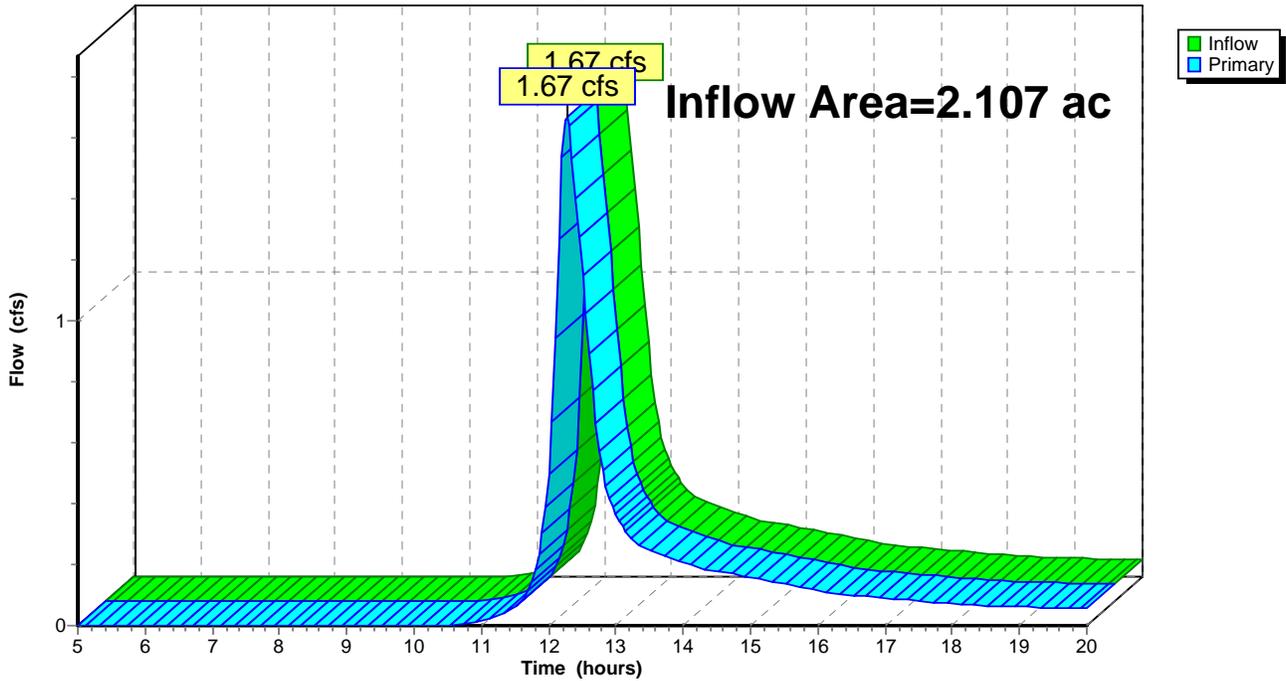
Summary for Link 3L: LINK 3

Inflow Area = 2.107 ac, 0.00% Impervious, Inflow Depth > 0.92" for 2-YR event
Inflow = 1.67 cfs @ 12.27 hrs, Volume= 0.162 af
Primary = 1.67 cfs @ 12.27 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min

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

Link 3L: LINK 3

Hydrograph



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Type III 24-hr 25-YR Rainfall=5.10"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCATCHMENT1 Runoff Area=64,405 sf 25.36% Impervious Runoff Depth>2.87"
Flow Length=401' Tc=11.5 min CN=81 Runoff=4.41 cfs 0.354 af

Subcatchment 2S: SUBCATCHMENT2 Runoff Area=105,948 sf 25.38% Impervious Runoff Depth>2.69"
Flow Length=499' Tc=13.7 min CN=79 Runoff=6.40 cfs 0.545 af

Subcatchment 3S: SUBCATCHMENT3 Runoff Area=91,802 sf 0.00% Impervious Runoff Depth>2.42"
Flow Length=355' Tc=18.0 min CN=76 Runoff=4.53 cfs 0.426 af

Pond 1P: (new Pond) Peak Elev=363.95' Storage=4,006 cf Inflow=4.41 cfs 0.354 af
Primary=1.74 cfs 0.348 af Secondary=0.00 cfs 0.000 af Outflow=1.74 cfs 0.348 af

Pond 2P: new pond Peak Elev=363.10' Storage=5,318 cf Inflow=6.40 cfs 0.545 af
Primary=2.18 cfs 0.498 af Secondary=1.78 cfs 0.041 af Outflow=3.96 cfs 0.539 af

Link 1L: LINK 1 Inflow=1.74 cfs 0.348 af
Primary=1.74 cfs 0.348 af

Link 2L: LINK 2 Inflow=3.96 cfs 0.539 af
Primary=3.96 cfs 0.539 af

Link 3L: LINK 3 Inflow=4.53 cfs 0.426 af
Primary=4.53 cfs 0.426 af

Total Runoff Area = 6.018 ac Runoff Volume = 1.324 af Average Runoff Depth = 2.64"
83.51% Pervious = 5.026 ac 16.49% Impervious = 0.992 ac

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Type III 24-hr 25-YR Rainfall=5.10"

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Summary for Subcatchment 1S: SUBCATCHMENT 1

Runoff = 4.41 cfs @ 12.16 hrs, Volume= 0.354 af, Depth> 2.87"

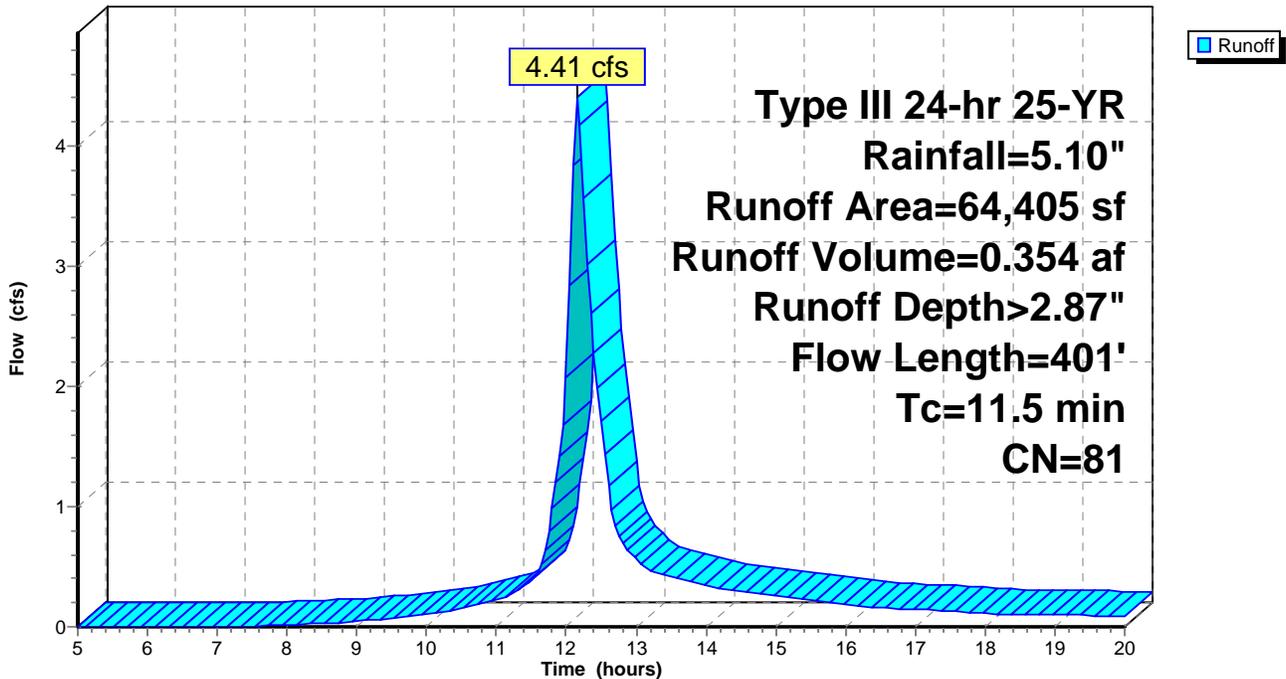
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.10"

Area (sf)	CN	Description
13,095	98	Paved parking, HSG C
3,237	98	Roofs, HSG C
11,787	74	>75% Grass cover, Good, HSG C
36,286	76	Woods/grass comb., Fair, HSG C
64,405	81	Weighted Average
48,073		74.64% Pervious Area
16,332		25.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0250	0.17		Sheet Flow, SF Grass: Short n= 0.150 P2= 2.70"
1.7	301	0.0406	3.02		Shallow Concentrated Flow, SCF Grassed Waterway Kv= 15.0 fps
11.5	401	Total			

Subcatchment 1S: SUBCATCHMENT 1

Hydrograph



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Type III 24-hr 25-YR Rainfall=5.10"

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Summary for Subcatchment 2S: SUBCATCHMENT 2

Runoff = 6.40 cfs @ 12.19 hrs, Volume= 0.545 af, Depth> 2.69"

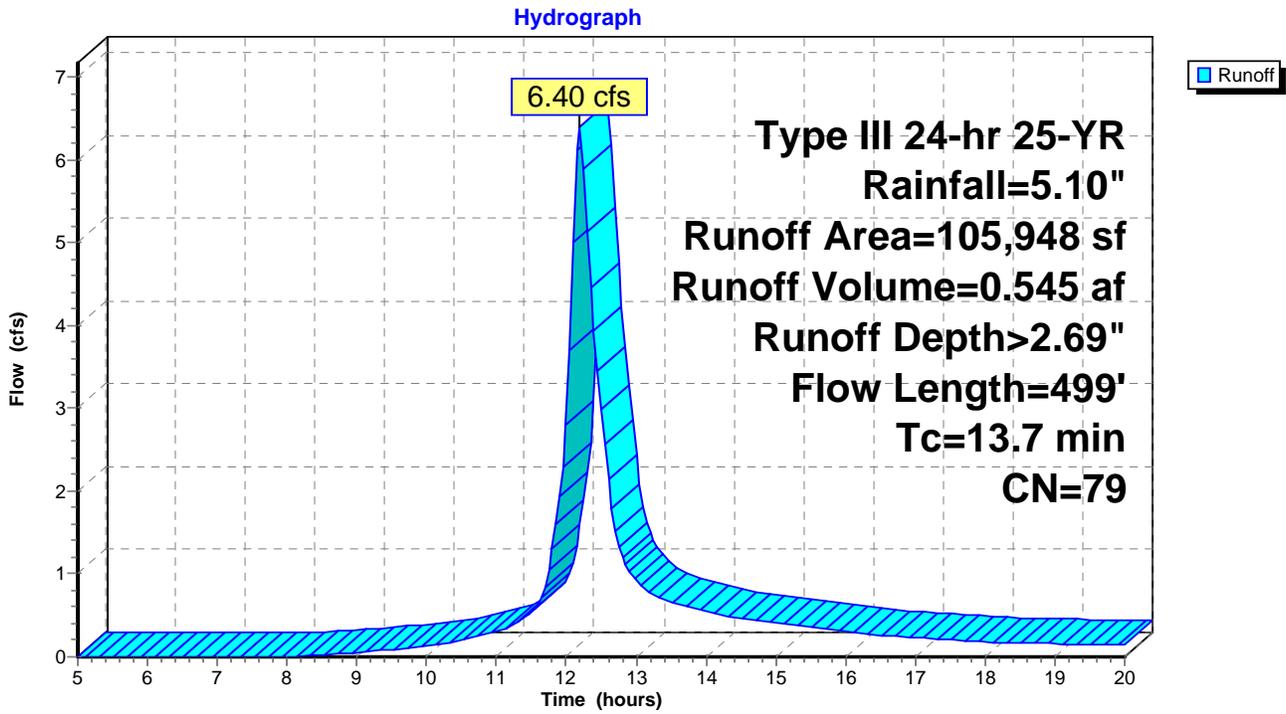
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25-YR Rainfall=5.10"

Area (sf)	CN	Description
24,478	98	Paved parking, HSG C
2,413	98	Roofs, HSG C
22,291	74	>75% Grass cover, Good, HSG C
56,766	72	Woods/grass comb., Good, HSG C
105,948	79	Weighted Average
79,057		74.62% Pervious Area
26,891		25.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0150	0.14		Sheet Flow, SF Grass: Short n= 0.150 P2= 2.70"
0.5	116	0.0770	4.16		Shallow Concentrated Flow, SCF Grassed Waterway Kv= 15.0 fps
0.3	145	0.0270	7.45	5.85	Pipe Channel, PC 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.9	138	0.0280	2.51		Shallow Concentrated Flow, SCF Grassed Waterway Kv= 15.0 fps
13.7	499	Total			

Subcatchment 2S: SUBCATCHMENT 2



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Type III 24-hr 25-YR Rainfall=5.10"

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Summary for Subcatchment 3S: SUBCATCHMENT 3

Runoff = 4.53 cfs @ 12.25 hrs, Volume= 0.426 af, Depth> 2.42"

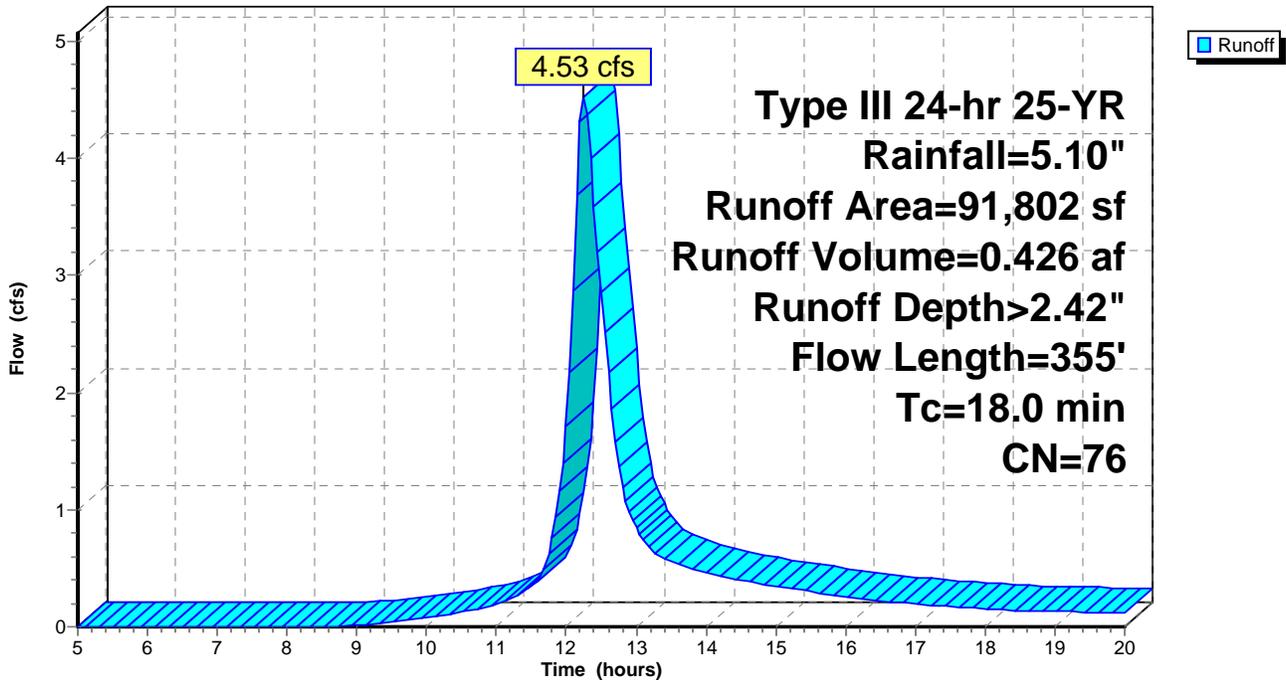
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-YR Rainfall=5.10"

Area (sf)	CN	Description
4,732	74	>75% Grass cover, Good, HSG C
87,070	76	Woods/grass comb., Fair, HSG C
91,802	76	Weighted Average
91,802		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0700	0.12		Sheet Flow, SF Woods: Light underbrush n= 0.400 P2= 2.70"
3.8	255	0.0500	1.12		Shallow Concentrated Flow, SCF Woodland Kv= 5.0 fps
18.0	355	Total			

Subcatchment 3S: SUBCATCHMENT 3

Hydrograph



AUGUSTA POST

Type III 24-hr 25-YR Rainfall=5.10"

Prepared by {enter your company name here}

Printed 5/22/2014

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Summary for Pond 1P: (new Pond)

Inflow Area = 1.479 ac, 25.36% Impervious, Inflow Depth > 2.87" for 25-YR event
 Inflow = 4.41 cfs @ 12.16 hrs, Volume= 0.354 af
 Outflow = 1.74 cfs @ 12.49 hrs, Volume= 0.348 af, Atten= 61%, Lag= 20.0 min
 Primary = 1.74 cfs @ 12.49 hrs, Volume= 0.348 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 363.95' @ 12.49 hrs Surf.Area= 4,486 sf Storage= 4,006 cf

Plug-Flow detention time= 30.5 min calculated for 0.347 af (98% of inflow)
 Center-of-Mass det. time= 24.2 min (812.7 - 788.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	362.20'	4,254 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
362.20	1,263	137.0	0	0	1,263
363.00	1,704	156.0	1,182	1,182	1,721
364.00	4,685	491.0	3,071	4,254	18,972

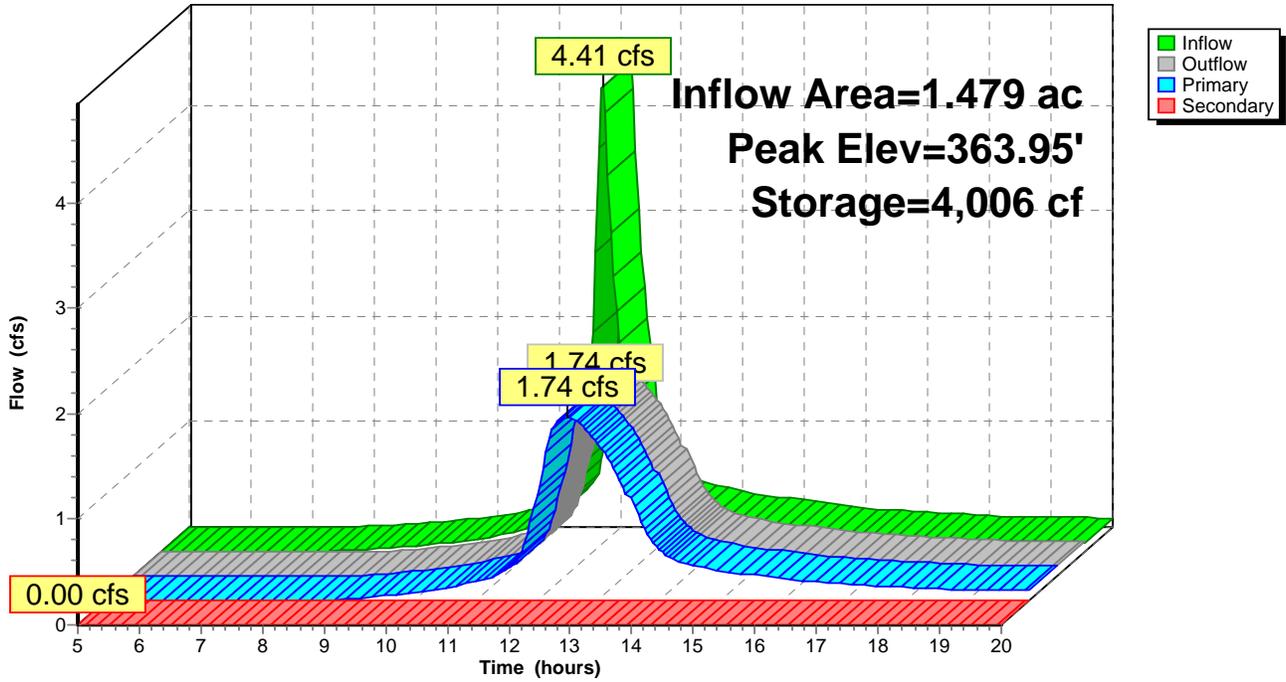
Device	Routing	Invert	Outlet Devices
#1	Primary	362.20'	8.0" Round 8" HDPE L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 362.20' / 362.00' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	364.00'	15.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.74 cfs @ 12.49 hrs HW=363.95' (Free Discharge)
 ↗1=8" HDPE (Barrel Controls 1.74 cfs @ 4.98 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=362.20' (Free Discharge)
 ↗2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: (new Pond)

Hydrograph



Summary for Pond 2P: new pond

Inflow Area = 2.432 ac, 25.38% Impervious, Inflow Depth > 2.69" for 25-YR event
 Inflow = 6.40 cfs @ 12.19 hrs, Volume= 0.545 af
 Outflow = 3.96 cfs @ 12.40 hrs, Volume= 0.539 af, Atten= 38%, Lag= 12.6 min
 Primary = 2.18 cfs @ 12.40 hrs, Volume= 0.498 af
 Secondary = 1.78 cfs @ 12.40 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 363.10' @ 12.40 hrs Surf.Area= 4,398 sf Storage= 5,318 cf

Plug-Flow detention time= 24.1 min calculated for 0.539 af (99% of inflow)
 Center-of-Mass det. time= 20.1 min (814.7 - 794.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	360.60'	7,308 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
360.60	958	175.0	0	0	958	
361.00	1,307	216.0	451	451	2,236	
362.00	2,062	273.0	1,670	2,121	4,468	
362.50	2,477	282.0	1,133	3,255	4,889	
363.00	4,102	446.0	1,628	4,882	14,391	
363.50	5,642	457.0	2,426	7,308	15,213	

Device	Routing	Invert	Outlet Devices
#1	Primary	360.60'	8.0" Round Culvert L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 360.60' / 360.00' S= 0.0240 1/8" Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Secondary	362.90'	8.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=2.18 cfs @ 12.40 hrs HW=363.10' (Free Discharge)

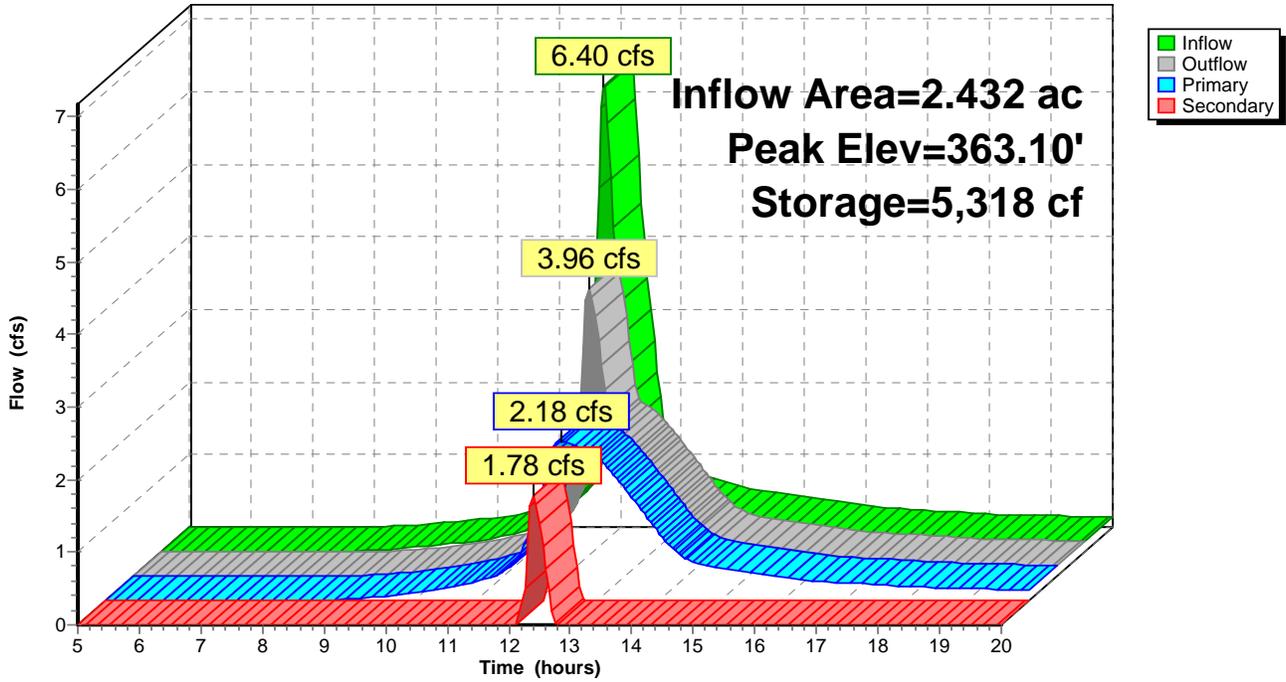
↑**1=Culvert** (Inlet Controls 2.18 cfs @ 6.26 fps)

Secondary OutFlow Max=1.77 cfs @ 12.40 hrs HW=363.10' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 1.77 cfs @ 1.09 fps)

Pond 2P: new pond

Hydrograph



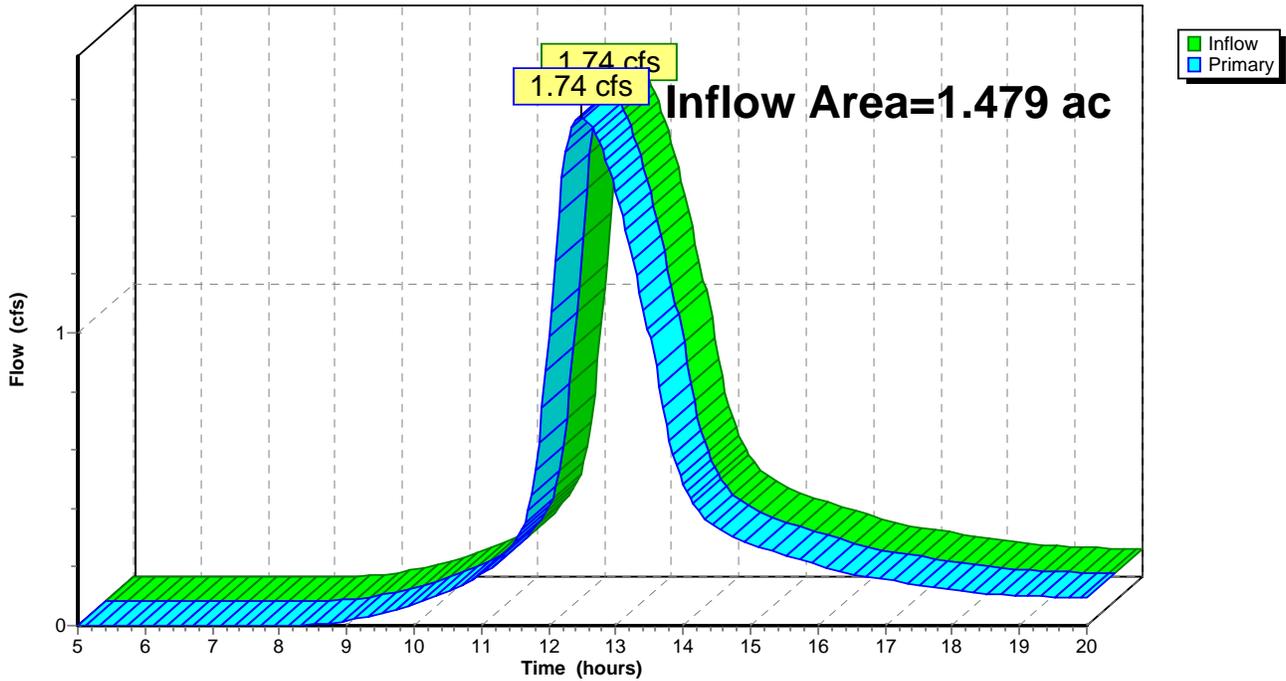
Summary for Link 1L: LINK 1

Inflow Area = 1.479 ac, 25.36% Impervious, Inflow Depth > 2.82" for 25-YR event
Inflow = 1.74 cfs @ 12.49 hrs, Volume= 0.348 af
Primary = 1.74 cfs @ 12.49 hrs, Volume= 0.348 af, Atten= 0%, Lag= 0.0 min

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

Link 1L: LINK 1

Hydrograph



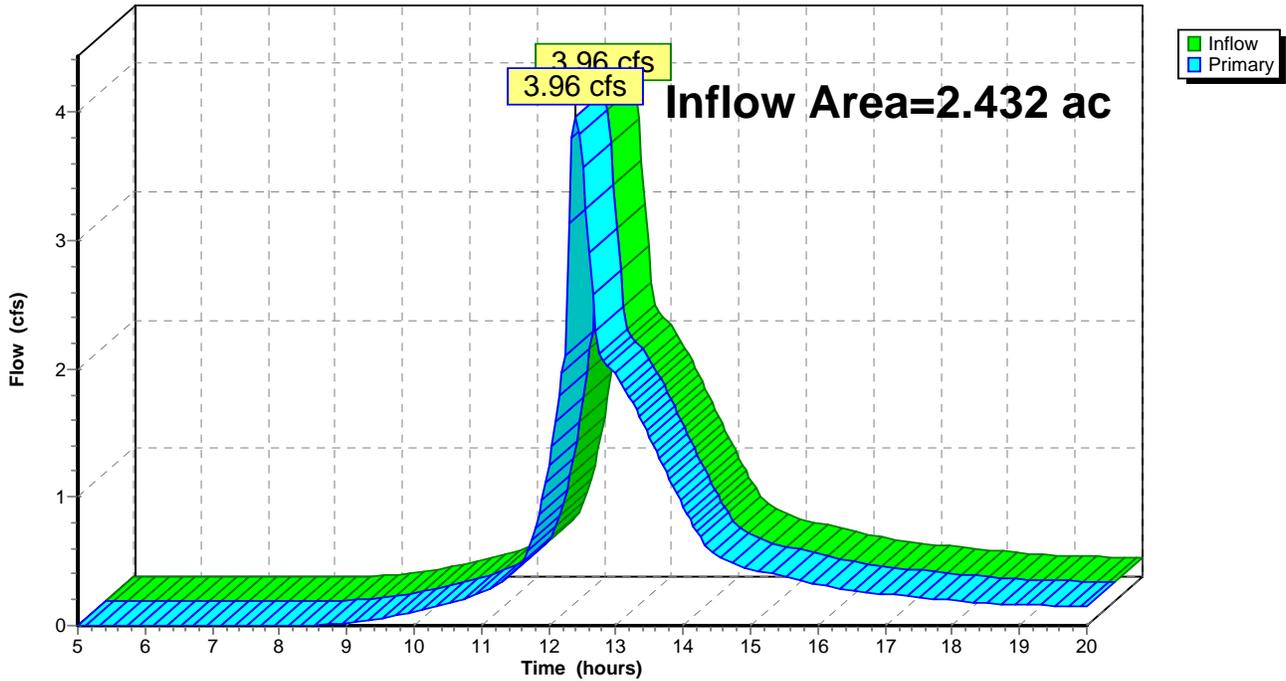
Summary for Link 2L: LINK 2

Inflow Area = 2.432 ac, 25.38% Impervious, Inflow Depth > 2.66" for 25-YR event
Inflow = 3.96 cfs @ 12.40 hrs, Volume= 0.539 af
Primary = 3.96 cfs @ 12.40 hrs, Volume= 0.539 af, Atten= 0%, Lag= 0.0 min

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

Link 2L: LINK 2

Hydrograph



Summary for Link 3L: LINK 3

Inflow Area = 2.107 ac, 0.00% Impervious, Inflow Depth > 2.42" for 25-YR event
Inflow = 4.53 cfs @ 12.25 hrs, Volume= 0.426 af
Primary = 4.53 cfs @ 12.25 hrs, Volume= 0.426 af, Atten= 0%, Lag= 0.0 min

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

Link 3L: LINK 3

Hydrograph

