Addendum No. 1

December 20, 2023

Re: Upper Wilson Pond Dam Improvements Project
Town of Swanzey

From: DuBois & King, Inc.
Charles Johnston, P.E.
6 Green Tree Drive
South Burlington, Vermont 05403
(802) 878-7661

To: Prospective Bidders

This Addendum forms part of the Contract Documents and modifies the original Bidding Documents issued for the Upper Wilson Pond Dam Improvements Project dated December 1, 2023. Acknowledge receipt of this Addendum in the space provided on Page 3 of the Bid Form. Failure to do so will subject the Bidder to disqualification.

I. Contract Document (Bid Document) Changes

Bid Advertisement/Bid Period

A request to extend the bid period was received. The Town of Swanzey (Project Owner) has agreed to extend the bid period one week to **January 5, 2023 at 2:00 P.M.**

Pre-bid Conference

A pre-bid conference was held on Wednesday, December 13, 2023 at 11:00 A.M. at Upper Wilson Pond Dam, Swanzey Factory Road, Swanzey, NH 03431. Attendance was not required. Appended to this addendum is a list of attendees present.

Permits

The US Army Corps of Engineers New Hampshire Programmatic General Permit (PGP) is processing and is expected be sent to the Project Owner January 2024. The NHDES Wetland and Dam Bureau permits are included in the bid documents.

Easements

The Town of Swanzey is currently working to obtain access/easements to the neighboring properties.

II. Questions & Answers

Question 1: *Are federal funding and grants provided for the Upper Wilson Pond Dam Improvements Project?*

The Town of Swanzey has received a grant for construction through the State of New Hampshire Dam Bureau for this project. There are no associated federal funding requirements for Davis-Bacon wage rates, MBE/WBE requirements, or Buy-American purchase requirements.

Question 2: *Are there restrictions on when construction should take place in the year?*

As noted in the Advertisement for Bids, the Project has an expected duration of 225 days. Within the Agreement, the Work will be substantially complete on or before **November 15, 2024,** and completed on or before **December 31, 2024.**

The Contractor will complete the various requirements within the Wetland and Dam Safety permit prior to commencing work. There does not appear to be restrictions within permits on timeframe for work to take place.

Question 3: *Will recreation occur on Upper Wilson Pond during construction?*

Recreation is not expected during construction.

Question 4: *Will information be provided to size a bypass system during construction?*

A report by DuBois & King, dated April 29, 2021, related to the existing conditions Hydrology and Hydraulics is attached.

There does not appear to be a requirement for by-pass flows within the permits. Recommend by-pass system at a <u>minimum</u> to continue to provide seasonal flows to downstream channel. Lower Wilson Pond levels will be monitored by project stakeholders. USGS StreamStats provides the following seasonal flows:

- January to March 15
  - 98% Flow – 0.234 cfs
  - 90% Flow – 0.364 cfs
  - 80% Flow – 0.498 cfs
- March 16 to May
  - 98% Flow – 0.535 cfs
  - 90% Flow – 1.01 cfs
  - 80% Flow – 1.42 cfs
- June to October
  - 98% Flow – 0.013 cfs
  - 90% Flow – 0.025 cfs
  - 80% Flow – 0.044 cfs
- November to December
  - 98% Flow – 0.137 cfs
  - 90% Flow – 0.375 cfs
  - 80% Flow – 0.593 cfs

Question 5: *Will the Contractor have access to the channel upstream of Upper Wilson Pond Dam?*

Yes, there is access to the upstream channel via neighboring property.

The flows into Upper Wilson Pond are maintained by a channel from the Diversion Dam on the Branch River. There are no controls are the Diversion Dam to limit flows into channel. The Branch River at the Diversion Dam location is highly influenced by flows releases from the Army Corp Otter Brook Flood Control Dam.

The Town of Swanzey requires the Contractor to be fully responsible for the control of water at Upper Wilson Pond Dam. If the Contractor elects to control flows to Upper Wilson Pond at the Diversion Dam, the Contractor must be available 24 hours a day, 7-days a week to make modifications in case of emergency during construction.

Question 6: *Areas other than the project location available for laydown? Is a job trailer required?*

The Town of Swanzey does not have an off-site location near this project site. Other private locations nearby may be available. No job trailer is required for this project.

Question 7: *Can construction joints be used to form the concrete labyrinth spillway?*

The labyrinth spillway wall must be constructed as a continuous single placement. No joints in this wall will be acceptable.

Question 8: *How are we going to be compensated for boulders/ledge if encountered?*

Borings on site did not encounter boulders or bedrock. If bedrock is encountered, notes on the bidding plans outline procedure to address change in expected conditions. Payment will be addressed via change order.

This document constitutes Addendum 1 for this Project.

Pre-bid Conference List of Attendees

Company Name / Representative	Contact Information
1. Bazin Brothers Trucking, Inc. (Jeff Marsden)	Jmarsden@bazinbrothers.com
2. Cavanagh Marine (Andrew Cavanagh)	Andrew@cavanaghmarine.com
3. Daniels Construction (Matthew B. Belden)	Mbelden@neilhdaniels.com
4. Edward Paige Corporation (Rob Schuster)	Rshuster@edwardpaige.com
5. J.F. Brennan Company (Dan Maggio)	Dmaggio@jfbrennan.com
6. Gordon Services	tel. (603)325-8916
7. T Ford Company, Inc. (Dan Galante)	Dan@tford.com
8. TPM (Craig Hicks)	Tpm.chicks@comcast.net

April 29, 2021

James R. Weber, P.E.
NH Department of Environmental Services
Dam Bureau
Water Division
29 Hazen Drive, PO Box 95

Re: **Upper Wilson Pond Dam (#232.006)**
Hydrology and Hydraulics

Dear Mr. Weber,

DuBois & King has completed an evaluation of the hydrology and hydraulics for Upper Wilson Pond Dam (UWPD) to affirm the data and assumptions used in previous studies. A study of the hydrology and hydraulics for both Upper and Lower Wilson Pond Dams was completed in 2012, utilizing a HydroCAD watershed model with data from the Northeast Regional Climate Center (NRCC) and StreamStats. In 2018, as part of the design for the rehabilitation of Lower Wilson Pond Dam, the HydroCAD watershed model was updated with NOAA rainfall data and slight differences were found in the results. The objective of this current analysis is to verify data and assumptions used in the watershed model and to make any necessary changes.

The HydroCAD watershed model for UWPD, is comprised of the watershed for Upper Wilson Pond only (approximately 57.7 acres), and inflow from the Diversion Dam channel. Information within the watershed model, such as drainage area, land cover, rainfall data and inflow from the Diversion Dam Channel were checked. Many of the parameters matched the 2012 analysis. The current rainfall data was collected from the NOAA Atlas 14, and found a slight decrease in rainfall depth compared to the 2012 NRCC Q_{100} rainfall.

The inflow from the Diversion Dam channel was estimated in 2012 utilizing a HEC-1D backwater model from Upper Wilson Pond Dam to the Diversion Dam and FEMA FIS water surface elevations. To verify the assumed 300 cfs, a critical depth calculation was used to estimate the flow through the structure during the Q_{100} event and a corresponding upstream water surface elevation. This flow was verified using a weir flow and orifice flow through the intake structure to generate an upstream water surface elevation that matched the previous calculation. The upstream water surface elevation also corresponded with the FEMA FIS Q_{100} water surface elevation. This calculated a flow of 332 cfs which was approximately the flow used in the 2012 analysis.

Table 1: Watershed Model Data Comparison

Parameter	2012 Data	2021 Data
Drainage Area (acres)	57.7	57.7
Time of Concentration (minutes)	57.5	57.5
100-year Rainfall Depth (inches) [1]	**6.85**	**6.06**
Land Cover/Curve Number	65	65
Concrete Spillway Crest (NAD88, Feet)	497.2	497.2
Diversion Dam Channel Inflow (cfs) [2]	**300**	**332**

Notes:

1. Rainfall data obtained in 2012 from Northeast Regional Climate Center and current date from NOAA Atlas 14 Precipitation Frequency Data Server (PFDS) on April 29, 2021.
2. Inflow to Upper Wilson Pond from the Branch River Diversion Dam Channel was re-evaluated Q100 only. See attached calcualtions.

Per New Hampshire Dam Safety Rule Env-Wr. 303.11, existing high hazard dams are to be designed to pass 250% of the Q_{100} inflow with 1-ft of freeboard. The HydroCAD watershed model was updated with the new rainfall depth and inflow from the Diversion Dam channel.

Table 2: Comparison of HydroCAD Models

Event	Parameter	2012 Model	2021 Model
100-year Storm (Steady Diversion Dam Inflow)	Inflow	380.15 cfs	390.67 cfs
	Outflow	357.15 cfs	377.19 cfs
	Peak Water Surface Elev.	499.66’	499.74’
	Depth Overtopping (El. 499.7’)	-0.04 ft (freeboard)	0.04 ft
250% of the 100-year Storm (Steady Diversion Dam Inflow)	Inflow	950.37 cfs	976.69 cfs
	Outflow	944.70 cfs	973.49 cfs
	Peak Water Surface Elev.	500.49’	500.51’
	Depth Overtopping (El. 499.7’)	0.79 ft	0.81 ft

Notes:

1. Results from constant inflow from the Branch River Diversion Dam Channel.
2. PDF of 2021 HydroCAD model are provided.

The updated model shows the existing dam overtopping in the Q_{100} event and overtopping by approximately 0.81-ft during the design storm (250% Q_{100} event). The watershed model also incorporates an option to peak the Diversion Dam Channel inflow at the same time as the peak inflow from the watershed, however, there was not a significant difference in the results at UWPD. The updated results are similar to the previous model, and will be used to establish rehabilitation alternatives for Upper Wilson Pond Dam.

Sincerely,

Charles W Johnston

Charles Johnston, P.E.
Project Engineer

Attachments:

- 2021 HydroCAD model (attached zip file)
- NOAA Atlas 14 Rainfall Depth Data
- Diversion Dam Channel Flow Calculation
- FEMA FIS Profile and Flood Insurance Rate Map (2006)

DuBois & King inc.

NOAA Atlas 14, Volume 10, Version 3
Location name: Keene, New Hampshire, USA*
Latitude: 42.9087°, Longitude: -72.2575°
Elevation: 490.18 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.284 (0.223-0.356)	0.336 (0.263-0.422)	0.421 (0.329-0.530)	0.492 (0.381-0.622)	0.589 (0.441-0.774)	0.663 (0.486-0.888)	0.739 (0.524-1.02)	0.821 (0.554-1.16)	0.935 (0.606-1.37)	1.02 (0.649-1.53)
10-min	0.402 (0.316-0.505)	0.476 (0.373-0.598)	0.597 (0.466-0.751)	0.697 (0.540-0.881)	0.834 (0.625-1.10)	0.938 (0.688-1.26)	1.05 (0.743-1.45)	1.16 (0.785-1.65)	1.32 (0.859-1.94)	1.45 (0.919-2.17)
15-min	0.473 (0.371-0.594)	0.560 (0.439-0.703)	0.702 (0.548-0.884)	0.819 (0.635-1.04)	0.981 (0.736-1.29)	1.10 (0.810-1.48)	1.23 (0.874-1.70)	1.37 (0.923-1.94)	1.56 (1.01-2.28)	1.71 (1.08-2.55)
30-min	0.671 (0.526-0.841)	0.793 (0.621-0.996)	0.994 (0.776-1.25)	1.16 (0.900-1.47)	1.39 (1.04-1.83)	1.56 (1.15-2.10)	1.74 (1.24-2.41)	1.94 (1.31-2.74)	2.21 (1.43-3.23)	2.42 (1.53-3.61)
60-min	0.868 (0.680-1.09)	1.03 (0.804-1.29)	1.29 (1.00-1.62)	1.50 (1.16-1.90)	1.80 (1.35-2.36)	2.02 (1.48-2.71)	2.26 (1.60-3.12)	2.51 (1.69-3.55)	2.85 (1.85-4.17)	3.13 (1.98-4.67)
2-hr	1.10 (0.871-1.38)	1.31 (1.03-1.63)	1.65 (1.29-2.06)	1.93 (1.50-2.42)	2.31 (1.74-3.02)	2.60 (1.92-3.47)	2.91 (2.08-4.00)	3.24 (2.20-4.56)	3.72 (2.42-5.40)	4.10 (2.60-6.08)
3-hr	1.26 (0.998-1.56)	1.50 (1.18-1.86)	1.88 (1.49-2.35)	2.21 (1.73-2.76)	2.65 (2.01-3.45)	2.98 (2.21-3.97)	3.33 (2.39-4.59)	3.73 (2.53-5.23)	4.30 (2.80-6.22)	4.77 (3.03-7.03)
6-hr	1.56 (1.25-1.93)	1.86 (1.48-2.29)	2.34 (1.86-2.90)	2.74 (2.16-3.41)	3.29 (2.51-4.27)	3.70 (2.76-4.90)	4.14 (3.00-5.69)	4.66 (3.17-6.49)	5.43 (3.55-7.81)	6.08 (3.88-8.91)
12-hr	1.91 (1.53-2.34)	2.27 (1.82-2.78)	2.86 (2.28-3.51)	3.34 (2.65-4.13)	4.01 (3.09-5.19)	4.51 (3.40-5.96)	5.05 (3.70-6.94)	5.71 (3.90-7.91)	6.73 (4.41-9.62)	7.60 (4.87-11.1)
24-hr	2.27 (1.83-2.76)	2.70 (2.18-3.29)	3.41 (2.74-4.16)	4.00 (3.19-4.91)	4.81 (3.72-6.18)	5.41 (4.10-7.10)	6.06 (4.46-8.28)	6.86 (4.71-9.44)	8.09 (5.32-11.5)	9.15 (5.87-13.2)
2-day	2.62 (2.13-3.16)	3.14 (2.55-3.79)	3.99 (3.23-4.84)	4.69 (3.77-5.72)	5.66 (4.40-7.21)	6.39 (4.85-8.31)	7.16 (5.28-9.67)	8.08 (5.57-11.0)	9.46 (6.25-13.4)	10.6 (6.85-15.3)
3-day	2.86 (2.34-3.44)	3.43 (2.80-4.14)	4.37 (3.55-5.28)	5.14 (4.15-6.25)	6.21 (4.84-7.88)	7.01 (5.34-9.07)	7.86 (5.81-10.6)	8.86 (6.13-12.1)	10.4 (6.86-14.6)	11.6 (7.50-16.6)
4-day	3.08 (2.52-3.69)	3.69 (3.01-4.43)	4.68 (3.81-5.64)	5.51 (4.46-6.67)	6.64 (5.19-8.40)	7.49 (5.72-9.67)	8.39 (6.21-11.2)	9.46 (6.55-12.8)	11.1 (7.33-15.5)	12.4 (8.01-17.7)
7-day	3.68 (3.03-4.39)	4.35 (3.58-5.20)	5.46 (4.47-6.54)	6.38 (5.19-7.68)	7.64 (6.00-9.60)	8.58 (6.58-11.0)	9.59 (7.12-12.8)	10.8 (7.48-14.5)	12.5 (8.33-17.5)	14.0 (9.07-19.9)
10-day	4.29 (3.54-5.10)	5.00 (4.12-5.95)	6.16 (5.06-7.35)	7.12 (5.82-8.55)	8.45 (6.65-10.6)	9.44 (7.26-12.0)	10.5 (7.80-13.9)	11.7 (8.16-15.7)	13.5 (9.01-18.8)	15.0 (9.75-21.3)
20-day	6.20 (5.16-7.32)	6.95 (5.78-8.22)	8.18 (6.77-9.70)	9.20 (7.56-11.0)	10.6 (8.39-13.1)	11.7 (8.99-14.7)	12.8 (9.48-16.6)	14.0 (9.80-18.6)	15.7 (10.5-21.6)	17.1 (11.1-24.0)
30-day	7.80 (6.52-9.18)	8.59 (7.16-10.1)	9.87 (8.20-11.7)	10.9 (9.03-13.0)	12.4 (9.84-15.2)	13.5 (10.4-16.9)	14.7 (10.9-18.9)	15.9 (11.2-21.0)	17.5 (11.7-23.9)	18.7 (12.2-26.2)
45-day	9.77 (8.20-11.4)	10.6 (8.90-12.4)	12.0 (10.0-14.1)	13.2 (10.9-15.5)	14.7 (11.7-18.0)	16.0 (12.4-19.8)	17.2 (12.7-21.9)	18.4 (13.0-24.2)	19.9 (13.4-27.1)	21.0 (13.7-29.3)
60-day	11.4 (9.59-13.3)	12.3 (10.3-14.4)	13.8 (11.6-16.2)	15.1 (12.5-17.8)	16.8 (13.4-20.4)	18.1 (14.0-22.4)	19.4 (14.4-24.6)	20.6 (14.6-27.2)	22.2 (15.0-30.1)	23.2 (15.2-32.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

Purpose: Determine flow into Upper Wilson Pond from Diversion Channel and establish an appropriate inflow during the required 250% Q100.

History: The current HydroCAD model utilizes a 300 cfs steady flow and 300 cfs peaking flow from the diversion channel. The 300 cfs flow was established in 2012 utilizing a backwater analysis of Upper Wilson Pond Dam and estimating inflow from the Branch River based on 2006 Flood Insurance Study (FIS).

The following table was established during the 2012 HECRAS backwater analysis of Upper Wilson Pond Dam.

Discharge (cfs)	Computed WSEL (ft)	Stage (ft)
0	498	0
1	498.61	1.61
5	498.83	1.83
10	499.01	2.01
20	499.15	2.15
30	499.25	2.25
50	499.45	2.45
75	499.66	2.66
100	499.85	2.85
150	500.17	3.17
200	500.49	3.49
250	500.76	3.76
300	501.02	4.02
350	501.24	4.24
400	501.46	4.46
450	501.67	4.67
500	501.86	4.86

The 2006 FEMA FIS study establishes the Q100 WSEL to be approximately: 504.2 ft
See attached sheets of FEMA Flood Insurance Study Profile and the Flood Insurance Rate Map, dated May 23, 2006.

The following information was collected in 2012 for the diversion channel intake structure:

Existing Opening: 9 ft wide by 6.2 ft tall

Existing Gate Inv.:	497.5	ft
Flashboard Inv.:	498.5	ft
Existing Gate Centerline:	500.6	ft
Bottom of Concrete Beam:	503.7	ft
Top of Concrete Beam:	506.2	ft

The intake structure works as a weir until the water surface level in the Branch River is above the concrete beam invert. The intake structure then acts as a pressurized culvert/orifice. Estimated flow with associated downstream critical depth was used to determine which inflow generates a WSEL downstream that changes the flow through the intake from weir flow to orifice flow.

Top of Concrete Beam: 506.2 ft

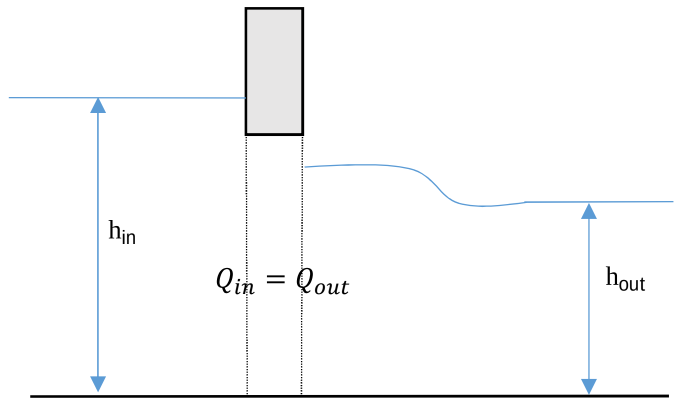
$WSEL_{in}$ (2006 FEMA FIS): 504.2 ft

Bottom of Concrete Beam: 503.7 ft

Existing Gate Centerline: 500.6 ft

Flashboard Inv.: 498.5 ft

Existing Gate Inv.: 497.5 ft



Bottom of Stream El: 497.0 ft

Weir Equation: $Q_{in} = C * w * h^{\frac{3}{2}}$ C: 2.8

Orifice Equation: $Q_{in} = C * A * \sqrt{2g\Delta h}$ C: 0.5

$\Delta h = (WSEL_{in} - WSEL_{out})$

w_{in}: 9.0 ft

estimated w_{out}: 10.25 ft

$Q_{out} = A_{out} * V_{out}$

$h_{criticaldepth} = \sqrt[3]{\frac{Q_{out}^2}{gw^2}}$

$A_{out} = l * h_{criticaldepth}$

$V_{out} = \frac{Q_{out}}{A_{out}}$

$\Delta h = h_{velocity} + h_{loss}$

$h_{velocity} = \frac{V^2}{2g}$

$h_{loss} = 1.5 h_{velocity}$

1) Estimate the inflow based on critical depth and head required in the downstream channel.

$h_{criticaldepth}$	Q_{out}	A_{out}	V_{out}	$h_{velocity}$	h_{loss}	$h_{requiredu/s}$	$WSEL_{u/s}$	$WSEL_{d/s}$
1.0	58.2	10.3	5.7	0.5	0.8	2.3	499.3	498.0
1.5	106.9	15.4	6.9	0.8	1.1	3.4	500.4	498.5
2.0	164.5	20.5	8.0	1.0	1.5	4.5	501.5	499.0
2.5	229.9	25.6	9.0	1.3	1.9	5.6	502.6	499.5
3.0	302.2	30.8	9.8	1.5	2.3	6.8	503.8	500.0
3.20	332.9	32.8	10.2	1.6	2.4	7.2	504.2	500.2
3.5	380.8	35.9	10.6	1.8	2.6	7.9	504.9	500.5
3.6	397.3	36.9	10.8	1.8	2.7	8.1	505.1	500.6
4.0	465.3	41.0	11.3	2.0	3.0	9.0	506.0	501.0

JOB:	827045 Upper Wilson Pond Dam		
SHEET NO.:	3	OF	3
CALCULATED BY:	CWJ	DATE:	23-Apr-2021
CHECKED BY:	LNM	DATE:	23-Apr-2021
SCALE:	-		

Offices in Vermont, New Hampshire, Maine, & New York

2) Determine possible inflow through the intake structure.

The intake structure will act as a concrete box weir and will transition to a orifice/pressurized flow when the water surface is above the bottom of the concrete beam.

w_{in}: 9.0 ft
A_{in}: 47.2 sf

Bottom of Concrete Beam / Top of Intake Structure: 503.7 ft
Centerline of Intake Structure: 501.1 ft
Flashboard Inv.: 498.5 ft

Weir Equation: $Q_{in} = C * w * h^{\frac{3}{2}}$ C: 2.8

Orifice Equation: $Q_{in} = C * A * \sqrt{2g\Delta h}$ C: 0.5

$WSEL_{u/s}$	$WSEL_{d/s}$	Δh_{bottom}	Δh_{top}	Δh_{weir}	$Q_{in.weir}$	$\Delta h_{orifice}$	$Q_{in.orifice}$	Q_{in}
499.3	498.0	0.8	4.5	0.8	16.4	0.0	0.0	16.4
500.4	498.5	1.9	3.4	1.9	64.7	0.0	0.0	64.7
501.5	499.0	3.0	2.2	3.0	130.9	0.0	0.0	130.9
502.6	499.5	4.1	1.1	4.1	211.1	0.0	0.0	211.1
503.7	499.5	5.2	0.0	5.2	298.8	2.6	306.3	306.3
503.8	500.0	5.3	0.0	5.3	303.1	2.6	306.9	306.9
504.2	500.2	5.7	0.0	5.2	298.8	3.1	332.1	332.1
504.9	500.5	6.4	0.0	5.2	298.8	3.8	366.7	366.7
505.1	500.6	6.6	0.0	5.2	298.8	4.0	377.5	377.5
506.0	501.0	7.5	0.0	5.2	298.8	4.9	418.0	418.0

Establish the Q100 flow to be: 332 cfs. This does not directly match the backwater study in 2012. However some conditions in the diversion channel have changed since that analysis such as the addition of the flashboard.

Per New Hampshire Dam Safety Rule Env-Wr. 303.11: Flow into High Hazard Dams to be 250% of Q_{100} flow

Diversion Channel Design Flow: 830 cfs

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Hampshire State Plane, FIPSZONE 2800. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles (DOQs) produced at a scale of 1:12,000 from photography dated 1998 or later. These images were reproject by the New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT) onto the New Hampshire State Plane coordinate system.

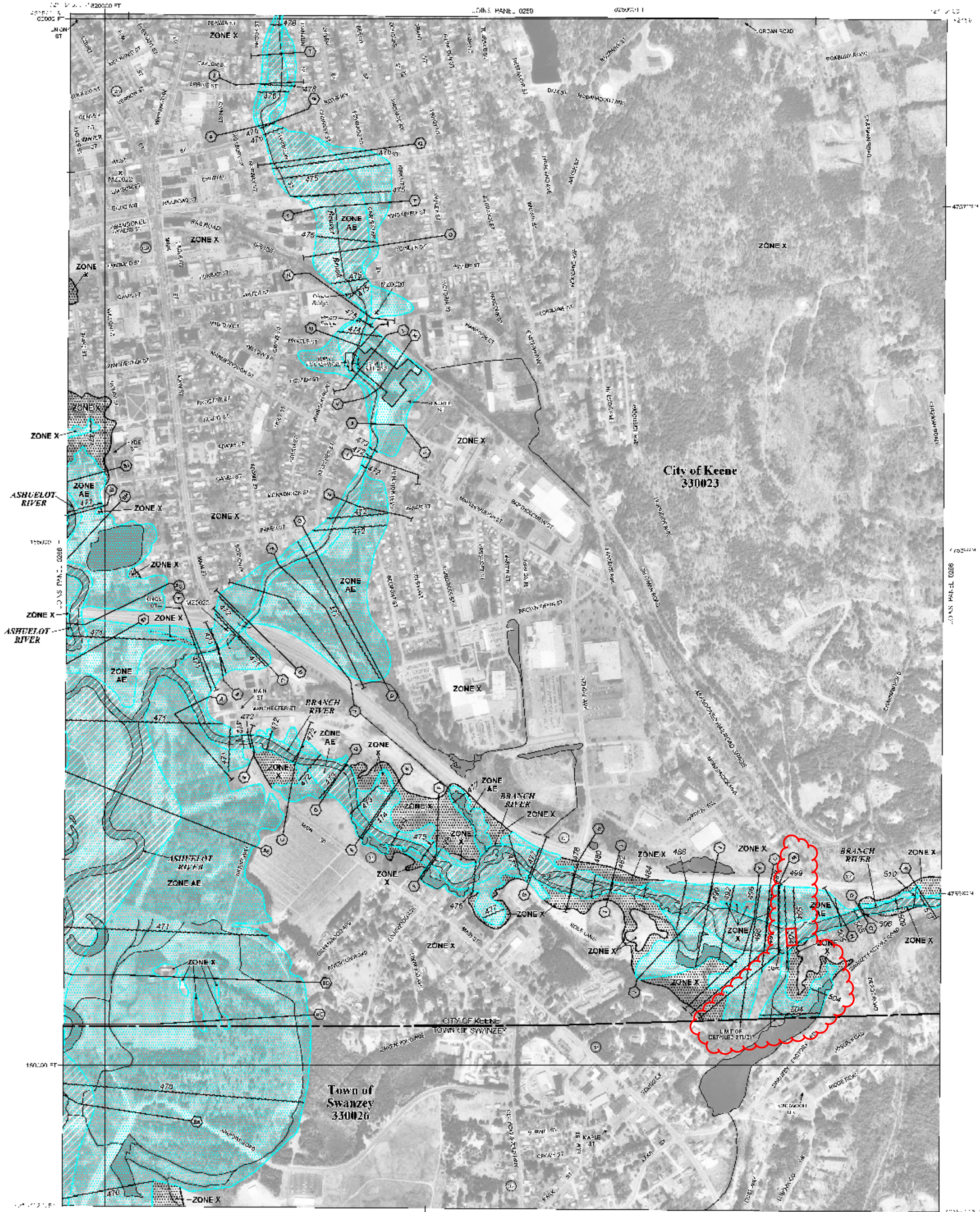
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)- - - -(23)	Transect line
	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000	1000-meter Universal Transverse Mercator grid values, zone 18
500000 FT	5000-foot grid values: New Hampshire State Plane coordinate system, zone (FIPSZONE 2800), Transverse Mercator projection
DX5510 X	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 23, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0267E

FIRM
FLOOD INSURANCE RATE MAP
CHESHIRE COUNTY,
NEW HAMPSHIRE
(ALL JURISDICTIONS)

PANEL 267 OF 610

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

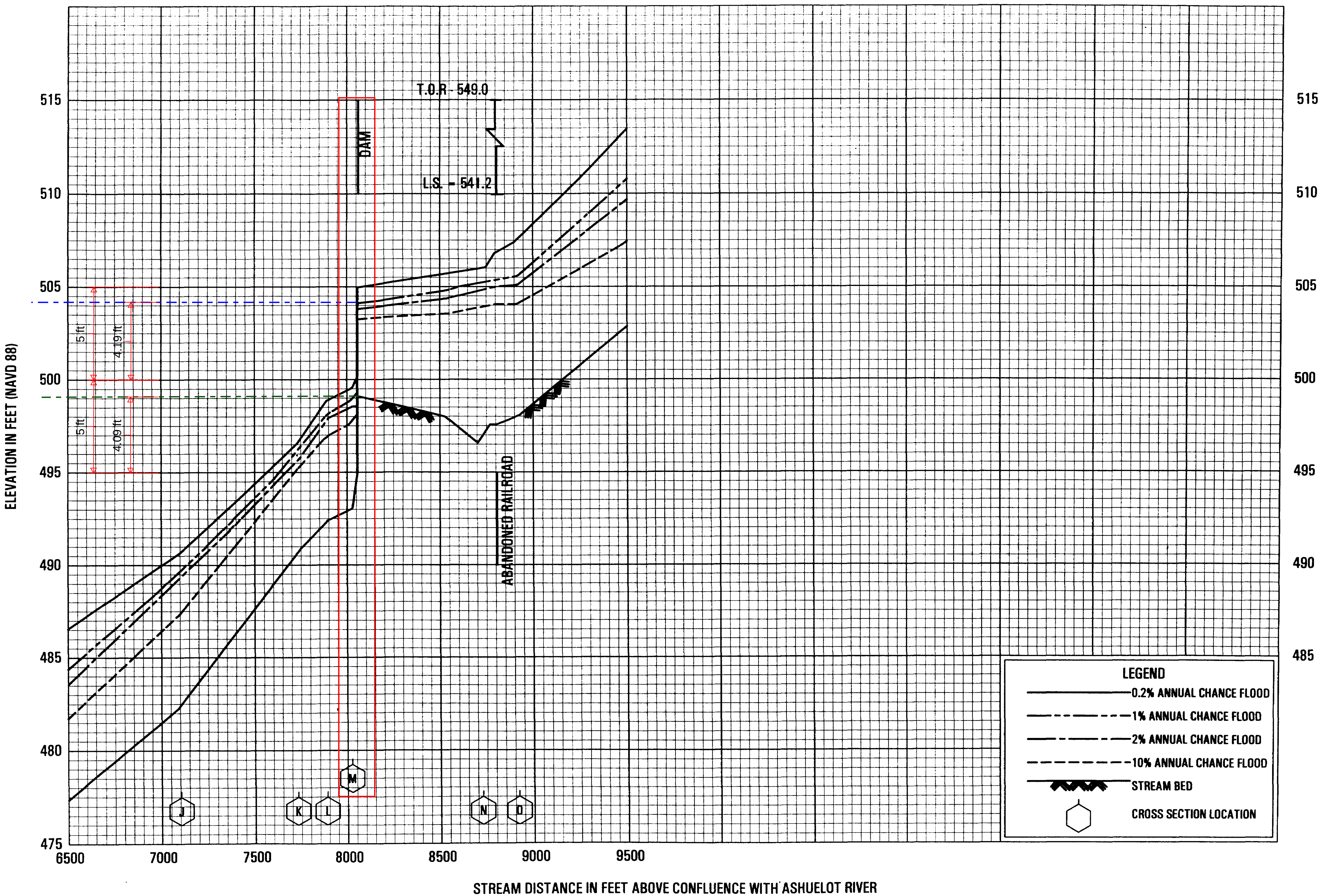
COMMUNITY	NUMBER	PANEL	SUFFIX
KEENE, CITY OF	330023	0267	E
SWANZEY, TOWN OF	330026	0267	E

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

MAP NUMBER
33005C0267E

EFFECTIVE DATE
MAY 23, 2006

Federal Emergency Management Agency



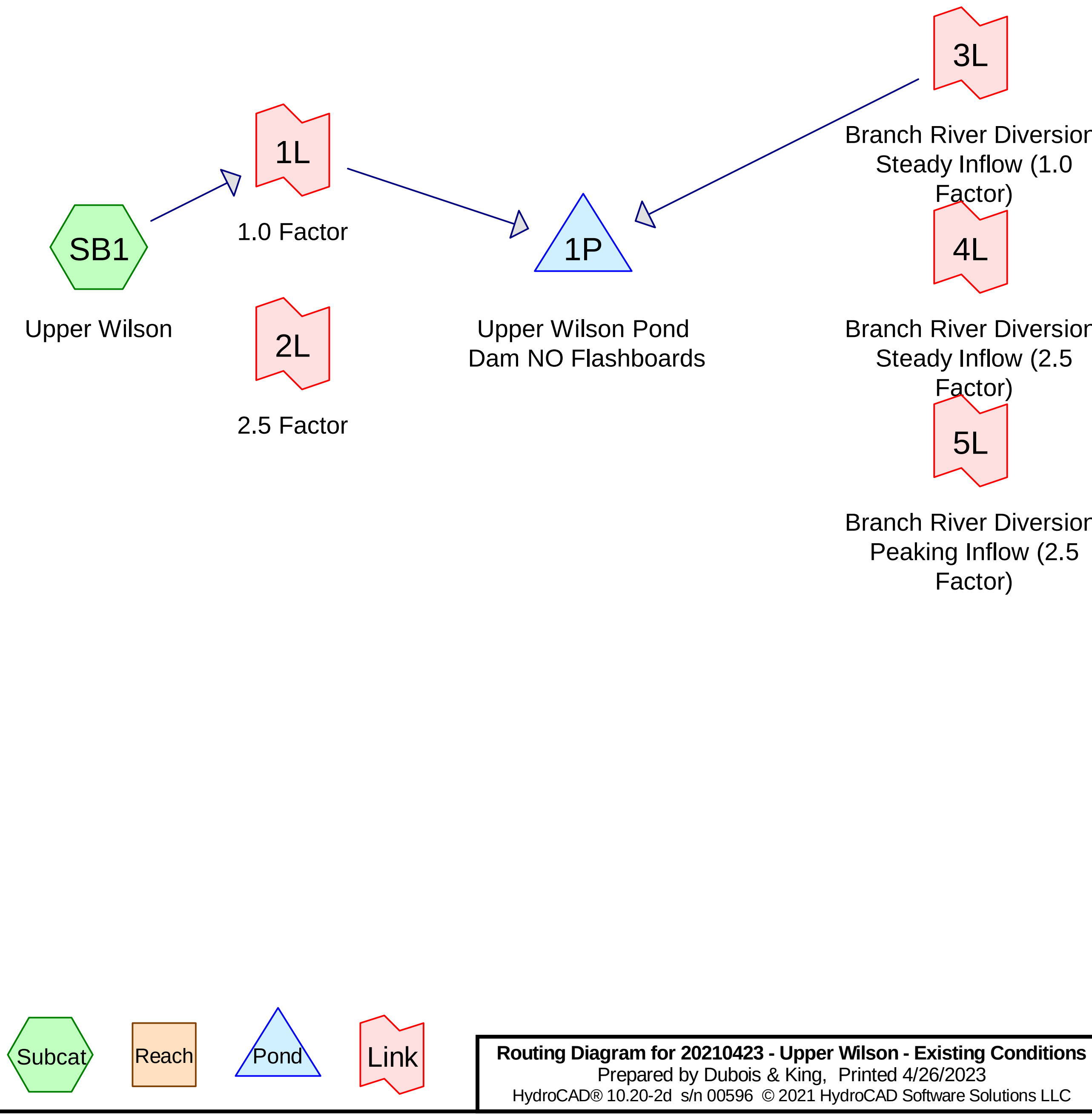
FLOOD PROFILES

BRANCH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CHESHIRE COUNTY, NH

(ALL JURISDICTIONS)



Routing Diagram for 20210423 - Upper Wilson - Existing Conditions
Prepared by Dubois & King, Printed 4/26/2023
HydroCAD® 10.20-2d s/n 00596 © 2021 HydroCAD Software Solutions LLC

Summary for Subcatchment SB1: Upper Wilson

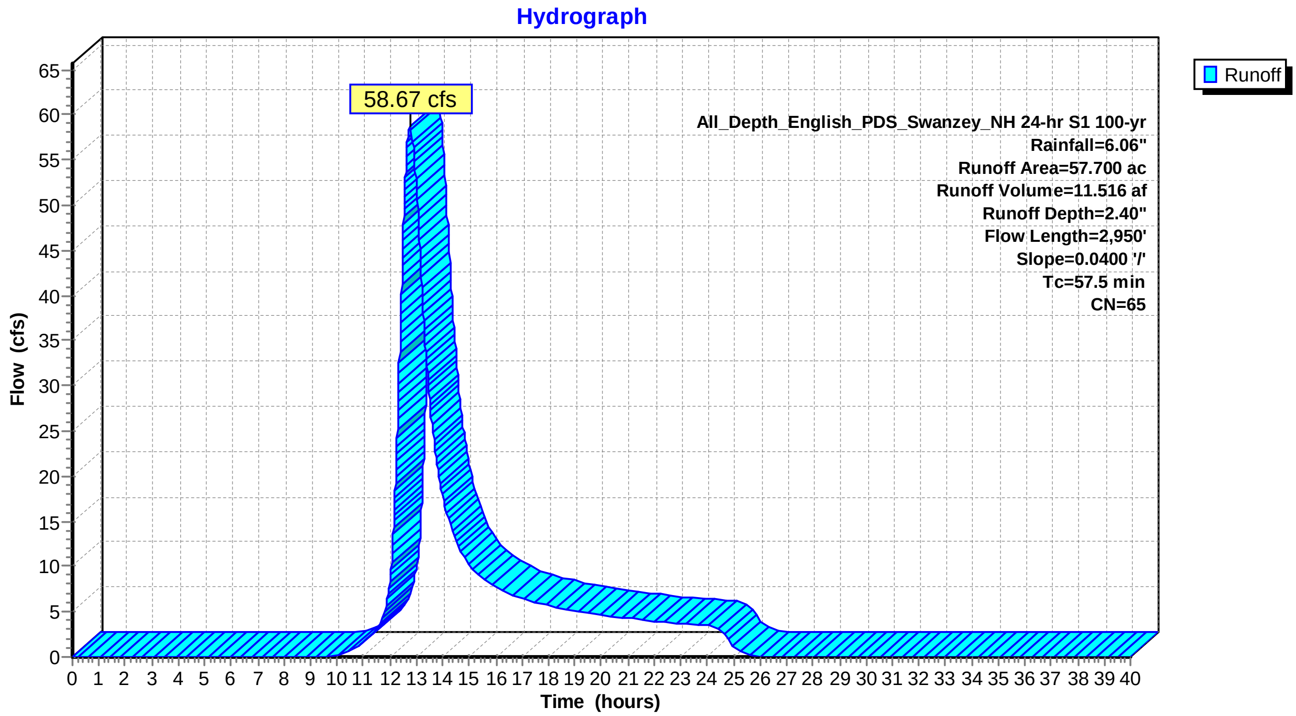
Runoff = 58.67 cfs @ 12.77 hrs, Volume= 11.516 af, Depth= 2.40"
Routed to Link 1L : 1.0 Factor

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
All_Depth_English_PDS_Swanzey_NH 24-hr S1 100-yr Rainfall=6.06"

	Area (ac)	CN	Description
	6.900	55	Woods, Good, HSG B
	4.600	70	Woods, Good, HSG C
*	2.710	32	Woods/grass comb., Good, HSG A_MUS22B
*	0.490	83	Paved roads w/open ditches, 50% imp, HSG A_MUS22B
*	6.500	54	1/2 acre lots, 25% imp, HSG A_MUS22B
*	0.230	98	Unconnected roofs, HSG B_MUS142C
*	1.200	82	Dirt roads, HSG B_MUS142C
*	7.670	58	Woods/grass comb., Good, HSG B_MUS142C
*	3.880	70	1/2 acre lots, 25% imp, HSG B_MUS143C
*	0.620	89	Paved roads w/open ditches, 50% imp, HSG B_MUS143C
*	0.500	75	1/4 acre lots, 38% imp, HSG B_MUS143D
*	3.540	55	Woods, Good, HSG B_MUS143D
*	0.260	89	Paved roads w/open ditches, 50% imp, HSG B_MUS143D
*	1.850	70	Woods, Good, HSG C_MUS161E
*	1.850	77	Woods, Good, HSG D_MUS161E
*	2.400	70	Woods, Good, HSG C_MUS414
	2.300	61	1/4 acre lots, 38% imp, HSG A
*	2.300	30	Woods, Good, HSG A_MUS526A
	0.300	61	1/4 acre lots, 38% imp, HSG A
	7.600	98	Water Surface, HSG D
	57.700	65	Weighted Average
	45.412		78.70% Pervious Area
	12.288		21.30% Impervious Area
	0.230		1.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.5	2,950	0.0400	0.86		**Lag/CN Method,**

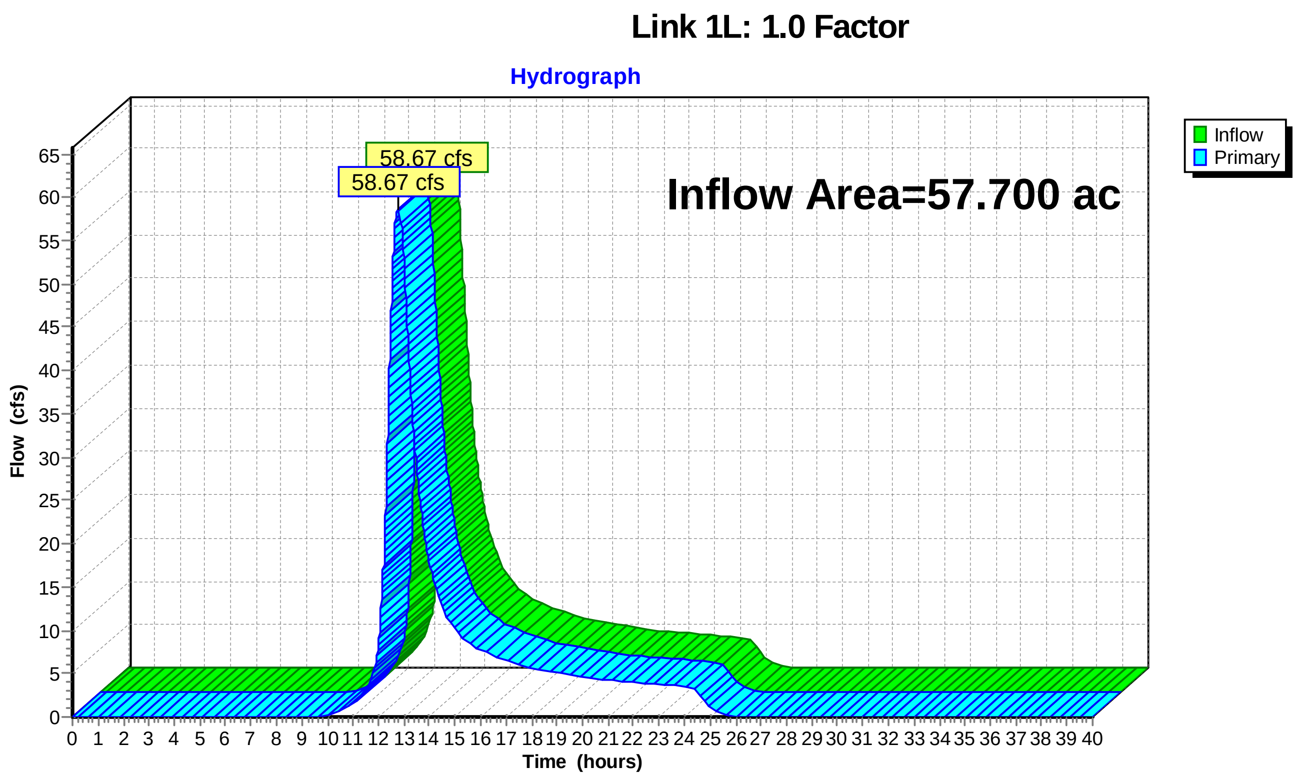
Subcatchment SB1: Upper Wilson



Summary for Link 1L: 1.0 Factor

Inflow Area = 57.700 ac, 21.30% Impervious, Inflow Depth = 2.40" for 100-yr event
Inflow = 58.67 cfs @ 12.77 hrs, Volume= 11.516 af
Primary = 58.67 cfs @ 12.77 hrs, Volume= 11.516 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Upper Wilson Pond Dam NO Flashboards

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs



Summary for Link 3L: Branch River Diversion Steady Inflow (1.0 Factor)

Inflow = 332.00 cfs @ 0.00 hrs, Volume= 1,097.795 af
Primary = 332.00 cfs @ 0.00 hrs, Volume= 1,097.795 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Upper Wilson Pond Dam NO Flashboards

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

101 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
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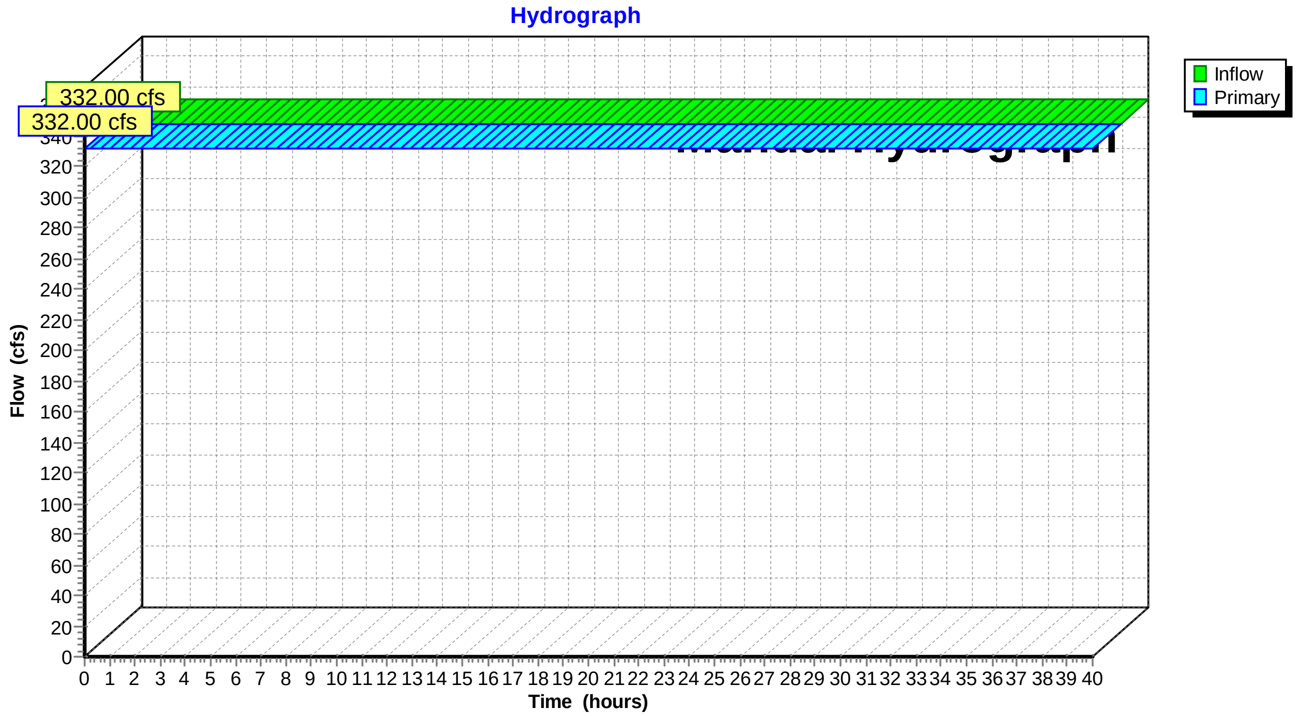
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00									

Link 3L: Branch River Diversion Steady Inflow (1.0 Factor)



Summary for Pond 1P: Upper Wilson Pond Dam NO Flashboards

Inflow Area = 57.700 ac, 21.30% Impervious, Inflow Depth > 230.71" for 100-yr event
Inflow = 390.67 cfs @ 12.77 hrs, Volume= 1,109.311 af
Outflow = 377.19 cfs @ 13.12 hrs, Volume= 1,090.888 af, Atten= 3%, Lag= 21.1 min
Primary = 374.42 cfs @ 13.12 hrs, Volume= 1,090.764 af
Routed to nonexistent node 1R
Secondary = 2.77 cfs @ 13.12 hrs, Volume= 0.124 af
Routed to nonexistent node 1R

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Starting Elev= 497.20' Surf.Area= 6.590 ac Storage= 20.430 af
Peak Elev= 499.74' @ 13.12 hrs Surf.Area= 9.381 ac Storage= 40.648 af (20.219 af above start)
Flood Elev= 499.70' Surf.Area= 9.339 ac Storage= 40.298 af (19.868 af above start)

Plug-Flow detention time= 84.6 min calculated for 1,070.322 af (96% of inflow)
Center-of-Mass det. time= 20.0 min (1,217.0 - 1,197.1)

Volume	Invert	Avail.Storage	Storage Description
#1	491.00'	79.758 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

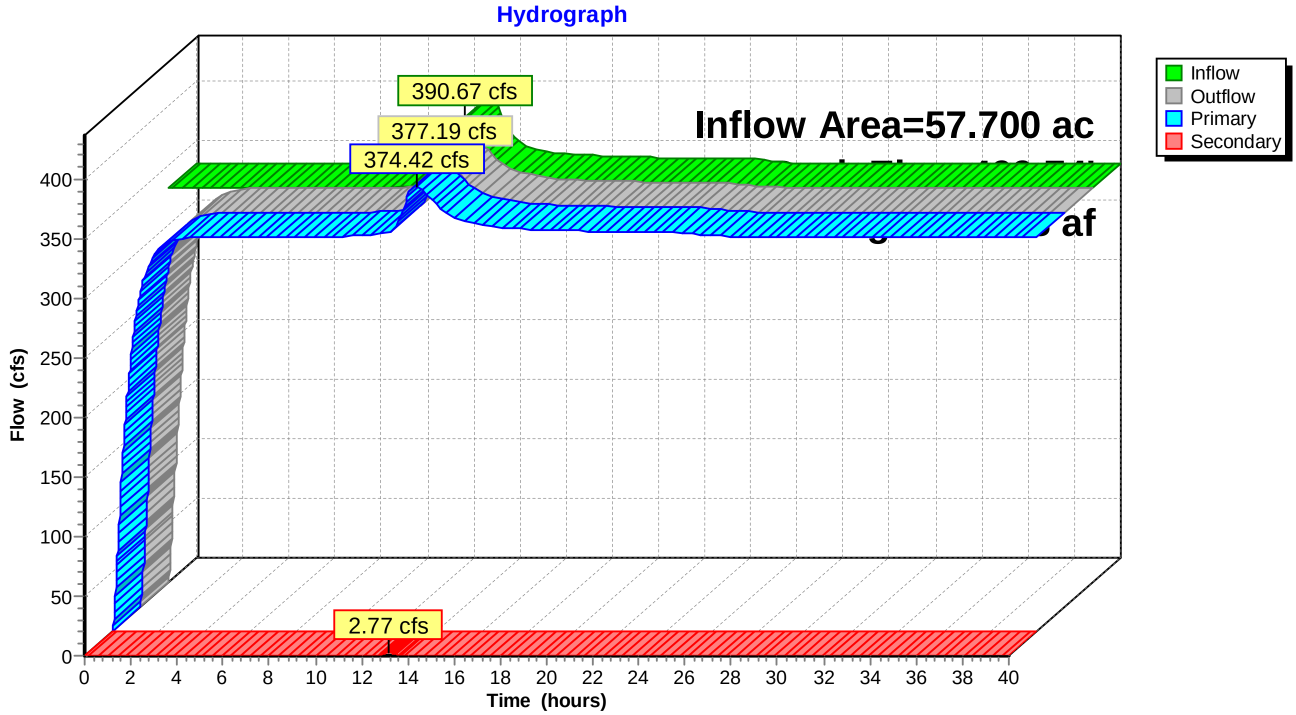
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
491.00	0.000	0.000	0.000
498.15	7.600	27.170	27.170
500.20	9.900	17.938	45.108
503.20	13.200	34.650	79.758

Device	Routing	Invert	Outlet Devices
#1	Primary	497.20'	**HEC-RAS Stage-Discharge No Flashbrds** Elev. (feet) 497.20 497.25 497.32 497.43 497.56 497.67 497.87 498.07 498.26 498.58 498.88 499.14 499.39 499.63 499.85 500.07 500.28 501.00 Disch. (cfs) 0.000 1.000 5.000 10.000 20.000 30.000 50.000 75.000 100.000 150.000 200.000 250.000 300.000 350.000 400.000 450.000 500.000 670.000
#2	Secondary	499.70'	**Top of Dam - Left overbank Weir, C= 2.63** Offset (feet) 0.00 0.10 17.60 58.40 86.90 122.60 185.02 195.40 243.70 292.10 317.90 336.30 345.90 351.20 351.30 359.50 359.60 Elev. (feet) 502.00 499.86 500.20 499.83 500.10 500.40 500.10 500.40 499.70 499.70 499.90 499.70 499.70 499.70 499.80 499.80 502.00
#3	Secondary	500.10'	**Top of Dam - Right overbank, C= 2.63** Offset (feet) 396.70 396.80 400.90 401.40 410.50 410.80 414.70 434.30 438.10 469.40 469.50 472.30 488.90 498.00 505.90 523.30 Elev. (feet) 504.60 500.20 500.20 502.90 502.90 500.20 500.20 500.10 500.10 500.10 500.10 500.20 500.90 502.20 503.10 504.60

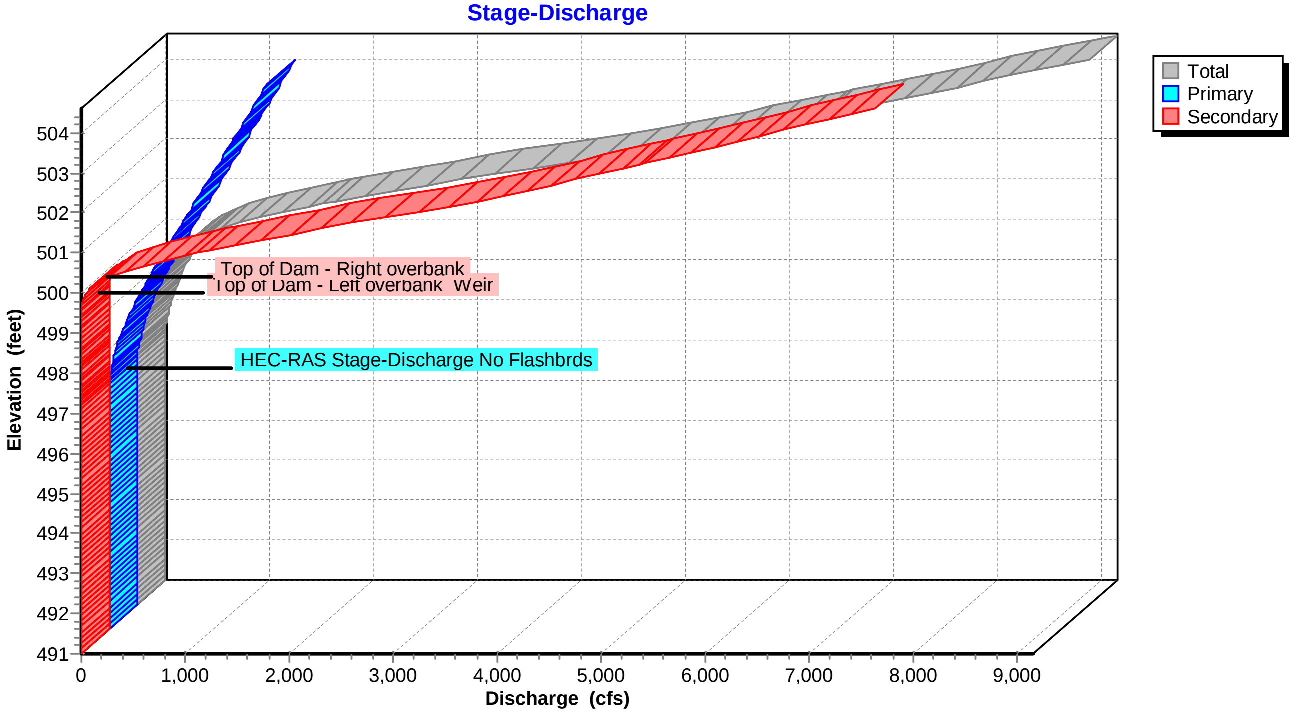
Primary OutFlow Max=374.42 cfs @ 13.12 hrs HW=499.74' (Free Discharge)
└**1=HEC-RAS Stage-Discharge No Flashbrds** (Custom Controls 374.42 cfs)

Secondary OutFlow Max=1.29 cfs @ 13.12 hrs HW=499.74' (Free Discharge)
├**2=Top of Dam - Left overbank Weir** (Weir Controls 1.29 cfs @ 0.46 fps)
└**3=Top of Dam - Right overbank** (Controls 0.00 cfs)

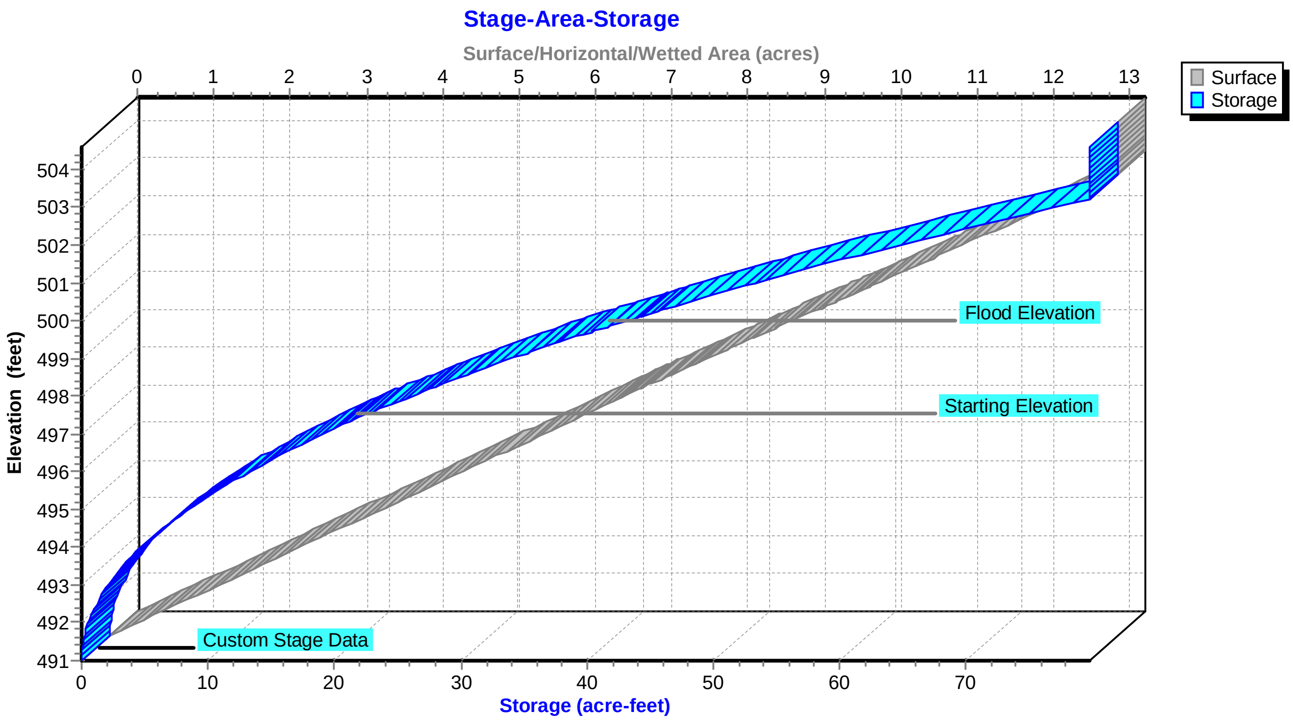
Pond 1P: Upper Wilson Pond Dam NO Flashboards

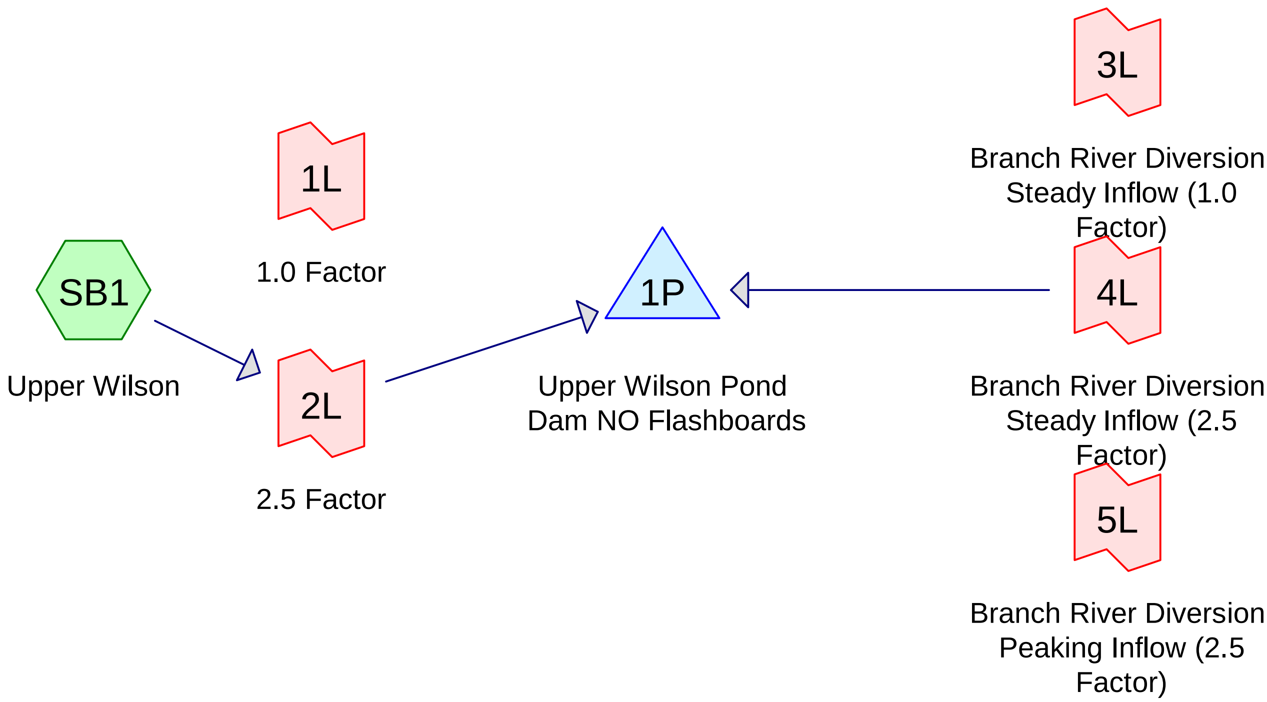


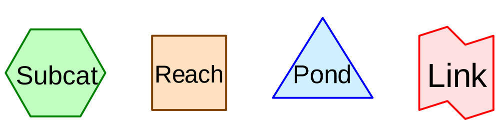
Pond 1P: Upper Wilson Pond Dam NO Flashboards



Pond 1P: Upper Wilson Pond Dam NO Flashboards







Routing Diagram for 20210423 - Upper Wilson - Existing Conditions
Prepared by Dubois & King, Printed 4/26/2023
HydroCAD® 10.20-2d s/n 00596 © 2021 HydroCAD Software Solutions LLC

Summary for Subcatchment SB1: Upper Wilson

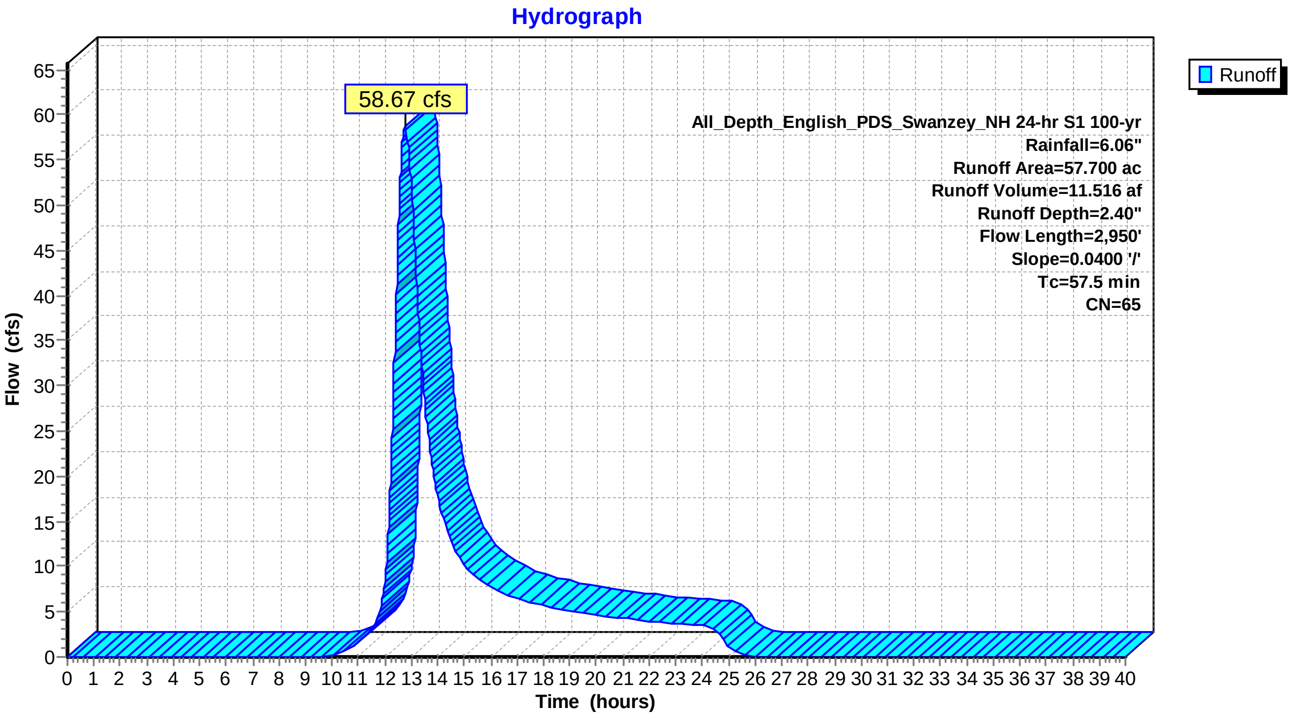
Runoff = 58.67 cfs @ 12.77 hrs, Volume= 11.516 af, Depth= 2.40"
Routed to Link 2L : 2.5 Factor

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
All_Depth_English_PDS_Swanzey_NH 24-hr S1 100-yr Rainfall=6.06"

	Area (ac)	CN	Description
	6.900	55	Woods, Good, HSG B
	4.600	70	Woods, Good, HSG C
*	2.710	32	Woods/grass comb., Good, HSG A_MUS22B
*	0.490	83	Paved roads w/open ditches, 50% imp, HSG A_MUS22B
*	6.500	54	1/2 acre lots, 25% imp, HSG A_MUS22B
*	0.230	98	Unconnected roofs, HSG B_MUS142C
*	1.200	82	Dirt roads, HSG B_MUS142C
*	7.670	58	Woods/grass comb., Good, HSG B_MUS142C
*	3.880	70	1/2 acre lots, 25% imp, HSG B_MUS143C
*	0.620	89	Paved roads w/open ditches, 50% imp, HSG B_MUS143C
*	0.500	75	1/4 acre lots, 38% imp, HSG B_MUS143D
*	3.540	55	Woods, Good, HSG B_MUS143D
*	0.260	89	Paved roads w/open ditches, 50% imp, HSG B_MUS143D
*	1.850	70	Woods, Good, HSG C_MUS161E
*	1.850	77	Woods, Good, HSG D_MUS161E
*	2.400	70	Woods, Good, HSG C_MUS414
	2.300	61	1/4 acre lots, 38% imp, HSG A
*	2.300	30	Woods, Good, HSG A_MUS526A
	0.300	61	1/4 acre lots, 38% imp, HSG A
	7.600	98	Water Surface, HSG D
	57.700	65	Weighted Average
	45.412		78.70% Pervious Area
	12.288		21.30% Impervious Area
	0.230		1.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.5	2,950	0.0400	0.86		**Lag/CN Method,**

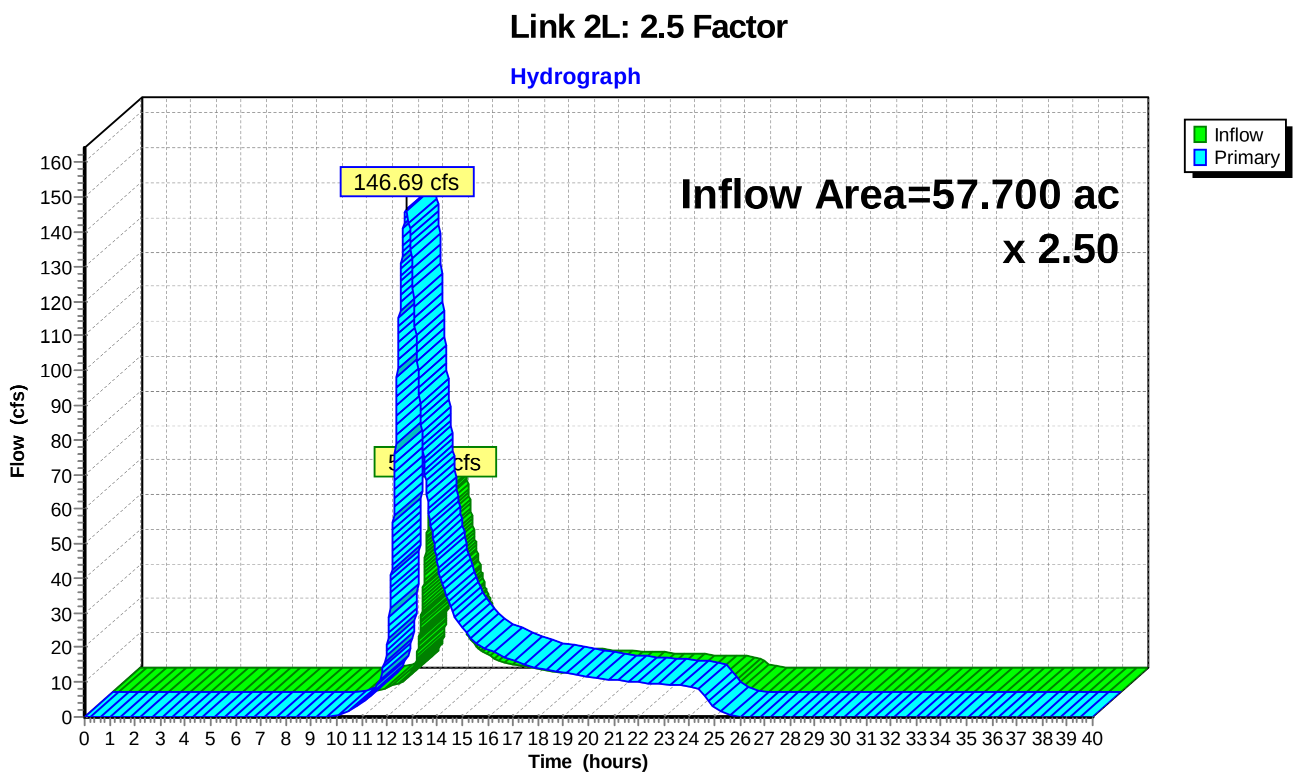
Subcatchment SB1: Upper Wilson



Summary for Link 2L: 2.5 Factor

Inflow Area = 57.700 ac, 21.30% Impervious, Inflow Depth = 2.40" for 100-yr event
Inflow = 58.67 cfs @ 12.77 hrs, Volume= 11.516 af
Primary = 146.69 cfs @ 12.77 hrs, Volume= 28.790 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Upper Wilson Pond Dam NO Flashboards

Primary outflow = Inflow x 2.50, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs



Summary for Link 4L: Branch River Diversion Steady Inflow (2.5 Factor)

Inflow = 332.00 cfs @ 0.00 hrs, Volume= 1,097.795 af
Primary = 830.00 cfs @ 0.00 hrs, Volume= 2,744.488 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Upper Wilson Pond Dam NO Flashboards

Primary outflow = Inflow x 2.50, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

101 Point manual hydrograph, To= 0.00 hrs, dt= 1.00 hrs, cfs =

332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
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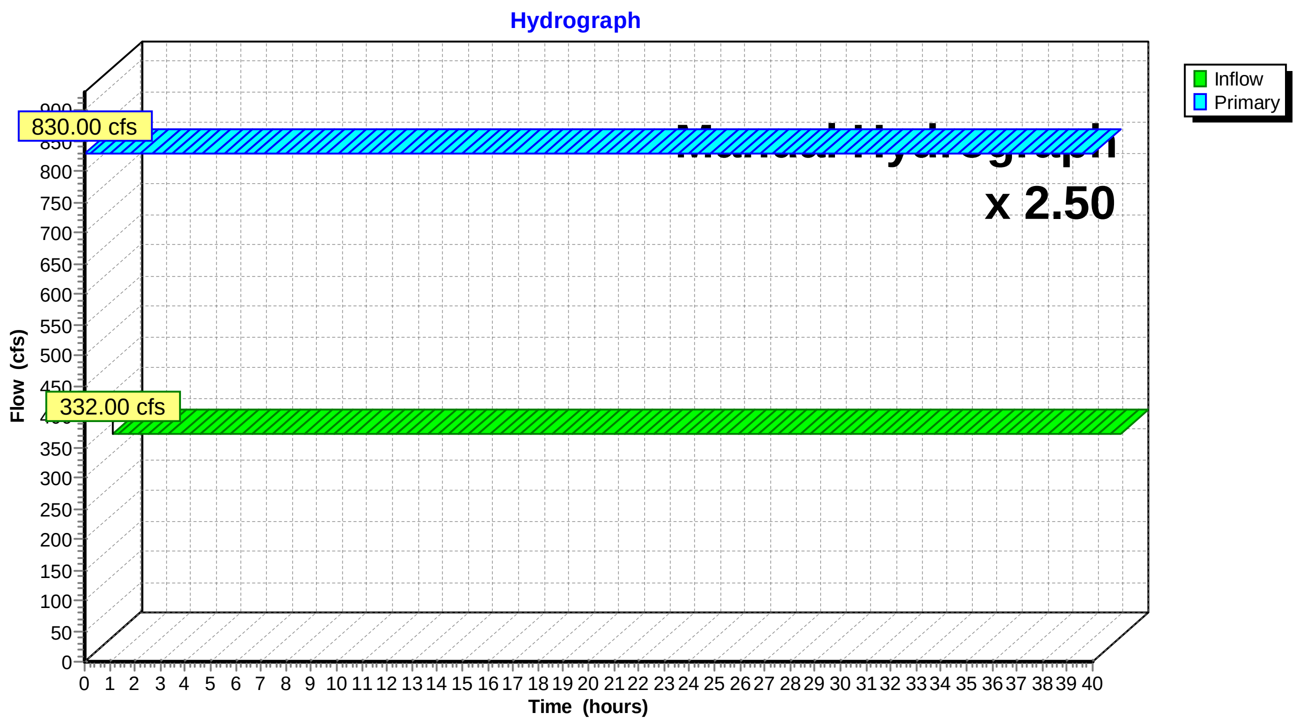
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00	332.00
332.00									

Link 4L: Branch River Diversion Steady Inflow (2.5 Factor)



Summary for Pond 1P: Upper Wilson Pond Dam NO Flashboards

Inflow Area = 57.700 ac, 21.30% Impervious, Inflow Depth >576.76" for 100-yr event
Inflow = 976.69 cfs @ 12.77 hrs, Volume= 2,773.278 af
Outflow = 973.49 cfs @ 12.87 hrs, Volume= 2,746.550 af, Atten= 0%, Lag= 5.7 min
Primary = 555.40 cfs @ 12.87 hrs, Volume= 1,743.261 af
Routed to nonexistent node 1R
Secondary = 418.08 cfs @ 12.87 hrs, Volume= 1,003.289 af
Routed to nonexistent node 1R

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Starting Elev= 497.20' Surf.Area= 6.590 ac Storage= 20.430 af
Peak Elev= 500.51' @ 12.87 hrs Surf.Area= 10.246 ac Storage= 48.277 af (27.847 af above start)
Flood Elev= 499.70' Surf.Area= 9.339 ac Storage= 40.298 af (19.868 af above start)

Plug-Flow detention time= 41.2 min calculated for 2,725.778 af (98% of inflow)
Center-of-Mass det. time= 11.6 min (1,208.6 - 1,197.1)

Volume	Invert	Avail.Storage	Storage Description
#1	491.00'	79.758 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

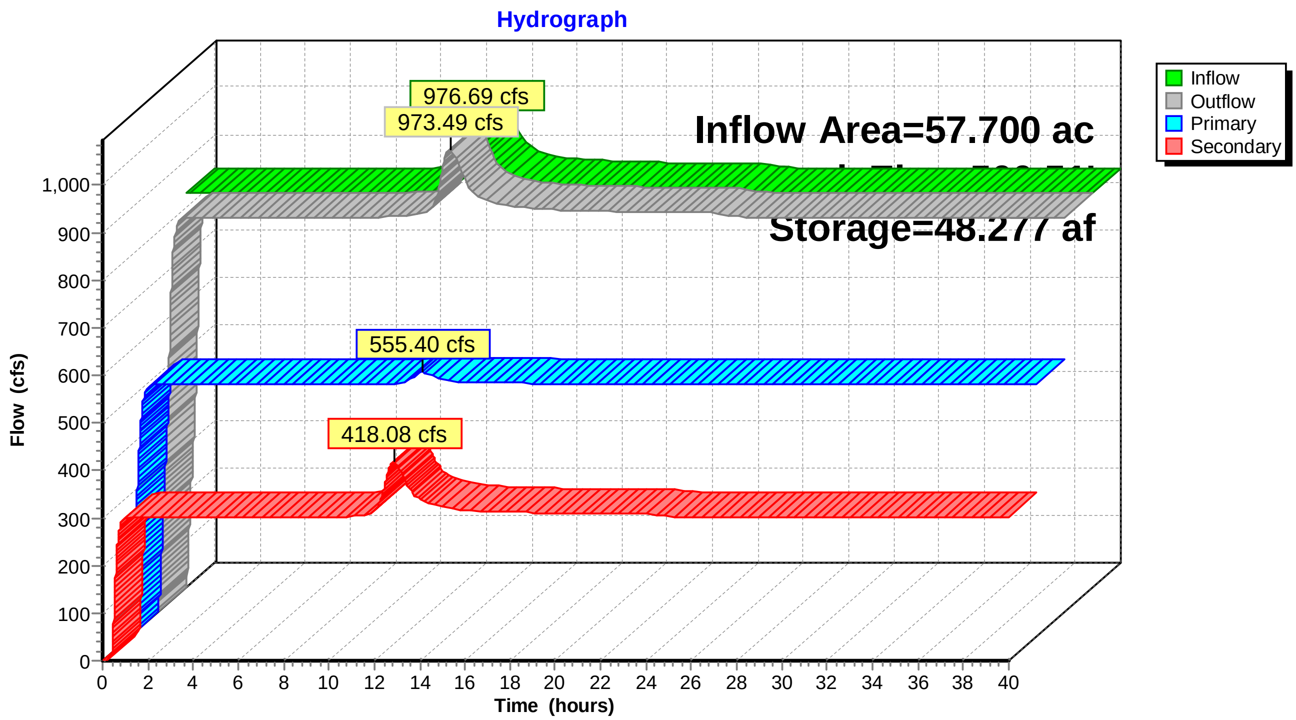
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
491.00	0.000	0.000	0.000
498.15	7.600	27.170	27.170
500.20	9.900	17.938	45.108
503.20	13.200	34.650	79.758

Device	Routing	Invert	Outlet Devices
#1	Primary	497.20'	**HEC-RAS Stage-Discharge No Flashbrds** Elev. (feet) 497.20 497.25 497.32 497.43 497.56 497.67 497.87 498.07 498.26 498.58 498.88 499.14 499.39 499.63 499.85 500.07 500.28 501.00 Disch. (cfs) 0.000 1.000 5.000 10.000 20.000 30.000 50.000 75.000 100.000 150.000 200.000 250.000 300.000 350.000 400.000 450.000 500.000 670.000
#2	Secondary	499.70'	**Top of Dam - Left overbank Weir, C= 2.63** Offset (feet) 0.00 0.10 17.60 58.40 86.90 122.60 185.02 195.40 243.70 292.10 317.90 336.30 345.90 351.20 351.30 359.50 359.60 Elev. (feet) 502.00 499.86 500.20 499.83 500.10 500.40 500.10 500.40 499.70 499.70 499.90 499.70 499.70 499.70 499.80 499.80 502.00
#3	Secondary	500.10'	**Top of Dam - Right overbank, C= 2.63** Offset (feet) 396.70 396.80 400.90 401.40 410.50 410.80 414.70 434.30 438.10 469.40 469.50 472.30 488.90 498.00 505.90 523.30 Elev. (feet) 504.60 500.20 500.20 502.90 502.90 500.20 500.20 500.10 500.10 500.10 500.10 500.20 500.90 502.20 503.10 504.60

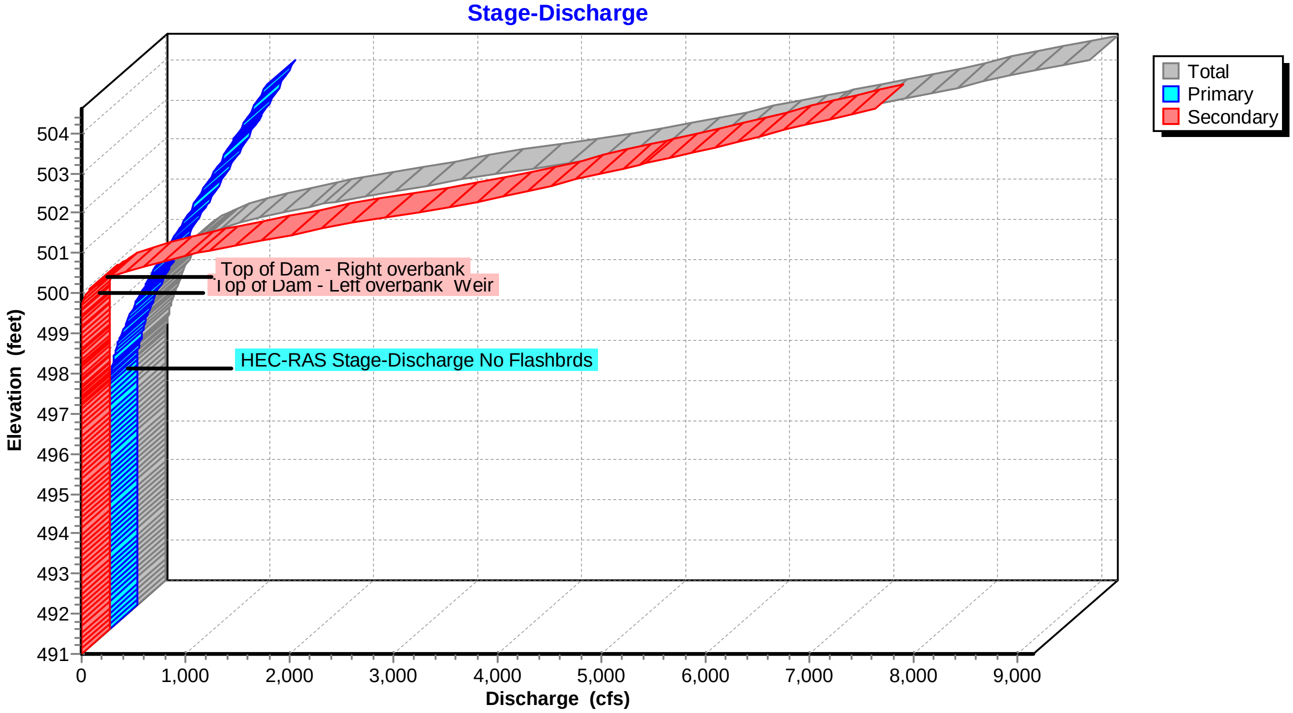
Primary OutFlow Max=555.40 cfs @ 12.87 hrs HW=500.51' (Free Discharge)
└**1=HEC-RAS Stage-Discharge No Flashbrds** (Custom Controls 555.40 cfs)

Secondary OutFlow Max=417.57 cfs @ 12.87 hrs HW=500.51' (Free Discharge)
├**2=Top of Dam - Left overbank Weir** (Weir Controls 374.73 cfs @ 1.58 fps)
└**3=Top of Dam - Right overbank** (Weir Controls 42.84 cfs @ 1.49 fps)

Pond 1P: Upper Wilson Pond Dam NO Flashboards



Pond 1P: Upper Wilson Pond Dam NO Flashboards



Pond 1P: Upper Wilson Pond Dam NO Flashboards