



Base Flood Elevation, Ditch Profile, and Detention Evaluation

Project Heartland

Grundy County, Illinois

July 2026

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Executive Summary

Kimley-Horn and Associates, Inc. (Kimley-Horn) has been contracted to perform a preliminary detention analysis and Base Flood Elevation (BFE) analysis for Aligned in Coal City, Illinois. The location of the proposed development is shown below and in **Appendix A** as **Figure 1**.

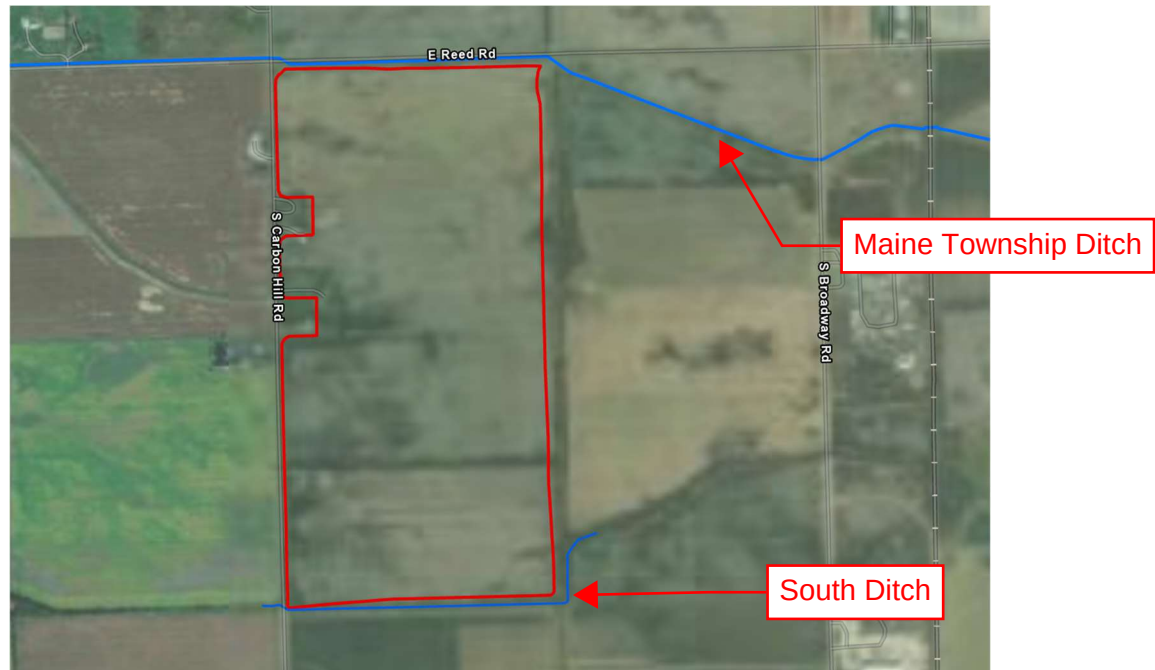


Figure 1: Project Location

The purpose of this hydrologic and hydraulic study is to provide the results of the onsite and offsite drainage analysis to estimate the BFEs for the ditch along the south property extent (herein referenced as South Ditch) and the detention requirements for the proposed project site. This report describes the methodology used to determine existing drainage patterns and perform the hydrologic and hydraulic analysis.

The U.S. Army Corps of Engineers HEC-HMS (Hydrologic Engineering Center Hydrologic Modeling System) v. 4.9 modeling program was used to complete the hydrologic analysis of the subject tract. HEC-RAS (Hydrologic Engineering Center River Analysis System) v. 4.6.1 was used to complete the one-dimensional hydraulic modeling of Maine Township Ditch and the South Ditch. HydroCAD was used to analyze onsite detention and release rate requirements.

Base Flood Elevations were determined for the entirety of the South Ditch through the project site and are presented in **Appendix E**. Detention and release rate requirements were analyzed to meet the Will County stormwater regulations and are presented in **Appendix E**.

1.0 Introduction

1.1 PURPOSE OF STUDY

The purpose of this hydrologic and hydraulic study is to provide the results of the on-site and off-site drainage analysis and to estimate the Base Flood Elevation (BFE) of the South Ditch and to determine onsite detention and release rate calculations. In addition, a proposed culvert sizing of the culverts under E. Reed Road and S. Carbon Hill Road was conducted to reduce flood and tailwater impacts on site. This report details the methodology used for these analysis.

1.2 LOCATION

The proposed development is in the Village of Coal City and Grundy County, Illinois. The site is located southwest of Coal City, Illinois and northwest of Central City, Illinois. The project site encompasses approximately 280 acres. The site is bounded to the north by E. Reed Road, to the east by private agricultural land, to the west by S. Carbon Hill Road, and to the south by Unnamed Tributary (South Ditch). The development falls under the jurisdiction of the Will County stormwater ordinance.

The site is located on FEMA Flood Insurance Rate Map (FIRM) Panels 17063C0145F and 17063C0210F as depicted in **Figure 2** in **Appendix A**. The majority of the site lies entirely within a FEMA Special Flood Hazard Area (SFHA) Zone X, "Area of Minimal Flood Hazard." The Maine Township Ditch, and the northwestern corner of the site, lie within a FEMA SFHA Zone AE. Zone AE Base Flood represents areas determined to be subject to inundation in the 1% annual chance event which have had base flood elevations (BFEs) determined. The South Ditch does not currently have BFEs determined and will be analyzed as part of this report.

A vicinity map showing the limits and location of the subject tract is shown as **Figure 1** in **Appendix A**.

1.3 GENERAL SITE CHARACTERISTICS

The project site is primarily undeveloped agricultural land located adjacent to E. Reed Road and S. Carbon Hill Road. Maine Township Ditch runs through the project site from east to west along E. Reed Road and exits the site to the north under E. Reed Road through a 6-foot culvert. The flows are then directed west under S. Carbon Hill Road through another 6-foot culvert. Offsite flows are captured outside the east property limit and conveyed into either Maine Township Ditch or the South Ditch.

The South Ditch runs from east to west along the southern border of the project site. The ditch is a tree lined, triangular section with a depth of 6 feet within the project limits. Midway through the site, the flow passes through a 4-foot culvert. At Carbon Hill Road, the ditch is conveyed beneath the roadway through a 6-foot culvert and continues downstream to the west. South Ditch is not privately owned and is under the jurisdiction of Grundy County.

2.0 Survey Information

2.1 TOPOGRAPHIC INFORMATION

Site specific survey was provided for the site by the Client on February 5th, 2026. The survey included on-site topographic information and hard-shot channel data collected along the length of the Maine Township Ditch at approximately 300-foot intervals. These survey data were used to define ground elevations and channel geometry within the model.

Publicly available 1-meter LiDAR was used to supplement the site-specific survey data. Public LiDAR of the model area was obtained from the United States Geological Survey (USGS). The topography from this

supplemental data was used to define the limits of the hydrologic model along high points throughout the terrain.

3.0 South Ditch Base Flood Elevation Analysis

3.1 INTRODUCTION

A preliminary analysis of South Ditch was performed in HEC-RAS to determine water surface elevations for the 100-year flood event and to be used for compensatory storage calculations. Discharge data was collected from the United States Geological Survey (USGS) StreamStats software for analysis in the HEC-RAS model.

3.2 DISCHARGE DATA

Three discharges from StreamStats were applied to the HEC-RAS model. StreamStats data is provided in **Appendix B**. Discharge locations were selected to represent locations across the watershed where flow changes and to provide detailed flow data through the South Ditch along the border of the property. The regression equations used by StreamStats closely represent the similar conditions of Maine Township Ditch and provide values in-line with the regulatory model scaled to the conditions of the South Ditch. A summary of the discharges and the associated cross sections are presented below in **Table 1**. A base flood elevation map with cross sections is provided in **Appendix B**.

Table 1: USGS Discharges and Locations

Cross Section	USGS Flow (cfs)
299	232
2862	221
3654	188

3.3 HEC-RAS ANALYSIS

In HEC-RAS version 6.4.1, a reach was defined to represent the South Ditch. Cross sections were added throughout the watershed model and project site to capture hydraulically relevant features and to represent the channel and overland geometry of the study area.

Two existing culverts were modeled in the reach along the south end of the project site. The first culvert is a 4-foot concrete pipe culvert that conveys flow under an agricultural crossing located approximately halfway through the project site along South Ditch. The second culvert is a 6-foot corrugated metal pipe culvert conveying flow under S. Carbon Hill Road at the western limit of the project site. Expansion and contraction ratios were increased, and ineffective areas were applied to two cross sections upstream and downstream of these crossings.

Manning's n values for the channel and overbank were determined from aerial and street-view imagery. A Manning's of 0.06 and 0.045 were used for the overbanks and channel respectively.

The USGS flows were applied in HEC-RAS as steady flow data at the cross sections mentioned above. A normal depth boundary condition was used at the downstream end of the study.

3.4 BASE FLOOD ELEVATION SUMMARY

Base flood elevations determined throughout the model are shown in **Table 2** below. Onsite cross sections are denoted with an asterisk. A base flood elevation map is provided in **Appendix B**.

Table 2: Base Flood Elevation Summary Table

River Station	Profile	Q Total	W.S. Elevation (ft)
3654	100-Yr	188	568.85
3493	100-Yr	188	568.84
3200	100-Yr	188	568.69
2956	100-Yr	188	568.54
2861	100-Yr	221	568.45
2701	100-Yr	221	568.31
2289	100-Yr	221	567.97
1955	100-Yr	221	567.71
1767	100-Yr	221	567.57
1757	100-Yr	221	567.56
1747	100-Yr	221	567.55
1721		Culvert	
1694	100-Yr	221	565.93
1684	100-Yr	221	565.93
1673	100-Yr	221	565.93
1496	100-Yr	221	565.9
963	100-Yr	221	565.86
491	100-Yr	221	565.85
299	100-Yr	232	565.85
289	100-Yr	232	565.85
257	100-Yr	232	565.85
226		Culvert	
173	100-Yr	232	565.07
158	100-Yr	232	564.99
144	100-Yr	232	564.98
32	100-Yr	255	564.62

4.0 Maine Township Ditch Culvert Sizing

4.1 INTRODUCTION

Detention release along the regulatory floodplain of Maine Township Ditch is controlled, in part, by the 10-year tailwater elevations. The FEMA FIS report shows water surface profiles for Maine Township Ditch throughout the project site. Due to the restrictive nature of the culverts at the downstream end of the site, under E. Reed Road and S. Carbon Hill Road, there is a significant drop in water surface elevations across the FEMA profile through these culverts.

4.2 CULVERT ANALYSIS

The regulatory model for Maine Township Ditch was acquired from FEMA. The model was opened and run in HEC-RAS v. 6.4.1 to ensure compatibility across versions and verify version results against the regulatory model. See **Appendix E** for the Maine Township Ditch HEC-RAS output logs and profile summary tables.

The model includes the existing 6-foot culverts under E. Reed Road and S. Carbon Hill Road. A corrected effective model geometry was created by updating the effective geometry with more recent USGS lidar and site-specific survey. In addition to updated survey, six additional cross sections, 20426, 20601, 20873, 21180, 21485, and 21756, were added for defining hydraulic structures that are included in proposed development conditions. These additional cross sections provide the level of detail necessary to model the structures consistently in both the existing and proposed conditions analysis.

A proposed effective model was created by updating the corrected effective model with proposed 12-foot wide by 6.5-foot tall box culverts at the ditch crossing for both E. Reed Road and S. Carbon Hill Road. The proposed culverts reduce the 10-year tailwater elevation by up to 2.5 feet through the project site. Since the FEMA model utilized the same flow upstream and downstream of the culverts, the proposed culvert increase effects are within the adopted upstream and downstream flows. See **Appendix C** for the proposed Maine Township Ditch floodplain delineation. See **Appendix E** for the HEC-RAS profile summary table comparing the water surfaces between the effective, corrected effective, and proposed conditions models.

5.0 Detention Analysis

5.1 INTRODUCTION

The Will County stormwater manual dictates the allowable release rates for the 2- and 100-year storm events for developments. An analysis of detention sizing and release rates was conducted in HydroCAD to determine the required storage volume and outlet sizing to meet the release rates.

The project site was broken into four subbasins with each subbasin having an associated detention pond and allowable release rate determined by the disturbed area for that subbasin. See **Appendix D** for detention drainage area maps.

5.2 EXISTING DRAINAGE

An existing site analysis was conducted in HydroCAD to determine existing drainage patterns and site runoff. Will County ordinance requires that release rates of new development meet the 2-year and 100-year release rate requirements of 0.04 and 0.15 cfs/ac, respectively, of development unless the existing conditions release rate is lower.

In existing conditions, the site is comprised of entirely agricultural landcover. A band of increased elevation splits the site into north and south draining sections. The north section drains to Maine Township Ditch and the south section drains to the South Ditch. In the northwest corner of the project site there is a sink that holds water but drains to Maine Township Ditch through a 1-foot culvert or by overland flow. On the southwest side of the property, there is another sink that captures water but drains to the South Ditch through a 2-foot culvert.

The results of the existing condition analysis show that existing release rates are well above the 0.04 and 0.15 cfs/ac release rate required by the County. **Table 3** below summarizes the existing conditions release rates.

Table 3: Existing Conditions Release Rates

Drainage Area	Release Rate (cfs)
North	120.40
South	94.58

5.2 MODEL PARAMETERS

Curve Number

Curve numbers for the proposed conditions were assigned based on the Will County stormwater manuals acceptance of the TR-55 methodology for determination of curve numbers. The weighted curve numbers used in the detention analysis for the site are presented below in **Table 4**. The dominant landcover types in proposed conditions are pervious open space, impervious, and gravel substation areas.

Table 4: Subbasin Drainage Area and Curve Number

Subbasin	Drainage Area (ac)	Curve Number
1	45.74	89
2	47.83	89
3	60.15	94
4	129.42	86

Time of Concentration

Time of concentration was estimated based on the proposed land cover conditions to be 10 minutes. Time of concentration calculations used estimates for sheet flow, shallow concentrated flow, and channelized or pipe flow.

Rainfall

Rainfall data for the project site was acquired from the Illinois State Water Survey (ISWS) Bulletin 75. These rainfall depths were applied to Huff distributions for Illinois in HydroCAD for the 2- and 100-year storm events. Rainfall depths at the project site for the 2- and 100-year storm events are provided in **Table 5** below.

Table 5: Precipitation

Storm Event	Rainfall (in)
2-Year	3.34
100-Year	8.57

Water Quality Volume

Will County stormwater ordinance requires that impervious runoff from the 0.75" rainfall event is to be stored for water quality purposes. The runoff volume from the 0.75" event was calculated and added below the primary basin outlets for infiltration and to provide the necessary water quality storage volume. Water quality storage was modeled in HydroCAD using a single pond node for Ponds 1 and 2 and a single pond node for Ponds 3 and 4. Because the ponds within each pair are connected by equalizer pipes at their invert elevations, water can flow freely between them, resulting in a common water surface elevation. Therefore, a single water quality high water level was calculated for each pond pair.

5.3 RELEASE RATE ANALYSIS

Allowable release rates for the project site are determined by a ratio of cubic feet per second of release per acre of disturbed area. The Will County stormwater manual enforces 0.04 cfs/ac and 0.15 cfs/ac as the ratios for allowable release rates for the 2- and 100-year storm events respectively. There will be only two points of release for the proposed development. The north basins, Basin 1 and 2, will be equalized with the outfall to Maine Township Ditch through Basin 1. In the south, Basins 3 and 4 will be equalized and the outfall to the South Ditch will be through Basin 4.

Table 6 includes the calculated allowable release rate for each basin in proposed conditions by design storm.

Table 6: Allowable Release Rates

Design Storm	2-Year	100-Year
Basin	Calculated Allowable Release by Basin (cfs)	
1	1.83	6.86
2	1.91	7.17
1 and 2 Total	3.74	14.03
3	2.41	9.02
4	5.18	19.41
3 and 4 Total	7.59	28.43

Since Basins 1 and 2 are equalized, the allowable release rate is the sum of the releases shown for Basins 1 and 2 in the table above. The same is true for Basins 3 and 4 which will have a combined allowable release rate due to being equalized.

Basins and outlets were designed to meet the release rate requirements dictated by the manual through rate control and storage. Typical outlet design for this project consists of an orifice controlling the smaller storm events with an overflow weir controlling the larger storm events. A summary of outlet structures and release rates are provided in **Table 7**. Full HydroCAD report output logs are provided in **Appendix E**.

Table 7: Basin Outlet Structures and Release Rates

Basin	1	2	3	4
Outlet 1	8.5" Orifice (2x)	No outfall - Equalized with Basin 1	No outfall - Equalized with Basin 3	11" Orifice (2x)
Invert 1	561.26			560.31
Outlet 2	1.2' Weir			1.5' Weir
Invert 2	562.68			561.33
2-Year Release (cfs)	0.00*			7.02
100-Year Release (cfs)	13.78			27.74

*Release restricted by 10-year tailwater from Maine Township Ditch

Comparing **Table 6** and **Table 7**, the release rate requirement is met for all storm events across the basins. Stage storage tables are provided in the HydroCAD output logs in **Appendix E** with the total volume of each basin. A summary of basin volumes is presented below in **Table 8**.

Table 8: Basin Storage Volumes

Basin	Used (ac-ft)	Available (ac-ft)	Excess (ac-ft)
1	3.90	5.09	1.19
2	44.67	76.77	32.1
3	24.77	36.14	11.37
4	67.24	98.70	31.46
Total (ac-ft):	140.58	216.7	76.12

6.0 Compensatory Storage

6.1 REQUIREMENTS

In accordance with Grundy County floodplain development requirements, any flood storage volume displaced by fill within the floodplain must be compensated through equivalent flood storage volume. Compensatory storage requirements for the development were determined from the flood elevations provided in the regulatory FEMA model for Maine Township Ditch and from the preliminary base flood elevation study conducted on the South Ditch.

During coordination meetings with the Village of Coal City, it was determined that isolated low-lying areas located along the north portion of the site serve as depressional storage areas and are drained through existing culverts beneath Reed Road and Carbon Hill Road. The Village indicated that compensatory storage would be required for these depressional areas up to the inverts of the culverts on a one-to-one basis. Floodplain storage above the culvert invert would continue to be evaluated based on Grundy County ordinances.

Compensatory storage requirements were determined by comparing the existing floodplain and depressional storage volumes to proposed conditions and calculating the net loss of storage resulting from the proposed development. Existing and proposed ground surfaces were evaluated relative to the applicable BFEs and culvert invert elevations to determine volumes.

6.2 SUMMARY

The regulatory FEMA model shows isolated flooding to be present on the north side of the project site. The low-lying areas where the floodplain is delineated are drained by culverts. The compensatory storage provided for these areas was the volume within the 100-year flood elevation that was below the draining culverts based on discussions with the Village of Coal City.

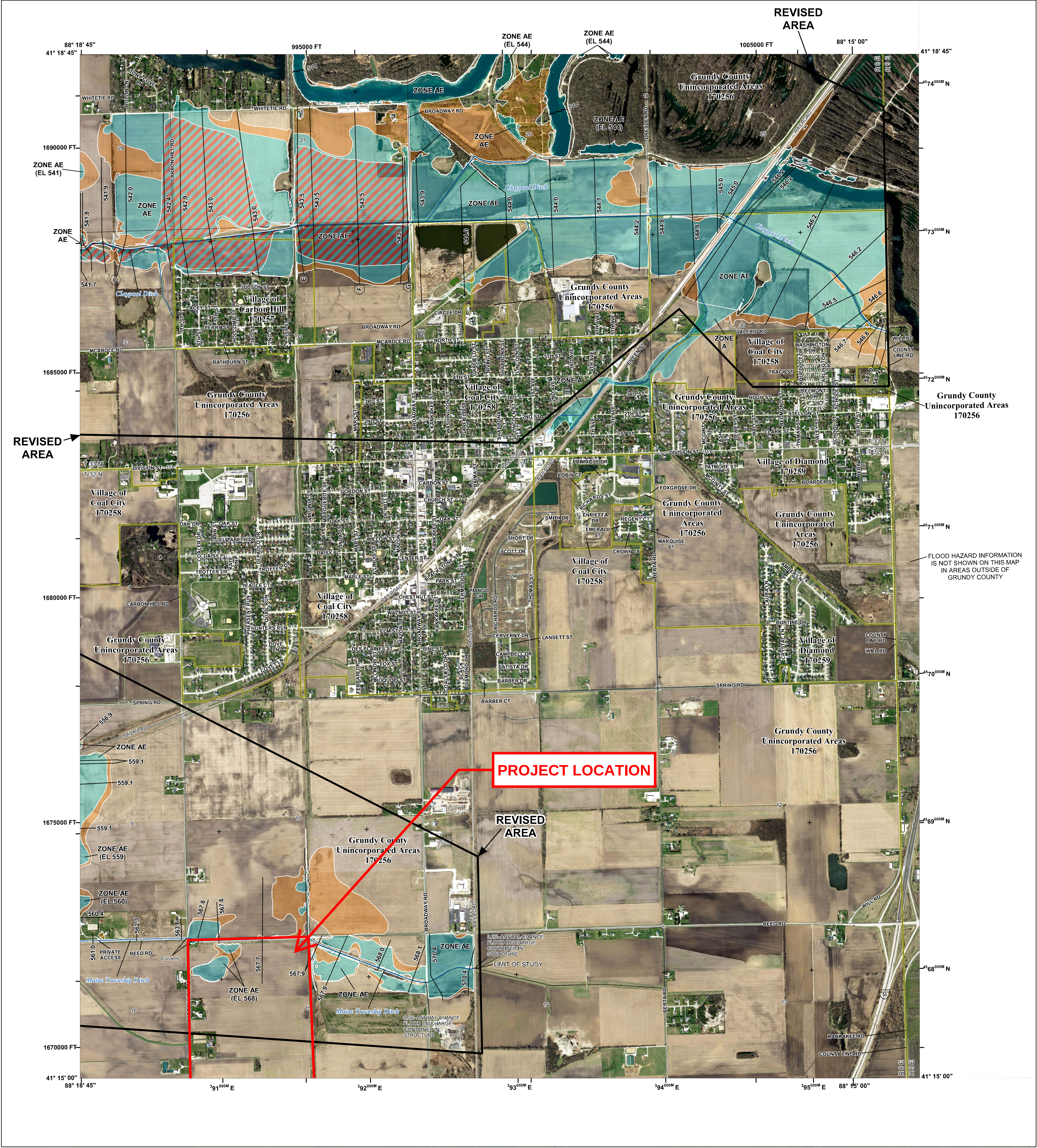
Compensatory storage will be provided within proposed onsite detention basins. The available compensatory storage volume exceeds the required storage volume, resulting in no net loss of floodplain storage.

The total compensatory storage volume required for the north and south portions of the site are 1.5 acre-feet and 13.5 acre-feet respectively. Compensatory storage will be provided in excess storage within the basins. A summary of the cut and fill computations are provided below in **Table 9**. Detailed calculations are provided in **Appendix F**.

Table 9: Compensatory Storage Summary

Storage Location	Storage (ac-ft)
South Floodplain Fill	47.5
South Total Floodplain Cut	34.0
South Required Comp Storage	13.5
North Required Comp Storage	1.5
Total Required Comp Storage	15.0

Appendix A Vicinity Maps



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A95
		With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Dam, Jetty, or Weir
		Levee, Dike or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) 719.7 717.5
		Coastal Transect
		Coastal Transect Baseline
OTHER FEATURES		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE) 512
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map data for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-368-6277) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to 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.

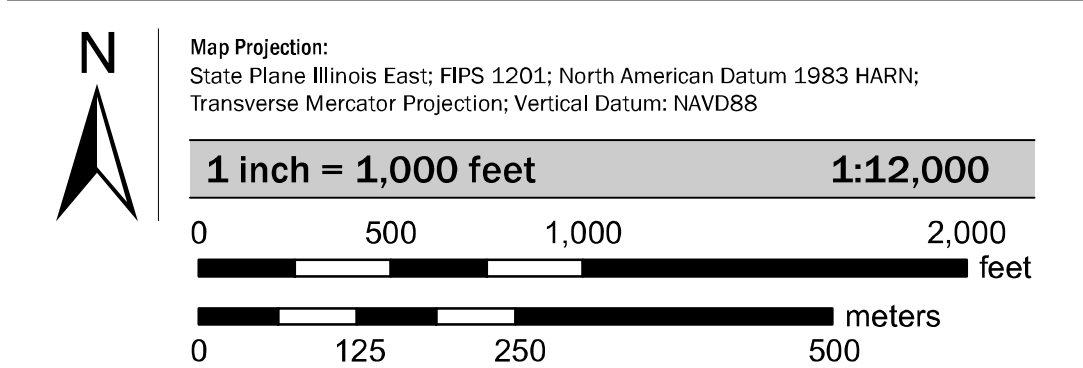
Base map information shown on this FIRM was provided in digital format by the Cook County Board of Commissioners. This information was derived from digital orthorectified imagery at a spatial resolution of 0.5 foot from aerial photography dated 2015.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LIMWA). The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LIMWA (or between the shoreline and the LIMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in Zone VE.

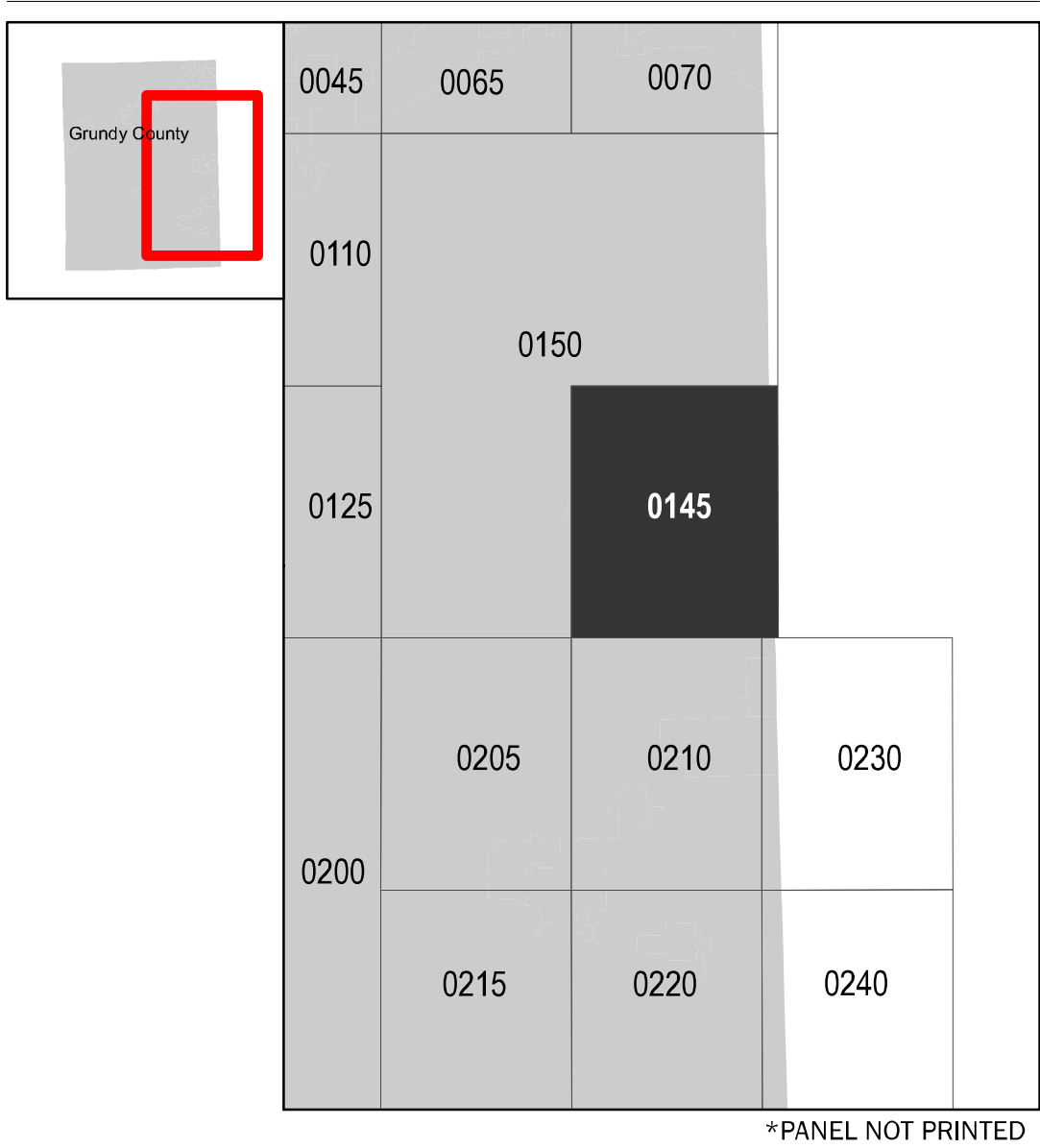
Limit of Moderate Wave Action (LIMWA)

ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

SCALE



PANEL LOCATOR



National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP

GRUNDY COUNTY, ILLINOIS
and Incorporated Areas

PANEL 145 of 350

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
CARBON HILL, VILLAGE OF	170257	0145	F
COAL CITY, VILLAGE OF	170258	0145	F
DIAMOND, VILLAGE OF	170259	0145	F
GRUNDY COUNTY	170256	0145	F

REVISED TO REFLECT
LOMR EFFECTIVE
OCTOBER 18, 2019

VERSION NUMBER
2.5.3.0
MAP NUMBER
17063C0145F
MAP REVISED
AUGUST 2, 2012

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 and 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 flood plain 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 flood plain 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.

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

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 for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM 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 www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey. Digital orthoimagery with a spatial resolution of 0.5 meter ground sample distance were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2005.

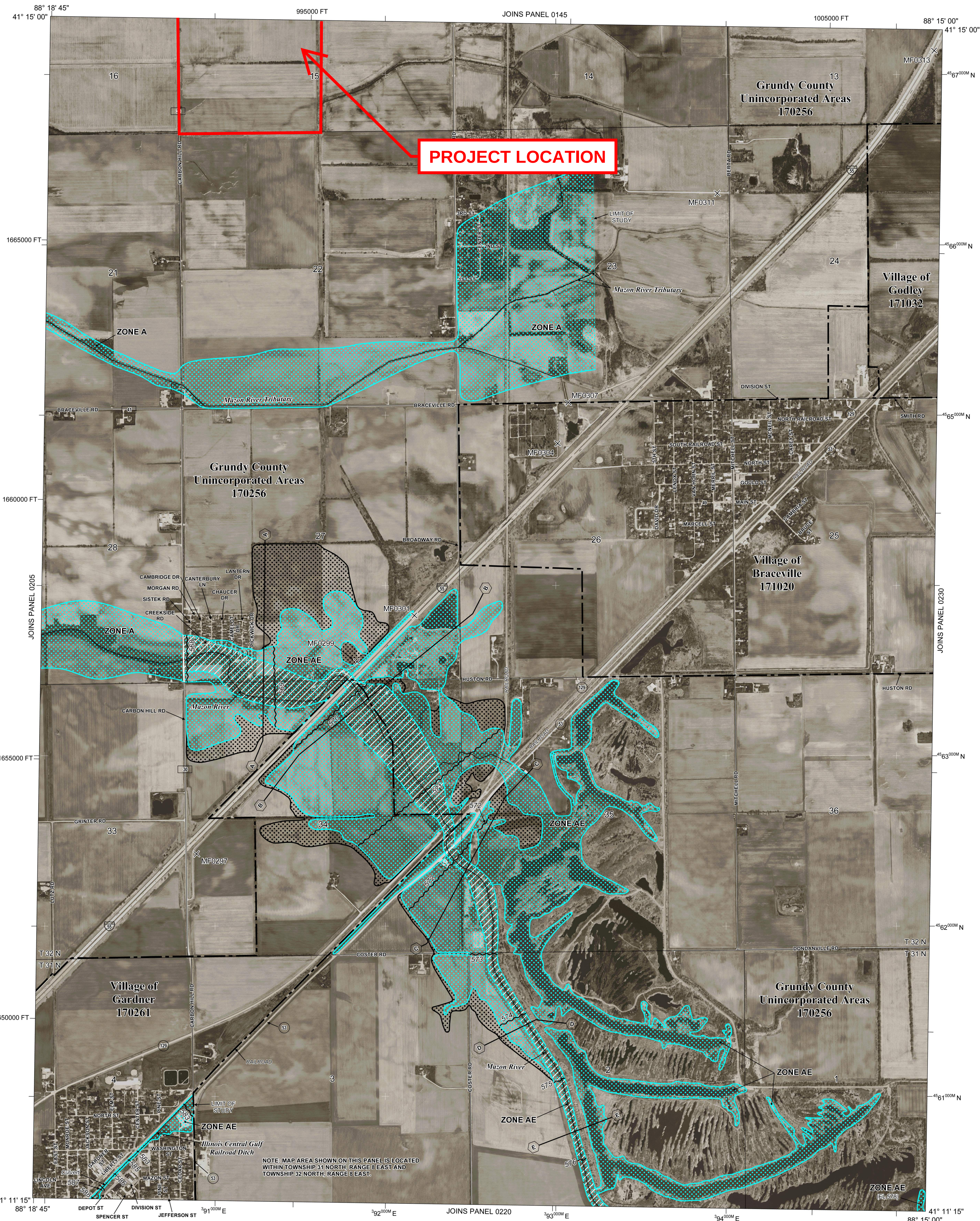
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. 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.

For information on available products associated with this FIRM visit the Map Service Center (MSC) website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip>.



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 the 1% annual 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
ZONE AE
ZONE AH
ZONE AO
ZONE AR
ZONE A99
ZONE V
ZONE VE

No Base Flood Elevations determined.
 Base Flood Elevations determined.
 Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
 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.
 Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decretted. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
 Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
 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 the 1% annual chance flood.

OTHER AREAS

Areas determined to be outside the 0.2% annual chance floodplain.
 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 Areas of different Base Flood Elevations, flood depths or flood velocities.

Base Flood Elevation line and value; elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet*

(EL 987)

*Referenced to the North American Vertical Datum of 1988

Cross section line

Transect line

45° 05' 08", 93° 02' 12"

Geographic coordinates referenced to the North American Datum 1983 (NAD 83)

49g80N FT

1565000 FT

1000-meter Universal Transverse Mercator grid values, zone 16

5000-foot grid tick: Illinois State Plane East Coordinate System, 376 zone (FIPSZONE 1201) Transverse Mercator

Benue mark (see explanation in Notes to Users section of this FIR panel)

DX5510x

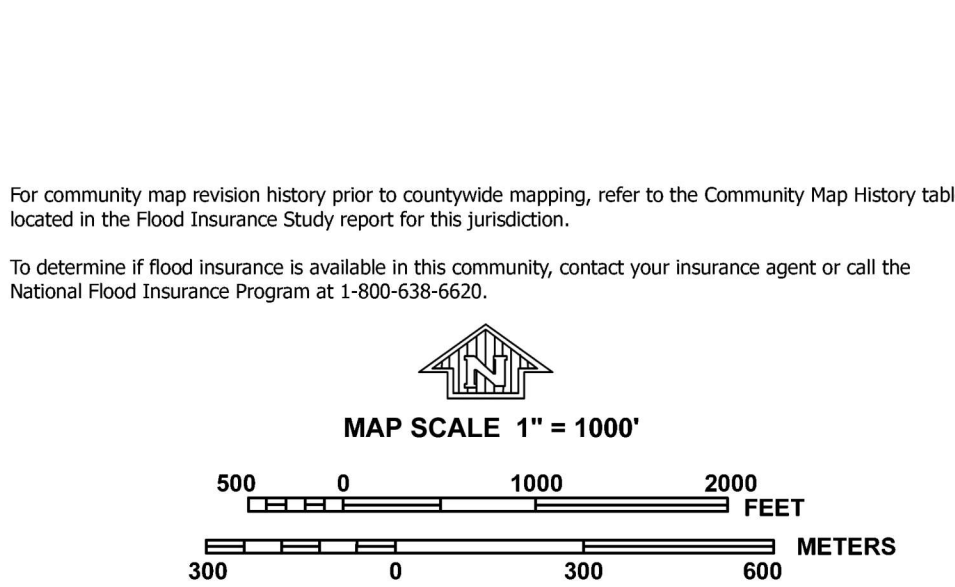
River Mile

MAP REPOSITORIES
 Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
 FLOOD INSURANCE RATE MAP

AUGUST 2, 2012

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



NEED

FIRM **FLOOD INSURANCE RATE MA** **GRUNDY COUNTY,** **ILLINOIS** **AND INCORPORATED AREAS**

PANEL 210 OF 350				
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)				
CONTAINS:				
<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFF</u>	
BRACEVILLE, VILLAGE OF	171020	0210	F	
GARDNER, VILLAGE OF	170261	0210	F	
GODLEY, VILLAGE OF	171032	0210	F	
GRUNDY COUNTY	170256	0210	F	

FLOOD

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.

INTERNATIONAL

 **MAP NUMBER**
17063C0210

EFFECTIVE DATE
AUGUST 2, 2011

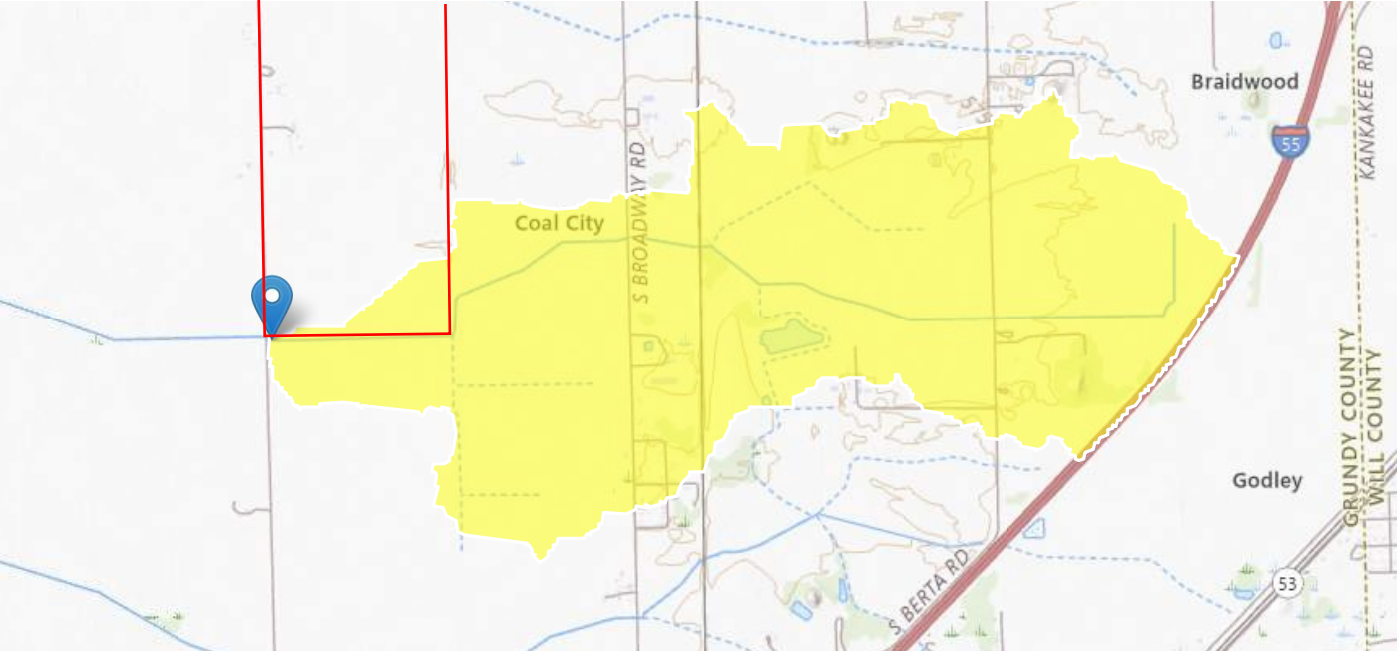
Federal Emergency Management Agency

Appendix B

Base Flood Elevation Analysis

StreamStats Report

Region ID: IL
Clicked Point (Latitude, Longitude): 41.24392, -88.30317
Time: 2026-04-30 15:26:11 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at <https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release> (<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>) .

+ Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.83	square miles
FLC16DVLMH	Fraction of drainage area that is in low to high developed land-use classes 22-24 from NLCD 2016	0.03	decimal fraction
FSSURGDC78	Fraction of land area that is in very poorly drained and unknown likely water drainage classes 7 and 8 from SSURGO	0.0974	decimal fraction
RELRELF	Basin relief divided by basin perimeter	8.29	feet per mi

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [IL Peakflow Region 2 ICT-23-014]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.83	square miles	0.07031	1352
FLC16DVLMH	Frac_Lo_Med_Hi_Developed_from_NLCD2016	0.03	decimal fraction	0.002045	0.9692
FSSURGDC78	Fraction_SSURGO_Drainage_Classes_7_and_8	0.0974	decimal fraction	0	0.2506
RELRELF	Relative Relief	8.29	feet per mi	0.8122	35.97

Peak-Flow Statistics Flow Report [IL Peakflow Region 2 ICT-23-014]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	60.6	ft^3/s	28.6	129	46.9
20-percent AEP flood	102	ft^3/s	47.4	219	47.9
10-percent AEP flood	132	ft^3/s	59.7	292	49.9
4-percent AEP flood	171	ft^3/s	74.2	394	52.8
2-percent AEP flood	201	ft^3/s	84	481	55.6
1-percent AEP flood	232	ft^3/s	93.8	574	58
0.5-percent AEP flood	262	ft^3/s	102	671	60.5
0.2-percent AEP flood	302	ft^3/s	114	803	63.4

Peak-Flow Statistics Citations

Over, T.M., Marti, M.K., O'Shea, P.S., Sharpe, J.B.2023, Estimating peak-flow quantiles for selected annual exceedance probabilities in Illinois (Report No. FHWA-ICT-23-014). Illinois Center for Transportation. (<https://doi.org/10.36501/0197-9191/23-019>)

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Application Version: 4.32.0

SSHydro Services Version: 1.2.1

SSDelineate Services Version: 1.1.0

NSS Services Version: 2.2.1

GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

Batch Processor Version: 1.6.1

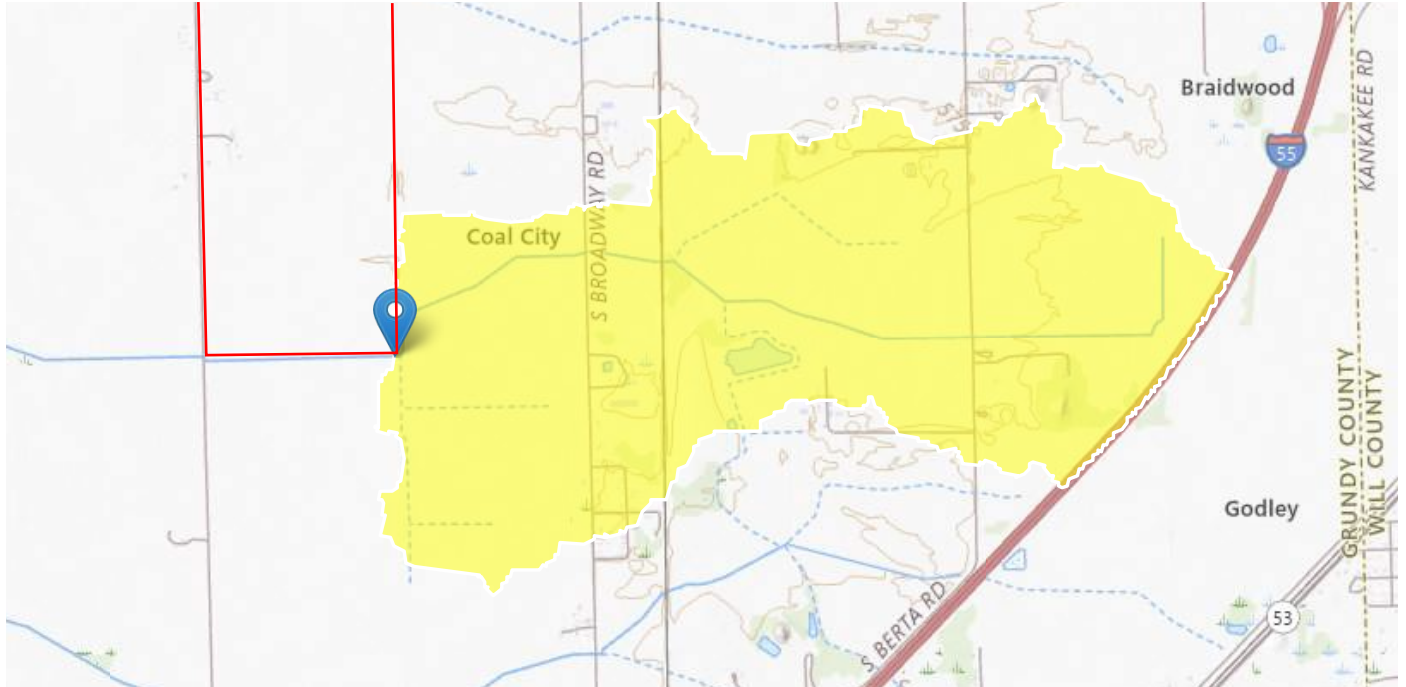
ONSITE UPSTREAM STREAMSTATS REPORT

StreamStats Report

Region ID: IL

Clicked Point (Latitude, Longitude): 41.24411, -88.29377

Time: 2026-04-30 15:27:48 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at <https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release> (<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>).

+ Collapse All

> Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.7	square miles
FLC16DVLMH	Fraction of drainage area that is in low to high developed land-use classes 22-24 from NLCD 2016	0.04	decimal fraction

Parameter Code	Parameter Description	Value	Unit
FSSURGDC78	Fraction of land area that is in very poorly drained and unknown likely water drainage classes 7 and 8 from SSURGO	0.1047	decimal fraction
RELRELF	Basin relief divided by basin perimeter	8.73	feet per mi

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [IL Peakflow Region 2 ICT-23-014]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.7	square miles	0.07031	1352
FLC16DVLHM	Frac_Lo_Med_Hi_Developed_from_NLCD2016	0.04	decimal fraction	0.002045	0.9692
FSSURGDC78	Fraction_SSURGO_Drainage_Classes_7_and_8	0.1047	decimal fraction	0	0.2506
RELRELF	Relative Relief	8.73	feet per mi	0.8122	35.97

Peak-Flow Statistics Flow Report [IL Peakflow Region 2 ICT-23-014]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	57.8	ft^3/s	27.3	122	46.9
20-percent AEP flood	97	ft^3/s	45.2	208	47.9
10-percent AEP flood	126	ft^3/s	57	278	49.9
4-percent AEP flood	163	ft^3/s	70.8	375	52.8
2-percent AEP flood	192	ft^3/s	80.4	459	55.6
1-percent AEP flood	221	ft^3/s	89.5	546	58
0.5-percent AEP flood	250	ft^3/s	97.8	639	60.5
0.2-percent AEP flood	290	ft^3/s	109	770	63.4

Peak-Flow Statistics Citations

Over, T.M., Marti, M.K., O'Shea, P.S., Sharpe, J.B. 2023, Estimating peak-flow quantiles for selected annual exceedance probabilities in Illinois (Report No. FHWA-ICT-23-014). Illinois Center for Transportation. (<https://doi.org/10.36501/0197-9191/23-019>)

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NSS Services Version: 2.2.1

GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

Batch Processor Version: 1.6.1

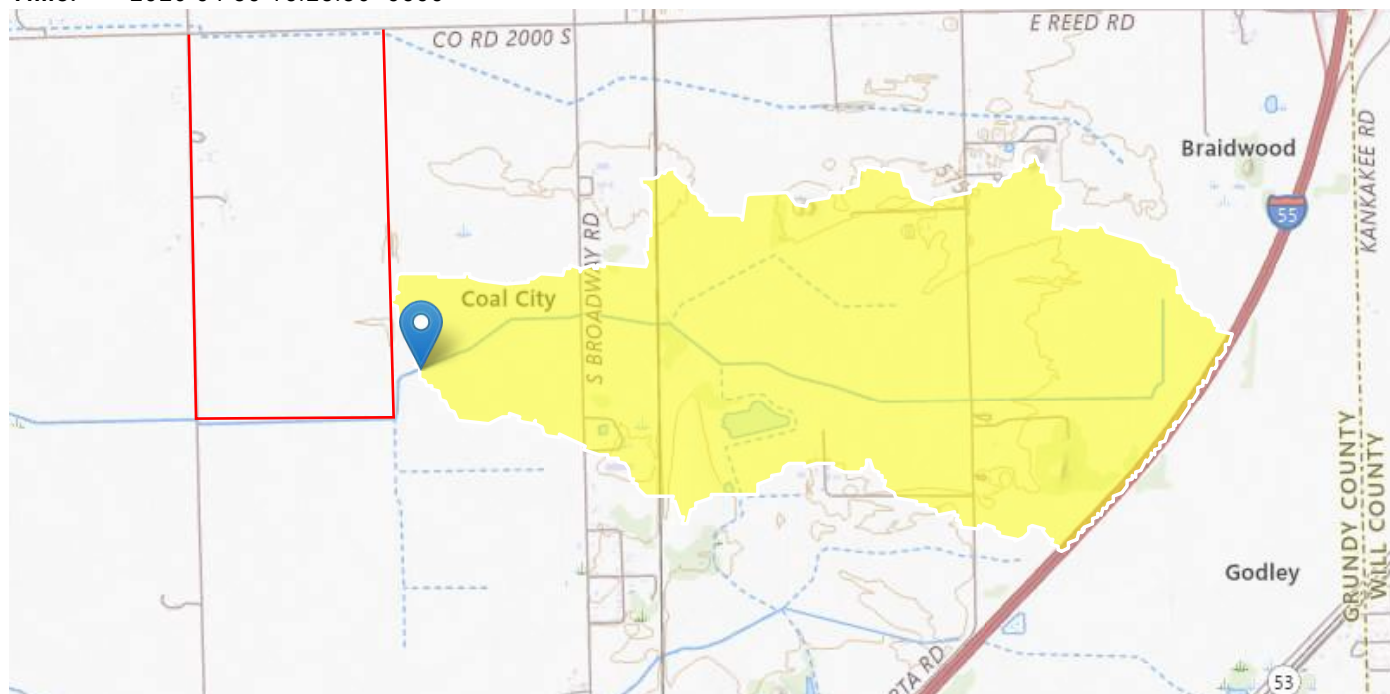
OFFSITE UPSTREAM STREAMSTATS REPORT

StreamStats Report

Region ID: IL

Clicked Point (Latitude, Longitude): 41.24600, -88.29236

Time: 2026-04-30 15:28:36 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at <https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release> (<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>).

+ Collapse All

> Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.33	square miles
FLC16DVLHM	Fraction of drainage area that is in low to high developed land-use classes 22-24 from NLCD 2016	0.03	decimal fraction

Parameter Code	Parameter Description	Value	Unit
FSSURGDC78	Fraction of land area that is in very poorly drained and unknown likely water drainage classes 7 and 8 from SSURGO	0.1039	decimal fraction
RELRELF	Basin relief divided by basin perimeter	9.34	feet per mi

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [IL Peakflow Region 2 ICT-23-014]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.33	square miles	0.07031	1352
FLC16DVLHM	Frac_Lo_Med_Hi_Developed_from_NLCD2016	0.03	decimal fraction	0.002045	0.9692
FSSURGDC78	Fraction_SSURGO_Drainage_Classes_7_and_8	0.1039	decimal fraction	0	0.2506
RELRELF	Relative Relief	9.34	feet per mi	0.8122	35.97

Peak-Flow Statistics Flow Report [IL Peakflow Region 2 ICT-23-014]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	47.9	ft ³ /s	22.5	102	46.9
20-percent AEP flood	81.4	ft ³ /s	37.8	175	47.9
10-percent AEP flood	106	ft ³ /s	47.8	235	49.9
4-percent AEP flood	138	ft ³ /s	59.8	319	52.8
2-percent AEP flood	163	ft ³ /s	68	391	55.6
1-percent AEP flood	188	ft ³ /s	75.8	466	58
0.5-percent AEP flood	213	ft ³ /s	83	547	60.5
0.2-percent AEP flood	246	ft ³ /s	92.2	656	63.4

Peak-Flow Statistics Citations

Over, T.M., Marti, M.K., O'Shea, P.S., Sharpe, J.B. 2023, Estimating peak-flow quantiles for selected annual exceedance probabilities in Illinois (Report No. FHWA-ICT-23-014). Illinois Center for Transportation. (<https://doi.org/10.36501/0197-9191/23-019>)

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NSS Services Version: 2.2.1

GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

Batch Processor Version: 1.6.1



Legend

- Project Site
- Proposed 100-Year Inundaiton Boundary
- Cross Sections
- Culverts
- RAS Reach
- Proposed Contours

Kimley»Horn
500 E 96th St
Suite 300
Indianapolis, IN 46240
(317) 218-9560



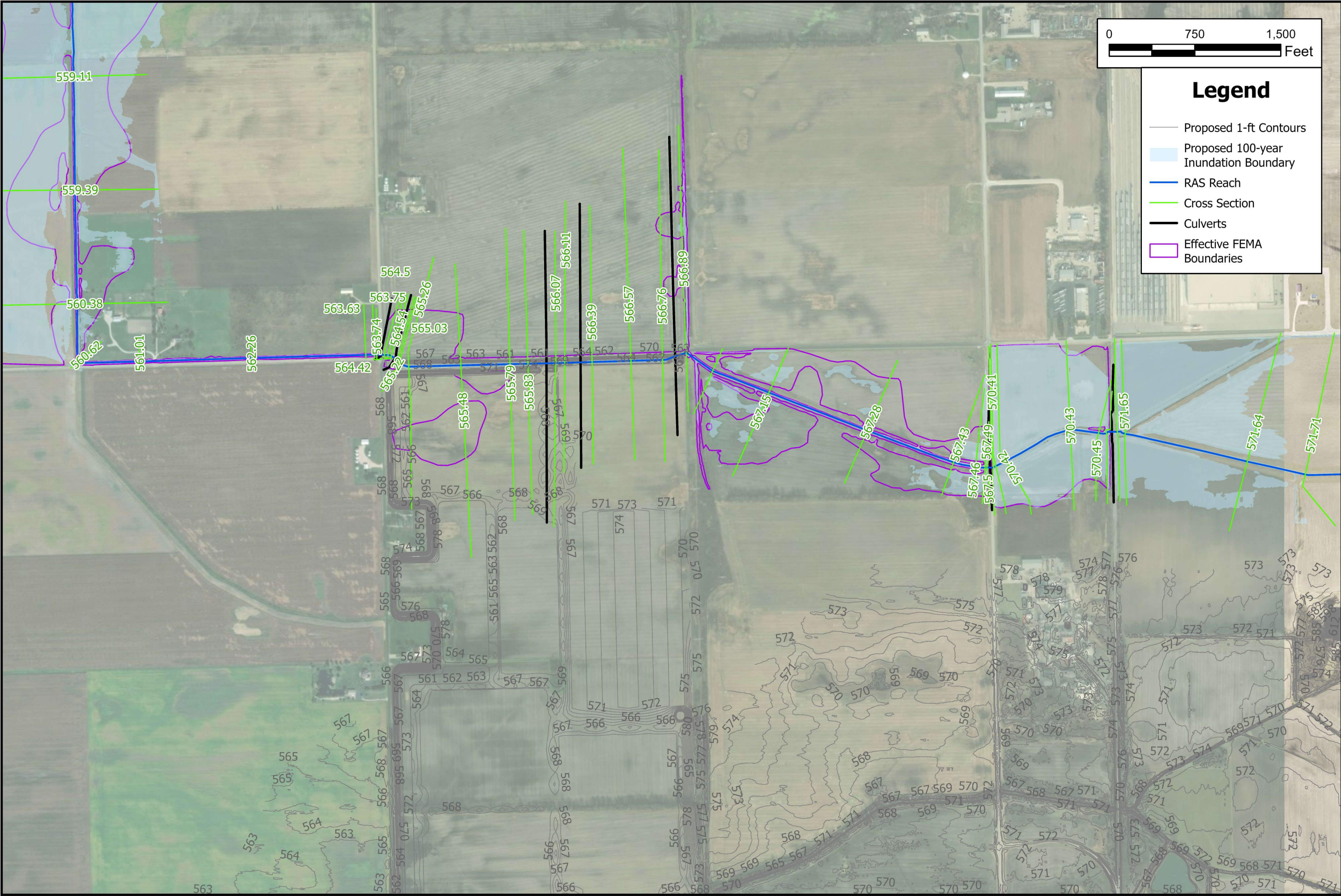
Grundy County, IL
ADC - COAL CITY

**PROPOSED SOUTH DITCH
BASE FLOOD ELEVATION MAP**

DATE:	JULY 2026
DESIGN:	EB
DRAWN:	EB
CHECKED:	JSG
KH NO.:	170405001

Appendix C

Maine Township Ditch Culvert Sizing



07501,500

Feet

Legend

Proposed 1-ft Contours

Proposed 100-year Inundation Boundary

RAS Reach

Cross Section

Culverts

Effective FEMA Boundaries

DATE: JULY 2026

DESIGN: EB

DRAWN: EB

CHECKED: JSG

KH NO.: 170405001

FIGURE

6

MAINE TOWNSHIP DITCH
PROPOSED
BASE FLOOD ELEVATION MAP

Grundy County, IL

ADC - COAL CITY

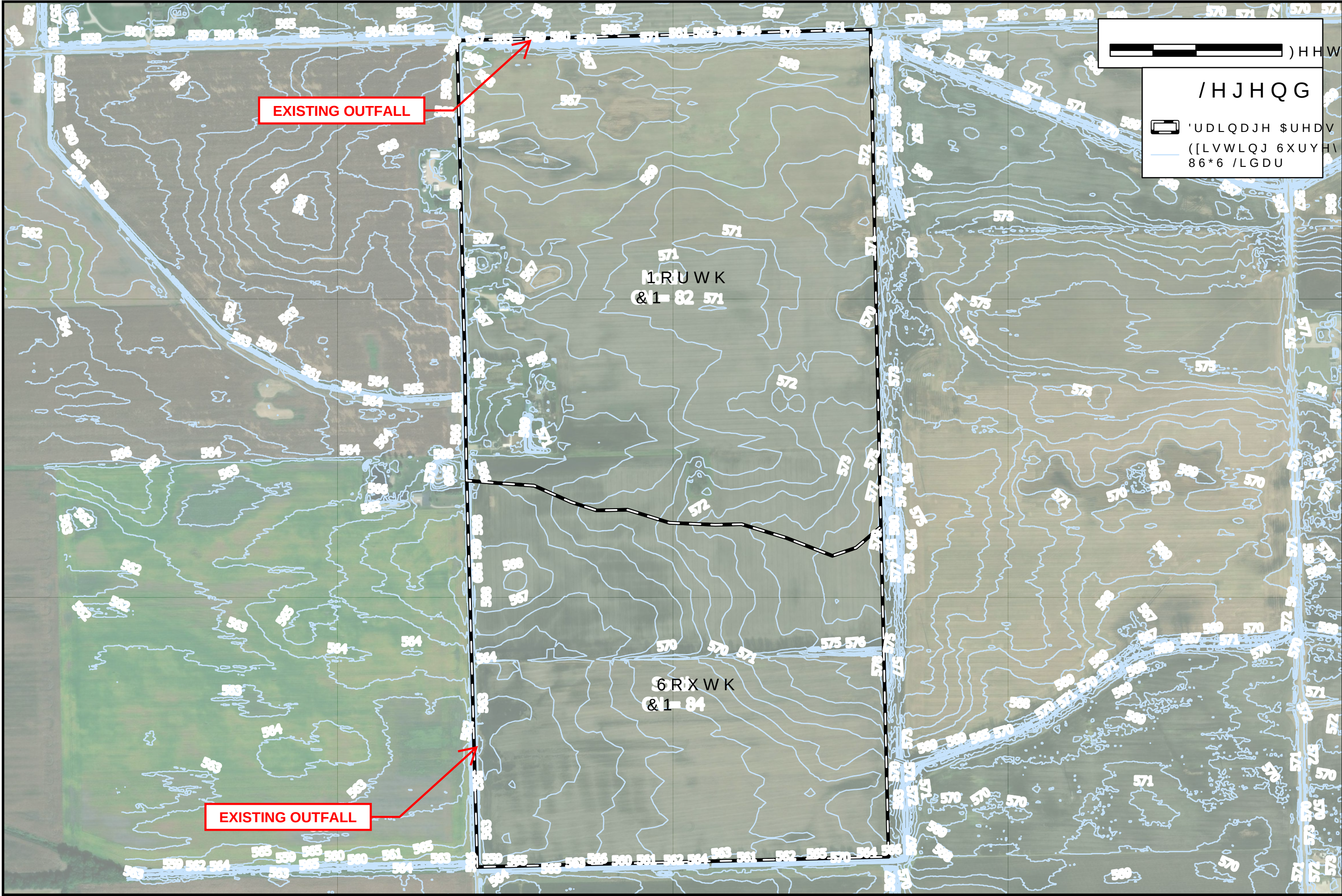
Kimley»Horn

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Indianapolis, IN 46240
(317) 218-9560



 500 E 96th St Suite 300 Indianapolis, IN 46240 (317) 218-9560	
Grundy County, IL ADC - COAL CITY	
MAINE TOWNSHIP DITCH PROPOSED ONSITE BASE FLOOD ELEVATION MAP	
DATE: JULY 2026 DESIGN: EB DRAWN: EB CHECKED: JSG KH NO.: 170405001	FIGURE 6B

Appendix D Detention Analysis



HHW

/HJHQG

'UDLQDJH \$UHDV

([LVWLQJ 6XUYH]

86*6 /LGDU

Kimley»Horn

(WK 6W

6XLWH

'QGLDQDSROLV ,1

*UXQG\ &RXQW\ ,/

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Appendix E Output Logs

SOUTH DITCH PROFILE SUMMARY TABLE

HEC-RAS River: River 1 Reach: Reach 1 Profile: 100-Yr

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3654	100-Yr	Exis_r5	188.00	563.19	568.96		569.00	0.000483	1.63	116.28	35.83	0.15
Reach 1	3654	100-Yr	Prop_r5	188.00	563.19	568.85		568.89	0.000535	1.68	112.48	34.75	0.16
Reach 1	3493	100-Yr	Exis_r5	188.00	561.93	568.94		568.95	0.000117	0.79	238.87	74.06	0.08
Reach 1	3493	100-Yr	Prop_r5	188.00	561.93	568.84		568.85	0.000131	0.82	230.81	72.74	0.08
Reach 1	3200	100-Yr	Exis_r5	188.00	563.09	568.81		568.88	0.000804	2.08	90.59	25.06	0.19
Reach 1	3200	100-Yr	Prop_r5	188.00	563.09	568.69		568.76	0.000894	2.15	87.54	24.70	0.20
Reach 1	2956	100-Yr	Exis_r5	188.00	562.72	568.68		568.72	0.000494	1.60	117.39	33.78	0.15
Reach 1	2956	100-Yr	Prop_r5	188.00	562.72	568.54		568.58	0.000551	1.67	112.75	33.11	0.16
Reach 1	2861	100-Yr	Exis_r5	221.00	562.56	568.60		568.66	0.000710	1.97	134.58	165.13	0.18
Reach 1	2861	100-Yr	Prop_r5	221.00	562.56	568.45	565.18	568.51	0.000838	2.11	104.88	603.49	0.20
Reach 1	2701	100-Yr	Exis_r5	221.00	562.19	568.51	564.96	568.56	0.000525	1.87	177.31	958.69	0.16
Reach 1	2701	100-Yr	Prop_r5	221.00	562.19	568.31	564.95	568.39	0.000746	2.16	103.06	1208.72	0.19
Reach 1	2289	100-Yr	Exis_r5	221.00	561.75	568.24	564.61	568.31	0.000719	2.07	107.01	2127.26	0.18
Reach 1	2289	100-Yr	Prop_r5	221.00	561.75	567.97	564.62	568.05	0.000906	2.22	99.69	1841.46	0.20
Reach 1	1955	100-Yr	Exis_r5	221.00	560.88	568.03	564.04	568.09	0.000570	1.91	115.84	3046.67	0.16
Reach 1	1955	100-Yr	Prop_r5	221.00	560.88	567.71	564.05	567.78	0.000727	2.06	107.04	2662.42	0.18
Reach 1	1767	100-Yr	Exis_r5	221.00	560.84	567.92	563.92	567.98	0.000559	1.95	114.98	3280.26	0.16
Reach 1	1767	100-Yr	Prop_r5	221.00	560.84	567.57	563.93	567.64	0.000742	2.12	104.69	2845.22	0.19
Reach 1	1757	100-Yr	Exis_r5	221.00	560.78	567.92	563.94	567.98	0.000569	1.93	115.14	3297.04	0.16
Reach 1	1757	100-Yr	Prop_r5	221.00	560.78	567.56	563.94	567.63	0.000760	2.11	104.91	2864.10	0.19
Reach 1	1747	100-Yr	Exis_r5	221.00	560.66	567.92	563.89	567.97	0.000522	1.88	119.28	3324.41	0.16
Reach 1	1747	100-Yr	Prop_r5	221.00	560.66	567.55	563.91	567.62	0.000697	2.05	108.46	2877.41	0.18
Reach 1	1721			Culvert									
Reach 1	1694	100-Yr	Exis_r5	221.00	560.62	566.19	563.81	566.29	0.001581	2.55	86.73	1488.63	0.26
Reach 1	1694	100-Yr	Prop_r5	221.00	560.62	565.93	563.81	565.94	0.000418	1.27	240.04	1839.04	0.13
Reach 1	1684	100-Yr	Exis_r5	221.00	560.63	566.17	563.78	566.28	0.001688	2.63	84.15	1455.17	0.27
Reach 1	1684	100-Yr	Prop_r5	221.00	560.63	565.93	563.77	565.94	0.000221	0.93	349.32	1935.63	0.10
Reach 1	1673	100-Yr	Exis_r5	221.00	560.66	566.15	563.75	566.26	0.001707	2.66	83.15	1468.49	0.27
Reach 1	1673	100-Yr	Prop_r5	221.00	560.66	565.93	563.75	565.93	0.000162	0.80	416.65	2066.89	0.08
Reach 1	1496	100-Yr	Exis_r5	221.00	560.16	565.94	563.04	566.03	0.000977	2.39	94.52	1796.82	0.22
Reach 1	1496	100-Yr	Prop_r5	221.00	560.16	565.90	563.04	565.91	0.000139	0.90	423.54	1947.54	0.08
Reach 1	963	100-Yr	Exis_r5	221.00	559.47	565.87	562.48	565.87	0.000109	0.86	502.89	4167.63	0.07
Reach 1	963	100-Yr	Prop_r5	221.00	559.47	565.86	562.47	565.87	0.000047	0.56	817.24	2676.40	0.05
Reach 1	491	100-Yr	Exis_r5	221.00	559.09	565.85	561.81	565.85	0.000017	0.37	1267.90	3964.49	0.03
Reach 1	491	100-Yr	Prop_r5	221.00	559.09	565.85	561.81	565.86	0.000014	0.34	1418.04	2675.48	0.03
Reach 1	299	100-Yr	Exis_r5	232.00	558.69	565.85	561.48	565.85	0.000016	0.37	1446.92	3730.99	0.03
Reach 1	299	100-Yr	Prop_r5	232.00	558.69	565.85	561.48	565.85	0.000024	0.45	1309.38	2558.42	0.03
Reach 1	289	100-Yr	Exis_r5	232.00	558.62	565.85	561.46	565.85	0.000018	0.38	1394.54	3550.73	0.03
Reach 1	289	100-Yr	Prop_r5	232.00	558.62	565.85	561.45	565.85	0.000034	0.51	1047.69	2138.93	0.04
Reach 1	257	100-Yr	Exis_r5	232.00	558.62	565.85	561.47	565.85	0.000008	0.22	1878.14	3781.07	0.02
Reach 1	257	100-Yr	Prop_r5	232.00	558.62	565.85	561.47	565.85	0.000008	0.22	1878.14	3781.07	0.02
Reach 1	226			Culvert									
Reach 1	173	100-Yr	Exis_r5	232.00	558.36	565.07	561.24	565.07	0.000011	0.27	2013.71	1929.07	0.02
Reach 1	173	100-Yr	Prop_r5	232.00	558.36	565.07	561.24	565.07	0.000011	0.27	2013.71	1929.07	0.02
Reach 1	158	100-Yr	Exis_r5	232.00	559.03	564.99	561.65	565.05	0.000583	2.03	119.55	1922.19	0.17
Reach 1	158	100-Yr	Prop_r5	232.00	559.03	564.99	561.65	565.05	0.000583	2.03	119.55	1922.19	0.17
Reach 1	144	100-Yr	Exis_r5	232.00	558.82	564.98	561.40	565.04	0.000569	2.01	120.76	1926.86	0.17
Reach 1	144	100-Yr	Prop_r5	232.00	558.82	564.98	561.40	565.04	0.000569	2.01	120.76	1926.86	0.17
Reach 1	32	100-Yr	Exis_r5	255.00	560.84	564.62	563.39	564.84	0.005000	3.77	67.72	1837.32	0.44
Reach 1	32	100-Yr	Prop_r5	255.00	560.84	564.62	563.39	564.84	0.005000	3.77	67.72	1837.32	0.44

NORTH DITCH PROFILE SUMMARY TABLE

HEC-RAS River: Maine_Township Reach: Reach 1 Profile: 100 yr

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	30210	100 yr	REV 1218 FW	200.52	568.13	572.73		572.88	0.000932	3.05	65.73	23.25	0.32
Reach 1	30210	100 yr	Prop_Eff_R1	200.52	568.13	572.76		572.90	0.000909	3.02	66.32	23.35	0.32
Reach 1	30210	100 yr	Corr_Eff_R2	200.52	568.13	572.77		572.91	0.000905	3.02	66.45	23.37	0.32
Reach 1	30131	100 yr	REV 1218 FW	200.52	568.14	572.89		572.81	0.000693	2.69	74.61	26.05	0.28
Reach 1	30131	100 yr	Prop_Eff_R1	200.52	568.14	572.72		572.83	0.000676	2.66	75.30	26.16	0.28
Reach 1	30131	100 yr	Corr_Eff_R2	200.52	568.14	572.73		572.84	0.000672	2.66	75.45	26.18	0.28
Reach 1	29125	100 yr	REV 1218 FW	200.52	567.58	572.05		572.14	0.000621	2.50	88.85	41.87	0.26
Reach 1	29125	100 yr	Prop_Eff_R1	200.52	567.58	572.11		572.19	0.000584	2.44	91.15	42.43	0.26
Reach 1	29125	100 yr	Corr_Eff_R2	200.52	567.58	572.12		572.20	0.000575	2.43	91.70	42.56	0.25
Reach 1	28133	100 yr	REV 1218 FW	200.52	566.29	571.71		571.75	0.000258	1.74	129.72	49.61	0.17
Reach 1	28133	100 yr	Prop_Eff_R1	200.52	566.29	571.79		571.82	0.000239	1.69	133.70	50.36	0.16
Reach 1	28133	100 yr	Corr_Eff_R2	200.52	566.29	571.80		571.84	0.000235	1.68	134.63	50.53	0.16
Reach 1	27709	100 yr	REV 1218 FW	200.52	566.27	571.62		571.65	0.000178	1.51	150.32	55.58	0.14
Reach 1	27709	100 yr	Prop_Eff_R1	200.52	566.27	571.71		571.74	0.000164	1.46	155.15	56.48	0.14
Reach 1	27709	100 yr	Corr_Eff_R2	200.52	566.27	571.73		571.76	0.000161	1.45	156.26	56.68	0.14
Reach 1	27191	100 yr	REV 1218 FW	200.52	565.53	571.55		571.57	0.000132	1.27	187.10	76.51	0.12
Reach 1	27191	100 yr	Prop_Eff_R1	200.52	565.53	571.64		571.66	0.000123	1.25	194.29	80.66	0.12
Reach 1	27191	100 yr	Corr_Eff_R2	200.52	565.53	571.66		571.68	0.000121	1.24	195.99	81.51	0.12
Reach 1	26095	100 yr	REV 1218 FW	200.52	564.03	571.56		571.56	0.000002	0.22	2115.28	1278.43	0.02
Reach 1	26095	100 yr	Prop_Eff_R1	200.52	564.03	571.65		571.65	0.000002	0.21	2232.48	1286.80	0.02
Reach 1	26095	100 yr	Corr_Eff_R2	200.52	564.03	571.67		571.67	0.000002	0.20	2259.52	1288.93	0.02
Reach 1	26020	100 yr	REV 1218 FW	200.52	563.28	571.56	565.96	571.56	0.000004	0.32	1574.91	1063.37	0.02
Reach 1	26020	100 yr	Prop_Eff_R1	200.52	563.28	571.65	565.96	571.65	0.000004	0.30	1672.35	1068.25	0.02
Reach 1	26020	100 yr	Corr_Eff_R2	200.52	563.28	571.67	565.96	571.67	0.000004	0.29	1694.79	1069.37	0.02
Reach 1	25982		Culvert										
Reach 1	25918	100 yr	REV 1218 FW	200.52	562.95	570.27		570.28	0.000023	0.66	525.25	525.94	0.06
Reach 1	25918	100 yr	Prop_Eff_R1	200.52	562.95	570.45		570.45	0.000017	0.59	618.90	539.20	0.05
Reach 1	25918	100 yr	Corr_Eff_R2	200.52	562.95	570.48		570.49	0.000016	0.58	638.68	541.43	0.05
Reach 1	25849	100 yr	REV 1218 FW	200.52	562.48	570.27		570.28	0.000011	0.45	907.26	720.47	0.04
Reach 1	25849	100 yr	Prop_Eff_R1	200.52	562.48	570.45		570.45	0.000008	0.41	1036.28	749.91	0.03
Reach 1	25849	100 yr	Corr_Eff_R2	200.52	562.48	570.49		570.49	0.000008	0.40	1063.78	754.73	0.03
Reach 1	25601	100 yr	REV 1218 FW	200.52	562.25	570.25		570.27	0.000060	1.06	349.63	796.91	0.09
Reach 1	25601	100 yr	Prop_Eff_R1	200.52	562.25	570.43		570.44	0.000042	0.91	515.39	1038.85	0.07
Reach 1	25601	100 yr	Corr_Eff_R2	200.52	562.25	570.47		570.48	0.000039	0.87	555.33	1070.70	0.07
Reach 1	24971	100 yr	REV 1218 FW	200.52	563.11	570.26		570.26	0.000002	0.19	2548.00	1454.13	0.02
Reach 1	24971	100 yr	Prop_Eff_R1	200.52	563.11	570.42	565.10	570.42	0.000009	0.45	757.26	1461.65	0.04
Reach 1	24971	100 yr	Corr_Eff_R2	200.52	563.11	570.46	565.10	570.46	0.000009	0.44	767.89	1463.12	0.03
Reach 1	24874	100 yr	REV 1218 FW	200.52	562.91	570.26		570.26	0.000003	0.26	2085.64	1389.10	0.02
Reach 1	24874	100 yr	Prop_Eff_R1	200.52	562.91	570.41	564.79	570.42	0.000024	0.79	308.20	1397.16	0.06
Reach 1	24874	100 yr	Corr_Eff_R2	200.52	562.91	570.45	564.79	570.46	0.000023	0.78	311.26	1399.05	0.06
Reach 1	24854	100 yr	REV 1218 FW	200.52	562.85	570.25	564.81	570.26	0.000016	0.57	656.79	1135.89	0.05
Reach 1	24854	100 yr	Prop_Eff_R1	200.52	562.85	570.41	564.82	570.42	0.000021	0.65	306.63	1190.35	0.05
Reach 1	24854	100 yr	Corr_Eff_R2	200.52	562.85	570.45	564.82	570.46	0.000020	0.65	309.16	1200.69	0.05
Reach 1	24825		Culvert										
Reach 1	24792	100 yr	REV 1218 FW	200.52	560.56	568.15		568.15	0.000027	0.72	307.55	131.39	0.06
Reach 1	24792	100 yr	Prop_Eff_R1	200.52	560.56	567.50		567.51	0.000049	0.87	235.32	81.30	0.08
Reach 1	24792	100 yr	Corr_Eff_R2	200.52	560.56	568.05		568.06	0.000030	0.74	295.88	125.63	0.06
Reach 1	24776	100 yr	REV 1218 FW	200.52	560.89	568.15		568.15	0.000027	0.75	477.80	523.89	0.06
Reach 1	24776	100 yr	Prop_Eff_R1	200.52	560.89	567.49		567.51	0.000062	1.02	222.48	259.48	0.09
Reach 1	24776	100 yr	Corr_Eff_R2	200.52	560.89	568.05		568.06	0.000031	0.79	430.25	513.99	0.07
Reach 1	24692	100 yr	REV 1218 FW	200.52	561.64	568.13		568.15	0.000084	1.15	303.59	576.77	0.10
Reach 1	24692	100 yr	Prop_Eff_R1	200.52	561.64	567.46		567.50	0.000184	1.55	129.46	39.15	0.15
Reach 1	24692	100 yr	Corr_Eff_R2	200.52	561.64	568.03		568.05	0.000101	1.24	247.32	566.01	0.11
Reach 1	24496	100 yr	REV 1218 FW	200.52	561.09	568.11		568.13	0.000097	1.27	201.47	506.17	0.11
Reach 1	24496	100 yr	Prop_Eff_R1	200.52	561.09	567.43		567.47	0.000164	1.54	129.93	35.61	0.14
Reach 1	24496	100 yr	Corr_Eff_R2	200.52	561.09	568.01		568.03	0.000108	1.33	155.30	352.60	0.12
Reach 1	23695	100 yr	REV 1218 FW	200.52	560.72	568.02		568.05	0.000104	1.39	165.86	560.40	0.12
Reach 1	23695	100 yr	Prop_Eff_R1	200.52	560.72	567.28		567.33	0.000183	1.66	120.95	31.47	0.15
Reach 1	23695	100 yr	Corr_Eff_R2	200.52	560.72	567.91		567.94	0.000112	1.43	143.28	68.46	0.12
Reach 1	22995		Lat Struct										
Reach 1	22776	100 yr	REV 1218 FW	200.52	560.51	567.94		567.97	0.000076	1.17	212.84	272.73	0.10
Reach 1	22776	100 yr	Prop_Eff_R1	200.52	560.51	567.15		567.18	0.000135	1.46	137.76	35.30	0.13
Reach 1	22776	100 yr	Corr_Eff_R2	200.52	560.51	567.83		567.85	0.000084	1.22	186.40	194.81	0.10
Reach 1	22249	100 yr	REV 1218 FW	200.52	560.36	567.86		567.89	0.000105	1.33	151.52	48.91	0.11

HEC-RAS River: Maine_Township Reach: Reach 1 Profile: 100 yr (Continued)

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	22249	100 yr	Prop_Eff_R1	200.52	560.36	567.00		567.04	0.000189	1.65	121.31	32.80	0.15
Reach 1	22249	100 yr	Corr_Eff_R2	200.52	560.36	567.74		567.77	0.000113	1.37	146.78	35.97	0.12
Reach 1	22000		Lat Struct										
Reach 1	21969	100 yr	REV 1218 FW	200.52	560.69	567.85		567.86	0.000052	0.86	389.52	292.25	0.08
Reach 1	21969	100 yr	Prop_Eff_R1	200.52	560.97	566.89	563.78	566.96	0.000371	2.20	91.08	161.24	0.21
Reach 1	21969	100 yr	Corr_Eff_R2	200.52	560.97	567.72		567.74	0.000077	1.08	355.89	385.50	0.10
Reach 1	21756	100 yr	Prop_Eff_R1	200.52	562.91	566.76	565.02	566.85	0.000732	2.42	82.93	291.97	0.28
Reach 1	21756	100 yr	Corr_Eff_R2	200.52	560.59	567.71		567.72	0.000055	0.96	587.11	1111.64	0.08
Reach 1	21485	100 yr	Prop_Eff_R1	200.52	562.44	566.57	564.62	566.66	0.000634	2.36	85.03	337.67	0.27
Reach 1	21485	100 yr	Corr_Eff_R2	200.52	560.44	567.71		567.71	0.000026	0.65	916.09	1307.28	0.06
Reach 1	21180	100 yr	Prop_Eff_R1	200.52	561.84	566.39	564.10	566.47	0.000505	2.23	89.84	214.49	0.24
Reach 1	21180	100 yr	Corr_Eff_R2	200.52	560.09	567.69		567.70	0.000054	0.89	643.99	1229.03	0.08
Reach 1	20965	100 yr	REV 1218 FW	200.52	559.61	567.75		567.78	0.000129	1.48	135.06	30.69	0.12
Reach 1	20965	100 yr	Prop_Eff_R1	200.52	561.44	566.11		566.18	0.000453	2.15	93.20	33.95	0.23
Reach 1	20965	100 yr	Corr_Eff_R2	200.52	560.04	567.68		567.69	0.000039	0.78	809.27	1416.34	0.07
Reach 1	20873	100 yr	Prop_Eff_R1	200.52	561.31	566.07	563.56	566.14	0.000408	2.07	96.93	34.59	0.22
Reach 1	20873	100 yr	Corr_Eff_R2	200.52	559.93	567.68		567.68	0.000026	0.65	962.29	1429.98	0.06
Reach 1	20601	100 yr	Prop_Eff_R1	200.52	560.88	565.83		565.89	0.000347	1.95	102.96	35.65	0.20
Reach 1	20601	100 yr	Corr_Eff_R2	200.52	559.93	567.67		567.68	0.000022	0.60	1013.91	1333.40	0.05
Reach 1	20426	100 yr	Prop_Eff_R1	200.52	560.62	565.79		565.84	0.000285	1.81	110.84	36.96	0.18
Reach 1	20426	100 yr	Corr_Eff_R2	200.52	560.00	567.67		567.67	0.000020	0.55	1118.46	1456.26	0.05
Reach 1	19996	100 yr	REV 1218 FW	379.56	558.90	567.62		567.66	0.000129	1.69	400.54	805.66	0.13
Reach 1	19996	100 yr	Prop_Eff_R1	379.56	559.88	565.48	563.00	565.62	0.000698	2.97	127.76	534.03	0.29
Reach 1	19996	100 yr	Corr_Eff_R2	379.56	559.54	567.64		567.65	0.000094	1.28	771.58	1087.18	0.11
Reach 1	19541	100 yr	REV 1218 FW	379.56	558.64	567.60		567.61	0.000044	1.09	886.56	741.35	0.08
Reach 1	19541	100 yr	Prop_Eff_R1	379.56	559.09	565.26	562.22	565.36	0.000446	2.51	151.44	130.14	0.24
Reach 1	19541	100 yr	Corr_Eff_R2	379.56	559.25	567.61		567.62	0.000052	1.01	1009.59	1157.33	0.08
Reach 1	19470	100 yr	REV 1218 FW	379.56	558.61	567.59		567.61	0.000069	1.28	671.15	514.21	0.10
Reach 1	19470	100 yr	Prop_Eff_R1	379.56	559.09	565.22		565.32	0.000486	2.58	147.14	43.02	0.25
Reach 1	19470	100 yr	Corr_Eff_R2	379.56	559.02	567.60		567.61	0.000092	1.26	659.82	556.33	0.11
Reach 1	19448	100 yr	REV 1218 FW	379.56	558.91	567.59	563.09	567.61	0.000085	1.26	663.11	549.58	0.10
Reach 1	19448	100 yr	Prop_Eff_R1	379.56	558.92	565.03	562.13	565.29	0.001343	4.06	93.53	23.62	0.36
Reach 1	19448	100 yr	Corr_Eff_R2	379.56	558.98	567.60	563.55	567.61	0.000106	1.31	635.28	542.48	0.11
Reach 1	19417		Culvert										
Reach 1	19377	100 yr	REV 1218 FW	379.56	558.41	567.53		567.54	0.000078	1.26	671.71	477.74	0.09
Reach 1	19377	100 yr	Prop_Eff_R1	379.56	558.41	564.54		564.81	0.001374	4.20	90.45	21.37	0.36
Reach 1	19377	100 yr	Corr_Eff_R2	379.56	558.41	567.53		567.55	0.000078	1.26	673.98	478.57	0.09
Reach 1	19348	100 yr	REV 1218 FW	379.56	558.26	567.53		567.54	0.000061	1.24	671.18	467.08	0.09
Reach 1	19348	100 yr	Prop_Eff_R1	379.56	558.26	564.50		564.77	0.001308	4.15	91.50	25.53	0.39
Reach 1	19348	100 yr	Corr_Eff_R2	379.56	558.26	567.53		567.55	0.000061	1.23	673.26	467.82	0.09
Reach 1	19316	100 yr	REV 1218 FW	379.56	558.45	567.52	562.77	567.54	0.000079	1.36	637.91	459.03	0.10
Reach 1	19316	100 yr	Prop_Eff_R1	379.56	558.36	564.42	561.53	564.72	0.001610	4.42	85.91	20.78	0.38
Reach 1	19316	100 yr	Corr_Eff_R2	379.56	558.45	567.53	562.77	567.54	0.000079	1.35	639.85	461.47	0.10
Reach 1	19283		Culvert										
Reach 1	19250	100 yr	REV 1218 FW	379.56	558.24	563.70		564.04	0.001820	4.67	81.25	24.66	0.45
Reach 1	19250	100 yr	Prop_Eff_R1	379.56	558.33	563.74		564.02	0.001575	4.30	88.31	24.74	0.40
Reach 1	19250	100 yr	Corr_Eff_R2	379.56	558.24	563.73		564.07	0.001776	4.63	82.00	24.77	0.45
Reach 1	19228	100 yr	REV 1218 FW	379.56	558.40	563.75		563.98	0.001142	3.85	98.64	28.90	0.37
Reach 1	19228	100 yr	Prop_Eff_R1	379.56	558.40	563.75		563.98	0.001142	3.85	98.64	28.90	0.37
Reach 1	19228	100 yr	Corr_Eff_R2	379.56	558.40	563.75		563.98	0.001136	3.84	98.82	28.93	0.37
Reach 1	19154	100 yr	REV 1218 FW	379.56	557.60	563.63		563.88	0.001287	4.05	93.61	27.39	0.39
Reach 1	19154	100 yr	Prop_Eff_R1	379.56	557.60	563.63		563.88	0.001287	4.05	93.61	27.39	0.39
Reach 1	19154	100 yr	Corr_Eff_R2	379.56	557.60	563.63		563.88	0.001287	4.05	93.61	27.39	0.39
Reach 1	18156	100 yr	REV 1218 FW	379.56	556.27	562.26		562.55	0.001377	4.31	88.07	23.74	0.39
Reach 1	18156	100 yr	Prop_Eff_R1	379.56	556.27	562.26		562.55	0.001377	4.31	88.07	23.74	0.39
Reach 1	18156	100 yr	Corr_Eff_R2	379.56	556.27	562.26		562.55	0.001377	4.31	88.07	23.74	0.39
Reach 1	17180	100 yr	REV 1218 FW	379.56	554.65	561.01		561.25	0.001268	3.88	97.76	30.41	0.38
Reach 1	17180	100 yr	Prop_Eff_R1	379.56	554.65	561.01		561.25	0.001268	3.88	97.76	30.41	0.38
Reach 1	17180	100 yr	Corr_Eff_R2	379.56	554.65	561.01		561.25	0.001268	3.88	97.76	30.41	0.38
Reach 1	16643	100 yr	REV 1218 FW	379.56	554.28	560.62		560.76	0.000617	2.94	129.08	36.37	0.28
Reach 1	16643	100 yr	Prop_Eff_R1	379.56	554.28	560.62		560.76	0.000617	2.94	129.08	36.37	0.28
Reach 1	16643	100 yr	Corr_Eff_R2	379.56	554.28	560.62		560.76	0.000617	2.94	129.08	36.37	0.28

HEC-RAS River: Maine_Township Reach: Reach 1 Profile: 100 yr (Continued)

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	16139	100 yr	REV 1218 FW	546.39	553.61	560.38		560.45	0.000514	2.74	636.89	1416.38	0.25
Reach 1	16139	100 yr	Prop_Eff_R1	546.39	553.61	560.38		560.45	0.000514	2.74	636.89	1416.38	0.25
Reach 1	16139	100 yr	Corr_Eff_R2	546.39	553.61	560.38		560.45	0.000514	2.74	636.89	1416.38	0.25
Reach 1	15148	100 yr	REV 1218 FW	546.39	552.75	559.39		559.47	0.000628	2.61	445.47	734.23	0.27
Reach 1	15148	100 yr	Prop_Eff_R1	546.39	552.75	559.39		559.47	0.000628	2.61	445.47	734.23	0.27
Reach 1	15148	100 yr	Corr_Eff_R2	546.39	552.75	559.39		559.47	0.000628	2.61	445.47	734.23	0.27
Reach 1	14153	100 yr	REV 1218 FW	546.39	552.09	559.11		559.12	0.000088	1.20	1234.49	1199.76	0.11
Reach 1	14153	100 yr	Prop_Eff_R1	546.39	552.09	559.11		559.12	0.000088	1.20	1234.56	1199.78	0.11
Reach 1	14153	100 yr	Corr_Eff_R2	546.39	552.09	559.11		559.12	0.000088	1.20	1234.56	1199.78	0.11
Reach 1	13160	100 yr	REV 1218 FW	546.39	550.87	559.08		559.08	0.000019	0.59	3174.97	3494.47	0.05
Reach 1	13160	100 yr	Prop_Eff_R1	546.39	550.87	559.08		559.08	0.000019	0.59	3175.18	3494.48	0.05
Reach 1	13160	100 yr	Corr_Eff_R2	546.39	550.87	559.08		559.08	0.000019	0.59	3175.18	3494.48	0.05
Reach 1	12721	100 yr	REV 1218 FW	546.39	550.92	559.08		559.08	0.000004	0.27	5533.07	3683.77	0.02
Reach 1	12721	100 yr	Prop_Eff_R1	546.39	550.92	559.08		559.08	0.000004	0.27	5533.30	3683.77	0.02
Reach 1	12721	100 yr	Corr_Eff_R2	546.39	550.92	559.08		559.08	0.000004	0.27	5533.30	3683.77	0.02
Reach 1	12641	100 yr	REV 1218 FW	546.39	550.46	559.08	554.72	559.08	0.000006	0.37	4721.85	3709.37	0.03
Reach 1	12641	100 yr	Prop_Eff_R1	546.39	550.46	559.08	554.72	559.08	0.000006	0.37	4722.08	3709.38	0.03
Reach 1	12641	100 yr	Corr_Eff_R2	546.39	550.46	559.08	554.72	559.08	0.000006	0.37	4722.08	3709.38	0.03
Reach 1	12590		Culvert										
Reach 1	12546	100 yr	REV 1218 FW	546.39	550.53	556.75		556.90	0.001125	3.83	296.23	317.84	0.36
Reach 1	12546	100 yr	Prop_Eff_R1	546.39	550.53	556.75		556.90	0.001124	3.83	296.35	317.86	0.36
Reach 1	12546	100 yr	Corr_Eff_R2	546.39	550.53	556.75		556.90	0.001124	3.83	296.35	317.86	0.36
Reach 1	12487	100 yr	REV 1218 FW	546.39	550.48	556.83		556.84	0.000131	1.43	1161.29	1416.85	0.13
Reach 1	12487	100 yr	Prop_Eff_R1	546.39	550.48	556.83		556.84	0.000131	1.43	1161.64	1417.02	0.13
Reach 1	12487	100 yr	Corr_Eff_R2	546.39	550.48	556.83		556.84	0.000131	1.43	1161.64	1417.02	0.13
Reach 1	11833	100 yr	REV 1218 FW	546.39	548.99	556.58		556.68	0.000535	2.91	459.99	972.66	0.26
Reach 1	11833	100 yr	Prop_Eff_R1	546.39	548.99	556.58		556.68	0.000534	2.91	460.64	973.34	0.26
Reach 1	11833	100 yr	Corr_Eff_R2	546.39	548.99	556.58		556.68	0.000534	2.91	460.64	973.34	0.26
Reach 1	11178	100 yr	REV 1218 FW	546.39	548.65	555.79	553.42	556.13	0.001407	4.64	117.67	29.55	0.41
Reach 1	11178	100 yr	Prop_Eff_R1	546.39	548.65	555.79	553.42	556.13	0.001405	4.64	117.71	29.56	0.41
Reach 1	11178	100 yr	Corr_Eff_R2	546.39	548.65	555.80	553.42	556.13	0.001405	4.64	117.72	29.56	0.41
Reach 1	11110	100 yr	REV 1218 FW	546.39	548.31	555.78		556.02	0.000976	4.02	141.14	98.45	0.35
Reach 1	11110	100 yr	Prop_Eff_R1	546.39	548.31	555.78		556.03	0.000975	4.02	141.29	98.87	0.35
Reach 1	11110	100 yr	Corr_Eff_R2	546.39	548.31	555.78		556.03	0.000975	4.02	141.30	98.92	0.35
Reach 1	11072	100 yr	REV 1218 FW	546.39	548.57	555.79	552.94	555.97	0.000745	3.46	157.71	39.57	0.31
Reach 1	11072	100 yr	Prop_Eff_R1	546.39	548.57	555.79	552.94	555.97	0.000744	3.46	157.77	39.58	0.31
Reach 1	11072	100 yr	Corr_Eff_R2	546.39	548.57	555.79	552.94	555.97	0.000744	3.46	157.78	39.58	0.31
Reach 1	11053		Bridge										
Reach 1	11035	100 yr	REV 1218 FW	546.39	548.96	555.62		555.88	0.001126	4.06	134.58	35.73	0.37
Reach 1	11035	100 yr	Prop_Eff_R1	546.39	548.96	555.62		555.88	0.001125	4.06	134.64	35.74	0.37
Reach 1	11035	100 yr	Corr_Eff_R2	546.39	548.96	555.62		555.88	0.001125	4.06	134.64	35.74	0.37
Reach 1	11010	100 yr	REV 1218 FW	546.39	548.45	555.52		555.84	0.001410	4.50	121.33	32.74	0.41
Reach 1	11010	100 yr	Prop_Eff_R1	546.39	548.45	555.53		555.84	0.001409	4.50	121.39	32.74	0.41
Reach 1	11010	100 yr	Corr_Eff_R2	546.39	548.45	555.53		555.84	0.001409	4.50	121.39	32.74	0.41
Reach 1	10938	100 yr	REV 1218 FW	546.39	548.30	555.45		555.74	0.001089	4.32	126.55	28.55	0.36
Reach 1	10938	100 yr	Prop_Eff_R1	546.39	548.30	555.45		555.74	0.001088	4.32	126.60	28.55	0.36
Reach 1	10938	100 yr	Corr_Eff_R2	546.39	548.30	555.45		555.74	0.001088	4.32	126.60	28.55	0.36
Reach 1	9945	100 yr	REV 1218 FW	546.39	547.60	555.07		555.13	0.000326	2.42	521.89	542.39	0.20
Reach 1	9945	100 yr	Prop_Eff_R1	546.39	547.60	555.08		555.14	0.000322	2.40	525.64	544.50	0.20
Reach 1	9945	100 yr	Corr_Eff_R2	546.39	547.60	555.08		555.14	0.000322	2.40	525.64	544.50	0.20
Reach 1	8949	100 yr	REV 1218 FW	546.39	546.82	554.40		554.63	0.000801	3.81	143.25	31.28	0.31
Reach 1	8949	100 yr	Prop_Eff_R1	546.39	546.82	554.41		554.64	0.000795	3.80	143.65	31.32	0.31
Reach 1	8949	100 yr	Corr_Eff_R2	546.39	546.82	554.41		554.64	0.000795	3.80	143.65	31.32	0.31
Reach 1	7957	100 yr	REV 1218 FW	546.39	545.94	553.39		553.68	0.001140	4.35	125.72	29.11	0.37
Reach 1	7957	100 yr	Prop_Eff_R1	546.39	545.94	553.41		553.70	0.001122	4.32	126.45	29.19	0.37
Reach 1	7957	100 yr	Corr_Eff_R2	546.39	545.94	553.41		553.70	0.001122	4.32	126.45	29.19	0.37
Reach 1	7419	100 yr	REV 1218 FW	546.39	544.98	552.31		552.81	0.002311	5.69	95.96	24.42	0.51
Reach 1	7419	100 yr	Prop_Eff_R1	546.39	544.98	552.37		552.86	0.002221	5.61	97.42	24.60	0.50
Reach 1	7419	100 yr	Corr_Eff_R2	546.39	544.98	552.37		552.86	0.002221	5.61	97.42	24.60	0.50
Reach 1	6750	100 yr	REV 1218 FW	546.39	543.83	551.63		551.86	0.000827	3.86	141.52	31.05	0.32
Reach 1	6750	100 yr	Prop_Eff_R1	546.39	543.83	551.73		551.95	0.000781	3.78	144.60	31.37	0.31
Reach 1	6750	100 yr	Corr_Eff_R2	546.39	543.83	551.73		551.95	0.000781	3.78	144.60	31.37	0.31
Reach 1	6591	100 yr	REV 1218 FW	546.39	543.86	551.49		551.73	0.000865	3.93	138.86	30.59	0.33
Reach 1	6591	100 yr	Prop_Eff_R1	546.39	543.86	551.60		551.83	0.000812	3.84	142.20	30.93	0.32
Reach 1	6591	100 yr	Corr_Eff_R2	546.39	543.86	551.60		551.83	0.000812	3.84	142.20	30.93	0.32

HEC-RAS River: Maine_Township Reach: Reach 1 Profile: 100 yr (Continued)

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	5921	100 yr	REV 1218 FW	546.39	542.86	550.81		551.09	0.001050	4.22	129.34	29.26	0.35
Reach 1	5921	100 yr	Prop_Eff_R1	546.39	542.86	550.98		551.24	0.000950	4.07	134.30	29.80	0.34
Reach 1	5921	100 yr	Corr_Eff_R2	546.39	542.86	550.98		551.24	0.000950	4.07	134.30	29.80	0.34
Reach 1	5719	100 yr	REV 1218 FW	546.39	542.29	550.75		550.91	0.000506	3.18	171.57	34.77	0.25
Reach 1	5719	100 yr	Prop_Eff_R1	546.39	542.29	550.93		551.07	0.000460	3.07	177.70	35.36	0.24
Reach 1	5719	100 yr	Corr_Eff_R2	546.39	542.29	550.93		551.07	0.000460	3.07	177.70	35.36	0.24
Reach 1	5644	100 yr	REV 1218 FW	626.25	542.55	550.64		550.86	0.000762	3.76	166.69	36.63	0.31
Reach 1	5644	100 yr	Prop_Eff_R1	626.25	542.55	550.82		551.03	0.000684	3.61	173.57	37.36	0.30
Reach 1	5644	100 yr	Corr_Eff_R2	626.25	542.55	550.82		551.03	0.000684	3.61	173.57	37.36	0.30
Reach 1	5611	100 yr	REV 1218 FW	626.25	541.43	550.76	545.57	550.79	0.000106	1.55	406.09	85.57	0.12
Reach 1	5611	100 yr	Prop_Eff_R1	626.25	541.43	550.93	545.57	550.97	0.000095	1.49	421.45	88.15	0.12
Reach 1	5611	100 yr	Corr_Eff_R2	626.25	541.43	550.93	545.57	550.97	0.000095	1.49	421.45	88.15	0.12
Reach 1	5578			Culvert									
Reach 1	5554	100 yr	REV 1218 FW	626.25	542.40	550.39		550.43	0.000102	1.50	416.56	83.90	0.12
Reach 1	5554	100 yr	Prop_Eff_R1	626.25	542.40	550.58		550.61	0.000092	1.45	432.81	86.06	0.11
Reach 1	5554	100 yr	Corr_Eff_R2	626.25	542.40	550.58		550.61	0.000092	1.45	432.81	86.06	0.11
Reach 1	5506	100 yr	REV 1218 FW	626.25	541.49	550.15		550.39	0.000790	3.94	158.88	32.27	0.31
Reach 1	5506	100 yr	Prop_Eff_R1	626.25	541.49	550.36		550.59	0.000706	3.78	165.76	32.93	0.30
Reach 1	5506	100 yr	Corr_Eff_R2	626.25	541.49	550.36		550.59	0.000706	3.78	165.76	32.93	0.30
Reach 1	5426	100 yr	REV 1218 FW	626.25	541.71	549.99		550.31	0.001200	4.52	138.65	31.91	0.38
Reach 1	5426	100 yr	Prop_Eff_R1	626.25	541.71	550.23		550.51	0.001041	4.28	146.21	32.75	0.36
Reach 1	5426	100 yr	Corr_Eff_R2	626.25	541.71	550.23		550.51	0.001041	4.28	146.21	32.75	0.36
Reach 1	5256	100 yr	REV 1218 FW	626.25	541.54	549.83		550.11	0.001001	4.24	147.59	32.58	0.35
Reach 1	5256	100 yr	Prop_Eff_R1	626.25	541.54	550.09		550.34	0.000862	4.01	156.10	33.48	0.33
Reach 1	5256	100 yr	Corr_Eff_R2	626.25	541.54	550.09		550.34	0.000862	4.01	156.10	33.48	0.33
Reach 1	4561	100 yr	REV 1218 FW	626.25	540.99	549.06		549.37	0.001128	4.50	139.09	30.07	0.37
Reach 1	4561	100 yr	Prop_Eff_R1	626.25	540.99	549.46		549.73	0.000897	4.13	151.57	31.34	0.33
Reach 1	4561	100 yr	Corr_Eff_R2	626.25	540.99	549.46		549.73	0.000897	4.13	151.57	31.34	0.33
Reach 1	4197	100 yr	REV 1218 FW	626.25	540.33	548.83		549.02	0.000689	3.52	177.94	40.89	0.30
Reach 1	4197	100 yr	Prop_Eff_R1	626.25	540.33	549.29		549.45	0.000521	3.17	197.64	43.09	0.26
Reach 1	4197	100 yr	Corr_Eff_R2	626.25	540.33	549.29		549.45	0.000521	3.17	197.64	43.09	0.26
Reach 1	3473	100 yr	REV 1218 FW	820.57	540.26	547.48		548.08	0.002237	6.24	131.59	29.70	0.52
Reach 1	3473	100 yr	Prop_Eff_R1	962.00	540.26	547.86		548.56	0.002447	6.72	143.23	30.85	0.55
Reach 1	3473	100 yr	Corr_Eff_R2	962.00	540.26	547.86		548.56	0.002446	6.72	143.24	30.85	0.55
Reach 1	3004	100 yr	REV 1218 FW	820.57	539.68	546.59		547.08	0.001933	5.65	152.40	56.73	0.49
Reach 1	3004	100 yr	Prop_Eff_R1	962.00	539.68	546.92		547.48	0.002041	6.04	172.68	64.27	0.51
Reach 1	3004	100 yr	Corr_Eff_R2	962.00	539.68	546.92		547.48	0.002041	6.04	172.70	64.27	0.51
Reach 1	2921	100 yr	REV 1218 FW	820.57	539.70	546.16	544.81	546.87	0.002674	6.87	143.78	93.34	0.58
Reach 1	2921	100 yr	Prop_Eff_R1	962.00	539.70	546.65	545.25	547.29	0.002255	6.77	194.76	114.45	0.54
Reach 1	2921	100 yr	Corr_Eff_R2	962.00	539.70	546.65	545.25	547.29	0.002254	6.77	194.82	114.46	0.54
Reach 1	2891	100 yr	REV 1218 FW	820.57	539.61	546.41	543.59	546.69	0.001049	4.26	192.73	46.33	0.37
Reach 1	2891	100 yr	Prop_Eff_R1	962.00	539.61	546.82	543.94	547.14	0.001137	4.53	212.59	49.65	0.39
Reach 1	2891	100 yr	Corr_Eff_R2	962.00	539.61	546.82	543.94	547.14	0.001136	4.52	212.60	49.65	0.39
Reach 1	2875			Bridge									
Reach 1	2854	100 yr	REV 1218 FW	820.57	539.42	546.30		546.64	0.001409	4.68	175.41	45.80	0.42
Reach 1	2854	100 yr	Prop_Eff_R1	962.00	539.42	546.70		547.08	0.001464	4.94	194.54	48.10	0.43
Reach 1	2854	100 yr	Corr_Eff_R2	962.00	539.42	546.70		547.08	0.001464	4.94	194.54	48.10	0.43
Reach 1	2828	100 yr	REV 1218 FW	820.57	539.17	546.01		546.57	0.002232	5.98	138.51	68.63	0.52
Reach 1	2828	100 yr	Prop_Eff_R1	962.00	539.17	546.43		547.02	0.002134	6.22	175.26	106.10	0.52
Reach 1	2828	100 yr	Corr_Eff_R2	962.00	539.17	546.43		547.02	0.002134	6.22	175.26	106.10	0.52
Reach 1	2746	100 yr	REV 1218 FW	820.57	539.43	545.65		546.35	0.002817	6.74	126.15	48.88	0.59
Reach 1	2746	100 yr	Prop_Eff_R1	962.00	539.43	546.02	544.59	546.80	0.002906	7.15	145.63	70.47	0.60
Reach 1	2746	100 yr	Corr_Eff_R2	962.00	539.43	546.02	544.59	546.80	0.002906	7.15	145.63	70.47	0.60
Reach 1	2206	100 yr	REV 1218 FW	820.57	537.77	544.19		544.80	0.002811	6.25	131.27	41.12	0.59
Reach 1	2206	100 yr	Prop_Eff_R1	962.00	537.77	544.60		545.26	0.002679	6.52	155.18	71.79	0.58
Reach 1	2206	100 yr	Corr_Eff_R2	962.00	537.77	544.60		545.26	0.002679	6.52	155.18	71.79	0.58
Reach 1	1444	100 yr	REV 1218 FW	820.57	535.48	542.65		543.09	0.001743	5.33	154.06	38.43	0.47
Reach 1	1444	100 yr	Prop_Eff_R1	962.00	535.48	542.97		543.49	0.001945	5.78	166.50	39.88	0.50
Reach 1	1444	100 yr	Corr_Eff_R2	962.00	535.48	542.97		543.49	0.001945	5.78	166.50	39.88	0.50
Reach 1	775	100 yr	REV 1218 FW	820.57	534.54	541.68		542.05	0.001351	4.94	181.31	69.30	0.42
Reach 1	775	100 yr	Prop_Eff_R1	962.00	534.54	541.78		542.26	0.001693	5.62	188.92	72.19	0.47
Reach 1	775	100 yr	Corr_Eff_R2	962.00	534.54	541.78		542.26	0.001693	5.62	188.92	72.19	0.47
Reach 1	476	100 yr	REV 1218 FW	820.57	534.77	541.34		541.65	0.001197	4.56	212.14	93.79	0.39
Reach 1	476	100 yr	Prop_Eff_R1	962.00	534.77	541.31		541.74	0.001684	5.39	209.50	92.69	0.47

HEC-RAS River: Maine_Township Reach: Reach 1 Profile: 100 yr (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	476	100 yr	Corr_Eff_R2	962.00	534.77	541.31		541.74	0.001684	5.39	209.50	92.69	0.47
Reach 1	181	100 yr	REV 1218 FW	820.57	531.76	541.30		541.44	0.000297	3.00	338.04	127.40	0.21
Reach 1	181	100 yr	Prop_Eff_R1	962.00	531.76	541.26		541.44	0.000419	3.55	332.57	118.02	0.25
Reach 1	181	100 yr	Corr_Eff_R2	962.00	531.76	541.26		541.44	0.000419	3.55	332.57	118.02	0.25

WATER QUALITY HYDROCAD REPORT

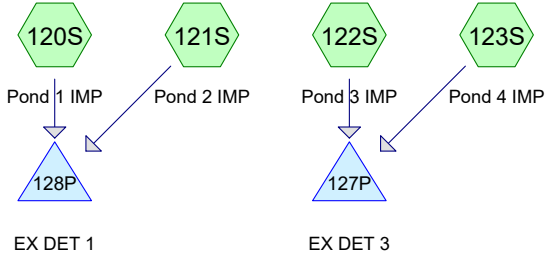
CoalCity_PUD_R2

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	0.75" Event	Huff B75 0-10sm	3Q	Scale	24.00	1	0.75	2



CoalCity_PUD_R2 Huff B75 0-10sm 3Q scaled to 24.00 hrs 0.75" Event Rainfall=0.75"
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Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment120S: Pond 1 IMP	Runoff Area=29.520 ac 100.00% Impervious Runoff Depth=0.75" Tc=10.0 min CN=100 Runoff=2.00 cfs 1.845 af
Subcatchment121S: Pond 2 IMP	Runoff Area=34.800 ac 100.00% Impervious Runoff Depth=0.75" Tc=10.0 min CN=100 Runoff=2.36 cfs 2.175 af
Subcatchment122S: Pond 3 IMP	Runoff Area=46.870 ac 100.00% Impervious Runoff Depth=0.75" Tc=10.0 min CN=100 Runoff=3.18 cfs 2.929 af
Subcatchment123S: Pond 4 IMP	Runoff Area=65.560 ac 100.00% Impervious Runoff Depth=0.75" Tc=10.0 min CN=100 Runoff=4.45 cfs 4.098 af
Pond 127P: EX DET 3	Peak Elev=560.31' Storage=306.090 cf Inflow=7.62 cfs 7.027 af Outflow=0.00 cfs 0.000 af
Pond 128P: EX DET 1	Peak Elev=561.26' Storage=4.020 af Inflow=4.36 cfs 4.020 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 176.750 ac Runoff Volume = 11.047 af Average Runoff Depth = 0.75"
0.00% Pervious = 0.000 ac 100.00% Impervious = 176.750 ac

CoalCity_PUD_R2 Huff B75 0-10sm 3Q scaled to 24.00 hrs 0.75" Event Rainfall=0.75"
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Summary for Subcatchment 120S: Pond 1 IMP

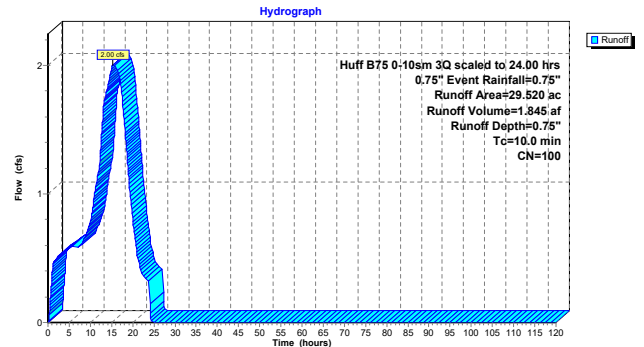
Runoff = 2.00 cfs @ 15.30 hrs, Volume= 1.845 af, Depth= 0.75"
Routed to Pond 128P : EX DET 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 0.75" Event Rainfall=0.75"

Area (ac)	CN	Description
29.520	100	Impervious Area in SW Drainage Area
29.520		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Est.

Subcatchment 120S: Pond 1 IMP



Summary for Subcatchment 121S: Pond 2 IMP

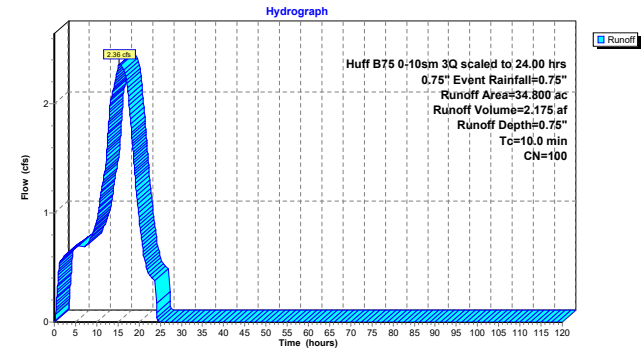
Runoff = 2.36 cfs @ 15.30 hrs, Volume= 2.175 af, Depth= 0.75"
Routed to Pond 128P : EX DET 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 0.75" Event Rainfall=0.75"

Area (ac)	CN	Description
* 34.800	100	
34.800		100.00% Impervious Area

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

Subcatchment 121S: Pond 2 IMP



Summary for Subcatchment 122S: Pond 3 IMP

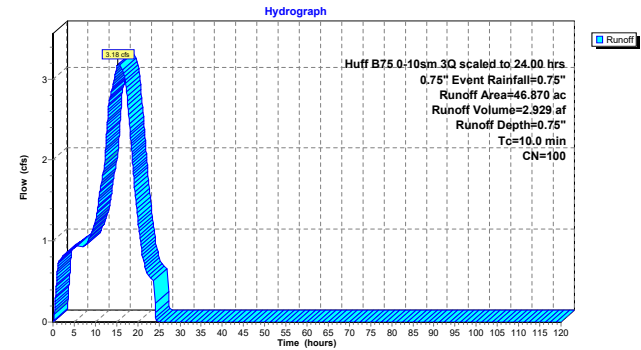
Runoff = 3.18 cfs @ 15.30 hrs, Volume= 2.929 af, Depth= 0.75"
Routed to Pond 127P : EX DET 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 0.75" Event Rainfall=0.75"

Area (ac)	CN	Description
* 46.870	100	Impervious Area in S Drainage Area
46.870		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Est.

Subcatchment 122S: Pond 3 IMP



Summary for Subcatchment 123S: Pond 4 IMP

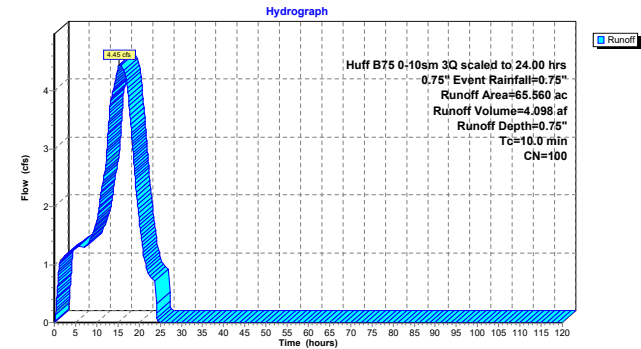
Runoff = 4.45 cfs @ 15.30 hrs, Volume= 4.098 af, Depth= 0.75"
Routed to Pond 127P : EX DET 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 0.75" Event Rainfall=0.75"

Area (ac)	CN	Description
* 65.560	100	Impervious Area in NW Drainage Area
65.560		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Max Allowed for Metropolitan Water Reclamation

Subcatchment 123S: Pond 4 IMP



Summary for Pond 127P: EX DET 3

Inflow Area = 112.430 ac, 100.00% Impervious, Inflow Depth = 0.75" for 0.75" Event event
Inflow = 7.62 cfs @ 15.30 hrs, Volume= 7.027 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

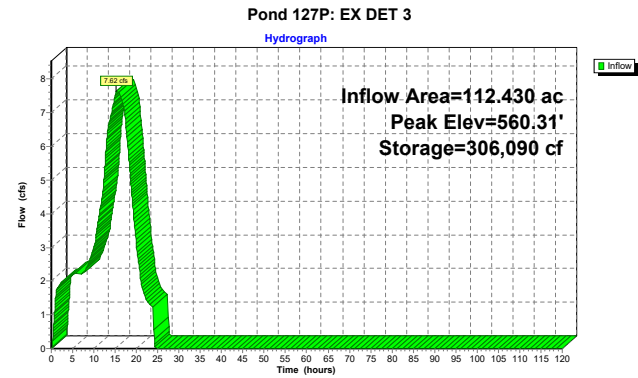
Routing by Sim-Route method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Peak Elev= 560.31' @ 24.60 hrs Surf.Area= 972,797 sf Storage= 306,090 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail. Storage	Storage Description
#1	560.00'	1,574,421 cf	Pond 3 (Prismatic) Listed below
#2	560.00'	4,299,563 cf	Pond 4 (Prismatic) Listed below (Recalc)
		5,873,984 cf	Total Available Storage

Elevation (feet)	Surf. Area (sq-ft)	Inc. Store (cubic-feet)	Cum. Store (cubic-feet)
560.00	258,913	0	0
561.00	260,076	259,495	259,495
562.00	261,239	260,658	520,152
563.00	262,402	261,821	781,973
564.00	263,565	262,984	1,044,956
565.00	264,728	264,147	1,309,103
566.00	265,909	265,319	1,574,421

Elevation (feet)	Surf. Area (sq-ft)	Inc. Store (cubic-feet)	Cum. Store (cubic-feet)
560.00	713,158	0	0
561.00	714,302	713,730	713,730
562.00	715,447	714,875	1,428,605
563.00	716,592	716,020	2,144,624
564.00	717,737	717,165	2,861,789
565.00	718,882	718,310	3,580,098
566.00	720,047	719,465	4,299,563



Summary for Pond 128P: EX DET 1

Inflow Area = 64.320 ac, 100.00% Impervious, Inflow Depth = 0.75" for 0.75" Event event
Inflow = 4.36 cfs @ 15.30 hrs, Volume= 4.020 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

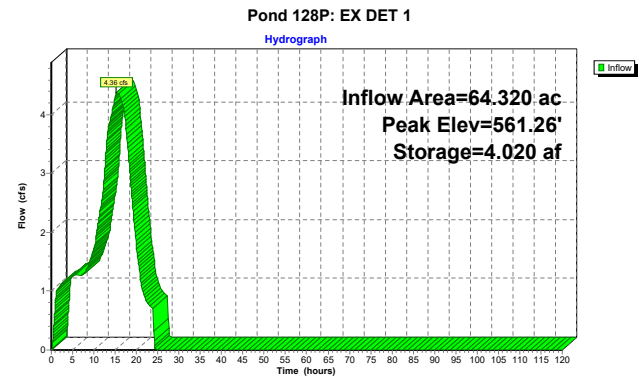
Routing by Sim-Route method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Peak Elev= 561.26' @ 24.60 hrs Surf.Area= 15.373 ac Storage= 4.020 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

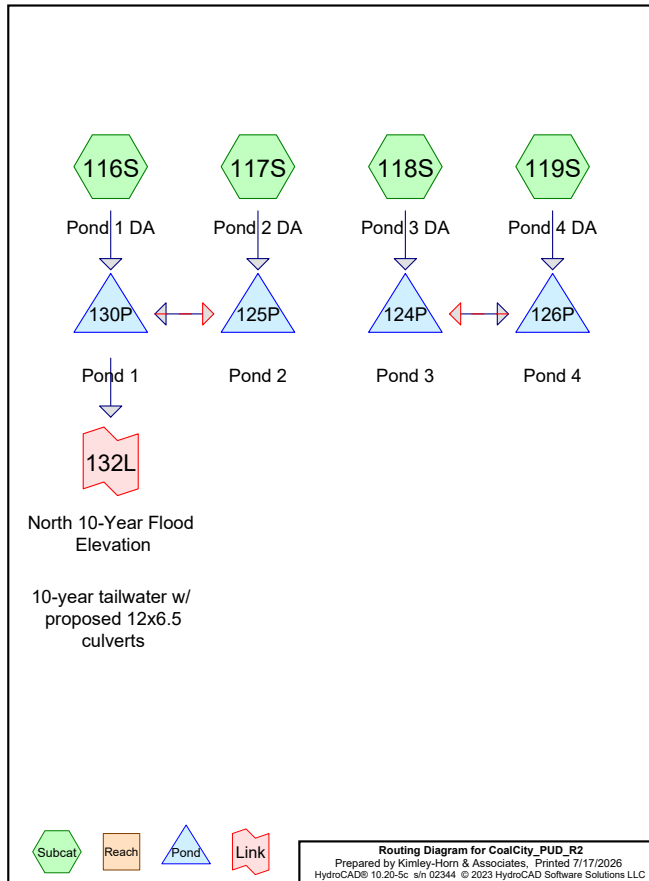
Volume	Invert	Avail. Storage	Storage Description
#1	561.00'	5.087 af	Pond 1 (Prismatic) Listed below
#2	561.00'	76.767 af	Pond 2 (Prismatic) Listed below (Recalc)
		81.855 af	Total Available Storage

Elevation (feet)	Surf. Area (acres)	Inc. Store (acre-feet)	Cum. Store (acre-feet)
561.00	0.615	0.000	0.000
562.00	0.774	0.695	0.695
563.00	0.935	0.855	1.549
564.00	1.097	1.016	2.565
565.00	1.261	1.179	3.744
566.00	1.426	1.343	5.087

Elevation (feet)	Surf. Area (acres)	Inc. Store (acre-feet)	Cum. Store (acre-feet)
561.00	14.642	0.000	0.000
562.00	14.925	14.783	14.783
563.00	15.209	15.067	29.850
564.00	15.495	15.352	45.202
565.00	15.782	15.639	60.841
566.00	16.071	15.927	76.767



ONSITE DETENTION HYDROCAD REPORT



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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Huff B75 0-10sm	3Q	Scale	24.00	1	3.34	2
2	100-Year	Huff B75 0-10sm	3Q	Scale	24.00	1	8.57	2

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Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

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Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

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

Subcatchment116S: Pond 1 DA Runoff Area=45.740 ac 0.00% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=89 Runoff=11.68 cfs 8.423 af

Subcatchment117S: Pond 2 DA Runoff Area=47.830 ac 0.00% Impervious Runoff Depth=2.21"
Tc=10.0 min CN=89 Runoff=12.21 cfs 8.808 af

Subcatchment118S: Pond 3 DA Runoff Area=60.150 ac 0.00% Impervious Runoff Depth=2.68"
Tc=10.0 min CN=94 Runoff=17.08 cfs 13.433 af

Subcatchment119S: Pond 4 DA Runoff Area=129.420 ac 0.00% Impervious Runoff Depth=1.96"
Tc=10.0 min CN=86 Runoff=30.49 cfs 21.110 af

Pond 124P: Pond 3 Peak Elev=561.34' Storage=7.967 af Inflow=17.08 cfs 13.433 af
24.0" Round Culvert x 4.00 n=0.012 L=50.0' S=0.0000 ' Outflow=9.45 cfs 11.207 af

Pond 125P: Pond 2 Peak Elev=562.11' Storage=16.443 af Inflow=22.97 cfs 17.842 af
12.0" Round Culvert x 4.00 n=0.012 L=60.0' S=0.0000 ' Outflow=0.41 cfs 1.400 af

Pond 126P: Pond 4 Peak Elev=561.33' Storage=21.803 af Inflow=39.93 cfs 32.317 af
Primary=7.02 cfs 26.205 af Secondary=0.00 cfs 0.000 af Outflow=7.02 cfs 26.205 af

Pond 130P: Pond 1 Peak Elev=562.68' Storage=1.275 af Inflow=11.68 cfs 9.823 af
Primary=0.00 cfs 0.000 af Secondary=11.10 cfs 9.035 af Outflow=11.10 cfs 9.035 af

Link 132L: North 10-Year Flood Elevation Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 283.140 ac Runoff Volume = 51.773 af Average Runoff Depth = 2.19"
100.00% Pervious = 283.140 ac 0.00% Impervious = 0.000 ac

CoalCity_PUD_R2

Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

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Summary for Subcatchment 116S: Pond 1 DA

r6 DAs

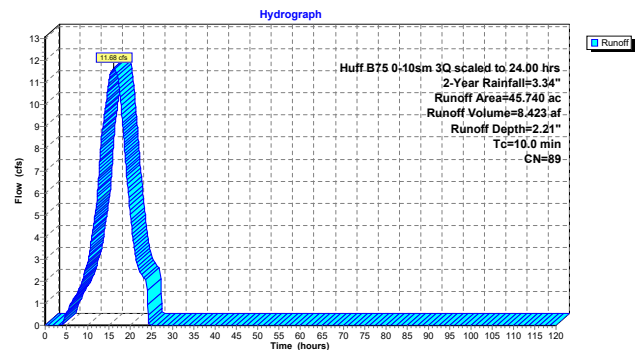
Runoff = 11.68 cfs @ 16.14 hrs, Volume= 8.423 af, Depth= 2.21"
Routed to Pond 130P : Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
45.740	89	
45.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Max Allowed for Metropolitan Water Reclamation

Subcatchment 116S: Pond 1 DA



Summary for Subcatchment 117S: Pond 2 DA

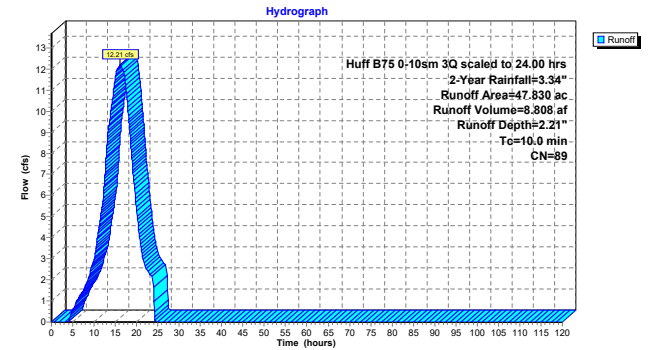
Runoff = 12.21 cfs @ 16.14 hrs, Volume= 8.808 af, Depth= 2.21"
Routed to Pond 125P : Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
* 47.830	89	
47.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Est.

Subcatchment 117S: Pond 2 DA



Summary for Subcatchment 118S: Pond 3 DA

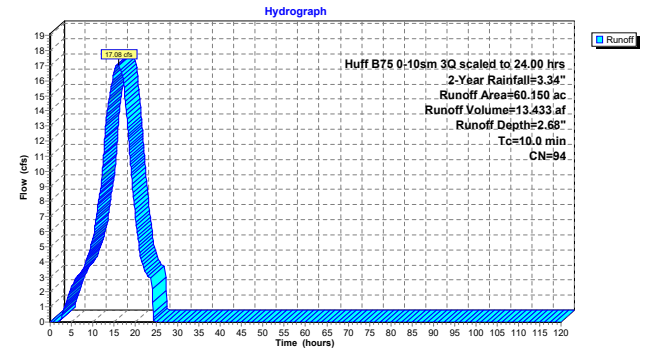
Runoff = 17.08 cfs @ 16.08 hrs, Volume= 13.433 af, Depth= 2.68"
Routed to Pond 124P : Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
* 60.150	94	
60.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Est.

Subcatchment 118S: Pond 3 DA



Summary for Subcatchment 119S: Pond 4 DA

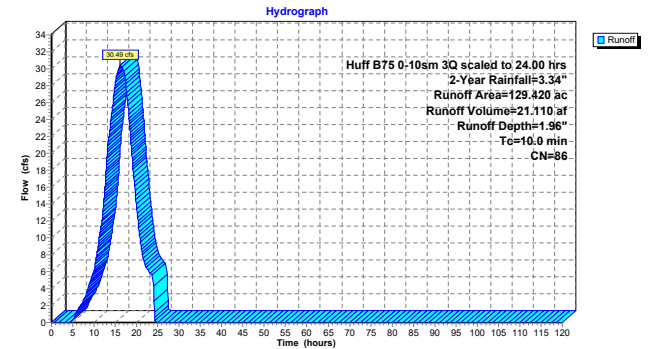
Runoff = 30.49 cfs @ 16.17 hrs, Volume= 21.110 af, Depth= 1.96"
Routed to Pond 126P : Pond 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
* 129.420	86	
129.420		100.00% Pervious Area

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

Subcatchment 119S: Pond 4 DA



Summary for Pond 124P: Pond 3

Inflow = 17.08 cfs @ 16.08 hrs, Volume= 13.433 af
Outflow = 9.45 cfs @ 16.11 hrs, Volume= 11.207 af, Atten= 45%, Lag= 1.9 min
Primary = 9.45 cfs @ 16.11 hrs, Volume= 11.207 af
Routed to Pond 126P : Pond 4

Routing by Sim-Route method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Peak Elev= 561.34' @ 24.10 hrs Surf.Area= 5.979 ac Storage= 7.967 af

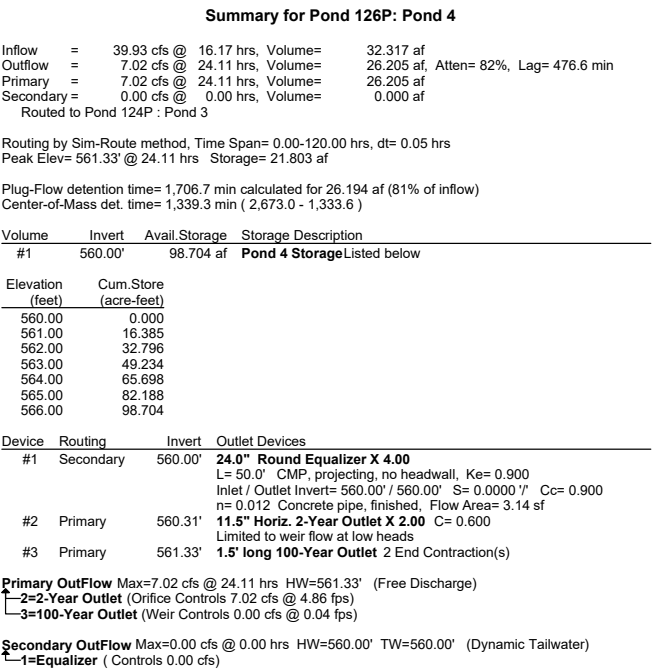
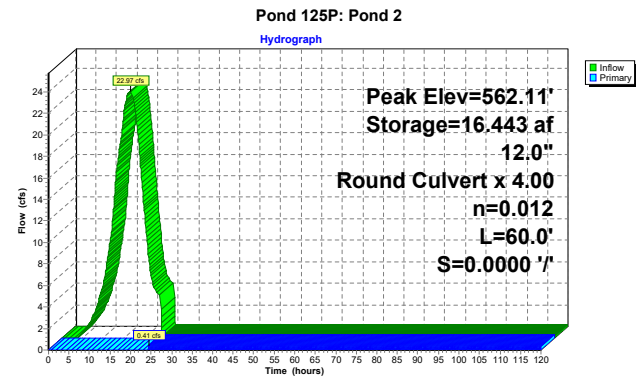
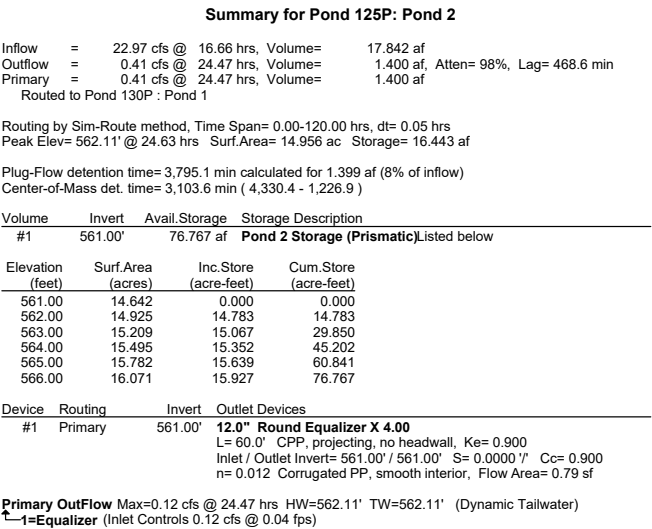
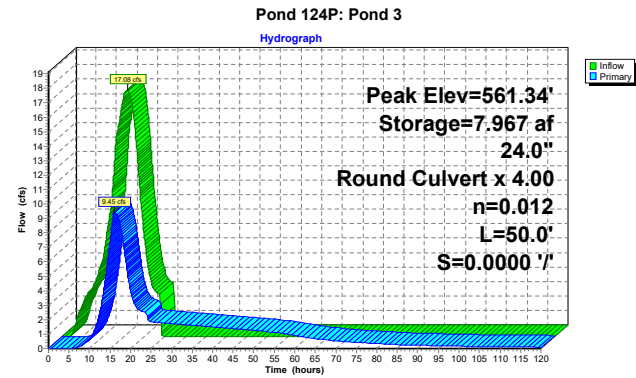
Plug-Flow detention time= 1,215.9 min calculated for 11.203 af (83% of inflow)
Center-of-Mass det. time= 1,147.4 min (2,042.3 - 894.9)

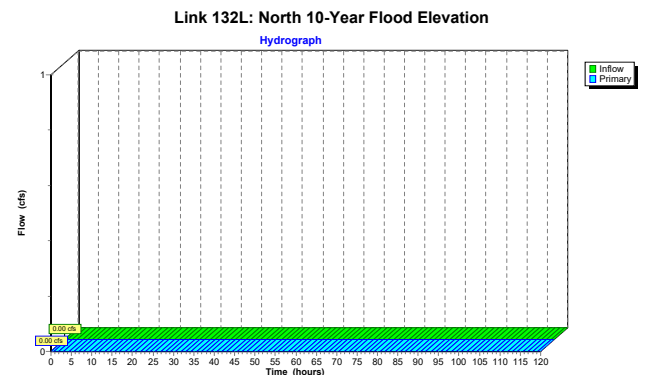
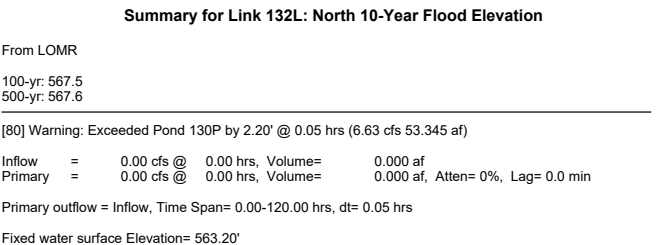
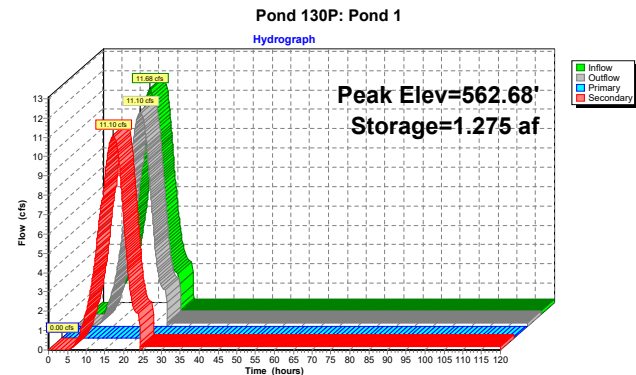
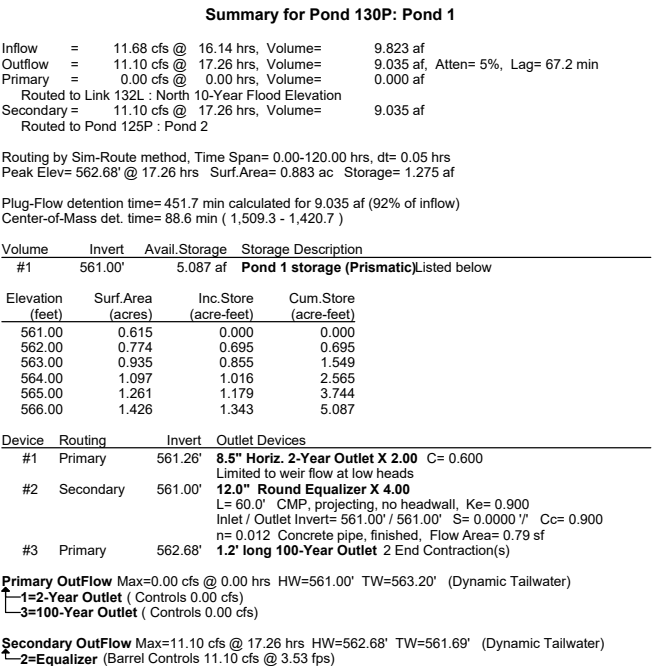
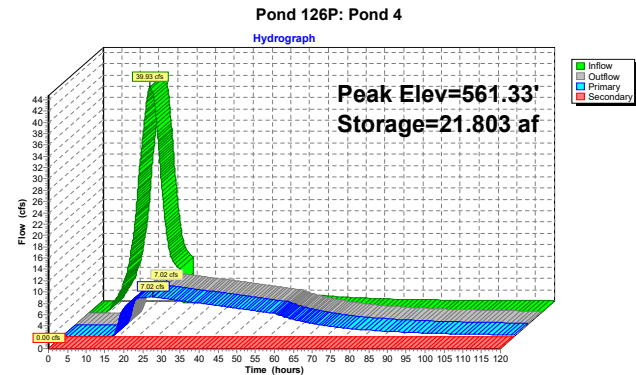
Volume	Invert	Avail. Storage	Storage Description
#1	560.00'	36.144 af	Pond 3 Storage (Prismatic) Listed below

Elevation (feet)	Surf. Area (acres)	Inc. Store (acre-feet)	Cum. Store (acre-feet)
560.00	5.944	0.000	0.000
561.00	5.971	5.957	5.957
562.00	5.997	5.984	11.941
563.00	6.024	6.011	17.952
564.00	6.051	6.037	23.989
565.00	6.077	6.064	30.053
566.00	6.104	6.091	36.144

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	24.0" Round Equalizer X 4.00 L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 560.00' / 560.00' S= 0.0000' /' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=9.25 cfs @ 16.11 hrs HW=560.96' TW=560.75' (Dynamic Tailwater)
1=Equalizer (Outlet Controls 9.25 cfs @ 2.27 fps)





Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment116S: Pond 1 DA	Runoff Area=45.740 ac 0.00% Impervious Runoff Depth=7.25" Tc=10.0 min CN=89 Runoff=34.07 cfs 27.622 af
Subcatchment117S: Pond 2 DA	Runoff Area=47.830 ac 0.00% Impervious Runoff Depth=7.25" Tc=10.0 min CN=89 Runoff=35.63 cfs 28.884 af
Subcatchment118S: Pond 3 DA	Runoff Area=60.150 ac 0.00% Impervious Runoff Depth=7.85" Tc=10.0 min CN=94 Runoff=45.99 cfs 39.343 af
Subcatchment119S: Pond 4 DA	Runoff Area=129.420 ac 0.00% Impervious Runoff Depth=6.88" Tc=10.0 min CN=86 Runoff=94.37 cfs 74.254 af
Pond 124P: Pond 3	Peak Elev=564.13' Storage=24.772 af Inflow=45.99 cfs 39.343 af 24.0" Round Culvert x 4.00 n=0.012 L=50.0' S=0.0000 'f' Outflow=13.11 cfs 36.167 af
Pond 125P: Pond 2	Peak Elev=563.97' Storage=44.669 af Inflow=52.79 cfs 45.398 af 12.0" Round Culvert x 4.00 n=0.012 L=60.0' S=0.0000 'f' Outflow=5.31 cfs 12.489 af
Pond 126P: Pond 4	Peak Elev=564.09' Storage=67.237 af Inflow=107.12 cfs 110.419 af Primary=27.74 cfs 101.771 af Secondary=0.00 cfs 0.000 af Outflow=27.74 cfs 101.771 af
Pond 130P: Pond 1	Peak Elev=565.12' Storage=3.904 af Inflow=34.07 cfs 40.109 af Primary=13.78 cfs 21.843 af Secondary=17.16 cfs 16.515 af Outflow=30.47 cfs 38.358 af
Link 132L: North 10-Year Flood Elevation	Inflow=13.78 cfs 21.843 af Primary=13.78 cfs 21.843 af

Total Runoff Area = 283.140 ac Runoff Volume = 170.103 af Average Runoff Depth = 7.21"
100.00% Pervious = 283.140 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 116S: Pond 1 DA

r6 DAs

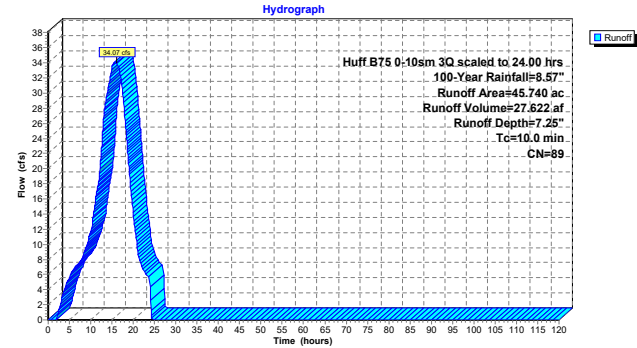
Runoff = 34.07 cfs @ 16.06 hrs, Volume= 27.622 af, Depth= 7.25"
Routed to Pond 130P : Pond 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
* 45.740	89	
45.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Max Allowed for Metropolitan Water Reclamation

Subcatchment 116S: Pond 1 DA



Summary for Subcatchment 117S: Pond 2 DA

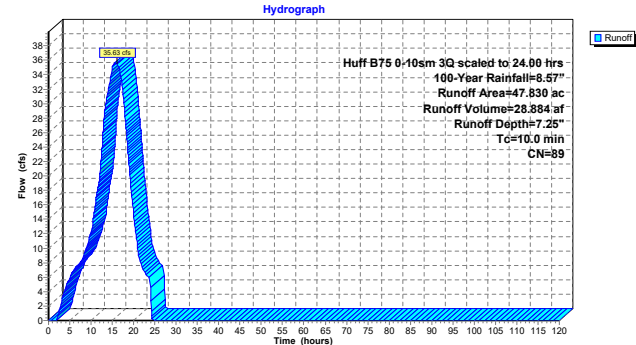
Runoff = 35.63 cfs @ 16.06 hrs, Volume= 28.884 af, Depth= 7.25"
Routed to Pond 125P : Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
* 47.830	89	
47.830		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Est.

Subcatchment 117S: Pond 2 DA



Summary for Subcatchment 118S: Pond 3 DA

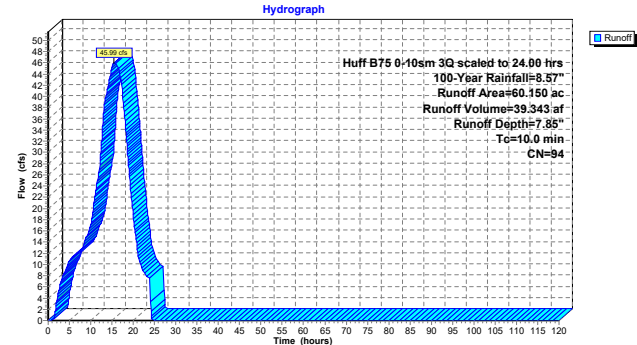
Runoff = 45.99 cfs @ 15.49 hrs, Volume= 39.343 af, Depth= 7.85"
Routed to Pond 124P : Pond 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
* 60.150	94	
60.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Est.

Subcatchment 118S: Pond 3 DA



Summary for Subcatchment 119S: Pond 4 DA

Runoff = 94.37 cfs @ 16.08 hrs, Volume= 74.254 af, Depth= 6.88"

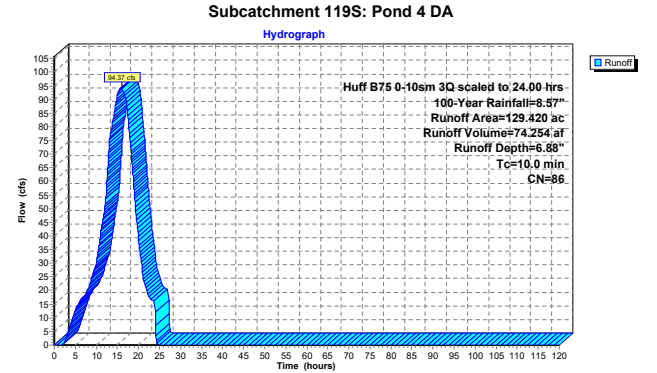
Routed to Pond 126P : Pond 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Huff B75 0-10sm 3Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
* 129.420	86	
129.420		100.00% Pervious Area

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



Summary for Pond 124P: Pond 3

Inflow = 45.99 cfs @ 15.49 hrs, Volume= 39.343 af

Outflow = 13.11 cfs @ 17.22 hrs, Volume= 36.167 af, Atten= 71%, Lag= 104.0 min

Primary = 13.11 cfs @ 17.22 hrs, Volume= 36.167 af

Routed to Pond 126P : Pond 4

Routing by Sim-Route method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Peak Elev= 564.13' @ 22.14 hrs Surf.Area= 6.054 ac Storage= 24.772 af

Plug-Flow detention time= 1,523.3 min calculated for 36.167 af (92% of inflow)

Center-of-Mass det. time= 1,482.4 min (2,334.3 - 851.9)

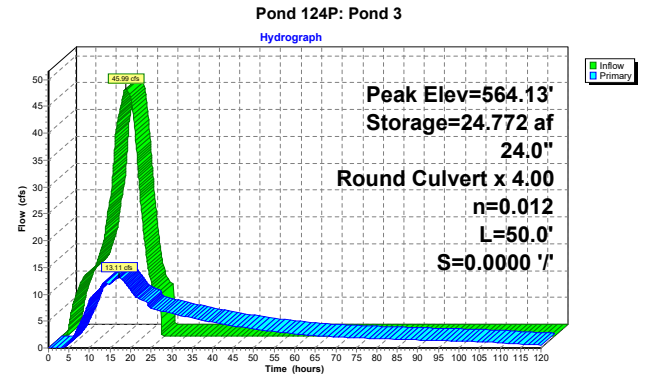
Volume	Invert	Avail. Storage	Storage Description
#1	560.00'	36.144 af	Pond 3 Storage (Prismatic) Listed below

Elevation (feet)	Surf. Area (acres)	Inc. Store (acre-feet)	Cum. Store (acre-feet)
560.00	5.944	0.000	0.000
561.00	5.971	5.957	5.957
562.00	5.997	5.984	11.941
563.00	6.024	6.011	17.952
564.00	6.051	6.037	23.989
565.00	6.077	6.064	30.053
566.00	6.104	6.091	36.144

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	24.0" Round Equalizer X 4.00 L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 560.00' / 560.00' S= 0.0000 ' / Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=11.22 cfs @ 17.22 hrs HW=563.33' TW=563.28' (Dynamic Tailwater)

1=Equalizer (Inlet Controls 11.22 cfs @ 0.89 fps)



Summary for Pond 125P: Pond 2

[86] Warning: Oscillations may require smaller dt (severity=11)

Inflow = 52.79 cfs @ 16.07 hrs, Volume= 45.398 af

Outflow = 5.31 cfs @ 26.07 hrs, Volume= 12.489 af, Atten= 90%, Lag= 600.2 min

Primary = 5.31 cfs @ 26.07 hrs, Volume= 12.489 af

Routed to Pond 130P : Pond 1

Routing by Sim-Route method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Peak Elev= 563.97' @ 24.20 hrs Surf.Area= 15.485 ac Storage= 44.669 af

Plug-Flow detention time= 2,122.8 min calculated for 12.489 af (28% of inflow)

Center-of-Mass det. time= 1,734.1 min (2,654.9 - 920.8)

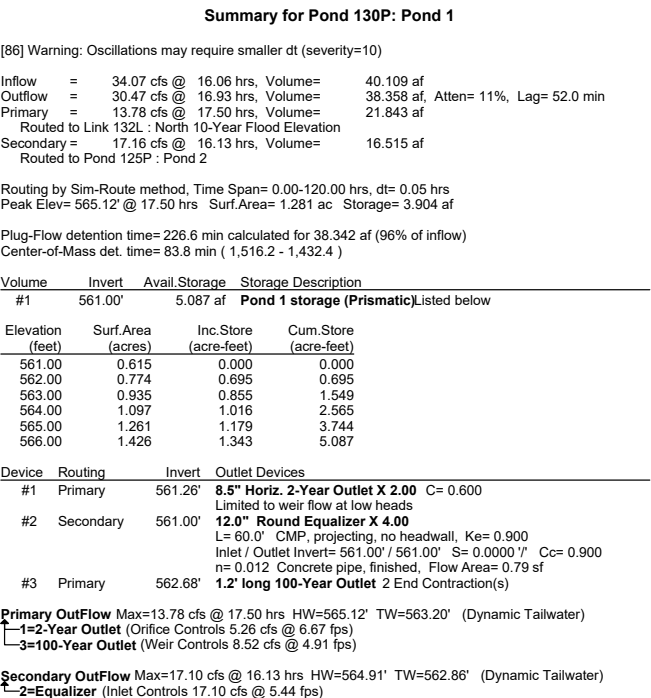
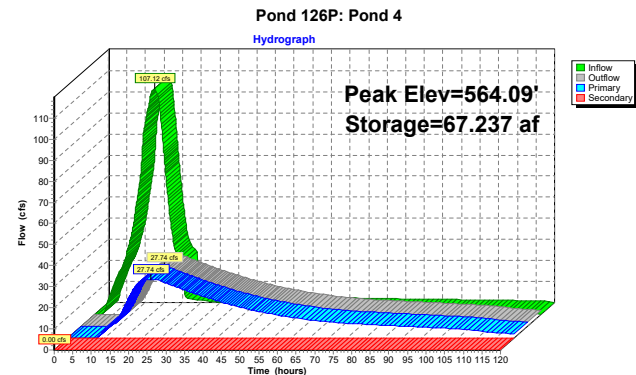
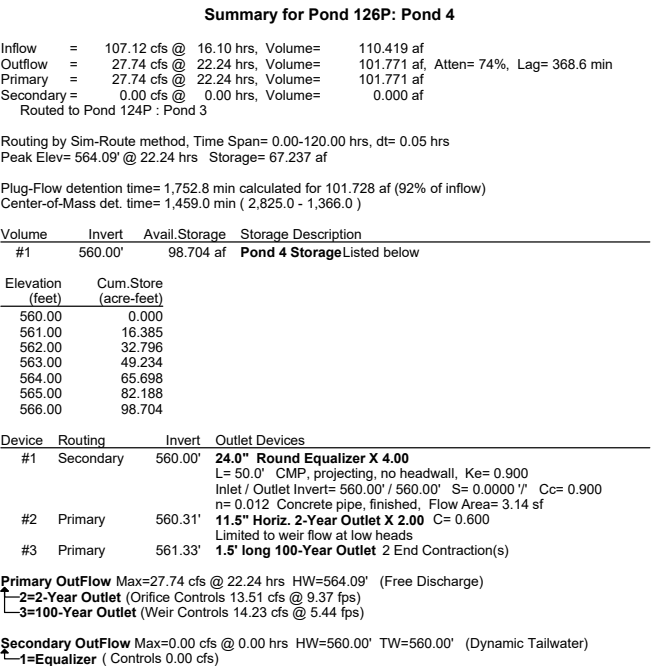
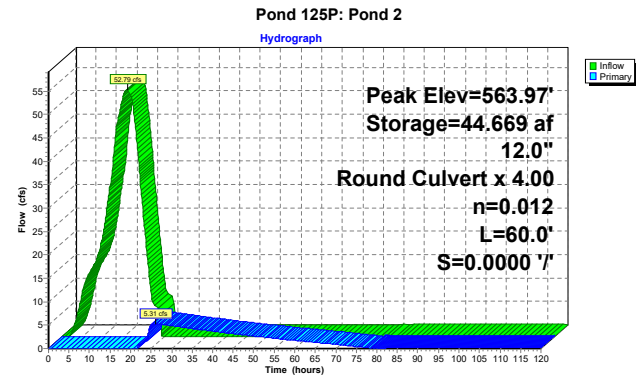
Volume	Invert	Avail. Storage	Storage Description
#1	561.00'	76.767 af	Pond 2 Storage (Prismatic) Listed below

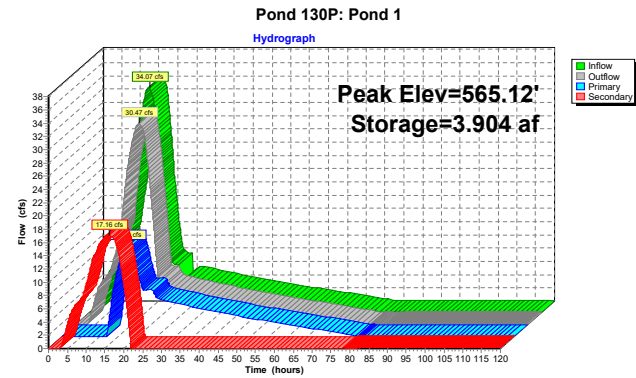
Elevation (feet)	Surf. Area (acres)	Inc. Store (acre-feet)	Cum. Store (acre-feet)
561.00	14.642	0.000	0.000
562.00	14.925	14.783	14.783
563.00	15.209	15.067	29.850
564.00	15.495	15.352	45.202
565.00	15.782	15.639	60.841
566.00	16.071	15.927	76.767

Device	Routing	Invert	Outlet Devices
#1	Primary	561.00'	12.0" Round Equalizer X 4.00 L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 561.00' / 561.00' S= 0.0000 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.33 cfs @ 26.07 hrs HW=563.92' TW=563.72' (Dynamic Tailwater)

1=Equalizer (Inlet Controls 5.33 cfs @ 1.70 fps)





Summary for Link 132L: North 10-Year Flood Elevation

From LOMR

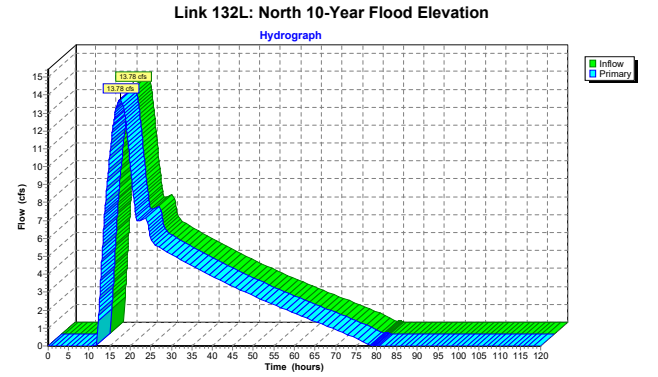
100-yr: 567.5
500-yr: 567.6

[80] Warning: Exceeded Pond 130P by 2.20' @ 0.05 hrs (6.63 cfs 6.004 af)

Inflow = 13.78 cfs @ 17.50 hrs, Volume= 21.843 af
Primary = 13.78 cfs @ 17.55 hrs, Volume= 21.843 af, Atten= 0%, Lag= 3.0 min

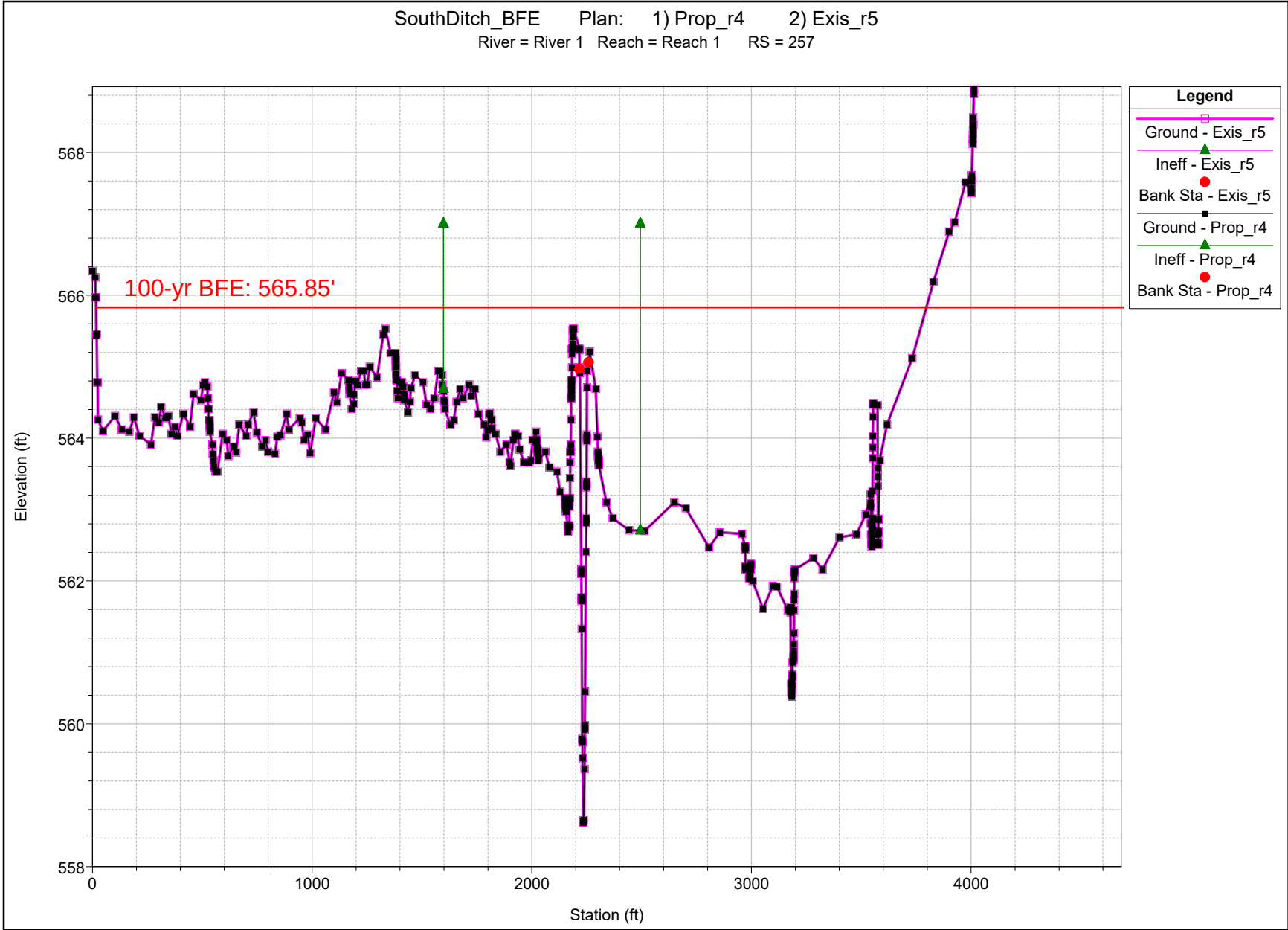
Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Fixed water surface Elevation= 563.20'



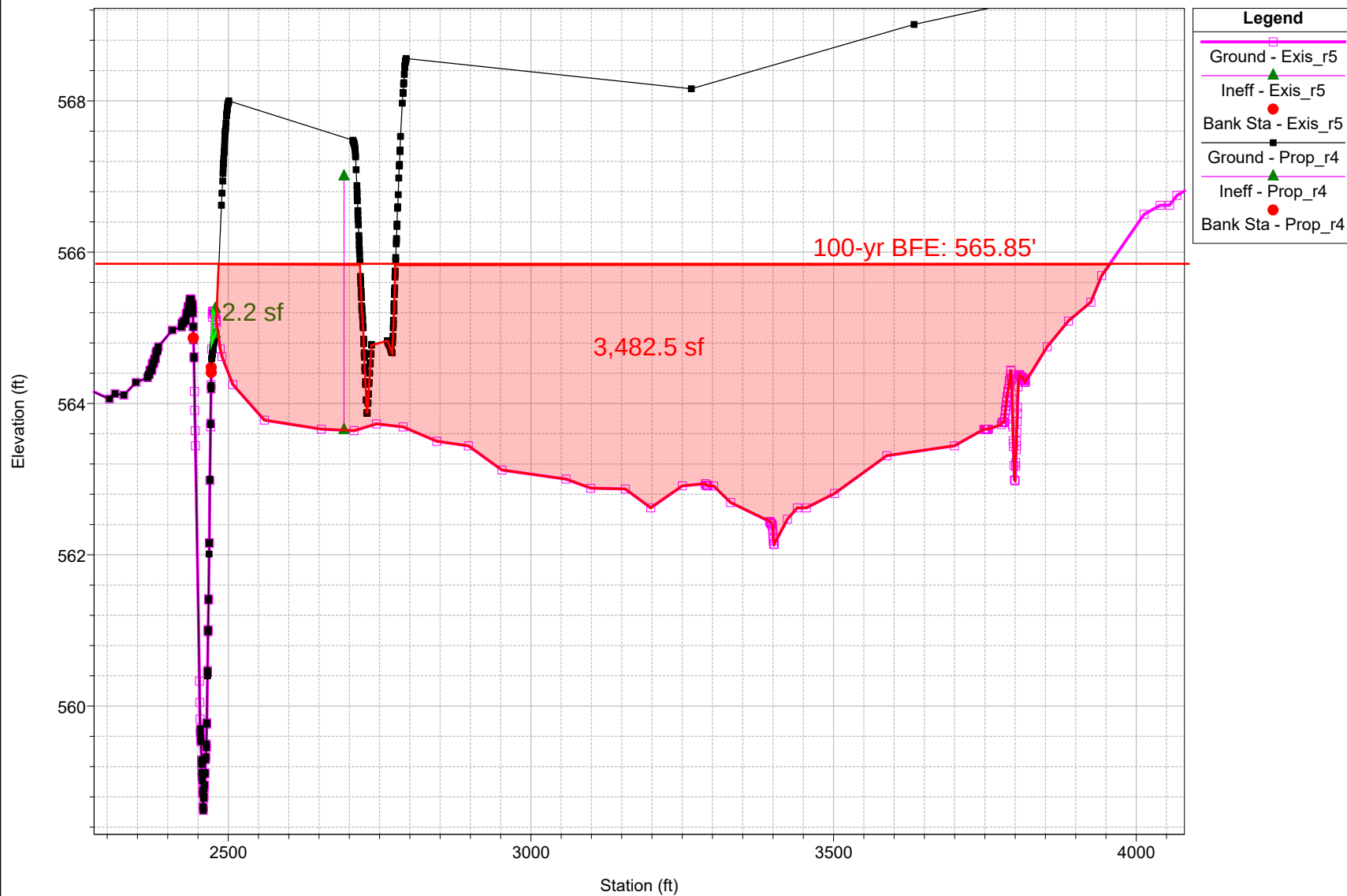
Appendix F Compensatory Storage

SOUTH DITCH COMPENSATORY STORAGE CROSS SECTIONS



SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

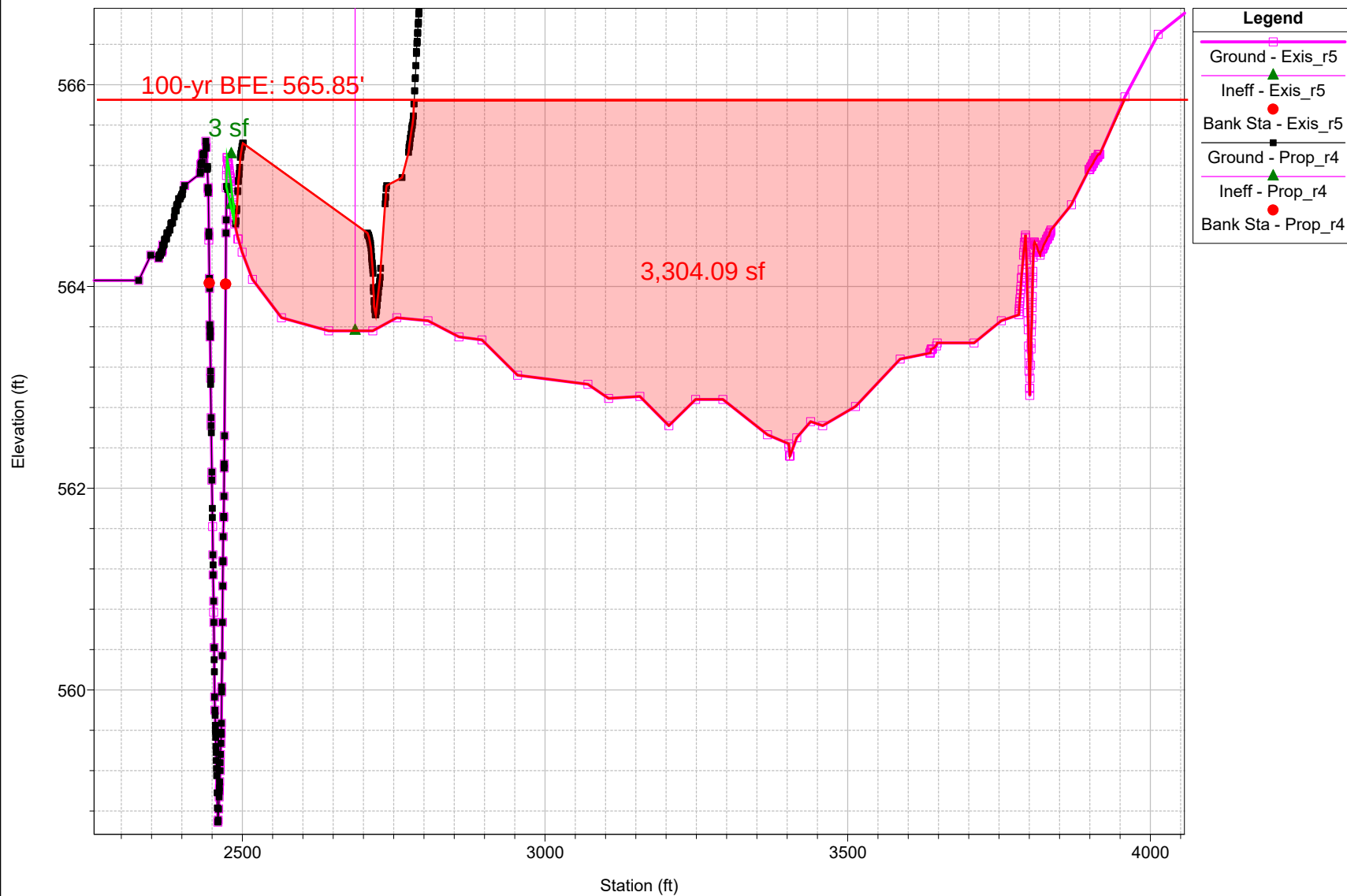
River = River 1 Reach = Reach 1 RS = 289



1 in Horiz. = 250 ft 1 in Vert. = 2 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

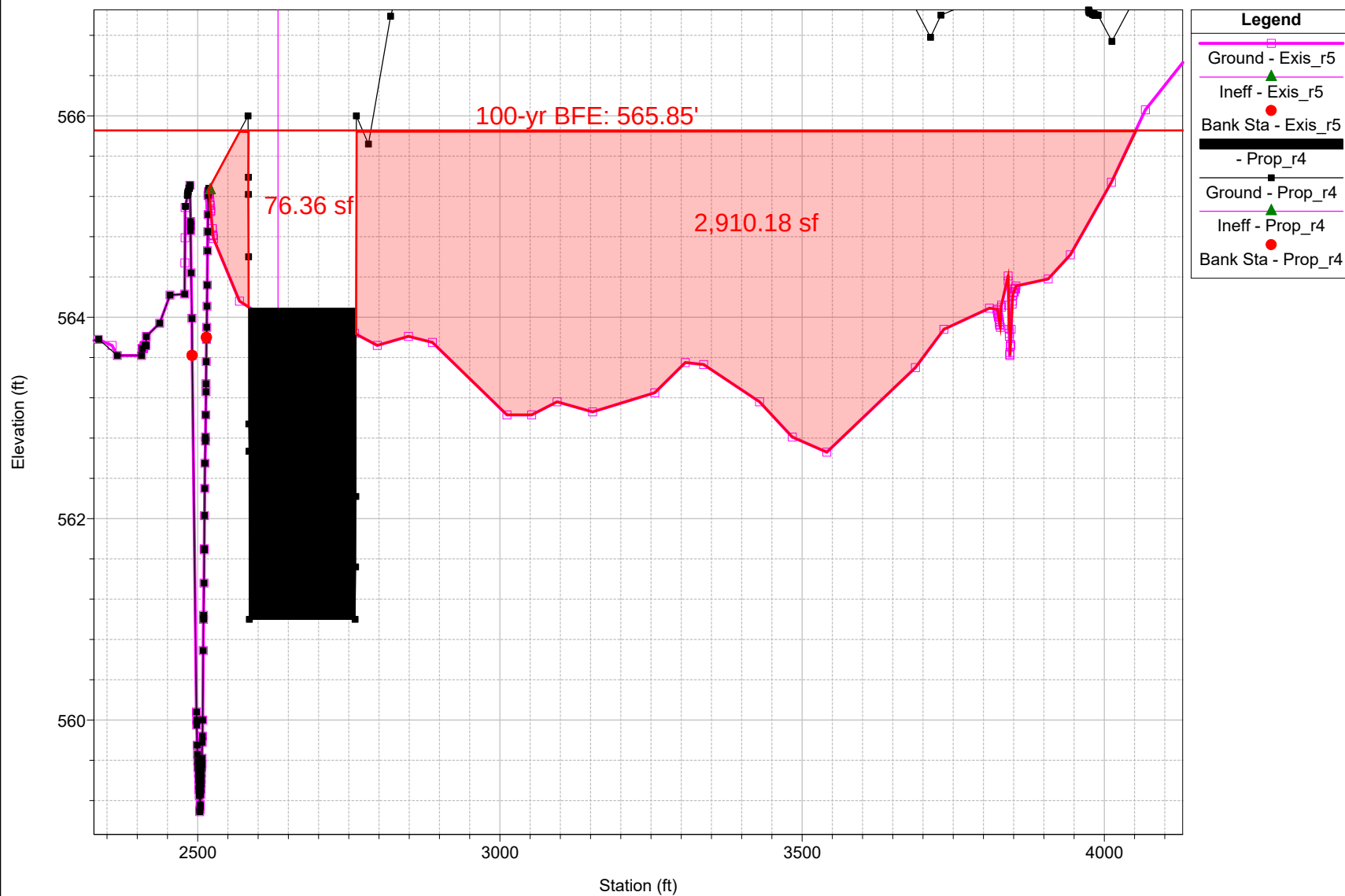
River = River 1 Reach = Reach 1 RS = 299



1 in Horiz. = 250 ft 1 in Vert. = 1.5 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

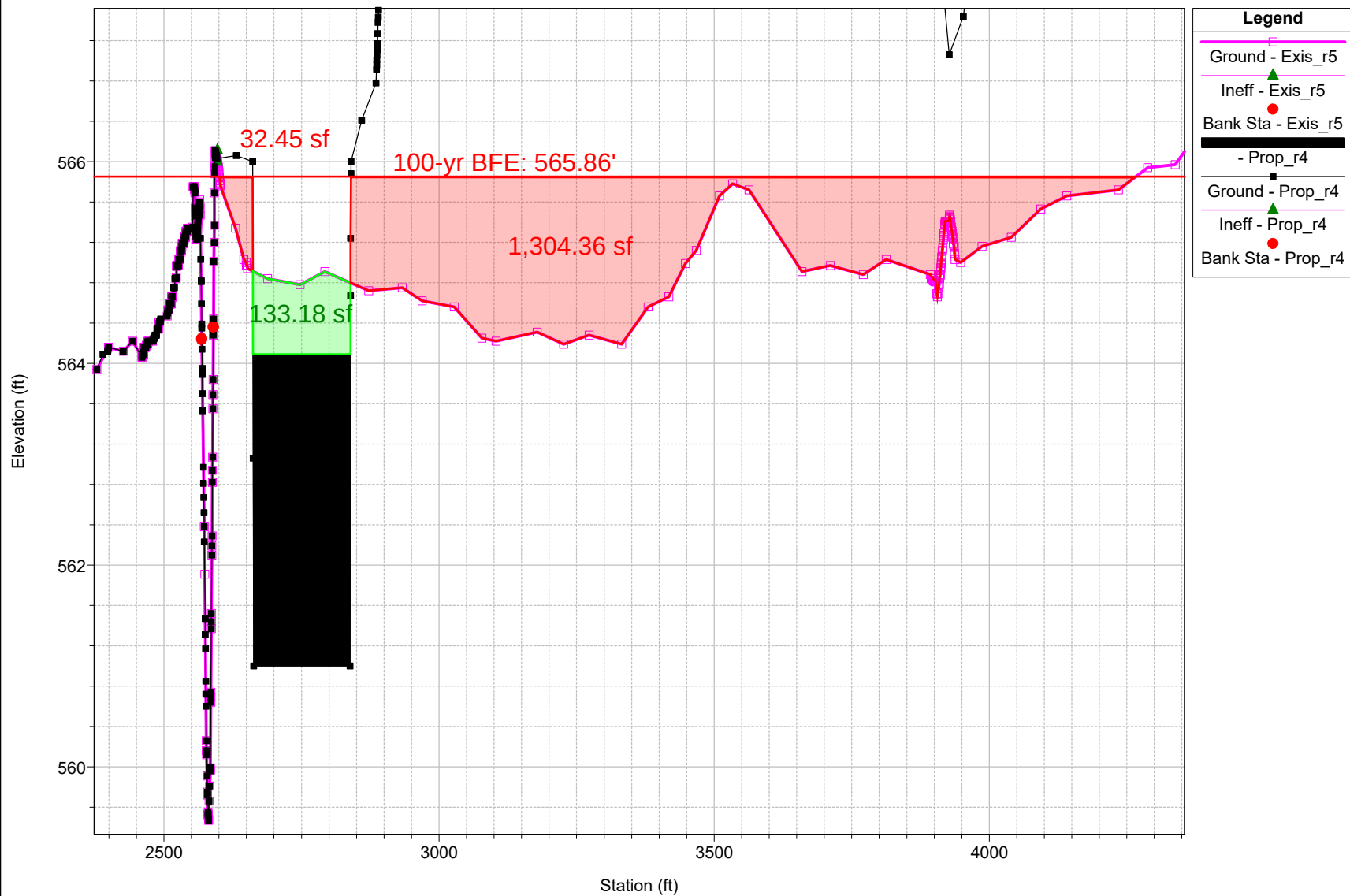
River = River 1 Reach = Reach 1 RS = 491



1 in Horiz. = 250 ft 1 in Vert. = 1.5 ft

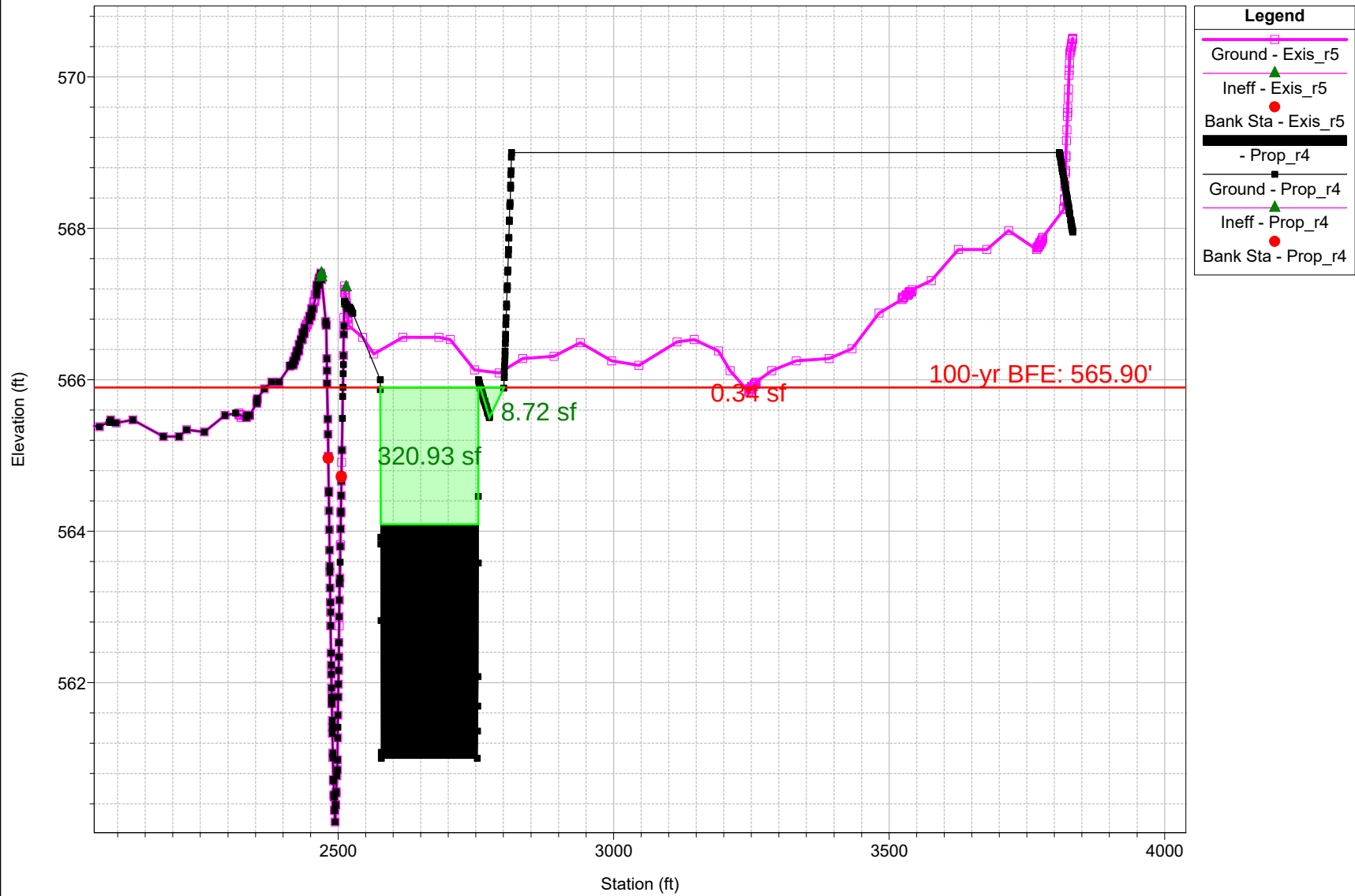
SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

River = River 1 Reach = Reach 1 RS = 963

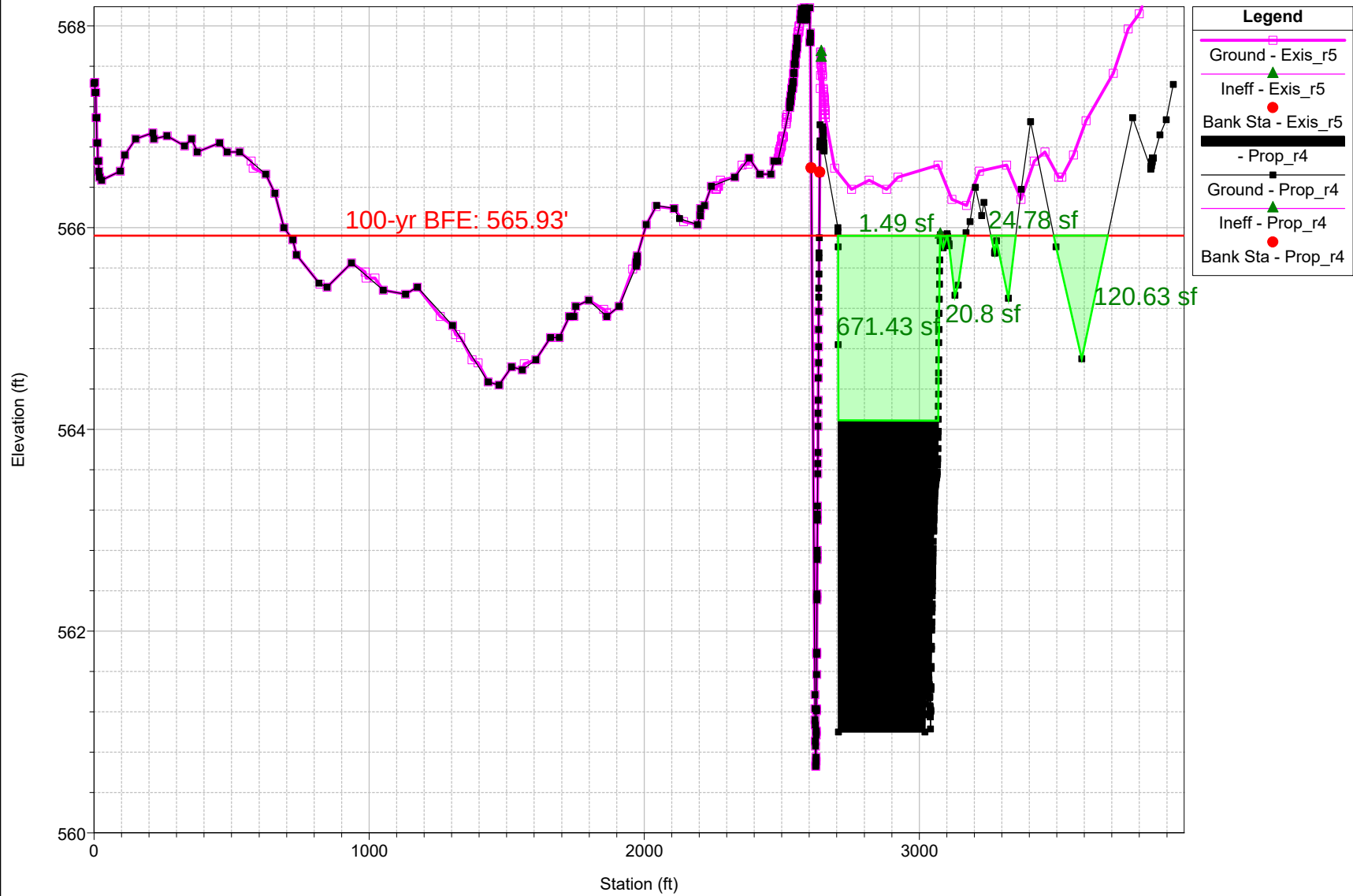


1 in Horiz. = 275 ft 1 in Vert. = 1.5 ft

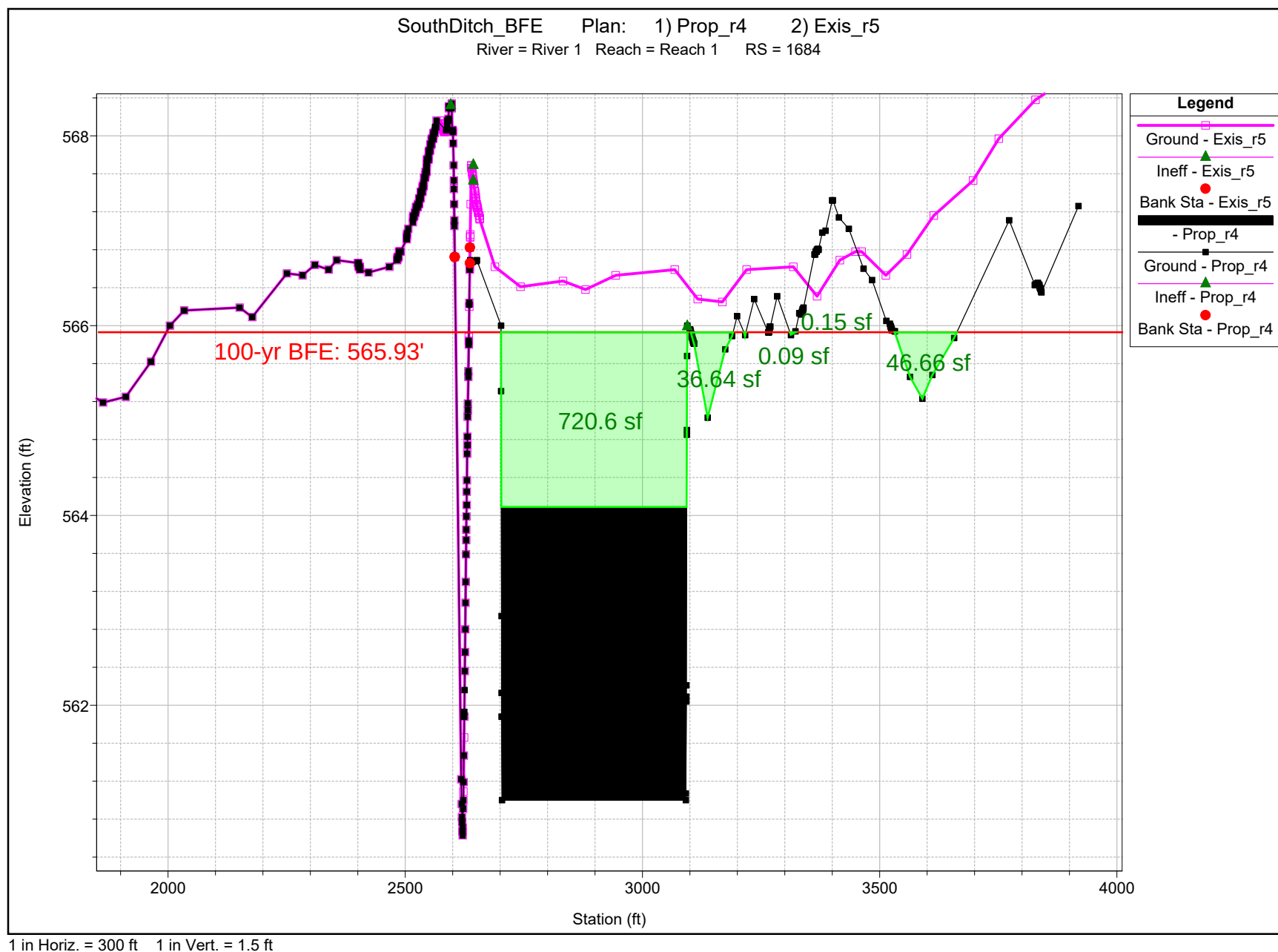
SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5
River = River 1 Reach = Reach 1 RS = 1496



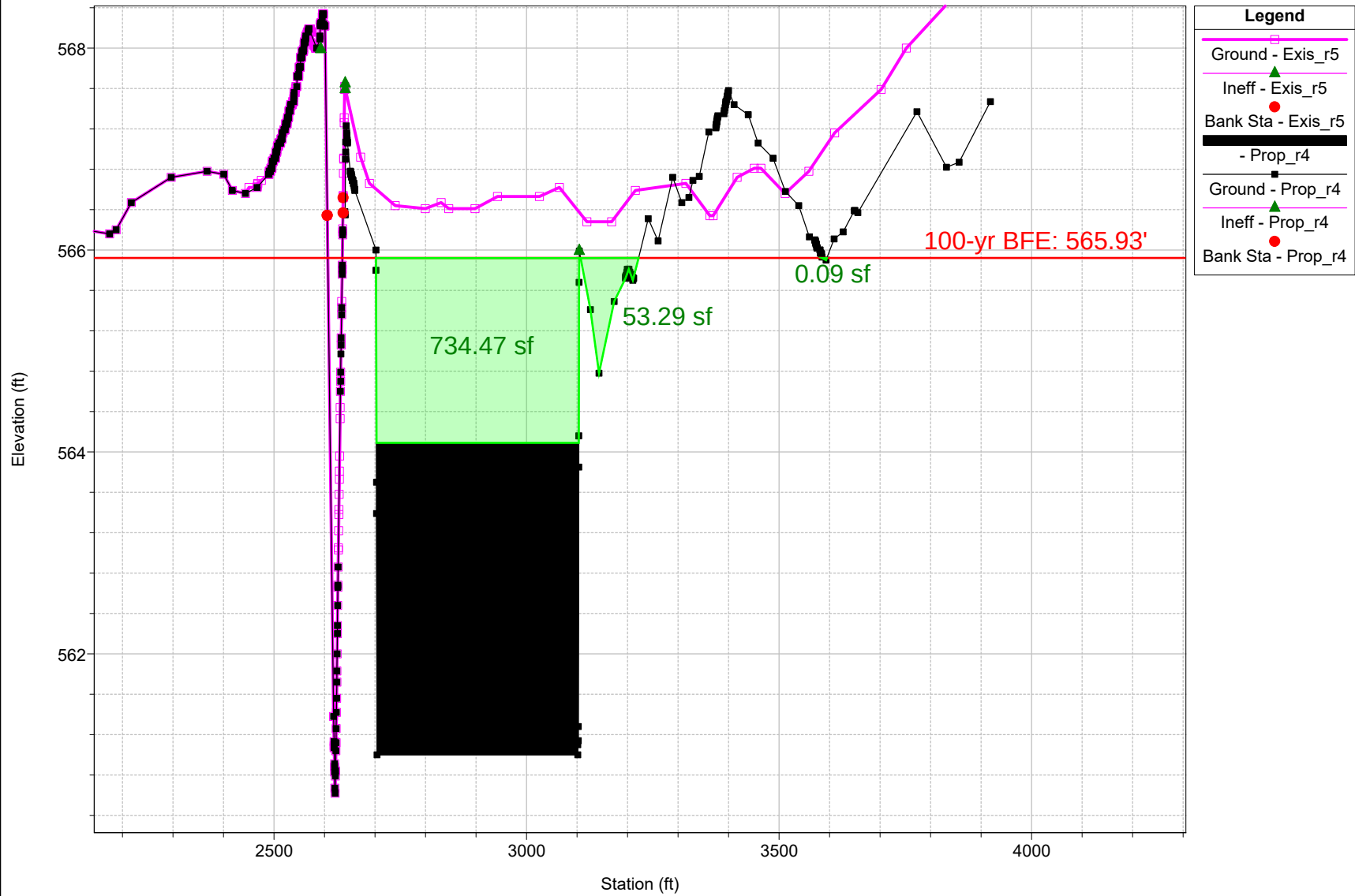
SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5
 River = River 1 Reach = Reach 1 RS = 1673



1 in Horiz. = 550 ft 1 in Vert. = 1.5 ft



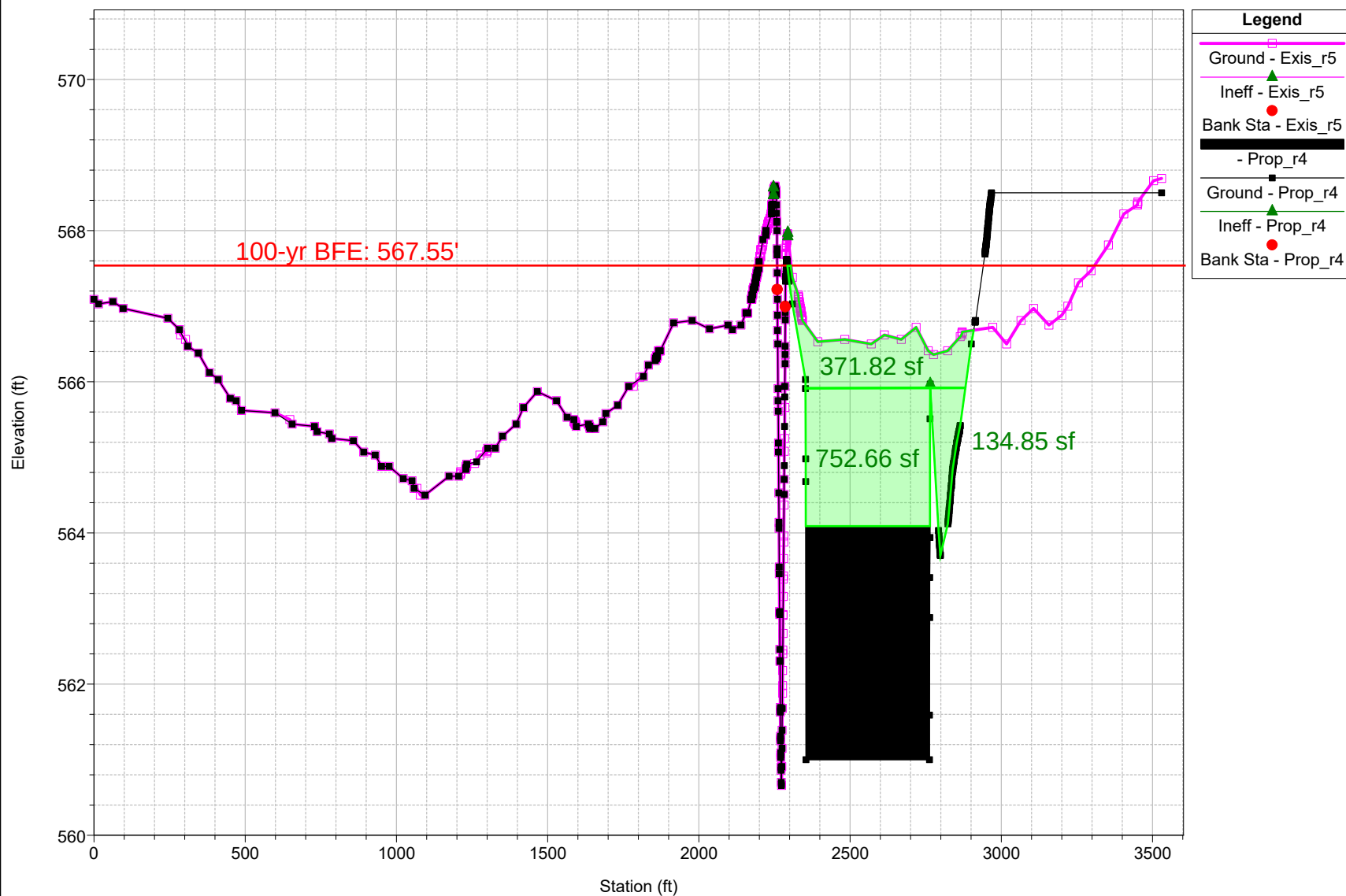
SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5
River = River 1 Reach = Reach 1 RS = 1694



1 in Horiz. = 300 ft 1 in Vert. = 1.5 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

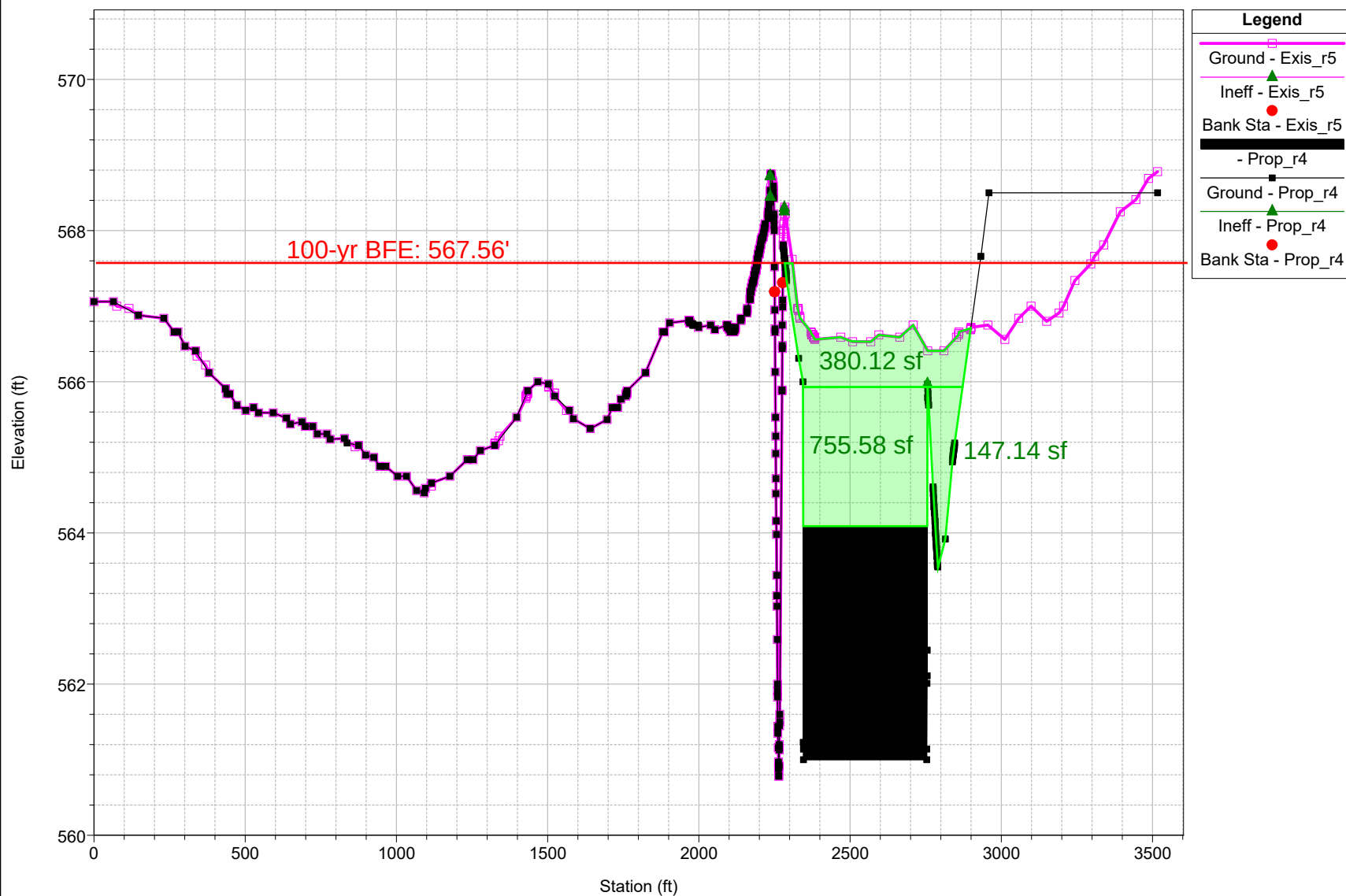
River = River 1 Reach = Reach 1 RS = 1747



1 in Horiz. = 500 ft 1 in Vert. = 2 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

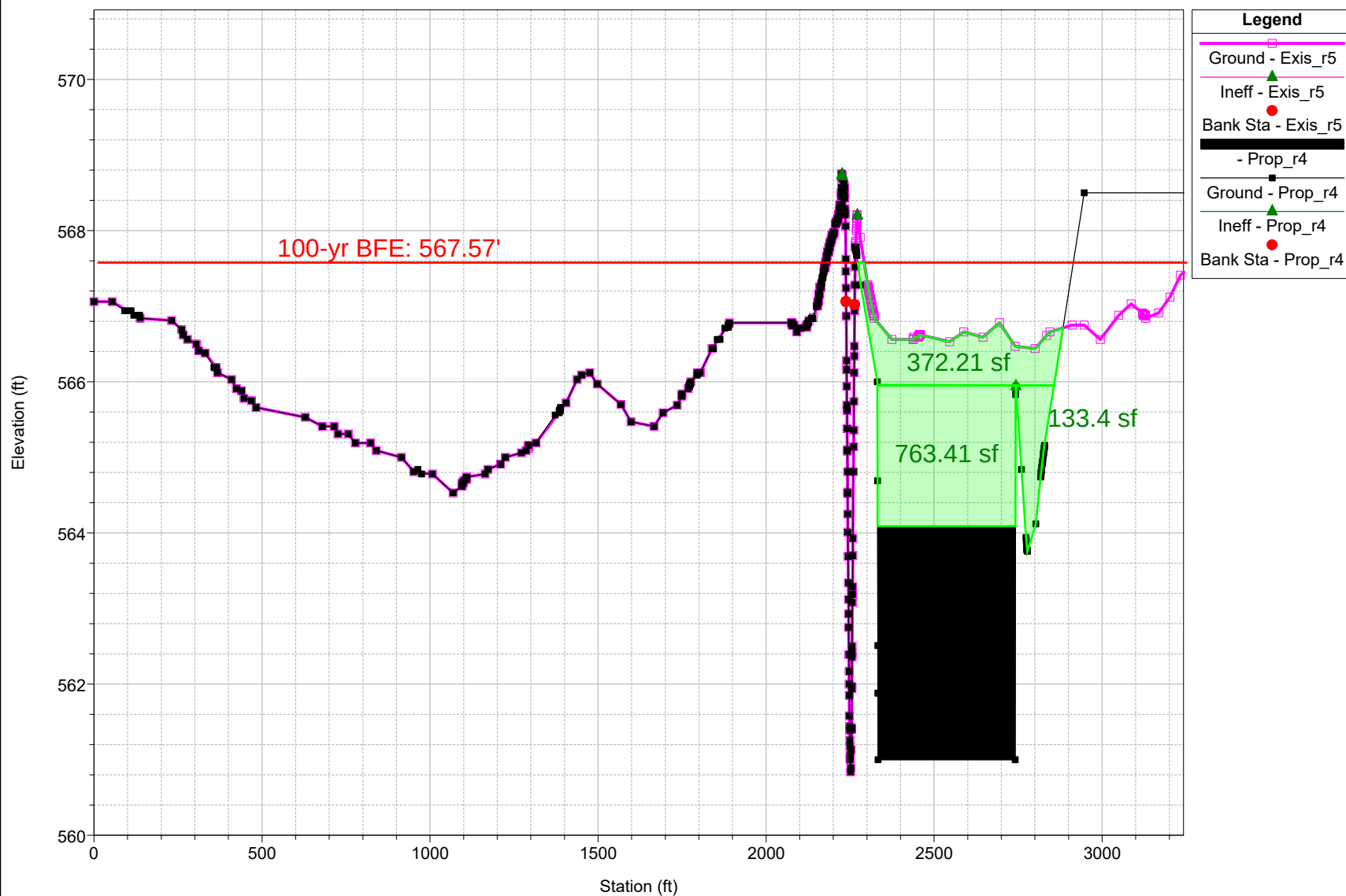
River = River 1 Reach = Reach 1 RS = 1757



1 in Horiz. = 500 ft 1 in Vert. = 2 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

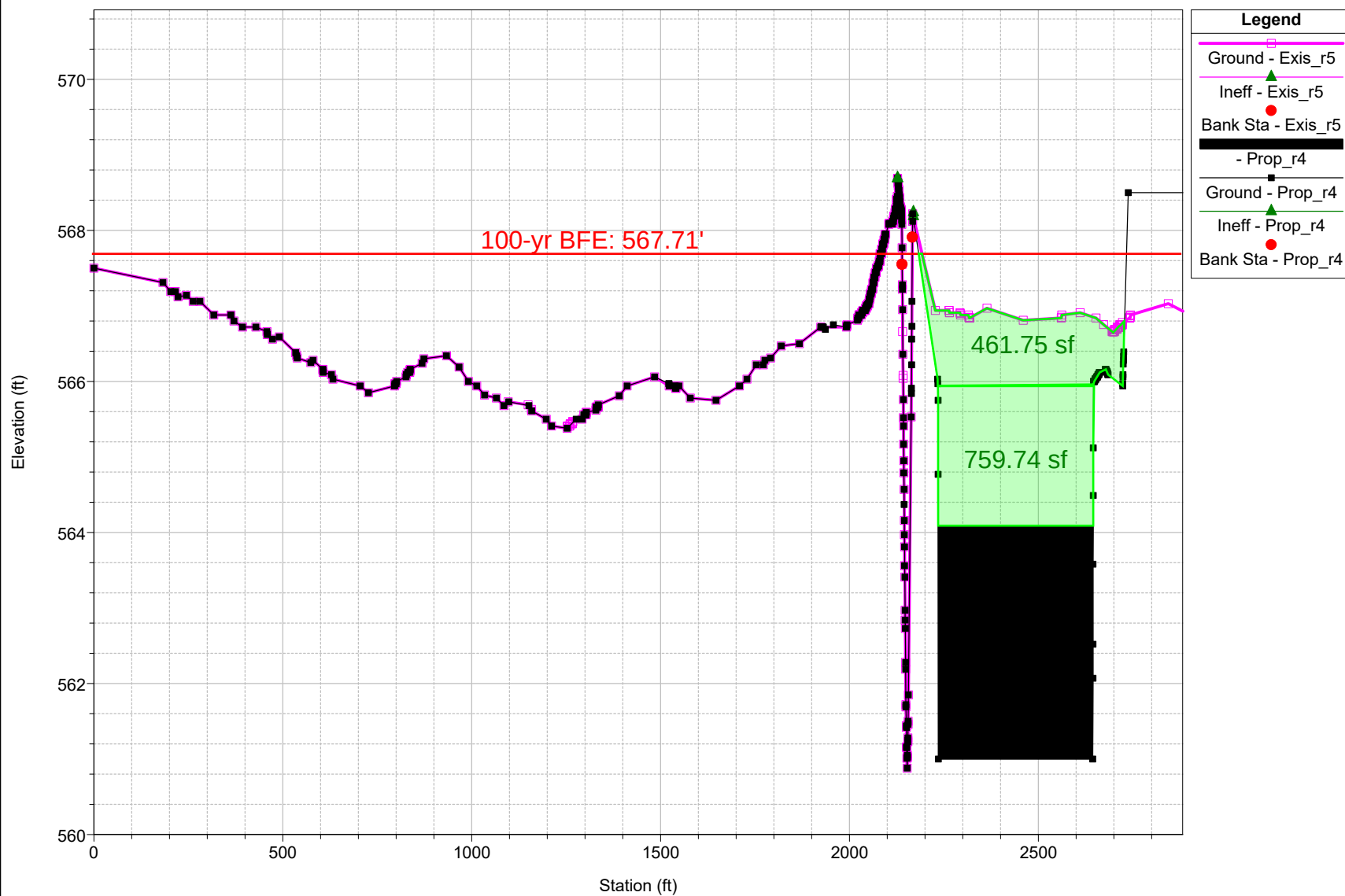
River = River 1 Reach = Reach 1 RS = 1767



1 in Horiz. = 450 ft 1 in Vert. = 2 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

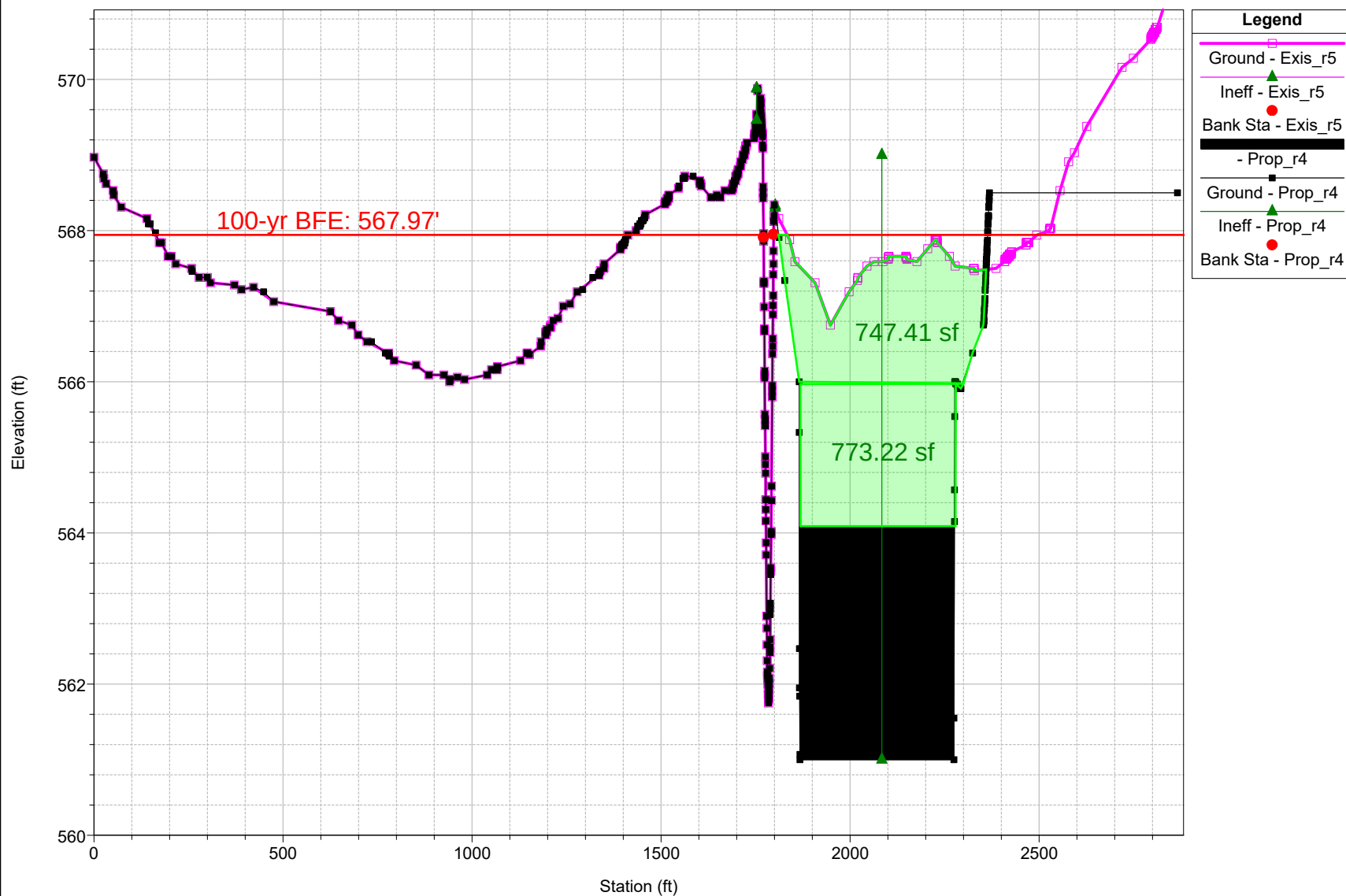
River = River 1 Reach = Reach 1 RS = 1955



1 in Horiz. = 400 ft 1 in Vert. = 2 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

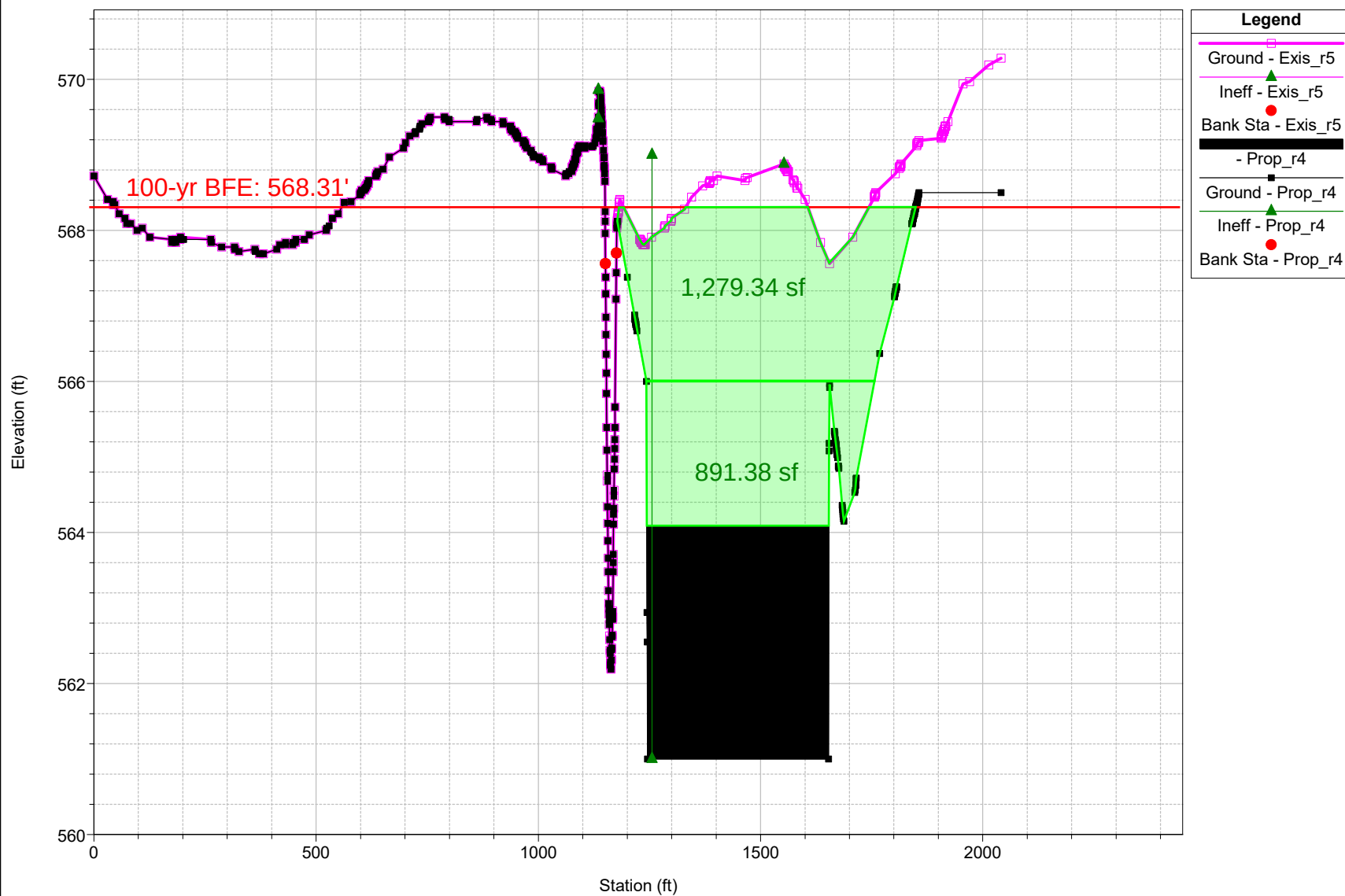
River = River 1 Reach = Reach 1 RS = 2289



1 in Horiz. = 400 ft 1 in Vert. = 2 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

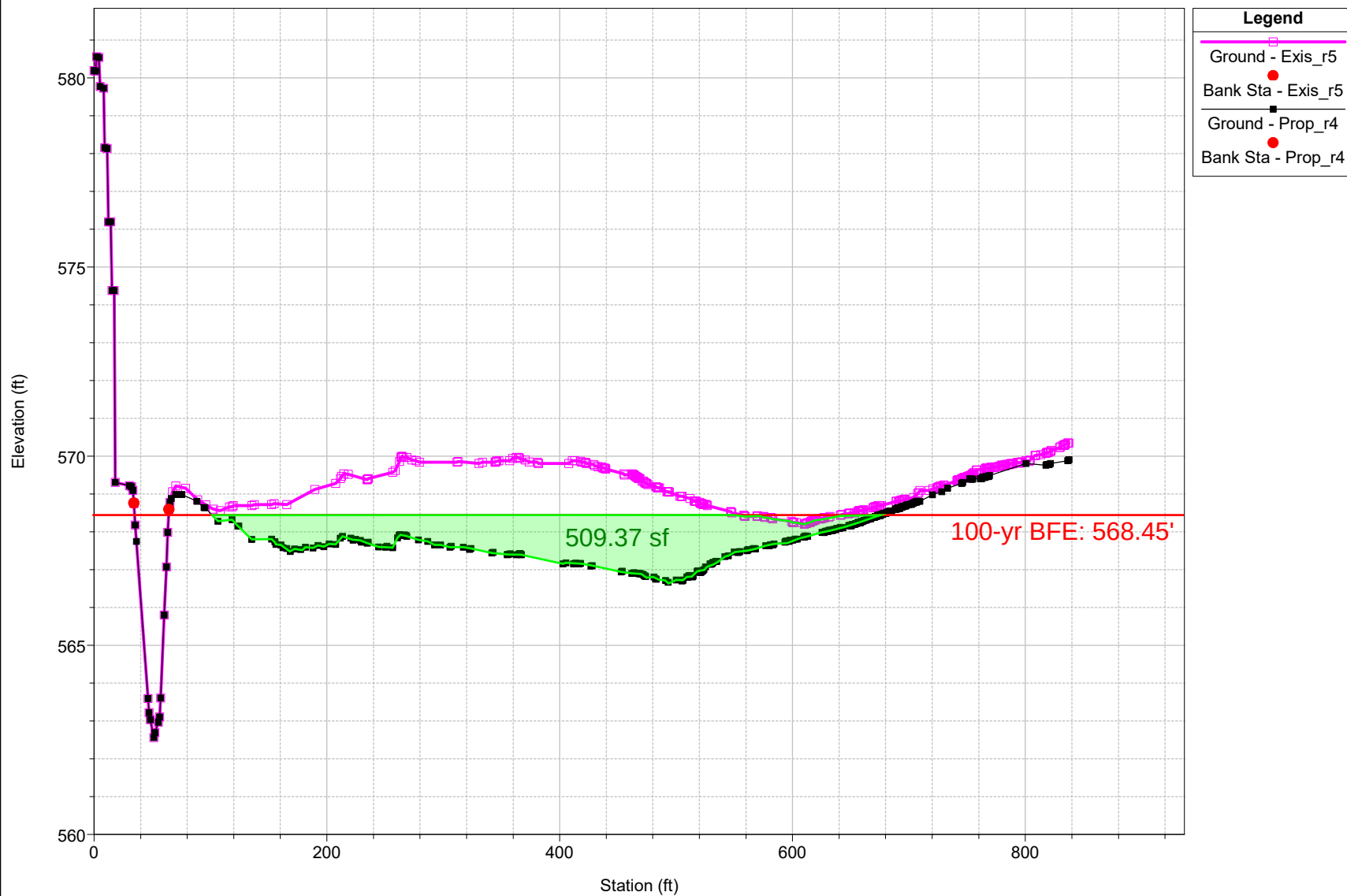
River = River 1 Reach = Reach 1 RS = 2701



1 in Horiz. = 340 ft 1 in Vert. = 2 ft

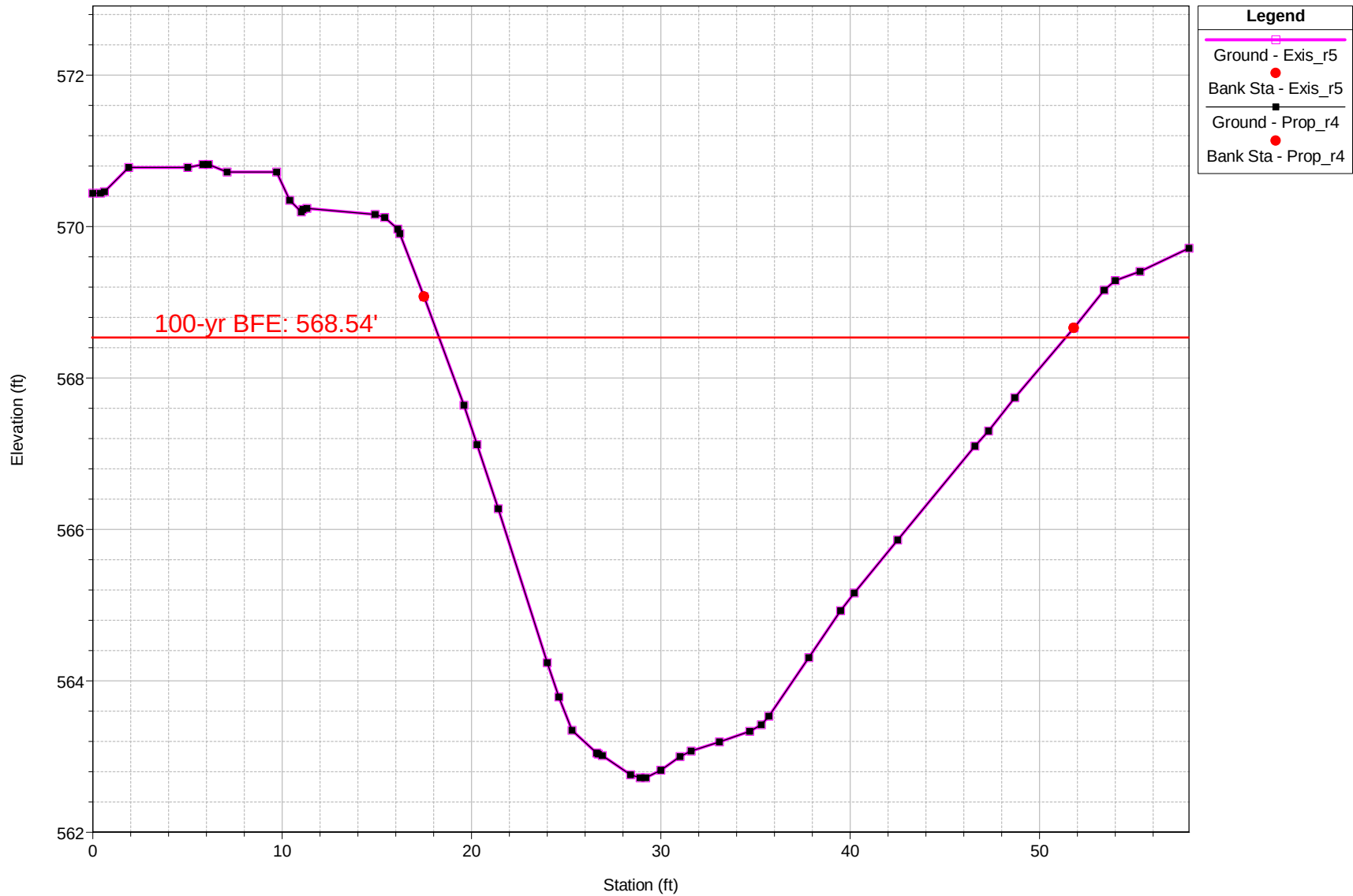
SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5

River = River 1 Reach = Reach 1 RS = 2861



1 in Horiz. = 130 ft 1 in Vert. = 4 ft

SouthDitch_BFE Plan: 1) Prop_r4 2) Exis_r5
River = River 1 Reach = Reach 1 RS = 2956



1 in Horiz. = 8 ft 1 in Vert. = 2 ft

SOUTH DITCH COMPENSATORY STORAGE CALCULATIONS

Coal City Earthwork Summary (CF)			
Location	100-Year		
	Cut (-)	Fill (+)	
South	1480864.8	2070365.5	
Total (CF)	1480864.8	2070365.5	
Balance (CF)	589500.7		
South Floodplain Fill		2070365.5	CF
Required Cut (1:1)		2070365.5	CF
South Total Floodplain Cut		1480864.8	CF
South Required Comp Storage		13.5	AF
North Required Comp Storage		1.5	AF
Total Required Comp Storage		15.0	AF

*north comp storage volume was measured from closed contours below outlet

Coal City South Earthwork - Cut Below 100-Year WSEL					
Location	Cross Section	Area Cut (SF)	Average (SF)	Distance (FT)	Cut (CF)
1	257	0.0			
			1.1	32.1	35.3
	289	2.2			
			2.6	10.5	27.3
	299	3.0			
			1.5	191.1	286.7
	491	0.0			
			66.6	472.5	31463.8
	963	133.2			
			231.4	533.0	123344.2
	1496	329.7			
			584.4	177.3	103612.3
	1673	839.1			
			821.6	10.6	8709.3
	1684	804.1			
			796.0	10.1	8039.5
	1694	787.9			
			1023.6	53.1	54352.6
	1747	1259.3			
			1271.1	10.2	12965.1
	1757	1282.8			
			1275.9	10.1	12886.9
	1767	1269.0			
			1245.3	10.1	12577.1
	1955	1221.5			
			1371.1	187.8	257485.1
	2289	1520.6			
			1845.7	333.5	615532.6
	2701	2170.7			
			1340.0	160.8	215479.2
	2861	509.4			
			254.7	94.5	24067.7
	2956	0.0			
					1480864.8
					Total Cut (CF)

Coal City South Earthwork - Fill Below 100-Year WSEL					
Location	Cross Section	Area Fill (SF)	Average (SF)	Distance (FT)	Fill (CF)
1	257	0.0			
			1741.3	32.1	55894.1
	289	3482.5			
			3393.3	10.5	35629.6
	299	3304.1			
			3145.3	191.1	601069.7
	491	2986.5			
			2161.7	472.5	1021391.4
	963	1336.8			
			668.6	533.0	356350.5
	1496	0.3			
			0.2	177.3	30.1
	1673	0.0			
			0.0	10.6	0.0
	1684	0.0			
			0.0	10.1	0.0
	1694	0.0			
			0.0	53.1	0.0
	1747	0.0			
			0.0	10.2	0.0
	1757	0.0			
			0.0	10.1	0.0
	1767	0.0			
			0.0	10.1	0.0
	1955	0.0			
			0.0	187.8	0.0
	2289	0.0			
			0.0	333.5	0.0
	2701	0.0			
			0.0	160.8	0.0
	2861	0.0			
			0.0	94.5	0.0
	2956	0.0			
					2070365.5

Total Fill (CF)