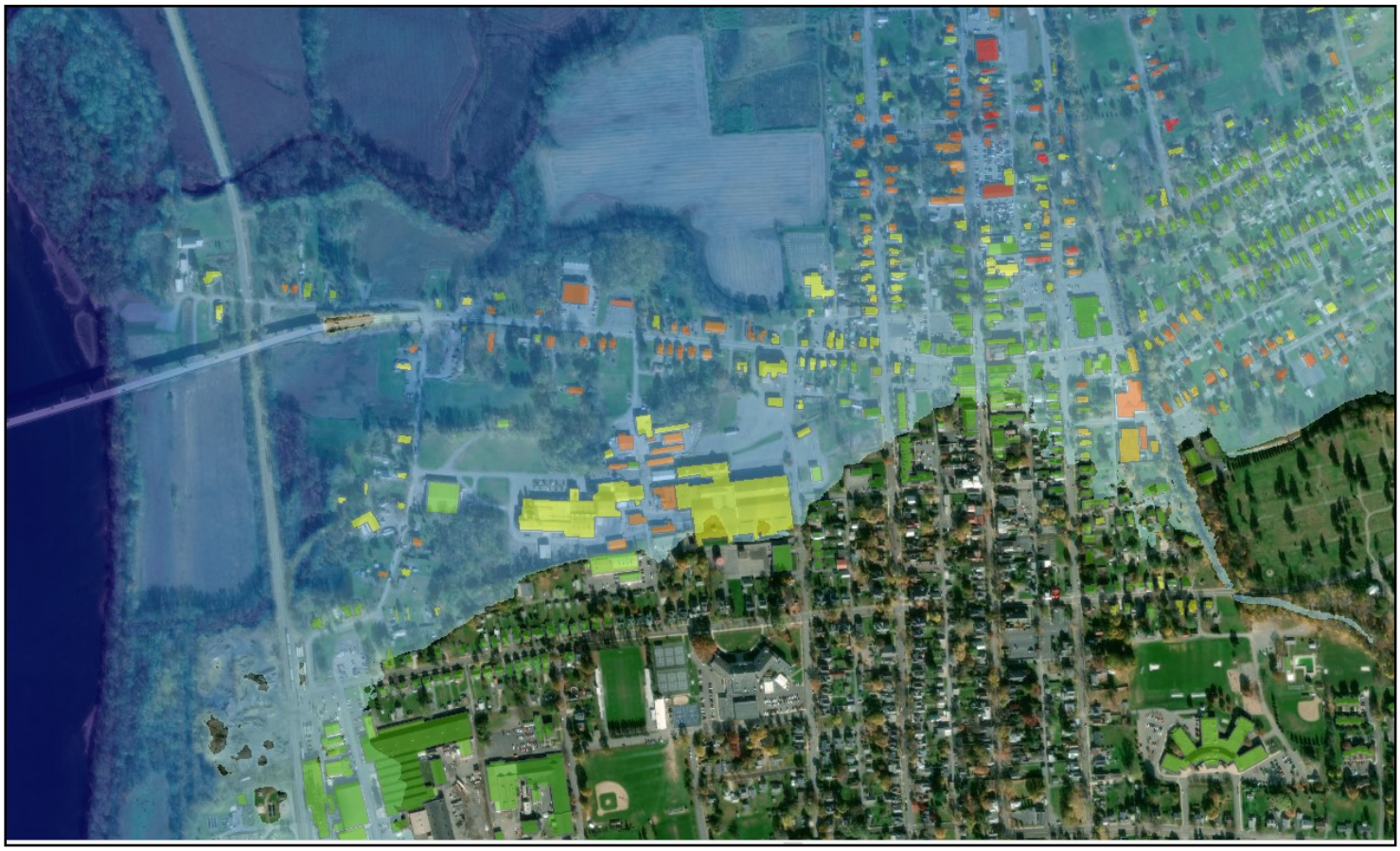
FLOOD RISK ASSESSMENT FOR MUNCY BOROUGH

LYCOMING COUNTY, PENNSYLVANIA



Prepared for: Lycoming County Planning & Community Development
48 West Third Street
Williamsport, Pennsylvania 17701

Prepared by: Planning Division
U.S. Army Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, Maryland 21201

With Support from: Susquehanna River Basin Commission
4423 North Front Street
Harrisburg, Pennsylvania 17110

JULY 2019

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Project Disc (Digital Report, GIS Data, Modeling Files)

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1 INTRODUCTION

1.1 BACKGROUND AND STUDY PURPOSE

According to the Greater Muncy Resilience Plan Scope of Work, dated June 2016, the Greater Muncy Area, Lycoming County, Pennsylvania, has experienced significant damages from flooding throughout the years, with the most recent flooding occurring during 2011's Tropical Storm Lee. The convergence of Glade Run, Muncy Creek, and the Susquehanna River contribute to 41-percent of all commercial and residential structures being located in the 1-percent annual chance floodplain. With the majority of the structures being built before 1980, most buildings are not built to be resilient to continual flooding.

The partnership of Muncy Borough, Lycoming County, and the Pennsylvania Department of Community and Economic Development have requested the assistance of the U.S. Army Corps of Engineers (USACE), Baltimore District, in providing floodplain management support to complete tasks outlined in the Greater Muncy Resilience Plan Scope of Work.

The overall floodplain management support that USACE will provide to the partnership includes the following tasks:

1. Conducting revised hydrologic and hydraulic analyses of riverine flooding sources effecting the study area and use the results of the analyses to develop up-to-date floodplain mapping, flood depth grids, and flood elevations for multiple frequencies of flooding (2-year flood to 500-year flood);

2. Determine the impact to buildings and roadways from existing-conditions riverine floods;

3. Develop stormwater modeling to identify locations in the study area that are susceptible to stormwater-related flooding;

4. Determine the impact to buildings and roadways from existing-conditions stormwater-related floods; and

5. Develop planning-level solutions to reduce the risk of both riverine and stormwater-related flooding within the study area.

This flood risk assessment report for Muncy Borough summarizes the completion of Tasks 1 and 2 listed above. Upon completion of Tasks 3, 4, and 5, separate reports will be published outlining the results of those efforts.

1.2 STUDY AUTHORITY

This study was conducted by USACE, Baltimore District, under the Planning Assistance to States Program (PAS). The PAS program is designed to provide planning-level assistance to communities and partners for water resource related issues. The project is planning-level only. No detailed design or construction by USACE will result from this investigation. Lycoming County Planning and Community Development Department (LCPCD) served as the primary non-Federal project sponsor for this effort, with the Susquehanna River Basin Commission (SRBC) contributing funds and in-kind services to support the completion of this effort.

1.3 STUDY AREA

The study area for this investigation is the Greater Muncy Area, Lycoming County, Pennsylvania, which includes Muncy Borough and portions of Muncy Creek Township.

According to the *2017 Multi-Municipal Comprehensive Plan Review and Implementation Strategy for the Muncy Creek Planning Area, Lycoming County, Pennsylvania*, flooding is the number one natural threat to the Greater Muncy Area (Muncy Borough), with significant flooding occurring in 1889, 1936, 1972, 1996, 2004, 2009, 2010, and most recently in 2011 as a result of Tropical Storm Lee. The location of Muncy Borough at the convergence of Glade Run, Muncy Creek, and the West Branch Susquehanna River make it a high risk to repetitive flooding from flash flood situations, which occur along Glade Run and Muncy Creek, to large scale regional flooding that originates from the West Branch Susquehanna River.

Damages from flooding in Muncy Borough can be substantial, as 90-percent of the buildings in the floodplain were built prior to 1980 and, therefore, do not meet current flood-proofing design guidelines (LCPCD, 2016). Economically, flooding in Muncy can impact a large portion of the downtown historic district.

1.4 DATA SOURCES

Data was collected from various Federal, State, and local entities to support the analyses in this study. A list of this data is provided in Table 1.1, with the following entities contributing data to this investigation: FEMA, United States Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS), Natural Resources Conservation Service (NRCS), Pennsylvania Department of Conservation and Natural Resources (PADCNR), Pennsylvania Department of Transportation (PENNDOT), and LCPCD.

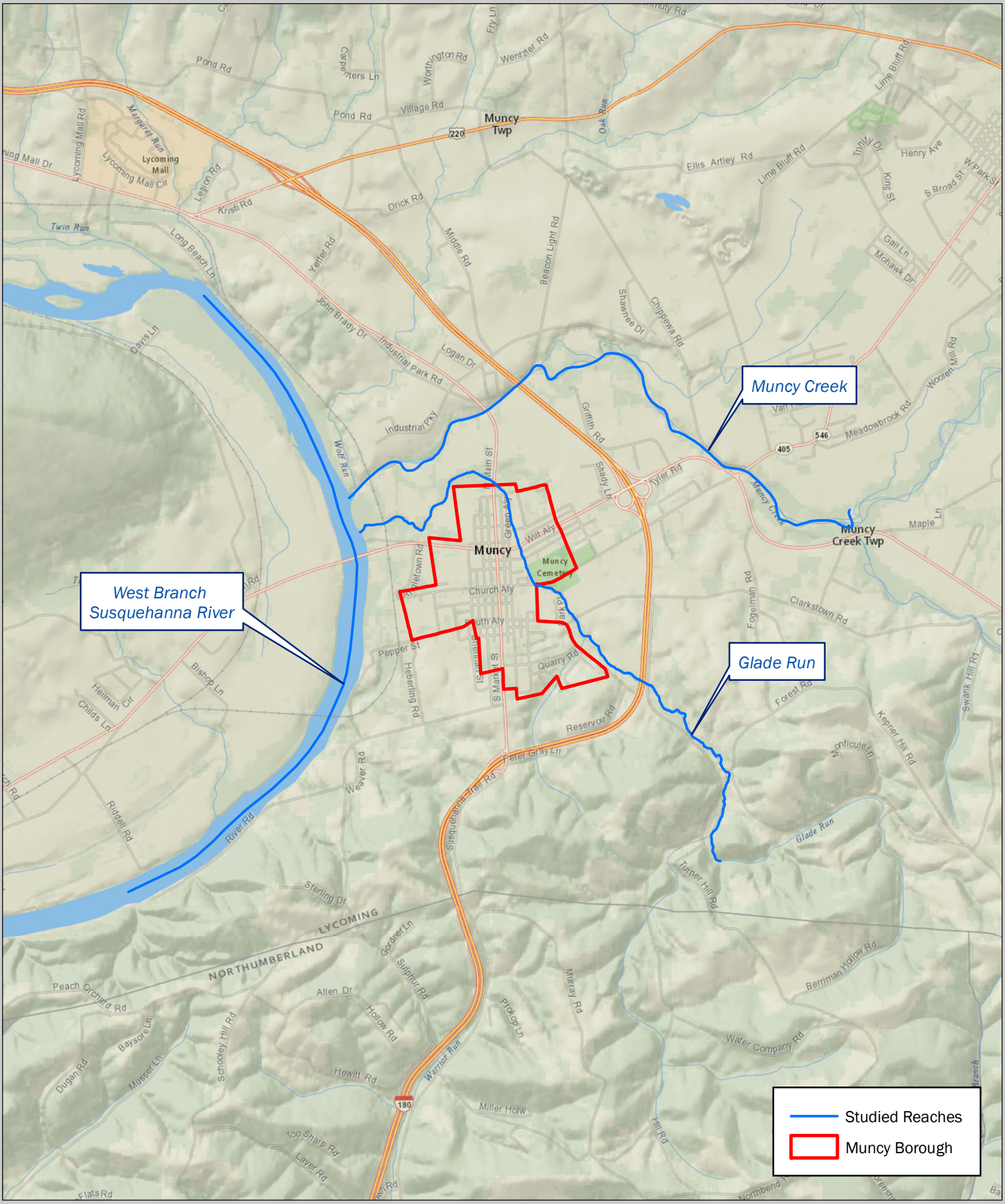


Figure 1.1
Study Area

0 2,000 4,000 8,000 Feet

1 inch = 4,000 feet

Table 1.1: Data Collected

Data	*Date*	*Source*
Effective Flood Insurance Study (FIS) for Lycoming County and Incorporated Areas	2016	FEMA
Hydraulic Modeling (HEC-2 and HEC-RAS) and hydrologic calculations for effective FIS	Varies	FEMA
Digital Elevation Model (DEM) for Project Area	2007	PADCNR
Geographic Information System (GIS) data (Land Use, Impervious Surfaces, Roads, Buildings, etc....)	Various	LCPCD
Stormwater inlet and piping data for Muncy Borough	2017	LCPCD
Bridge Plans	Various	PENNDOT
Soils Data	2017	NRCS
Observed Flow Data	Various	USGS
Point Precipitation Frequency Estimates (NOAA Atlas 14, Volume 2, Version 3)	2006	NWS
High Water Mark Data	Various	NWS

A "project DEM" was developed that spanned the study area. This DEM was used for delineating drainage areas for the Glade Run watershed hydrologic model, for overbank elevation data for cross-sections in the hydraulic models for all flooding sources, and for floodplain mapping for all flooding sources. The project DEM was clipped by USACE directly from a 1-meter resolution DEM downloaded from the Pennsylvania Spatial Data Access (PASDA) website. The PASDA DEM was created from LiDAR that was flown by Woolpert in 2007 in support of the PADCNR PAMAP Program. The horizontal coordinate system for the project DEM is Pennsylvania North State Plane feet and the vertical datum is the North American Vertical Datum of 1988 (NAVD88).

1.5 PREVIOUS STUDIES

Two previous studies have been completed that relate to the flood risk in Muncy Borough.

FEMA Flood Insurance Study (FIS) for Lycoming County and Incorporated Areas

The effective FEMA FIS for Lycoming County is dated June 2, 2016. Although the FIS is dated June 2, 2016, the technical analyses to map the floodplains for the West Branch Susquehanna River, Muncy Creek, and Glade Run were completed in 2014, 2001, and 1979, respectively. For West Branch Susquehanna River in the effective FIS, the hydrologic analysis was completed by USACE using a statistical analysis at the USGS stream gages at Renovo, Williamsport, and Lewisburg, to the most recent water year at the time of the study (1976). These statistical analyses followed the standard log-Pearson Type III method as outlined by the Water Resources Council. The flood-frequency curves were adjusted for the effects of upstream reservoirs since the period of record for regulated flow was minimal at the time.

The hydraulic modeling for the West Branch Susquehanna River in the effective FEMA FIS was from a HEC-RAS model completed by Micheal Baker Jr., Inc. in July 2014. Although the HEC-RAS model was from July 2014, the basic data in the model (channel and overbank elevations and most bridge data) were from the original HEC-2 model completed in 1976.

The hydrologic and hydraulic analyses for Muncy Creek in the effective FEMA FIS were completed by the USGS in March 2001. Peak flows were determined using regression equations as outlined in USGS Water Resources Investigation Report 00-4189, *Techniques for Estimating Magnitude and Frequency of Peak Flows for Pennsylvania Streams* (USGS, 2000). Flood elevations were determined using the USACE HEC-RAS program utilizing channel and field survey data collected in the study process.

For Glade Run, peak flows outlined in the effective FEMA FIS were obtained from a regional flood-frequency method developed by USACE in a hydrologic study completed using data from Tropical Storm Agnes. These computations were completed in 1976. The Glade Run hydraulic model was completed in 1979 using the USACE HEC-2 program, utilizing channel and bridge survey data from the 1970's.

Non-Structural Flood Risk Management Economic Assessment for Lycoming County, PA

This study was completed by the Pennsylvania Silver Jackets Flood Risk Management Interagency Team in April 2016. The purpose of this study was to assess the potential for non-structural mitigation activities in three high risk communities, including Muncy Borough. The study included the survey of 112 buildings in Muncy Borough and the development of non-structural flood mitigation options for 19 prototype structures. A benefit-cost analysis was also completed to determine the benefit of implementing the developed mitigation options.

2 FIELD SURVEY

A bridge/culvert and channel field survey was completed by the Susquehanna River Basin Commission (SRBC) from December 2017 to February 2018 to support the hydrologic and hydraulic modeling in this investigation. The LCPCD conducted a field survey of floodprone buildings in Muncy Borough between January 2018 and May 2018. For the bridge/culvert and channel surveys, all survey points were coded based upon Table 3 in the May 2016 *Guidance for Flood Risk Analysis and Mapping-Data Capture-Workflow Details (FEMA, 2016*) to ensure compatible data if any information is submitted to FEMA in the future for flood mapping changes based upon the results of this study. Details on the methodology and results of the survey are outlined below.

2.1 BRIDGE AND CULVERT SURVEY

A total of 22 bridges/culverts were surveyed in this investigation, with 3 located on West Branch Susquehanna River, 7 located on Muncy Creek, and 12 located on Glade Run. SRBC staff visited each stream crossing, recording elevations and opening size data necessary for hydraulic modeling. A sketch of the opening dimensions with elevations was completed and digital photographs were acquired at each bridge or culvert. For elevations, the survey utilized relative positioning techniques yielding precision on the order of < 2 centimeters horizontally and vertically. More specifically, Real-Time Kinematic (RTK) Global Positioning System (GPS) techniques were used. The Trimble R8 GNSS (Global Navigation Satellite System) unit was utilized to perform the field survey, with watershed level control established by Virtual Reference Station (VRS) networks using RTK solutions with Continuously Operating Reference Station (CORS) network stations.

2.2 CHANNEL SURVEY

For the West Branch Susquehanna River, bathymetric data was collected by SRBC using the Sontek's HydroSurveyor system as well as a Trimble R8 GPS receiver. The HydroSurveyor system is comprised of two components which include the HydroSurveyor Acoustic Doppler Profiler (ADP®) platform and data collection software (also called "HydroSurveyor"). The ADP platform is Sontek's "M9" affixed to a small floating trimaran. Bathymetric transects at seven locations within the study reach were developed by obtaining a water surface elevation (NAVD88) using the Trimble R8 unit at the transect location. Fixing the water surface elevation obtained from the R8 unit as the reference plane within the HydroSurveyor software, the ADP was pulled around the transect location in a sinuous pattern such that representative coverage of the bathymetric surface was obtained. The ADP collects depth information using four angled and one vertical acoustic beam. The HydroSurveyor software uses a proprietary process to interpolate bathymetric surface elevations at a user selected grid cell size. The West Branch Susquehanna River bathymetric data was processed using a 10' grid cell size to minimize processing time and manage file sizes while maintaining an accurate representation of the channel bottom. The interpolated bathymetry was exported from HydroSurveyor as a ".csv" file containing XYZ coordinates/elevation and then imported into ESRI ArcGIS for incorporation into project modeling efforts.

Channel data for Muncy Creek was taken directly from a USGS channel survey undertaken as part of a Muncy Creek flood study, completed by USGS in March 2001. The channel survey data was provided in the effective HEC-RAS model for Muncy Creek as part of the March 16, 2004 FIS for Lycoming County, Pennsylvania. This data was compared to the project DEM and water depth measurements in the field to conclude that it is still accurate for use in this current study.

For Glade Run, a total of 33 channel cross-sections were captured by SRBC using the same equipment and methodology as the bridge and culvert survey. SRBC staff walked Glade Run and captured critical elevations at each cross-section, such as top of bank, toe of slope, and channel invert.

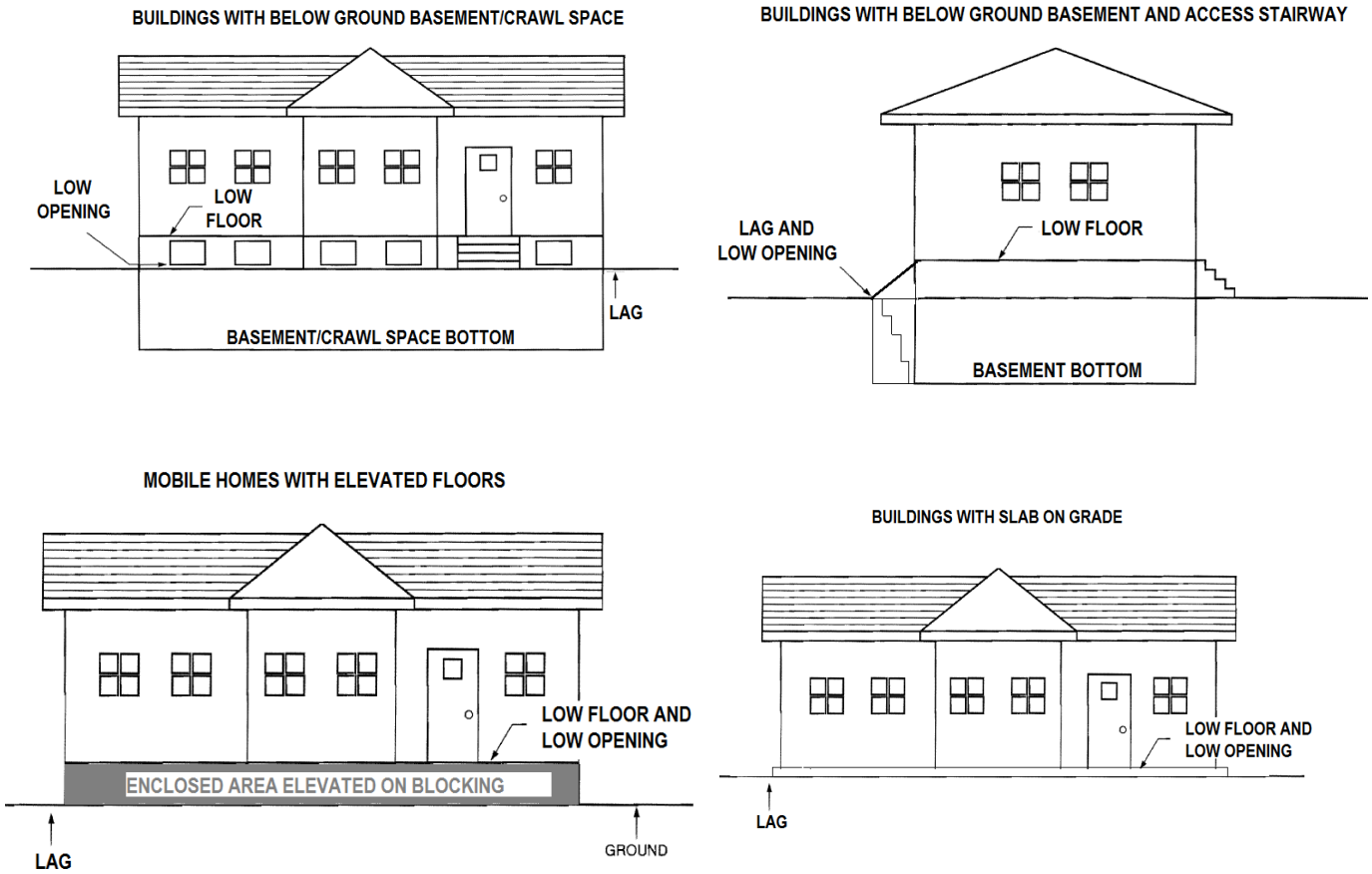
2.3 BUILDING SURVEY

LCPCD field teams completed a survey of a total of 584 buildings within the study area. At the onset of the survey, buildings were identified based upon whether they were mapped in the effective 0.2-percent annual chance (500-year) floodplain as shown on the effective FEMA Digital Flood Insurance Rate Map (DFIRM) dated June 2, 2016.

Global Positioning System (GPS) techniques were utilized for capturing the desired elevations for the building survey. The use of GPS allows for the collection of a large amount of data in a short time frame to a high degree of accuracy. The survey utilized relative positioning techniques yielding precision on the order of < 2 centimeters horizontally and vertically. More specifically, RTK GPS techniques were used. The Trimble R8 GNSS unit was used to perform the field survey. The survey was completed in the same manner as the 112 buildings surveyed as part of the April 2016 *Non-Structural Flood Risk Management Economic Assessment for Lycoming County, PA*. Thus, between the LCPCD survey as part of this effort, and the April 2016 study, a total of 696 buildings have been surveyed in Muncy Borough to determine the existing flood risk. At each building, the field team confirmed the correct address, noted the building use (residential or commercial), identified the foundation type (slab on grade, basement, crawl space, etc…) and identified the location of the lowest adjacent grade (LAG), low opening, and low floor elevations of the building. These three elevations, shown in Figure 2.1, are primarily considered the most important elevations when assessing a building's vulnerability to flood damages and are defined below:

Lowest Adjacent Grade (LAG): This is the lowest ground touching the outside of the building. Under the FEMA National Flood Insurance Program (NFIP), a building is considered within the respective floodplain if the LAG elevation is below the respective flood elevation. For example, a building that has a LAG elevation of 100.0 ft. and the 1-percent annual chance flood (100-year) elevation at that building is 102.0 ft., the building is considered within the 100-year floodplain. Conversely, if the building has a LAG elevation of 100.0 ft., and the 1-percent annual chance flood (100-year) elevation at that building is 99.0 ft., the building is considered outside the 100-year floodplain.

Figure 2.1: Building Survey Point Locations



Low Opening: The low opening elevation is the first point of entry of overland floodwaters into the building, and the elevation in which flood damages to the inside of the building begin from overland flooding (excludes sewer system back-ups or groundwater leaks). For buildings with a basement or crawl space, the low opening elevation is usually a window well, vent, or top of basement stairway. For buildings that are built on a slab at grade, the low opening elevation is typically a doorway into the building.

Low Floor: The low floor elevation, for the purposes of this inventory, is the elevation of the primary living space (residential) or use space (commercial) of the building. For buildings with a basement or crawl space, because field teams did not enter the buildings, this elevation is typically not the bottom of the basement or crawl space but the elevation of the next higher floor. For the purposes of this inventory, the bottom elevation of the basement or crawl space is not critical, as floodwaters would not reach this elevation until the low opening elevation is reached.

The low floor from this assessment should not be confused with the lowest floor elevation from FEMA regulations. FEMA defines the lowest floor as the lowest enclosed area (including basement); an unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a

building's lowest floor. A basement, as defined by FEMA, is any area of the building having its floor subgrade (below ground level) on all sides.

The results of the LCPCD building survey were compiled by USACE into a floodprone building inventory in GIS format. GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying forms of geographically referenced information. It allows users to understand and visualize data in unique ways. By using GIS for the floodprone building inventory, Muncy Borough can overlay this data onto other data layers for the Borough to better manage floodplains and be better prepared for a flood event. Documentation of the floodprone building inventory database is located in Appendix A.

3 HYDROLOGIC ANALYSES

For West Branch Susquehanna River, Muncy Creek, and Glade Run, revised hydrologic analyses were completed in order to accurately assess the flood risk in Muncy Borough. Peak flows for eight storm events were calculated in this investigation. Table 3.1 lists these eight storm events.

Table 3.1: Modeled Storm Events

Recurrence Interval (years)	*Percent Chance of Occurring in Any Given Year*
2	50.0
5	20.0
10	10.0
25	4.0
50	2.0
100	1.0
200	0.4
500	0.2

All hydrologic modeling was completed to comply with all of FEMA's guidance documents and standards. This was done in the event that the peak flows computed in this investigation were to be submitted to FEMA by the local municipalities for a change to the effective FIS. The modeling completed in this study uses more up-to date data than the effective FEMA studies and better estimates the peak flows on the flooding sources in this study.

3.1 WEST BRANCH SUSQUEHANNA RIVER

The Borough of Muncy is located between two USGS streamflow gages. USGS 01551500, West Branch Susquehanna River at Williamsport, PA (Williamsport Gage), is located upstream of Muncy, and USGS 01553500, West Branch Susquehanna River at Lewisburg (Lewisburg Gage), PA, is located downstream of Muncy (Figure 3.1). The Williamsport Gage has a drainage area of 5,682 square miles, has been in operation since 1895, and has an overall period of record of 122 years, when factoring in historical peaks prior to its installation. The Lewisburg gage has a drainage area of 6,847 square miles, has been in operation since 1939, and has an overall period of record of 84 years, when factoring in historical peaks prior to its installation.

USACE completed a comprehensive flood control plan for the protection of communities in the West Branch Susquehanna River Basin in the 1960s that was authorized by the Flood Control Act approved Sept. 3, 1954. This plan included the construction of several reservoirs that regulate the flow on the West Branch Susquehanna River. The entire system contains the George B. Stevenson Dam, operated by the Commonwealth of Pennsylvania, and the Curwensville Dam, Alvin R. Bush Dam, and Foster Joseph Sayers Dam, operated by USACE. The observed data at the Williamsport and Lewisburg gages began to see the effect

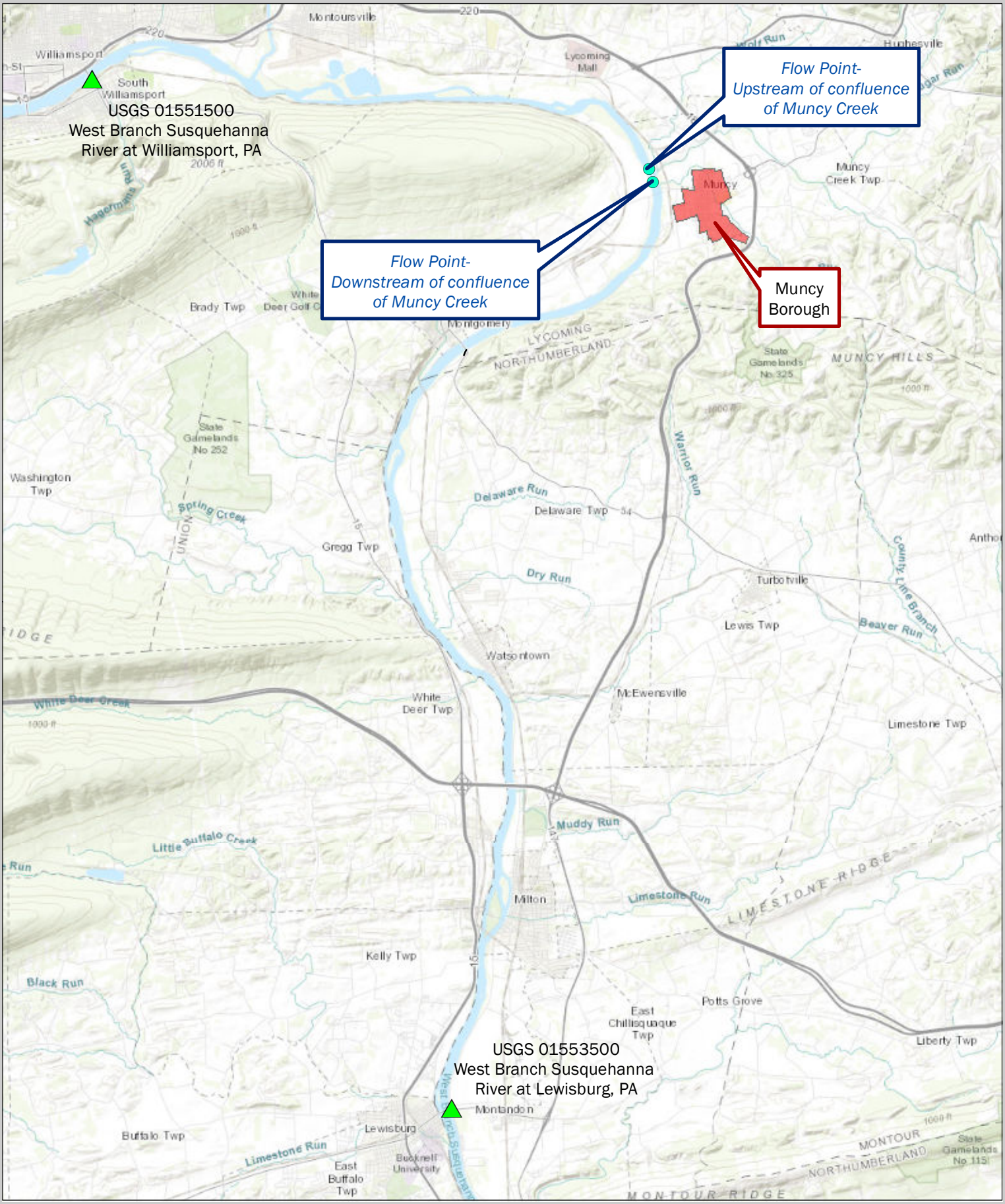


Figure 3.1
West Branch Susquehanna River
Gages and Flow Points

0 6,000 12,000 24,000 Feet

1 inch = 12,000 feet

of this regulation in water year 1962 and 1966, respectively. Through consultation with the USGS, it was recommended that the peak flows for the West Branch of the Susquehanna River in the Borough of Muncy be computed by a statistical analysis of the regulated flow values at the Williamsport and Lewisburg gages, and a transfer of these flows based on drainage area to the location of Muncy.

For the statistical analysis at the USGS gages, PeakFQ Version 7.1, dated March 2014, was used. PeakFQ implements procedures from *Bulletin 17B, Guidelines for Determining Flood Flow Frequency* (WRC, 1981). It provides estimates of flood magnitudes and their corresponding variance for a range of 15 annual exceedance probabilities, including 0.6667, 0.50, 0.4292 0.20, 0.10, 0.04, 0.02, 0.01, 0.005, and 0.002 (recurrence intervals 1.5, 2, 2.33, 5, 10, 25, 50, 100, 200, and 500 years, respectively.) The output also includes estimates of the parameters of the log-Pearson Type III frequency distribution, including the logarithmic mean, standard deviation, skew, and mean square error of the skew.

At the Williamsport Gage, 55 years of regulated record were used in the analysis, spanning from 1962-2016. At the Lewisburg Gage, 51 years of record were used in the analysis, spanning from 1966-2016. This period of record captures six of the top ten peaks to occur at the gages, including the peak of record from Agnes (1972). The results of the PeakFQ analysis at the Williamsport and Lewisburg Gages is shown in Table 3.2, along with several historical storms that are included for calibration purposes during hydraulic modeling (discussed in Section 4). Full results are located in Appendix B.

Table 3.2: Statistical Analysis Results at Williamsport and Lewisburg Gages

Storm Event	*USGS 01551500-West Branch Susquehanna River at Williamsport, PA*	*USGS 01553500-West Branch Susquehanna River at Lewisburg, PA*
	Drainage Area = 5,682 sq. mi.	*Drainage Area = 6,847 sq. mi.*
	Period of Record 1962-2016 (55 yrs.)	*Period of Record 1966-2016 (51 yrs.)*
Frequency Storms		
2-year	78,710	85,570
5-year	118,300	129,100
10-year	149,000	163,500
25-year	193,400	213,900
50-year	230,700	256,700
100-year	271,800	304,400
200-year	317,200	357,700
500-year	384,800	437,800
Historical Storms		
10/24/1990	54,600	75,300
12/2/2010	143,000	143,000
Lee (2011)	143,000	143,000
Ivan (2004)	203,000	209,000
Agnes (1972)	279,000	300,000

Recently, a new approach for statistical analysis, called Expected Moments Algorithm (EMA), has gained in use and is recommended for use by the USGS in *Guidelines for Determining Flood Flow Frequency, Bulletin 17C* (USGS, 2018). The EMA methodology is also available in the USGS PeakFQWin program, and this methodology was run in this study, with the results being identical to the results of the Bulletin 17B analysis.

The flows at the gages were then translated to Muncy Borough using drainage area ratio methodology. Two flow points along the West Branch Susquehanna River were identified, one point upstream of the confluence of Muncy Creek, with a drainage area of 6,230 square miles, and one point downstream of the confluence of Muncy Creek, with a drainage area of 6,450 square miles. This translation was also completed for several historical storms in order to assist in the calibration of the hydraulic models to be discussed in later sections of this report. A summary of discharges for the West Branch Susquehanna River in the Borough of Muncy is shown in Table 3.3.

Table 3.3: Summary of Discharges for West Branch Susquehanna River in Muncy

Storm Event	*Upstream of confluence of Muncy Creek*	*Downstream of confluence of Muncy Creek*
	Drainage Area = 6,230 sq. mi.	*Drainage Area = 6,450 sq. mi.*
Frequency Storms		
2-year	82,000	83,500
5-year	123,500	125,500
10-year	156,000	158,000
25-year	203,000	206,000
50-year	243,000	248,000
100-year	287,000	293,000
200-year	336,000	244,000
500-year	409,500	420,000
Historical Storms		
10/24/1990	60,400	60,800
12/2/2010	143,000	143,000
Lee (2011)	155,000	160,000
Ivan (2004)	206,000	207,000
Agnes (1972)	289,000	293,000

The results also show that the flows that occurred during Agnes (1972) in this reach of the West Branch Susquehanna River are equivalent to flows during a 1-percent annual chance (100-year) flood event, and that Ivan (2004) was approximately a 4-percent annual chance (25-year) flood event, This analysis on the West Branch Susquehanna River is accurate to water year 2016. As time goes by and more flow data is collected, the estimated frequency of Agnes (1972) and Ivan (2004) may change.

The results of the existing-conditions hydrologic analysis for West Branch Susquehanna River were compared to the effective FEMA 1-percent annual chance (100-year) flood peak flows (Table 3.4). The addition of approximately 40 years of flow data has resulted in a four to five percent reduction of 1-percent annual chance (100-year) peak flows in Muncy Borough.

Table 3.4: Existing-Conditions vs. Effective FEMA Flows for West Branch Susquehanna River

Location	*Drainage Area (square miles)*	*1-percent annual chance (100-year) Peak Flow (cubic feet per second)*	
		Effective FEMA (USACE 1976)	*Existing-Conditions (USACE 2018)*
Upstream of confluence of Muncy Creek	6,230	300,000	287,000
Downstream of confluence of Muncy Creek	6,450	310,000	293,000

3.2 MUNCY CREEK

For Muncy Creek, a USGS gage is located within the study area. USGS 01553005-Muncy Creek near Muncy, PA, has a period of record of 28 years to water year 2016 (Figure 3.2). During Lee (2011), this gage recorded a record flow of 46,600 cfs, which was nearly double the previous flow of record of 24,900 cfs on January 19, 1996. Inclusion of several large floods, or lack of any large floods, can change the flood frequency-magnitude estimates for stations, especially those with short periods or record. Thus, through consultation with USGS, it was determined that the best approach to determining peak flows for Muncy Creek was using a weighted method that incorporates regression equation estimates with observed flow statistical analyses.

Peak flows for Muncy Creek were computed using a weighted method to minimize the temporal bias as outlined in USGS Scientific Investigations Report 2008-5102, *Regression Equations for Estimating Flood Flows at Selected Recurrence Intervals for Ungaged Streams in Pennsylvania* (USGS, 2008). Step one in the process included completing a statistical analysis at USGS 01553005-Muncy Creek near Muncy, PA, using PeakFQ Version 7.1. Peak flow values for the years of record to water year 2016 were used in the analysis. Table 3.5 shows the results of the analysis, with detailed results located in Appendix C.

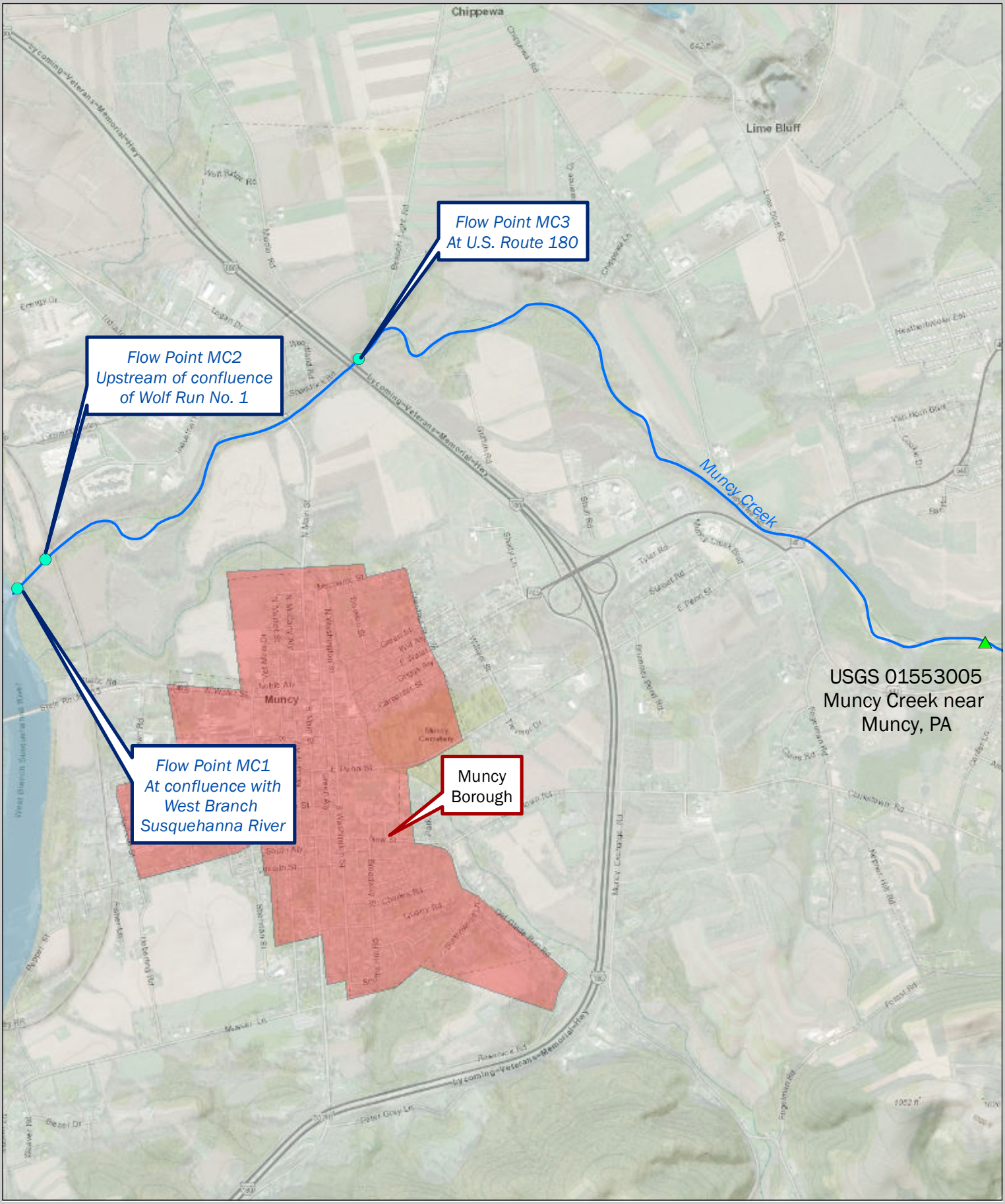


Figure 3.2
Muncy Creek
Gages and Flow Points

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Table 3.5: Flood Frequency Analysis at USGS 01553005 to Water Year 2016

Recurrence Interval (years)	*Peak Flow (cfs)*
2	7,634
5	12,850
10	17,860
25	26,560
50	35,220
100	46,220
200	60,160
500	84,420

Step two in the process was calculating peak flow estimates using regression equations outlined in SIR 2008-5102 for the location of USGS 01553005. The USGS StreamStats program was used to compute peak flow values from the published regression equations. StreamStats is a web application that incorporates GIS to provide users with access to an assortment of analytical tools that are useful for a variety of water-resources planning and management purposes, and for engineering and design purposes. StreamStats provides tools that allow users to select sites on ungaged streams and obtain the drainage-basin boundary, compute selected basin characteristics, and estimate selected streamflow statistics using regression equations, among other tools. The Muncy Creek watershed is located in Peak Flow Region I, which has the drainage area and percent storage variables in the regression equations. For the location of USGS 01553005, the StreamStats program computed a drainage area of 196.0 square miles and a percent storage of zero. The results of the regression equations computations at USGS 01553005 is shown in Table 3.6, with full results located in Appendix C.

Table 3.6: Regression Equation Estimates at USGS 01553005

Recurrence Interval (years)	*Peak Flow (cfs)*
2	6,650
5	10,800
10	14,100
25	n/a*
50	22,800
100	27,100
200	n/a*
500	38,800

**Regression equations not available in SIR 2008-5102 for these frequencies.*

The third step in the process was determining the weighted peak flow estimates at the location of USGS 01553005. This was achieved by utilizing a weighting equation shown in SIR 2008-5102, and described below:

$$Q_{T(W)} = \frac{\left[Q_{T(G)}(N) + \hat{Q}_{T(R)}(NE)\right]}{(N + NE)}$$

where

$Q_{T(W)}$ = the weighted flood discharge for the T-year recurrence interval, in cubic feet per second;

$Q_{T(G)}$ = the observed flood discharge computed from streamflow-gaging-station data for the T-year recurrence interval, in cubic feet per second;

N = the number of years of record at the streamflow-gaging station used to calculate $Q_{T(G)}$;

$\hat{Q}_{T(R)}$ = the predicted flood discharge computed from regression equations for the T-year recurrence interval, in cubic feet per second; and

NE = average equivalent years of record associated with the regression equation in table 4.

The computations are shown in Appendix C. Because there were no regression equation estimates for the 25-year and 200-year frequency storms, weighted values were determined by plotting the weighted frequency curve and interpolating these values from that curve. The existing-conditions peak flow estimates using weighting for Muncy Creek at USGS 01553005 are shown in Table 3.7.

Table 3.7: Weighted Peak Flow Estimates at USGS 01553005

Recurrence Interval (years)	*Peak Flow (cfs)*		
	Statistical Analysis to Water Year 2016	*Regression Equations*	*Weighted (Existing-Conditions)*
2	7,634	6,650	7,539
5	12,850	10,800	12,488
10	17,860	14,100	16,945
25	26,560	n/a	25,000*
50	35,220	22,800	31,282
100	46,220	27,100	40,158
200	60,160	n/a	55,000*
500	84,420	38,800	69,213

**Estimated from frequency curve in Appendix C.*

These results show that Lee (2011), which produced a record flow of 46,600 cfs, exceeded a 1-percent annual chance (100-year) flow at this location.

The final step in the process was to translate the weighted flow values computed at USGS 01553005 to other flow points within the studied reach. Three flow points along Muncy Creek were identified, and are shown on Figure 3.2. This translation was completed for all frequency storms as well Lee (2011) for hydraulic model calibration purposes. The translation equation below was utilized to determine peak flows at the ungaged flow points:

$$Q_u = (A_u/A_g)^b Q_g$$

Where: Q_u is the discharge at ungaged flow point, in cfs;

A_u is the drainage area of the ungaged flow point;

A_g is the drainage area of the gaged flow point;

Q_g is the discharge at the gaged flow point, in cfs; and

b is a drainage area basin characteristic coefficient

Values for b are frequency based and were taken from the Region 1 estimates from SIR 2008-5102:

Q2	1.84257	0.86396
Q5	2.10658	.84127
Q10	2.24305	.83197
Q50	2.47845	.81981
Q100	2.56172	.81626
Q500	2.73185	.81002

Translation computations or Muncy Creek are located in Appendix C. Final peak flow values for the Muncy Creek studied reach are shown in Table 3.8.

Table 3.8: Summary of Discharges for Muncy Creek

Storm Event	*MC1* *At confluence with West Branch Susquehanna River*	*MC2* *Upstream of confluence of Wolf Run No. 1*	*MC3* *At U.S. Route 180*	*MC4* *At USGS 01553005*
	Drainage Area = 215.0 sq. mi.	*Drainage Area = 204.0 sq. mi.*	*Drainage Area = 203.0 sq. mi.*	*Drainage Area = 196.0 sq. mi.*
Frequency Storms				
2-year	8,166	7,804	7,771	7,539
5-year	13,499	12,915	12,862	12,488
10-year	18,301	17,518	17,447	16,945
25-year	26,971	25,834	25,730	25,000
50-year	33,747	32,325	31,195	31,282
100-year	43,308	41,491	41,325	40,158
200-year	59,297	56,818	56,592	55,000
500-year	74,600	71,493	71,209	69,213
Historical Storms				
Lee (2011)	50,245	48,142	47,950	46,600

The results of the existing-conditions hydrologic analysis for Muncy Creek were compared to the effective FEMA 1-percent annual chance (100-year) flood peak flows (Table 3.9). Peak flows have increased approximately 43-percent between the effective FEMA flows and the existing-conditions analysis in this study. This is due to the fact that the effective FEMA flows were computed using regression equations that were developed prior to the Lee (2011) flood event and thus, this event was not considered in the effective FEMA analysis either through weighting or through the development of the actual equations.

Table 3.9: Existing-Conditions vs. Effective FEMA Flows for Muncy Creek

Location	*Drainage Area (square miles)*	*1-percent annual chance (100-year) Peak Flow (cubic feet per second)*	
		Effective FEMA (USGS 2001)	*Existing-Conditions (USACE 2018)*
MC1 At confluence with West Branch Susquehanna River	215.0	24,900	43,308
MC2 Upstream of confluence of Wolf Run No. 1	204.0	23,900	41,491
MC3 At U.S. Route 180	203.0	23,800	41,325
MC4 At USGS 01553005	196.0	23,400	41,325

3.3 GLADE RUN

The USACE Hydrologic Modeling System (HMS), version 4.2.0, was used to estimate peak flows, develop flood-frequency curves and flow hydrographs for the Glade Run watershed. This rainfall-runoff model was chosen for Glade Run to provide a tool for determining potential impacts of upstream detention alternatives in future phases of this study. HEC-HMS is a public domain software package developed by the USACE Hydrologic Engineering Center (HEC). HEC-HMS is designed to simulate the precipitation-runoff process in dendritic watershed systems. It is designed to be applicable in a wide range of geographic areas for solving the widest possible range of problems (USACE, 2016). It is widely used and is an approved model by many Federal, State, and local agencies for flood and stormwater investigations.

The HEC-HMS model has three basic components. The physical representation of the watershed is accomplished with a *basin model*. Hydrologic elements are connected in a dendritic network to simulate runoff processes. Meteorological data analysis is performed by the *meteorological model*, which includes six different historical and synthetic precipitation methods. The simulation time span is controlled by *control specifications*. A simulation run is created by combining these three components.

Flow Points (Junctions)

The HEC-HMS basin model for the Glade Run watershed is set-up with a nomenclature system that consists of an abbreviation representing the watercourse and a random number starting at the downstream end of the watercourse. For example, Flow Point GLR1 is a flow point on Glade Run at its confluence with the West Branch Susquehanna River, and Flow Point GLR5 is further upstream at East Water Street. Two unnamed tributaries are included in the Glade Run watershed, model, and these two unnamed tributaries were named Tuner Hill Tributary (THT) and Quarry Road Tributary (QRT).

Flow points were generally located at road crossings, just downstream of confluences of tributaries, or at other hydrologically significant points in the watershed. A total of 15 flow points are included in the Glade Run HEC-HMS basin model. The location of these points is shown in Figure 3.3.

Sub-basins Drainage Area

The Glade Run watershed was divided into 20 sub-basins of similar land use and characteristics (Figure 3.4). Sub-basins are named based upon the flow point in which the contribute runoff to. GIS data layers of the existing stormwater infrastructure within Muncy Borough, including inlet and pipe locations, were obtained from LCPCD and used in the delineation. Sub-basins were delineated using the project DEM described in Section 1.5 of this report. Significant detail was placed on the delineation of the sub-basin boundaries. In many applications of HEC-HMS, peak flows for only one study point are required, and the detail in the delineation of sub-basins is not necessary. For this study, however, detail was necessary to provide accurate peak flow data for many study points throughout the watershed to meet the objectives of the investigation.

Sub-basins Loss Method

The SCS Curve Number Loss Method was chosen for the HEC-HMS basin model. Runoff Curve Numbers were developed by the NRCS in programs such as TR-55 and Technical Release 20 (TR-20), and are used in HEC-HMS and other applications to convert mass rainfall into mass runoff. CN is based upon soils, plant cover, amount of impervious area, interception, and surface storage. CN's generally range from 30 to 98, with 30 having the least amount of runoff and 98 being impervious area, with the greatest amount of runoff. This method was chosen for this watershed as it is a widely used method in hydrologic modeling throughout the United States and the relatively rural nature of the watershed.

Existing land use data was provided by LCPCD for use in this study. The land use in the Glade Run watershed was divided into 12 land use categories: Brush (Good Condition); Commercial; Farmstead; Impervious; Open Space (Good Condition); Residential (1-acre); Residential (1/2-acre); Residential (1/4-acre); Row Crops (Straight Row-Good Condition); Water; Woods-Grass Combination; and Woods (Good Condition). Existing-conditions land use for the Glade Run watershed is shown in Figure 3.5.

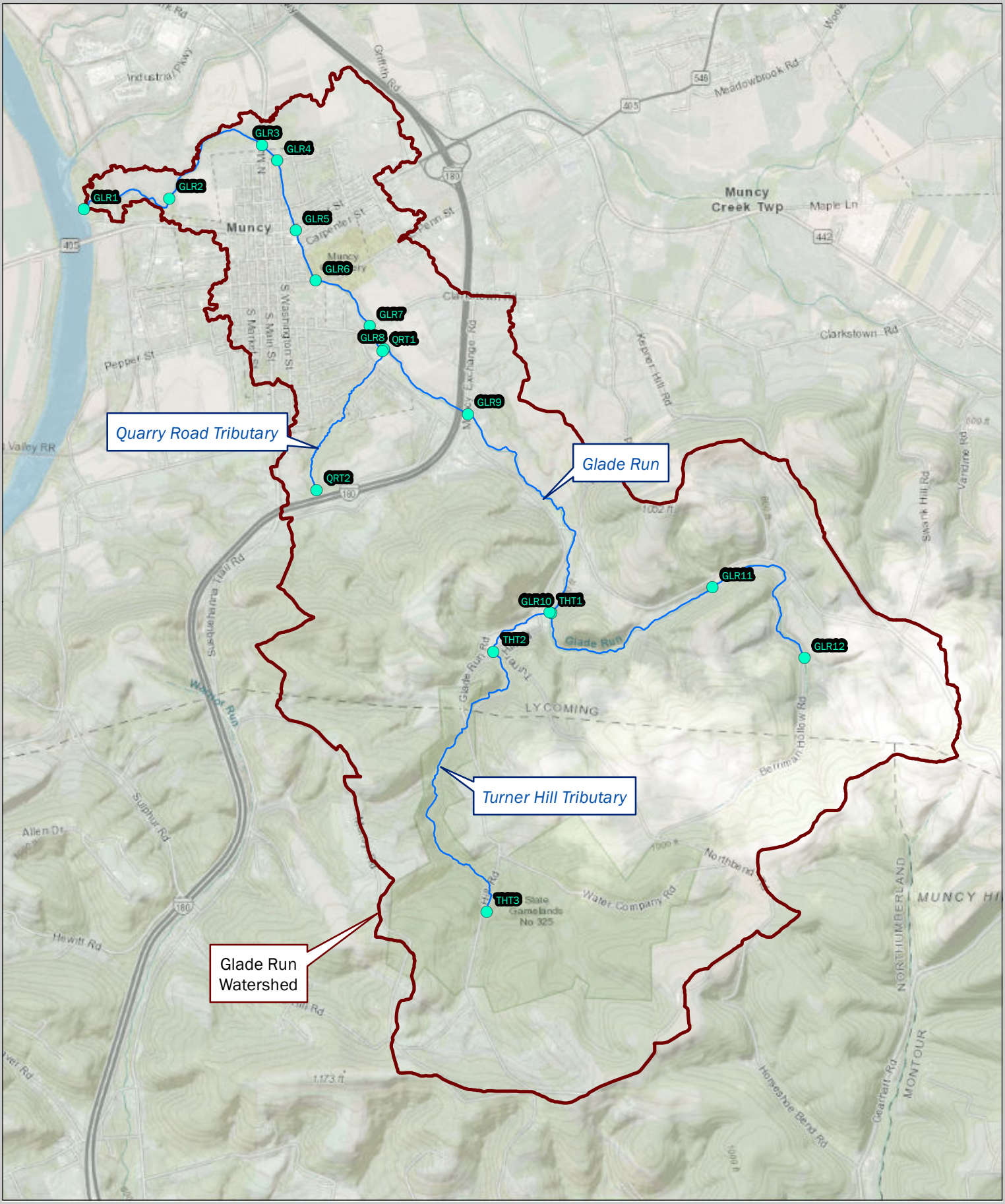


Figure 3.3
Glade Run Flow Points

0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

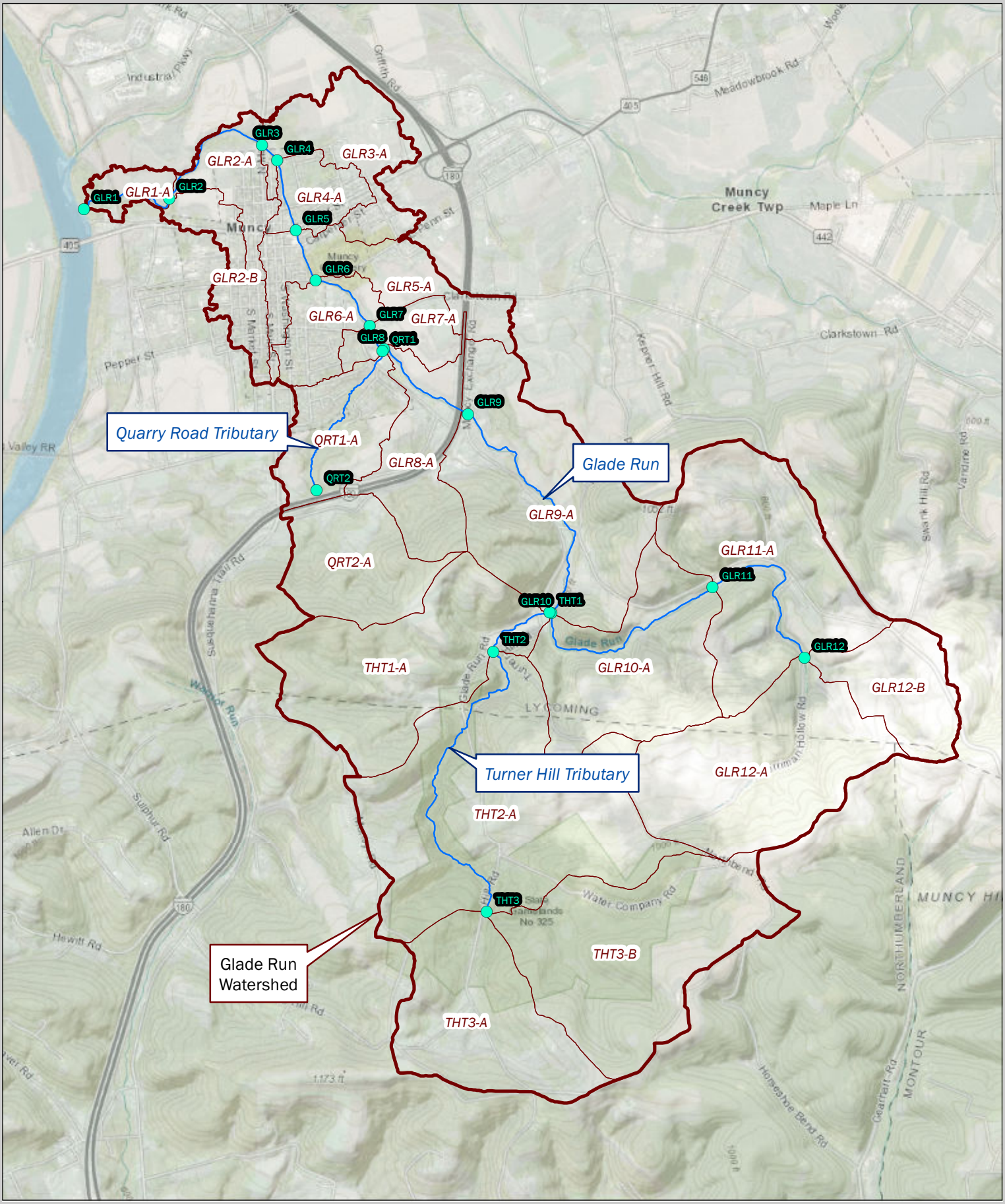


Figure 3.4
Glade Run Sub-Basins

0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

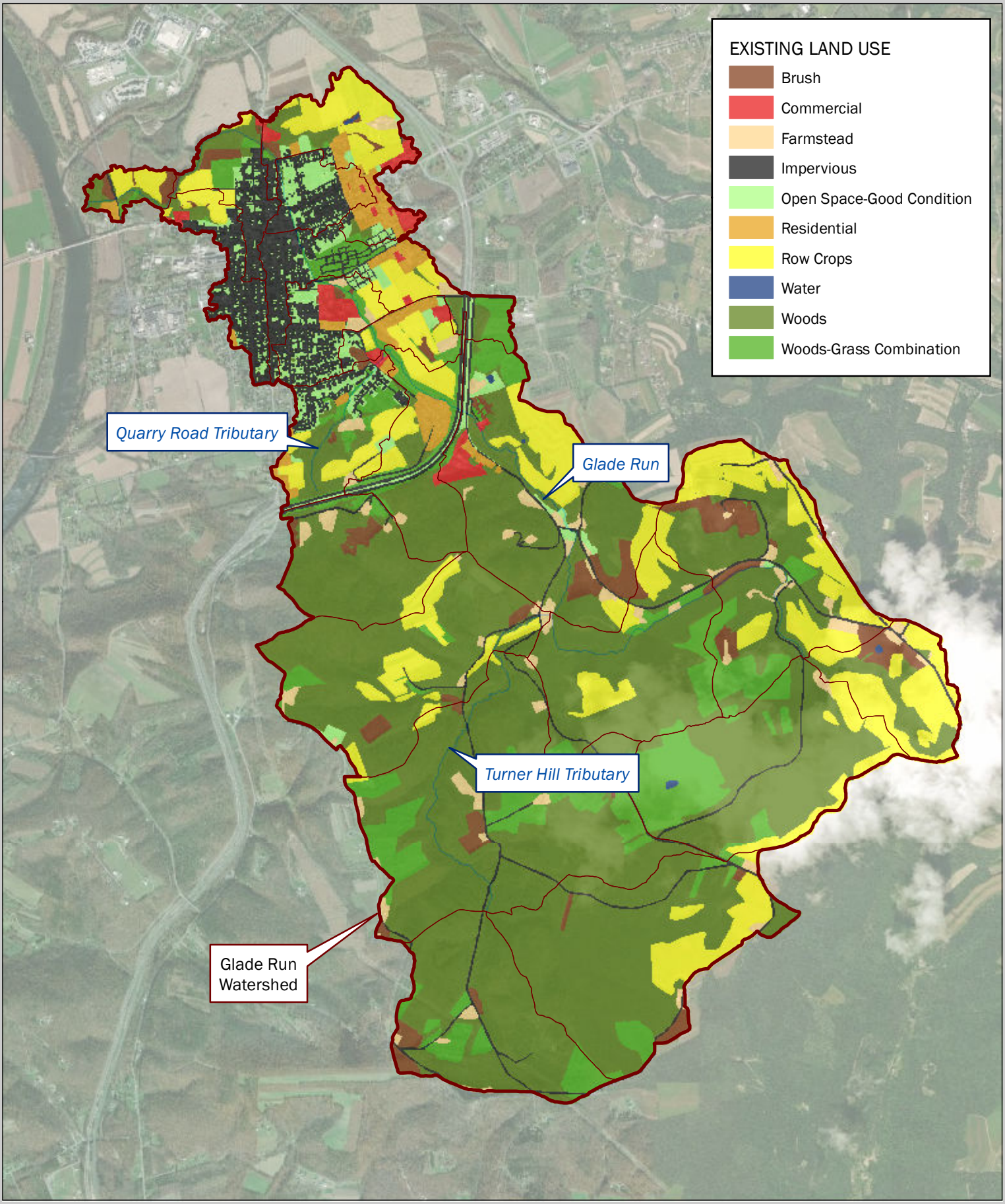


Figure 3.5
Glade Run Watershed
Existing Land Use

0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

A GIS routine was used to union the land use data with soil data for the watershed to compute the CN values. In regards to soils, a Hydrologic Soil Group (HSG) classification was developed by the NRCS to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The hydrologic soil groups are named A, B, C, and D, with Group A having low runoff potential and Group D having high runoff potential. Spatial soil data, dated 2017, was obtained from the NRCS to use in this study. Figure 3.6 shows the hydrologic soil groups within the Glade Run watershed. Note that within the HEC-HMS basin model the percent imperviousness and initial abstraction were left blank. The impervious area was considered in the CN calculations and the initial abstraction was left blank in order to allow the program to calculate the standard values.

Sub-basins Transform Method

The SCS Unit Hydrograph Method was used as the transform method for the sub-basins in the HEC-HMS basin models. This method requires the input of the SCS lag time, which is defined as 60% of the time of concentration (T_c). Travel time (T_t) is the time it takes water to travel from one location to another in the watershed. T_t is a component of T_c, which is the time for runoff to travel from the most hydrologically remote point in the watershed to the point of interest. T_c is calculated by summing the travel time for consecutive flow components in each sub-basin. Methods outlined in the NRCS TR-55 were used to calculate the T_t and T_c for each sub-basin. Existing topographic mapping, field reconnaissance, and stormwater infrastructure information was used to determine flow paths and hydraulic characteristics of the flow paths.

Lag time is a critical factor in the estimation of peak flows within a watershed, and although lag time is defined as 60% of the T_c, it is often a variable that varies based upon regional factors. The level of confidence in the calculated T_c is relatively high because it is calculated based upon physical factors that can be field measured. The level of confidence in the lag time, however, is not as high when using the standard $0.6T_c$ definition, especially in this relatively smaller watershed. Therefore, for the HEC-HMS model, the T_c was used as the SCS lag time in the SCS Unit Hydrograph Method.

Sub-basins Baseflow

Baseflow is the portion of stream flow that comes from the sum of deep subsurface flow and delayed shallow subsurface flow, and in the realm of hydrologic modeling, is the amount of flow in a channel prior to the storm event occurring. For Glade Run and its tributaries, this flow amount is negligible and will not impact flood flows. Therefore, baseflow was not included in the HEC-HMS model.

Reaches and Routing

The Muskingum-Cunge Routing Method was used for the routing method for the reaches in the HEC-HMS basin model. This method is based on the combination of the conservation of mass and the diffusion representation of the conservation of momentum. It is designed to account for peak flow attenuation within the reaches. The 8-Point method was utilized for all reaches, as cross-sections were developed from the field survey and the project DEM.

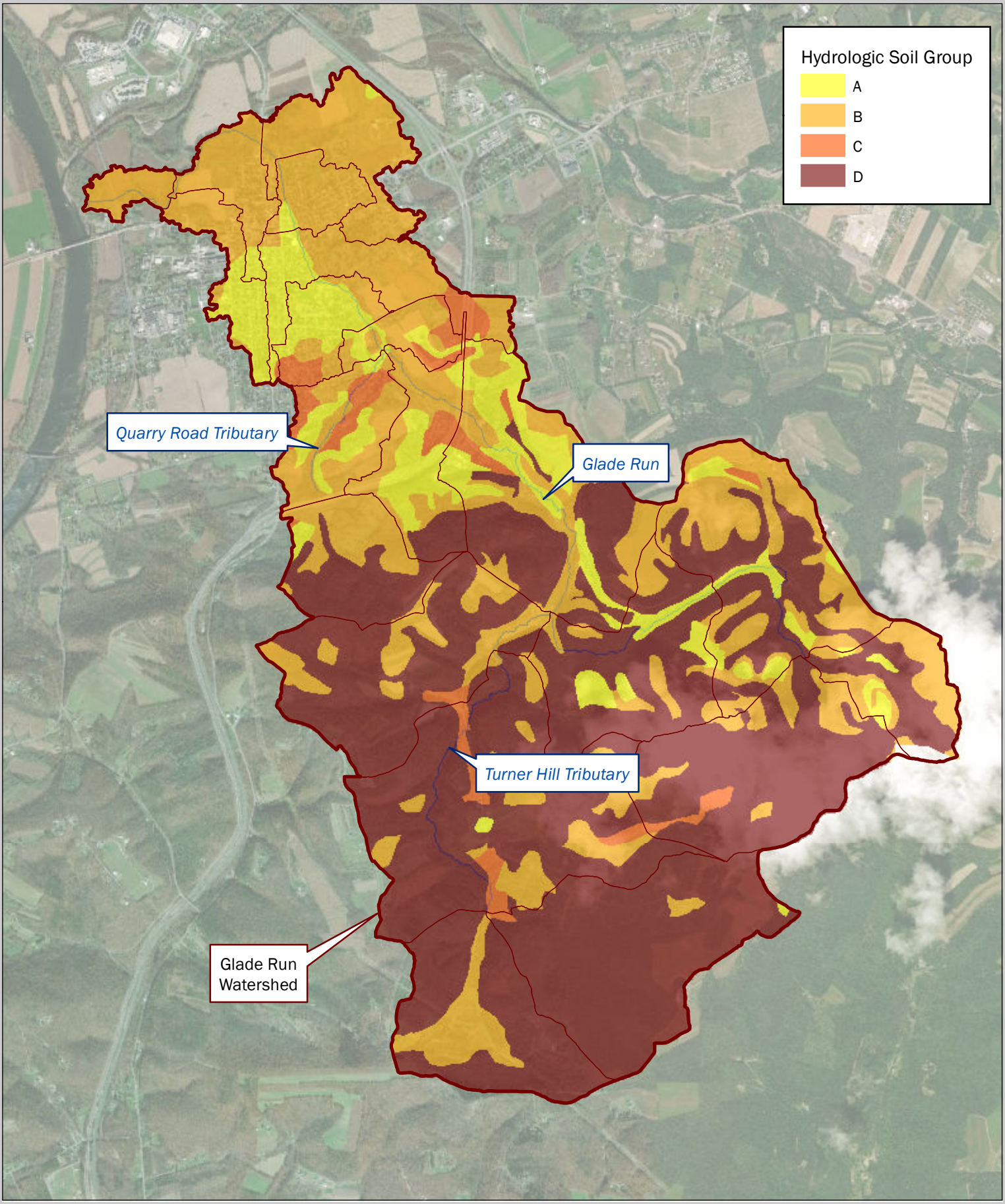


Figure 3.6
Glade Run
Watershed Soils

0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

Aerial photographs and field data were used to assist in determining the Manning's n values for the channel and over bank areas. The cross-sections are stored as paired data within the HEC-HMS model.

Reservoirs

A reservoir in a HEC-HMS model represents man-made or natural areas in the watershed where storage of runoff occurs that could change the hydrograph of a reach such that peak flows are decreased. Based upon a desktop evaluation and subsequent field inspection, it was determined that there are no areas in the Glade Run watershed that would warrant modeling as a reservoir. Therefore, no reservoirs are included in the Glade Run HEC-HMS model.

All input data into the Glade Run basin model is provided in Appendix D of this report. The data includes a table showing the drainage area, CN, and T_c used for each sub-basin, reach data, and cross-section paired data.

Precipitation Data

The Frequency Storm method was used as the meteorological model for the HEC-HMS model. This method is designed to produce a synthetic storm from statistical precipitation data to compute a hyetograph for each sub-basin. For this investigation, precipitation data was taken from the NOAA Atlas 14, Volume 2, Version 3, at the latitude and longitude of the watershed (Table 3.10).

Table 3.10: Precipitation Data for the Glade Run Watershed

Duration	*Recurrence Interval (years)*							
	2	*5*	*10*	*25*	*50*	*100*	*200*	*500*
1-hr	1.24	1.50	1.68	1.91	2.08	2.25	2.42	2.66
2-hr	1.42	1.73	1.98	2.33	2.63	2.95	3.30	3.83
3-hr	1.53	1.87	2.16	2.57	2.92	3.32	3.76	4.43
6-hr	1.91	2.34	2.69	3.20	3.65	4.14	4.68	5.52
12-hr	2.37	2.91	3.36	4.03	4.61	5.26	6.00	7.14
24-hr	2.81	3.48	4.06	4.96	5.78	6.74	7.86	9.67

Control Specifications

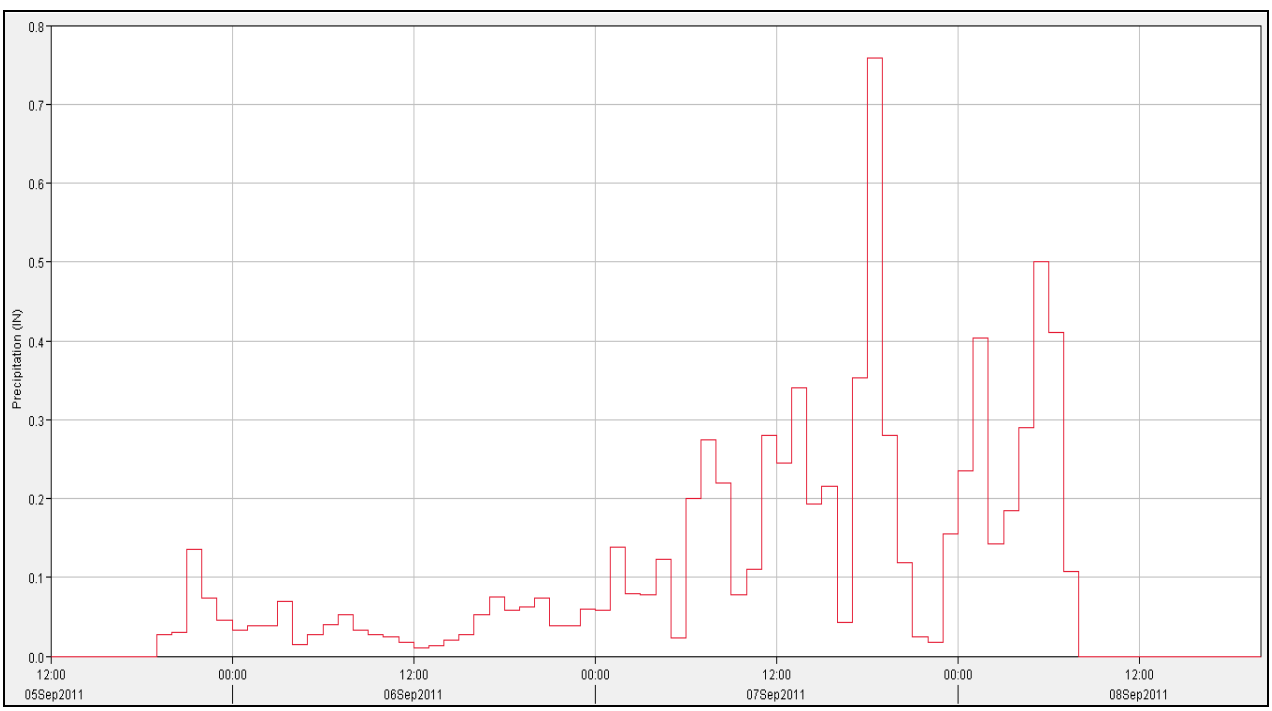
A duration of 24-hours and a 1-minute time step was used for the HEC-HMS models. A 1-minute time step was chosen due to the small times of concentration within the watershed. A 1-minute time step is necessary in order to allow the program to perform computations within the limits established. The date was set randomly as 01Jan2017. The actual duration was set 36 hours to allow ample time for the watershed to respond to the 24-hour storm.

Calibration and Verification

Calibration is the adjustment of the basin model to replicate conditions during storm events with known historical data (i.e. stream flow and precipitation data). Verification is the determination that the model is accurate for the range of storm events to be modeled in the study. Both calibration and verification involve the input of known stream flow and precipitation data for various storms throughout a time period representative of current watershed conditions. There are no stream flow gages located on Glade Run; however, precipitation data for the Lee (2011) flood event was obtained from the NWS to model the Lee (2011) flood event in the Glade Run watershed. Although no stream flow gage is available to confirm the flow being generated by the HEC-HMS model, the Lee (2011) HEC-HMS model can be input into the hydraulic model to determine if the flows are within range based upon observed flooding conditions during the event.

Gridded hourly rainfall data for Lee (2011) was obtained from NWS for the Glade Run watershed. Based upon this data, it was determined that the storm dumped nearly 8.0 inches of rainfall on the Glade Run watershed between noon of 5 September 2011 and noon on 8 September 2011, with the peak intensity of rainfall occurring in the late evening of 7 September 2011. The rainfall data was entered into the HECHMS model as a specified hyetograph (Figure 3.7) and a meteorological model for the Lee (2011) flood event was developed using this data. The simulation run "Lee_Sept2011" was created using the existing-conditions basin model, the Lee (2011) meteorological model, and control specifications (duration) for the event.

Figure 3.7: Hyetograph for Lee (Sept 2011) Flood Event in Glade Run Watershed



Model Runs

Peak flows for the eight storm events shown in Table 3.1, as well as the Lee (2011) flood were calculated using HEC-HMS. As full summary of results for the HEC-HMS model is located in Appendix D. Table 3.11 provides results for the flow points that are located in Muncy Borough.

Table 3.11: Summary of Discharges for Glade Run

Storm Event	*GLR1* At confluence with WB Susq. Riv.	*GLR2*	*GLR3* At North Main Street	*GLR4* At Mechanic Street
	Drainage Area = 7.8 sq. mi.	*Drainage Area = 7.7 sq. mi.*	*Drainage Area = 7.4 sq. mi.*	*Drainage Area = 7.1 sq. mi.*
Frequency Storms				
2-year	279	286	290	282
5-year	609	647	631	618
10-year	930	973	967	948
25-year	1,237	1,402	1,388	1,355
50-year	1,686	1,767	1,776	1,731
100-year	2,099	2,231	2,226	2,172
200-year	2,605	2,749	2,731	2,662
500-year	3,383	3,541	3,495	3,401
Historical Storms				
Lee (2011)	1,390	1,399	1,374	1,335

Storm Event	*GLR5* At East Water Street	*GLR6* At East Penn Street	*GLR7* At Clarkstown Road	*GLR8* At confluence with QRT
	Drainage Area = 7.0 sq. mi.	*Drainage Area = 6.7 sq. mi.*	*Drainage Area = 6.6 sq. mi.*	*Drainage Area = 6.5 sq. mi.*
Frequency Storms				
2-year	279	272	270	271
5-year	640	640	646	648
10-year	982	976	978	983
25-year	1,407	1,428	1,429	1,439
50-year	1,772	1,799	1,797	1,812
100-year	2,210	2,231	2,236	2,255
200-year	2,711	2,725	2,745	2,762
500-year	3,458	3,456	3,477	3,497
Historical Storms				
Lee (2011)	1,391	1,378	1,358	1,349

These results show that Lee (2011) was approximately a 4-percent annual chance (25-year) flood in the Glade Run watershed.

The results of the existing-conditions HEC-HMS model for Glade Run were compared to the effective FEMA 1-percent annual chance (100-year) flood peak flows (Table 3.12). Peak flows have decreased approximately 46-percent between the effective FEMA flows and the existing-conditions analysis in this study. This is due to the use of different methodologies. The effective FEMA flows were computed from a regional flood-frequency method developed by USACE in a hydrologic study completed using data from Tropical Storm Agnes. This method transfers flows from the West Branch Susquehanna River to Glade Run based solely on drainage area. The existing-conditions HEC-HMS model is more watershed specific, incorporating specific land use and soils data to compute estimated runoff.

Table 3.12: Existing-Conditions vs. Effective FEMA Flows for Glade Run

Location	*Drainage Area (square miles)*	*1-percent annual chance (100-year) Peak Flow (cubic feet per second)*	
		Effective FEMA (USACE 1976)	*Existing-Conditions (USACE 2018)*
GLR1 At confluence with West Branch Susquehanna River	7.80	3,900	2,099

4 HYDRAULIC ANALYSES

The USACE HEC-RAS (River Analysis System), version 5.0.3, was used to develop geo-referenced hydraulic models for West Branch Susquehanna River, Muncy Creek, and Glade Run, calculate flood elevations for the existing-conditions 2-, 5-, 10-, 25-, 50-, 100-, 200- and 500-year flood events, and complete a 100-year floodway encroachment analysis for all flooding sources. HEC-RAS is software that performs one-dimensional steady and unsteady state river flow hydraulic calculations. It is an integrated system of software designed for interactive use for a multi-tasking environment. The system is comprised of a graphical user interface, separate analysis components, data storage and management capabilities, graphics and reporting facilities (USACE, 2016). It is widely used and is an approved model for use in FEMA FIS's and floodplain mapping. The HEC-GeoRAS pre- and post-processor utilities were used to assist in the development of cross-sections and the mapping of the floodplain. All elevations in the modeling and mapping are referenced to the NAVD88 vertical datum with a horizontal coordinate system of Pennsylvania State Plane North feet.

All hydraulic modeling was completed to comply with FEMA's guidance documents and standards. This was done in the event that the floodplain mapping completed in this investigation were to be submitted to FEMA by the local municipalities for a change to the effective FIRMs. The modeling completed in this study uses more up-to date data as the effective FEMA studies and better estimates the flood elevations and floodplain boundaries for West Branch Susquehanna River, Muncy Creek, and Glade Run.

4.1 WEST BRANCH SUSQUEHANNA RIVER

An existing-conditions HEC-RAS model was developed to determine flood elevations along West Branch Susquehanna River. The model extends for approximately 6.7 miles, from just downstream of 2nd Street (PA Route 405/54) in Montgomery to approximately 1.8 miles upstream of PA Route 405 in Muncy Borough. The study reach contains two NWS Advanced Hydrologic Prediction Service (AHPS) forecast points, one in Muncy and one in Montgomery (Figure 4.1).

Topographic Data

The HEC-GeoRAS pre-processor, using the project DEM described in Section 1.5, was used to develop cross-sections for the West Branch Susquehanna River. The overbank portions of the cross-sections are from the DEM. The "wet sections" of the cross-sections were input based upon the channel field survey data described in Section 2.2 of this report. For intermediate cross-sections between surveyed sections, the channel dimensions were interpolated. The source of channel data for each cross-section is listed in the description box in the geometric data editor, along with any correlation between effective FEMA cross-sections.

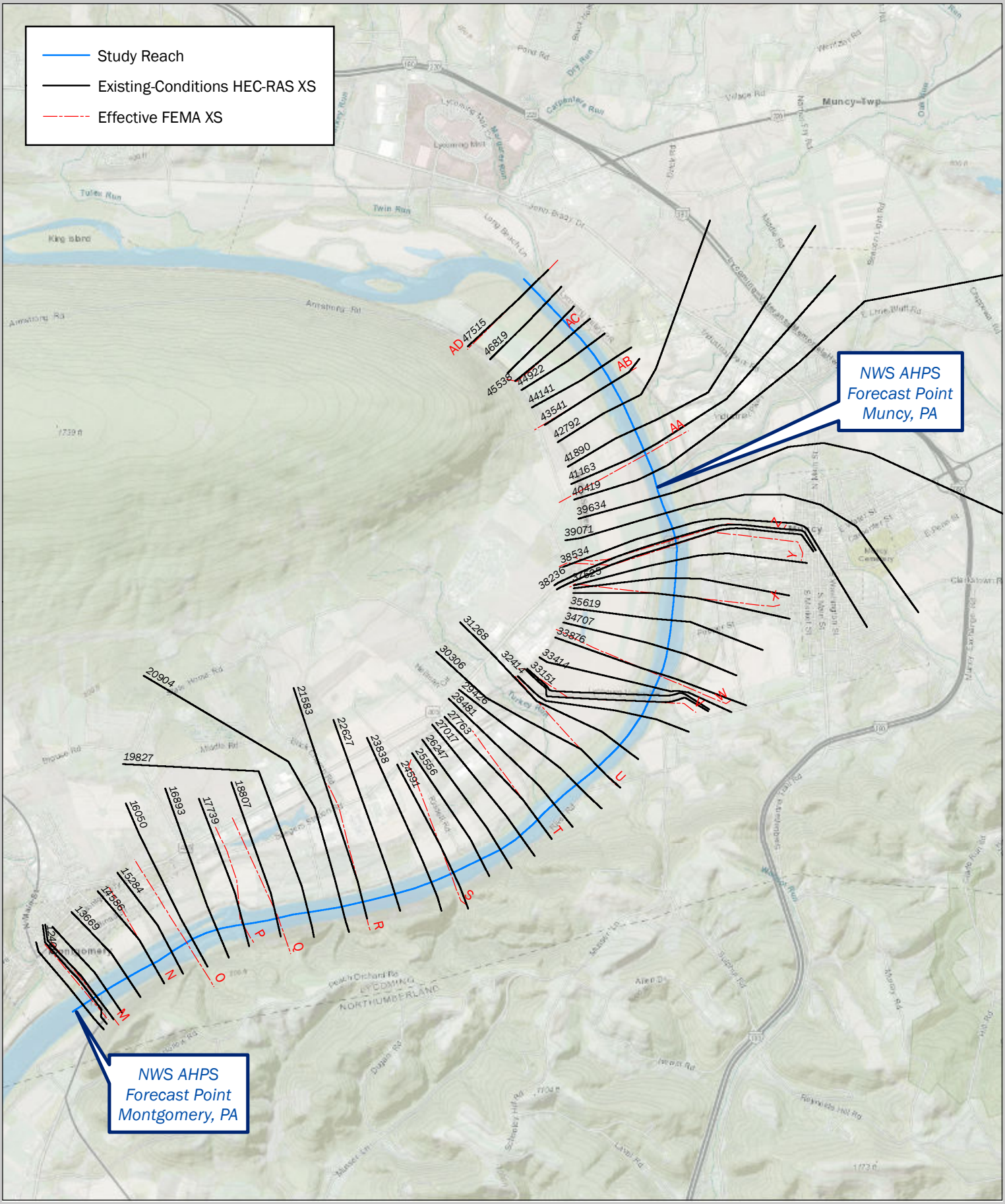


Figure 4.1
West Branch Susquehanna River
HEC-RAS Model

0 2,000 4,000 8,000 Feet

1 inch = 4,000 feet

The HEC-RAS model has cross-sections that have river stations generated by the HEC-GeoRAS program. The station identifier is the stream distance in feet upstream of the Lycoming County boundary.

Road Crossings

Data for road crossings were obtained from the field survey described in Section 2.1 of this report. A list of road crossings included in the West Branch Susquehanna River HEC-RAS model is located in Table 4.1.

Table 4.1: Road Crossings in West Branch Susquehanna River HEC-RAS Model

HEC-RAS Station	*Name*	*Description*
12463	2nd Street (PA Rte 405/54)	Multiple span concrete bridge with eleven triangular nosed concrete piers, 8.5' at base and 7.5 ft. at top. Total span is 960 feet. On right bank, 6.0' x 6.0' concrete box culvert in concrete headwall
33012	Railroad	Multiple span metal/concrete bridge with concrete round nosed piers. Total span is 1,260 feet. Main opening piers are 9.0 ft. at base and 6.0 ft. at top. Right side piers are 4.5 ft. at base and 3.5 ft. at top.
38150	PA Route 405	Multiple span elevated bridge. Total span is 2,133 feet, with 16 concrete hammerhead piers, 6.6 ft. wide. On left bank and right bank, single 48" concrete pipes.

Manning's Roughness Values

Roughness factors (Manning's "n") were chosen based upon engineering judgment, land use, aerial photography, and field observation. Base values for West Branch Susquehanna River were .040 in the channel and ranged from .013-.20 in the over bank areas. These values were adjusted during the calibration process using the "Flow Roughness Factors" option in HEC-RAS, where n values were reduced or increased as flood elevations increased.

Ineffective Flow Areas and Obstructions

Ineffective flow areas were set appropriately at bridges and other areas where flood flow would not be effective. Obstructions in the model represent buildings that would occupy storage space for floodwaters.

Contraction/Expansion Coefficients

Contraction/expansion values for the cross-sections at bridges were set at the FEMA recommended values of .3 and .5, respectively. All other cross-sections were assigned contraction/expansion coefficients of .1 and .3, respectively.

Reach Boundary Conditions

The downstream boundary condition used for the West Branch Susquehanna River model was a rating curve developed by USACE from observed data from the NWS forecast point in Montgomery (https://water.weather.gov/ahps2/hydrograph.php?wfo=ctp&gage=mtgp1). Although no active USGS gage is located in Montgomery, the data provided by NWS at this AHPS forecast point shows historical observed stages. Peak flows to these corresponding stages were determined by translating the flows from the upstream (Williamsport) and downstream (Lewisburg) gages using drainage area ratio methodology. The high flow and low flow values on the rating curve were extrapolated to complete the curve for a full range of stage/flow values. The rating curve used as the downstream boundary condition for the West Branch Susquehanna River model is shown in Table 4.2.

Table 4.2: Rating Curve at NWS Forecast Point in Montgomery, PA

Storm Event	*Stage (feet)*	*Elevation (feet NAVD 88)*	*Discharge (cfs)*
	From AHPS	*Determined by adding stage from AHPS to gage height (455.0 ft.)*	*Determined from translation from Williamsport and Lewisburg USGS Gages*
*	4.3	459.3	10,000
1/26/2010	21.5	476.5	118,000
12/2/2010	24.5	479.5	143,000
Ivan (9/19/2004)	28.8	483.8	207,000
5/28/1946	30.3	485.3	248,000
3/12/1936	36.0	491.0	280,000
Agnes (6/23/1972)	37.5	492.5	293,000
*	50.0	505.0	450,000

**Values determined through extrapolation*

Calibration

The HEC-RAS model for West Branch Susquehanna River was calibrated to five flood events that have occurred in Muncy Borough, spanning several different levels of flooding. Observed flood elevation data for these storm events were taken from the NWS forecast point data located in Muncy (https://water.weather.gov/ahps2/hydrograph.php?wfo=ctp&gage=mcyp1). Although no active USGS gage is located in Muncy Borough, the data provided by NWS at this AHPS forecast point shows historical observed stages. Peak flows for the historical storms shown in Table 3.3 were input into the HEC-RAS model. The model was run and calibrated by adjusting Manning's n values using the "Flow Roughness Factors" option in HEC-RAS, where n values were reduced or increased as flood elevations increased. Results of the model calibration are shown in Table 4.3.

Table 4.3: Calibration Results of West Branch Susquehanna River in Muncy Borough

Storm	*Peak Flow at XS 38534 (cfs)*	*Water Surface Elevation (feet NAVD 88)*		
		Observed	*Computed*	*Difference*
10/24/1990	60,800	479.6	479.5	-0.1
12/2/2010	143,000	487.9	488.3	0.4
Lee (2011)	160,000	489.3	489.1	-0.2
Ivan (2004)	207,000	492.4	492.1	-0.3
Agnes (1972)	293,000	501.1	501.0	-0.1

Results

Peak flows for all frequency storms shown in Table 3.3 were input into the HEC-RAS model, and the model was run in subcritical flow regime. Abbreviated results, at cross-sections that are located in Muncy Borough, are shown in Table 4.4, with full results being located in Appendix E. The FEMA RASPLOT software was used to create a flood profile for the West Branch Susquehanna River. This flood profile is located in Appendix F. Flood mapping is located in Exhibit 1.

Table 4.4: Existing-Conditions HEC-RAS Results in Muncy Borough-West Branch Susquehanna River

HEC-RAS XS	*Water Surface Elevation (feet NAVD 88)*						
	5yr	*10yr*	*25yr*	*50yr*	*100yr*	*200yr*	*500yr*
39071	482.0	487.0	489.1	492.1	494.9	501.1	504.6
38534	481.9	486.9	489.0	492.0	494.8	501.0	504.5
38235	481.8	486.7	488.8	491.9	494.7	500.9	504.5
38150	PA Route 405						
38052	481.6	486.6	488.7	491.9	494.7	500.8	504.5
37525	481.4	486.3	488.4	491.5	494.2	500.4	504.1
36949	481.1	486.0	488.1	491.1	493.6	499.9	503.7

Floodway Encroachment Analysis

A floodway encroachment analysis is required if the data developed in this investigation were to be submitted to FEMA for a map change. The regulatory floodway is defined as the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to convey the 100-year flood without cumulatively increasing the water-surface elevation by more than a designated height (surcharge). The NFIP standard surcharge of 1-foot has been adopted in Pennsylvania.

HEC-RAS was used to complete the floodway encroachment analysis for the West Branch Susquehanna River. Method 4 in HEC-RAS was initially used to specify a target water-surface increase, which is 1-foot. Method 1 was then employed to further refine the floodway encroachment stations. A floodway data table, showing the results of the floodway encroachment analysis for the West Branch Susquehanna River, is located in Appendix G.

Tie-In to Effective FEMA Study

The results of the existing-conditions HEC-RAS model for West Branch Susquehanna River were compared to the effective FEMA 1-percent annual chance (100-year) flood elevations (Table 4.5).

Table 4.5: Existing-Conditions vs. Effective FEMA 100-year Flood Elevations for West Branch Susquehanna River

HEC-RAS XS	*Effective FEMA Lettered XS*	*Water Surface Elevation (feet NAVD 88)*		
		Effective FEMA	*Existing-Conditions*	*Difference*
47515	AD	507.2	503.3	-3.9
45538	AC	505.2	502.4	-2.8
43541	AB	504.0	501.9	-2.1
41163	AA	502.1	501.5	-0.6
38235	Z	501.5	500.9	-0.6
38052	Y	501.5	500.8	-0.7
36407	X	500.7	499.7	-1.0
33876	W	499.8	499.0	-0.8
32931	V	499.2	498.4	-0.8
30306	U	498.1	497.1	-1.0
27763	T	497.3	496.6	-0.7
24591	S	496.4	495.8	-0.6
21583	R	495.1	495.0	-0.1
18807	Q	494.2	494.2	0.0
17739	P	494.2	494.2	0.0
16050	O	493.6	493.8	0.2
14586	N	493.2	493.4	0.2
12525	M	492.4	493.0	0.6
12400	L	492.2	492.8	0.6

**Red box indicated XS that impact Muncy Borough.*

As shown in Table 4.5, 1-percent annual chance (100-year) flood elevations generally decrease in the location of Muncy Borough and upstream. This can be attributed to several factors, such as a reduction in peak flow, better topographic (channel and overbank) data, better bridge survey data, and calibration to the NWS forecast point located in Muncy Borough.

The existing-conditions HEC-RAS model for the West Branch Susquehanna River has tie-in issues with the effective FEMA FIS at both the upstream and downstream ends, which will be required to be resolved in order for this data to be submitted to FEMA for a map revision. FEMA requires that the upstream and downstream ends of a model tie-in within 0.5 ft. of the effective FEMA model. For this current study, USACE was scoped to only provide an updated flood risk assessment for Muncy Borough, therefore, were not scoped to extend the models until acceptable tie-ins are achieved. The severity of the tie-in issue is outlined in Table 4.6, where tie-in values are in the 2-4 ft. range for all storm events.

Table 4.6: West Branch Susquehanna River Tie-In Issues

FEMA Lettered XS/HEC-RAS XS	*Storm*	*Water Surface Elevation (feet NAVD 88)*		
		Existing-Conditions	*Effective FEMA*	*Difference*
AD/47515	10-year	491.0	492.5	1.5
	50-year	497.1	500.3	3.2
	100-year	503.3	507.2	2.9
	500-year	511.9	516.0	4.1
L/12400	10-year	480.7	482.8	2.1
	50-year	485.7	489.2	3.5
	100-year	492.8	492.2	-0.6
	500-year	502.9	499.5	-3.4

The tie-in issue can be attributed to numerous factors, with the primary factor being calibration. At the downstream end of the model, a rating curve was used to establish a solid boundary condition based upon observed stage and flow data. At the time of the effective FEMA study, most of this data was not available, and therefore the model was not calibrated at this location. At the upstream end the model was calibrated in Muncy Borough based upon NWS AHPS observed stage data. This data was not likely available at the time of the effective FEMA study. Other factors that could contribute is the approximately 4-percent reduction in peak flows along this reach, and the use of better topographic data, for both the channel and overbank areas, as well as bridges. The resolution to this issue would be to extend the current model upstream and downstream until an acceptable tie-in is achieved.

4.2 MUNCY CREEK

An existing-conditions HEC-RAS model was developed to determine flood elevations along Muncy Creek. The model extends for approximately 3.9 miles, from the confluence with the West Branch Susquehanna River to just downstream of the confluence of Little Muncy Creek. The study reach contains one USGS stream flow gage, USGS 01553005-Muncy Creek near Muncy, PA (Figure 4.2).

Topographic Data

The HEC-GeoRAS pre-processor, using the project DEM described in Section 1.5, was used to develop cross-sections for Muncy Creek. The overbank portions of the cross-sections are from the DEM. The "wet sections" of the cross-sections were input based upon the channel field survey data from SRBC described in Section 2.2 of this report or from a USGS field survey as part of the Muncy Creek study completed in March 2001 (as included in the June 2, 2016 FIS for Lycoming County). For intermediate cross-sections between surveyed sections, the channel dimensions were interpolated. The source of channel data for each cross-section is listed in the description box in the geometric data editor, along with any correlation between effective FEMA cross-sections.

The HEC-RAS model has cross-sections that have river stations generated by the HEC-GeoRAS program. The station identifier is the stream distance in feet upstream of the confluence with the West Branch Susquehanna River.

Road Crossings

Data for road crossings were obtained from the field survey described in Section 2.1 of this report. A list of road crossings included in the Muncy Creek HEC-RAS model is located in Table 4.7.

Table 4.7: Road Crossings in the Muncy Creek HEC-RAS Model

HEC-RAS Station	*Name*	*Description*
915	Railroad	Multi-span concrete bridge. Main opening is 134.5 ft. span with a 5.0 ft. round-nosed concrete pier.
5778	North Main Street	Multi-span concrete bridge. Main opening is 295.5 ft. span with twin 3.0 ft. round-nosed concrete piers.
7055	U.S. Route 180 East	Multi-span concrete bridge. Main opening is 210.0 ft. span with twin 3.0 ft. round-nosed concrete piers.
7141	U.S. Route 180 West	Multi-span concrete bridge. Main opening is 210.0 ft. span with twin 3.0 ft. round-nosed concrete piers.
16772	PA Route 405	Multi-span concrete bridge. Total span is 195.2 feet. Two 3 ft. concrete round-nosed piers.

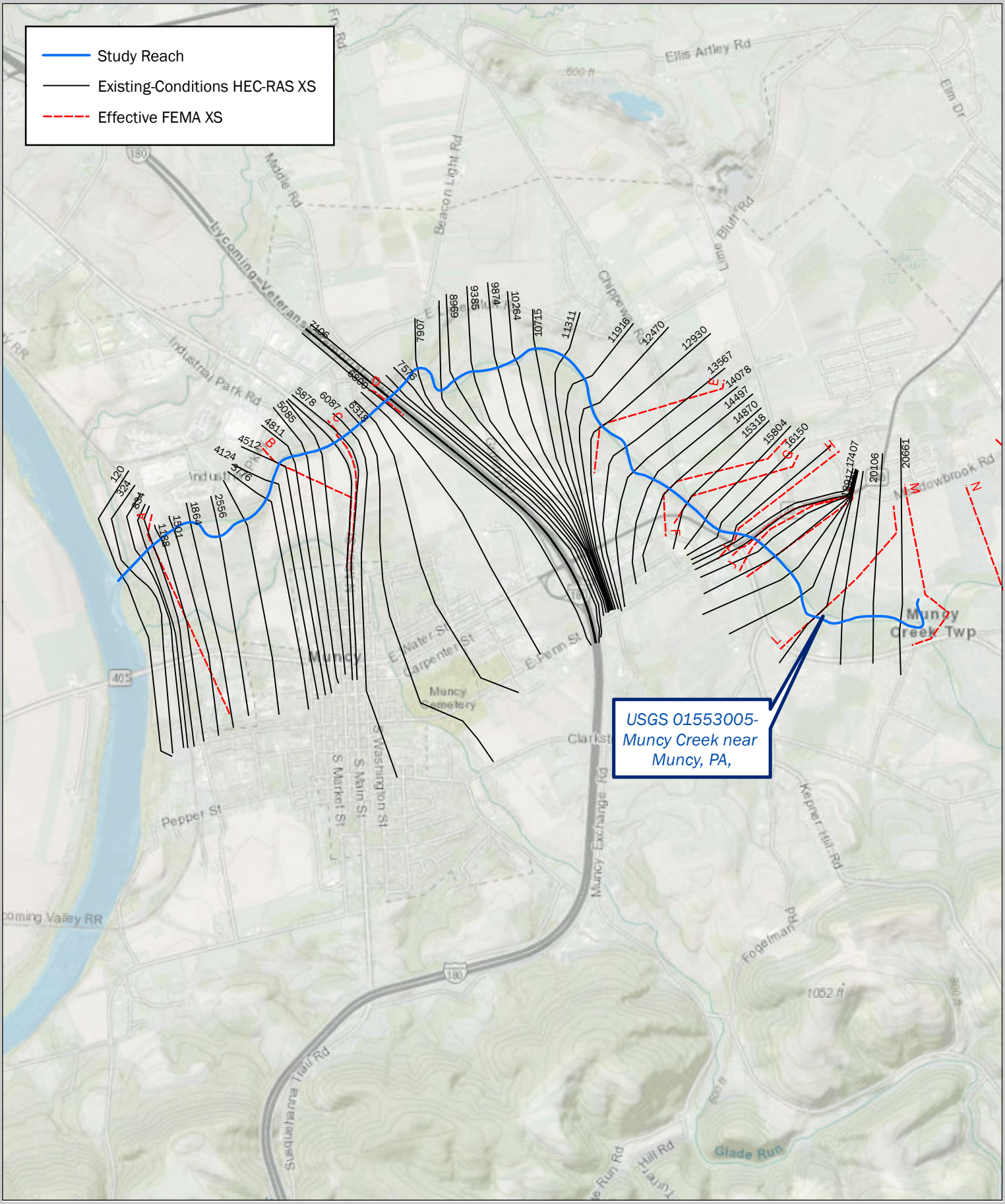


Figure 4.2
Muncy Creek
HEC-RAS Model

0 1,250 2,500 5,000 Feet

1 inch = 2,500 feet

Manning's Roughness Values

Roughness factors (Manning's "n") were chosen based upon engineering judgment, land use, aerial photography, and field observation. Base values for Muncy Creek were .046 in the channel and ranged from .013-.20 in the over bank areas. These values were adjusted during the calibration process using the "Flow Roughness Factors" option in HEC-RAS, where n values were increased as flood elevations increased.

Ineffective Flow Areas and Obstructions

Ineffective flow areas were set appropriately at bridges and other areas where flood flow would not be effective. Obstructions in the model represent buildings that would occupy storage space for floodwaters.

Contraction/Expansion Coefficients

Contraction/expansion values for the cross-sections at bridges were set at the FEMA recommended values of .3 and .5, respectively. All other cross-sections were assigned contraction/expansion coefficients of .1 and .3, respectively.

Reach Boundary Conditions

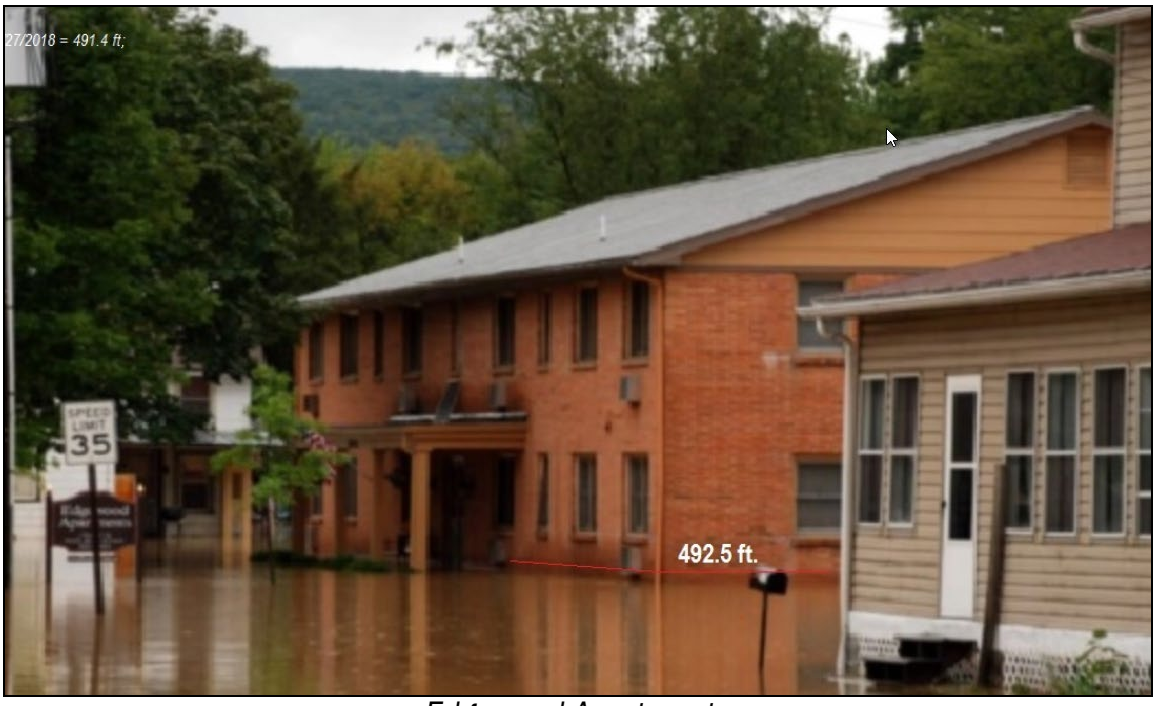
Per FEMA's Guidelines and Specifications, for starting conditions on tributaries, normal depth should be used unless a coincident peak situation is assumed, or the tributary flow depths are higher than the corresponding mainstream events. The assumption of coincident peaks may be appropriate if all of the following are true: (1) the ratio of the drainage areas lies between 0.6 and 1.4; (2) the arrival times of flood peaks are similar for the two combining watersheds; and (3) the likelihood of both watersheds being covered by the storm being modeled is high.

For Muncy Creek, the ratio of drainage area in respect to the receiving West Branch Susquehanna River is well outside the recommended ratio and the arrival times of the peaks would not be similar. Therefore, normal depth was used as the downstream reach boundary condition for Muncy Creek, with a normal depth slope ranging from .002 for a 2-year storm to .0006 for a 500-year storm.

Calibration

The HEC-RAS model for Muncy Creek was calibrated to the most recent rating curve at USGS 01553005-Muncy Creek near Muncy, PA, located at XS 18917. The model was also calibrated to high water marks surveyed by USACE in April 2018, using photographs taken during the flood event. The high water marks were taken at the Edgewood Apartments and the Hook and Ladder Company (Figure 4.3). The model was run and calibrated by adjusting Manning's n values using the "Flow Roughness Factors" option in HEC-RAS, where n values were increased as flood elevations increased. Results of the model calibration are shown in Table 4.8.

Figure 4.3: HWMs for Calibration of HEC-RAS Model for Muncy Creek



Edgewood Apartments

Hook and Ladder Company

Table 4.8: Calibration Results for Muncy Creek

Storm	*Peak Flow at XS 18917*	*Water Surface Elevation (feet NAVD 88)*		
		Observed	*Computed*	*Difference*
2-year	7,539	503.8	503.9	0.1
5-year	12,488	506.3	506.2	-0.1
10-year	16,945	508.0	507.8	-0.2
25-year	25,000	509.9	509.8	-0.1
50-year	31,282	510.9	510.7	-0.2
100-year	40,158	511.9	511.9	0.0
Lee (Sept 2011)	46,600	512.6	512.7	0.1
High Water Mark Calibration to Lee (Sept 2011)				
Location	*HEC-RAS XS*	*Observed*	*Computed*	*Difference*
Edgewood Apartments	3776	492.5	492.5	0.0
Hook and Ladder Company	5878	492.6	493.0	0.4

Results

Peak flows for all frequency storms shown in Table 3.8 were input into the HEC-RAS model, and the model was run in subcritical flow regime. Abbreviated results, at cross-sections that are located in Muncy Borough, are shown in Table 4.9, with full results being located in Appendix E. The FEMA RASPLOT software was used to create a flood profile for Muncy Creek. This flood profile is located in Appendix F. Flood mapping for Muncy Creek is located in Exhibit 1.

Floodway Encroachment Analysis

HEC-RAS was used to complete the floodway encroachment analysis for Muncy Creek. Method 4 in HEC-RAS was initially used to specify a target water-surface increase, which is 1-foot. Method 1 was then employed to further refine the floodway encroachment stations. A floodway data table, showing the results of the floodway encroachment analysis for the Muncy Creek is located in Appendix G.

Table 4.9: Existing-Conditions HEC-RAS Results in Muncy Borough-Muncy Creek

HEC-RAS XS	*Water Surface Elevation (feet NAVD 88)*						
	5yr	*10yr*	*25yr*	*50yr*	*100yr*	*200yr*	*500yr*
6800	486.4	487.5	488.2	489.0	490.4	492.5	494.3
6566	486.2	487.6	488.9	489.6	491.5	494.7	496.5
6318	486.3	487.8	489.2	490.0	491.9	495.0	497.0
6087	486.1	487.7	489.1	489.8	491.8	495.0	496.9
5878	485.7	487.5	488.9	489.7	491.7	494.9	496.9
5778	North Main Street						
5685	484.0	484.8	486.6	488.5	491.3	494.8	496.8
5380	483.5	484.5	486.5	488.4	491.3	494.7	496.7
5085	483.1	484.2	486.3	488.3	491.2	494.7	496.7
4811	483.0	484.0	486.3	488.3	491.2	494.7	496.7
4512	482.7	483.8	486.1	488.2	491.1	494.7	496.6
4124	482.1	483.3	485.9	488.1	491.1	494.6	496.6
3776	481.2	482.7	485.6	487.9	491.0	494.6	496.6
3150	480.4	482.1	485.4	487.8	490.9	494.5	496.5
2556	480.1	482.0	485.3	487.7	490.9	494.5	496.5
1864	479.3	481.5	485.1	487.6	490.8	494.4	496.4
1501	479.1	481.3	484.9	487.4	490.7	494.4	496.4
1188	478.6	481.0	484.7	487.2	490.4	494.4	496.3
986	478.1	480.1	483.4	485.6	488.5	494.4	496.3
915	Railroad						
834	477.1	479.1	482.0	483.9	486.3	491.8	495.1
646	476.8	478.9	482.0	484.1	486.7	491.8	495.1
324	475.8	477.7	480.6	482.5	485.1	491.3	494.7
120	475.5	477.5	480.5	482.5	485.1	491.4	494.8

Tie-In to Effective FEMA Study

The results of the existing-conditions HEC-RAS model for Muncy Creek were compared to the effective FEMA 1-percent annual chance (100-year) flood elevations (Table 4.10).

Table 4.10: Existing-Conditions vs. Effective FEMA 100-year Flood Elevations for Muncy Creek

HEC-RAS XS	*Effective FEMA Lettered XS*	*Water Surface Elevation (feet NAVD 88)*		
		Effective FEMA	*Existing-Conditions*	*Difference*
18917	L	509.5	511.9	2.4
17407	K	509.0	510.8	1.8
17107	J	508.8	510.5	1.7
16845	I	508.3	510.0	1.7
16455	H	506.3	508.9	2.6
15318	G	503.3	506.3	3.0
14870	F	502.6	505.1	2.5
12930	E	500.5	502.3	1.8
6975	D	490.3	494.3	4.0
5878	C	489.5	491.7	2.2
4512	B	487.8	491.1	3.3
986	A	482.4	488.5	6.1

**Red box indicated XS that impact Muncy Borough.*

As shown in Table 4.10, 1-percent annual chance (100-year) flood elevations increase significantly for Muncy Creek. This is a consequence of the approximately 43-percent increase in 1-percent annual chance (100-year) peak flows along Muncy Creek, as shown in Table 3.9. This is due to the fact that the effective FEMA flows were computed using regression equations that were developed prior to the Lee (2011) flood event and thus, this event was not considered in the effective FEMA analysis either through weighting or through the development of the actual equations.

Due to the significant increase in peak flows, the existing-conditions HEC-RAS model for Muncy Creek has tie-in issues with the effective FEMA FIS at the upstream end, which will be required to be resolved in order for this data to be submitted to FEMA for a map revision. FEMA requires that the upstream and downstream ends of a model tie-in within 0.5 ft. of the effective FEMA model. For this current study, USACE was scoped to only provide an updated flood risk assessment for Muncy Borough, therefore, were not scoped to extend the models until acceptable tie-ins are achieved. As seen in Table 4.10, there is a difference of 2.4 feet for the 1-percent annual chance (100-year) flood elevation at the tie-in point, near FEMA XS L.

4.3 GLADE RUN

An existing-conditions HEC-RAS model was developed to determine flood elevations along Glade Run. The model extends for approximately 4.2 miles, from the confluence with the West Branch Susquehanna River to approximately 0.6 miles upstream of Muncy Exchange Road (Figure 4.4).

Topographic Data

The HEC-GeoRAS pre-processor, using the project DEM described in Section 1.5, was used to develop cross-sections for Glade Run. The overbank portions of the cross-sections are from the DEM. The "wet sections" of the cross-sections were input based upon the channel field survey data from SRBC described in Section 2.2 of this report. For intermediate cross-sections between surveyed sections, the channel dimensions were interpolated. The source of channel data for each cross-section is listed in the description box in the geometric data editor, along with any correlation between effective FEMA cross-sections.

The HEC-RAS model has cross-sections that have river stations generated by the HEC-GeoRAS program. The station identifier is the stream distance in feet upstream of the confluence with the West Branch Susquehanna River.

Road Crossings

Data for road crossings were obtained from the field survey described in Section 2.1 of this report. A list of road crossings included in the Glade Run HEC-RAS model is located in Table 4.11.

Manning's Roughness Values

Roughness factors (Manning's "n") were chosen based upon engineering judgment, land use, aerial photography, and field observation. Values for Glade Run range from .042-.045 in the channel and from .013-.20 in the over bank areas.

Ineffective Flow Areas and Obstructions

Ineffective flow areas were set appropriately at bridges and other areas where flood flow would not be effective. Obstructions in the model represent buildings that would occupy storage space for floodwaters.

Contraction/Expansion Coefficients

Contraction/expansion values for the cross-sections at bridges were set at the FEMA recommended values of .3 and .5, respectively. All other cross-sections were assigned contraction/expansion coefficients of .1 and .3, respectively.

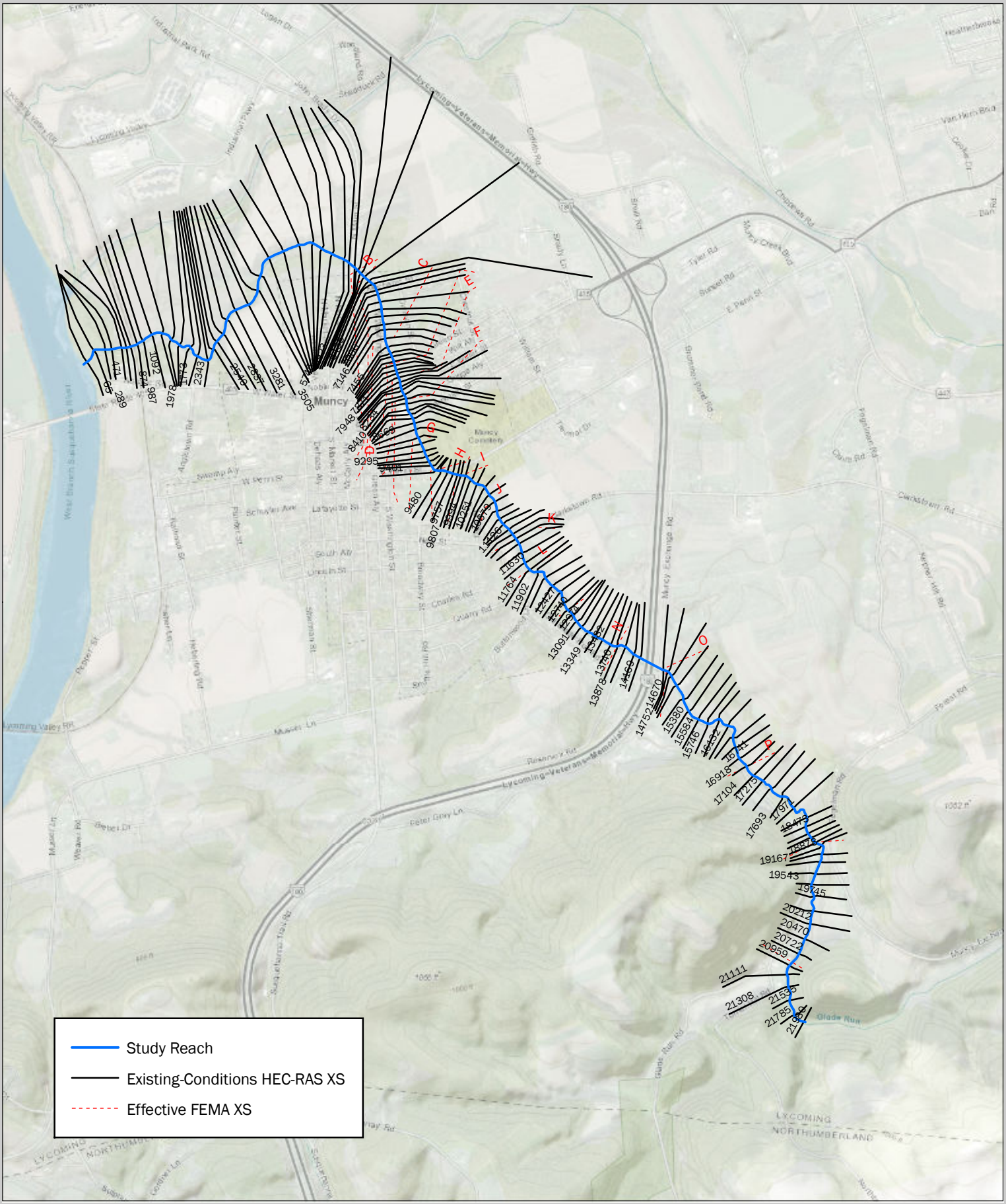


Figure 4.4
Glade Run
HEC-RAS Model

0 1,000 2,000 4,000 Feet

1 inch = 2,000 feet

Table 4.11: Road Crossings in the Glade Run HEC-RAS Model

HEC-RAS Station	*Name*	*Description*
654	Abandoned Road	Single stone arch, 11.5' wide, 9.8' high in center.
928	Railroad	Low flow is a 4.7' x 7.2' concrete ellipse in concrete headwall. High flow is 23.0' x 13.5' opening in railroad embankment above culvert.
5810	Main Street	Dual span concrete bridge with concrete headwall and 2.5 ft. round nosed pier. Total span is 38.5 feet.
6318	Mechanic Street	Single span concrete bridge with concrete headwalls. Total span is 25.7 feet at top and 23.7 ft. at bottom.
7491	Green Street	Single span concrete bridge with concrete headwalls. Total span is 30.0 feet.
8045	Water Street	Single span concrete bridge with concrete headwalls. Total span is 30.0 feet.
8460	Carpenter Street	Single span concrete bridge with concrete headwalls. Total span is 25.5 feet.
9336	Penn Street	Single span concrete bridge with concrete headwalls. Total span is 30.0 feet.
9781	Footbridge	Metal footbridge. Total span at top is 42.5 ft.
11172	Clarkstown Road	Single span concrete bridge with concrete headwall. Total span is 30.0 feet.
14392	U.S. Route 180 and Muncy Exchange Road	Twin 15.0' x 6.7' concrete box culverts in concrete headwall.
18709	Muncy Exchange Road	Single span concrete bridge with concrete headwall. Total span is 22.0 feet.

Reach Boundary Conditions

Normal depth was used as the downstream reach boundary condition for Glade Run, with a normal depth slope of .0007 being set for all profiles.

Calibration

There are no stream gages located along Glade Run, and HWM's were not available for the Lee (2011) flood event. Therefore, calibration of the Glade Run HEC-RAS model was not possible. Peak flows for Lee (2011) were developed in the HEC-HMS model, as shown in Table 3.11, and these values were input into the HEC-RAS model and the Lee (2011) storm event was run for reference purposes.

Results

Peak flows for all frequency storms shown in Table 3.11 were input into the HEC-RAS model, and the model was run in subcritical flow regime. Abbreviated results, at cross-sections that

are located in Muncy Borough, are shown in Table 4.12, with full results being located in Appendix E. The FEMA RASPLOT software was used to create a flood profile for Glade Run. This flood profile is located in Appendix F. Flood mapping for Glade Run is located in Exhibit 1.

Table 4.12: Existing-Conditions HEC-RAS Results in Muncy Borough-Glade Run

HEC-RAS XS	*Water Surface Elevation (feet NAVD 88)*						
	5yr	*10yr*	*25yr*	*50yr*	*100yr*	*200yr*	*500yr*
13740	530.7	531.6	532.5	533.1	533.8	534.9	536.4
12096	518.7	519.6	520.6	521.4	522.3	523.1	523.2
11220	512.1	513.2	514.6	515.5	518.4	519.6	522
11172	Clarkstown Road						
11126	511.5	512.5	513.7	514.4	514.8	515.2	515.7
10111	505.0	505.9	507.0	507.8	508.7	509.1	509.7
9807	502.6	503.6	505.6	506.9	507.9	508.2	508.6
9781	Footbridge						
9757	502.3	503.4	504.7	505.3	506.0	506.9	507.4
9401	500.6	501.8	503.5	504.6	505.4	505.8	506.4
9336	Penn Street						
9295	500.0	501.2	502.3	502.8	503.3	504.3	504.8
8910	497.5	498.7	500.1	501	501.5	502.1	503
8489	496.1	497.5	499.5	500.4	500.7	501.1	501.8
8460	Carpenter Street						
8410	495.7	497.0	498.5	499.2	499.7	500.2	501.1
8086	494.5	495.9	497.6	498.5	498.6	498.7	498.8
8045	Water Street						
8006	493.8	494.8	495.3	495.6	497.1	497.6	497.7
7732	492.9	494.2	495.2	495.9	496.6	497.1	497.7
7534	491.6	492.6	494.4	495.4	496.2	496.6	497.2
7491	Green Street						
7455	491.3	492.2	493.1	493.9	494.2	495	495.6
6559	488.8	489.4	490	490.3	490.6	490.9	491.2
6366	486.7	488	488.5	490	490.2	490.5	490.7
6318	Mechanic Street						
6252	486.1	486.5	487.1	487.2	487.4	487.6	487.9

Table 4.12: Existing-Conditions HEC-RAS Results in Muncy Borough-Glade Run (Continued)

HEC-RAS XS	*Water Surface Elevation (feet NAVD 88)*						
	5yr	*10yr*	*25yr*	*50yr*	*100yr*	*200yr*	*500yr*
5861	484.7	485.6	486.1	486.4	486.7	486.9	487.3
5810	Main Street						
5745	484.2	485.1	485.6	485.8	486.0	486.7	487.1
987	478.3	479.4	480.0	480.4	480.8	481.3	481.8
928	Railroad						
874	473.7	474.2	474.7	475.2	475.7	476.2	477.0
731	473.5	474.0	474.5	474.9	475.3	475.8	476.6
654	Abandoned Road						
572	472.5	473.1	473.7	474.2	474.6	475.1	475.8
65	472.1	472.7	473.2	473.7	474.1	474.6	475.3

Floodway Encroachment Analysis

HEC-RAS was used to complete the floodway encroachment analysis for Glade Run. Method 4 in HEC-RAS was initially used to specify a target water-surface increase, which is 1-foot. Method 1 was then employed to further refine the floodway encroachment stations. A floodway data table, showing the results of the floodway encroachment analysis for the Glade Run, is located in Appendix G.

Tie-In to Effective FEMA Study

The results of the existing-conditions HEC-RAS model for Glade Run were compared to the effective FEMA 1-percent annual chance (100-year) flood elevations (Table 4.13). As shown in Table 4.12, 1-percent annual chance (100-year) flood elevations generally decrease with the existing-conditions analysis. This can be attributed to a slight decrease in peak flows, the use of better topographic data for both the channel and overbank areas, as well as bridges.

Table 4.13: Existing-Conditions vs. Effective FEMA 100-year Flood Elevations for Glade Run

HEC-RAS XS	*Effective FEMA Lettered XS*	*Water Surface Elevation (feet NAVD 88)*		
		Effective FEMA	*Existing-Conditions*	*Difference*
20959	R	619.5	604.1	-15.4
18773	Q	584.7	582.0	-2.7
16918	P	565.7	562.6	-3.1
14670	O	546.4	545.7	-0.7
13740	N	536.0	533.8	-2.2
12740	M	529.0	525.7	-3.3
11764	L	520.5	519.0	-1.5
11220	K	520.5	518.4	-2.1
10528	J	511.0	509.8	-1.2
9807	I	506.3	507.9	1.6
9401	H	506.3	505.4	-0.9
8807	G	503.4	501.2	-2.2
8156	F	503.4	498.7	-4.7
7798	E	499.6	496.6	-3.0
7534	D	496.8	496.2	-0.6
7146	C	493.2	491.8	-1.4
6079	B	493.1	486.8	-6.3
5923	A	489.8	486.8	-3.0

**Red box indicated XS that impact Muncy Borough.*

5 FLOOD RISK ASSESSMENT AND CONCLUSIONS

5.1 FLOOD RISK ASSESSMENT

A flood risk assessment was completed for Muncy Borough using the results of the existing-conditions HEC-RAS modeling described in Section 4 and the Floodprone Building Inventory Database discussed in Section 2.3 and Appendix A. The results of the existing-conditions HEC-RAS models were used to create digital floodplain inundation, depth grids, and water surface elevation grids for all storm events included in this investigation. The HEC-GeoRAS postprocessor and the project DEM were used to delineate the floodplain boundaries and develop the depth and water surface elevation grids. All mapping products are provided digitally in GIS shapefile and raster format, respectively, on the attached project disc. Exhibit 1 contains existing-conditions flood mapping as a result of this investigation.

The damage storm for each flooding source was determined by comparing the low opening elevation with the flood elevations from this study (refer to Appendix A). By determining the damage storm, taking into account intervening high ground, the data in the floodprone building database can be used to assess the overall risk of flood damages within Muncy Borough and the surveyed area. For the purposes of this study, a building is considered damaged when floodwaters enter the building through the low opening. Certainly, for buildings where the low opening is much higher than the LAG elevation, damages to the foundation may occur due to floodwaters touching the outside of the building without entering the building, however, this possible occurrence was not included in this assessment.

Based upon the data in the floodprone building database, a total of 658 buildings are at risk of incurring damages from floods with a recurrence interval of less than 500-years for West Branch Susquehanna River, 250 buildings for Muncy Creek, and 146 buildings for Glade Run (Table 5.1).

Table 5.1: Number of Buildings at Risk of Damages by Flooding Source

Storm Event	*Number of Buildings*		
	West Branch Susquehanna River	*Muncy Creek*	*Glade Run*
2-year	0	0	0
5-year	3	0	2
10-year	21	0	5
25-year	127	4	29
50-year	214	22	60
100-year	494	89	77
200-year	584	197	105
500-year	658	250	146

Buildings are at risk of flooding from all three flooding sources, at different times. Meaning, buildings flooded in the study area as a result of Muncy Creek, such as during Lee (2011), without flooding occurring on West Branch Susquehanna River or Glade Run. Ivan (2004) flooded the study area from the West Branch Susquehanna River, without flooding occurring on Muncy Creek or Glade Run. Thus, buildings in the study area are at a higher level or risk due to the fact that they could potentially flood from three different flooding sources from three different types of storms. To assess the impact of this, a "Risk Number" was determined for each building to identify buildings that are at a higher risk of flooding because they are located in the floodplain of two or all three of the flooding sources. The Risk Number is a numerical value determined by adding the probabilities of the damage storm of all three flooding sources together at each building. For example, a 10-year damage storm has a 10-percent chance of occurring in any given year, and a 100-year storm has a 1-percent chance of occurring in any given year. A flood on Glade Run, Muncy Creek, and West Branch Susquehanna River can be considered mutually exclusive, assuming they will not occur at the same time. Therefore, the risk number can be determined by adding the damage storm probabilities together (See Appendix A for example). The higher the risk number, the more likely the building will experience flood damages as all flooding sources are taken into consideration collectively. Risk numbers for the surveyed buildings range from 0, meaning no risk, to 34, which is a building that has a higher risk of sustaining damages from flooding from one of the three flooding sources.

Figure 5.1 shows the risk numbers for buildings within the study area. The buildings with the highest risk numbers are concentrated in the northern end of Muncy Borough, along North Main Street, North Market Street, and North Washington Street north of Brady Street.

5.2 CONCLUSIONS

USACE was tasked in providing floodplain management support to complete tasks outlined in the Greater Muncy Resilience Plan Scope of Work. This flood risk assessment report for Muncy Borough summarizes the completion of Tasks 1 and 2, which included: (1) conducting revised hydrologic and hydraulic analyses of riverine flooding sources effecting the study area and use the results of the analyses to develop up-to-date floodplain mapping, flood depth grids, and flood elevations for multiple frequencies of flooding (2-year flood to 500-year flood); and (2) determining the impact to buildings and roadways from existing-conditions riverine floods. Other tasks, which include assessing flood risk from stormwater flooding and developing planning-level solutions to reduce the risk of both riverine and stormwater-related flooding within the study area, will be completed in future phases of the project.

Section 3 of this document discusses the revised hydrologic analyses that were completed for West Branch Susquehanna River, Muncy Creek, and Glade Run. Section 4 outlines the hydraulic analyses, which included the development of calibrated, geo-referenced steady-state HEC-RAS models to calculate flood elevations for the existing-conditions 2-, 5-, 10-, 25-, 50-, 100-, 200- and 500-year flood events, and complete a 100-year floodway encroachment analysis for all flooding sources. Section 5 includes results of the flood risk

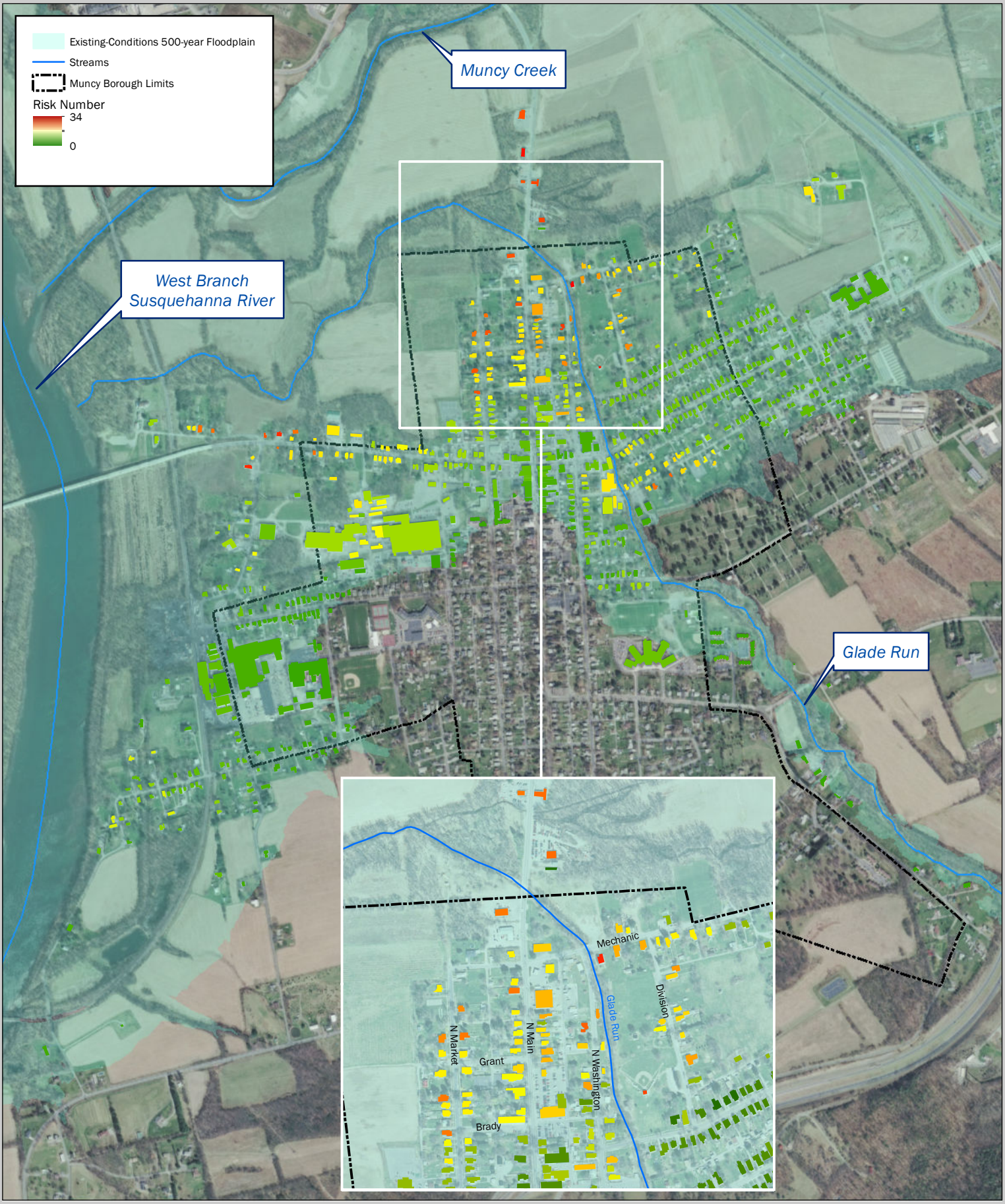


Figure 5.1
Flood Risk Assessment

0 600 1,200 2,400 Feet

1 inch = 1,200 feet

assessment, which shows the number of buildings at risk of flood damages from all storm events modeled. A "risk number" was developed to determine which buildings are at higher risk of flooding due to being located in the floodplain of two or all three flooding sources. The results of the building survey discussed in Section 2.3 were compiled into a floodprone building inventory in GIS format, which can be a valuable tool for not only this study moving forward, but for local planners and emergency managers.

6 REFERENCES

Federal Emergency Management Agency (FEMA), Guidance for Flood Risk Analysis and Mapping-Data Capture-Workflow Details, May 2016

Lycoming County Planning and Community Development Department (LCPCD), 2017 Multi-Municipal Comprehensive Plan Review and Implementation Strategy for the Muncy Creek Planning Area, Lycoming County, Pennsylvania, 2017.

U.S. Army Corps of Engineers (USACE), River Analysis System HEC-RAS, User's Manual, Version 5.0, February 2016.

United States Geological Survey (USGS), Water Resources Investigation Report 00-4189, Techniques for Estimating Magnitude and Frequency of Peak Flows for Pennsylvania Streams, by Marla H. Stuckey and Lloyd A. Reed, 2000.

United States Geological Survey (USGS), Scientific Investigations Report 2008-5102, Regression Equations for Estimating Flood Flows at Selected Recurrence Intervals for Ungaged Streams in Pennsylvania, by Mark A. Roland and Marla H. Stuckey, 2008.

United States Geological Survey (USGS), Guidelines for determining flood flow frequency Bulletin 17C , by England, J.F., Jr., Cohn, T.A., Faber, B.A., Stedinger, J.R. Thomas, W.O., Jr., Veilleux, A.G., Kiang, J.E., and Mason, R.R., Jr., 2018.

Water Resources Council (WRC), Hydrology Committee, Guidelines for Determining Flood Flow Frequencies, Bulletin 17B, 1981.

APPENDIX A

Floodprone Building Inventory Database Documentation

APPENDIX A: FLOODPRONE BUILDING INVENTORY-GIS DATA LAYER

The results of the building survey discussed in Section 2.3 were compiled into a floodprone building inventory in GIS format. GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying forms of geographically referenced information. It allows users to understand and visualize data in unique ways. By using GIS for the floodprone building inventory, users can overlay this data onto other data layers for the Borough to better manage floodplains and be better prepared for a flood event.

The floodprone building inventory is structured to include certain data that is required for the FEMA Elevation Certificate. The Elevation Certificate is an important administrative tool for the NFIP. It is used to provide elevation information to ensure compliance with community floodplain management ordinances, to determine the proper flood insurance premium rates, and to support requests for Letters of Map Amendment (LOMA) or Letters of Map Revision based on Fill (LOMR-F). Because the intent of the building survey was to determine the storm frequency in which damages from flooding begin to occur at each building to assess overall flood risk in the community, the data collected is not enough to complete an Elevation Certificate in its entirety. Therefore, the data in this database alone may not be sufficient to determine proper flood insurance rate premiums.

The data collected from the building survey was entered into a GIS shapefile (titled MuncyFloodproneBuildingInventory.shp) which includes a separate polygon for each building. The building outlines were digitized based upon the most recent aerial photography available. Each polygon, or data point, is complete with *attribution*. Attribution is the data collected during the building survey for each individual building. There are several fields within the attribution table for each building. A *field* is a specific piece of data for each individual building. The user of the floodprone building inventory can click on any building and visualize all information collected during the building survey.

A list and description of the fields included in the attribution table of the floodprone building inventory is the remainder of this section. The horizontal datum of the floodprone building inventory database is NAD1983 State Plane Pennsylvania North FIPS 3701 Feet.

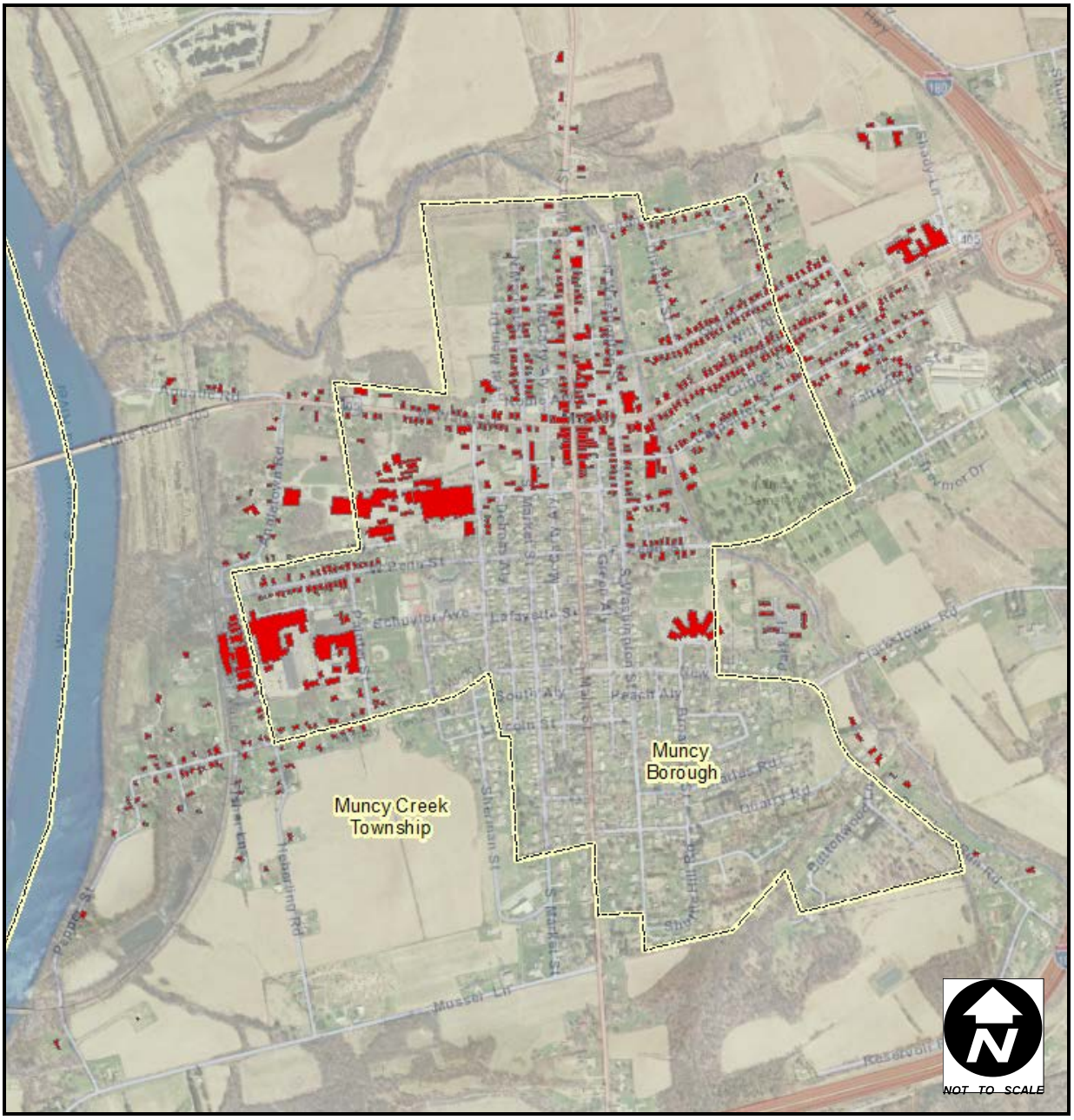
Id: Building Number

Each building included in the survey was assigned a random building number based upon the progression of the survey. This building number can be used as the primary identifier of the building for overall database and flood risk management purposes. The building numbers range from 1 to 696. A map of the buildings included in the survey and in the floodprone building inventory as shown in Figure A.1.

ADDRESS: Building Address

This field contains the address of the building. The correct address was confirmed during the LCPCD field survey.

Figure A.1: Buildings included in Database



TAX_PARCEL: Building Tax Parcel

This field contains the tax parcel that the building is located on. A GIS layer containing parcel data was provided by LCPCD and used to populate this data field. The number in the database is equivalent to the TXID_NMBER field in the parcel data layer.

BLDG_USE: Building Use

This field contains the current use of the building. The only two types of buildings included in the building survey were residential and commercial. Garages, sheds, and other out-buildings were not included in the building survey.

BLDG_DIA_N: Building Diagram Number

This field contains a description of the type of building construction defined on the FEMA Elevation Certificate.

NFIP_COMM_: FEMA NFIP Community Identification Number

This field contains the FEMA NFIP Community Identification Number. All buildings included in the survey are within the corporate limits of Muncy Borough or Muncy Creek Township, thus, the number listed in this field is 420650 or 420649 for every building, which is the FEMA community identification number for Muncy Borough or Muncy Creek Township, respectively.

COUNTY: County

This field contains the County Name. All buildings included in the survey are located in Lycoming County.

STATE: State

This field contains the State Name. All buildings included in the survey are located in Pennsylvania.

MAP_NO: Effective FEMA FIRM Map Number

This field contains the effective FEMA FIRM Map Number in which the building is located on. The effective FEMA FIS and FIRMs are dated June 2, 2016. The map numbers that span the survey area are 42081C0453F and 42081C0454F.

MAP_DATE: Effective FEMA FIRM Map Date

This field contains the date of the effective FEMA FIRM map that the building is located on. For all buildings, this date is June 2, 2016.

FEMA_BFE: Effective FEMA Base Flood Elevation

This field contains the effective FEMA Base Flood Elevation (BFE) at the building, in feet referenced to NAVD 88. The BFE, also known as the 1-percent annual chance flood elevation, or 100-year flood elevation, is the flood that has a 1-percent chance of occurring each year. More importantly, FEMA uses this elevation to map the Special Flood Hazard

Area (SFHA), or 100-year floodplain, on their effective FIRMs. If a building is located within the SFHA, the owner is subject to the mandatory purchase of flood insurance on any Federally-backed loan. The BFE is also used to establish flood insurance rates for buildings that have purchased flood insurance. The effective FEMA FIS was used to determine the effective BFE at each building included in the survey. This elevation is currently the regulatory BFE at the building for flood insurance purposes, not the BFE from the revised USACE study.

VERT_DATUM: Vertical Datum

This field contains the vertical datum used for the elevations taken during the building survey. The vertical datum used is NAVD 88.

BENCHMARK: Benchmark

The survey utilized KeyNetGPS, a Trimble VRS (Virtual Reference Station) Network. KeyNetGPS is a series of continuously operating, high precision GNSS reference stations. These reference stations have all been linked together using Trimble VRS3Net App software, creating a VRS.

FOUNDATION: Building Foundation

This field contains the foundation of the surveyed building. The foundation types used include “Below Grade” and “Slab on Grade”.

LOW_FLOOR: Low Floor Elevation

This field contains the surveyed low floor elevation, in feet NAVD 88.

LAG: Lowest Adjacent Grade Elevation

This field contains the surveyed lowest adjacent grade elevation, in feet NAVD 88.

LAG_LOC: Location of Lowest Adjacent Grade Elevation

This field contains the location of the surveyed lowest adjacent grade elevation. This location is typically a corner of the building (NE, SE, NW, SW), a side of the building (east, west, north, south), or more specific description such as window well, front doorway, or top of basement stairway.

LOW_OPEN: Low Opening Elevation

This field contains the surveyed low opening elevation, in feet NAVD 88.

LOW_OPEN_L: Location of Low Opening

This field contains the location of the surveyed low opening elevation. This location is typically a doorway, window well, or top of basement stairway.

NOTES: Survey Notes

This field contains survey notes.

SURVEY_DAT: Date of Building Survey

This field contains the date the building was surveyed.

FEMA_FW: Effective FEMA Floodway

This field identifies whether the building is located graphically within the effective FEMA regulatory floodway. The FEMA regulatory floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases to flood heights. The regulatory floodway is significant because communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations.

REV_FW: Revised 100-year Floodway

This field identifies whether the building is located graphically within the regulatory floodway delineated in the revised USACE study.

LAT: Latitude

This field contains the latitude of the centroid of the building polygon.

LONG: Longitude

This field contains the longitude of the centroid of the building polygon.

MAP_FEMA: In FEMA SFHA?

This field identifies whether the building is graphically mapped in the effective FEMA SFHA, or 100-year floodplain. If a building is graphically mapped in the effective SFHA, the building may be required to carry flood insurance on any Federally-backed loan.

GR_XS, MC_XS, and WB_XS: HEC-RAS Cross-Section

This field identifies the HEC-RAS cross-section used to determine the flood elevations, based upon the revised USACE study, at each building. “GR” represents Glade Run, “MC”

represent Muncy Creek, and "WB" represents the West Branch Susquehanna River. "n/a" means that flooding from that respective flooding source does not impact the building.

GR_2YR, GR_5YR, GR_10YR, GR_25YR, GR_50YR, GR_100YR, GR_200YR, GR_500YR; MC_2YR, MC_5YR, MC_10YR, MC_25YR, MC_50YR, MC_100YR, MC_200YR, MC_500YR; WB_2YR, WB_5YR, WB_10YR, WB_25YR, WB_50YR, WB_100YR, WB_200YR, WB _500YR: : Flood Elevation at Building

There are eight fields in the building inventory that represent the flood events for each building from the revised USACE Study. Eight flood events were included in the analyses in the study, ranging from small, frequent events (such as a 2-year flood, one having a 50-percent chance of occurring in any given year) to large, less frequent events (such as a 500-year flood, one having a 0.2-percent chance of occurring in any given year). "GR" represents Glade Run, "MC" represent Muncy Creek, and "WB" represents the West Branch Susquehanna River. A "None" or "n/a" means that flooding from that respective flooding source does not impact the building. All elevations are in feet NAVD88.

GR_DS, MC_DS, and WB_DS: Damage Storm

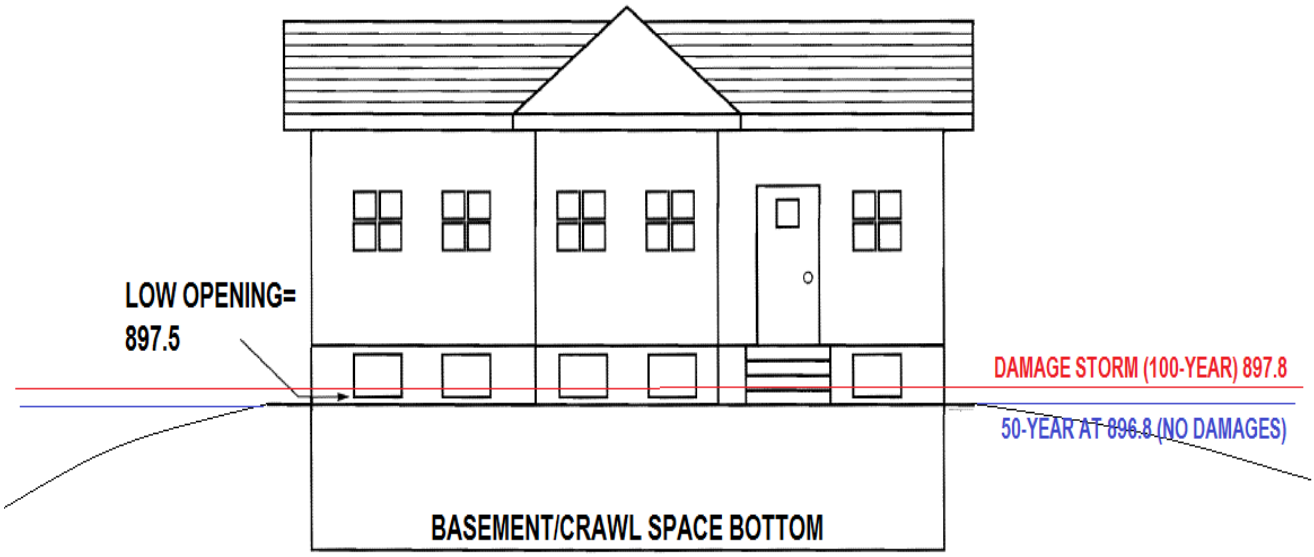
This field identifies the frequency of storm in which a building first experiences damages from flooding. For the purposes of this building inventory, it is defined as the damage storm. The damage storm is determined by comparing the low opening elevation with the flood elevations from the revised USACE Study. Once the low opening elevation is reached by floodwaters, damages will occur to the inside of the building. For example, if the low opening of a building is at an elevation of 100 ft., and the 10-year flood elevation is at 99.0 ft., the building would not sustain flood damages during a 10-year flood event. The next larger, less frequent flood event included in the study is the 25-year flood event, and if that flood elevation is at an elevation of 101.0 ft., flood damages would occur to the building. The damage storm for this building would be the 25-year flood event. This concept is further illustrated in A.2.

At times, the low opening elevation of the building may be lower than the surrounding ground, and although the low opening elevation may be lower than a respective flood elevation, the intervening high ground prevents the floodwaters from actually reaching the low opening; thus, intervening high ground was taken into account when determining the damage storm. "GR" represents Glade Run, "MC" represent Muncy Creek, and "WB" represents the West Branch Susquehanna River. A "None" or "n/a" means that flooding from that respective flooding source does not impact the building. All elevations are in feet NAVD88.

Figure A.2: Determination of Damage Storm

Low Opening Elevation= 897.5			
Storm Event	Flood Elevation	Depth of Flooding at Low Opening (Flood Elevation-Low Opening)	Damages
2-year	893.2	-4.3	No
5-year	894.0	-3.5	No
10-year	894.7	-2.8	No
25-year	895.5	-2.0	No
50-year	896.8	-0.7	No
100-year	897.8	0.3	Yes
200-year	898.7	1.2	Yes
500-year	900.6	3.1	Yes

Damage Storm



GR_FP, MC_FP, and WB_FP: Floodplain from Revised USACE Study

This field identifies the most frequent, smallest storm event floodplain that a building is located in. A building is considered to be in the floodplain if the LAG elevation is below the respective storm event flood elevation. The LAG elevation from the building survey was compared to the flood elevation from the revised USACE Study to make this determination, taking into consideration intervening high ground that may be present. "GR" represents Glade Run, "MC" represent Muncy Creek, and "WB" represents the West Branch Susquehanna River. A "None" or "n/a" means that flooding from that respective flooding source does not impact the building. All elevations are in feet NAVD88.

MAP_NOTES: Floodplain mapping notes

This field outlines notes from the determination of the mapped floodplain. The notes include "High ground between LAG and WSE for some profiles", which means that intervening high ground is present for some profiles, and "LAG elevation more accurate than mapping", meaning that the mapped floodplain graphically shows the building in the respective floodplain, but based upon the LAG elevation, it is not.

RISK_FCTR: "Risk Number"

Since there are three flooding sources that could impact the buildings in the survey area, a "Risk Number" was determined for each building to identify buildings that are at a higher risk of flooding because they are located in the floodplain of two or all three of the flooding sources. The Risk Number is a numerical value determined by adding the probabilities of the damage storm of all three flooding sources together at each building. For example, a 10-year damage storm has a 10-percent chance of occurring in any given year, and a 100-year storm has a 1-percent chance of occurring in any given year. A flood on Glade Run, Muncy Creek, and West Branch Susquehanna River can be considered mutually exclusive, assuming they will not occur at the same time. Therefore, the risk number can be determined by adding the damage storm probabilities together. Examples of the determination of the risk number are shown below:

Building A		
Stream	Damage Storm	% chance of occurring in any given year
Glade Run	10-year	10
Muncy Creek	50-year	2
West Branch Susquehanna River	25-year	4
Risk Number		**16**

Building B		
Stream	Damage Storm	% chance of occurring in any given year
Glade Run	500-year	0.2
Muncy Creek	100-year	1
West Branch Susquehanna River	100-year	1
Risk Number		**2.2**

The higher the risk number, the more likely the building will experience flood damages as all flooding sources are taken into consideration collectively. Risk numbers for the surveyed buildings range from 0, meaning no risk, to 34, which is a building that has a higher risk of sustaining damages from flooding from one of the three flooding sources.

APPENDIX B

Hydrologic Analysis for West Branch Susquehanna River

```
1
  Program PeakFq           U. S. GEOLOGICAL SURVEY             Seq.002.000
  Version 7.1         Annual peak flow frequency analysis      Run Date / Time
  3/14/2014                                                    11/29/2017 21:17

                        --- PROCESSING OPTIONS ---

                      Plot option         = None
                      Basin char output   = None
                      Print option        = Yes
                      Debug print         = No
                      Input peaks listing = Long
                      Input peaks format  = WATSTORE peak file

                      Input files used:
                         peaks (ascii)  -
C:\Users\chico\Desktop\WBWilliamsport\PEAK.TXT
                         specifications -
C:\Users\chico\Desktop\WBWilliamsport\PKFQWPSF.TMP
                      Output file(s):
                         main - C:\Users\chico\Desktop\WBWilliamsport\PEAK.PRT


1


  Program PeakFq           U. S. GEOLOGICAL SURVEY             Seq.001.001
  Version 7.1         Annual peak flow frequency analysis      Run Date / Time
  3/14/2014                                                    11/29/2017 21:17

          Station - 01551500  WB Susquehanna River at Williamsport, PA


                     I N P U T   D A T A   S U M M A R Y

                Number of peaks in record            =       55
                Peaks not used in analysis           =        0
                Systematic peaks in analysis         =       55
                Historic peaks in analysis           =        0
                Beginning Year                       =     1962
                Ending Year                          =     2016
                Historical Period Length             =        0
                Generalized skew                     =    0.311
                     Standard error                  =    0.550
                     Mean Square error               =    0.303
                Skew option                          = STATION SKEW
                Gage base discharge                  =      0.0
                User supplied high outlier threshold =   --
```

```
User supplied PILF (LO) criterion    =   --
Plotting position parameter          =     0.00
Type of analysis                       BULL.17B
PILF (LO) Test Method                      GBT
Perception Thresholds            =   Not Applicable
Interval Data                    =   Not Applicable


*********  NOTICE  --  Preliminary machine computations.        *********
*********  User responsible for assessment and interpretation.  *********

  WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE.                  0.0
  WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE.    295645.2
  WCF195I-NO LOW OUTLIERS WERE DETECTED BELOW CRITERION.          22309.3
 *WCF151I-17B WEIGHTED SKEW REPLACED BY USER OPTION.     0.381     0.408  -1


                                     Kendall's Tau Parameters

                                                        MEDIAN   No. of
                                       TAU    P-VALUE    SLOPE   PEAKS
                                  ---------------------------------------
            SYSTEMATIC RECORD     -0.083      0.376   -243.750    55


1


 Program PeakFq           U. S. GEOLOGICAL SURVEY            Seq.001.002
 Version 7.1         Annual peak flow frequency analysis     Run Date / Time
 3/14/2014                                                   11/29/2017 21:17

         Station - 01551500  WB Susquehanna River at Williamsport, PA


          ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

                       FLOOD BASE                   LOGARITHMIC
                 ----------------------  -------------------------------
                            EXCEEDANCE                STANDARD
                  DISCHARGE PROBABILITY     MEAN     DEVIATION     SKEW
                 -------------------------------------------------------
 SYSTEMATIC RECORD       0.0     1.0000     4.9096      0.2001      0.408
 BULL.17B ESTIMATE       0.0     1.0000     4.9096      0.2001      0.408

 BULL.17B ESTIMATE OF MSE OF AT-SITE SKEW     0.1217
```

ANNUAL FREQUENCY CURVE -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

ANNUAL EXCEEDANCE PROBABILITY	BULL.17B ESTIMATE	SYSTEMATIC RECORD	<-- FOR BULLETIN 17B ESTIMATES --> VARIANCE OF EST.	95% CONFIDENCE INTERVALS LOWER	UPPER
0.9950	29560.	29560.	----	23730.0	34970.0
0.9900	31970.	31970.	----	25990.0	37500.0
0.9500	40300.	40300.	----	33930.0	46160.0
0.9000	46080.	46080.	----	39540.0	52160.0
0.8000	54760.	54760.	----	48000.0	61230.0
0.6667	65020.	65020.	----	57930.0	72140.0
0.5000	78710.	78710.	----	70900.0	87240.0
0.4292	85480.	85480.	----	77150.0	94970.0
0.2000	118300.	118300.	----	105900.0	134700.0
0.1000	149000.	149000.	----	131200.0	174600.0
0.0400	193400.	193400.	----	166000.0	235500.0
0.0200	230700.	230700.	----	194300.0	289000.0
0.0100	271800.	271800.	----	224600.0	350000.0
0.0050	317200.	317200.	----	257300.0	419400.0
0.0020	384800.	384800.	----	304800.0	526200.0

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.003
Version 7.1 Annual peak flow frequency analysis Run Date / Time
3/14/2014 11/29/2017 21:17

Station - 01551500 WB Susquehanna River at Williamsport, PA

I N P U T D A T A L I S T I N G

WATER YEAR	PEAK VALUE	PEAKFQ CODES	REMARKS
1962	93000.0	K	
1963	100000.0	K	
1964	197000.0	K	
1965	68900.0	K	
1966	84900.0	K	
1967	67300.0	K	
1968	52600.0	K	
1969	37300.0	K	
1970	91400.0	K	
1971	66500.0	K	

1972	279000.0	K
1973	80600.0	K
1974	67700.0	K
1975	169000.0	K
1976	82400.0	K
1977	77400.0	K
1978	72600.0	K
1979	147000.0	K
1980	74300.0	K
1981	105000.0	K
1982	81000.0	K
1983	45600.0	K
1984	178000.0	K
1985	50500.0	K
1986	90900.0	K
1987	71400.0	K
1988	72300.0	K
1989	71600.0	K
1990	47600.0	K
1991	75900.0	K
1992	37400.0	K
1993	122000.0	K
1994	113000.0	K
1995	64500.0	K
1996	191000.0	K
1997	108000.0	K
1998	95500.0	K
1999	72000.0	K
2000	49700.0	K
2001	33100.0	K
2002	75800.0	K
2003	78300.0	K
2004	203000.0	K
2005	89400.0	K
2006	99200.0	K
2007	81200.0	K
2008	81100.0	K
2009	55900.0	K
2010	118000.0	K
2011	143000.0	K
2012	40600.0	K
2013	73800.0	K
2014	72700.0	K
2015	57400.0	K
2016	35100.0	K

Explanation of peak discharge qualification codes

PeakFQ CODE	NWIS CODE	DEFINITION
D	3	Dam failure, non-recurrent flow anomaly
G	8	Discharge greater than stated value
X	3+8	Both of the above
L	4	Discharge less than stated value
K	6 OR C	Known effect of regulation or urbanization
H	7	Historic peak

- Minus-flagged discharge -- Not used in computation
  -8888.0 -- No discharge value given
- Minus-flagged water year -- Historic peak used in computation

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.004
Version 7.1 Annual peak flow frequency analysis Run Date / Time
3/14/2014 11/29/2017 21:17

Station - 01551500 WB Susquehanna River at Williamsport, PA

EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	B17B ESTIMATE
1972	279000.0	0.0179	0.0179
2004	203000.0	0.0357	0.0357
1964	197000.0	0.0536	0.0536
1996	191000.0	0.0714	0.0714
1984	178000.0	0.0893	0.0893
1975	169000.0	0.1071	0.1071
1979	147000.0	0.1250	0.1250
2011	143000.0	0.1429	0.1429
1993	122000.0	0.1607	0.1607
2010	118000.0	0.1786	0.1786
1994	113000.0	0.1964	0.1964
1997	108000.0	0.2143	0.2143
1981	105000.0	0.2321	0.2321
1963	100000.0	0.2500	0.2500
2006	99200.0	0.2679	0.2679
1998	95500.0	0.2857	0.2857
1962	93000.0	0.3036	0.3036

```
    1970    91400.0     0.3214      0.3214
    1986    90900.0     0.3393      0.3393
    2005    89400.0     0.3571      0.3571
    1966    84900.0     0.3750      0.3750
    1976    82400.0     0.3929      0.3929
    2007    81200.0     0.4107      0.4107
    2008    81100.0     0.4286      0.4286
    1982    81000.0     0.4464      0.4464
    1973    80600.0     0.4643      0.4643
    2003    78300.0     0.4821      0.4821
    1977    77400.0     0.5000      0.5000
    1991    75900.0     0.5179      0.5179
    2002    75800.0     0.5357      0.5357
    1980    74300.0     0.5536      0.5536
    2013    73800.0     0.5714      0.5714
    2014    72700.0     0.5893      0.5893
    1978    72600.0     0.6071      0.6071
    1988    72300.0     0.6250      0.6250
    1999    72000.0     0.6429      0.6429
    1989    71600.0     0.6607      0.6607
    1987    71400.0     0.6786      0.6786
    1965    68900.0     0.6964      0.6964
    1974    67700.0     0.7143      0.7143
    1967    67300.0     0.7321      0.7321
    1971    66500.0     0.7500      0.7500
    1995    64500.0     0.7679      0.7679
    2015    57400.0     0.7857      0.7857
    2009    55900.0     0.8036      0.8036
    1968    52600.0     0.8214      0.8214
    1985    50500.0     0.8393      0.8393
    2000    49700.0     0.8571      0.8571
    1990    47600.0     0.8750      0.8750
    1983    45600.0     0.8929      0.8929
    2012    40600.0     0.9107      0.9107
    1992    37400.0     0.9286      0.9286
    1969    37300.0     0.9464      0.9464
    2016    35100.0     0.9643      0.9643
    2001    33100.0     0.9821      0.9821
1


 End PeakFQ analysis.
   Stations processed :       1
   Number of errors   :       0
   Stations skipped   :       0
   Station years      :      55
```

```
Data records may have been ignored for the stations listed below.
(Card type must be Y, Z, N, H, I, 2, 3, 4,  or *.)
(2, 4, and * records are ignored.)

 For the station below, the following records were ignored:

 FINISHED PROCESSING STATION:  01551500       USGS WB Susquehanna River at Willi


 For the station below, the following records were ignored:

 FINISHED PROCESSING STATION:
```

```
1
  Program PeakFq           U. S. GEOLOGICAL SURVEY             Seq.002.000
  Version 7.1         Annual peak flow frequency analysis      Run Date / Time
  3/14/2014                                                    11/29/2017 21:15

                        --- PROCESSING OPTIONS ---

                      Plot option         = None
                      Basin char output   = None
                      Print option        = Yes
                      Debug print         = No
                      Input peaks listing = Long
                      Input peaks format  = WATSTORE peak file

                      Input files used:
                         peaks (ascii)  -
C:\Users\chico\Desktop\WBLewisburg\PEAK.TXT
                         specifications -
C:\Users\chico\Desktop\WBLewisburg\PKFQWPSF.TMP
                      Output file(s):
                         main - C:\Users\chico\Desktop\WBLewisburg\PEAK.PRT


1


  Program PeakFq           U. S. GEOLOGICAL SURVEY             Seq.001.001
  Version 7.1         Annual peak flow frequency analysis      Run Date / Time
  3/14/2014                                                    11/29/2017 21:15

       Station - 01553500  West Branch Susquehanna River at Lewisburg, PA


                    I N P U T   D A T A   S U M M A R Y

                Number of peaks in record           =       51
                Peaks not used in analysis          =        0
                Systematic peaks in analysis        =       51
                Historic peaks in analysis          =        0
                Beginning Year                      =     1966
                Ending Year                         =     2016
                Historical Period Length            =        0
                Generalized skew                    =    0.349
                     Standard error                 =    0.550
                     Mean Square error              =    0.303
                Skew option                         = STATION SKEW
                Gage base discharge                 =      0.0
                User supplied high outlier threshold =   --
```

```
User supplied PILF (LO) criterion    =   --
Plotting position parameter          =     0.00
Type of analysis                       BULL.17B
PILF (LO) Test Method                      GBT
Perception Thresholds            =   Not Applicable
Interval Data                    =   Not Applicable


*********  NOTICE  --  Preliminary machine computations.        *********
*********  User responsible for assessment and interpretation.  *********

  WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE.                  0.0
  WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE.    320699.1
  WCF195I-NO LOW OUTLIERS WERE DETECTED BELOW CRITERION.          24531.1
 *WCF151I-17B WEIGHTED SKEW REPLACED BY USER OPTION.     0.431     0.467  -1


                                     Kendall's Tau Parameters

                                                      MEDIAN   No. of
                                       TAU    P-VALUE    SLOPE   PEAKS
                                 ---------------------------------------
            SYSTEMATIC RECORD     -0.051      0.603   -146.154    51


1


 Program PeakFq           U. S. GEOLOGICAL SURVEY            Seq.001.002
 Version 7.1         Annual peak flow frequency analysis     Run Date / Time
 3/14/2014                                                   11/29/2017 21:15

      Station - 01553500  West Branch Susquehanna River at Lewisburg, PA


          ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

                       FLOOD BASE                   LOGARITHMIC
                 ----------------------  -------------------------------
                            EXCEEDANCE                STANDARD
                  DISCHARGE PROBABILITY     MEAN     DEVIATION     SKEW
                 -------------------------------------------------------
 SYSTEMATIC RECORD       0.0     1.0000     4.9479      0.2011      0.467
 BULL.17B ESTIMATE       0.0     1.0000     4.9479      0.2011      0.467

 BULL.17B ESTIMATE OF MSE OF AT-SITE SKEW     0.1343
```

ANNUAL FREQUENCY CURVE -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

ANNUAL EXCEEDANCE PROBABILITY	BULL.17B ESTIMATE	SYSTEMATIC RECORD	<-- FOR BULLETIN 17B ESTIMATES --> VARIANCE OF EST.	95% CONFIDENCE INTERVALS LOWER	UPPER
0.9950	32940.	32940.	----	26250.0	39110.0
0.9900	35460.	35460.	----	28610.0	41760.0
0.9500	44240.	44240.	----	36980.0	50910.0
0.9000	50380.	50380.	----	42920.0	57300.0
0.8000	59660.	59660.	----	51960.0	67020.0
0.6667	70700.	70700.	----	62640.0	78800.0
0.5000	85570.	85570.	----	76700.0	95260.0
0.4292	92960.	92960.	----	83520.0	103800.0
0.2000	129100.	129100.	----	115100.0	147900.0
0.1000	163500.	163500.	----	143200.0	193200.0
0.0400	213900.	213900.	----	182300.0	263500.0
0.0200	256700.	256700.	----	214400.0	326100.0
0.0100	304400.	304400.	----	249100.0	398500.0
0.0050	357700.	357700.	----	286900.0	481900.0
0.0020	437800.	437800.	----	342200.0	612200.0

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.003
Version 7.1 Annual peak flow frequency analysis Run Date / Time
3/14/2014 11/29/2017 21:15

Station - 01553500 West Branch Susquehanna River at Lewisburg, PA

I N P U T D A T A L I S T I N G

WATER YEAR	PEAK VALUE	PEAKFQ CODES	REMARKS
1966	91800.0	K	
1967	76600.0	K	
1968	60900.0	K	
1969	45000.0	K	
1970	101000.0	K	
1971	78200.0	K	
1972	300000.0	K	
1973	88400.0	K	
1974	75300.0	K	
1975	242000.0	K	

1976	89900.0	K
1977	80900.0	K
1978	82000.0	K
1979	165000.0	K
1980	83800.0	K
1981	123000.0	K
1982	98800.0	K
1983	52200.0	K
1984	192000.0	K
1985	53100.0	K
1986	112000.0	K
1987	77000.0	K
1988	80300.0	K
1989	83600.0	K
1990	48000.0	K
1991	88900.0	K
1992	40400.0	K
1993	146000.0	K
1994	111000.0	K
1995	74700.0	K
1996	205000.0	K
1997	104000.0	K
1998	118000.0	K
1999	84800.0	K
2000	56100.0	K
2001	35100.0	K
2002	85800.0	K
2003	90200.0	K
2004	209000.0	K
2005	113000.0	K
2006	100000.0	K
2007	85900.0	K
2008	88600.0	K
2009	56100.0	K
2010	118000.0	K
2011	168000.0	K
2012	45500.0	K
2013	76400.0	K
2014	76500.0	K
2015	57500.0	K
2016	46800.0	K

Explanation of peak discharge qualification codes

PeakFQ CODE	NWIS CODE	DEFINITION

```
D        3    Dam failure, non-recurrent flow anomaly
G        8    Discharge greater than stated value
X       3+8   Both of the above
L        4    Discharge less than stated value
K     6 OR C  Known effect of regulation or urbanization
H        7    Historic peak

-  Minus-flagged discharge -- Not used in computation
      -8888.0 -- No discharge value given
-  Minus-flagged water year -- Historic peak used in computation
```

1

```
Program PeakFq          U. S. GEOLOGICAL SURVEY            Seq.001.004
Version 7.1         Annual peak flow frequency analysis    Run Date / Time
3/14/2014                                                  11/29/2017 21:15
```

Station - 01553500 West Branch Susquehanna River at Lewisburg, PA

EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	B17B ESTIMATE
1972	300000.0	0.0192	0.0192
1975	242000.0	0.0385	0.0385
2004	209000.0	0.0577	0.0577
1996	205000.0	0.0769	0.0769
1984	192000.0	0.0962	0.0962
2011	168000.0	0.1154	0.1154
1979	165000.0	0.1346	0.1346
1993	146000.0	0.1538	0.1538
1981	123000.0	0.1731	0.1731
1998	118000.0	0.1923	0.1923
2010	118000.0	0.2115	0.2115
2005	113000.0	0.2308	0.2308
1986	112000.0	0.2500	0.2500
1994	111000.0	0.2692	0.2692
1997	104000.0	0.2885	0.2885
1970	101000.0	0.3077	0.3077
2006	100000.0	0.3269	0.3269
1982	98800.0	0.3462	0.3462
1966	91800.0	0.3654	0.3654
2003	90200.0	0.3846	0.3846
1976	89900.0	0.4038	0.4038

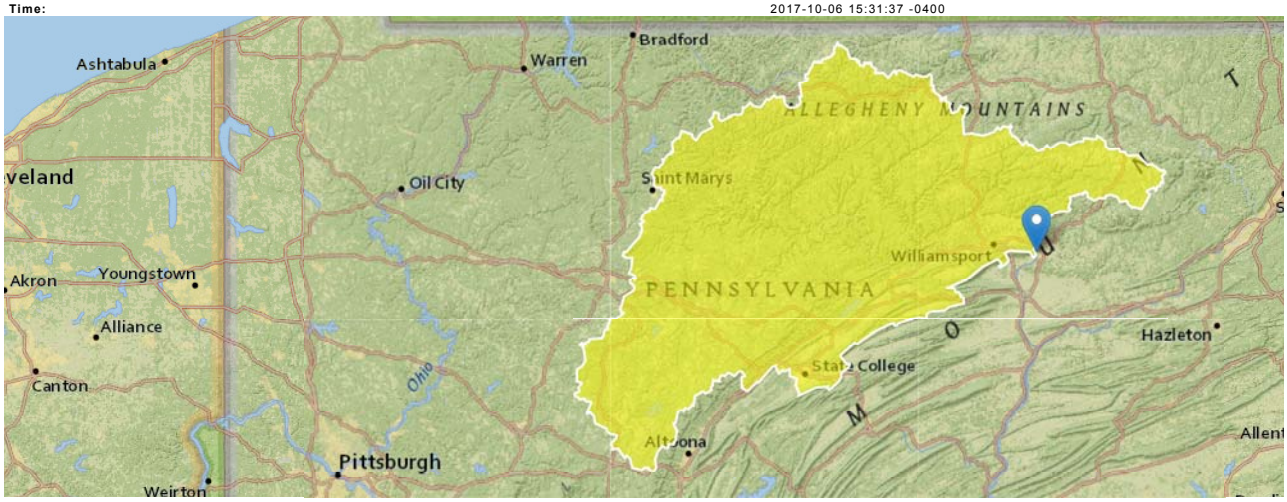
```
    1991    88900.0     0.4231      0.4231
    2008    88600.0     0.4423      0.4423
    1973    88400.0     0.4615      0.4615
    2007    85900.0     0.4808      0.4808
    2002    85800.0     0.5000      0.5000
    1999    84800.0     0.5192      0.5192
    1980    83800.0     0.5385      0.5385
    1989    83600.0     0.5577      0.5577
    1978    82000.0     0.5769      0.5769
    1977    80900.0     0.5962      0.5962
    1988    80300.0     0.6154      0.6154
    1971    78200.0     0.6346      0.6346
    1987    77000.0     0.6538      0.6538
    1967    76600.0     0.6731      0.6731
    2014    76500.0     0.6923      0.6923
    2013    76400.0     0.7115      0.7115
    1974    75300.0     0.7308      0.7308
    1995    74700.0     0.7500      0.7500
    1968    60900.0     0.7692      0.7692
    2015    57500.0     0.7885      0.7885
    2000    56100.0     0.8077      0.8077
    2009    56100.0     0.8269      0.8269
    1985    53100.0     0.8462      0.8462
    1983    52200.0     0.8654      0.8654
    1990    48000.0     0.8846      0.8846
    2016    46800.0     0.9038      0.9038
    2012    45500.0     0.9231      0.9231
    1969    45000.0     0.9423      0.9423
    1992    40400.0     0.9615      0.9615
    2001    35100.0     0.9808      0.9808
1


 End PeakFQ analysis.
   Stations processed :       1
   Number of errors   :       0
   Stations skipped   :       0
   Station years      :      51


Data records may have been ignored for the stations listed below.
(Card type must be Y, Z, N, H, I, 2, 3, 4,  or *.)
(2, 4, and * records are ignored.)

 For the station below, the following records were ignored:

 FINISHED PROCESSING STATION:  01553500       USGS West Branch Susquehanna River
```

For the station below, the following records were ignored:

FINISHED PROCESSING STATION:

West Branch Susuqehanna Upstream of Muncy Creek

Region ID:	PA
Workspace ID:	PA20171006193114255000
Clicked Point (Latitude, Longitude):	41.21028, -76.80462
Time:	2017-10-06 15:31:37 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	6230	square miles
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.5	percent
ELEV	Mean Basin Elevation	1619.2	feet
CARBON	Percentage of area of carbonate rock	4.3	percent

Peak-Flow Statistics Parameters [33 Percent (2040 square miles) Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6230	square miles	1.72	1280
STORAGE	Percent Storage	0.5	percent	0	21.2

Peak-Flow Statistics Parameters [67 Percent (4190 square miles) Peak Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6230	square miles	1.44	1610
ELEV	Mean Basin Elevation	1619.2	feet	457	2150
CARBON	Percent Carbonate	4.3	percent	0	99
STORAGE	Percent Storage	0.5	percent	0	22.6

Peak-Flow Statistics Disclaimers [33 Percent (2040 square miles) Peak Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [33 Percent (2040 square miles) Peak Flow Region 1]

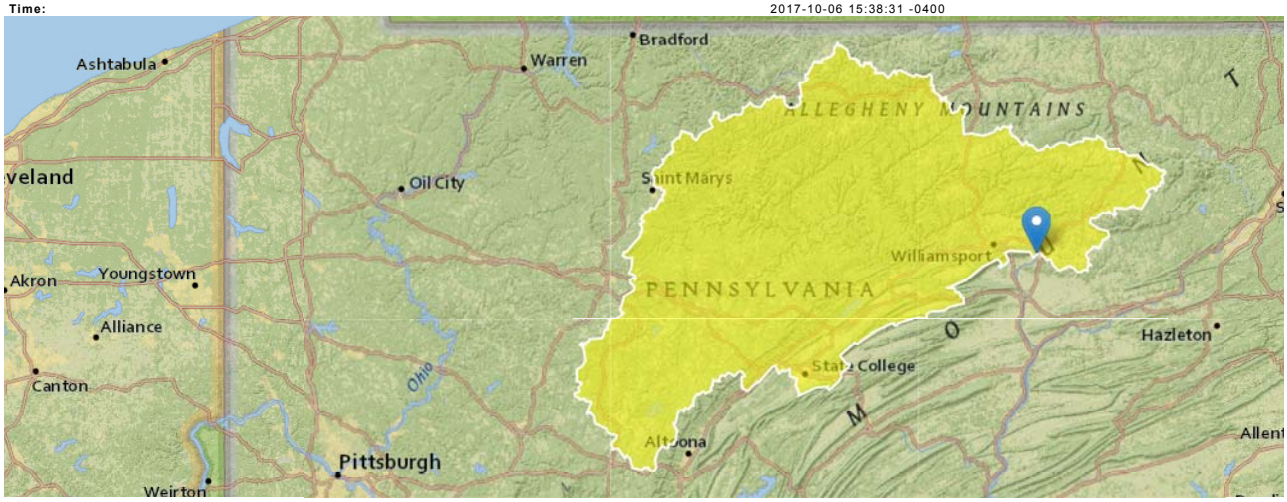
Statistic	Value	Unit
2 Year Peak Flood	129000	ft^3/s
5 Year Peak Flood	194000	ft^3/s
10 Year Peak Flood	245000	ft^3/s
50 Year Peak Flood	380000	ft^3/s
100 Year Peak Flood	447000	ft^3/s
500 Year Peak Flood	627000	ft^3/s

Peak-Flow Statistics Disclaimers [67 Percent (4190 square miles) Peak Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

West Branch Susquehanna River DS of Muncy Creek

Region ID:	PA
Workspace ID:	PA20171006193810798000
Clicked Point (Latitude, Longitude):	41.20783, -76.80360
Time:	2017-10-06 15:38:31 -0400



Peak-Flow Statistics Parameters [35 Percent (2260 square miles) Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6450	square miles	1.72	1280
STORAGE	Percent Storage	0.6	percent	0	21.2

Peak-Flow Statistics Parameters [65 Percent (4190 square miles) Peak Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6450	square miles	1.44	1610
ELEV	Mean Basin Elevation	1604.8	feet	457	2150
CARBON	Percent Carbonate	4.2	percent	0	99
STORAGE	Percent Storage	0.6	percent	0	22.6

Peak-Flow Statistics Disclaimers [35 Percent (2260 square miles) Peak Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [35 Percent (2260 square miles) Peak Flow Region 1]

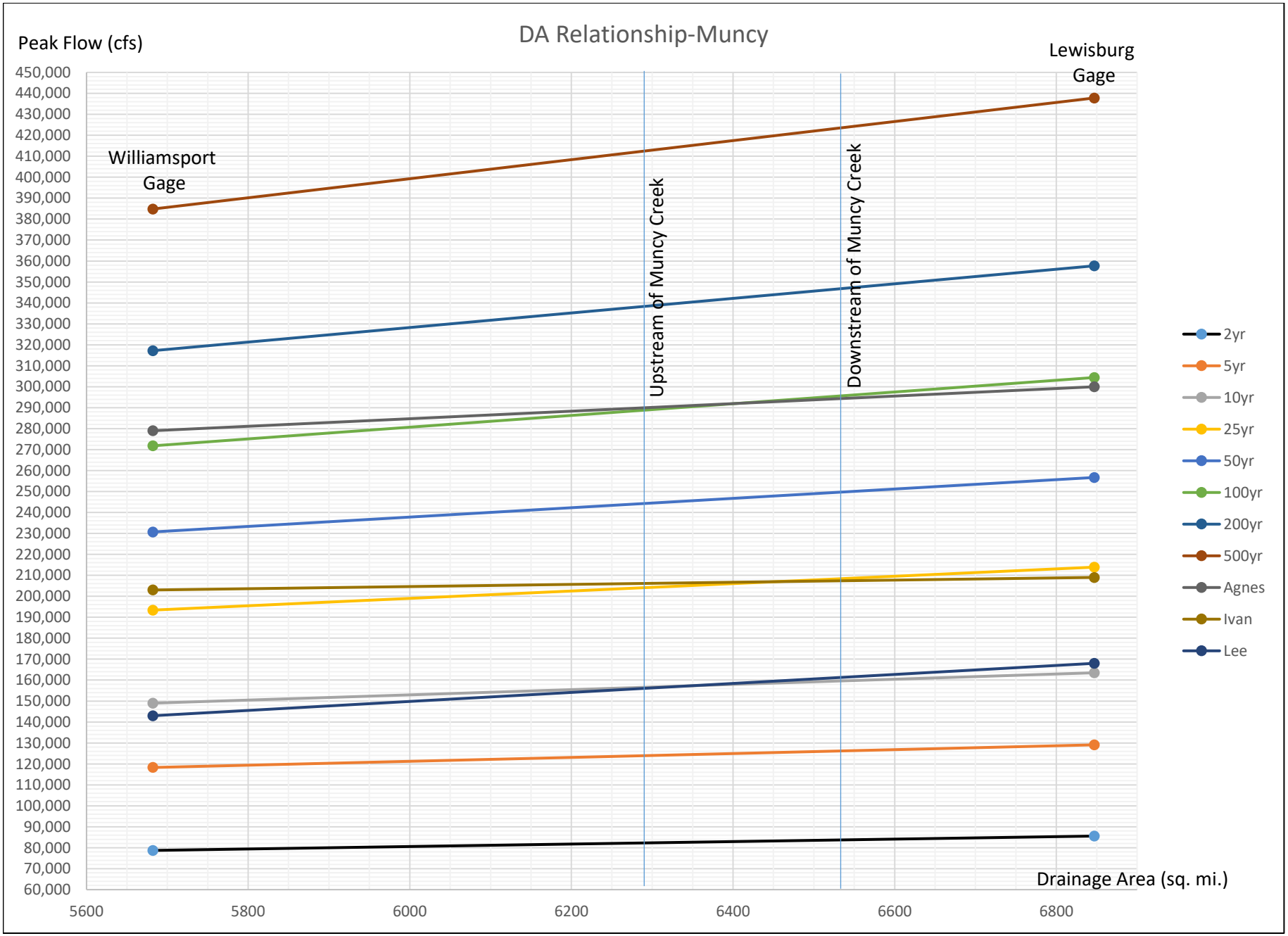
Statistic	Value	Unit
2 Year Peak Flood	132000	ft^3/s
5 Year Peak Flood	199000	ft^3/s
10 Year Peak Flood	251000	ft^3/s
50 Year Peak Flood	390000	ft^3/s
100 Year Peak Flood	458000	ft^3/s
500 Year Peak Flood	643000	ft^3/s

Peak-Flow Statistics Disclaimers [65 Percent (4190 square miles) Peak Flow Region 3]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [65 Percent (4190 square miles) Peak Flow Region 3]

Statistic	Value	Unit
2 Year Peak Flood	79800	ft^3/s
5 Year Peak Flood	112000	ft^3/s
10 Year Peak Flood	134000	ft^3/s
50 Year Peak Flood	184000	ft^3/s
100 Year Peak Flood	206000	ft^3/s


DA Relationship-Muncy
Peak Flow (cfs)
Lewisburg Gage
Williamsport Gage
Upstream of Muncy Creek
Downstream of Muncy Creek
Drainage Area (sq. mi.)
450,000
440,000
430,000
420,000
410,000
400,000
390,000
380,000
370,000
360,000
350,000
340,000
330,000
320,000
310,000
300,000
290,000
280,000
270,000
260,000
250,000
240,000
230,000
220,000
210,000
200,000
190,000
180,000
170,000
160,000
150,000
140,000
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
5600
5800
6000
6200
6400
6600
6800
2yr
5yr
10yr
25yr
50yr
100yr
200yr
500yr
Agnes
Ivan
Lee

Streamgage Number	Streamgage Name	Drainage Area (mi^2)	2011 Peak (cfs)	Date of 2011 Peak	Rank of 2011 peak	Updated Log-Pearson III (LP3) Flood Frequencies (cubic feet per second)												
						Systematic Period of Record (POR) used in analysis (water year)	Number of years used in analysis (including Historic Peaks)	Q2	Q5	Q10	Q25	Q50	Q100	Q200	Q500	Agnes	Lee	Ivan
01551500	West Branch Susquehanna River at Williamsport, Pa	5682	143,000	12/2/2010	8	1962-2016	55	78,710	118,300	149,000	193,400	230,700	271,800	317,200	384,800	279,000	143,000	203,000
01553500	West Branch Susquehanna River at Lewisburg, Pa	6847	168,000	9/8/2011	6	1966-2016	51	85,570	129,100	163,500	213,900	256,700	304,400	357,700	437,800	300,000	168,000	209,000

FINAL VALUES	Upstream of Muncy Creek	6230						82,000	123,500	156,000	203,000	243,000	287,000	336,000	409,500	289,000	155,000	206,000
	Downstream of Muncy Creek	6450						83,500	125,500	158,000	206,000	248,000	293,000	344,000	420,000	293,000	160,000	207,000

APPENDIX C

Hydrologic Analysis for Muncy Creek

```
1
  Program PeakFq           U. S. GEOLOGICAL SURVEY             Seq.002.000
  Version 7.1         Annual peak flow frequency analysis      Run Date / Time
  3/14/2014                                                    11/15/2017 17:21

                        --- PROCESSING OPTIONS ---

                      Plot option         = None
                      Basin char output   = None
                      Print option        = Yes
                      Debug print         = No
                      Input peaks listing = Long
                      Input peaks format  = WATSTORE peak file

                      Input files used:
                         peaks (ascii)  -
C:\Users\chico\Desktop\MuncyCreek\PEAK2.TXT
                         specifications -
C:\Users\chico\Desktop\MuncyCreek\PKFQWPSF.TMP
                      Output file(s):
                         main - C:\Users\chico\Desktop\MuncyCreek\PEAK2.PRT


1


  Program PeakFq           U. S. GEOLOGICAL SURVEY             Seq.001.001
  Version 7.1         Annual peak flow frequency analysis      Run Date / Time
  3/14/2014                                                    11/15/2017 17:21

                 Station - 01553005  Muncy Creek near Muncy, PA


                     I N P U T   D A T A   S U M M A R Y

                Number of peaks in record            =       28
                Peaks not used in analysis           =        0
                Systematic peaks in analysis         =       28
                Historic peaks in analysis           =        0
                Beginning Year                       =     1989
                Ending Year                          =     2016
                Historical Period Length             =        0
                Generalized skew                     =    0.339
                     Standard error                  =    0.550
                     Mean Square error               =    0.303
                Skew option                          = STATION SKEW
                Gage base discharge                  =      0.0
                User supplied high outlier threshold =   --
```

```
User supplied PILF (LO) criterion    =   --
Plotting position parameter          =     0.00
Type of analysis                       BULL.17B
PILF (LO) Test Method                      GBT
Perception Thresholds            =   Not Applicable
Interval Data                    =   Not Applicable


*********  NOTICE  --  Preliminary machine computations.        *********
*********  User responsible for assessment and interpretation.  *********

  WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE.                   0.0
  WCF162I-SYSTEMATIC PEAKS EXCEEDED HIGH-OUTLIER CRITERION.   1   35051.1
  WCF195I-NO LOW OUTLIERS WERE DETECTED BELOW CRITERION.           2001.4
 *WCF151I-17B WEIGHTED SKEW REPLACED BY USER OPTION.     0.672     1.002  -1
```

Kendall's Tau Parameters

	TAU	P-VALUE	MEDIAN SLOPE	No. of PEAKS
SYSTEMATIC RECORD	0.175	0.199	96.072	28

1

```
Program PeakFq          U. S. GEOLOGICAL SURVEY            Seq.001.002
Version 7.1         Annual peak flow frequency analysis    Run Date / Time
3/14/2014                                                  11/15/2017 17:21
```

Station - 01553005 Muncy Creek near Muncy, PA

ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

	FLOOD BASE		LOGARITHMIC		
	DISCHARGE	EXCEEDANCE PROBABILITY	MEAN	STANDARD DEVIATION	SKEW
SYSTEMATIC RECORD	0.0	1.0000	3.9230	0.2453	1.002
BULL.17B ESTIMATE	0.0	1.0000	3.9230	0.2453	1.002

BULL.17B ESTIMATE OF MSE OF AT-SITE SKEW 0.2996

ANNUAL FREQUENCY CURVE -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

ANNUAL EXCEEDANCE PROBABILITY	BULL.17B ESTIMATE	SYSTEMATIC RECORD	<-- FOR BULLETIN 17B ESTIMATES --> VARIANCE OF EST.	95% CONFIDENCE INTERVALS LOWER	UPPER
0.9950	3274.	3274.	----	2342.0	4145.0
0.9900	3417.	3417.	----	2469.0	4302.0
0.9500	3982.	3982.	----	2978.0	4923.0
0.9000	4430.	4430.	----	3388.0	5416.0
0.8000	5177.	5177.	----	4079.0	6245.0
0.6667	6161.	6161.	----	4992.0	7361.0
0.5000	7634.	7634.	----	6335.0	9108.0
0.4292	8426.	8426.	----	7039.0	10090.0
0.2000	12850.	12850.	----	10690.0	16160.0
0.1000	17860.	17860.	----	14420.0	23950.0
0.0400	26560.	26560.	----	20370.0	39120.0
0.0200	35220.	35220.	----	25890.0	55760.0
0.0100	46220.	46220.	----	32540.0	78620.0
0.0050	60160.	60160.	----	40550.0	109900.0
0.0020	84420.	84420.	----	53730.0	169200.0

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.003
Version 7.1 Annual peak flow frequency analysis Run Date / Time
3/14/2014 11/15/2017 17:21

Station - 01553005 Muncy Creek near Muncy, PA

I N P U T D A T A L I S T I N G

WATER YEAR	PEAK VALUE	PEAKFQ CODES	REMARKS
1989	5900.0		
1990	5500.0		
1991	2920.0		
1992	5860.0		
1993	6160.0		
1994	8210.0		
1995	7840.0		
1996	24900.0		
1997	9780.0		
1998	14100.0		

1999	9050.0
2000	3590.0
2001	6120.0
2002	9470.0
2003	8760.0
2004	11900.0
2005	6980.0
2006	12500.0
2007	10100.0
2008	13900.0
2009	6680.0
2010	14800.0
2011	46600.0
2012	4360.0
2013	6410.0
2014	6360.0
2015	5650.0
2016	8310.0

Explanation of peak discharge qualification codes

PeakFQ CODE	NWIS CODE	DEFINITION
D	3	Dam failure, non-recurrent flow anomaly
G	8	Discharge greater than stated value
X	3+8	Both of the above
L	4	Discharge less than stated value
K	6 OR C	Known effect of regulation or urbanization
H	7	Historic peak

- Minus-flagged discharge -- Not used in computation
  -8888.0 -- No discharge value given
- Minus-flagged water year -- Historic peak used in computation

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.004
Version 7.1 Annual peak flow frequency analysis Run Date / Time
3/14/2014 11/15/2017 17:21

Station - 01553005 Muncy Creek near Muncy, PA

EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	B17B ESTIMATE
2011	46600.0	0.0345	0.0345
1996	24900.0	0.0690	0.0690
2010	14800.0	0.1034	0.1034
1998	14100.0	0.1379	0.1379
2008	13900.0	0.1724	0.1724
2006	12500.0	0.2069	0.2069
2004	11900.0	0.2414	0.2414
2007	10100.0	0.2759	0.2759
1997	9780.0	0.3103	0.3103
2002	9470.0	0.3448	0.3448
1999	9050.0	0.3793	0.3793
2003	8760.0	0.4138	0.4138
2016	8310.0	0.4483	0.4483
1994	8210.0	0.4828	0.4828
1995	7840.0	0.5172	0.5172
2005	6980.0	0.5517	0.5517
2009	6680.0	0.5862	0.5862
2013	6410.0	0.6207	0.6207
2014	6360.0	0.6552	0.6552
1993	6160.0	0.6897	0.6897
2001	6120.0	0.7241	0.7241
1989	5900.0	0.7586	0.7586
1992	5860.0	0.7931	0.7931
2015	5650.0	0.8276	0.8276
1990	5500.0	0.8621	0.8621
2012	4360.0	0.8966	0.8966
2000	3590.0	0.9310	0.9310
1991	2920.0	0.9655	0.9655

1

End PeakFQ analysis.

```
Stations processed :       1
Number of errors   :       0
Stations skipped   :       0
Station years      :      28
```

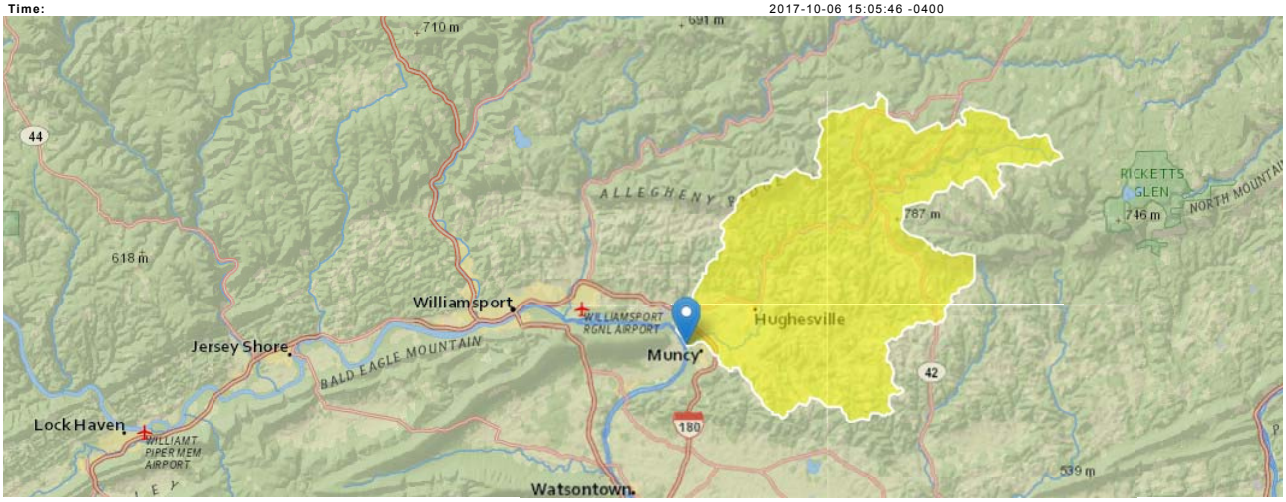
Data records may have been ignored for the stations listed below.
(Card type must be Y, Z, N, H, I, 2, 3, 4, or *.)
(2, 4, and * records are ignored.)

For the station below, the following records were ignored:

```
FINISHED PROCESSING STATION:  01553005       USGS Muncy Creek near Muncy, PA


For the station below, the following records were ignored:

FINISHED PROCESSING STATION:
```

Muncy Creek-Flow Point MUC1

Region ID:	PA
Workspace ID:	PA20171006190528925000
Clicked Point (Latitude, Longitude):	41.21038, -76.80270
Time:	2017-10-06 15:05:46 -0400



Calculated by USACE in October 2016 using USGS StreamStats Version 4 Beta

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	215	square miles
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent

Peak-Flow Statistics Parameters [Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	215	square miles	1.72	1280
STORAGE	Percent Storage	0	percent	0	21.2

Peak-Flow Statistics Flow Report [Peak Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

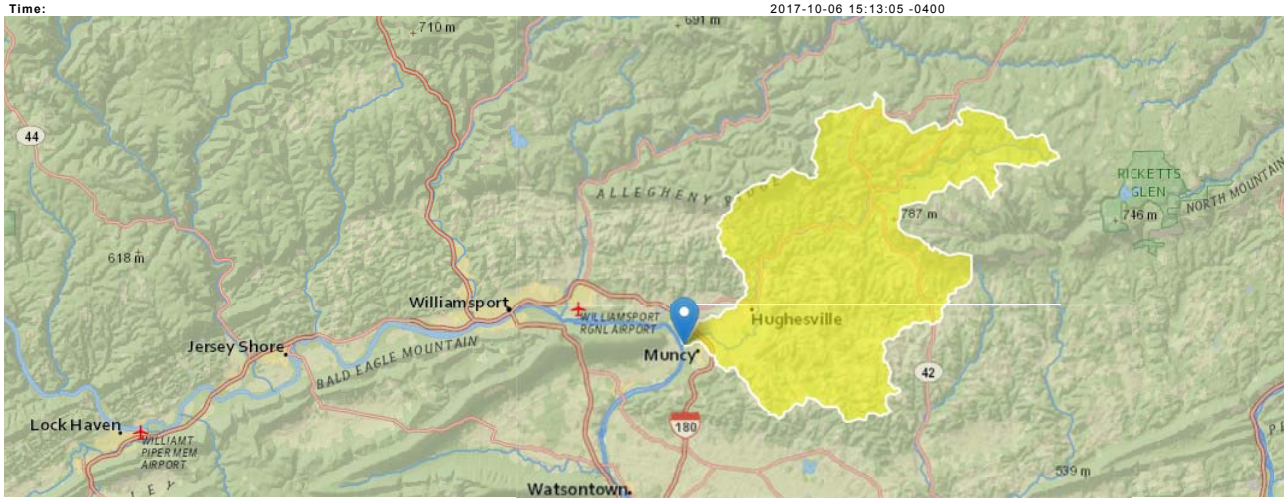
Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	7210	ft^3/s	33	33	3
5 Year Peak Flood	11700	ft^3/s	31	31	6
10 Year Peak Flood	15300	ft^3/s	31	31	9
50 Year Peak Flood	24600	ft^3/s	36	36	13
100 Year Peak Flood	29200	ft^3/s	38	38	13
500 Year Peak Flood	41800	ft^3/s	46	46	14

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H.,2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p. (http://pubs.usgs.gov/sir/2008/5102/)

Muncy Creek-Flow Point MUC2

Region ID:	PA
Workspace ID:	PA20171006191247452000
Clicked Point (Latitude, Longitude):	41.21110, -76.80184
Time:	2017-10-06 15:13:05 -0400



Calculated by USACE in October 2016 using StreamStats Version4 Beta

Peak-Flow Statistics Parameters [Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	204	square miles	1.72	1280
STORAGE	Percent Storage	0	percent	0	21.2

Peak-Flow Statistics Flow Report [Peak Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

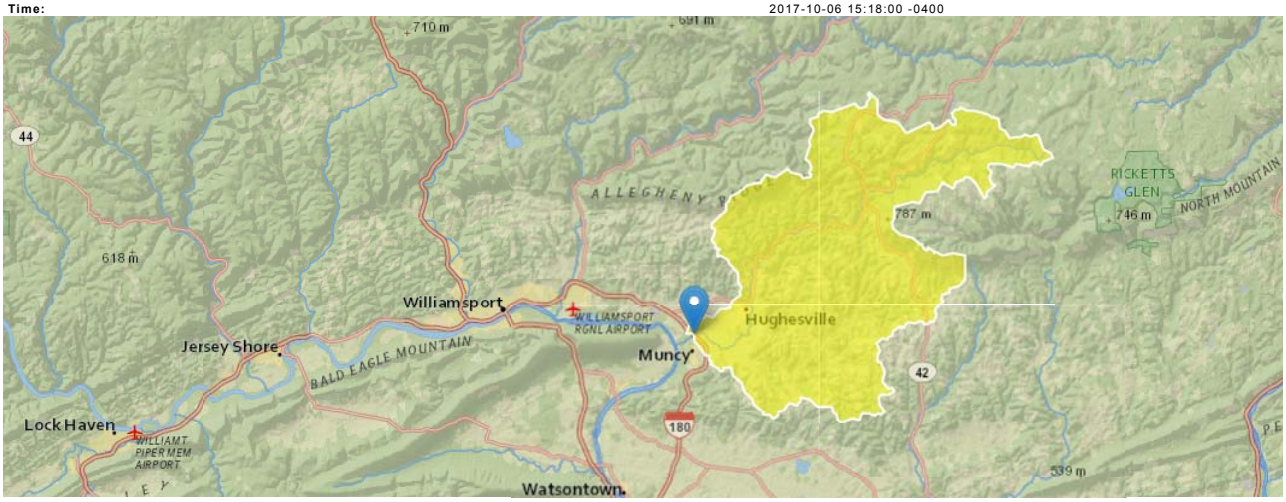
Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	6890	ft^3/s	33	33	3
5 Year Peak Flood	11200	ft^3/s	31	31	6
10 Year Peak Flood	14600	ft^3/s	31	31	9
50 Year Peak Flood	23500	ft^3/s	36	36	13
100 Year Peak Flood	28000	ft^3/s	38	38	13
500 Year Peak Flood	40100	ft^3/s	46	46	14

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H.,2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p. (http://pubs.usgs.gov/sir/2008/5102/)

Muncy Creek Flow Point MUC3

Region ID:	PA
Workspace ID:	PA20171006191742950000
Clicked Point (Latitude, Longitude):	41.22010, -76.78320
Time:	2017-10-06 15:18:00 -0400



Calculated by USACE in October 2016 using USGS StreamStats Version 4 Beta

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	203	square miles
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent

Peak-Flow Statistics Parameters [Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	203	square miles	1.72	1280
STORAGE	Percent Storage	0	percent	0	21.2

Peak-Flow Statistics Flow Report [Peak Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

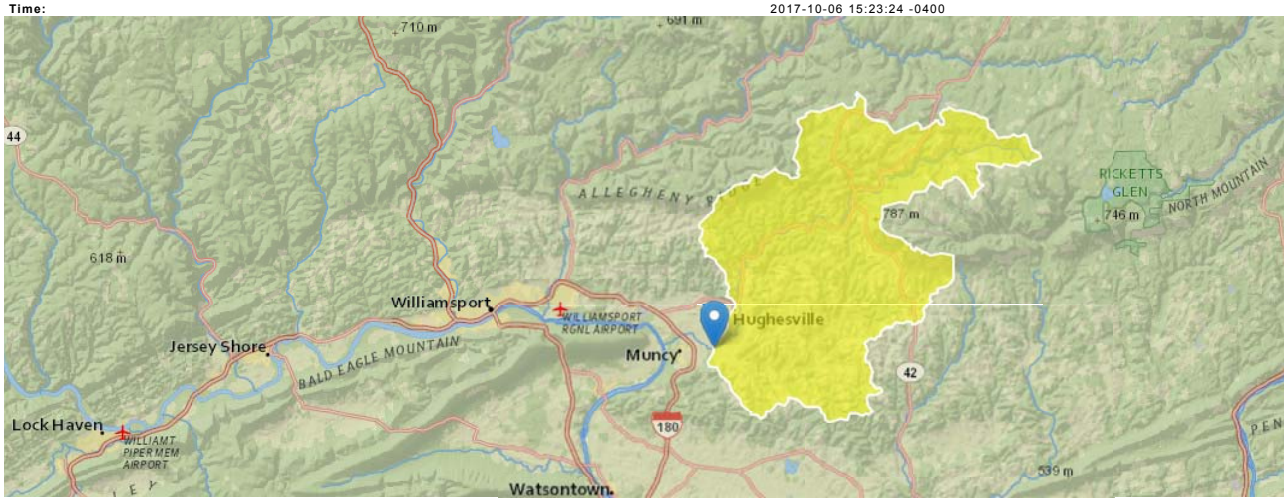
Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	6860	ft^3/s	33	33	3
5 Year Peak Flood	11200	ft^3/s	31	31	6
10 Year Peak Flood	14500	ft^3/s	31	31	9
50 Year Peak Flood	23500	ft^3/s	36	36	13
100 Year Peak Flood	27900	ft^3/s	38	38	13
500 Year Peak Flood	39900	ft^3/s	46	46	14

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H.,2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p. (http://pubs.usgs.gov/sir/2008/5102/)

Muncy Creek-Flow Point MUC4

Region ID:	PA
Workspace ID:	PA20171006192306415000
Clicked Point (Latitude, Longitude):	41.20757, -76.74674
Time:	2017-10-06 15:23:24 -0400



Calculated by USACE in October 2016 using USGS StreamStats Version 4 Beta

Peak-Flow Statistics Parameters [Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	196	square miles	1.72	1280
STORAGE	Percent Storage	0	percent	0	21.2

Peak-Flow Statistics Flow Report [Peak Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	6650	ft^3/s	33	33	3
5 Year Peak Flood	10800	ft^3/s	31	31	6
10 Year Peak Flood	14100	ft^3/s	31	31	9
50 Year Peak Flood	22800	ft^3/s	36	36	13
100 Year Peak Flood	27100	ft^3/s	38	38	13
500 Year Peak Flood	38800	ft^3/s	46	46	14

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H.,2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p. (http://pubs.usgs.gov/sir/2008/5102/)

Weighted Frequency Analysis:
USGS Station - 01553005 Muncy Creek near Muncy, PA

USGS
science for a changing world

In cooperation with the Federal Emergency Management Agency, the Pennsylvania State Association of Township Supervisors, and the Susquehanna River Basin Commission

Regression Equations for Estimating Flood Flows at Selected Recurrence Intervals for Ungaged Streams in Pennsylvania

Scientific Investigations Report 2008-5102

U.S. Department of the Interior
U.S. Geological Survey

$$Q_{T(W)} = \frac{[Q_{T(G)}(N) + \hat{Q}_{T(R)}(NE)]}{(N + NE)}$$

where

$Q_{T(W)}$ = the weighted flood discharge for the T-year recurrence interval, in cubic feet per second;

$Q_{T(G)}$ = the observed flood discharge computed from streamflow-gaging-station data for the T-year recurrence interval, in cubic feet per second;

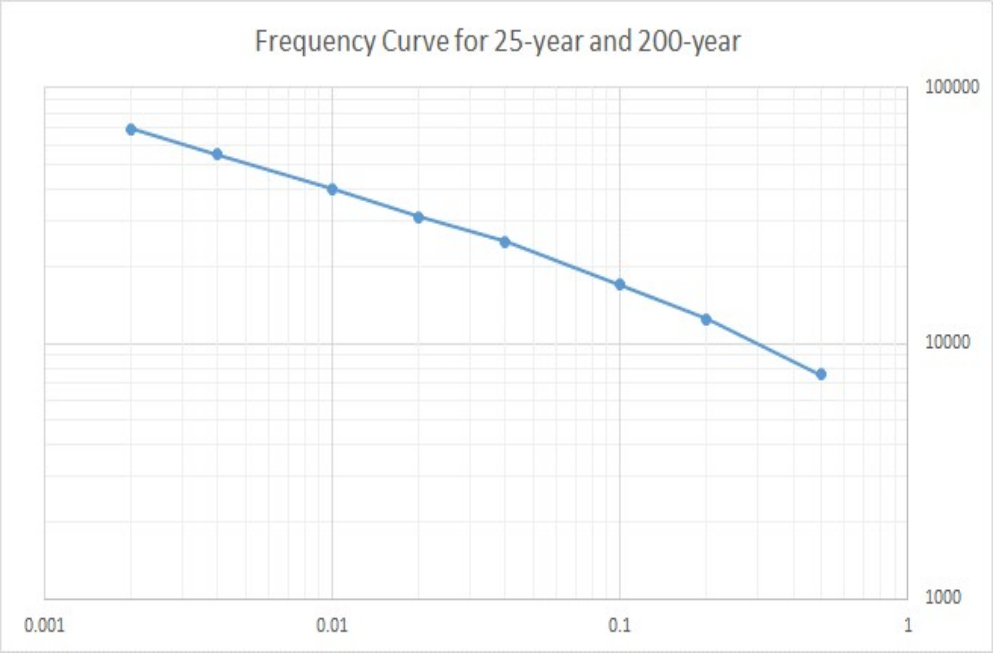
N = the number of years of record at the streamflow-gaging station used to calculate $Q_{T(G)}$;

$\hat{Q}_{T(R)}$ = the predicted flood discharge computed from regression equations for the T-year recurrence interval, in cubic feet per second; and

NE = average equivalent years of record associated with the regression equation in table 4.

Storm	Observed		Regression		Computations				Result
	$Q_{T(G)}$	N	$Q_{T(R)}$	NE	$Q_{T(G)}$ x N	$Q_{T(R)}$ x NE	($Q_{T(G)}$ x N) + ($Q_{T(R)}$ x NE)	N + NE	$Q_{T(W)}$
Q_2	7634	28	6650	3	213752	19950	233702	31	7539
Q_5	12850	28	10800	6	359800	64800	424600	34	12488
Q_{10}	17860	28	14100	9	500080	126900	626980	37	16945
Q_{50}	35220	28	22800	13	986160	296400	1282560	41	31282
Q_{100}	46220	28	27100	13	1294160	352300	1646460	41	40158
Q_{500}	84420	28	38800	14	2363760	543200	2906960	42	69213

Final Values	
Q_2	7539
Q_5	12488
Q_{10}	16945
Q_{25}	25000
Q_{50}	31282
Q_{100}	40158
Q_{200}	55000
Q_{500}	69213



Drainage Area Translation Downstream of
USGS Station - 01553005 Muncy Creek near Muncy, PA

$Q_u = (A_u/A_g)^b Q_g$

Region 1		
Q2	1.84257	0.86396
Q5	2.10658	.84127
Q10	2.24305	.83197
Q50	2.47845	.81981
Q100	2.56172	.81626
Q500	2.73185	.81002

Flood Frequency	Flow Point	A_u	A_g	Q_g	A_u/A_g	b	$(A_u/A_g)^b$	Translated Peak Flow at Flow Point
2	MUC1	215	196	7539	1.0969	0.86396	1.0832	8166
5	MUC1	215	196	12488	1.0969	0.84127	1.0809	13499
10	MUC1	215	196	16945	1.0969	0.83197	1.0800	18301
25	MUC1	215	196	25000	1.0969	0.82000	1.0788	26971
50	MUC1	215	196	31282	1.0969	0.81981	1.0788	33747
100	MUC1	215	196	40158	1.0969	0.81626	1.0784	43308
200	MUC1	215	196	55000	1.0969	0.81300	1.0781	59297
500	MUC1	215	196	69213	1.0969	0.81002	1.0778	74600
2	MUC2	204	196	7539	1.0408	0.86396	1.0352	7804
5	MUC2	204	196	12488	1.0408	0.84127	1.0342	12915
10	MUC2	204	196	16945	1.0408	0.83197	1.0338	17518
25	MUC2	204	196	25000	1.0408	0.82000	1.0333	25834
50	MUC2	204	196	31282	1.0408	0.81981	1.0333	32325
100	MUC2	204	196	40158	1.0408	0.81626	1.0332	41491
200	MUC2	204	196	55000	1.0408	0.81300	1.0331	56818
500	MUC2	204	196	69213	1.0408	0.81002	1.0329	71493
2	MUC3	203	196	7539	1.0357	0.86396	1.0308	7771
5	MUC3	203	196	12488	1.0357	0.84127	1.0300	12862
10	MUC3	203	196	16945	1.0357	0.83197	1.0296	17447
25	MUC3	203	196	25000	1.0357	0.82000	1.0292	25730
50	MUC3	203	196	31282	1.0357	0.81981	1.0292	32195
100	MUC3	203	196	40158	1.0357	0.81626	1.0291	41325
200	MUC3	203	196	55000	1.0357	0.81300	1.0289	56592
500	MUC3	203	196	69213	1.0357	0.81002	1.0288	71209

APPENDIX D

HEC-HMS Input Data and Results for Glade Run

SUBBASIN INPUTS			
NAME	AREA_SQMI	CN	TC_MIN
GLR1-A	0.0655	63	64.6
GLR10-A	0.5046	70	38
GLR11-A	0.6763	70	30.9
GLR12-A	0.6377	76	41
GLR12-B	0.2247	77	22.2
GLR2-A	0.1456	69	64.6
GLR2-B	0.1518	71	39
GLR3-A	0.2652	73	60.1
GLR4-A	0.1185	73	57.1
GLR5-A	0.2716	70	57.1
GLR6-A	0.1576	68	20.8
GLR7-A	0.1096	69	18.5
GLR8-A	0.2795	61	38.7
GLR9-A	0.7205	66	53.3
QRT1-A	0.2521	64	34.9
QRT2-A	0.3023	68	36.4
THT1-A	0.6188	74	66.1
THT2-A	1.035	73	75.4
THT3-A	0.4856	73	39.7
THT3-B	0.7361	79	70.3

REACH INPUTS

NAME	ELEV_IN	ELEV_OUT	SLOPE	N_CH	N_LB	N_RB	INVERT	LENGTH
GLR10-GLR9	598.9	536	0.0098	0.045	0.1	0.1	557	6449
GLR11-GLR10	680.6	598.9	0.0156	0.06	0.12	0.12	610	5244
GLR12-GLR11	772.2	680.6	0.0202	0.06	0.12	0.12	700	4527
GLR2-GLR1	473.4	467.1	0.0024	0.045	0.08	0.08	471	2596
GLR3-GLR2	481.8	473.4	0.0026	0.045	0.1	0.06	479	3239
GLR4-GLR3	483.3	481.8	0.0029	0.045	0.05	0.05	483	513
GLR5-GLR4	489.9	483.3	0.0038	0.045	0.12	0.12	485	1719
GLR6-GLR5	495.7	489.9	0.0044	0.045	0.12	0.12	493	1305
GLR7-GLR6	511	495.7	0.0084	0.045	0.08	0.08	501	1824
GLR8-GLR7	513	511	0.0029	0.045	0.1	0.06	509	684
GLR9-GLR8	536	513	0.0086	0.045	0.06	0.1	524	2687
QRT2-QRT1	581.3	513	0.0161	0.06	0.12	0.12	527	4232
THT2-THT1	627.9	598.9	0.0158	0.042	0.065	0.06	607	1833
THT3-THT2	783.7	627.9	0.0187	0.06	0.12	0.12	693	8329

GLR10-GLR9

Station	Elevation
0	582
50	572
86	560
100	557
118	557
135	560
435	562
572	572

GLR11-GLR10

Station	Elevation
0	640
90	614
260	614
270	610
284	610
292	614
305	620
340	640

GLR12-GLR11

Station	Elevation
0	742
60	714
100	703
106	700
120	700
135	703
268	706
340	720

GLR2-GLR1

Station	Elevation
0	490
241	476
398	474
404	471

GLR3-GLR2

Station	Elevation
0	490
200	484
363	482
691	479

GLR4-GLR3

Station	Elevation
0	490
231	486
350	486
355	483

424	471
430	474
950	478
2133	490

712	479
738	482
1879	482
1897	490

388	483
415	486
997	486
1224	490

GLR5-GLR4

Station	Elevation
0	496
645	492
740	490
754	485
767	485
776	490
1184	492
1444	496

GLR6-GLR5

Station	Elevation
0	510
140	502
612	498
622	493
634	493
642	498
705	502
725	510

GLR7-GLR6

Station	Elevation
0	512
450	508
613	506
623	501
661	501
680	506
788	508
830	512

GLR8-GLR7

Station	Elevation
0	528
39	520
282	514
294	509
312	509
330	514
503	520
610	528

GLR9-GLR8

Station	Elevation
0	542
146	530
226	526
233	521
250	521
268	526
354	530
574	542

QRT2-QRT1

Station	Elevation
0	546
100	536
134	530
140	527
150	527
173	530
225	534
520	546

THT2-THT1

Station	Elevation
0	648
27	635
90	610
99	607
119	607

THT3-THT2

Station	Elevation
0	720
50	700
83	696
87	693
100	693

121	610
295	610
400	640

105	696
216	697
265	724

Project: Glade Run Simulation Run: Existing_2YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 2YEAR_24HR
Compute Time: 10Oct2017, 08:44:02 Control Specifications:24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	279.4	01Jan2017, 11:00	0.50
GLR1-A	0.0655	0.8	01Jan2017, 09:00	0.23
GLR10	4.9188	282.9	01Jan2017, 09:00	0.58
GLR10-A	0.5046	25.1	01Jan2017, 08:00	0.43
GLR10-GLR9	4.9188	254.9	01Jan2017, 09:00	0.59
GLR11	1.5387	104.4	01Jan2017, 08:00	0.57
GLR11-A	0.6763	38.2	01Jan2017, 08:00	0.43
GLR11-GLR10	1.5387	89.4	01Jan2017, 09:00	0.58
GLR12	0.8624	89.3	01Jan2017, 08:00	0.68
GLR12-A	0.6377	60.5	01Jan2017, 08:00	0.66
GLR12-B	0.2247	28.8	01Jan2017, 08:00	0.71
GLR12-GLR11	0.8624	66.2	01Jan2017, 08:00	0.68
GLR2	7.6931	285.6	01Jan2017, 10:00	0.51
GLR2-A	0.1456	5.0	01Jan2017, 09:00	0.40
GLR2-B	0.1518	8.5	01Jan2017, 08:00	0.47
GLR2-GLR1	7.6931	278.7	01Jan2017, 11:00	0.51
GLR3	7.3957	290.1	01Jan2017, 10:00	0.51
GLR3-A	0.2652	14.7	01Jan2017, 09:00	0.54
GLR3-GLR2	7.3957	277.7	01Jan2017, 10:00	0.51
GLR4	7.1305	281.6	01Jan2017, 10:00	0.51
GLR4-A	0.1185	6.5	01Jan2017, 09:00	0.54
GLR4-GLR3	7.1305	280.5	01Jan2017, 10:00	0.51
GLR5	7.0120	279.2	01Jan2017, 10:00	0.51
GLR5-A	0.2716	10.6	01Jan2017, 09:00	0.43
GLR5-GLR4	7.0120	277.4	01Jan2017, 10:00	0.51
GLR6	6.7404	272.8	01Jan2017, 10:00	0.51
GLR6-A	0.1576	6.7	01Jan2017, 08:00	0.37

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	271.9	01Jan2017, 10:00	0.51
GLR7	6.5828	269.8	01Jan2017, 10:00	0.51
GLR7-A	0.1096	5.5	01Jan2017, 08:00	0.40
GLR7-GLR6	6.5828	269.6	01Jan2017, 10:00	0.51
GLR8	6.4732	270.8	01Jan2017, 09:00	0.51
GLR8-A	0.2795	2.6	01Jan2017, 10:00	0.18
GLR8-GLR7	6.4732	267.4	01Jan2017, 10:00	0.51
GLR9	5.6393	270.8	01Jan2017, 09:00	0.55
GLR9-A	0.7205	15.9	01Jan2017, 09:00	0.31
GLR9-GLR8	5.6393	255.3	01Jan2017, 09:00	0.55
QRT1	0.5544	13.2	01Jan2017, 09:00	0.31
QRT1-A	0.2521	4.7	01Jan2017, 08:00	0.25
QRT2	0.3023	11.6	01Jan2017, 08:00	0.37
QRT2-A	0.3023	11.6	01Jan2017, 08:00	0.37
QRT2-QRT1	0.3023	9.6	01Jan2017, 09:00	0.36
THT1	2.8755	176.6	01Jan2017, 09:00	0.62
THT1-A	0.6188	37.9	01Jan2017, 09:00	0.58
THT2	2.2567	143.7	01Jan2017, 09:00	0.63
THT2-A	1.0350	55.1	01Jan2017, 09:00	0.54
THT2-THT1	2.2567	138.7	01Jan2017, 09:00	0.63
THT3	1.2217	94.5	01Jan2017, 09:00	0.70
THT3-A	0.4856	34.1	01Jan2017, 08:00	0.54
THT3-B	0.7361	71.8	01Jan2017, 09:00	0.80
THT3-THT2	1.2217	88.7	01Jan2017, 09:00	0.70

Project: Glade Run Simulation Run: Existing_5YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 5YEAR_24HR
Compute Time: 10Oct2017, 08:44:43 Control Specifications:24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	608.7	01Jan2017, 10:00	1.00
GLR1-A	0.0655	3.2	01Jan2017, 09:00	0.57
GLR10	4.9188	609.4	01Jan2017, 09:00	1.12
GLR10-A	0.5046	65.8	01Jan2017, 08:00	0.89
GLR10-GLR9	4.9188	574.4	01Jan2017, 09:00	1.12
GLR11	1.5387	246.9	01Jan2017, 08:00	1.09
GLR11-A	0.6763	100.1	01Jan2017, 08:00	0.89
GLR11-GLR10	1.5387	190.9	01Jan2017, 08:00	1.10
GLR12	0.8624	184.8	01Jan2017, 08:00	1.24
GLR12-A	0.6377	126.5	01Jan2017, 08:00	1.23
GLR12-B	0.2247	58.2	01Jan2017, 08:00	1.29
GLR12-GLR11	0.8624	146.8	01Jan2017, 08:00	1.25
GLR2	7.6931	646.9	01Jan2017, 10:00	1.00
GLR2-A	0.1456	13.0	01Jan2017, 09:00	0.84
GLR2-B	0.1518	21.2	01Jan2017, 08:00	0.94
GLR2-GLR1	7.6931	606.4	01Jan2017, 10:00	1.00
GLR3	7.3957	631.2	01Jan2017, 09:00	1.00
GLR3-A	0.2652	32.9	01Jan2017, 09:00	1.05
GLR3-GLR2	7.3957	630.1	01Jan2017, 10:00	1.00
GLR4	7.1305	617.6	01Jan2017, 09:00	1.00
GLR4-A	0.1185	14.6	01Jan2017, 09:00	1.05
GLR4-GLR3	7.1305	610.0	01Jan2017, 10:00	1.00
GLR5	7.0120	640.1	01Jan2017, 09:00	1.00
GLR5-A	0.2716	26.4	01Jan2017, 09:00	0.89
GLR5-GLR4	7.0120	603.0	01Jan2017, 09:00	1.00
GLR6	6.7404	639.8	01Jan2017, 09:00	1.01
GLR6-A	0.1576	19.6	01Jan2017, 08:00	0.79

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	613.6	01Jan2017, 09:00	1.01
GLR7	6.5828	646.2	01Jan2017, 09:00	1.01
GLR7-A	0.1096	15.0	01Jan2017, 08:00	0.84
GLR7-GLR6	6.5828	630.2	01Jan2017, 09:00	1.01
GLR8	6.4732	647.5	01Jan2017, 09:00	1.01
GLR8-A	0.2795	12.9	01Jan2017, 08:00	0.49
GLR8-GLR7	6.4732	639.0	01Jan2017, 09:00	1.01
GLR9	5.6393	622.6	01Jan2017, 09:00	1.06
GLR9-A	0.7205	48.1	01Jan2017, 09:00	0.70
GLR9-GLR8	5.6393	601.7	01Jan2017, 09:00	1.07
QRT1	0.5544	39.6	01Jan2017, 08:00	0.71
QRT1-A	0.2521	18.6	01Jan2017, 08:00	0.61
QRT2	0.3023	33.6	01Jan2017, 08:00	0.79
QRT2-A	0.3023	33.6	01Jan2017, 08:00	0.79
QRT2-QRT1	0.3023	24.9	01Jan2017, 09:00	0.80
THT1	2.8755	380.5	01Jan2017, 09:00	1.16
THT1-A	0.6188	82.6	01Jan2017, 09:00	1.11
THT2	2.2567	304.9	01Jan2017, 09:00	1.17
THT2-A	1.0350	124.8	01Jan2017, 09:00	1.05
THT2-THT1	2.2567	297.9	01Jan2017, 09:00	1.18
THT3	1.2217	185.2	01Jan2017, 09:00	1.27
THT3-A	0.4856	79.1	01Jan2017, 08:00	1.05
THT3-B	0.7361	135.8	01Jan2017, 09:00	1.42
THT3-THT2	1.2217	180.1	01Jan2017, 09:00	1.28

Project: Glade Run Simulation Run: Existing_10YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 10YEAR_24HR
Compute Time: 10Oct2017, 08:45:13 Control Specifications:24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	930.4	01Jan2017, 10:00	1.43
GLR1-A	0.0655	5.8	01Jan2017, 09:00	0.91
GLR10	4.9188	894.3	01Jan2017, 09:00	1.59
GLR10-A	0.5046	103.3	01Jan2017, 08:00	1.32
GLR10-GLR9	4.9188	848.5	01Jan2017, 09:00	1.59
GLR11	1.5387	372.5	01Jan2017, 08:00	1.56
GLR11-A	0.6763	157.0	01Jan2017, 08:00	1.32
GLR11-GLR10	1.5387	298.9	01Jan2017, 08:00	1.57
GLR12	0.8624	262.9	01Jan2017, 08:00	1.74
GLR12-A	0.6377	181.1	01Jan2017, 08:00	1.72
GLR12-B	0.2247	81.8	01Jan2017, 08:00	1.80
GLR12-GLR11	0.8624	215.5	01Jan2017, 08:00	1.76
GLR2	7.6931	972.6	01Jan2017, 10:00	1.44
GLR2-A	0.1456	20.8	01Jan2017, 09:00	1.25
GLR2-B	0.1518	32.7	01Jan2017, 08:00	1.38
GLR2-GLR1	7.6931	926.5	01Jan2017, 10:00	1.44
GLR3	7.3957	967.0	01Jan2017, 09:00	1.44
GLR3-A	0.2652	49.1	01Jan2017, 09:00	1.51
GLR3-GLR2	7.3957	947.6	01Jan2017, 10:00	1.44
GLR4	7.1305	947.9	01Jan2017, 09:00	1.44
GLR4-A	0.1185	21.8	01Jan2017, 09:00	1.51
GLR4-GLR3	7.1305	917.9	01Jan2017, 09:00	1.44
GLR5	7.0120	981.6	01Jan2017, 09:00	1.45
GLR5-A	0.2716	41.4	01Jan2017, 09:00	1.32
GLR5-GLR4	7.0120	926.1	01Jan2017, 09:00	1.44
GLR6	6.7404	976.0	01Jan2017, 09:00	1.46
GLR6-A	0.1576	32.0	01Jan2017, 08:00	1.19

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	940.2	01Jan2017, 09:00	1.45
GLR7	6.5828	977.9	01Jan2017, 09:00	1.46
GLR7-A	0.1096	24.0	01Jan2017, 08:00	1.25
GLR7-GLR6	6.5828	960.6	01Jan2017, 09:00	1.46
GLR8	6.4732	983.0	01Jan2017, 09:00	1.46
GLR8-A	0.2795	25.2	01Jan2017, 08:00	0.80
GLR8-GLR7	6.4732	966.6	01Jan2017, 09:00	1.46
GLR9	5.6393	929.5	01Jan2017, 09:00	1.53
GLR9-A	0.7205	81.0	01Jan2017, 09:00	1.07
GLR9-GLR8	5.6393	906.0	01Jan2017, 09:00	1.53
QRT1	0.5544	70.4	01Jan2017, 08:00	1.09
QRT1-A	0.2521	33.2	01Jan2017, 08:00	0.96
QRT2	0.3023	54.8	01Jan2017, 08:00	1.19
QRT2-A	0.3023	54.8	01Jan2017, 08:00	1.19
QRT2-QRT1	0.3023	39.5	01Jan2017, 09:00	1.20
THT1	2.8755	556.6	01Jan2017, 09:00	1.64
THT1-A	0.6188	121.4	01Jan2017, 09:00	1.58
THT2	2.2567	443.4	01Jan2017, 09:00	1.66
THT2-A	1.0350	186.4	01Jan2017, 09:00	1.51
THT2-THT1	2.2567	435.2	01Jan2017, 09:00	1.66
THT3	1.2217	261.5	01Jan2017, 09:00	1.77
THT3-A	0.4856	117.9	01Jan2017, 08:00	1.51
THT3-B	0.7361	187.8	01Jan2017, 09:00	1.95
THT3-THT2	1.2217	257.0	01Jan2017, 09:00	1.78

Project: Glade Run Simulation Run: Existing_25YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 25YEAR_24HR
Compute Time: 10Oct2017, 08:45:47 Control Specifications: 24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	1327.0	01Jan2017, 10:00	2.08
GLR1-A	0.0655	9.9	01Jan2017, 09:00	1.45
GLR10	4.9188	1279.3	01Jan2017, 09:00	2.30
GLR10-A	0.5046	156.6	01Jan2017, 08:00	1.97
GLR10-GLR9	4.9188	1226.3	01Jan2017, 09:00	2.29
GLR11	1.5387	546.9	01Jan2017, 08:00	2.27
GLR11-A	0.6763	237.0	01Jan2017, 08:00	1.97
GLR11-GLR10	1.5387	454.1	01Jan2017, 08:00	2.28
GLR12	0.8624	367.3	01Jan2017, 08:00	2.49
GLR12-A	0.6377	254.7	01Jan2017, 08:00	2.46
GLR12-B	0.2247	112.6	01Jan2017, 08:00	2.55
GLR12-GLR11	0.8624	310.0	01Jan2017, 08:00	2.50
GLR2	7.6931	1401.6	01Jan2017, 10:00	2.09
GLR2-A	0.1456	32.0	01Jan2017, 09:00	1.89
GLR2-B	0.1518	48.9	01Jan2017, 08:00	2.05
GLR2-GLR1	7.6931	1320.5	01Jan2017, 10:00	2.08
GLR3	7.3957	1387.7	01Jan2017, 10:00	2.09
GLR3-A	0.2652	71.6	01Jan2017, 09:00	2.21
GLR3-GLR2	7.3957	1364.7	01Jan2017, 10:00	2.09
GLR4	7.1305	1354.7	01Jan2017, 10:00	2.09
GLR4-A	0.1185	31.8	01Jan2017, 09:00	2.21
GLR4-GLR3	7.1305	1347.0	01Jan2017, 10:00	2.09
GLR5	7.0120	1407.3	01Jan2017, 09:00	2.10
GLR5-A	0.2716	62.8	01Jan2017, 09:00	1.97
GLR5-GLR4	7.0120	1337.0	01Jan2017, 10:00	2.09
GLR6	6.7404	1428.3	01Jan2017, 09:00	2.12
GLR6-A	0.1576	49.9	01Jan2017, 08:00	1.82

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	1344.5	01Jan2017, 09:00	2.10
GLR7	6.5828	1428.5	01Jan2017, 09:00	2.12
GLR7-A	0.1096	36.8	01Jan2017, 08:00	1.89
GLR7-GLR6	6.5828	1404.3	01Jan2017, 09:00	2.12
GLR8	6.4732	1439.4	01Jan2017, 09:00	2.13
GLR8-A	0.2795	45.9	01Jan2017, 08:00	1.32
GLR8-GLR7	6.4732	1411.0	01Jan2017, 09:00	2.12
GLR9	5.6393	1357.5	01Jan2017, 09:00	2.21
GLR9-A	0.7205	131.2	01Jan2017, 09:00	1.67
GLR9-GLR8	5.6393	1314.3	01Jan2017, 09:00	2.21
QRT1	0.5544	118.7	01Jan2017, 08:00	1.69
QRT1-A	0.2521	56.4	01Jan2017, 08:00	1.52
QRT2	0.3023	85.8	01Jan2017, 08:00	1.82
QRT2-A	0.3023	85.8	01Jan2017, 08:00	1.82
QRT2-QRT1	0.3023	62.3	01Jan2017, 08:00	1.83
THT1	2.8755	791.2	01Jan2017, 09:00	2.36
THT1-A	0.6188	175.1	01Jan2017, 09:00	2.29
THT2	2.2567	633.3	01Jan2017, 09:00	2.38
THT2-A	1.0350	272.6	01Jan2017, 09:00	2.21
THT2-THT1	2.2567	616.1	01Jan2017, 09:00	2.38
THT3	1.2217	364.7	01Jan2017, 09:00	2.52
THT3-A	0.4856	171.8	01Jan2017, 08:00	2.21
THT3-B	0.7361	257.1	01Jan2017, 09:00	2.73
THT3-THT2	1.2217	360.7	01Jan2017, 09:00	2.53

Project: Glade Run Simulation Run: Existing_50YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 50YEAR_24HR
Compute Time: 10Oct2017, 08:46:21 Control Specifications:24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	1685.5	01Jan2017, 11:00	2.69
GLR1-A	0.0655	13.7	01Jan2017, 09:00	1.99
GLR10	4.9188	1610.7	01Jan2017, 09:00	2.95
GLR10-A	0.5046	202.6	01Jan2017, 08:00	2.59
GLR10-GLR9	4.9188	1536.1	01Jan2017, 09:00	2.92
GLR11	1.5387	694.7	01Jan2017, 08:00	2.92
GLR11-A	0.6763	304.8	01Jan2017, 08:00	2.59
GLR11-GLR10	1.5387	564.9	01Jan2017, 08:00	2.91
GLR12	0.8624	453.3	01Jan2017, 08:00	3.17
GLR12-A	0.6377	315.8	01Jan2017, 08:00	3.14
GLR12-B	0.2247	137.5	01Jan2017, 08:00	3.24
GLR12-GLR11	0.8624	389.9	01Jan2017, 08:00	3.19
GLR2	7.6931	1767.1	01Jan2017, 10:00	2.70
GLR2-A	0.1456	41.8	01Jan2017, 09:00	2.50
GLR2-B	0.1518	62.8	01Jan2017, 08:00	2.68
GLR2-GLR1	7.6931	1679.1	01Jan2017, 11:00	2.69
GLR3	7.3957	1775.7	01Jan2017, 10:00	2.71
GLR3-A	0.2652	90.4	01Jan2017, 09:00	2.86
GLR3-GLR2	7.3957	1719.7	01Jan2017, 10:00	2.70
GLR4	7.1305	1731.0	01Jan2017, 10:00	2.70
GLR4-A	0.1185	40.1	01Jan2017, 09:00	2.86
GLR4-GLR3	7.1305	1724.4	01Jan2017, 10:00	2.70
GLR5	7.0120	1771.7	01Jan2017, 09:00	2.72
GLR5-A	0.2716	81.0	01Jan2017, 09:00	2.59
GLR5-GLR4	7.0120	1708.8	01Jan2017, 10:00	2.70
GLR6	6.7404	1798.8	01Jan2017, 09:00	2.73
GLR6-A	0.1576	65.3	01Jan2017, 08:00	2.41

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	1690.6	01Jan2017, 09:00	2.72
GLR7	6.5828	1797.0	01Jan2017, 09:00	2.74
GLR7-A	0.1096	47.7	01Jan2017, 08:00	2.50
GLR7-GLR6	6.5828	1767.3	01Jan2017, 09:00	2.74
GLR8	6.4732	1811.9	01Jan2017, 09:00	2.74
GLR8-A	0.2795	65.8	01Jan2017, 08:00	1.82
GLR8-GLR7	6.4732	1774.2	01Jan2017, 09:00	2.74
GLR9	5.6393	1711.4	01Jan2017, 09:00	2.84
GLR9-A	0.7205	175.3	01Jan2017, 09:00	2.24
GLR9-GLR8	5.6393	1643.9	01Jan2017, 09:00	2.84
QRT1	0.5544	162.8	01Jan2017, 08:00	2.26
QRT1-A	0.2521	77.3	01Jan2017, 08:00	2.07
QRT2	0.3023	112.9	01Jan2017, 08:00	2.41
QRT2-A	0.3023	112.9	01Jan2017, 08:00	2.41
QRT2-QRT1	0.3023	85.5	01Jan2017, 08:00	2.43
THT1	2.8755	996.8	01Jan2017, 09:00	3.03
THT1-A	0.6188	219.9	01Jan2017, 09:00	2.95
THT2	2.2567	794.4	01Jan2017, 09:00	3.05
THT2-A	1.0350	345.8	01Jan2017, 09:00	2.86
THT2-THT1	2.2567	776.9	01Jan2017, 09:00	3.05
THT3	1.2217	449.7	01Jan2017, 09:00	3.21
THT3-A	0.4856	217.2	01Jan2017, 08:00	2.86
THT3-B	0.7361	313.5	01Jan2017, 09:00	3.43
THT3-THT2	1.2217	448.6	01Jan2017, 09:00	3.21

Project: Glade Run Simulation Run: Existing_100YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 100YEAR_24HR
Compute Time: 10Oct2017, 08:46:46 Control Specifications:24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	2099.4	01Jan2017, 11:00	3.47
GLR1-A	0.0655	18.2	01Jan2017, 09:00	2.66
GLR10	4.9188	2017.1	01Jan2017, 09:00	3.74
GLR10-A	0.5046	252.4	01Jan2017, 08:00	3.35
GLR10-GLR9	4.9188	1890.2	01Jan2017, 09:00	3.72
GLR11	1.5387	853.2	01Jan2017, 08:00	3.72
GLR11-A	0.6763	377.6	01Jan2017, 08:00	3.35
GLR11-GLR10	1.5387	671.2	01Jan2017, 08:00	3.70
GLR12	0.8624	544.4	01Jan2017, 08:00	4.00
GLR12-A	0.6377	380.9	01Jan2017, 08:00	3.97
GLR12-B	0.2247	163.5	01Jan2017, 08:00	4.07
GLR12-GLR11	0.8624	475.6	01Jan2017, 08:00	4.01
GLR2	7.6931	2231.3	01Jan2017, 10:00	3.48
GLR2-A	0.1456	52.9	01Jan2017, 09:00	3.25
GLR2-B	0.1518	77.8	01Jan2017, 08:00	3.45
GLR2-GLR1	7.6931	2091.2	01Jan2017, 11:00	3.48
GLR3	7.3957	2225.7	01Jan2017, 10:00	3.49
GLR3-A	0.2652	111.9	01Jan2017, 09:00	3.66
GLR3-GLR2	7.3957	2171.6	01Jan2017, 10:00	3.49
GLR4	7.1305	2171.8	01Jan2017, 10:00	3.47
GLR4-A	0.1185	49.7	01Jan2017, 09:00	3.66
GLR4-GLR3	7.1305	2161.6	01Jan2017, 10:00	3.48
GLR5	7.0120	2209.6	01Jan2017, 09:00	3.49
GLR5-A	0.2716	102.1	01Jan2017, 09:00	3.35
GLR5-GLR4	7.0120	2144.1	01Jan2017, 10:00	3.47
GLR6	6.7404	2231.0	01Jan2017, 09:00	3.50
GLR6-A	0.1576	82.0	01Jan2017, 08:00	3.15

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	2107.5	01Jan2017, 09:00	3.49
GLR7	6.5828	2236.4	01Jan2017, 09:00	3.51
GLR7-A	0.1096	59.5	01Jan2017, 08:00	3.25
GLR7-GLR6	6.5828	2190.0	01Jan2017, 09:00	3.51
GLR8	6.4732	2255.5	01Jan2017, 09:00	3.51
GLR8-A	0.2795	88.5	01Jan2017, 08:00	2.47
GLR8-GLR7	6.4732	2206.9	01Jan2017, 09:00	3.51
GLR9	5.6393	2117.6	01Jan2017, 09:00	3.62
GLR9-A	0.7205	227.4	01Jan2017, 09:00	2.95
GLR9-GLR8	5.6393	2035.1	01Jan2017, 09:00	3.62
QRT1	0.5544	212.4	01Jan2017, 08:00	2.98
QRT1-A	0.2521	100.6	01Jan2017, 08:00	2.76
QRT2	0.3023	142.4	01Jan2017, 08:00	3.15
QRT2-A	0.3023	142.4	01Jan2017, 08:00	3.15
QRT2-QRT1	0.3023	111.8	01Jan2017, 08:00	3.17
THT1	2.8755	1227.6	01Jan2017, 09:00	3.83
THT1-A	0.6188	270.7	01Jan2017, 09:00	3.76
THT2	2.2567	976.1	01Jan2017, 09:00	3.86
THT2-A	1.0350	428.4	01Jan2017, 09:00	3.66
THT2-THT1	2.2567	956.9	01Jan2017, 09:00	3.85
THT3	1.2217	549.3	01Jan2017, 08:00	4.04
THT3-A	0.4856	266.0	01Jan2017, 08:00	3.66
THT3-B	0.7361	376.2	01Jan2017, 09:00	4.29
THT3-THT2	1.2217	547.7	01Jan2017, 09:00	4.02

Project: Glade Run Simulation Run: Existing_200YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 200YEAR_24HR
Compute Time: 10Oct2017, 08:47:18 Control Specifications:24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	2605.2	01Jan2017, 10:00	4.43
GLR1-A	0.0655	23.4	01Jan2017, 09:00	3.50
GLR10	4.9188	2433.0	01Jan2017, 09:00	4.70
GLR10-A	0.5046	308.2	01Jan2017, 08:00	4.28
GLR10-GLR9	4.9188	2305.8	01Jan2017, 09:00	4.69
GLR11	1.5387	1015.7	01Jan2017, 08:00	4.67
GLR11-A	0.6763	458.1	01Jan2017, 08:00	4.28
GLR11-GLR10	1.5387	826.5	01Jan2017, 08:00	4.65
GLR12	0.8624	644.1	01Jan2017, 08:00	4.99
GLR12-A	0.6377	452.7	01Jan2017, 08:00	4.96
GLR12-B	0.2247	191.4	01Jan2017, 08:00	5.08
GLR12-GLR11	0.8624	557.7	01Jan2017, 08:00	4.98
GLR2	7.6931	2748.8	01Jan2017, 10:00	4.44
GLR2-A	0.1456	65.6	01Jan2017, 09:00	4.17
GLR2-B	0.1518	94.6	01Jan2017, 08:00	4.39
GLR2-GLR1	7.6931	2590.2	01Jan2017, 10:00	4.44
GLR3	7.3957	2730.9	01Jan2017, 10:00	4.44
GLR3-A	0.2652	135.8	01Jan2017, 09:00	4.62
GLR3-GLR2	7.3957	2675.0	01Jan2017, 10:00	4.44
GLR4	7.1305	2662.4	01Jan2017, 10:00	4.43
GLR4-A	0.1185	60.3	01Jan2017, 09:00	4.62
GLR4-GLR3	7.1305	2652.5	01Jan2017, 10:00	4.43
GLR5	7.0120	2711.4	01Jan2017, 09:00	4.43
GLR5-A	0.2716	125.9	01Jan2017, 09:00	4.28
GLR5-GLR4	7.0120	2628.4	01Jan2017, 10:00	4.42
GLR6	6.7404	2724.6	01Jan2017, 09:00	4.44
GLR6-A	0.1576	100.5	01Jan2017, 08:00	4.05

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	2585.5	01Jan2017, 09:00	4.44
GLR7	6.5828	2745.2	01Jan2017, 09:00	4.45
GLR7-A	0.1096	72.5	01Jan2017, 08:00	4.17
GLR7-GLR6	6.5828	2672.6	01Jan2017, 09:00	4.45
GLR8	6.4732	2761.8	01Jan2017, 09:00	4.46
GLR8-A	0.2795	115.1	01Jan2017, 08:00	3.28
GLR8-GLR7	6.4732	2708.0	01Jan2017, 09:00	4.45
GLR9	5.6393	2592.8	01Jan2017, 09:00	4.58
GLR9-A	0.7205	287.0	01Jan2017, 09:00	3.83
GLR9-GLR8	5.6393	2480.8	01Jan2017, 09:00	4.57
QRT1	0.5544	269.5	01Jan2017, 08:00	3.86
QRT1-A	0.2521	127.3	01Jan2017, 08:00	3.61
QRT2	0.3023	175.7	01Jan2017, 08:00	4.05
QRT2-A	0.3023	175.7	01Jan2017, 08:00	4.05
QRT2-QRT1	0.3023	142.2	01Jan2017, 08:00	4.08
THT1	2.8755	1484.1	01Jan2017, 09:00	4.80
THT1-A	0.6188	327.1	01Jan2017, 09:00	4.73
THT2	2.2567	1180.6	01Jan2017, 09:00	4.82
THT2-A	1.0350	521.1	01Jan2017, 09:00	4.62
THT2-THT1	2.2567	1157.0	01Jan2017, 09:00	4.81
THT3	1.2217	665.5	01Jan2017, 08:00	5.03
THT3-A	0.4856	320.3	01Jan2017, 08:00	4.62
THT3-B	0.7361	445.0	01Jan2017, 09:00	5.31
THT3-THT2	1.2217	659.5	01Jan2017, 09:00	4.99

Project: Glade Run Simulation Run: Existing_500YR

Start of Run: 01Jan2017, 01:00 Basin Model: Existing
End of Run: 02Jan2017, 13:00 Meteorologic Model: 500YEAR_24HR
Compute Time: 10Oct2017, 08:47:48 Control Specifications: 24HourStorm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	3383.3	01Jan2017, 10:00	6.04
GLR1-A	0.0655	31.7	01Jan2017, 09:00	4.94
GLR10	4.9188	3141.9	01Jan2017, 09:00	6.32
GLR10-A	0.5046	392.9	01Jan2017, 08:00	5.84
GLR10-GLR9	4.9188	2880.5	01Jan2017, 09:00	6.32
GLR11	1.5387	1274.7	01Jan2017, 08:00	6.29
GLR11-A	0.6763	578.5	01Jan2017, 08:00	5.84
GLR11-GLR10	1.5387	1024.7	01Jan2017, 09:00	6.30
GLR12	0.8624	792.6	01Jan2017, 08:00	6.64
GLR12-A	0.6377	560.3	01Jan2017, 08:00	6.61
GLR12-B	0.2247	232.3	01Jan2017, 08:00	6.74
GLR12-GLR11	0.8624	696.2	01Jan2017, 08:00	6.64
GLR2	7.6931	3540.9	01Jan2017, 10:00	6.04
GLR2-A	0.1456	85.2	01Jan2017, 09:00	5.72
GLR2-B	0.1518	120.0	01Jan2017, 08:00	5.97
GLR2-GLR1	7.6931	3362.9	01Jan2017, 10:00	6.05
GLR3	7.3957	3495.4	01Jan2017, 10:00	6.03
GLR3-A	0.2652	172.2	01Jan2017, 09:00	6.23
GLR3-GLR2	7.3957	3444.8	01Jan2017, 10:00	6.05
GLR4	7.1305	3401.1	01Jan2017, 10:00	6.02
GLR4-A	0.1185	76.5	01Jan2017, 09:00	6.23
GLR4-GLR3	7.1305	3394.4	01Jan2017, 10:00	6.02
GLR5	7.0120	3457.9	01Jan2017, 09:00	6.02
GLR5-A	0.2716	162.4	01Jan2017, 09:00	5.84
GLR5-GLR4	7.0120	3357.3	01Jan2017, 10:00	6.02
GLR6	6.7404	3455.5	01Jan2017, 09:00	6.03
GLR6-A	0.1576	128.4	01Jan2017, 08:00	5.59

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	3295.5	01Jan2017, 09:00	6.03
GLR7	6.5828	3476.8	01Jan2017, 09:00	6.05
GLR7-A	0.1096	92.0	01Jan2017, 08:00	5.72
GLR7-GLR6	6.5828	3386.4	01Jan2017, 09:00	6.04
GLR8	6.4732	3496.8	01Jan2017, 09:00	6.05
GLR8-A	0.2795	157.2	01Jan2017, 08:00	4.69
GLR8-GLR7	6.4732	3427.6	01Jan2017, 09:00	6.05
GLR9	5.6393	3260.3	01Jan2017, 09:00	6.19
GLR9-A	0.7205	379.8	01Jan2017, 09:00	5.33
GLR9-GLR8	5.6393	3120.2	01Jan2017, 09:00	6.19
QRT1	0.5544	358.4	01Jan2017, 08:00	5.37
QRT1-A	0.2521	168.5	01Jan2017, 08:00	5.07
QRT2	0.3023	226.4	01Jan2017, 08:00	5.59
QRT2-A	0.3023	226.4	01Jan2017, 08:00	5.59
QRT2-QRT1	0.3023	189.9	01Jan2017, 08:00	5.61
THT1	2.8755	1862.3	01Jan2017, 09:00	6.42
THT1-A	0.6188	412.9	01Jan2017, 09:00	6.36
THT2	2.2567	1495.7	01Jan2017, 09:00	6.45
THT2-A	1.0350	663.0	01Jan2017, 09:00	6.23
THT2-THT1	2.2567	1449.4	01Jan2017, 09:00	6.44
THT3	1.2217	845.5	01Jan2017, 08:00	6.69
THT3-A	0.4856	402.1	01Jan2017, 08:00	6.23
THT3-B	0.7361	548.2	01Jan2017, 09:00	6.99
THT3-THT2	1.2217	832.7	01Jan2017, 09:00	6.63

Project: Glade Run Simulation Run: Sept2011_Lee

Start of Run: 06Sep2011, 12:00 Basin Model: Existing
End of Run: 08Sep2011, 20:00 Meteorologic Model: SEPT2011_LEE
Compute Time: 10Oct2017, 08:48:12 Control Specifications:Sept2011_Lee

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR1	7.7586	1389.7	08Sep2011, 08:00	3.95
GLR1-A	0.0655	12.6	08Sep2011, 07:00	3.06
GLR10	4.9188	1101.6	08Sep2011, 07:00	4.22
GLR10-A	0.5046	125.6	07Sep2011, 19:00	3.79
GLR10-GLR9	4.9188	1047.5	08Sep2011, 07:00	4.21
GLR11	1.5387	402.9	07Sep2011, 19:00	4.18
GLR11-A	0.6763	181.6	07Sep2011, 19:00	3.79
GLR11-GLR10	1.5387	356.0	07Sep2011, 19:00	4.19
GLR12	0.8624	249.0	07Sep2011, 19:00	4.47
GLR12-A	0.6377	177.3	07Sep2011, 19:00	4.44
GLR12-B	0.2247	71.7	07Sep2011, 19:00	4.55
GLR12-GLR11	0.8624	221.4	07Sep2011, 19:00	4.49
GLR2	7.6931	1398.8	08Sep2011, 08:00	3.95
GLR2-A	0.1456	30.9	08Sep2011, 07:00	3.69
GLR2-B	0.1518	38.4	07Sep2011, 19:00	3.90
GLR2-GLR1	7.6931	1380.1	08Sep2011, 08:00	3.96
GLR3	7.3957	1374.4	08Sep2011, 07:00	3.96
GLR3-A	0.2652	60.3	08Sep2011, 07:00	4.12
GLR3-GLR2	7.3957	1357.2	08Sep2011, 08:00	3.96
GLR4	7.1305	1334.6	08Sep2011, 07:00	3.96
GLR4-A	0.1185	27.1	08Sep2011, 07:00	4.12
GLR4-GLR3	7.1305	1314.1	08Sep2011, 07:00	3.95
GLR5	7.0120	1391.4	08Sep2011, 07:00	3.96
GLR5-A	0.2716	59.7	08Sep2011, 07:00	3.79
GLR5-GLR4	7.0120	1307.5	08Sep2011, 07:00	3.95
GLR6	6.7404	1378.4	08Sep2011, 07:00	3.98
GLR6-A	0.1576	40.4	07Sep2011, 19:00	3.58

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
GLR6-GLR5	6.7404	1331.7	08Sep2011, 07:00	3.97
GLR7	6.5828	1357.6	08Sep2011, 07:00	3.99
GLR7-A	0.1096	28.9	07Sep2011, 19:00	3.69
GLR7-GLR6	6.5828	1344.1	08Sep2011, 07:00	3.99
GLR8	6.4732	1348.7	08Sep2011, 07:00	3.99
GLR8-A	0.2795	53.8	08Sep2011, 07:00	2.85
GLR8-GLR7	6.4732	1333.4	08Sep2011, 07:00	3.99
GLR9	5.6393	1197.6	08Sep2011, 07:00	4.11
GLR9-A	0.7205	150.1	08Sep2011, 07:00	3.37
GLR9-GLR8	5.6393	1178.2	08Sep2011, 07:00	4.11
QRT1	0.5544	116.7	08Sep2011, 07:00	3.40
QRT1-A	0.2521	54.3	07Sep2011, 19:00	3.16
QRT2	0.3023	72.5	07Sep2011, 19:00	3.58
QRT2-A	0.3023	72.5	07Sep2011, 19:00	3.58
QRT2-QRT1	0.3023	65.3	08Sep2011, 07:00	3.59
THT1	2.8755	635.5	07Sep2011, 20:00	4.31
THT1-A	0.6188	140.0	08Sep2011, 07:00	4.22
THT2	2.2567	501.4	07Sep2011, 20:00	4.34
THT2-A	1.0350	224.0	08Sep2011, 07:00	4.12
THT2-THT1	2.2567	496.7	07Sep2011, 20:00	4.34
THT3	1.2217	286.2	08Sep2011, 07:00	4.51
THT3-A	0.4856	128.0	07Sep2011, 19:00	4.12
THT3-B	0.7361	182.2	07Sep2011, 20:00	4.78
THT3-THT2	1.2217	277.6	07Sep2011, 20:00	4.52

APPENDIX E

HEC-RAS Results

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HEC-RAS HEC-RAS 5.0.3 September 2016
  U.S. Army Corps of Engineers
 Hydrologic Engineering Center
       609 Second Street
       Davis, California


X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: WBSR
Project File : WBSR.prj
Run Date and Time: 7/26/2018 10:52:05 AM

Project in English units

Project Description:
Geo-referenced steady-state HEC-RAS model for West Branch Susquehanna River in the Borough of Muncy and Lycoming County, Pennsylvania. Completed in May 2018 by the U.S. Army Corps of Engineers, Baltimore District, as part of the "Floodplain Management Study for the Greater Muncy Area, Lycoming County, Pennsylvania". This study was completed under the USACE Planning Assistance to States (PAS) Program.

Existing-conditions geometry as of February 2018.
Vertical datum is North American Vertical Datum of 1988 (NAVD). Horizontal datum is Pennsylvania State Plane Feet North NAD83. Overbank data from 1-meter resolution PADCNR PAMAP Program DEM collected in 2007. Channel and bridge data from Susquehanna River Basin Commission (SRBC) survey in December 2017.
Cross-section stations in feet upstream of the Lycoming County boundary.

Peak flows from gage analysis completed by USACE to water year 2016 as part of the "Floodplain Management Study for the Greater Muncy Area, Lycoming County, Pennsylvania". Gages upstream USGS 01551500 (Williamsport) and downstream USGS 01553500 (Lewisburg) used to calculate flows in Muncy area for frequency storms and historical storms.

Plans
include:
"WBSR_ExistingConditions". Existing-conditions plan for West Branch Susquehanna River in the Borough of Muncy, Lycoming County, Pennsylvania. Run in subcritical flow regime. Downstream boundary condition from rating curve developed from historical obervations at NWS forecast point in Montgomery, PA. Calibrated to Agnes (1972), Ivan (2004), and several smaller storms at XS 38534 based upon data from NWS forecast point in Muncy, PA.

"WBSR_Floodway":
Regulatory Floodway plan for West Branch Susquehanna River in Lycoming County, Pennsylvania.

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	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
Muncy	47515	Q2	82000.00	461.47	484.4	472.49	485.13	0.000502	7.04	11902.33	647.49	0.27
Muncy	47515	Q5	123500.00	461.47	489.1	475.28	490.22	0.000495	8.52	16159.73	1310.32	0.30
Muncy	47515	Q10	156000.00	461.47	491.0	477.23	492.52	0.000490	9.87	18858.67	1484.24	0.33
Muncy	47515	Q25	203000.00	461.47	493.9	479.80	495.84	0.000495	11.35	23803.80	1912.71	0.37
Muncy	47515	Q50	243000.00	461.47	497.1	481.83	499.10	0.000537	11.81	29942.11	2038.59	0.36
Muncy	47515	Q100	287000.00	461.47	503.3	483.98	504.86	0.000496	10.84	43295.41	2261.96	0.30
Muncy	47515	Q200	336000.00	461.47	507.0	486.33	508.58	0.000514	11.09	52935.60	2885.38	0.30
Muncy	47515	Q500	409500.00	461.47	511.9	490.94	513.44	0.000457	11.24	67676.87	3048.37	0.29
Muncy	47515	Agnes1972	289000.00	461.47	503.6	484.07	505.16	0.000543	10.79	44015.48	2288.94	0.30
Muncy	47515	Ivan2004	206000.00	461.47	494.0	479.96	495.94	0.000492	11.50	23899.78	1913.43	0.37
Muncy	47515	Lee2011	155000.00	461.47	491.2	477.18	492.59	0.000477	9.76	19021.26	1500.66	0.33
Muncy	47515	2Dec2010	143000.00	461.47	490.5	476.47	491.81	0.000506	9.27	18074.91	1418.19	0.32
Muncy	47515	24Oct1990	60400.00	461.47	482.2	470.83	482.69	0.000515	5.82	10516.71	611.32	0.24
Muncy	46819	Q2	82000.00	461.09	484.1	471.61	484.78	0.000442	6.59	12506.09	631.40	0.26
Muncy	46819	Q5	123500.00	461.09	488.9	474.30	489.86	0.000439	8.01	16400.29	1114.21	0.28
Muncy	46819	Q10	156000.00	461.09	490.8	476.20	492.15	0.000438	9.31	18887.01	1456.09	0.31
Muncy	46819	Q25	203000.00	461.09	493.7	478.73	495.46	0.000443	10.71	23710.57	1745.56	0.34
Muncy	46819	Q50	243000.00	461.09	496.9	480.70	498.70	0.000491	11.24	29198.19	1764.43	0.34
Muncy	46819	Q100	287000.00	461.09	503.0	482.71	504.51	0.000472	10.52	40629.60	2076.74	0.30
Muncy	46819	Q200	336000.00	461.09	506.7	484.84	508.23	0.000496	10.83	49583.58	2637.10	0.29
Muncy	46819	Q500	409500.00	461.09	511.6	488.55	513.12	0.000446	11.04	62851.70	2724.31	0.28
Muncy	46819	Agnes1972	289000.00	461.09	503.3	482.80	504.78	0.000519	10.49	41212.81	2130.19	0.29
Muncy	46819	Ivan2004	206000.00	461.09	493.8	478.88	495.55	0.000440	10.85	23807.91	1745.92	0.35
Muncy	46819	Lee2011	155000.00	461.09	490.9	476.15	492.24	0.000427	9.20	19054.47	1470.15	0.31
Muncy	46819	2Dec2010	143000.00	461.09	490.3	475.44	491.44	0.000452	8.74	18102.83	1346.11	0.30
Muncy	46819	24Oct1990	60400.00	461.09	481.9	470.03	482.33	0.000455	5.45	11107.03	622.06	0.22
Muncy	46106	Q2	82000.00	459.91	483.7	471.46	484.44	0.000483	6.91	11975.47	614.74	0.27

Muncy	46106	Q5	123500.00	459.91	488.4	474.31	489.52	0.000479	8.37	16083.76	1165.20	0.29
Muncy	46106	Q10	156000.00	459.91	490.4	476.25	491.82	0.000476	9.71	18688.81	1514.47	0.33
Muncy	46106	Q25	203000.00	459.91	493.3	478.84	495.12	0.000474	11.10	23267.99	1609.57	0.36
Muncy	46106	Q50	243000.00	459.91	496.4	480.86	498.33	0.000525	11.64	28397.71	1674.30	0.36
Muncy	46106	Q100	287000.00	459.91	502.6	482.94	504.16	0.000493	10.78	39520.82	2030.35	0.30
Muncy	46106	Q200	336000.00	459.91	506.2	485.23	507.86	0.000524	11.15	47990.48	2623.80	0.30
Muncy	46106	Q500	409500.00	459.91	511.2	489.59	512.79	0.000466	11.31	61294.65	2680.87	0.29
Muncy	46106	Agnes1972	289000.00	459.91	502.8	483.05	504.39	0.000544	10.76	40008.72	2048.71	0.30
Muncy	46106	Ivan2004	206000.00	459.91	493.3	479.00	495.22	0.000471	11.24	23355.78	1613.23	0.36
Muncy	46106	Lee2011	155000.00	459.91	490.5	476.21	491.91	0.000463	9.60	18884.31	1527.02	0.32
Muncy	46106	2Dec2010	143000.00	459.91	489.8	475.51	491.09	0.000493	9.13	17868.05	1401.12	0.31
Muncy	46106	24Oct1990	60400.00	459.91	481.5	469.78	481.99	0.000496	5.71	10624.38	603.03	0.24
Muncy	45538	Q2	82000.00	459.32	483.5	470.82	484.16	0.000425	6.54	12640.47	636.54	0.25
Muncy	45538	Q5	123500.00	459.32	488.3	473.51	489.24	0.000427	7.98	16486.46	1186.63	0.28
Muncy	45538	Q10	156000.00	459.32	490.2	475.41	491.52	0.000425	9.26	19301.96	1531.96	0.31
Muncy	45538	Q25	203000.00	459.32	493.1	477.91	494.82	0.000424	10.60	24122.75	1672.20	0.34
Muncy	45538	Q50	243000.00	459.32	496.2	479.88	498.00	0.000474	11.14	29277.52	1699.63	0.34
Muncy	45538	Q100	287000.00	459.32	502.4	481.92	503.87	0.000450	10.36	41175.77	2103.92	0.29
Muncy	45538	Q200	336000.00	459.32	506.0	484.07	507.54	0.000480	10.73	50148.93	2683.20	0.29
Muncy	45538	Q500	409500.00	459.32	511.1	487.46	512.50	0.000419	10.79	63875.11	2745.17	0.27
Muncy	45538	Agnes1972	289000.00	459.32	502.6	482.01	504.07	0.000499	10.36	41612.95	2122.13	0.29
Muncy	45538	Ivan2004	206000.00	459.32	493.2	478.06	494.92	0.000421	10.72	24223.39	1672.47	0.34
Muncy	45538	Lee2011	155000.00	459.32	490.3	475.35	491.62	0.000413	9.15	19507.40	1554.84	0.31
Muncy	45538	2Dec2010	143000.00	459.32	489.6	474.68	490.79	0.000441	8.71	18428.47	1463.15	0.30
Muncy	45538	24Oct1990	60400.00	459.32	481.3	469.22	481.71	0.000436	5.40	11223.29	627.33	0.22
Muncy	44922	Q2	82000.00	458.58	483.3	470.00	483.89	0.000342	5.91	14048.34	780.28	0.23
Muncy	44922	Q5	123500.00	458.58	488.2	472.54	488.95	0.000342	7.18	18549.14	1360.51	0.25
Muncy	44922	Q10	156000.00	458.58	490.2	474.32	491.21	0.000337	8.30	21928.87	1593.04	0.28
Muncy	44922	Q25	203000.00	458.58	493.2	476.68	494.49	0.000335	9.49	26740.02	1621.57	0.30
Muncy	44922	Q50	243000.00	458.58	496.2	478.50	497.64	0.000380	10.04	31679.14	1638.63	0.30
Muncy	44922	Q100	287000.00	458.58	502.3	480.46	503.55	0.000373	9.48	44681.73	2698.66	0.26
Muncy	44922	Q200	336000.00	458.58	506.0	482.47	507.19	0.000386	9.66	54775.19	2803.83	0.26
Muncy	44922	Q500	409500.00	458.58	511.0	485.44	512.19	0.000338	9.74	69143.95	2857.91	0.25
Muncy	44922	Agnes1972	289000.00	458.58	502.5	480.54	503.73	0.000421	9.55	45107.70	2704.64	0.27
Muncy	44922	Ivan2004	206000.00	458.58	493.2	476.82	494.58	0.000333	9.60	26850.23	1621.91	0.30
Muncy	44922	Lee2011	155000.00	458.58	490.3	474.27	491.32	0.000327	8.20	22145.48	1595.37	0.27
Muncy	44922	2Dec2010	143000.00	458.58	489.5	473.63	490.48	0.000351	7.82	20953.40	1573.63	0.26
Muncy	44922	24Oct1990	60400.00	458.58	481.1	468.49	481.44	0.000352	4.88	12435.38	713.13	0.20
Muncy	44141	Q2	82000.00	458.01	483.1	468.73	483.63	0.000291	5.63	14882.84	804.35	0.21
Muncy	44141	Q5	123500.00	458.01	488.0	471.29	488.68	0.000298	6.89	19938.48	1418.42	0.23
Muncy	44141	Q10	156000.00	458.01	490.0	473.08	490.94	0.000295	7.98	23061.68	1484.12	0.26
Muncy	44141	Q25	203000.00	458.01	493.0	475.43	494.21	0.000300	9.20	27514.72	1499.56	0.29
Muncy	44141	Q50	243000.00	458.01	495.9	477.30	497.34	0.000349	9.83	31991.95	1555.13	0.29
Muncy	44141	Q100	287000.00	458.01	502.0	479.22	503.26	0.000354	9.39	42990.68	2103.53	0.26
Muncy	44141	Q200	336000.00	458.01	505.6	481.29	506.88	0.000390	9.85	52274.82	2951.96	0.26

Muncy	44141	Q500	409500.00	458.01	510.7	484.15	511.91	0.000345	9.97	67421.66	3007.07	0.25
Muncy	44141	Agnes1972	289000.00	458.01	502.2	479.29	503.40	0.000395	9.42	43278.13	2121.40	0.26
Muncy	44141	Ivan2004	206000.00	458.01	493.0	475.58	494.31	0.000297	9.31	27621.27	1499.85	0.29
Muncy	44141	Lee2011	155000.00	458.01	490.1	473.02	491.06	0.000287	7.89	23271.24	1484.77	0.26
Muncy	44141	2Dec2010	143000.00	458.01	489.3	472.38	490.21	0.000307	7.52	22124.28	1481.17	0.25
Muncy	44141	24Oct1990	60400.00	458.01	480.8	467.20	481.18	0.000294	4.64	13185.83	729.41	0.18
Muncy	43541	Q2	82000.00	457.08	483.0	468.03	483.45	0.000242	5.16	16522.06	1001.08	0.19
Muncy	43541	Q5	123500.00	457.08	487.9	470.46	488.48	0.000246	6.29	22300.66	1379.15	0.21
Muncy	43541	Q10	156000.00	457.08	489.9	472.17	490.73	0.000244	7.30	25160.20	1397.93	0.24
Muncy	43541	Q25	203000.00	457.08	492.9	474.43	493.99	0.000251	8.46	29368.75	1405.55	0.26
Muncy	43541	Q50	243000.00	457.08	495.9	476.19	497.09	0.000299	9.12	33513.72	1502.89	0.27
Muncy	43541	Q100	287000.00	457.08	501.9	478.02	503.03	0.000315	8.88	43494.58	1969.94	0.24
Muncy	43541	Q200	336000.00	457.08	505.4	479.99	506.63	0.000345	9.29	52905.09	3007.06	0.25
Muncy	43541	Q500	409500.00	457.08	510.5	483.03	511.69	0.000312	9.50	68354.20	3094.17	0.24
Muncy	43541	Agnes1972	289000.00	457.08	502.0	478.10	503.15	0.000353	8.91	43704.22	1982.76	0.24
Muncy	43541	Ivan2004	206000.00	457.08	493.0	474.58	494.09	0.000249	8.56	29474.71	1405.73	0.27
Muncy	43541	Lee2011	155000.00	457.08	490.1	472.11	490.86	0.000238	7.21	25359.29	1398.33	0.24
Muncy	43541	2Dec2010	143000.00	457.08	489.3	471.51	489.99	0.000255	6.87	24251.47	1396.03	0.23
Muncy	43541	24Oct1990	60400.00	457.08	480.7	466.52	481.00	0.000247	4.26	14348.74	882.24	0.17
Muncy	42792	Q2	82000.00	455.89	482.9	467.57	483.25	0.000220	4.67	18578.45	1222.27	0.18
Muncy	42792	Q5	123500.00	455.89	487.8	470.14	488.27	0.000211	5.58	25144.09	1491.08	0.20
Muncy	42792	Q10	156000.00	455.89	489.9	471.86	490.51	0.000207	6.46	28392.01	1613.73	0.22
Muncy	42792	Q25	203000.00	455.89	492.9	474.32	493.75	0.000208	7.43	33348.11	1681.41	0.24
Muncy	42792	Q50	243000.00	455.89	495.9	476.06	496.80	0.000243	7.98	38164.14	1785.88	0.24
Muncy	42792	Q100	287000.00	455.89	501.9	477.67	502.74	0.000248	7.68	51295.84	2786.81	0.22
Muncy	42792	Q200	336000.00	455.89	505.4	479.54	506.30	0.000265	7.94	62102.59	3122.27	0.21
Muncy	42792	Q500	409500.00	455.89	510.6	482.04	511.39	0.000239	8.13	79557.91	4332.21	0.21
Muncy	42792	Agnes1972	289000.00	455.89	502.0	477.73	502.83	0.000279	7.71	51536.22	2811.85	0.22
Muncy	42792	Ivan2004	206000.00	455.89	493.0	474.48	493.85	0.000206	7.52	33480.90	1682.82	0.24
Muncy	42792	Lee2011	155000.00	455.89	490.0	471.80	490.64	0.000201	6.38	28625.08	1615.95	0.21
Muncy	42792	2Dec2010	143000.00	455.89	489.2	471.20	489.77	0.000216	6.09	27315.38	1587.80	0.21
Muncy	42792	24Oct1990	60400.00	455.89	480.6	465.97	480.81	0.000234	3.91	15880.90	1111.63	0.16
Muncy	41890	Q2	82000.00	455.00	482.7	467.21	483.05	0.000224	4.70	18974.52	1270.56	0.18
Muncy	41890	Q5	123500.00	455.00	487.6	469.88	488.08	0.000209	5.55	25834.99	1526.43	0.19
Muncy	41890	Q10	156000.00	455.00	489.7	471.65	490.32	0.000201	6.37	29142.16	1599.52	0.21
Muncy	41890	Q25	203000.00	455.00	492.8	473.96	493.55	0.000199	7.27	34063.34	1655.85	0.23
Muncy	41890	Q50	243000.00	455.00	495.7	475.97	496.56	0.000231	7.77	38788.82	1796.84	0.24
Muncy	41890	Q100	287000.00	455.00	501.8	477.85	502.49	0.000230	7.39	52551.90	2799.99	0.21
Muncy	41890	Q200	336000.00	455.00	505.3	479.56	506.04	0.000244	7.62	63038.38	3155.19	0.20
Muncy	41890	Q500	409500.00	455.00	510.4	482.34	511.16	0.000225	7.89	80257.81	3516.48	0.20
Muncy	41890	Agnes1972	289000.00	455.00	501.8	477.91	502.56	0.000259	7.42	52716.18	2801.76	0.21
Muncy	41890	Ivan2004	206000.00	455.00	492.9	474.08	493.65	0.000197	7.35	34199.34	1665.42	0.23
Muncy	41890	Lee2011	155000.00	455.00	489.9	471.57	490.45	0.000195	6.28	29381.87	1600.05	0.21
Muncy	41890	2Dec2010	143000.00	455.00	489.0	470.94	489.57	0.000212	6.02	28044.16	1590.54	0.21
Muncy	41890	24Oct1990	60400.00	455.00	480.4	465.46	480.60	0.000242	3.96	16090.94	1176.34	0.16

Muncy	41163	Q2	82000.00	454.68	482.6	465.96	482.90	0.000187	4.72	18980.79	1097.22	0.17
Muncy	41163	Q5	123500.00	454.68	487.4	468.49	487.93	0.000193	5.77	24923.30	1360.07	0.19
Muncy	41163	Q10	156000.00	454.68	489.5	470.27	490.17	0.000191	6.67	27768.71	1365.97	0.21
Muncy	41163	Q25	203000.00	454.68	492.5	472.65	493.39	0.000196	7.70	32076.22	1593.78	0.23
Muncy	41163	Q50	243000.00	454.68	495.4	474.40	496.38	0.000234	8.29	36525.64	1740.15	0.24
Muncy	41163	Q100	287000.00	454.68	501.5	476.20	502.31	0.000238	7.90	49636.79	2603.86	0.21
Muncy	41163	Q200	336000.00	454.68	505.0	478.44	505.85	0.000257	8.19	60586.13	3267.04	0.21
Muncy	41163	Q500	409500.00	454.68	510.1	481.21	510.98	0.000240	8.50	77840.86	3605.02	0.21
Muncy	41163	Agnes1972	289000.00	454.68	501.5	476.27	502.36	0.000268	7.94	49723.39	2608.52	0.21
Muncy	41163	Ivan2004	206000.00	454.68	492.6	472.78	493.50	0.000194	7.79	32203.10	1597.30	0.24
Muncy	41163	Lee2011	155000.00	454.68	489.7	470.21	490.31	0.000185	6.58	27980.77	1366.41	0.21
Muncy	41163	2Dec2010	143000.00	454.68	488.8	469.56	489.42	0.000200	6.29	26833.66	1364.03	0.20
Muncy	41163	24Oct1990	60400.00	454.68	480.2	464.45	480.44	0.000190	3.91	16493.00	1023.95	0.15
Muncy	40418	Q2	82000.00	454.60	482.3	468.22	482.73	0.000264	5.14	17349.68	1035.28	0.20
Muncy	40418	Q5	123500.00	454.60	487.2	470.63	487.75	0.000257	6.18	22741.95	1168.53	0.22
Muncy	40418	Q10	156000.00	454.60	489.2	472.31	489.99	0.000255	7.17	25173.10	1249.10	0.24
Muncy	40418	Q25	203000.00	454.60	492.2	474.48	493.21	0.000261	8.31	29397.12	1570.32	0.26
Muncy	40418	Q50	243000.00	454.60	495.0	476.27	496.16	0.000308	8.94	33867.23	1767.61	0.27
Muncy	40418	Q100	287000.00	454.60	501.1	478.08	502.10	0.000303	8.45	47093.55	2797.79	0.24
Muncy	40418	Q200	336000.00	454.60	504.6	479.95	505.62	0.000321	8.72	58464.53	3285.77	0.23
Muncy	40418	Q500	409500.00	454.60	509.9	482.64	510.79	0.000272	8.66	76619.70	3929.34	0.22
Muncy	40418	Agnes1972	289000.00	454.60	501.1	478.14	502.12	0.000343	8.51	47102.67	2801.07	0.24
Muncy	40418	Ivan2004	206000.00	454.60	492.3	474.63	493.31	0.000258	8.40	29522.82	1571.48	0.27
Muncy	40418	Lee2011	155000.00	454.60	489.4	472.24	490.14	0.000247	7.08	25381.13	1295.48	0.24
Muncy	40418	2Dec2010	143000.00	454.60	488.5	471.65	489.23	0.000267	6.76	24354.89	1187.52	0.23
Muncy	40418	24Oct1990	60400.00	454.60	480.0	466.79	480.26	0.000278	4.28	14996.78	963.57	0.18
Muncy	39634	Q2	83500.00	455.02	482.1	468.04	482.50	0.000298	5.48	19138.96	5037.61	0.21
Muncy	39634	Q5	125500.00	455.02	487.0	471.26	487.53	0.000245	6.09	28919.60	7139.47	0.21
Muncy	39634	Q10	158000.00	455.02	489.1	473.22	489.76	0.000227	6.85	33271.04	7585.69	0.23
Muncy	39634	Q25	206000.00	455.02	492.2	475.56	492.94	0.000209	7.62	40685.00	8019.38	0.24
Muncy	39634	Q50	248000.00	455.02	495.0	477.69	495.83	0.000254	8.04	47931.61	8370.48	0.24
Muncy	39634	Q100	293000.00	455.02	501.2	480.60	501.76	0.000241	7.21	68038.67	11207.43	0.20
Muncy	39634	Q200	344000.00	455.02	504.7	482.93	505.28	0.000221	7.30	82895.64	12084.64	0.20
Muncy	39634	Q500	420000.00	455.02	510.0	485.18	510.49	0.000183	7.16	105536.10	12230.11	0.18
Muncy	39634	Agnes1972	293000.00	455.02	501.2	480.60	501.76	0.000241	7.21	68038.67	11207.43	0.20
Muncy	39634	Ivan2004	207000.00	455.02	492.3	475.70	493.03	0.000209	7.62	40931.02	8022.97	0.24
Muncy	39634	Lee2011	160000.00	455.02	489.3	473.33	489.91	0.000226	6.88	33594.55	7619.13	0.23
Muncy	39634	2Dec2010	143000.00	455.02	488.4	472.37	488.99	0.000237	6.42	31813.32	7436.99	0.22
Muncy	39634	24Oct1990	60800.00	455.02	479.7	466.06	480.02	0.000329	4.68	14991.42	2991.35	0.19
Muncy	39071	Q2	83500.00	455.94	482.0	467.37	482.33	0.000229	4.87	21567.26	3033.29	0.19
Muncy	39071	Q5	125500.00	455.94	487.0	470.09	487.39	0.000201	5.59	30162.05	4568.01	0.19
Muncy	39071	Q10	158000.00	455.94	489.1	471.89	489.62	0.000191	6.34	34145.47	5010.22	0.21
Muncy	39071	Q25	206000.00	455.94	492.1	474.25	492.81	0.000184	7.23	40246.98	5744.90	0.23
Muncy	39071	Q50	248000.00	455.94	494.9	476.32	495.68	0.000232	7.74	46639.29	7715.56	0.23

Muncy	39071		Q100	293000.00	455.94	501.1	478.67	501.62	0.000214	6.84	72270.25	9574.36	0.19
Muncy	39071		Q200	344000.00	455.94	504.6	480.50	505.14	0.000192	6.85	87009.86	9653.81	0.18
Muncy	39071		Q500	420000.00	455.94	509.9	482.86	510.38	0.000161	6.76	109197.80	9708.04	0.17
Muncy	39071		Agnes1972	293000.00	455.94	501.1	478.67	501.62	0.000214	6.84	72270.25	9574.36	0.19
Muncy	39071		Ivan2004	207000.00	455.94	492.2	474.31	492.91	0.000185	7.24	40454.94	5776.75	0.23
Muncy	39071		Lee2011	160000.00	455.94	489.2	471.98	489.77	0.000190	6.38	34430.40	5042.04	0.21
Muncy	39071		2Dec2010	143000.00	455.94	488.4	471.10	488.85	0.000198	5.93	32807.09	4927.84	0.20
Muncy	39071		24Oct1990	60800.00	455.94	479.6	465.65	479.84	0.000249	4.13	17619.67	2936.81	0.17
Muncy	38534		Q2	83500.00	456.90	481.9	466.98	482.20	0.000204	4.28	19609.93	1186.98	0.17
Muncy	38534		Q5	125500.00	456.90	486.9	469.24	487.27	0.000187	5.09	25237.71	2917.50	0.18
Muncy	38534		Q10	158000.00	456.90	489.0	470.78	489.51	0.000181	5.86	28103.95	3487.42	0.20
Muncy	38534		Q25	206000.00	456.90	492.0	472.92	492.71	0.000177	6.75	33685.24	4582.42	0.22
Muncy	38534		Q50	248000.00	456.90	494.8	474.64	495.56	0.000223	7.26	40084.60	6244.88	0.23
Muncy	38534		Q100	293000.00	456.90	501.0	476.55	501.51	0.000198	6.34	68411.99	7731.14	0.18
Muncy	38534		Q200	344000.00	456.90	504.5	478.13	505.04	0.000172	6.28	84613.03	8093.20	0.17
Muncy	38534		Q500	420000.00	456.90	509.9	480.31	510.29	0.000139	6.12	108706.80	8610.12	0.16
Muncy	38534		Agnes1972	293000.00	456.90	501.0	476.55	501.51	0.000198	6.34	68411.99	7731.14	0.18
Muncy	38534		Ivan2004	207000.00	456.90	492.1	472.97	492.81	0.000177	6.76	33892.50	4627.12	0.22
Muncy	38534		Lee2011	160000.00	456.90	489.1	470.87	489.67	0.000181	5.90	28322.09	3565.00	0.20
Muncy	38534		2Dec2010	143000.00	456.90	488.3	470.10	488.74	0.000187	5.46	27119.56	3391.82	0.19
Muncy	38534		24Oct1990	60800.00	456.90	479.5	465.56	479.69	0.000220	3.58	17025.10	1057.27	0.16
Muncy	38235		Q2	83500.00	457.81	481.8	466.87	482.12	0.000208	4.70	18392.84	1067.99	0.18
Muncy	38235		Q5	125500.00	457.81	486.7	469.17	487.19	0.000202	5.64	25111.86	2182.38	0.19
Muncy	38235		Q10	158000.00	457.81	488.8	470.75	489.44	0.000193	6.43	30270.95	3142.15	0.21
Muncy	38235		Q25	206000.00	457.81	491.9	472.83	492.65	0.000180	7.21	39775.59	4328.46	0.23
Muncy	38235		Q50	248000.00	457.81	494.7	474.47	495.49	0.000218	7.56	48720.59	5724.62	0.23
Muncy	38235		Q100	293000.00	457.81	500.9	476.16	501.43	0.000196	6.60	75183.78	7682.80	0.18
Muncy	38235		Q200	344000.00	457.81	504.5	477.96	504.95	0.000158	6.27	103093.20	7756.71	0.17
Muncy	38235		Q500	420000.00	457.81	509.9	480.72	510.20	0.000125	6.00	133379.70	7917.11	0.15
Muncy	38235		Agnes1972	293000.00	457.81	500.9	476.16	501.43	0.000196	6.60	75183.78	7682.80	0.18
Muncy	38235		Ivan2004	207000.00	457.81	492.0	472.87	492.74	0.000180	7.21	40083.34	4350.64	0.23
Muncy	38235		Lee2011	160000.00	457.81	489.0	470.85	489.60	0.000193	6.47	30699.15	3236.91	0.21
Muncy	38235		2Dec2010	143000.00	457.81	488.1	470.04	488.67	0.000200	6.02	28391.19	2706.08	0.20
Muncy	38235		24Oct1990	60800.00	457.81	479.4	465.41	479.62	0.000213	3.87	15938.44	959.40	0.16
Muncy	38150	PA Route 405		Mult Open									
Muncy	38052		Q2	83500.00	458.41	481.6	467.89	482.03	0.000251	4.98	17271.63	1079.63	0.19
Muncy	38052		Q5	125500.00	458.41	486.6	470.11	487.11	0.000231	5.86	25042.25	2446.62	0.21
Muncy	38052		Q10	158000.00	458.41	488.7	471.68	489.39	0.000214	6.60	30647.96	3194.84	0.22
Muncy	38052		Q25	206000.00	458.41	491.9	473.79	492.61	0.000194	7.31	39542.25	4335.12	0.23
Muncy	38052		Q50	248000.00	458.41	494.7	475.47	495.44	0.000232	7.65	47764.05	5477.73	0.23
Muncy	38052		Q100	293000.00	458.41	500.8	477.16	501.35	0.000207	6.65	74232.75	7587.43	0.19
Muncy	38052		Q200	344000.00	458.41	504.5	478.98	504.88	0.000164	6.27	101624.30	7659.87	0.17
Muncy	38052		Q500	420000.00	458.41	509.8	481.82	510.13	0.000128	6.00	130941.30	7693.99	0.15
Muncy	38052		Agnes1972	293000.00	458.41	500.8	477.16	501.35	0.000207	6.65	74232.75	7587.43	0.19

Muncy	38052	Ivan2004	207000.00	458.41	492.0	473.83	492.71	0.000194	7.30	39831.75	4364.11	0.23
Muncy	38052	Lee2011	160000.00	458.41	488.9	471.76	489.54	0.000213	6.63	31072.73	3231.09	0.22
Muncy	38052	2Dec2010	143000.00	458.41	488.0	470.97	488.58	0.000226	6.22	28612.04	3034.80	0.21
Muncy	38052	24Oct1990	60800.00	458.41	479.3	466.51	479.54	0.000261	4.12	14908.42	904.07	0.17
Muncy	37525	Q2	83500.00	459.40	481.4	468.96	481.84	0.000350	5.62	15004.07	984.38	0.23
Muncy	37525	Q5	125500.00	459.40	486.3	471.34	486.93	0.000311	6.56	22622.84	2020.40	0.24
Muncy	37525	Q10	158000.00	459.40	488.4	473.07	489.21	0.000288	7.39	27075.77	2178.23	0.26
Muncy	37525	Q25	206000.00	459.40	491.5	475.28	492.42	0.000264	8.26	33813.75	3597.55	0.27
Muncy	37525	Q50	248000.00	459.40	494.2	476.99	495.21	0.000326	8.78	40616.69	4334.02	0.27
Muncy	37525	Q100	293000.00	459.40	500.4	478.73	501.15	0.000297	7.77	62444.44	6349.95	0.22
Muncy	37525	Q200	344000.00	459.40	504.1	480.61	504.72	0.000235	7.34	87481.71	6477.25	0.20
Muncy	37525	Q500	420000.00	459.40	509.6	483.69	510.02	0.000173	6.83	126189.70	6879.86	0.18
Muncy	37525	Agnes1972	293000.00	459.40	500.4	478.73	501.15	0.000297	7.77	62444.44	6349.95	0.22
Muncy	37525	Ivan2004	207000.00	459.40	491.6	475.33	492.52	0.000265	8.26	34050.59	3646.12	0.27
Muncy	37525	Lee2011	160000.00	459.40	488.5	473.17	489.36	0.000287	7.43	27396.34	2183.43	0.26
Muncy	37525	2Dec2010	143000.00	459.40	487.7	472.29	488.40	0.000303	6.95	25548.98	2134.94	0.24
Muncy	37525	24Oct1990	60800.00	459.40	479.0	467.50	479.36	0.000372	4.67	13081.79	907.29	0.20
Muncy	36949	Q2	83500.00	460.21	481.1	469.48	481.62	0.000397	5.97	15213.81	981.05	0.24
Muncy	36949	Q5	125500.00	460.21	486.0	471.88	486.73	0.000350	6.95	21615.77	1471.20	0.25
Muncy	36949	Q10	158000.00	460.21	488.1	473.59	489.02	0.000333	7.93	24822.73	1574.67	0.27
Muncy	36949	Q25	206000.00	460.21	491.1	475.89	492.24	0.000318	9.02	29631.19	1827.61	0.30
Muncy	36949	Q50	248000.00	460.21	493.6	477.73	494.97	0.000408	9.75	33999.35	2051.76	0.31
Muncy	36949	Q100	293000.00	460.21	499.9	479.49	500.92	0.000396	8.92	53330.91	4649.62	0.26
Muncy	36949	Q200	344000.00	460.21	503.7	481.49	504.54	0.000323	8.58	74620.34	5137.75	0.23
Muncy	36949	Q500	420000.00	460.21	509.2	484.81	509.88	0.000246	8.13	104413.00	5526.54	0.21
Muncy	36949	Agnes1972	293000.00	460.21	499.9	479.49	500.92	0.000396	8.92	53330.91	4649.62	0.26
Muncy	36949	Ivan2004	207000.00	460.21	491.2	475.95	492.33	0.000319	9.02	29793.77	1841.07	0.30
Muncy	36949	Lee2011	160000.00	460.21	488.2	473.68	489.17	0.000332	7.97	25055.26	1576.53	0.28
Muncy	36949	2Dec2010	143000.00	460.21	487.4	472.80	488.20	0.000348	7.43	23717.68	1564.83	0.26
Muncy	36949	24Oct1990	60800.00	460.21	478.7	468.03	479.12	0.000427	4.99	12965.58	936.04	0.22
Muncy	36407	Q2	83500.00	460.22	480.8	469.47	481.40	0.000425	6.16	14716.65	1124.61	0.25
Muncy	36407	Q5	125500.00	460.22	485.8	471.87	486.54	0.000364	7.08	21912.85	1585.49	0.26
Muncy	36407	Q10	158000.00	460.22	487.9	473.59	488.83	0.000341	8.03	25287.54	1628.22	0.28
Muncy	36407	Q25	206000.00	460.22	490.9	475.84	492.06	0.000325	9.12	30237.47	1870.90	0.30
Muncy	36407	Q50	248000.00	460.22	493.4	477.70	494.75	0.000417	9.86	34542.33	2131.06	0.31
Muncy	36407	Q100	293000.00	460.22	499.7	479.28	500.70	0.000399	8.95	54855.23	5030.49	0.26
Muncy	36407	Q200	344000.00	460.22	503.5	481.73	504.36	0.000328	8.66	76325.80	5585.42	0.24
Muncy	36407	Q500	420000.00	460.22	509.0	485.40	509.74	0.000247	8.17	105646.90	5935.77	0.21
Muncy	36407	Agnes1972	293000.00	460.22	499.7	479.28	500.70	0.000399	8.95	54855.23	5030.49	0.26
Muncy	36407	Ivan2004	207000.00	460.22	491.0	475.92	492.16	0.000325	9.12	30400.97	1880.44	0.30
Muncy	36407	Lee2011	160000.00	460.22	488.0	473.70	488.99	0.000340	8.07	25528.90	1631.09	0.28
Muncy	36407	2Dec2010	143000.00	460.22	487.2	472.80	488.01	0.000356	7.52	24138.26	1612.72	0.26
Muncy	36407	24Oct1990	60800.00	460.22	478.5	467.98	478.88	0.000458	5.15	12401.77	937.59	0.22
Muncy	35619	Q2	83500.00	460.00	480.5	469.76	481.05	0.000435	6.02	14776.53	1119.41	0.25

Muncy	35619	Q5	125500.00	460.00	485.5	472.02	486.24	0.000358	6.84	22150.63	1656.21	0.25
Muncy	35619	Q10	158000.00	460.00	487.7	473.64	488.55	0.000331	7.72	25574.45	1699.39	0.27
Muncy	35619	Q25	206000.00	460.00	490.7	475.82	491.78	0.000309	8.72	31383.48	2135.04	0.29
Muncy	35619	Q50	248000.00	460.00	493.2	477.56	494.39	0.000397	9.43	36170.81	2457.66	0.30
Muncy	35619	Q100	293000.00	460.00	499.4	479.35	500.38	0.000379	8.58	59042.34	5058.46	0.25
Muncy	35619	Q200	344000.00	460.00	503.3	481.23	504.09	0.000308	8.26	80877.63	5147.45	0.23
Muncy	35619	Q500	420000.00	460.00	508.9	484.78	509.54	0.000233	7.83	110813.30	5476.01	0.20
Muncy	35619	Agnes1972	293000.00	460.00	499.4	479.35	500.38	0.000379	8.58	59042.34	5058.46	0.25
Muncy	35619	Ivan2004	207000.00	460.00	490.8	475.85	491.88	0.000309	8.72	31570.81	2145.49	0.29
Muncy	35619	Lee2011	160000.00	460.00	487.8	473.70	488.71	0.000330	7.76	25816.28	1702.82	0.27
Muncy	35619	2Dec2010	143000.00	460.00	486.9	472.89	487.72	0.000348	7.25	24397.88	1683.24	0.26
Muncy	35619	24Oct1990	60800.00	460.00	478.1	468.36	478.50	0.000486	5.09	12469.11	957.28	0.23
Muncy	34707	Q2	83500.00	459.28	480.3	467.46	480.69	0.000247	4.74	18666.31	1134.55	0.19
Muncy	34707	Q5	125500.00	459.28	485.5	469.68	485.92	0.000217	5.52	25623.75	1677.93	0.20
Muncy	34707	Q10	158000.00	459.28	487.6	471.08	488.23	0.000206	6.31	28828.19	1754.59	0.22
Muncy	34707	Q25	206000.00	459.28	490.7	473.01	491.46	0.000197	7.20	35122.29	2015.13	0.23
Muncy	34707	Q50	248000.00	459.28	493.1	474.57	494.00	0.000263	7.90	39575.74	2647.08	0.25
Muncy	34707	Q100	293000.00	459.28	499.3	476.13	500.02	0.000254	7.19	63491.20	4531.46	0.21
Muncy	34707	Q200	344000.00	459.28	503.2	477.82	503.80	0.000215	7.06	81174.42	4805.58	0.19
Muncy	34707	Q500	420000.00	459.28	508.8	480.15	509.32	0.000165	6.73	110638.30	5277.75	0.17
Muncy	34707	Agnes1972	293000.00	459.28	499.3	476.13	500.02	0.000254	7.19	63491.20	4531.46	0.21
Muncy	34707	Ivan2004	207000.00	459.28	490.8	473.05	491.56	0.000198	7.20	35297.56	2018.07	0.23
Muncy	34707	Lee2011	160000.00	459.28	487.8	471.15	488.39	0.000205	6.35	29051.23	1761.26	0.22
Muncy	34707	2Dec2010	143000.00	459.28	486.9	470.44	487.40	0.000215	5.90	27707.09	1731.27	0.21
Muncy	34707	24Oct1990	60800.00	459.28	477.9	466.15	478.13	0.000271	3.98	15930.97	1093.91	0.17
Muncy	33876	Q2	83500.00	458.75	479.9	467.61	480.43	0.000350	5.73	16076.19	1117.10	0.23
Muncy	33876	Q5	125500.00	458.75	485.0	470.05	485.69	0.000307	6.66	22209.42	1589.07	0.24
Muncy	33876	Q10	158000.00	458.75	487.1	471.77	488.00	0.000297	7.65	25142.21	1786.52	0.26
Muncy	33876	Q25	206000.00	458.75	490.2	474.04	491.24	0.000278	8.61	32855.30	2341.84	0.28
Muncy	33876	Q50	248000.00	458.75	492.5	475.98	493.72	0.000364	9.35	37941.35	3098.46	0.29
Muncy	33876	Q100	293000.00	458.75	499.0	477.88	499.77	0.000313	8.06	65483.95	4479.28	0.23
Muncy	33876	Q200	344000.00	458.75	502.9	479.78	503.60	0.000258	7.81	83162.88	4527.23	0.21
Muncy	33876	Q500	420000.00	458.75	508.6	482.62	509.17	0.000200	7.47	110237.00	5070.62	0.19
Muncy	33876	Agnes1972	293000.00	458.75	499.0	477.88	499.77	0.000313	8.06	65483.95	4479.28	0.23
Muncy	33876	Ivan2004	207000.00	458.75	490.3	474.07	491.34	0.000278	8.61	33062.62	2363.72	0.28
Muncy	33876	Lee2011	160000.00	458.75	487.3	471.86	488.16	0.000297	7.70	25354.41	1805.32	0.26
Muncy	33876	2Dec2010	143000.00	458.75	486.4	471.01	487.16	0.000309	7.16	24094.42	1743.65	0.25
Muncy	33876	24Oct1990	60800.00	458.75	477.5	466.12	477.86	0.000381	4.82	13552.78	1032.77	0.21
Muncy	33414	Q2	83500.00	458.50	479.7	468.39	480.26	0.000393	5.92	16219.07	1107.69	0.24
Muncy	33414	Q5	125500.00	458.50	484.9	470.78	485.54	0.000331	6.78	22991.42	1546.25	0.24
Muncy	33414	Q10	158000.00	458.50	487.0	472.44	487.86	0.000311	7.69	26374.28	1757.20	0.27
Muncy	33414	Q25	206000.00	458.50	490.0	474.83	491.11	0.000297	8.76	31469.39	2644.02	0.29
Muncy	33414	Q50	248000.00	458.50	492.3	476.67	493.54	0.000390	9.51	37727.37	3462.62	0.30
Muncy	33414	Q100	293000.00	458.50	498.9	478.43	499.61	0.000314	7.97	64036.64	4280.47	0.23
Muncy	33414	Q200	344000.00	458.50	502.8	480.25	503.47	0.000255	7.68	80155.84	4374.12	0.21

Muncy	33414		Q500	420000.00	458.50	508.5	483.03	509.06	0.000196	7.32	105441.70	5096.54	0.19
Muncy	33414		Agnes1972	293000.00	458.50	498.9	478.43	499.61	0.000314	7.97	64036.64	4280.47	0.23
Muncy	33414		Ivan2004	207000.00	458.50	490.1	474.87	491.20	0.000298	8.77	31635.72	2669.30	0.29
Muncy	33414		Lee2011	160000.00	458.50	487.2	472.53	488.01	0.000310	7.74	26614.16	1792.24	0.27
Muncy	33414		2Dec2010	143000.00	458.50	486.3	471.68	487.01	0.000326	7.22	25181.01	1626.60	0.25
Muncy	33414		24Oct1990	60800.00	458.50	477.3	466.94	477.67	0.000440	5.02	13520.05	1081.83	0.22
Muncy	33151		Q2	83500.00	458.42	479.7	466.98	480.11	0.000277	5.07	17545.17	1052.41	0.20
Muncy	33151		Q5	125500.00	458.42	484.9	469.17	485.39	0.000169	5.95	23651.15	1764.57	0.21
Muncy	33151		Q10	158000.00	458.42	487.0	470.71	487.71	0.000133	6.85	26448.52	2394.51	0.23
Muncy	33151		Q25	206000.00	458.42	490.0	472.74	490.96	0.000112	7.92	30441.92	3646.80	0.26
Muncy	33151		Q50	248000.00	458.42	492.3	474.44	493.40	0.000190	8.80	33376.75	3806.79	0.27
Muncy	33151		Q100	293000.00	458.42	498.4	476.06	499.43	0.000310	8.54	42041.20	4500.72	0.24
Muncy	33151		Q200	344000.00	458.42	502.1	477.81	503.23	0.000304	8.99	47950.20	4622.09	0.25
Muncy	33151		Q500	420000.00	458.42	508.5	480.30	508.97	0.000130	6.48	112053.90	5424.69	0.16
Muncy	33151		Agnes1972	293000.00	458.42	498.4	476.06	499.43	0.000310	8.54	42041.20	4500.72	0.24
Muncy	33151		Ivan2004	207000.00	458.42	490.1	472.79	491.06	0.000113	7.93	30566.51	3694.83	0.26
Muncy	33151		Lee2011	160000.00	458.42	487.2	470.80	487.87	0.000132	6.89	26644.50	2476.21	0.23
Muncy	33151		2Dec2010	143000.00	458.42	486.3	470.02	486.87	0.000159	6.40	25459.50	2067.86	0.22
Muncy	33151		24Oct1990	60800.00	458.42	477.2	465.64	477.52	0.000302	4.26	15013.84	998.17	0.18
Muncy	33012	Railroad		Bridge									
Muncy	32931		Q2	83500.00	458.30	479.0	466.72	479.38	0.000269	4.83	17581.50	1106.04	0.20
Muncy	32931		Q5	125500.00	458.30	484.1	468.79	484.62	0.000234	5.63	23832.35	1325.55	0.20
Muncy	32931		Q10	158000.00	458.30	486.3	470.21	486.90	0.000224	6.46	26585.70	1876.28	0.22
Muncy	32931		Q25	206000.00	458.30	489.3	472.07	490.11	0.000221	7.48	30497.88	3293.74	0.25
Muncy	32931		Q50	248000.00	458.30	492.2	473.58	493.23	0.000279	8.09	34401.41	3584.52	0.25
Muncy	32931		Q100	293000.00	458.30	498.4	475.13	499.27	0.000307	7.86	43826.73	3994.78	0.23
Muncy	32931		Q200	344000.00	458.30	501.9	476.79	502.90	0.000305	8.32	49733.01	4244.95	0.23
Muncy	32931		Q500	420000.00	458.30	507.4	479.08	507.86	0.000161	6.56	108220.40	5537.09	0.17
Muncy	32931		Agnes1972	293000.00	458.30	498.4	475.13	499.27	0.000307	7.86	43826.73	3994.78	0.23
Muncy	32931		Ivan2004	207000.00	458.30	489.4	472.11	490.21	0.000222	7.49	30619.86	3317.47	0.25
Muncy	32931		Lee2011	160000.00	458.30	486.4	470.27	487.06	0.000224	6.50	26776.08	1976.52	0.23
Muncy	32931		2Dec2010	143000.00	458.30	485.5	469.58	486.07	0.000233	6.04	25618.97	1424.95	0.21
Muncy	32931		24Oct1990	60800.00	458.30	476.6	465.42	476.82	0.000297	4.06	15128.01	991.72	0.18
Muncy	32414		Q2	83500.00	458.09	478.7	467.22	479.18	0.000376	5.61	15829.38	997.27	0.23
Muncy	32414		Q5	125500.00	458.09	483.8	469.74	484.43	0.000322	6.50	21212.04	1266.60	0.24
Muncy	32414		Q10	158000.00	458.09	485.9	471.30	486.71	0.000309	7.47	23468.81	1851.55	0.26
Muncy	32414		Q25	206000.00	458.09	488.8	473.39	489.92	0.000296	8.53	28389.70	2942.19	0.28
Muncy	32414		Q50	248000.00	458.09	491.8	475.04	493.00	0.000367	9.16	32816.82	3505.88	0.29
Muncy	32414		Q100	293000.00	458.09	498.0	476.63	499.05	0.000377	8.62	44356.59	3955.03	0.25
Muncy	32414		Q200	344000.00	458.09	501.6	478.33	502.70	0.000365	9.01	51074.39	4230.44	0.25
Muncy	32414		Q500	420000.00	458.09	507.2	481.08	507.77	0.000188	7.06	105113.30	4759.21	0.18
Muncy	32414		Agnes1972	293000.00	458.09	498.0	476.63	499.05	0.000377	8.62	44356.59	3955.03	0.25
Muncy	32414		Ivan2004	207000.00	458.09	488.9	473.44	490.01	0.000296	8.54	28523.67	2981.64	0.28
Muncy	32414		Lee2011	160000.00	458.09	486.0	471.39	486.86	0.000309	7.52	23625.72	1927.44	0.26

Muncy	32414	2Dec2010	143000.00	458.09	485.1	470.60	485.88	0.000321	6.98	22684.93	1499.90	0.25
Muncy	32414	24Oct1990	60800.00	458.09	476.3	465.70	476.62	0.000420	4.74	13469.28	961.67	0.21
Muncy	31268	Q2	83500.00	457.30	477.9	467.37	478.63	0.000575	7.11	13288.10	972.76	0.29
Muncy	31268	Q5	125500.00	457.30	483.0	470.10	483.95	0.000489	8.17	18357.47	1176.19	0.30
Muncy	31268	Q10	158000.00	457.30	484.9	472.02	486.23	0.000475	9.41	20397.82	1933.17	0.33
Muncy	31268	Q25	206000.00	457.30	487.7	474.75	489.44	0.000472	10.87	25578.29	2680.92	0.36
Muncy	31268	Q50	248000.00	457.30	490.6	476.88	492.43	0.000565	11.45	30714.51	2993.57	0.36
Muncy	31268	Q100	293000.00	457.30	497.2	478.81	498.53	0.000524	10.28	43257.50	3436.41	0.29
Muncy	31268	Q200	344000.00	457.30	500.8	480.80	502.21	0.000489	10.56	50368.39	3587.03	0.29
Muncy	31268	Q500	420000.00	457.30	506.8	483.64	507.52	0.000263	8.47	93527.88	3925.38	0.22
Muncy	31268	Agnes1972	293000.00	457.30	497.2	478.81	498.53	0.000524	10.28	43257.50	3436.41	0.29
Muncy	31268	Ivan2004	207000.00	457.30	487.8	474.79	489.53	0.000472	10.88	25749.86	2693.69	0.36
Muncy	31268	Lee2011	160000.00	457.30	485.1	472.10	486.39	0.000475	9.47	20540.63	1978.33	0.33
Muncy	31268	2Dec2010	143000.00	457.30	484.3	471.12	485.40	0.000491	8.77	19703.01	1669.50	0.31
Muncy	31268	24Oct1990	60800.00	457.30	475.5	465.72	476.01	0.000640	6.02	10972.00	934.36	0.26
Muncy	30306	Q2	83500.00	456.00	477.4	466.57	478.09	0.000531	6.92	13760.56	1060.09	0.28
Muncy	30306	Q5	125500.00	456.00	482.5	469.31	483.48	0.000454	7.98	18783.46	1453.78	0.29
Muncy	30306	Q10	158000.00	456.00	484.5	471.24	485.78	0.000452	9.28	20879.11	1887.31	0.32
Muncy	30306	Q25	206000.00	456.00	487.5	473.96	488.94	0.000403	10.20	30631.21	2863.30	0.33
Muncy	30306	Q50	248000.00	456.00	490.4	475.90	491.82	0.000448	10.35	39155.29	2926.01	0.32
Muncy	30306	Q100	293000.00	456.00	497.1	477.73	497.97	0.000361	8.67	59147.44	3119.48	0.25
Muncy	30306	Q200	344000.00	456.00	500.9	479.82	501.66	0.000315	8.61	71051.73	3317.57	0.23
Muncy	30306	Q500	420000.00	456.00	506.5	482.60	507.26	0.000269	8.64	91233.70	4659.05	0.22
Muncy	30306	Agnes1972	293000.00	456.00	497.1	477.73	497.97	0.000361	8.67	59147.44	3119.48	0.25
Muncy	30306	Ivan2004	207000.00	456.00	487.6	474.03	489.04	0.000402	10.19	30918.85	2866.38	0.33
Muncy	30306	Lee2011	160000.00	456.00	484.6	471.35	485.93	0.000452	9.35	21036.32	1956.84	0.32
Muncy	30306	2Dec2010	143000.00	456.00	483.8	470.39	484.93	0.000461	8.61	20133.30	1631.25	0.30
Muncy	30306	24Oct1990	60800.00	456.00	474.9	464.89	475.41	0.000597	5.88	11427.71	972.30	0.25
Muncy	29426	Q2	83500.00	454.41	477.0	464.94	477.64	0.000406	6.29	15108.53	1023.78	0.25
Muncy	29426	Q5	125500.00	454.41	482.3	467.59	483.09	0.000363	7.37	20176.38	1503.63	0.26
Muncy	29426	Q10	158000.00	454.41	484.3	469.55	485.37	0.000360	8.55	22620.59	2349.57	0.29
Muncy	29426	Q25	206000.00	454.41	487.3	472.01	488.57	0.000332	9.52	33074.14	2755.06	0.30
Muncy	29426	Q50	248000.00	454.41	490.1	473.96	491.43	0.000391	9.90	41097.20	2878.57	0.30
Muncy	29426	Q100	293000.00	454.41	496.8	475.83	497.66	0.000338	8.54	60707.86	3018.39	0.24
Muncy	29426	Q200	344000.00	454.41	500.6	477.81	501.38	0.000305	8.62	72207.25	3113.51	0.23
Muncy	29426	Q500	420000.00	454.41	506.2	480.50	507.01	0.000278	8.92	90819.03	4419.52	0.22
Muncy	29426	Agnes1972	293000.00	454.41	496.8	475.83	497.66	0.000338	8.54	60707.86	3018.39	0.24
Muncy	29426	Ivan2004	207000.00	454.41	487.4	472.06	488.66	0.000332	9.52	33344.79	2763.81	0.30
Muncy	29426	Lee2011	160000.00	454.41	484.4	469.68	485.52	0.000361	8.61	22815.86	2381.97	0.29
Muncy	29426	2Dec2010	143000.00	454.41	483.6	468.68	484.52	0.000372	7.97	21662.12	2121.99	0.27
Muncy	29426	24Oct1990	60800.00	454.41	474.5	463.33	474.92	0.000446	5.31	12764.08	973.84	0.22
Muncy	28481	Q2	83500.00	452.91	476.9	463.17	477.28	0.000260	5.13	17272.20	1100.43	0.20
Muncy	28481	Q5	125500.00	452.91	482.2	465.43	482.74	0.000233	6.01	24640.32	2039.83	0.21
Muncy	28481	Q10	158000.00	452.91	484.3	467.06	484.99	0.000224	6.86	29707.80	2519.53	0.23

Muncy	28481	Q25	206000.00	452.91	487.4	469.19	488.19	0.000210	7.71	38361.56	2752.15	0.24
Muncy	28481	Q50	248000.00	452.91	490.1	471.06	491.01	0.000258	8.15	46117.11	2875.86	0.25
Muncy	28481	Q100	293000.00	452.91	496.7	472.81	497.34	0.000241	7.29	65473.36	3023.88	0.20
Muncy	28481	Q200	344000.00	452.91	500.4	474.64	501.09	0.000223	7.45	76935.28	3214.33	0.20
Muncy	28481	Q500	420000.00	452.91	506.1	477.18	506.73	0.000193	7.51	97806.78	4175.40	0.19
Muncy	28481	Agnes1972	293000.00	452.91	496.7	472.81	497.34	0.000241	7.29	65473.36	3023.88	0.20
Muncy	28481	Ivan2004	207000.00	452.91	487.5	469.26	488.29	0.000210	7.71	38627.82	2754.11	0.24
Muncy	28481	Lee2011	160000.00	452.91	484.4	467.15	485.14	0.000224	6.90	30045.24	2547.80	0.23
Muncy	28481	2Dec2010	143000.00	452.91	483.5	466.32	484.15	0.000235	6.44	27943.79	2424.47	0.22
Muncy	28481	24Oct1990	60800.00	452.91	474.3	461.76	474.55	0.000282	4.30	14806.45	1038.91	0.18
Muncy	27763	Q2	83500.00	452.23	476.8	461.81	477.09	0.000201	4.59	18702.78	985.12	0.18
Muncy	27763	Q5	125500.00	452.23	482.1	464.04	482.56	0.000188	5.48	24010.77	1678.34	0.19
Muncy	27763	Q10	158000.00	452.23	484.2	465.56	484.81	0.000181	6.26	29363.41	2201.40	0.21
Muncy	27763	Q25	206000.00	452.23	487.3	467.61	488.03	0.000176	7.16	37119.11	2712.66	0.22
Muncy	27763	Q50	248000.00	452.23	490.0	469.26	490.82	0.000219	7.61	44564.78	2753.08	0.23
Muncy	27763	Q100	293000.00	452.23	496.6	470.93	497.16	0.000208	6.84	63185.90	2987.83	0.19
Muncy	27763	Q200	344000.00	452.23	500.3	472.74	500.92	0.000193	6.99	74657.08	3132.59	0.18
Muncy	27763	Q500	420000.00	452.23	506.0	475.30	506.59	0.000168	7.05	93827.68	3808.98	0.17
Muncy	27763	Agnes1972	293000.00	452.23	496.6	470.93	497.16	0.000208	6.84	63185.90	2987.83	0.19
Muncy	27763	Ivan2004	207000.00	452.23	487.4	467.66	488.13	0.000177	7.16	37379.02	2717.88	0.22
Muncy	27763	Lee2011	160000.00	452.23	484.4	465.64	484.96	0.000181	6.30	29680.98	2224.64	0.21
Muncy	27763	2Dec2010	143000.00	452.23	483.4	464.88	483.97	0.000189	5.86	27715.69	2071.91	0.20
Muncy	27763	24Oct1990	60800.00	452.23	474.1	460.44	474.36	0.000215	3.83	16117.00	974.22	0.16
Muncy	27017	Q2	83500.00	451.36	476.5	462.18	476.92	0.000242	5.06	17459.75	968.09	0.19
Muncy	27017	Q5	125500.00	451.36	481.8	464.54	482.40	0.000227	6.03	22903.49	1825.54	0.21
Muncy	27017	Q10	158000.00	451.36	484.0	466.15	484.66	0.000216	6.85	28736.44	2363.42	0.22
Muncy	27017	Q25	206000.00	451.36	487.0	468.32	487.88	0.000205	7.73	36345.22	2592.78	0.24
Muncy	27017	Q50	248000.00	451.36	489.7	470.06	490.63	0.000255	8.21	43324.55	2615.09	0.25
Muncy	27017	Q100	293000.00	451.36	496.3	471.60	496.99	0.000238	7.34	61446.89	2968.33	0.20
Muncy	27017	Q200	344000.00	451.36	500.1	473.92	500.77	0.000219	7.46	72843.13	3048.82	0.20
Muncy	27017	Q500	420000.00	451.36	505.8	476.52	506.45	0.000189	7.50	91724.87	3658.46	0.19
Muncy	27017	Agnes1972	293000.00	451.36	496.3	471.60	496.99	0.000238	7.34	61446.89	2968.33	0.20
Muncy	27017	Ivan2004	207000.00	451.36	487.1	468.36	487.97	0.000205	7.73	36596.06	2593.14	0.24
Muncy	27017	Lee2011	160000.00	451.36	484.1	466.24	484.81	0.000215	6.89	29076.40	2373.91	0.23
Muncy	27017	2Dec2010	143000.00	451.36	483.2	465.42	483.81	0.000226	6.43	26927.04	2308.15	0.21
Muncy	27017	24Oct1990	60800.00	451.36	473.9	460.71	474.18	0.000260	4.23	14925.34	958.31	0.17
Muncy	26247	Q2	83500.00	450.92	476.3	461.08	476.74	0.000232	5.04	17067.42	877.09	0.19
Muncy	26247	Q5	125500.00	450.92	481.7	463.59	482.23	0.000223	6.07	21594.38	1883.67	0.20
Muncy	26247	Q10	158000.00	450.92	483.8	465.31	484.49	0.000209	6.83	28327.54	2057.27	0.22
Muncy	26247	Q25	206000.00	450.92	486.8	467.57	487.72	0.000204	7.81	35400.39	2573.20	0.24
Muncy	26247	Q50	248000.00	450.92	489.5	469.41	490.43	0.000256	8.32	42270.80	2634.83	0.25
Muncy	26247	Q100	293000.00	450.92	496.1	471.26	496.81	0.000237	7.38	60774.11	2876.03	0.20
Muncy	26247	Q200	344000.00	450.92	499.9	473.18	500.60	0.000217	7.49	71859.41	2954.88	0.20
Muncy	26247	Q500	420000.00	450.92	505.7	475.86	506.31	0.000187	7.52	90720.70	4071.16	0.19
Muncy	26247	Agnes1972	293000.00	450.92	496.1	471.26	496.81	0.000237	7.38	60774.11	2876.03	0.20

Muncy	26247	Ivan2004	207000.00	450.92	486.9	467.63	487.81	0.000204	7.81	35648.86	2574.92	0.24
Muncy	26247	Lee2011	160000.00	450.92	483.9	465.41	484.64	0.000209	6.88	28622.71	2069.04	0.22
Muncy	26247	2Dec2010	143000.00	450.92	483.0	464.54	483.62	0.000232	6.60	22714.11	1981.14	0.22
Muncy	26247	24Oct1990	60800.00	450.92	473.7	459.47	473.98	0.000244	4.18	14857.11	831.10	0.17
Muncy	25556	Q2	83500.00	450.80	476.1	462.67	476.56	0.000290	5.39	15831.70	1014.22	0.21
Muncy	25556	Q5	125500.00	450.80	481.5	465.08	482.06	0.000255	6.26	22534.75	1888.29	0.22
Muncy	25556	Q10	158000.00	450.80	483.6	466.69	484.34	0.000239	7.07	28052.34	2321.96	0.24
Muncy	25556	Q25	206000.00	450.80	486.7	468.87	487.57	0.000225	7.96	35787.64	2612.36	0.25
Muncy	25556	Q50	248000.00	450.80	489.3	470.62	490.25	0.000278	8.42	42644.62	2629.09	0.26
Muncy	25556	Q100	293000.00	450.80	496.0	472.43	496.64	0.000251	7.43	60847.46	2796.86	0.21
Muncy	25556	Q200	344000.00	450.80	499.8	474.35	500.45	0.000230	7.55	71571.94	2825.77	0.20
Muncy	25556	Q500	420000.00	450.80	505.5	477.01	506.17	0.000199	7.63	90221.38	4212.37	0.19
Muncy	25556	Agnes1972	293000.00	450.80	496.0	472.43	496.64	0.000251	7.43	60847.46	2796.86	0.21
Muncy	25556	Ivan2004	207000.00	450.80	486.8	468.89	487.67	0.000225	7.96	36042.16	2613.19	0.25
Muncy	25556	Lee2011	160000.00	450.80	483.7	466.80	484.48	0.000241	7.15	28359.61	2365.06	0.24
Muncy	25556	2Dec2010	143000.00	450.80	482.8	465.97	483.45	0.000252	6.65	26249.50	2183.24	0.22
Muncy	25556	24Oct1990	60800.00	450.80	473.5	461.04	473.79	0.000316	4.51	13642.88	822.32	0.19
Muncy	24591	Q2	83500.00	450.85	476.0	459.96	476.30	0.000195	4.69	18050.45	1085.54	0.17
Muncy	24591	Q5	125500.00	450.85	481.4	462.42	481.81	0.000181	5.54	25399.08	2095.25	0.18
Muncy	24591	Q10	158000.00	450.85	483.5	464.07	484.09	0.000171	6.26	31812.90	2384.08	0.20
Muncy	24591	Q25	206000.00	450.85	486.6	466.21	487.33	0.000162	7.05	39488.91	2500.13	0.22
Muncy	24591	Q50	248000.00	450.85	489.2	467.93	489.96	0.000207	7.56	45975.07	2553.05	0.22
Muncy	24591	Q100	293000.00	450.85	495.8	469.69	496.39	0.000200	6.83	63191.20	2717.30	0.19
Muncy	24591	Q200	344000.00	450.85	499.6	471.53	500.22	0.000187	7.01	73932.20	3173.54	0.18
Muncy	24591	Q500	420000.00	450.85	505.4	474.16	505.97	0.000161	7.03	96782.63	4234.76	0.17
Muncy	24591	Agnes1972	293000.00	450.85	495.8	469.69	496.39	0.000200	6.83	63191.20	2717.30	0.19
Muncy	24591	Ivan2004	207000.00	450.85	486.7	466.24	487.42	0.000163	7.06	39730.03	2502.31	0.22
Muncy	24591	Lee2011	160000.00	450.85	483.7	464.15	484.24	0.000171	6.30	32140.84	2399.47	0.20
Muncy	24591	2Dec2010	143000.00	450.85	482.7	463.33	483.21	0.000180	5.88	29904.36	2260.55	0.19
Muncy	24591	24Oct1990	60800.00	450.85	473.3	458.46	473.52	0.000204	3.88	15756.27	846.48	0.15
Muncy	23838	Q2	83500.00	451.07	475.7	462.50	476.11	0.000292	5.24	16078.38	1149.28	0.21
Muncy	23838	Q5	125500.00	451.07	481.1	464.81	481.65	0.000241	5.95	24790.15	2075.12	0.21
Muncy	23838	Q10	158000.00	451.07	483.3	466.40	483.94	0.000224	6.72	29566.84	2311.45	0.23
Muncy	23838	Q25	206000.00	451.07	486.4	468.55	487.18	0.000205	7.47	36835.63	2341.51	0.24
Muncy	23838	Q50	248000.00	451.07	488.9	470.34	489.78	0.000259	8.00	42749.20	2362.78	0.25
Muncy	23838	Q100	293000.00	451.07	495.6	472.06	496.22	0.000242	7.19	59469.51	2677.29	0.20
Muncy	23838	Q200	344000.00	451.07	499.4	473.87	500.06	0.000224	7.36	70377.59	3100.02	0.20
Muncy	23838	Q500	420000.00	451.07	505.2	476.39	505.84	0.000191	7.38	91638.11	4342.82	0.19
Muncy	23838	Agnes1972	293000.00	451.07	495.6	472.06	496.22	0.000242	7.19	59469.51	2677.29	0.20
Muncy	23838	Ivan2004	207000.00	451.07	486.5	468.60	487.28	0.000205	7.47	37061.89	2342.21	0.24
Muncy	23838	Lee2011	160000.00	451.07	483.4	466.48	484.08	0.000223	6.75	29888.68	2312.94	0.23
Muncy	23838	2Dec2010	143000.00	451.07	482.5	465.67	483.04	0.000238	6.34	27670.84	2230.65	0.22
Muncy	23838	24Oct1990	60800.00	451.07	473.0	460.99	473.32	0.000326	4.42	13800.06	848.21	0.19
Muncy	22627	Q2	83500.00	451.66	475.3	462.91	475.73	0.000330	5.46	15355.46	1345.17	0.22

Muncy	22627	Q5	125500.00	451.66	480.8	465.19	481.35	0.000255	6.04	24728.49	2023.70	0.21
Muncy	22627	Q10	158000.00	451.66	483.0	466.77	483.66	0.000232	6.75	29248.82	2085.43	0.23
Muncy	22627	Q25	206000.00	451.66	486.2	468.90	486.93	0.000210	7.50	36064.54	2201.12	0.24
Muncy	22627	Q50	248000.00	451.66	488.6	470.61	489.46	0.000266	8.02	41474.66	2233.07	0.25
Muncy	22627	Q100	293000.00	451.66	495.3	472.31	495.93	0.000247	7.20	57202.60	2439.41	0.20
Muncy	22627	Q200	344000.00	451.66	499.1	474.13	499.79	0.000226	7.33	67196.37	2746.71	0.20
Muncy	22627	Q500	420000.00	451.66	504.8	476.68	505.57	0.000227	7.99	85734.58	4509.02	0.20
Muncy	22627	Agnes1972	293000.00	451.66	495.3	472.31	495.93	0.000247	7.20	57202.60	2439.41	0.20
Muncy	22627	Ivan2004	207000.00	451.66	486.3	468.94	487.03	0.000210	7.50	36277.30	2201.77	0.24
Muncy	22627	Lee2011	160000.00	451.66	483.1	466.86	483.81	0.000231	6.79	29540.48	2092.43	0.23
Muncy	22627	2Dec2010	143000.00	451.66	482.2	466.05	482.75	0.000249	6.40	27476.07	2063.92	0.22
Muncy	22627	24Oct1990	60800.00	451.66	472.6	461.49	472.89	0.000377	4.63	13130.45	828.43	0.20
Muncy	21583	Q2	83500.00	452.52	474.9	462.03	475.38	0.000342	5.70	14668.86	1190.50	0.23
Muncy	21583	Q5	125500.00	452.52	480.5	464.44	481.07	0.000271	6.35	23141.60	1766.60	0.22
Muncy	21583	Q10	158000.00	452.52	482.6	466.12	483.40	0.000255	7.20	27366.35	2079.96	0.24
Muncy	21583	Q25	206000.00	452.52	485.8	468.36	486.69	0.000231	7.99	34281.10	2209.55	0.25
Muncy	21583	Q50	248000.00	452.52	488.2	470.17	489.16	0.000295	8.55	39541.43	2216.72	0.26
Muncy	21583	Q100	293000.00	452.52	495.0	472.00	495.66	0.000266	7.55	54602.71	2347.33	0.21
Muncy	21583	Q200	344000.00	452.52	498.8	473.93	499.54	0.000244	7.69	64153.93	2606.20	0.20
Muncy	21583	Q500	420000.00	452.52	504.6	477.10	505.33	0.000217	7.88	82419.92	4909.83	0.20
Muncy	21583	Agnes1972	293000.00	452.52	495.0	472.00	495.66	0.000266	7.55	54602.71	2347.33	0.21
Muncy	21583	Ivan2004	207000.00	452.52	485.9	468.40	486.79	0.000231	7.98	34495.76	2209.90	0.25
Muncy	21583	Lee2011	160000.00	452.52	482.8	466.22	483.54	0.000255	7.25	27649.64	2093.43	0.24
Muncy	21583	2Dec2010	143000.00	452.52	481.8	465.37	482.47	0.000271	6.80	25664.13	1928.51	0.23
Muncy	21583	24Oct1990	60800.00	452.52	472.1	460.55	472.49	0.000383	4.81	12636.95	755.10	0.20
Muncy	20904	Q2	83500.00	453.03	474.6	462.70	475.12	0.000398	5.98	14015.61	842.56	0.24
Muncy	20904	Q5	125500.00	453.03	480.2	465.11	480.86	0.000317	6.73	21027.61	1801.96	0.24
Muncy	20904	Q10	158000.00	453.03	482.4	466.78	483.21	0.000283	7.47	26627.73	2179.32	0.25
Muncy	20904	Q25	206000.00	453.03	485.6	469.03	486.52	0.000250	8.18	33621.07	2191.68	0.26
Muncy	20904	Q50	248000.00	453.03	487.9	470.82	488.95	0.000318	8.76	38729.30	2200.36	0.27
Muncy	20904	Q100	293000.00	453.03	494.7	472.62	495.47	0.000281	7.68	53890.66	3476.98	0.22
Muncy	20904	Q200	344000.00	453.03	498.7	474.56	499.37	0.000243	7.62	67538.00	3752.55	0.20
Muncy	20904	Q500	420000.00	453.03	504.5	478.65	505.17	0.000228	8.03	85761.17	5847.58	0.20
Muncy	20904	Agnes1972	293000.00	453.03	494.7	472.62	495.47	0.000281	7.68	53890.66	3476.98	0.22
Muncy	20904	Ivan2004	207000.00	453.03	485.7	469.08	486.62	0.000250	8.18	33834.66	2192.05	0.26
Muncy	20904	Lee2011	160000.00	453.03	482.5	466.89	483.36	0.000283	7.50	26927.38	2179.85	0.25
Muncy	20904	2Dec2010	143000.00	453.03	481.5	466.04	482.27	0.000307	7.09	24719.63	2122.20	0.25
Muncy	20904	24Oct1990	60800.00	453.03	471.8	461.23	472.21	0.000460	5.09	11945.13	743.91	0.22
Muncy	19827	Q2	83500.00	453.54	474.2	462.31	474.69	0.000371	5.70	14695.50	891.97	0.23
Muncy	19827	Q5	125500.00	453.54	479.9	464.60	480.52	0.000286	6.34	22894.42	2104.26	0.23
Muncy	19827	Q10	158000.00	453.54	482.2	466.20	482.90	0.000258	7.07	28068.33	2321.46	0.24
Muncy	19827	Q25	206000.00	453.54	485.4	468.34	486.24	0.000226	7.74	35622.72	2344.59	0.25
Muncy	19827	Q50	248000.00	453.54	487.7	470.06	488.59	0.000292	8.33	40923.77	2548.78	0.26
Muncy	19827	Q100	293000.00	453.54	494.5	471.80	495.16	0.000258	7.31	57384.32	2735.15	0.21
Muncy	19827	Q200	344000.00	453.54	498.5	473.67	499.10	0.000226	7.31	70136.02	2835.32	0.20

Muncy	19827	Q500	420000.00	453.54	504.3	477.00	504.91	0.000193	7.34	89893.50	4259.34	0.19
Muncy	19827	Agnes1972	293000.00	453.54	494.5	471.80	495.16	0.000258	7.31	57384.32	2735.15	0.21
Muncy	19827	Ivan2004	207000.00	453.54	485.5	468.38	486.34	0.000226	7.74	35850.74	2345.97	0.25
Muncy	19827	Lee2011	160000.00	453.54	482.3	466.28	483.04	0.000257	7.11	28390.23	2322.08	0.24
Muncy	19827	2Dec2010	143000.00	453.54	481.3	465.48	481.93	0.000278	6.70	25997.61	2230.50	0.23
Muncy	19827	24Oct1990	60800.00	453.54	471.3	460.91	471.71	0.000441	4.89	12424.72	784.98	0.22
Muncy	18807	Q2	83500.00	453.71	473.8	462.99	474.29	0.000411	5.69	14688.70	959.48	0.24
Muncy	18807	Q5	125500.00	453.71	479.6	465.17	480.22	0.000302	6.29	21347.27	1545.94	0.23
Muncy	18807	Q10	158000.00	453.71	481.9	466.65	482.63	0.000271	7.02	26208.56	1938.57	0.25
Muncy	18807	Q25	206000.00	453.71	485.1	468.68	485.99	0.000246	7.84	33337.89	2529.06	0.26
Muncy	18807	Q50	248000.00	453.71	487.2	470.32	488.27	0.000325	8.53	38760.50	2765.56	0.27
Muncy	18807	Q100	293000.00	453.71	494.2	471.97	494.89	0.000273	7.36	56586.63	2955.99	0.21
Muncy	18807	Q200	344000.00	453.71	498.2	473.75	498.87	0.000232	7.26	70669.03	3042.30	0.20
Muncy	18807	Q500	420000.00	453.71	504.1	476.70	504.72	0.000192	7.22	90993.03	4555.01	0.18
Muncy	18807	Agnes1972	293000.00	453.71	494.2	471.97	494.89	0.000273	7.36	56586.63	2955.99	0.21
Muncy	18807	Ivan2004	207000.00	453.71	485.2	468.73	486.08	0.000251	7.91	33515.48	2530.29	0.26
Muncy	18807	Lee2011	160000.00	453.71	482.0	466.75	482.77	0.000271	7.06	26476.38	1985.36	0.25
Muncy	18807	2Dec2010	143000.00	453.71	481.0	465.98	481.64	0.000293	6.65	24557.07	1662.84	0.24
Muncy	18807	24Oct1990	60800.00	453.71	470.8	461.63	471.22	0.000520	4.99	12173.22	846.71	0.23
Muncy	17739	Q2	83500.00	453.50	473.6	461.80	473.90	0.000235	4.12	20342.14	1487.28	0.18
Muncy	17739	Q5	125500.00	453.50	479.6	463.61	479.89	0.000171	4.50	29371.33	2008.47	0.17
Muncy	17739	Q10	158000.00	453.50	481.9	464.86	482.31	0.000152	5.00	36270.66	2432.09	0.18
Muncy	17739	Q25	206000.00	453.50	485.2	466.45	485.68	0.000139	5.60	44700.35	2736.78	0.19
Muncy	17739	Q50	248000.00	453.50	487.3	467.73	487.86	0.000186	6.13	50309.25	2831.35	0.20
Muncy	17739	Q100	293000.00	453.50	494.2	469.03	494.57	0.000172	5.50	68652.10	3012.92	0.16
Muncy	17739	Q200	344000.00	453.50	498.2	470.41	498.59	0.000155	5.59	83047.70	3509.27	0.15
Muncy	17739	Q500	420000.00	453.50	504.1	472.36	504.48	0.000133	5.65	104927.40	4565.85	0.14
Muncy	17739	Agnes1972	293000.00	453.50	494.2	469.03	494.57	0.000172	5.50	68652.10	3012.92	0.16
Muncy	17739	Ivan2004	207000.00	453.50	485.3	466.48	485.75	0.000140	5.61	44901.63	2750.83	0.19
Muncy	17739	Lee2011	160000.00	453.50	482.1	464.91	482.45	0.000152	5.03	36610.26	2440.03	0.18
Muncy	17739	2Dec2010	143000.00	453.50	481.0	464.28	481.31	0.000165	4.74	33965.02	2348.27	0.17
Muncy	17739	24Oct1990	60800.00	453.50	470.5	460.63	470.75	0.000309	3.67	16586.64	1208.77	0.17
Muncy	16893	Q2	83500.00	452.78	473.2	462.86	473.62	0.000420	5.22	17818.83	1785.09	0.23
Muncy	16893	Q5	125500.00	452.78	479.3	465.09	479.70	0.000281	5.45	28571.91	2460.50	0.20
Muncy	16893	Q10	158000.00	452.78	481.7	466.42	482.14	0.000235	5.86	37856.96	2610.59	0.21
Muncy	16893	Q25	206000.00	452.78	485.0	468.18	485.52	0.000207	6.43	46478.26	2710.69	0.21
Muncy	16893	Q50	248000.00	452.78	487.0	469.78	487.66	0.000279	7.02	51863.61	2770.86	0.23
Muncy	16893	Q100	293000.00	452.78	493.9	471.21	494.38	0.000251	6.23	71435.43	3741.71	0.18
Muncy	16893	Q200	344000.00	452.78	498.0	472.72	498.42	0.000221	6.25	90357.14	4015.87	0.17
Muncy	16893	Q500	420000.00	452.78	503.9	475.18	504.33	0.000195	6.37	115047.30	4305.48	0.16
Muncy	16893	Agnes1972	293000.00	452.78	493.9	471.21	494.38	0.000251	6.23	71435.43	3741.71	0.18
Muncy	16893	Ivan2004	207000.00	452.78	485.1	468.21	485.60	0.000208	6.44	46676.23	2712.85	0.21
Muncy	16893	Lee2011	160000.00	452.78	481.8	466.49	482.28	0.000234	5.89	38213.90	2619.20	0.21
Muncy	16893	2Dec2010	143000.00	452.78	480.7	465.81	481.13	0.000257	5.59	35393.64	2550.56	0.20
Muncy	16893	24Oct1990	60800.00	452.78	470.0	461.47	470.39	0.000575	4.77	14006.87	1313.27	0.23

Muncy	16050	Q2	83500.00	452.15	473.0	460.85	473.32	0.000252	4.42	19511.68	1700.22	0.18
Muncy	16050	Q5	125500.00	452.15	479.2	462.72	479.48	0.000169	4.65	32287.04	2126.41	0.17
Muncy	16050	Q10	158000.00	452.15	481.6	464.03	481.96	0.000152	5.19	37239.32	2283.10	0.18
Muncy	16050	Q25	206000.00	452.15	484.9	465.79	485.36	0.000140	5.82	44369.83	2547.96	0.19
Muncy	16050	Q50	248000.00	452.15	486.9	467.17	487.44	0.000194	6.45	48668.10	2634.86	0.20
Muncy	16050	Q100	293000.00	452.15	493.8	468.62	494.19	0.000180	5.80	73424.65	3553.71	0.16
Muncy	16050	Q200	344000.00	452.15	497.8	470.08	498.26	0.000163	5.89	88103.74	3680.30	0.16
Muncy	16050	Q500	420000.00	452.15	503.8	472.31	504.19	0.000141	5.97	111109.80	4000.41	0.15
Muncy	16050	Agnes1972	293000.00	452.15	493.8	468.62	494.19	0.000180	5.80	73424.65	3553.71	0.16
Muncy	16050	Ivan2004	207000.00	452.15	485.0	465.81	485.44	0.000141	5.83	44530.24	2551.52	0.19
Muncy	16050	Lee2011	160000.00	452.15	481.7	464.12	482.10	0.000152	5.23	37536.13	2292.34	0.18
Muncy	16050	2Dec2010	143000.00	452.15	480.6	463.44	480.93	0.000165	4.93	35169.09	2196.00	0.17
Muncy	16050	24Oct1990	60800.00	452.15	469.8	459.70	469.99	0.000335	3.96	15674.54	1308.84	0.18
Muncy	15284	Q2	83500.00	451.52	472.8	461.06	473.11	0.000282	4.73	18117.69	1581.76	0.20
Muncy	15284	Q5	125500.00	451.52	479.0	462.97	479.35	0.000180	4.87	31384.88	2020.52	0.18
Muncy	15284	Q10	158000.00	451.52	481.4	464.31	481.83	0.000161	5.43	36397.39	2146.40	0.19
Muncy	15284	Q25	206000.00	451.52	484.7	466.12	485.25	0.000146	6.05	43628.01	2356.83	0.20
Muncy	15284	Q50	248000.00	451.52	486.7	467.57	487.29	0.000203	6.70	47897.20	2401.68	0.21
Muncy	15284	Q100	293000.00	451.52	493.6	469.02	494.05	0.000191	6.08	68602.61	3311.80	0.17
Muncy	15284	Q200	344000.00	451.52	497.7	470.66	498.13	0.000172	6.17	82188.44	3342.58	0.17
Muncy	15284	Q500	420000.00	451.52	503.6	472.88	504.07	0.000148	6.24	102241.60	3394.40	0.16
Muncy	15284	Agnes1972	293000.00	451.52	493.6	469.02	494.05	0.000191	6.08	68602.61	3311.80	0.17
Muncy	15284	Ivan2004	207000.00	451.52	484.8	466.14	485.32	0.000147	6.06	43790.59	2357.52	0.20
Muncy	15284	Lee2011	160000.00	451.52	481.6	464.39	481.98	0.000161	5.46	36694.04	2164.85	0.19
Muncy	15284	2Dec2010	143000.00	451.52	480.4	463.71	480.80	0.000176	5.16	34296.99	2085.14	0.18
Muncy	15284	24Oct1990	60800.00	451.52	469.4	459.76	469.71	0.000385	4.25	14486.48	1372.10	0.20
Muncy	14586	Q2	83500.00	450.96	472.5	460.51	472.91	0.000285	4.98	17500.77	1617.82	0.20
Muncy	14586	Q5	125500.00	450.96	478.8	462.51	479.21	0.000184	5.17	30913.61	2123.67	0.18
Muncy	14586	Q10	158000.00	450.96	481.3	463.94	481.71	0.000165	5.76	36214.18	2330.77	0.19
Muncy	14586	Q25	206000.00	450.96	484.6	465.88	485.14	0.000150	6.41	43586.64	2434.36	0.20
Muncy	14586	Q50	248000.00	450.96	486.5	467.44	487.14	0.000209	7.12	47775.38	2461.44	0.22
Muncy	14586	Q100	293000.00	450.96	493.4	469.00	493.91	0.000195	6.43	68075.00	3168.28	0.18
Muncy	14586	Q200	344000.00	450.96	497.5	470.75	498.00	0.000177	6.55	81057.98	3180.53	0.18
Muncy	14586	Q500	420000.00	450.96	503.5	473.03	503.96	0.000154	6.67	100075.40	3195.49	0.17
Muncy	14586	Agnes1972	293000.00	450.96	493.4	469.00	493.91	0.000195	6.43	68075.00	3168.28	0.18
Muncy	14586	Ivan2004	207000.00	450.96	484.7	465.92	485.21	0.000150	6.42	43749.34	2435.18	0.20
Muncy	14586	Lee2011	160000.00	450.96	481.4	464.00	481.86	0.000165	5.79	36521.98	2338.38	0.20
Muncy	14586	2Dec2010	143000.00	450.96	480.2	463.29	480.67	0.000181	5.49	33993.32	2263.71	0.19
Muncy	14586	24Oct1990	60800.00	450.96	469.1	459.26	469.44	0.000389	4.46	13938.30	1343.62	0.20
Muncy	13669	Q2	83500.00	450.25	472.2	459.92	472.64	0.000294	5.12	16862.02	1663.61	0.21
Muncy	13669	Q5	125500.00	450.25	478.7	462.03	479.05	0.000183	5.21	31500.18	2069.71	0.18
Muncy	13669	Q10	158000.00	450.25	481.1	463.51	481.56	0.000165	5.82	36259.53	2098.61	0.20
Muncy	13669	Q25	206000.00	450.25	484.4	465.51	485.00	0.000153	6.56	42786.13	2152.44	0.21
Muncy	13669	Q50	248000.00	450.25	486.2	467.13	486.94	0.000219	7.35	46335.75	2248.74	0.23

Muncy	13669		Q100	293000.00	450.25	493.1	468.85	493.72	0.000211	6.74	64639.87	2575.90	0.19
Muncy	13669		Q200	344000.00	450.25	497.2	470.51	497.82	0.000198	6.97	76089.25	2896.05	0.19
Muncy	13669		Q500	420000.00	450.25	503.2	472.96	503.80	0.000176	7.16	93429.34	2912.57	0.18
Muncy	13669		Agnes1972	293000.00	450.25	493.1	468.85	493.72	0.000211	6.74	64639.87	2575.90	0.19
Muncy	13669		Ivan2004	207000.00	450.25	484.5	465.55	485.07	0.000154	6.57	42927.76	2155.53	0.21
Muncy	13669		Lee2011	160000.00	450.25	481.2	463.60	481.71	0.000165	5.86	36531.79	2100.40	0.20
Muncy	13669		2Dec2010	143000.00	450.25	480.1	462.84	480.50	0.000179	5.53	34266.32	2085.09	0.19
Muncy	13669		24Oct1990	60800.00	450.25	468.8	458.62	469.08	0.000400	4.58	13531.96	1302.61	0.21
Muncy	12899		Q2	83500.00	449.62	472.1	459.27	472.42	0.000251	4.78	17767.34	1668.18	0.19
Muncy	12899		Q5	125500.00	449.62	478.6	461.28	478.90	0.000159	4.91	31498.37	1838.91	0.17
Muncy	12899		Q10	158000.00	449.62	481.0	462.68	481.43	0.000145	5.52	35798.44	1906.44	0.18
Muncy	12899		Q25	206000.00	449.62	484.3	464.58	484.87	0.000138	6.27	41700.17	2032.73	0.20
Muncy	12899		Q50	248000.00	449.62	486.1	466.14	486.76	0.000200	7.06	44826.40	2174.30	0.22
Muncy	12899		Q100	293000.00	449.62	493.0	467.72	493.55	0.000196	6.54	63114.02	2556.09	0.18
Muncy	12899		Q200	344000.00	449.62	497.1	469.39	497.67	0.000185	6.77	73995.76	2794.17	0.18
Muncy	12899		Q500	420000.00	449.62	503.1	471.73	503.66	0.000167	7.00	91069.68	2889.69	0.17
Muncy	12899		Agnes1972	293000.00	449.62	493.0	467.72	493.55	0.000196	6.54	63114.02	2556.09	0.18
Muncy	12899		Ivan2004	207000.00	449.62	484.4	464.62	484.95	0.000138	6.28	41826.99	2035.28	0.20
Muncy	12899		Lee2011	160000.00	449.62	481.1	462.76	481.58	0.000145	5.56	36043.69	1909.80	0.18
Muncy	12899		2Dec2010	143000.00	449.62	480.0	462.05	480.36	0.000157	5.23	33984.94	1878.20	0.18
Muncy	12899		24Oct1990	60800.00	449.62	468.5	458.03	468.78	0.000341	4.28	14314.79	1211.05	0.19
Muncy	12525		Q2	83500.00	449.30	472.0	458.84	472.33	0.000242	4.78	18041.00	1427.13	0.19
Muncy	12525		Q5	125500.00	449.30	478.5	460.95	478.82	0.000164	5.05	28660.27	1867.77	0.17
Muncy	12525		Q10	158000.00	449.30	480.9	462.40	481.36	0.000149	5.66	32772.38	2178.70	0.19
Muncy	12525		Q25	206000.00	449.30	484.3	464.39	484.81	0.000139	6.37	38513.58	2429.80	0.20
Muncy	12525		Q50	248000.00	449.30	486.0	465.96	486.67	0.000201	7.16	41494.42	2507.88	0.22
Muncy	12525		Q100	293000.00	449.30	493.0	467.67	493.46	0.000182	6.35	65149.26	2811.76	0.18
Muncy	12525		Q200	344000.00	449.30	497.1	469.41	497.57	0.000168	6.51	76997.98	2967.35	0.17
Muncy	12525		Q500	420000.00	449.30	503.0	471.77	503.57	0.000149	6.65	95027.30	3025.91	0.16
Muncy	12525		Agnes1972	293000.00	449.30	493.0	467.67	493.46	0.000182	6.35	65149.26	2811.76	0.18
Muncy	12525		Ivan2004	207000.00	449.30	484.3	464.43	484.88	0.000140	6.39	38636.09	2441.28	0.20
Muncy	12525		Lee2011	160000.00	449.30	481.1	462.49	481.50	0.000149	5.70	33010.92	2200.94	0.19
Muncy	12525		2Dec2010	143000.00	449.30	479.9	461.74	480.29	0.000162	5.38	31001.12	2069.23	0.18
Muncy	12525		24Oct1990	60800.00	449.30	468.4	457.55	468.66	0.000332	4.30	14430.60	1018.33	0.19
Muncy	12463	2nd Street		Mult Open									
Muncy	12400		Q2	83500.00	449.22	471.1	458.31	471.47	0.000245	4.77	17991.48	1306.90	0.19
Muncy	12400		Q5	125500.00	449.22	477.6	460.38	477.95	0.000154	4.87	30198.25	1996.57	0.17
Muncy	12400		Q10	158000.00	449.22	480.7	461.80	481.13	0.000128	5.31	35472.88	2214.53	0.17
Muncy	12400		Q25	206000.00	449.22	484.0	463.70	484.52	0.000121	6.00	41119.34	2418.81	0.19
Muncy	12400		Q50	248000.00	449.22	485.7	465.24	486.31	0.000177	6.76	44000.11	2601.29	0.20
Muncy	12400		Q100	293000.00	449.22	492.8	466.77	493.22	0.000160	6.00	69425.91	2934.96	0.17
Muncy	12400		Q200	344000.00	449.22	496.8	468.48	497.29	0.000149	6.17	81581.27	3042.75	0.16
Muncy	12400		Q500	420000.00	449.22	502.9	470.78	503.35	0.000131	6.31	100181.30	3096.92	0.16
Muncy	12400		Agnes1972	293000.00	449.22	492.8	466.77	493.22	0.000160	6.00	69425.91	2934.96	0.17

Muncy	12400	Ivan2004	207000.00	449.22	484.1	463.72	484.59	0.000122	6.02	41237.75	2425.95	0.19
Muncy	12400	Lee2011	160000.00	449.22	480.9	461.89	481.28	0.000128	5.34	35708.39	2219.60	0.17
Muncy	12400	2Dec2010	143000.00	449.22	479.7	461.18	480.07	0.000138	5.02	33724.01	2179.61	0.17
Muncy	12400	24Oct1990	60800.00	449.22	467.5	456.99	467.81	0.000338	4.30	14480.93	1224.14	0.19
Muncy	12021	Q2	83500.00	449.23	471.0	457.51	471.37	0.000243	4.89	17879.31	1144.80	0.19
Muncy	12021	Q5	125500.00	449.23	477.4	459.66	477.85	0.000186	5.46	27308.79	2175.48	0.19
Muncy	12021	Q10	158000.00	449.23	480.5	461.15	481.04	0.000158	5.99	33095.60	2415.20	0.19
Muncy	12021	Q25	206000.00	449.23	483.7	463.15	484.41	0.000154	6.86	39142.43	2622.61	0.21
Muncy	12021	Q50	248000.00	449.23	485.3	464.78	486.16	0.000229	7.79	42080.92	2773.47	0.23
Muncy	12021	Q100	293000.00	449.23	492.5	466.41	493.10	0.000203	6.84	68805.58	2893.15	0.19
Muncy	12021	Q200	344000.00	449.23	496.6	468.24	497.18	0.000190	7.04	80628.00	2939.40	0.18
Muncy	12021	Q500	420000.00	449.23	502.6	470.84	503.24	0.000171	7.24	98681.69	3018.14	0.18
Muncy	12021	Agnes1972	293000.00	449.23	492.5	466.41	493.10	0.000203	6.84	68805.58	2893.15	0.19
Muncy	12021	Ivan2004	207000.00	449.23	483.8	463.19	484.48	0.000155	6.88	39268.43	2632.75	0.21
Muncy	12021	Lee2011	160000.00	449.23	480.6	461.23	481.18	0.000159	6.04	33347.54	2424.02	0.19
Muncy	12021	2Dec2010	143000.00	449.23	479.5	460.47	479.98	0.000170	5.67	31205.95	2326.94	0.19
Muncy	12021	24Oct1990	60800.00	449.23	467.4	456.19	467.68	0.000323	4.35	14249.82	931.56	0.19

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                    HEC-RAS HEC-RAS 5.0.3 September 2016
                      U.S. Army Corps of Engineers
                     Hydrologic Engineering Center
                           609 Second Street
                           Davis, California


          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: MuncyCreek
Project File : MuncyCreek.prj
Run Date and Time: 7/26/2018 10:01:38 AM

Project in English units

Project Description:
Geo-referenced steady-state HEC-RAS model for Muncy Creek in the Borough of Muncy and Lycoming County, Pennsylvania. Completed in May 2018 by the U.S. Army Corps of Engineers, Baltimore District, as part of the "Floodplain Management Study for the Greater Muncy Area, Lycoming County, Pennsylvania". This study was completed under the USACE Planning Assistance to States (PAS) Program.

Existing-conditions geometry as of February 2018. Vertical datum is North American Vertical Datum of 1988 (NAVD). Horizontal datum is Pennsylvania State Plane Feet North NAD83. Overbank data from 1-meter resolution PADCNR PAMAP Program DEM collected in 2007. Channel and bridge data from Susquehanna River Basin Commission (SRBC) survey in December 2017 or from United States Geological Survey (USGS) field survey as part of the Muncy Creek study completed in March 2001 (as included in the June 2, 2016 FIS for Lycoming County).

Cross-sections in feet upstream of the confluence with West Branch Susquehanna River. Flows from a gage-regression analysis at USGS 01553005 Muncy Creek near Muncy, PA to water year 2016 as outlined in "Floodplain Management Study for the Greater Muncy Area, Lycoming County, Pennsylvania".

Plans include:
"MuncyCreek_ExistingConditions":
Existing-Conditions plan for Muncy Creek in Lycoming County, Pennsylvania. Run in subcritical flow regime. Flows from a gage-regression analysis at USGS 01553005 Muncy Creek near Muncy, PA.

"MuncyCreek_Floodway": Regulatory
Floodway plan for Muncy Creek in Lycoming County, Pennsylvania.

Profile Output Table - Standard Table 1

Reach	River Sta		Profile	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
USACE-Muncy	20661		Q2	7539.00	496.61	506.0	501.11	506.33	0.001113	4.42	1831.13	422.37	0.27
USACE-Muncy	20661		Q5	12488.00	496.61	508.2	502.58	508.60	0.001591	5.15	3510.18	1048.73	0.28
USACE-Muncy	20661		Q10	16945.00	496.61	509.6	503.71	509.92	0.001793	5.46	5409.31	1845.43	0.28
USACE-Muncy	20661		Q25	25000.00	496.61	511.4	505.72	511.74	0.001751	5.52	9390.02	2332.67	0.26
USACE-Muncy	20661		Q50	31282.00	496.61	512.5	508.28	512.80	0.001696	5.52	11991.05	2421.83	0.25
USACE-Muncy	20661		Q100	40158.00	496.61	513.7	509.67	513.95	0.001646	5.72	14871.72	2601.30	0.25
USACE-Muncy	20661		Q200	55000.00	496.61	515.4	511.12	515.69	0.001650	6.13	19816.86	3096.06	0.26
USACE-Muncy	20661		Q500	69213.00	496.61	517.1	511.76	517.33	0.001411	6.02	25125.17	3525.02	0.24
USACE-Muncy	20661		SEPT2011	46600.00	496.61	514.5	510.37	514.73	0.001602	5.83	16994.76	2860.40	0.25
USACE-Muncy	20106		Q2	7539.00	495.37	504.5	501.81	505.28	0.003401	7.20	1435.17	552.30	0.46
USACE-Muncy	20106		Q5	12488.00	495.37	506.7	504.15	507.30	0.003626	7.32	3591.51	1351.11	0.41
USACE-Muncy	20106		Q10	16945.00	495.37	508.3	506.11	508.70	0.002738	6.51	6121.14	1738.29	0.34
USACE-Muncy	20106		Q25	25000.00	495.37	510.4	507.47	510.63	0.002270	6.15	10328.99	2238.59	0.30
USACE-Muncy	20106		Q50	31282.00	495.37	511.4	508.04	511.69	0.002384	6.40	12970.99	2721.85	0.30
USACE-Muncy	20106		Q100	40158.00	495.37	512.7	508.73	512.92	0.002067	6.30	16554.20	2945.05	0.28
USACE-Muncy	20106		Q200	55000.00	495.37	514.5	509.96	514.72	0.001760	6.26	22083.11	3104.36	0.26
USACE-Muncy	20106		Q500	69213.00	495.37	516.4	510.60	516.53	0.001398	5.96	27714.39	3188.96	0.24
USACE-Muncy	20106		SEPT2011	46600.00	495.37	513.5	509.53	513.74	0.001957	6.35	19047.42	3065.93	0.28
USACE-Muncy	19470		Q2	7539.00	494.03	504.6	498.20	504.64	0.000291	2.42	5801.17	1844.30	0.14
USACE-Muncy	19470		Q5	12488.00	494.03	506.5	499.72	506.56	0.000407	2.71	10192.43	2494.15	0.14
USACE-Muncy	19470		Q10	16945.00	494.03	508.0	500.84	508.08	0.000391	2.67	14070.30	2551.24	0.13
USACE-Muncy	19470		Q25	25000.00	494.03	510.0	502.26	510.04	0.000419	2.82	19140.44	2684.43	0.13
USACE-Muncy	19470		Q50	31282.00	494.03	511.0	503.23	511.04	0.000484	3.06	21878.20	2815.55	0.14
USACE-Muncy	19470		Q100	40158.00	494.03	512.2	504.24	512.28	0.000527	3.36	25393.56	2921.13	0.14
USACE-Muncy	19470		Q200	55000.00	494.03	514.0	506.14	514.09	0.000578	3.76	30868.21	3221.04	0.15
USACE-Muncy	19470		Q500	69213.00	494.03	515.9	506.75	515.99	0.000544	3.89	36978.80	3342.07	0.15
USACE-Muncy	19470		SEPT2011	46600.00	494.03	513.0	504.63	513.09	0.000561	3.57	27782.40	3017.35	0.15
USACE-Muncy	18917	USGS 01553005	Q2	7539.00	493.70	503.9	501.11	504.27	0.002131	4.64	1684.16	1676.38	0.35
USACE-Muncy	18917	USGS 01553005	Q5	12488.00	493.70	506.2	502.25	506.29	0.000683	2.76	9041.29	2380.70	0.17
USACE-Muncy	18917	USGS 01553005	Q10	16945.00	493.70	507.8	503.14	507.84	0.000553	2.59	12827.69	2447.81	0.15
USACE-Muncy	18917	USGS 01553005	Q25	25000.00	493.70	509.8	504.20	509.80	0.000534	2.68	18130.37	2977.03	0.14
USACE-Muncy	18917	USGS 01553005	Q50	31282.00	493.70	510.7	504.21	510.77	0.000633	2.97	20995.38	3032.11	0.15
USACE-Muncy	18917	USGS 01553005	Q100	40158.00	493.70	511.9	504.74	511.99	0.000649	3.21	24779.82	3186.31	0.15
USACE-Muncy	18917	USGS 01553005	Q200	55000.00	493.70	513.7	504.87	513.79	0.000640	3.46	30530.56	3248.22	0.16
USACE-Muncy	18917	USGS 01553005	Q500	69213.00	493.70	515.6	506.53	515.71	0.000566	3.52	36793.66	3416.14	0.15
USACE-Muncy	18917	USGS 01553005	SEPT2011	46600.00	493.70	512.7	504.87	512.79	0.000647	3.33	27331.05	3205.34	0.15
USACE-Muncy	18352		Q2	7539.00	493.47	503.3	498.28	503.50	0.000876	3.90	2812.82	1548.47	0.24
USACE-Muncy	18352		Q5	12488.00	493.47	505.9	499.94	505.98	0.000506	2.96	9695.30	2337.82	0.16
USACE-Muncy	18352		Q10	16945.00	493.47	507.5	501.23	507.58	0.000452	2.84	13584.08	2445.58	0.14
USACE-Muncy	18352		Q25	25000.00	493.47	509.5	502.98	509.53	0.000498	3.04	18749.20	2845.99	0.14
USACE-Muncy	18352		Q50	31282.00	493.47	510.4	504.01	510.45	0.000579	3.30	21373.95	2927.32	0.15
USACE-Muncy	18352		Q100	40158.00	493.47	511.6	504.14	511.66	0.000616	3.58	24928.69	2999.46	0.15

USACE-Muncy	18352		Q200	55000.00	493.47	513.4	505.72	513.45	0.000665	3.98	30350.78	3097.29	0.16
USACE-Muncy	18352		Q500	69213.00	493.47	515.3	506.35	515.40	0.000602	4.05	36411.82	3240.86	0.16
USACE-Muncy	18352		SEPT2011	46600.00	493.47	512.4	504.14	512.45	0.000657	3.81	27300.68	3051.89	0.16
USACE-Muncy	17852		Q2	7539.00	493.11	502.9	498.32	503.07	0.000801	3.78	3280.60	1444.07	0.23
USACE-Muncy	17852		Q5	12488.00	493.11	505.7	499.66	505.74	0.000437	2.81	10141.08	2002.82	0.15
USACE-Muncy	17852		Q10	16945.00	493.11	507.3	500.52	507.36	0.000430	2.82	13447.23	2071.97	0.14
USACE-Muncy	17852		Q25	25000.00	493.11	509.2	502.04	509.29	0.000506	3.12	17694.16	2356.21	0.14
USACE-Muncy	17852		Q50	31282.00	493.11	510.1	502.95	510.15	0.000640	3.51	19739.25	2439.81	0.16
USACE-Muncy	17852		Q100	40158.00	493.11	511.2	503.22	511.33	0.000712	3.89	22629.06	2508.80	0.17
USACE-Muncy	17852		Q200	55000.00	493.11	513.0	504.87	513.09	0.000814	4.44	27058.72	2641.74	0.18
USACE-Muncy	17852		Q500	69213.00	493.11	515.0	505.56	515.08	0.000748	4.55	32174.61	2745.11	0.18
USACE-Muncy	17852		SEPT2011	46600.00	493.11	512.0	504.32	512.09	0.000786	4.20	24533.10	2585.87	0.18
USACE-Muncy	17407		Q2	7539.00	492.46	502.2	497.67	502.57	0.001542	4.97	1678.03	1080.46	0.31
USACE-Muncy	17407		Q5	12488.00	492.46	505.4	499.40	505.49	0.000723	3.56	6484.88	1485.42	0.19
USACE-Muncy	17407		Q10	16945.00	492.46	507.0	500.68	507.12	0.000686	3.51	9423.11	1959.39	0.17
USACE-Muncy	17407		Q25	25000.00	492.46	508.9	503.26	509.00	0.000812	3.89	13262.07	2106.50	0.18
USACE-Muncy	17407		Q50	31282.00	492.46	509.7	504.10	509.79	0.000989	4.29	14899.66	2127.23	0.19
USACE-Muncy	17407		Q100	40158.00	492.46	510.8	504.70	510.94	0.001076	4.69	17329.37	2203.90	0.20
USACE-Muncy	17407		Q200	55000.00	492.46	512.5	505.64	512.64	0.001177	5.23	21076.00	2313.84	0.22
USACE-Muncy	17407		Q500	69213.00	492.46	514.5	506.52	514.68	0.001028	5.25	25953.71	2479.42	0.21
USACE-Muncy	17407		SEPT2011	46600.00	492.46	511.5	505.11	511.67	0.001142	4.97	18922.60	2229.86	0.21
USACE-Muncy	17107		Q2	7539.00	491.50	502.0	496.29	502.20	0.000722	3.56	2381.42	1034.27	0.22
USACE-Muncy	17107		Q5	12488.00	491.50	505.0	497.98	505.24	0.000861	3.98	3925.67	1461.45	0.21
USACE-Muncy	17107		Q10	16945.00	491.50	506.9	499.10	506.94	0.000429	2.86	9988.26	1684.87	0.14
USACE-Muncy	17107		Q25	25000.00	491.50	508.7	500.92	508.79	0.000543	3.26	12965.31	1823.80	0.15
USACE-Muncy	17107		Q50	31282.00	491.50	509.4	502.08	509.53	0.000717	3.73	14144.07	1927.36	0.17
USACE-Muncy	17107		Q100	40158.00	491.50	510.5	503.32	510.64	0.000846	4.23	15958.06	2013.14	0.18
USACE-Muncy	17107		Q200	55000.00	491.50	512.1	505.44	512.31	0.001009	4.92	18793.92	2175.47	0.20
USACE-Muncy	17107		Q500	69213.00	491.50	514.2	505.45	514.37	0.000951	5.12	22421.26	2288.25	0.20
USACE-Muncy	17107		SEPT2011	46600.00	491.50	511.2	504.17	511.35	0.000939	4.58	17149.28	2126.37	0.19
USACE-Muncy	16845		Q2	7539.00	490.55	501.8	495.10	502.01	0.000652	3.81	1991.38	574.97	0.21
USACE-Muncy	16845		Q5	12488.00	490.55	504.6	496.63	504.94	0.001619	4.91	2608.64	872.28	0.24
USACE-Muncy	16845		Q10	16945.00	490.55	506.6	497.83	506.76	0.001300	4.13	6908.85	1630.55	0.19
USACE-Muncy	16845		Q25	25000.00	490.55	508.3	499.69	508.56	0.002078	4.84	10143.13	2170.27	0.21
USACE-Muncy	16845		Q50	31282.00	490.55	508.9	501.02	509.23	0.002865	5.44	11392.61	2180.89	0.23
USACE-Muncy	16845		Q100	40158.00	490.55	510.0	502.69	510.32	0.003119	5.90	13486.03	2265.20	0.24
USACE-Muncy	16845		Q200	55000.00	490.55	511.6	505.28	511.95	0.003337	6.46	16694.37	2438.69	0.26
USACE-Muncy	16845		Q500	69213.00	490.55	513.8	506.83	514.06	0.002793	6.32	21156.09	2666.70	0.24
USACE-Muncy	16845		SEPT2011	46600.00	490.55	510.7	503.89	511.01	0.003298	6.21	14808.36	2326.77	0.25
USACE-Muncy	16772	PA Route 405		Bridge									
USACE-Muncy	16672		Q2	7539.00	490.07	501.1	494.53	501.36	0.000647	3.70	2053.84	242.29	0.21
USACE-Muncy	16672		Q5	12488.00	490.07	504.1	496.08	504.44	0.001014	4.61	2851.07	460.48	0.23
USACE-Muncy	16672		Q10	16945.00	490.07	505.6	497.27	506.02	0.001417	5.42	3877.69	977.91	0.25
USACE-Muncy	16672		Q25	25000.00	490.07	507.3	499.12	507.84	0.001981	6.42	6033.98	1491.04	0.29
USACE-Muncy	16672		Q50	31282.00	490.07	508.3	500.35	508.91	0.002320	6.99	7625.93	1729.49	0.30
USACE-Muncy	16672		Q100	40158.00	490.07	509.4	501.95	510.09	0.002552	7.66	9586.53	1959.23	0.32
USACE-Muncy	16672		Q200	55000.00	490.07	511.2	507.20	511.85	0.002613	8.24	12892.66	2465.84	0.33
USACE-Muncy	16672		Q500	69213.00	490.07	513.4	508.64	513.94	0.002021	7.79	17277.00	2784.30	0.29
USACE-Muncy	16672		SEPT2011	46600.00	490.07	510.2	503.02	510.89	0.002631	7.99	11026.75	2234.25	0.33

USACE-Muncy	16455	Q2	7539.00	489.55	500.6	496.34	501.07	0.001735	5.39	1491.75	274.58	0.33
USACE-Muncy	16455	Q5	12488.00	489.55	503.5	498.02	504.06	0.002176	6.15	2400.04	751.17	0.33
USACE-Muncy	16455	Q10	16945.00	489.55	505.0	499.35	505.58	0.002404	6.50	4487.20	1654.18	0.32
USACE-Muncy	16455	Q25	25000.00	489.55	506.8	501.78	507.27	0.002372	6.56	7675.12	1982.54	0.31
USACE-Muncy	16455	Q50	31282.00	489.55	507.8	503.08	508.24	0.002441	6.71	9485.87	2118.40	0.30
USACE-Muncy	16455	Q100	40158.00	489.55	508.9	506.15	509.35	0.002482	7.09	11655.62	2668.98	0.31
USACE-Muncy	16455	Q200	55000.00	489.55	510.7	507.07	511.09	0.002295	7.30	15328.81	2726.91	0.30
USACE-Muncy	16455	Q500	69213.00	489.55	513.0	507.78	513.36	0.001641	6.70	20289.66	2765.88	0.26
USACE-Muncy	16455	SEPT2011	46600.00	489.55	509.7	506.57	510.12	0.002419	7.22	13278.74	2714.71	0.31
USACE-Muncy	16150	Q2	7539.00	489.08	499.9	495.30	500.49	0.002010	6.34	1348.18	336.18	0.37
USACE-Muncy	16150	Q5	12488.00	489.08	502.9	497.38	503.40	0.002123	6.54	3055.98	1392.92	0.33
USACE-Muncy	16150	Q10	16945.00	489.08	504.5	499.57	504.90	0.001751	5.97	6150.76	2135.18	0.28
USACE-Muncy	16150	Q25	25000.00	489.08	506.3	502.85	506.62	0.001684	5.89	9878.49	2335.83	0.26
USACE-Muncy	16150	Q50	31282.00	489.08	507.3	503.63	507.56	0.001739	6.01	11890.12	2365.59	0.26
USACE-Muncy	16150	Q100	40158.00	489.08	508.4	503.94	508.67	0.001745	6.29	14207.71	2389.84	0.26
USACE-Muncy	16150	Q200	55000.00	489.08	510.2	505.98	510.45	0.001651	6.52	17975.89	2421.28	0.26
USACE-Muncy	16150	Q500	69213.00	489.08	512.7	506.59	512.90	0.001239	6.11	23331.89	2535.34	0.23
USACE-Muncy	16150	SEPT2011	46600.00	489.08	509.2	505.56	509.45	0.001709	6.40	15866.29	2402.81	0.26
USACE-Muncy	15804	Q2	7539.00	488.53	499.1	494.91	499.73	0.002378	6.44	1360.09	360.33	0.39
USACE-Muncy	15804	Q5	12488.00	488.53	502.0	497.10	502.59	0.002612	6.83	2692.24	926.19	0.36
USACE-Muncy	15804	Q10	16945.00	488.53	503.7	499.51	504.19	0.002394	6.63	5245.21	1912.42	0.32
USACE-Muncy	15804	Q25	25000.00	488.53	505.7	501.39	506.00	0.001979	6.15	9077.03	2297.16	0.28
USACE-Muncy	15804	Q50	31282.00	488.53	506.6	502.53	506.93	0.002044	6.28	10945.61	2309.43	0.28
USACE-Muncy	15804	Q100	40158.00	488.53	507.7	504.55	508.03	0.002037	6.56	13133.40	2326.74	0.28
USACE-Muncy	15804	Q200	55000.00	488.53	509.6	505.51	509.86	0.001875	6.73	16768.88	2366.14	0.27
USACE-Muncy	15804	Q500	69213.00	488.53	512.3	506.13	512.48	0.001284	6.09	22084.27	2490.76	0.23
USACE-Muncy	15804	SEPT2011	46600.00	488.53	508.5	504.81	508.84	0.001972	6.65	14732.71	2341.41	0.28
USACE-Muncy	15318	Q2	7539.00	488.20	498.0	494.34	498.56	0.002357	6.07	1328.61	309.34	0.39
USACE-Muncy	15318	Q5	12488.00	488.20	500.5	496.05	501.22	0.003013	6.92	2348.40	559.97	0.38
USACE-Muncy	15318	Q10	16945.00	488.20	502.1	497.67	502.81	0.003340	7.39	3462.40	1085.92	0.38
USACE-Muncy	15318	Q25	25000.00	488.20	503.9	500.03	504.67	0.003790	8.05	6274.40	2316.47	0.38
USACE-Muncy	15318	Q50	31282.00	488.20	505.0	501.93	505.62	0.003548	7.90	8243.99	2327.78	0.36
USACE-Muncy	15318	Q100	40158.00	488.20	506.3	504.15	506.79	0.003199	7.92	10547.48	2367.82	0.35
USACE-Muncy	15318	Q200	55000.00	488.20	508.4	505.04	508.80	0.002546	7.67	14473.98	2433.18	0.32
USACE-Muncy	15318	Q500	69213.00	488.20	511.5	505.73	511.81	0.001469	6.49	20443.66	2459.08	0.25
USACE-Muncy	15318	SEPT2011	46600.00	488.20	507.2	504.57	507.68	0.002870	7.79	12299.13	2421.54	0.33
USACE-Muncy	14870	Q2	7539.00	488.00	497.3	493.13	497.66	0.001523	4.81	1615.73	273.33	0.31
USACE-Muncy	14870	Q5	12488.00	488.00	499.4	494.60	499.96	0.002483	6.04	2300.58	528.31	0.34
USACE-Muncy	14870	Q10	16945.00	488.00	500.7	495.74	501.37	0.003013	6.69	3669.97	1543.31	0.36
USACE-Muncy	14870	Q25	25000.00	488.00	502.6	497.75	503.13	0.002957	6.83	6697.66	2174.26	0.34
USACE-Muncy	14870	Q50	31282.00	488.00	503.7	499.15	504.18	0.002834	6.82	8695.38	2304.18	0.32
USACE-Muncy	14870	Q100	40158.00	488.00	505.1	502.14	505.52	0.002504	6.83	11263.53	2380.81	0.31
USACE-Muncy	14870	Q200	55000.00	488.00	507.5	503.15	507.81	0.001910	6.57	15669.72	2601.87	0.28
USACE-Muncy	14870	Q500	69213.00	488.00	511.0	503.88	511.25	0.001069	5.55	22294.05	3200.00	0.21
USACE-Muncy	14870	SEPT2011	46600.00	488.00	506.2	502.61	506.56	0.002176	6.66	13281.27	2482.16	0.29
USACE-Muncy	14497	Q2	7539.00	487.39	496.9	492.53	497.14	0.001200	4.36	2106.77	632.64	0.28
USACE-Muncy	14497	Q5	12488.00	487.39	498.8	494.00	499.12	0.001761	5.10	3440.79	930.62	0.29
USACE-Muncy	14497	Q10	16945.00	487.39	500.0	495.26	500.34	0.002189	5.66	4625.07	1783.91	0.30
USACE-Muncy	14497	Q25	25000.00	487.39	501.6	497.52	502.02	0.002830	6.55	6916.38	2800.50	0.33

USACE-Muncy	14497	Q50	31282.00	487.39	502.7	498.44	503.10	0.002818	6.68	8671.84	2943.76	0.32
USACE-Muncy	14497	Q100	40158.00	487.39	504.2	499.62	504.57	0.002405	6.62	11143.02	3036.17	0.30
USACE-Muncy	14497	Q200	55000.00	487.39	506.8	501.69	507.09	0.001810	6.38	15340.65	3082.48	0.27
USACE-Muncy	14497	Q500	69213.00	487.39	510.6	502.50	510.85	0.001012	5.44	21626.67	3170.57	0.21
USACE-Muncy	14497	SEPT2011	46600.00	487.39	505.4	500.11	505.74	0.002053	6.44	13108.72	3070.00	0.28
USACE-Muncy	14078	Q2	7539.00	486.41	496.4	492.27	496.65	0.001038	3.75	2372.86	987.40	0.25
USACE-Muncy	14078	Q5	12488.00	486.41	498.2	493.44	498.43	0.001481	4.34	4282.36	1956.82	0.26
USACE-Muncy	14078	Q10	16945.00	486.41	499.3	494.37	499.52	0.001692	4.63	6067.66	2983.20	0.26
USACE-Muncy	14078	Q25	25000.00	486.41	500.8	496.74	501.05	0.001819	4.91	9189.17	3355.83	0.26
USACE-Muncy	14078	Q50	31282.00	486.41	502.0	497.62	502.17	0.001680	4.87	11568.77	3522.17	0.24
USACE-Muncy	14078	Q100	40158.00	486.41	503.6	498.91	503.81	0.001335	4.72	15006.04	3755.34	0.22
USACE-Muncy	14078	Q200	55000.00	486.41	506.4	500.18	506.53	0.000965	4.52	20663.88	4274.88	0.19
USACE-Muncy	14078	Q500	69213.00	486.41	510.4	500.81	510.54	0.000532	3.87	29014.98	4350.39	0.15
USACE-Muncy	14078	SEPT2011	46600.00	486.41	504.9	499.43	505.10	0.001106	4.56	17703.51	4172.85	0.20
USACE-Muncy	13567	Q2	7539.00	484.82	495.7	491.29	496.03	0.001400	5.06	2344.86	1588.02	0.30
USACE-Muncy	13567	Q5	12488.00	484.82	497.3	493.23	497.60	0.001816	5.38	4538.88	2540.56	0.30
USACE-Muncy	13567	Q10	16945.00	484.82	498.3	496.01	498.59	0.002047	5.61	6040.19	2918.66	0.29
USACE-Muncy	13567	Q25	25000.00	484.82	499.8	497.15	500.05	0.002236	5.91	8472.99	3222.45	0.29
USACE-Muncy	13567	Q50	31282.00	484.82	501.0	498.15	501.27	0.002048	5.81	10745.33	3562.41	0.27
USACE-Muncy	13567	Q100	40158.00	484.82	502.9	498.32	503.10	0.001591	5.57	14452.85	4197.42	0.25
USACE-Muncy	13567	Q200	55000.00	484.82	505.9	499.17	506.04	0.001064	5.10	20346.99	4298.98	0.21
USACE-Muncy	13567	Q500	69213.00	484.82	510.2	499.88	510.27	0.000587	4.34	28885.06	4718.94	0.16
USACE-Muncy	13567	SEPT2011	46600.00	484.82	504.4	498.71	504.53	0.001245	5.22	17343.42	4229.54	0.22
USACE-Muncy	12930	Q2	7539.00	483.50	494.9	490.93	495.17	0.001230	4.44	3031.85	1733.19	0.28
USACE-Muncy	12930	Q5	12488.00	483.50	496.4	493.31	496.55	0.001438	4.47	5970.23	3274.80	0.26
USACE-Muncy	12930	Q10	16945.00	483.50	497.3	494.98	497.42	0.001595	4.61	7943.22	3712.13	0.25
USACE-Muncy	12930	Q25	25000.00	483.50	498.7	495.96	498.86	0.001533	4.59	11360.65	4160.63	0.24
USACE-Muncy	12930	Q50	31282.00	483.50	500.1	496.37	500.26	0.001213	4.25	14657.96	4467.01	0.21
USACE-Muncy	12930	Q100	40158.00	483.50	502.3	496.91	502.38	0.000814	3.85	19650.63	4847.68	0.17
USACE-Muncy	12930	Q200	55000.00	483.50	505.5	497.55	505.55	0.000553	3.60	27112.61	5068.69	0.15
USACE-Muncy	12930	Q500	69213.00	483.50	509.9	498.07	510.00	0.000305	3.09	37644.74	5367.24	0.11
USACE-Muncy	12930	SEPT2011	46600.00	483.50	503.9	497.21	503.97	0.000633	3.63	23392.36	4951.20	0.16
USACE-Muncy	12470	Q2	7539.00	483.09	494.1	490.14	494.48	0.001785	5.75	2665.65	2006.20	0.34
USACE-Muncy	12470	Q5	12488.00	483.09	495.7	494.09	495.85	0.001611	5.06	6462.21	3590.03	0.27
USACE-Muncy	12470	Q10	16945.00	483.09	496.5	494.83	496.69	0.001587	4.90	8990.04	4087.88	0.26
USACE-Muncy	12470	Q25	25000.00	483.09	498.1	495.52	498.21	0.001261	4.42	13590.61	4665.87	0.22
USACE-Muncy	12470	Q50	31282.00	483.09	499.7	495.92	499.78	0.000863	3.81	18275.18	4827.14	0.18
USACE-Muncy	12470	Q100	40158.00	483.09	502.0	496.36	502.07	0.000526	3.28	25085.86	4976.05	0.14
USACE-Muncy	12470	Q200	55000.00	483.09	505.3	496.89	505.34	0.000346	2.99	34775.63	5154.33	0.12
USACE-Muncy	12470	Q500	69213.00	483.09	509.8	497.32	509.88	0.000189	2.53	48251.02	5323.44	0.09
USACE-Muncy	12470	SEPT2011	46600.00	483.09	503.7	496.60	503.73	0.000399	3.04	30003.23	5078.17	0.12
USACE-Muncy	11916	Q2	7539.00	482.29	493.2	489.46	493.51	0.001605	4.83	2569.36	1612.61	0.31
USACE-Muncy	11916	Q5	12488.00	482.29	494.7	491.71	494.89	0.001870	4.90	5767.19	3366.97	0.29
USACE-Muncy	11916	Q10	16945.00	482.29	495.6	493.42	495.80	0.001632	4.53	8628.97	4035.84	0.26
USACE-Muncy	11916	Q25	25000.00	482.29	497.5	494.72	497.57	0.001083	3.85	13993.69	4789.70	0.20
USACE-Muncy	11916	Q50	31282.00	482.29	499.3	495.06	499.35	0.000690	3.27	19307.08	5152.00	0.16
USACE-Muncy	11916	Q100	40158.00	482.29	501.8	495.48	501.81	0.000418	2.85	26578.98	5363.92	0.13
USACE-Muncy	11916	Q200	55000.00	482.29	505.1	496.03	505.17	0.000284	2.67	36482.81	5457.21	0.11
USACE-Muncy	11916	Q500	69213.00	482.29	509.7	496.47	509.78	0.000161	2.32	50125.82	5601.66	0.08
USACE-Muncy	11916	SEPT2011	46600.00	482.29	503.5	495.73	503.53	0.000322	2.68	31655.59	5420.98	0.11

USACE-Muncy	11311	Q2	7771.00	481.51	492.3	488.27	492.59	0.001501	5.07	2721.43	1569.24	0.31
USACE-Muncy	11311	Q5	12862.00	481.51	493.8	490.85	494.00	0.001242	5.15	5482.38	2479.50	0.29
USACE-Muncy	11311	Q10	17447.00	481.51	494.9	492.72	495.05	0.001023	5.02	8426.90	3423.27	0.27
USACE-Muncy	11311	Q25	25730.00	481.51	497.1	493.43	497.16	0.000490	3.93	14682.99	4549.97	0.19
USACE-Muncy	11311	Q50	32195.00	481.51	499.0	493.82	499.10	0.000288	3.31	20277.76	5099.09	0.15
USACE-Muncy	11311	Q100	41325.00	481.51	501.6	494.83	501.66	0.000181	2.91	27561.22	5243.60	0.12
USACE-Muncy	11311	Q200	56592.00	481.51	505.0	495.44	505.06	0.000129	2.77	37248.99	5330.96	0.11
USACE-Muncy	11311	Q500	71209.00	481.51	509.7	495.90	509.72	0.000076	2.42	50547.98	5445.23	0.08
USACE-Muncy	11311	SEPT2011	47950.00	481.51	503.4	495.09	503.41	0.000143	2.76	32554.48	5295.94	0.11
USACE-Muncy	10715	Q2	7771.00	480.78	491.4	488.14	491.66	0.001667	4.87	2615.10	1280.18	0.32
USACE-Muncy	10715	Q5	12862.00	480.78	492.9	489.59	493.20	0.001534	5.32	4873.39	2422.47	0.32
USACE-Muncy	10715	Q10	17447.00	480.78	494.3	490.68	494.45	0.001070	4.88	7914.14	3344.66	0.27
USACE-Muncy	10715	Q25	25730.00	480.78	496.8	492.57	496.89	0.000464	3.73	14189.69	4607.02	0.18
USACE-Muncy	10715	Q50	32195.00	480.78	498.9	493.36	498.94	0.000282	3.22	19327.00	5179.45	0.15
USACE-Muncy	10715	Q100	41325.00	480.78	501.5	494.05	501.55	0.000187	2.92	25813.29	5304.13	0.12
USACE-Muncy	10715	Q200	56592.00	480.78	504.9	494.78	504.99	0.000140	2.85	34325.92	5382.89	0.11
USACE-Muncy	10715	Q500	71209.00	480.78	509.6	495.27	509.68	0.000086	2.56	46003.67	5473.39	0.09
USACE-Muncy	10715	SEPT2011	47950.00	480.78	503.3	494.26	503.33	0.000152	2.81	30216.23	5349.18	0.11
USACE-Muncy	10264	Q2	7771.00	480.41	490.4	487.33	490.84	0.001953	5.83	2406.61	1456.38	0.36
USACE-Muncy	10264	Q5	12862.00	480.41	492.4	489.79	492.59	0.001131	5.10	5973.18	2995.25	0.28
USACE-Muncy	10264	Q10	17447.00	480.41	493.9	491.10	494.06	0.000644	4.22	10226.63	3587.81	0.22
USACE-Muncy	10264	Q25	25730.00	480.41	496.7	491.99	496.72	0.000277	3.18	17787.97	4911.46	0.15
USACE-Muncy	10264	Q50	32195.00	480.41	498.8	492.45	498.84	0.000177	2.78	23715.73	5506.48	0.12
USACE-Muncy	10264	Q100	41325.00	480.41	501.4	492.95	501.48	0.000123	2.55	31108.54	5628.47	0.10
USACE-Muncy	10264	Q200	56592.00	480.41	504.9	493.83	504.93	0.000096	2.52	40760.95	5692.76	0.09
USACE-Muncy	10264	Q500	71209.00	480.41	509.6	494.28	509.64	0.000061	2.28	54008.13	5789.28	0.08
USACE-Muncy	10264	SEPT2011	47950.00	480.41	503.2	493.53	503.27	0.000102	2.47	36108.41	5663.49	0.09
USACE-Muncy	9874	Q2	7771.00	479.99	489.8	486.95	490.05	0.001867	4.44	3501.40	2050.25	0.33
USACE-Muncy	9874	Q5	12862.00	479.99	492.2	488.99	492.23	0.000628	3.23	9413.99	3625.39	0.20
USACE-Muncy	9874	Q10	17447.00	479.99	493.8	489.73	493.86	0.000350	2.73	14236.19	3967.69	0.15
USACE-Muncy	9874	Q25	25730.00	479.99	496.6	490.80	496.63	0.000187	2.36	22366.99	5367.68	0.12
USACE-Muncy	9874	Q50	32195.00	479.99	498.7	491.26	498.78	0.000133	2.21	28658.55	5945.14	0.10
USACE-Muncy	9874	Q100	41325.00	479.99	501.4	491.68	501.44	0.000100	2.14	36452.76	6066.96	0.09
USACE-Muncy	9874	Q200	56592.00	479.99	504.9	492.35	504.90	0.000084	2.22	46581.86	6122.25	0.09
USACE-Muncy	9874	Q500	71209.00	479.99	509.6	492.81	509.62	0.000057	2.09	60469.21	6209.41	0.07
USACE-Muncy	9874	SEPT2011	47950.00	479.99	503.2	492.05	503.23	0.000087	2.13	41707.75	6097.74	0.09
USACE-Muncy	9385	Q2	7771.00	479.21	489.1	485.65	489.27	0.001359	4.53	3756.75	2148.06	0.29
USACE-Muncy	9385	Q5	12862.00	479.21	491.9	486.92	491.99	0.000387	3.00	10588.82	3576.05	0.16
USACE-Muncy	9385	Q10	17447.00	479.21	493.7	488.77	493.71	0.000255	2.70	15047.73	3943.34	0.14
USACE-Muncy	9385	Q25	25730.00	479.21	496.5	489.88	496.54	0.000163	2.48	22352.26	5343.11	0.11
USACE-Muncy	9385	Q50	32195.00	479.21	498.7	490.44	498.71	0.000125	2.38	27951.16	6125.89	0.10
USACE-Muncy	9385	Q100	41325.00	479.21	501.4	491.01	501.39	0.000101	2.35	34858.55	6195.97	0.09
USACE-Muncy	9385	Q200	56592.00	479.21	504.8	491.63	504.85	0.000090	2.47	43807.87	6248.02	0.09
USACE-Muncy	9385	Q500	71209.00	479.21	509.6	492.13	509.59	0.000063	2.35	56085.07	6318.89	0.08
USACE-Muncy	9385	SEPT2011	47950.00	479.21	503.2	491.29	503.19	0.000090	2.36	39508.13	6224.16	0.09
USACE-Muncy	8969	Q2	7771.00	478.67	488.5	485.65	488.73	0.001208	4.62	3474.40	1657.43	0.28
USACE-Muncy	8969	Q5	12862.00	478.67	491.8	486.93	491.83	0.000336	3.02	9650.16	3537.17	0.16
USACE-Muncy	8969	Q10	17447.00	478.67	493.6	487.43	493.61	0.000232	2.76	13659.08	4071.34	0.13
USACE-Muncy	8969	Q25	25730.00	478.67	496.4	489.17	496.48	0.000150	2.52	20134.33	5504.94	0.11

USACE-Muncy	8969	Q50	32195.00	478.67	498.6	489.69	498.66	0.000116	2.41	25063.52	6132.36	0.10
USACE-Muncy	8969	Q100	41325.00	478.67	501.3	490.31	501.35	0.000095	2.38	31119.52	6177.50	0.09
USACE-Muncy	8969	Q200	56592.00	478.67	504.8	491.00	504.82	0.000086	2.50	38950.84	6228.01	0.09
USACE-Muncy	8969	Q500	71209.00	478.67	509.5	491.59	509.56	0.000062	2.39	49767.30	6487.55	0.08
USACE-Muncy	8969	SEPT2011	47950.00	478.67	503.1	490.63	503.15	0.000086	2.39	35191.52	6203.75	0.09
USACE-Muncy	8639	Q2	7771.00	478.06	488.4	483.09	488.49	0.000384	2.72	5376.64	2411.61	0.16
USACE-Muncy	8639	Q5	12862.00	478.06	491.7	484.30	491.76	0.000163	2.18	10533.40	3289.19	0.11
USACE-Muncy	8639	Q10	17447.00	478.06	493.5	485.18	493.55	0.000147	2.27	13340.63	4179.74	0.11
USACE-Muncy	8639	Q25	25730.00	478.06	496.4	486.52	496.43	0.000128	2.40	17886.01	5593.00	0.10
USACE-Muncy	8639	Q50	32195.00	478.06	498.6	487.65	498.62	0.000114	2.45	21354.82	6015.01	0.10
USACE-Muncy	8639	Q100	41325.00	478.06	501.3	488.17	501.31	0.000105	2.57	25620.00	6075.57	0.10
USACE-Muncy	8639	Q200	56592.00	478.06	504.7	489.58	504.78	0.000107	2.87	31193.22	6169.67	0.10
USACE-Muncy	8639	Q500	71209.00	478.06	509.5	490.22	509.54	0.000088	2.91	39279.66	6679.82	0.09
USACE-Muncy	8639	SEPT2011	47950.00	478.06	503.1	489.15	503.12	0.000101	2.66	28500.43	6119.61	0.10
USACE-Muncy	7907	Q2	7771.00	477.54	487.9	483.99	488.06	0.000962	4.48	3300.45	1935.70	0.25
USACE-Muncy	7907	Q5	12862.00	477.54	491.5	485.61	491.58	0.000390	3.53	6482.66	2861.59	0.17
USACE-Muncy	7907	Q10	17447.00	477.54	493.3	486.84	493.38	0.000366	3.72	8072.00	3764.60	0.17
USACE-Muncy	7907	Q25	25730.00	477.54	496.2	488.24	496.28	0.000335	4.00	10636.61	5347.41	0.17
USACE-Muncy	7907	Q50	32195.00	477.54	498.4	488.81	498.49	0.000306	4.13	12598.06	5738.57	0.16
USACE-Muncy	7907	Q100	41325.00	477.54	501.0	489.52	501.19	0.000288	4.35	15000.07	5790.60	0.16
USACE-Muncy	7907	Q200	56592.00	477.54	504.5	490.54	504.65	0.000296	4.84	18085.54	5838.66	0.17
USACE-Muncy	7907	Q500	71209.00	477.54	509.2	491.43	509.43	0.000234	4.81	22466.69	5947.48	0.15
USACE-Muncy	7907	SEPT2011	47950.00	477.54	502.8	489.99	502.99	0.000279	4.50	16615.46	5816.40	0.16
USACE-Muncy	7576	Q2	7771.00	477.50	487.5	483.16	487.75	0.000990	4.08	2706.28	1790.59	0.25
USACE-Muncy	7576	Q5	12862.00	477.50	491.3	484.74	491.45	0.000446	3.53	5302.25	2791.87	0.18
USACE-Muncy	7576	Q10	17447.00	477.50	493.1	485.67	493.26	0.000440	3.85	6533.01	3852.74	0.18
USACE-Muncy	7576	Q25	25730.00	477.50	496.0	487.83	496.16	0.000424	4.28	8513.75	5316.98	0.19
USACE-Muncy	7576	Q50	32195.00	477.50	498.2	488.55	498.38	0.000397	4.50	10028.92	5643.28	0.18
USACE-Muncy	7576	Q100	41325.00	477.50	500.8	489.42	501.08	0.000382	4.83	11874.07	5694.48	0.18
USACE-Muncy	7576	Q200	56592.00	477.50	504.2	490.69	504.54	0.000402	5.47	14220.33	5736.39	0.19
USACE-Muncy	7576	Q500	71209.00	477.50	509.0	491.77	509.33	0.000324	5.52	17546.33	5796.58	0.18
USACE-Muncy	7576	SEPT2011	47950.00	477.50	502.6	490.01	502.89	0.000375	5.05	13110.94	5719.44	0.18
USACE-Muncy	7356	Q2	7771.00	476.51	487.4	480.69	487.58	0.000588	3.71	2209.01	1720.65	0.20
USACE-Muncy	7356	Q5	12862.00	476.51	491.0	482.15	491.32	0.000576	4.49	3048.76	3164.34	0.21
USACE-Muncy	7356	Q10	17447.00	476.51	492.7	483.34	493.11	0.000725	5.42	3432.03	3856.27	0.24
USACE-Muncy	7356	Q25	25730.00	476.51	495.3	485.13	495.98	0.000930	6.81	4046.53	5114.76	0.28
USACE-Muncy	7356	Q50	32195.00	476.51	497.3	486.38	498.18	0.001019	7.65	4523.53	5489.10	0.30
USACE-Muncy	7356	Q100	41325.00	476.51	499.7	487.99	500.85	0.001145	8.74	5096.91	5561.46	0.32
USACE-Muncy	7356	Q200	56592.00	476.51	502.6	490.47	504.25	0.001432	10.58	5786.02	5600.12	0.37
USACE-Muncy	7356	Q500	71209.00	476.51	507.2	492.61	509.05	0.001294	11.23	6992.37	5697.78	0.36
USACE-Muncy	7356	SEPT2011	47950.00	476.51	501.3	489.08	502.64	0.001222	9.45	5480.18	5578.20	0.34
USACE-Muncy	7229	Q2	7771.00	475.67	487.0	481.23	487.42	0.001182	5.17	1535.41	1627.37	0.29
USACE-Muncy	7229	Q5	12862.00	475.67	490.5	483.06	491.13	0.001178	6.29	2126.67	2923.78	0.30
USACE-Muncy	7229	Q10	17447.00	475.67	491.9	484.47	492.84	0.001549	7.70	2373.14	3483.45	0.35
USACE-Muncy	7229	Q25	25730.00	475.67	494.1	486.75	495.57	0.002125	9.86	2762.69	4195.40	0.42
USACE-Muncy	7229	Q50	32195.00	475.67	495.8	488.33	497.68	0.002412	11.18	3077.61	4555.76	0.45
USACE-Muncy	7229	Q100	41325.00	475.67	497.7	490.39	500.22	0.002852	12.96	3454.76	4743.80	0.50
USACE-Muncy	7229	Q200	56592.00	475.67	499.2	493.45	503.25	0.004150	16.40	3769.37	4879.25	0.61
USACE-Muncy	7229	Q500	71209.00	475.67	504.1	496.07	508.15	0.003274	16.61	4793.68	5342.19	0.56
USACE-Muncy	7229	SEPT2011	47950.00	475.67	498.9	491.75	501.91	0.003125	14.10	3708.19	4853.49	0.53

USACE-Muncy	7141	US Rte 180 West		Bridge									
USACE-Muncy	7106		Q2	7771.00	474.41	485.8	480.13	486.24	0.001233	5.04	1545.11	164.27	0.29
USACE-Muncy	7106		Q5	12862.00	474.41	489.3	481.96	489.89	0.001201	6.10	2133.30	175.30	0.30
USACE-Muncy	7106		Q10	17447.00	474.41	490.6	483.35	491.51	0.001595	7.50	2367.39	178.81	0.35
USACE-Muncy	7106		Q25	25730.00	474.41	492.6	485.53	494.09	0.002226	9.67	2732.02	184.00	0.42
USACE-Muncy	7106		Q50	32195.00	474.41	494.2	487.06	496.10	0.002538	10.99	3029.52	191.51	0.46
USACE-Muncy	7106		Q100	41325.00	474.41	496.0	489.05	498.50	0.003047	12.81	3358.97	270.76	0.51
USACE-Muncy	7106		Q200	56592.00	474.41	498.4	492.04	502.05	0.003859	15.55	3818.20	323.43	0.58
USACE-Muncy	7106		Q500	71209.00	474.41	500.5	494.68	505.25	0.004482	17.80	4224.59	2205.15	0.64
USACE-Muncy	7106		SEPT2011	47950.00	474.41	497.1	490.39	500.09	0.003404	14.03	3570.11	310.89	0.54
USACE-Muncy	7089		Q2	7771.00	474.43	485.8	479.98	486.22	0.001247	5.06	1538.98	163.49	0.29
USACE-Muncy	7089		Q5	12862.00	474.43	489.3	481.84	489.87	0.001216	6.13	2124.53	173.86	0.30
USACE-Muncy	7089		Q10	17447.00	474.43	490.6	483.27	491.48	0.001621	7.54	2354.39	177.15	0.35
USACE-Muncy	7089		Q25	25730.00	474.43	492.6	485.53	494.05	0.002274	9.74	2711.21	182.12	0.42
USACE-Muncy	7089		Q50	32195.00	474.43	494.2	487.03	496.05	0.002603	11.08	3002.20	189.84	0.46
USACE-Muncy	7089		Q100	41325.00	474.43	495.9	489.04	498.42	0.003152	12.95	3321.62	256.61	0.51
USACE-Muncy	7089		Q200	56592.00	474.43	498.1	492.05	501.95	0.004053	15.80	3766.87	315.77	0.59
USACE-Muncy	7089		Q500	71209.00	474.43	500.1	494.66	505.11	0.004775	18.16	4165.45	3483.02	0.65
USACE-Muncy	7089		SEPT2011	47950.00	474.43	496.9	490.36	500.01	0.003543	14.22	3526.64	304.14	0.55
USACE-Muncy	7055	US Rte 180 East		Bridge									
USACE-Muncy	6975		Q2	7771.00	475.60	485.6	481.46	485.97	0.001417	4.88	1725.69	3136.62	0.30
USACE-Muncy	6975		Q5	12862.00	475.60	487.7	482.85	488.29	0.001734	6.29	2216.97	4098.46	0.35
USACE-Muncy	6975		Q10	17447.00	475.60	489.2	484.02	489.94	0.002021	7.42	2551.94	4439.73	0.38
USACE-Muncy	6975		Q25	25730.00	475.60	491.2	485.73	492.41	0.002517	9.21	3028.36	4635.87	0.44
USACE-Muncy	6975		Q50	32195.00	475.60	492.7	486.93	494.21	0.002757	10.33	3378.96	4715.45	0.47
USACE-Muncy	6975		Q100	41325.00	475.60	494.3	488.47	496.31	0.003224	11.94	3752.87	4993.80	0.51
USACE-Muncy	6975		Q200	56592.00	475.60	496.4	490.84	499.38	0.004000	14.41	4257.62	5157.53	0.58
USACE-Muncy	6975		Q500	71209.00	475.60	498.1	492.91	502.00	0.004765	16.63	4643.07	5245.48	0.65
USACE-Muncy	6975		SEPT2011	47950.00	475.60	495.3	489.54	497.70	0.003557	13.04	3988.50	5091.94	0.54
USACE-Muncy	6800		Q2	7771.00	475.14	484.9	480.84	485.54	0.002482	6.64	1183.23	1115.11	0.40
USACE-Muncy	6800		Q5	12862.00	475.14	486.4	482.80	487.64	0.003838	9.19	1529.45	1857.89	0.51
USACE-Muncy	6800		Q10	17447.00	475.14	487.5	484.31	489.16	0.004572	10.75	1868.76	2657.27	0.57
USACE-Muncy	6800		Q25	25730.00	475.14	488.2	487.73	491.18	0.007436	14.34	2108.06	3109.76	0.73
USACE-Muncy	6800		Q50	32195.00	475.14	489.0	488.98	492.74	0.008994	16.41	2332.51	3179.18	0.81
USACE-Muncy	6800		Q100	41325.00	475.14	490.4	490.45	494.74	0.009199	17.84	2783.82	3606.18	0.83
USACE-Muncy	6800		Q200	56592.00	475.14	492.5	492.55	497.69	0.009479	19.86	3434.63	3643.86	0.87
USACE-Muncy	6800		Q500	71209.00	475.14	494.3	494.29	500.23	0.009712	21.51	3979.60	3663.36	0.89
USACE-Muncy	6800		SEPT2011	47950.00	475.14	491.4	491.39	496.06	0.009358	18.78	3075.49	3630.95	0.85
USACE-Muncy	6566		Q2	7771.00	474.22	484.5	480.10	484.98	0.001945	6.04	1709.73	1651.13	0.36
USACE-Muncy	6566		Q5	12862.00	474.22	486.2	482.14	486.79	0.002135	7.11	2908.67	2819.51	0.38
USACE-Muncy	6566		Q10	17447.00	474.22	487.6	485.05	488.17	0.001838	7.18	4087.61	3056.23	0.36
USACE-Muncy	6566		Q25	25730.00	474.22	488.9	486.65	489.64	0.002185	8.40	5174.60	3108.55	0.40
USACE-Muncy	6566		Q50	32195.00	474.22	489.6	487.39	490.50	0.002569	9.42	5751.02	3221.01	0.44
USACE-Muncy	6566		Q100	41325.00	474.22	491.5	488.25	492.33	0.002151	9.37	7303.30	3597.36	0.41
USACE-Muncy	6566		Q200	56592.00	474.22	494.7	489.43	495.39	0.001640	9.22	9891.64	4004.95	0.37
USACE-Muncy	6566		Q500	71209.00	474.22	496.5	490.44	497.38	0.001656	9.86	11465.21	4333.79	0.38
USACE-Muncy	6566		SEPT2011	47950.00	474.22	492.8	488.79	493.57	0.001963	9.42	8338.23	3931.63	0.40

USACE-Muncy	6318		Q2	7771.00	472.50	484.4	478.27	484.61	0.000699	3.99	4127.35	2197.77	0.22
USACE-Muncy	6318		Q5	12862.00	472.50	486.3	480.23	486.41	0.000478	3.69	8987.74	2876.87	0.19
USACE-Muncy	6318		Q10	17447.00	472.50	487.8	484.05	487.87	0.000320	3.26	13310.99	2948.90	0.16
USACE-Muncy	6318		Q25	25730.00	472.50	489.2	484.97	489.28	0.000324	3.50	17482.02	3496.29	0.16
USACE-Muncy	6318		Q50	32195.00	472.50	490.0	485.62	490.08	0.000354	3.79	19804.37	3791.36	0.17
USACE-Muncy	6318		Q100	41325.00	472.50	491.9	485.93	491.96	0.000272	3.58	25424.69	4123.31	0.15
USACE-Muncy	6318		Q200	56592.00	472.50	495.0	486.90	495.08	0.000192	3.34	34747.35	4437.03	0.13
USACE-Muncy	6318		Q500	71209.00	472.50	497.0	487.41	497.05	0.000185	3.49	40600.61	4958.85	0.13
USACE-Muncy	6318		SEPT2011	47950.00	472.50	493.2	486.58	493.22	0.000239	3.51	29182.07	4233.66	0.14
USACE-Muncy	6087		Q2	7771.00	471.50	484.1	477.83	484.42	0.000859	4.53	3026.88	1575.15	0.24
USACE-Muncy	6087		Q5	12862.00	471.50	486.1	479.87	486.28	0.000607	4.26	7075.12	2287.92	0.21
USACE-Muncy	6087		Q10	17447.00	471.50	487.7	481.39	487.78	0.000426	3.86	10857.51	2676.77	0.18
USACE-Muncy	6087		Q25	25730.00	471.50	489.1	485.34	489.19	0.000448	4.21	14578.29	3156.45	0.19
USACE-Muncy	6087		Q50	32195.00	471.50	489.8	485.87	489.98	0.000488	4.55	16667.56	3343.22	0.20
USACE-Muncy	6087		Q100	41325.00	471.50	491.8	486.43	491.88	0.000365	4.23	21943.93	3677.26	0.17
USACE-Muncy	6087		Q200	56592.00	471.50	495.0	487.20	495.03	0.000228	3.72	37190.68	4453.84	0.14
USACE-Muncy	6087		Q500	71209.00	471.50	496.9	487.82	497.00	0.000213	3.82	45480.00	4641.95	0.14
USACE-Muncy	6087		SEPT2011	47950.00	471.50	493.1	486.80	493.15	0.000316	4.12	25478.37	4000.65	0.16
USACE-Muncy	5878		Q2	7771.00	471.20	483.4	478.58	484.04	0.002150	6.52	1280.39	839.80	0.37
USACE-Muncy	5878		Q5	12862.00	471.20	485.7	480.83	486.06	0.001168	5.58	4968.25	1944.30	0.29
USACE-Muncy	5878		Q10	17447.00	471.20	487.5	482.98	487.64	0.000723	4.80	9302.23	2885.07	0.23
USACE-Muncy	5878		Q25	25730.00	471.20	488.9	485.55	489.07	0.000645	4.86	13751.38	3279.13	0.22
USACE-Muncy	5878		Q50	32195.00	471.20	489.7	486.33	489.85	0.000670	5.12	16300.39	3512.95	0.23
USACE-Muncy	5878		Q100	41325.00	471.20	491.7	486.81	491.81	0.000439	4.49	23226.52	3995.20	0.19
USACE-Muncy	5878		Q200	56592.00	471.20	494.9	487.83	494.98	0.000268	3.92	34452.92	4328.69	0.15
USACE-Muncy	5878		Q500	71209.00	471.20	496.9	488.41	496.95	0.000250	4.02	41407.07	4612.33	0.15
USACE-Muncy	5878		SEPT2011	47950.00	471.20	493.0	487.44	493.08	0.000360	4.26	27745.43	4117.05	0.17
USACE-Muncy	5778	North Main Stree		Mult Open									
USACE-Muncy	5685		Q2	7771.00	471.03	482.6	477.91	483.24	0.002101	6.43	1247.57	408.97	0.37
USACE-Muncy	5685		Q5	12862.00	471.03	484.0	480.11	484.94	0.002864	8.24	2326.59	953.59	0.45
USACE-Muncy	5685		Q10	17447.00	471.03	484.8	481.67	485.96	0.003379	9.42	3233.35	1449.16	0.49
USACE-Muncy	5685		Q25	25730.00	471.03	486.6	485.85	487.39	0.002434	8.82	6711.81	2583.28	0.43
USACE-Muncy	5685		Q50	32195.00	471.03	488.5	486.46	488.86	0.001199	6.76	11742.88	2963.78	0.31
USACE-Muncy	5685		Q100	41325.00	471.03	491.3	487.15	491.47	0.000521	4.99	20675.63	3693.23	0.21
USACE-Muncy	5685		Q200	56592.00	471.03	494.8	487.89	494.88	0.000292	4.20	33323.57	4111.07	0.16
USACE-Muncy	5685		Q500	71209.00	471.03	496.8	488.47	496.85	0.000283	4.39	40745.28	4645.14	0.16
USACE-Muncy	5685		SEPT2011	47950.00	471.03	492.8	487.48	492.87	0.000408	4.65	25832.96	3970.94	0.19
USACE-Muncy	5380		Q2	7771.00	470.68	482.0	477.98	482.54	0.002037	5.83	1693.45	948.03	0.36
USACE-Muncy	5380		Q5	12862.00	470.68	483.5	479.93	483.98	0.001911	6.32	4106.65	2013.50	0.36
USACE-Muncy	5380		Q10	17447.00	470.68	484.5	482.84	484.87	0.001661	6.28	6105.62	2385.77	0.34
USACE-Muncy	5380		Q25	25730.00	470.68	486.5	484.04	486.68	0.000877	5.12	11664.10	3062.30	0.25
USACE-Muncy	5380		Q50	32195.00	470.68	488.4	484.52	488.52	0.000479	4.16	17863.49	3447.55	0.19
USACE-Muncy	5380		Q100	41325.00	470.68	491.3	485.14	491.32	0.000237	3.29	28600.41	3998.04	0.14
USACE-Muncy	5380		Q200	56592.00	470.68	494.7	485.80	494.79	0.000149	2.96	42893.49	4296.50	0.11
USACE-Muncy	5380		Q500	71209.00	470.68	496.7	486.36	496.77	0.000145	3.09	51707.81	4697.21	0.11
USACE-Muncy	5380		SEPT2011	47950.00	470.68	492.7	485.47	492.75	0.000195	3.16	34194.34	4036.99	0.13
USACE-Muncy	5085		Q2	7771.00	470.59	481.7	477.10	482.03	0.001190	4.68	2501.17	1121.29	0.28
USACE-Muncy	5085		Q5	12862.00	470.59	483.1	479.09	483.47	0.001319	5.45	4864.73	2558.62	0.30
USACE-Muncy	5085		Q10	17447.00	470.59	484.2	481.00	484.43	0.001147	5.41	7153.95	2821.22	0.29

USACE-Muncy	5085	Q25	25730.00	470.59	486.3	483.17	486.46	0.000522	4.12	14305.84	2994.46	0.20
USACE-Muncy	5085	Q50	32195.00	470.59	488.3	483.83	488.39	0.000298	3.41	20574.81	3499.89	0.15
USACE-Muncy	5085	Q100	41325.00	470.59	491.2	484.33	491.26	0.000161	2.81	31807.91	4075.59	0.12
USACE-Muncy	5085	Q200	56592.00	470.59	494.7	485.08	494.75	0.000109	2.60	46715.71	4635.04	0.10
USACE-Muncy	5085	Q500	71209.00	470.59	496.7	485.44	496.73	0.000108	2.74	55970.52	4808.65	0.10
USACE-Muncy	5085	SEPT2011	47950.00	470.59	492.7	484.66	492.69	0.000137	2.73	37648.21	4197.87	0.11
USACE-Muncy	4811	Q2	7804.00	470.48	481.6	477.06	481.73	0.000715	3.30	4119.01	1675.39	0.21
USACE-Muncy	4811	Q5	12915.00	470.48	483.0	479.06	483.17	0.000668	3.59	6924.02	2346.91	0.21
USACE-Muncy	4811	Q10	17518.00	470.48	484.0	480.54	484.16	0.000629	3.73	9438.99	2659.24	0.21
USACE-Muncy	4811	Q25	25834.00	470.48	486.3	481.71	486.33	0.000375	3.29	15862.17	3168.61	0.17
USACE-Muncy	4811	Q50	32325.00	470.48	488.3	482.28	488.32	0.000228	2.84	22782.28	3913.10	0.13
USACE-Muncy	4811	Q100	41491.00	470.48	491.2	482.89	491.22	0.000130	2.43	34663.69	3958.37	0.10
USACE-Muncy	4811	Q200	56818.00	470.48	494.7	483.69	494.72	0.000093	2.33	49670.05	4804.65	0.09
USACE-Muncy	4811	Q500	71493.00	470.48	496.7	484.44	496.70	0.000094	2.49	59263.48	4872.53	0.09
USACE-Muncy	4811	SEPT2011	48142.00	470.48	492.6	483.08	492.66	0.000114	2.40	40415.36	4089.07	0.10
USACE-Muncy	4512	Q2	7804.00	470.10	481.1	477.48	481.42	0.001758	4.87	2707.22	1334.09	0.32
USACE-Muncy	4512	Q5	12915.00	470.10	482.7	480.44	482.91	0.001394	4.95	5226.58	1992.63	0.30
USACE-Muncy	4512	Q10	17518.00	470.10	483.8	481.44	483.95	0.001097	4.76	7505.77	2231.80	0.27
USACE-Muncy	4512	Q25	25834.00	470.10	486.1	482.32	486.22	0.000550	3.90	13171.88	3062.99	0.20
USACE-Muncy	4512	Q50	32325.00	470.10	488.2	482.92	488.26	0.000299	3.20	20157.25	3280.05	0.15
USACE-Muncy	4512	Q100	41491.00	470.10	491.1	483.35	491.19	0.000160	2.66	30410.26	3620.98	0.11
USACE-Muncy	4512	Q200	56818.00	470.10	494.7	484.16	494.70	0.000102	2.41	44829.50	4557.35	0.09
USACE-Muncy	4512	Q500	71493.00	470.10	496.6	484.77	496.68	0.000098	2.51	53941.38	4637.08	0.09
USACE-Muncy	4512	SEPT2011	48142.00	470.10	492.6	483.72	492.63	0.000135	2.57	35753.20	4005.28	0.11
USACE-Muncy	4124	Q2	7804.00	469.33	480.3	475.97	480.72	0.001837	5.82	2209.80	1115.05	0.34
USACE-Muncy	4124	Q5	12915.00	469.33	482.1	479.75	482.39	0.001328	5.59	4917.31	1658.56	0.30
USACE-Muncy	4124	Q10	17518.00	469.33	483.3	480.92	483.54	0.001051	5.34	7125.82	1940.95	0.27
USACE-Muncy	4124	Q25	25834.00	469.33	485.9	482.03	486.01	0.000527	4.31	12933.64	3083.94	0.20
USACE-Muncy	4124	Q50	32325.00	469.33	488.1	482.51	488.14	0.000311	3.63	18710.64	3502.02	0.16
USACE-Muncy	4124	Q100	41491.00	469.33	491.1	483.12	491.13	0.000145	2.77	31535.00	3599.29	0.11
USACE-Muncy	4124	Q200	56818.00	469.33	494.6	483.90	494.66	0.000103	2.60	45976.39	4461.11	0.09
USACE-Muncy	4124	Q500	71493.00	469.33	496.6	484.54	496.64	0.000096	2.65	54860.71	4509.13	0.09
USACE-Muncy	4124	SEPT2011	48142.00	469.33	492.5	483.49	492.58	0.000124	2.68	36902.71	4045.39	0.10
USACE-Muncy	3776	Q2	7804.00	468.49	479.4	475.33	479.99	0.002279	6.40	1713.80	703.83	0.38
USACE-Muncy	3776	Q5	12915.00	468.49	481.2	477.69	481.78	0.002030	6.86	3608.96	1336.29	0.37
USACE-Muncy	3776	Q10	17518.00	468.49	482.7	480.58	483.09	0.001419	6.26	5666.34	1447.06	0.32
USACE-Muncy	3776	Q25	25834.00	468.49	485.6	481.79	485.80	0.000649	4.90	11223.52	2759.39	0.22
USACE-Muncy	3776	Q50	32325.00	468.49	487.9	482.36	488.02	0.000365	4.04	17018.07	3280.90	0.17
USACE-Muncy	3776	Q100	41491.00	468.49	491.0	483.01	491.07	0.000170	3.08	28775.71	3589.38	0.12
USACE-Muncy	3776	Q200	56818.00	468.49	494.6	484.04	494.62	0.000110	2.76	42556.34	4208.22	0.10
USACE-Muncy	3776	Q500	71493.00	468.49	496.6	484.63	496.61	0.000107	2.87	50529.53	4275.36	0.10
USACE-Muncy	3776	SEPT2011	48142.00	468.49	492.5	483.45	492.53	0.000143	2.95	34342.42	3929.36	0.11
USACE-Muncy	3150	Q2	7804.00	467.46	478.2	473.94	478.67	0.001800	5.63	2039.49	889.04	0.34
USACE-Muncy	3150	Q5	12915.00	467.46	480.4	476.48	480.69	0.001301	5.56	4676.39	1487.25	0.30
USACE-Muncy	3150	Q10	17518.00	467.46	482.1	478.73	482.34	0.000832	4.92	7510.20	1895.85	0.25
USACE-Muncy	3150	Q25	25834.00	467.46	485.4	480.24	485.46	0.000367	3.81	14816.58	2383.00	0.17
USACE-Muncy	3150	Q50	32325.00	467.46	487.8	480.83	487.82	0.000230	3.32	20756.24	2575.00	0.14
USACE-Muncy	3150	Q100	41491.00	467.46	490.9	481.48	490.97	0.000137	2.85	29523.86	3836.60	0.11
USACE-Muncy	3150	Q200	56818.00	467.46	494.5	482.43	494.55	0.000097	2.67	44697.93	3971.32	0.09
USACE-Muncy	3150	Q500	71493.00	467.46	496.5	483.09	496.54	0.000099	2.83	52584.74	4001.36	0.10

USACE-Muncy	3150		SEPT2011	48142.00	467.46	492.4	481.93	492.44	0.000120	2.79	36319.79	3957.95	0.10
USACE-Muncy	2556		Q2	7804.00	466.37	477.8	473.05	477.93	0.000738	3.35	3540.05	1360.56	0.22
USACE-Muncy	2556		Q5	12915.00	466.37	480.1	474.48	480.19	0.000446	3.11	8038.60	2342.61	0.17
USACE-Muncy	2556		Q10	17518.00	466.37	482.0	475.42	482.03	0.000269	2.71	12433.84	2437.38	0.14
USACE-Muncy	2556		Q25	25834.00	466.37	485.3	477.81	485.31	0.000142	2.33	20194.83	2570.38	0.11
USACE-Muncy	2556		Q50	32325.00	466.37	487.7	478.56	487.72	0.000103	2.19	25908.86	2983.48	0.09
USACE-Muncy	2556		Q100	41491.00	466.37	490.9	479.49	490.90	0.000076	2.10	33501.20	3432.72	0.08
USACE-Muncy	2556		Q200	56818.00	466.37	494.5	480.37	494.50	0.000056	2.01	51527.00	4000.21	0.07
USACE-Muncy	2556		Q500	71493.00	466.37	496.5	480.95	496.49	0.000059	2.17	59453.25	4013.05	0.07
USACE-Muncy	2556		SEPT2011	48142.00	466.37	492.4	479.82	492.39	0.000064	2.02	43106.13	3888.59	0.08
USACE-Muncy	1864		Q2	7804.00	465.13	476.2	472.73	476.97	0.002869	7.46	1500.69	632.75	0.43
USACE-Muncy	1864		Q5	12915.00	465.13	479.3	475.79	479.65	0.001397	6.31	4561.91	1475.00	0.32
USACE-Muncy	1864		Q10	17518.00	465.13	481.5	477.71	481.72	0.000776	5.26	8670.48	2082.17	0.24
USACE-Muncy	1864		Q25	25834.00	465.13	485.1	479.12	485.16	0.000305	3.82	16162.58	2612.09	0.16
USACE-Muncy	1864		Q50	32325.00	465.13	487.6	479.45	487.61	0.000204	3.41	21387.52	3025.70	0.13
USACE-Muncy	1864		Q100	41491.00	465.13	490.8	480.89	490.83	0.000141	3.11	28398.21	3682.12	0.11
USACE-Muncy	1864		Q200	56818.00	465.13	494.4	481.94	494.45	0.000083	2.63	49055.05	4143.02	0.09
USACE-Muncy	1864		Q500	71493.00	465.13	496.4	482.56	496.44	0.000084	2.77	56992.60	4181.77	0.09
USACE-Muncy	1864		SEPT2011	48142.00	465.13	492.3	481.29	492.33	0.000103	2.77	40531.71	4046.55	0.10
USACE-Muncy	1501		Q2	7804.00	464.06	476.2	469.94	476.36	0.000656	3.63	2315.87	417.99	0.21
USACE-Muncy	1501		Q5	12915.00	464.06	479.1	471.51	479.29	0.000587	4.12	4391.93	1165.51	0.21
USACE-Muncy	1501		Q10	17518.00	464.06	481.3	472.66	481.51	0.000441	4.00	7570.53	2165.79	0.19
USACE-Muncy	1501		Q25	25834.00	464.06	484.9	474.44	485.06	0.000260	3.56	13121.45	2550.94	0.15
USACE-Muncy	1501		Q50	32325.00	464.06	487.4	475.84	487.54	0.000202	3.42	16997.91	2991.33	0.13
USACE-Muncy	1501		Q100	41491.00	464.06	490.7	478.14	490.77	0.000155	3.30	22151.53	3472.16	0.12
USACE-Muncy	1501		Q200	56818.00	464.06	494.4	480.77	494.43	0.000077	2.56	48604.70	4142.70	0.09
USACE-Muncy	1501		Q500	71493.00	464.06	496.4	481.77	496.41	0.000082	2.76	56408.50	4224.39	0.09
USACE-Muncy	1501		SEPT2011	48142.00	464.06	492.2	479.25	492.28	0.000128	3.13	33802.35	3987.96	0.11
USACE-Muncy	1188		Q2	7804.00	463.74	475.7	470.62	476.06	0.001316	5.18	1939.54	458.13	0.30
USACE-Muncy	1188		Q5	12915.00	463.74	478.6	472.60	479.04	0.001088	5.65	3666.38	1325.88	0.28
USACE-Muncy	1188		Q10	17518.00	463.74	481.0	474.39	481.31	0.000820	5.50	5668.31	2372.42	0.25
USACE-Muncy	1188		Q25	25834.00	463.74	484.7	476.61	484.93	0.000567	5.30	8865.15	2772.40	0.22
USACE-Muncy	1188		Q50	32325.00	463.74	487.2	478.17	487.43	0.000472	5.27	11080.30	3111.31	0.20
USACE-Muncy	1188		Q100	41491.00	463.74	490.4	479.66	490.68	0.000392	5.29	13961.40	3753.10	0.19
USACE-Muncy	1188		Q200	56818.00	463.74	494.4	481.23	494.40	0.000077	2.59	52210.35	3991.23	0.09
USACE-Muncy	1188		Q500	71493.00	463.74	496.3	482.41	496.38	0.000082	2.80	59734.34	4124.32	0.09
USACE-Muncy	1188		SEPT2011	48142.00	463.74	492.1	480.41	492.23	0.000219	4.13	30088.04	3832.53	0.14
USACE-Muncy	986		Q2	7804.00	463.80	475.3	470.35	475.77	0.001394	5.36	1535.66	335.19	0.31
USACE-Muncy	986		Q5	12915.00	463.80	478.1	472.19	478.70	0.001524	6.63	2081.01	853.52	0.34
USACE-Muncy	986		Q10	17518.00	463.80	480.1	473.68	480.94	0.001586	7.51	2500.27	1882.82	0.35
USACE-Muncy	986		Q25	25834.00	463.80	483.4	475.83	484.50	0.001633	8.75	3165.07	2266.85	0.37
USACE-Muncy	986		Q50	32325.00	463.80	485.6	477.25	486.95	0.001661	9.56	3619.94	2671.85	0.38
USACE-Muncy	986		Q100	41491.00	463.80	488.5	479.01	490.14	0.001679	10.53	4210.26	3022.57	0.39
USACE-Muncy	986		Q200	56818.00	463.80	494.4	481.64	494.38	0.000071	2.52	47826.45	3755.46	0.08
USACE-Muncy	986		Q500	71493.00	463.80	496.3	483.90	496.36	0.000074	2.70	55268.80	3877.84	0.09
USACE-Muncy	986		SEPT2011	48142.00	463.80	491.9	480.18	492.11	0.000412	5.71	17957.90	3627.06	0.20
USACE-Muncy	915	Railroad		Mult Open									
USACE-Muncy	834		Q2	7804.00	464.30	474.5	469.94	474.95	0.001849	5.65	1425.57	213.02	0.34

USACE-Muncy	834	Q5	12915.00	464.30	477.1	471.84	477.83	0.001933	6.84	1953.99	557.95	0.36
USACE-Muncy	834	Q10	17518.00	464.30	479.1	473.39	479.97	0.001969	7.70	2356.00	1179.28	0.38
USACE-Muncy	834	Q25	25834.00	464.30	482.0	475.50	483.20	0.002082	9.04	2948.84	1709.50	0.40
USACE-Muncy	834	Q50	32325.00	464.30	483.9	476.86	485.37	0.002176	9.97	3339.60	1771.35	0.42
USACE-Muncy	834	Q100	41491.00	464.30	486.3	478.57	488.15	0.002280	11.10	3835.40	2536.48	0.43
USACE-Muncy	834	Q200	56818.00	464.30	491.8	481.09	491.88	0.000150	3.34	34621.48	3635.42	0.12
USACE-Muncy	834	Q500	71493.00	464.30	495.1	483.33	495.12	0.000107	3.06	46609.08	3881.07	0.10
USACE-Muncy	834	SEPT2011	48142.00	464.30	488.9	479.71	489.75	0.001213	8.78	9292.03	3218.46	0.32
USACE-Muncy	646	Q2	7804.00	464.33	474.1	470.41	474.58	0.002114	5.79	1425.18	215.23	0.36
USACE-Muncy	646	Q5	12915.00	464.33	476.8	472.18	477.43	0.001878	6.58	2157.03	521.49	0.36
USACE-Muncy	646	Q10	17518.00	464.33	478.9	473.44	479.52	0.001661	6.96	2942.44	1343.66	0.34
USACE-Muncy	646	Q25	25834.00	464.33	482.0	475.51	482.60	0.001326	7.20	4828.60	1748.30	0.32
USACE-Muncy	646	Q50	32325.00	464.33	484.1	477.03	484.65	0.001142	7.25	6129.37	2150.31	0.30
USACE-Muncy	646	Q100	41491.00	464.33	486.7	478.60	487.26	0.000982	7.37	7787.64	2683.18	0.29
USACE-Muncy	646	Q200	56818.00	464.33	491.8	481.13	491.86	0.000138	3.20	35654.97	3580.89	0.11
USACE-Muncy	646	Q500	71493.00	464.33	495.1	482.49	495.11	0.000102	2.98	47814.50	3825.94	0.10
USACE-Muncy	646	SEPT2011	48142.00	464.33	489.1	479.52	489.33	0.000503	5.67	16112.69	3102.32	0.21
USACE-Muncy	324	Q2	8166.00	464.00	473.2	469.44	473.82	0.002574	6.19	1322.14	345.26	0.40
USACE-Muncy	324	Q5	13499.00	464.00	475.8	471.27	476.69	0.002627	7.47	1829.28	371.15	0.42
USACE-Muncy	324	Q10	18301.00	464.00	477.7	472.66	478.81	0.002656	8.45	2233.96	576.03	0.44
USACE-Muncy	324	Q25	26971.00	464.00	480.6	474.89	481.94	0.002600	9.67	3480.76	1213.01	0.45
USACE-Muncy	324	Q50	33747.00	464.00	482.5	476.29	484.03	0.002481	10.28	4538.29	1978.00	0.45
USACE-Muncy	324	Q100	43308.00	464.00	485.1	478.55	486.70	0.002277	10.85	6093.91	2820.34	0.44
USACE-Muncy	324	Q200	59297.00	464.00	491.3	481.57	491.73	0.000700	7.26	27041.85	4946.71	0.25
USACE-Muncy	324	Q500	74600.00	464.00	494.7	483.84	495.02	0.000437	6.25	40102.66	5025.29	0.21
USACE-Muncy	324	SEPT2011	50245.00	464.00	488.1	480.10	489.02	0.001275	8.96	14321.66	4388.04	0.34
USACE-Muncy	120	Q2	8166.00	463.73	472.9	468.89	473.32	0.002002	5.52	1662.92	337.40	0.35
USACE-Muncy	120	Q5	13499.00	463.73	475.5	470.55	476.17	0.001900	6.55	2618.95	506.23	0.36
USACE-Muncy	120	Q10	18301.00	463.73	477.5	471.84	478.25	0.001802	7.18	3488.67	1224.24	0.36
USACE-Muncy	120	Q25	26971.00	463.73	480.5	474.00	481.35	0.001701	8.06	5130.92	2557.34	0.37
USACE-Muncy	120	Q50	33747.00	463.73	482.5	475.17	483.45	0.001602	8.51	6309.64	3220.16	0.36
USACE-Muncy	120	Q100	43308.00	463.73	485.1	477.07	486.14	0.001502	9.06	7838.81	4188.37	0.36
USACE-Muncy	120	Q200	59297.00	463.73	491.4	478.24	491.54	0.000250	4.44	42117.49	5468.63	0.15
USACE-Muncy	120	Q500	74600.00	463.73	494.8	481.62	494.91	0.000200	4.31	53925.47	5577.27	0.14
USACE-Muncy	120	SEPT2011	50245.00	463.73	488.3	478.17	488.67	0.000601	6.33	22644.00	5185.03	0.23

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HEC-RAS HEC-RAS 5.0.3 September 2016
  U.S. Army Corps of Engineers
 Hydrologic Engineering Center
       609 Second Street
       Davis, California


X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: GladeRun
Project File : GladeRun.prj
Run Date and Time: 7/26/2018 7:02:17 AM

Project in English units

Project Description:
Geo-referenced steady-state HEC-RAS model for Glade Run in the Borough of Muncy and Lycoming County, Pennsylvania. Completed in May 2018 by the U.S. Army Corps of Engineers, Baltimore District, as part of the "Floodplain Management Study for the Greater Muncy Area, Lycoming County, Pennsylvania". This study was completed under the USACE Planning Assistance to States (PAS) Program.

Existing-conditions geometry as of February 2018. Vertical datum is North American Vertical Datum of 1988 (NAVD). Horizontal datum is Pennsylvania State Plane Feet North NAD83. Overbank data from 1-meter resolution PADCNR PAMAP Program DEM collected in 2007. Channel and bridge data from Susquehanna River Basin Commission (SRBC) survey in December 2017.

Cross-sections in feet
upstream of the confluence with West Branch Susquehanna River. Flows from HEC-HMS rainfall-runoff model completed as part of the "Floodplain Management Study for the Greater Muncy Area, Lycoming County, Pennsylvania".

Plans
include:
"GladeRun_ExistingConditions": Existing-Conditions plan for Glade Run

in Lycoming County, Pennsylvania. Run in subcritical flow regime. Flows from
HEC-HMS model for Glade Run.

"GladeRun_Floodway": Regulatory Floodway plan
for Glade Run in Lycoming County, Pennsylvania.

Profile Output Table - Standard Table 1

Reach	River Sta		Profile	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
USACE-Muncy	21980	AG	Q2	283.00	613.77	616.6	616.36	617.28	0.015665	6.51	45.29	27.20	0.80
USACE-Muncy	21980	AG	Q5	609.00	613.77	618.0	617.58	618.94	0.012609	8.14	87.98	36.26	0.78
USACE-Muncy	21980	AG	Q10	894.00	613.77	618.4	618.38	619.98	0.016728	10.26	106.36	39.13	0.92
USACE-Muncy	21980	AG	Q25	1279.00	613.77	619.3	619.33	621.23	0.016220	11.60	144.07	46.09	0.94
USACE-Muncy	21980	AG	Q50	1611.00	613.77	620.0	619.95	622.17	0.016288	12.62	174.61	51.51	0.96
USACE-Muncy	21980	AG	Q100	2017.00	613.77	620.8	620.83	623.21	0.014693	13.26	225.66	66.03	0.94
USACE-Muncy	21980	AG	Q200	2433.00	613.77	622.0	622.05	624.11	0.010560	12.66	325.05	93.86	0.82
USACE-Muncy	21980	AG	Q500	3142.00	613.77	622.9	622.91	625.20	0.010790	13.76	408.00	99.44	0.84
USACE-Muncy	21980	AG	SEPT2011	1102.00	613.77	618.9	618.89	620.69	0.017140	11.18	124.63	42.67	0.95
USACE-Muncy	21785		Q2	283.00	610.70	614.1	613.55	614.65	0.011467	5.76	49.15	24.27	0.69
USACE-Muncy	21785		Q5	609.00	610.70	615.0	615.00	616.06	0.017520	8.39	86.33	54.75	0.88
USACE-Muncy	21785		Q10	894.00	610.70	615.8	615.82	616.88	0.013903	8.75	151.52	111.82	0.81
USACE-Muncy	21785		Q25	1279.00	610.70	616.6	616.57	617.62	0.011901	9.20	254.40	159.21	0.78
USACE-Muncy	21785		Q50	1611.00	610.70	617.1	617.06	618.11	0.011146	9.56	337.63	178.75	0.77
USACE-Muncy	21785		Q100	2017.00	610.70	617.5	617.45	618.58	0.011598	10.27	408.08	181.09	0.79
USACE-Muncy	21785		Q200	2433.00	610.70	617.8	617.79	619.02	0.012238	10.99	468.53	182.78	0.82
USACE-Muncy	21785		Q500	3142.00	610.70	618.3	618.29	619.67	0.013107	12.05	560.97	185.30	0.86
USACE-Muncy	21785		SEPT2011	1102.00	610.70	616.3	616.28	617.31	0.012343	8.93	209.63	141.53	0.78
USACE-Muncy	21535	AF	Q2	283.00	606.69	609.5	609.54	610.45	0.026134	7.66	37.01	21.47	1.01
USACE-Muncy	21535	AF	Q5	609.00	606.69	611.1	611.10	611.93	0.012070	7.68	127.10	125.15	0.75
USACE-Muncy	21535	AF	Q10	894.00	606.69	611.7	611.69	612.54	0.010488	8.09	223.77	167.06	0.72
USACE-Muncy	21535	AF	Q25	1279.00	606.69	612.4	612.36	613.16	0.009941	8.69	340.50	210.36	0.72
USACE-Muncy	21535	AF	Q50	1611.00	606.69	612.7	612.66	613.54	0.010715	9.42	404.06	211.92	0.76
USACE-Muncy	21535	AF	Q100	2017.00	606.69	613.0	612.97	613.94	0.011704	10.26	469.28	213.26	0.80
USACE-Muncy	21535	AF	Q200	2433.00	606.69	613.2	613.25	614.31	0.012565	11.01	529.08	214.12	0.84
USACE-Muncy	21535	AF	Q500	3142.00	606.69	613.7	613.67	614.88	0.013871	12.17	618.64	215.42	0.89
USACE-Muncy	21535	AF	SEPT2011	1102.00	606.69	612.0	611.99	612.90	0.011733	8.90	265.70	183.91	0.77
USACE-Muncy	21308		Q2	283.00	602.49	606.6		606.97	0.008233	4.83	58.64	27.35	0.58
USACE-Muncy	21308		Q5	609.00	602.49	607.0	606.98	608.18	0.023278	8.79	69.42	29.67	1.00
USACE-Muncy	21308		Q10	894.00	602.49	607.8	607.76	609.19	0.021208	9.63	94.28	34.43	0.98
USACE-Muncy	21308		Q25	1279.00	602.49	609.0	609.01	609.82	0.009144	7.94	257.40	192.06	0.68
USACE-Muncy	21308		Q50	1611.00	602.49	609.4	609.44	610.21	0.008360	8.10	345.70	218.95	0.67
USACE-Muncy	21308		Q100	2017.00	602.49	609.7	609.72	610.56	0.009112	8.79	406.31	219.44	0.70

USACE-Muncy	21308		Q200	2433.00	602.49	610.0	609.98	610.88	0.009592	9.35	464.51	219.92	0.73
USACE-Muncy	21308		Q500	3142.00	602.49	610.3	610.33	611.38	0.010819	10.37	541.17	220.53	0.78
USACE-Muncy	21308		SEPT2011	1102.00	602.49	608.8	608.77	609.59	0.009383	7.73	212.79	177.35	0.69
USACE-Muncy	21111	AE	Q2	283.00	599.53	603.1	603.08	604.29	0.024321	8.83	33.06	15.26	0.98
USACE-Muncy	21111	AE	Q5	609.00	599.53	605.3	605.34	605.76	0.005596	6.44	195.78	213.84	0.52
USACE-Muncy	21111	AE	Q10	894.00	599.53	605.6	605.65	606.09	0.006321	7.13	266.08	233.91	0.56
USACE-Muncy	21111	AE	Q25	1279.00	599.53	605.9	605.94	606.44	0.007476	8.05	334.77	238.25	0.61
USACE-Muncy	21111	AE	Q50	1611.00	599.53	606.1	606.12	606.68	0.008563	8.81	378.06	239.58	0.66
USACE-Muncy	21111	AE	Q100	2017.00	599.53	606.3	606.31	606.96	0.009726	9.60	424.63	253.12	0.71
USACE-Muncy	21111	AE	Q200	2433.00	599.53	606.5	606.50	607.21	0.010564	10.23	470.69	264.54	0.74
USACE-Muncy	21111	AE	Q500	3142.00	599.53	606.9	606.89	607.65	0.011122	10.94	573.03	308.04	0.77
USACE-Muncy	21111	AE	SEPT2011	1102.00	599.53	605.8	605.82	606.29	0.006910	7.63	307.54	237.44	0.59
USACE-Muncy	20959		Q2	271.00	597.78	600.7	599.93	600.98	0.005626	4.37	63.49	33.75	0.52
USACE-Muncy	20959		Q5	623.00	597.78	601.8	601.01	602.41	0.007098	6.46	106.77	46.71	0.63
USACE-Muncy	20959		Q10	930.00	597.78	602.2	601.77	603.23	0.010645	8.51	129.13	69.02	0.79
USACE-Muncy	20959		Q25	1358.00	597.78	603.1	603.08	604.05	0.008098	8.63	239.41	148.15	0.71
USACE-Muncy	20959		Q50	1711.00	597.78	603.8	603.81	604.56	0.005867	8.11	379.25	232.35	0.62
USACE-Muncy	20959		Q100	2118.00	597.78	604.1	604.09	604.90	0.006319	8.71	444.58	234.83	0.65
USACE-Muncy	20959		Q200	2593.00	597.78	604.4	604.36	605.24	0.006904	9.40	507.22	243.61	0.69
USACE-Muncy	20959		Q500	3260.00	597.78	604.7	604.67	605.68	0.007680	10.27	582.58	250.61	0.73
USACE-Muncy	20959		SEPT2011	1198.00	597.78	602.8	602.82	603.81	0.008476	8.49	202.76	136.38	0.72
USACE-Muncy	20722	AD	Q2	271.00	595.50	598.6	598.13	599.17	0.010726	5.77	46.94	22.48	0.70
USACE-Muncy	20722	AD	Q5	623.00	595.50	600.0	599.97	600.60	0.008274	6.85	161.17	206.28	0.67
USACE-Muncy	20722	AD	Q10	930.00	595.50	600.6	600.56	601.08	0.006804	6.93	317.93	314.56	0.62
USACE-Muncy	20722	AD	Q25	1358.00	595.50	600.9	600.87	601.48	0.008291	8.05	416.23	321.27	0.69
USACE-Muncy	20722	AD	Q50	1711.00	595.50	601.1	601.14	601.75	0.008485	8.49	502.51	325.29	0.71
USACE-Muncy	20722	AD	Q100	2118.00	595.50	601.3	601.32	602.03	0.009815	9.38	563.07	327.82	0.77
USACE-Muncy	20722	AD	Q200	2593.00	595.50	601.5	601.54	602.33	0.010868	10.17	633.66	330.68	0.81
USACE-Muncy	20722	AD	Q500	3260.00	595.50	601.8	601.84	602.70	0.011633	10.96	734.17	335.21	0.85
USACE-Muncy	20722	AD	SEPT2011	1198.00	595.50	600.8	600.77	601.34	0.007628	7.61	385.60	319.56	0.66
USACE-Muncy	20470		Q2	271.00	592.91	595.2	595.04	595.77	0.017224	6.13	46.24	47.28	0.87
USACE-Muncy	20470		Q5	623.00	592.91	596.2	596.21	596.74	0.011046	6.54	188.15	220.88	0.75
USACE-Muncy	20470		Q10	930.00	592.91	596.6	596.61	597.17	0.011018	7.23	290.93	286.27	0.77
USACE-Muncy	20470		Q25	1358.00	592.91	597.0	597.01	597.64	0.011524	8.09	411.35	309.33	0.80
USACE-Muncy	20470		Q50	1711.00	592.91	597.3	597.25	597.94	0.010807	8.36	512.46	323.04	0.79
USACE-Muncy	20470		Q100	2118.00	592.91	597.7		598.27	0.009913	8.53	629.67	338.66	0.77
USACE-Muncy	20470		Q200	2593.00	592.91	598.1		598.63	0.009174	8.73	758.15	349.80	0.75
USACE-Muncy	20470		Q500	3260.00	592.91	598.5		599.10	0.008440	8.99	928.56	366.49	0.73
USACE-Muncy	20470		SEPT2011	1198.00	592.91	596.9	596.89	597.49	0.011088	7.74	375.09	304.40	0.78
USACE-Muncy	20212	AC	Q2	271.00	590.59	592.9		593.11	0.006390	3.95	110.74	124.09	0.53
USACE-Muncy	20212	AC	Q5	623.00	590.59	593.7		594.01	0.006381	5.08	231.54	174.55	0.57
USACE-Muncy	20212	AC	Q10	930.00	590.59	594.2		594.53	0.006731	5.84	326.35	238.24	0.60
USACE-Muncy	20212	AC	Q25	1358.00	590.59	594.6		595.05	0.008073	6.98	431.58	270.53	0.67

USACE-Muncy	20212	AC	Q50	1711.00	590.59	594.8		595.39	0.009151	7.78	499.13	283.25	0.72
USACE-Muncy	20212	AC	Q100	2118.00	590.59	595.2		595.78	0.009604	8.45	593.14	294.99	0.75
USACE-Muncy	20212	AC	Q200	2593.00	590.59	595.4		596.13	0.010403	9.19	672.96	301.36	0.79
USACE-Muncy	20212	AC	Q500	3260.00	590.59	595.8		596.59	0.011364	10.12	778.92	310.20	0.84
USACE-Muncy	20212	AC	SEPT2011	1198.00	590.59	594.5		594.88	0.007661	6.61	395.12	263.17	0.65
USACE-Muncy	20004		Q2	271.00	588.06	590.2	590.22	590.75	0.024943	6.10	53.98	53.24	0.99
USACE-Muncy	20004		Q5	623.00	588.06	591.1	591.07	591.74	0.022298	6.91	122.66	132.37	0.98
USACE-Muncy	20004		Q10	930.00	588.06	591.5	591.53	592.28	0.019353	7.61	194.50	204.73	0.96
USACE-Muncy	20004		Q25	1358.00	588.06	592.1	592.08	592.81	0.014870	7.87	327.08	280.10	0.87
USACE-Muncy	20004		Q50	1711.00	588.06	592.4	592.42	593.13	0.013071	8.04	428.14	301.30	0.84
USACE-Muncy	20004		Q100	2118.00	588.06	592.7	592.64	593.45	0.013287	8.58	505.93	302.72	0.86
USACE-Muncy	20004		Q200	2593.00	588.06	593.0	592.91	593.79	0.012334	8.85	608.42	304.57	0.84
USACE-Muncy	20004		Q500	3260.00	588.06	593.5		594.24	0.011324	9.19	742.76	306.95	0.82
USACE-Muncy	20004		SEPT2011	1198.00	588.06	591.9	591.89	592.63	0.016073	7.77	277.79	245.89	0.90
USACE-Muncy	19745	AB	Q2	271.00	584.16	587.1	586.57	587.32	0.008007	4.52	89.16	69.07	0.60
USACE-Muncy	19745	AB	Q5	623.00	584.16	588.1	587.42	588.49	0.007899	6.03	178.83	113.77	0.64
USACE-Muncy	19745	AB	Q10	930.00	584.16	588.7		589.20	0.007353	6.70	260.78	147.09	0.64
USACE-Muncy	19745	AB	Q25	1358.00	584.16	589.3		589.91	0.008154	7.84	358.62	192.30	0.70
USACE-Muncy	19745	AB	Q50	1711.00	584.16	589.7		590.44	0.008216	8.46	454.22	224.14	0.71
USACE-Muncy	19745	AB	Q100	2118.00	584.16	590.2		590.90	0.007616	8.72	561.08	231.20	0.70
USACE-Muncy	19745	AB	Q200	2593.00	584.16	590.7		591.39	0.007281	9.07	672.22	239.63	0.69
USACE-Muncy	19745	AB	Q500	3260.00	584.16	591.3		592.02	0.006800	9.43	825.47	250.98	0.68
USACE-Muncy	19745	AB	SEPT2011	1198.00	584.16	589.1		589.65	0.008093	7.51	317.59	175.42	0.69
USACE-Muncy	19543		Q2	271.00	581.56	583.9	583.94	584.67	0.023700	6.87	39.45	27.34	1.01
USACE-Muncy	19543		Q5	623.00	581.56	585.1	585.09	586.12	0.017564	8.21	83.09	56.52	0.94
USACE-Muncy	19543		Q10	930.00	581.56	585.8	585.77	587.01	0.015688	9.18	123.96	64.15	0.93
USACE-Muncy	19543		Q25	1358.00	581.56	586.7	586.74	587.92	0.011166	9.32	228.26	140.19	0.82
USACE-Muncy	19543		Q50	1711.00	581.56	587.2	587.22	588.48	0.010797	9.88	300.38	158.73	0.82
USACE-Muncy	19543		Q100	2118.00	581.56	587.7	587.68	589.02	0.010637	10.47	377.40	173.57	0.83
USACE-Muncy	19543		Q200	2593.00	581.56	588.2	588.20	589.59	0.010154	10.93	471.71	186.59	0.82
USACE-Muncy	19543		Q500	3260.00	581.56	588.7	588.71	590.24	0.010562	11.83	567.49	193.27	0.85
USACE-Muncy	19543		SEPT2011	1198.00	581.56	586.5	586.47	587.63	0.011724	9.11	191.21	130.77	0.83
USACE-Muncy	19365		Q2	271.00	579.48	582.4		582.61	0.004138	3.84	73.10	38.51	0.45
USACE-Muncy	19365		Q5	623.00	579.48	583.8		584.19	0.003629	4.96	147.35	99.24	0.46
USACE-Muncy	19365		Q10	930.00	579.48	584.6		585.00	0.003808	5.73	238.07	156.14	0.48
USACE-Muncy	19365		Q25	1358.00	579.48	585.0		585.65	0.005202	7.14	306.88	159.04	0.58
USACE-Muncy	19365		Q50	1711.00	579.48	585.3	584.84	586.12	0.006204	8.12	355.89	164.21	0.63
USACE-Muncy	19365		Q100	2118.00	579.48	585.7	585.24	586.63	0.006943	8.99	417.56	174.70	0.68
USACE-Muncy	19365		Q200	2593.00	579.48	586.0	585.73	587.15	0.007628	9.85	483.19	181.77	0.72
USACE-Muncy	19365		Q500	3260.00	579.48	586.5	586.23	587.79	0.008427	10.89	568.69	191.82	0.77
USACE-Muncy	19365		SEPT2011	1198.00	579.48	584.8		585.40	0.004908	6.74	276.32	157.61	0.55
USACE-Muncy	19167	AA	Q2	271.00	577.49	580.1	580.07	580.92	0.022924	7.41	36.55	21.62	1.01
USACE-Muncy	19167	AA	Q5	623.00	577.49	581.4	581.35	582.70	0.019133	9.32	67.57	27.41	0.99

USACE-Muncy	19167	AA	Q10	930.00	577.49	582.8	582.80	583.84	0.008946	8.45	146.83	124.16	0.73
USACE-Muncy	19167	AA	Q25	1358.00	577.49	583.6	583.62	584.45	0.006884	8.35	283.65	191.53	0.66
USACE-Muncy	19167	AA	Q50	1711.00	577.49	584.0	583.99	584.83	0.006883	8.75	359.34	212.81	0.66
USACE-Muncy	19167	AA	Q100	2118.00	577.49	584.3	584.28	585.19	0.007438	9.42	421.59	217.97	0.70
USACE-Muncy	19167	AA	Q200	2593.00	577.49	584.6	584.57	585.56	0.007976	10.09	487.01	223.23	0.73
USACE-Muncy	19167	AA	Q500	3260.00	577.49	584.9	584.93	586.03	0.008739	10.97	566.54	230.06	0.77
USACE-Muncy	19167	AA	SEPT2011	1198.00	577.49	583.5	583.46	584.26	0.006620	8.01	253.18	184.48	0.64
USACE-Muncy	19039		Q2	271.00	575.91	579.5		579.73	0.003614	3.88	76.02	36.43	0.43
USACE-Muncy	19039		Q5	623.00	575.91	581.0		581.28	0.002898	4.62	216.64	200.96	0.41
USACE-Muncy	19039		Q10	930.00	575.91	581.4		581.74	0.003497	5.42	309.33	256.15	0.46
USACE-Muncy	19039		Q25	1358.00	575.91	581.8		582.17	0.004000	6.14	415.38	273.21	0.50
USACE-Muncy	19039		Q50	1711.00	575.91	582.1		582.49	0.003937	6.37	503.56	276.76	0.50
USACE-Muncy	19039		Q100	2118.00	575.91	582.5		582.83	0.003787	6.53	600.28	280.64	0.50
USACE-Muncy	19039		Q200	2593.00	575.91	582.8		583.19	0.003715	6.75	700.34	285.45	0.50
USACE-Muncy	19039		Q500	3260.00	575.91	583.3		583.66	0.003626	7.02	833.45	294.81	0.50
USACE-Muncy	19039		SEPT2011	1198.00	575.91	581.7		582.04	0.003668	5.79	387.29	272.12	0.48
USACE-Muncy	18878		Q2	271.00	574.76	578.4	577.81	578.82	0.009416	5.24	51.69	25.67	0.65
USACE-Muncy	18878		Q5	623.00	574.76	579.6	579.06	580.40	0.011756	7.31	88.61	66.96	0.77
USACE-Muncy	18878		Q10	930.00	574.76	580.6	580.48	581.08	0.005275	6.01	265.32	281.35	0.54
USACE-Muncy	18878		Q25	1358.00	574.76	581.4		581.65	0.002660	4.84	520.70	334.17	0.40
USACE-Muncy	18878		Q50	1711.00	574.76	581.8		582.00	0.002373	4.81	644.94	336.77	0.38
USACE-Muncy	18878		Q100	2118.00	574.76	582.2		582.38	0.002156	4.82	775.12	339.20	0.37
USACE-Muncy	18878		Q200	2593.00	574.76	582.6		582.76	0.002073	4.94	901.65	341.61	0.36
USACE-Muncy	18878		Q500	3260.00	574.76	583.0		583.25	0.001982	5.09	1066.39	344.92	0.36
USACE-Muncy	18878		SEPT2011	1198.00	574.76	581.4		581.58	0.002205	4.38	508.10	333.89	0.36
USACE-Muncy	18773	Z	Q2	271.00	574.38	577.1	576.76	577.62	0.013736	5.74	47.18	28.14	0.78
USACE-Muncy	18773	Z	Q5	623.00	574.38	578.7	577.96	579.30	0.007813	6.30	99.78	40.93	0.65
USACE-Muncy	18773	Z	Q10	930.00	574.38	580.4	578.65	580.63	0.001859	4.19	371.52	255.95	0.34
USACE-Muncy	18773	Z	Q25	1358.00	574.38	581.3	580.20	581.42	0.001295	3.90	584.71	265.45	0.29
USACE-Muncy	18773	Z	Q50	1711.00	574.38	581.6	580.43	581.79	0.001337	4.14	693.26	270.76	0.30
USACE-Muncy	18773	Z	Q100	2118.00	574.38	582.0	580.68	582.18	0.001380	4.38	796.20	282.88	0.31
USACE-Muncy	18773	Z	Q200	2593.00	574.38	582.4	580.92	582.56	0.001458	4.67	896.29	290.33	0.32
USACE-Muncy	18773	Z	Q500	3260.00	574.38	582.8	581.21	583.04	0.001536	5.01	1024.39	295.52	0.33
USACE-Muncy	18773	Z	SEPT2011	1198.00	574.38	581.3	579.99	581.39	0.001006	3.44	585.07	265.46	0.26
USACE-Muncy	18709	Muncy Exch. Rd		Bridge									
USACE-Muncy	18667		Q2	271.00	573.74	576.3	575.95	576.81	0.011529	5.45	49.70	28.20	0.72
USACE-Muncy	18667		Q5	623.00	573.74	577.5	577.12	578.30	0.013619	7.39	84.30	34.54	0.83
USACE-Muncy	18667		Q10	930.00	573.74	578.0	577.90	579.24	0.015162	8.86	107.66	46.01	0.90
USACE-Muncy	18667		Q25	1358.00	573.74	578.8	578.77	580.33	0.014784	10.14	143.62	58.70	0.92
USACE-Muncy	18667		Q50	1711.00	573.74	580.1	580.11	580.88	0.005795	7.78	314.58	229.62	0.61
USACE-Muncy	18667		Q100	2118.00	573.74	580.4	580.42	581.22	0.005984	8.23	379.68	245.82	0.63
USACE-Muncy	18667		Q200	2593.00	573.74	580.7	580.71	581.56	0.006223	8.69	446.54	263.12	0.64
USACE-Muncy	18667		Q500	3260.00	573.74	581.0	581.03	581.96	0.006707	9.36	521.31	266.36	0.67

USACE-Muncy	18667		SEPT2011	1198.00	573.74	578.5	578.48	579.95	0.015363	9.79	128.96	53.55	0.93
USACE-Muncy	18586		Q2	271.00	573.07	575.6	575.05	575.95	0.008391	4.54	59.73	35.52	0.62
USACE-Muncy	18586		Q5	623.00	573.07	576.6	576.12	577.24	0.010185	6.32	100.14	58.66	0.72
USACE-Muncy	18586		Q10	930.00	573.07	577.0	576.85	577.99	0.012691	7.87	130.23	121.11	0.83
USACE-Muncy	18586		Q25	1358.00	573.07	577.9	577.88	578.78	0.009465	8.07	248.82	270.91	0.74
USACE-Muncy	18586		Q50	1711.00	573.07	578.5	578.52	579.16	0.006170	7.27	419.82	342.76	0.62
USACE-Muncy	18586		Q100	2118.00	573.07	578.7	578.72	579.46	0.007249	8.11	475.35	353.64	0.67
USACE-Muncy	18586		Q200	2593.00	573.07	579.0	579.04	579.77	0.006987	8.33	574.27	373.43	0.67
USACE-Muncy	18586		Q500	3260.00	573.07	579.3	579.32	580.12	0.007482	8.96	663.06	378.76	0.70
USACE-Muncy	18586		SEPT2011	1198.00	573.07	577.5	577.46	578.53	0.012221	8.48	178.68	178.00	0.83
USACE-Muncy	18473	Y	Q2	271.00	572.01	574.5	574.08	574.91	0.009840	4.87	56.68	70.06	0.67
USACE-Muncy	18473	Y	Q5	623.00	572.01	575.6	575.26	576.13	0.009178	6.33	134.80	217.27	0.69
USACE-Muncy	18473	Y	Q10	930.00	572.01	576.0	576.01	576.67	0.009466	7.16	216.97	282.39	0.72
USACE-Muncy	18473	Y	Q25	1358.00	572.01	576.6	576.55	577.16	0.008174	7.43	356.82	384.34	0.69
USACE-Muncy	18473	Y	Q50	1711.00	572.01	576.9	576.86	577.47	0.008020	7.77	450.86	409.71	0.69
USACE-Muncy	18473	Y	Q100	2118.00	572.01	577.1	577.08	577.74	0.008637	8.36	520.62	414.98	0.73
USACE-Muncy	18473	Y	Q200	2593.00	572.01	577.3	577.28	578.03	0.009566	9.08	585.80	419.91	0.77
USACE-Muncy	18473	Y	Q500	3260.00	572.01	577.7	577.55	578.40	0.008704	9.20	719.71	464.21	0.75
USACE-Muncy	18473	Y	SEPT2011	1198.00	572.01	576.1	576.12	577.05	0.013097	8.62	240.42	310.25	0.86
USACE-Muncy	18327		Q2	271.00	570.30	572.8	572.50	573.27	0.012819	5.42	50.00	31.23	0.76
USACE-Muncy	18327		Q5	623.00	570.30	574.0	573.65	574.65	0.011102	6.74	102.37	119.35	0.75
USACE-Muncy	18327		Q10	930.00	570.30	574.7	574.56	575.29	0.008223	6.85	199.36	262.68	0.68
USACE-Muncy	18327		Q25	1358.00	570.30	575.5	575.12	575.86	0.004844	6.10	366.89	315.57	0.54
USACE-Muncy	18327		Q50	1711.00	570.30	575.7	575.35	576.20	0.005172	6.61	433.81	342.69	0.56
USACE-Muncy	18327		Q100	2118.00	570.30	576.0	575.57	576.53	0.005546	7.14	499.63	361.96	0.59
USACE-Muncy	18327		Q200	2593.00	570.30	576.4	575.92	576.90	0.005486	7.45	580.45	399.79	0.59
USACE-Muncy	18327		Q500	3260.00	570.30	576.8	576.22	577.37	0.005384	7.82	684.98	414.49	0.60
USACE-Muncy	18327		SEPT2011	1198.00	570.30	575.2	574.96	575.64	0.005743	6.33	306.25	309.99	0.58
USACE-Muncy	17971	X	Q2	271.00	566.69	569.8		570.11	0.006368	4.46	60.90	30.66	0.55
USACE-Muncy	17971	X	Q5	623.00	566.69	571.1		571.65	0.006499	6.21	113.25	65.18	0.60
USACE-Muncy	17971	X	Q10	930.00	566.69	571.7	571.02	572.55	0.007205	7.40	162.28	81.99	0.66
USACE-Muncy	17971	X	Q25	1358.00	566.69	572.3	571.99	573.46	0.009423	9.19	221.07	155.61	0.76
USACE-Muncy	17971	X	Q50	1711.00	566.69	572.9	572.94	573.98	0.007492	9.00	352.21	262.13	0.70
USACE-Muncy	17971	X	Q100	2118.00	566.69	573.5	573.51	574.41	0.006346	8.89	525.20	335.54	0.65
USACE-Muncy	17971	X	Q200	2593.00	566.69	573.9	573.86	574.77	0.006489	9.34	645.57	358.99	0.67
USACE-Muncy	17971	X	Q500	3260.00	566.69	574.2	574.21	575.19	0.007047	10.10	773.83	376.51	0.70
USACE-Muncy	17971	X	SEPT2011	1198.00	566.69	572.1	571.62	573.15	0.008412	8.49	199.67	125.82	0.72
USACE-Muncy	17693		Q2	271.00	564.53	566.9	566.77	567.44	0.015983	6.26	55.40	43.96	0.84
USACE-Muncy	17693		Q5	623.00	564.53	567.8	567.79	568.82	0.017988	8.64	100.40	51.77	0.94
USACE-Muncy	17693		Q10	930.00	564.53	568.6	568.59	569.72	0.015378	9.47	148.67	83.05	0.91
USACE-Muncy	17693		Q25	1358.00	564.53	569.5	569.52	570.56	0.011377	9.58	261.83	181.57	0.81
USACE-Muncy	17693		Q50	1711.00	564.53	570.2	570.22	571.07	0.008588	9.20	413.00	245.80	0.72
USACE-Muncy	17693		Q100	2118.00	564.53	570.4	570.45	571.46	0.010150	10.29	466.43	274.83	0.79

USACE-Muncy	17693		Q200	2593.00	564.53	571.0	570.98	571.91	0.008942	10.31	611.29	327.40	0.76
USACE-Muncy	17693		Q500	3260.00	564.53	571.4	571.41	572.39	0.009181	10.96	736.57	387.31	0.78
USACE-Muncy	17693		SEPT2011	1198.00	564.53	569.2	569.18	570.30	0.013026	9.70	207.97	125.43	0.86
USACE-Muncy	17465	W	Q2	271.00	561.62	563.9		564.25	0.011693	4.78	56.71	40.29	0.71
USACE-Muncy	17465	W	Q5	623.00	561.62	564.9		565.47	0.011101	6.30	102.71	56.02	0.75
USACE-Muncy	17465	W	Q10	930.00	561.62	565.5		566.31	0.009781	7.07	143.65	63.19	0.73
USACE-Muncy	17465	W	Q25	1358.00	561.62	566.4		567.33	0.008182	7.73	203.94	72.62	0.70
USACE-Muncy	17465	W	Q50	1711.00	561.62	567.1	566.25	568.06	0.007404	8.17	259.60	115.95	0.68
USACE-Muncy	17465	W	Q100	2118.00	561.62	567.7	566.78	568.77	0.007300	8.80	351.26	200.33	0.69
USACE-Muncy	17465	W	Q200	2593.00	561.62	567.9	567.08	569.30	0.009173	10.12	394.69	225.97	0.78
USACE-Muncy	17465	W	Q500	3260.00	561.62	568.6	568.60	569.88	0.007532	10.02	583.53	280.07	0.72
USACE-Muncy	17465	W	SEPT2011	1198.00	561.62	566.1		566.97	0.008654	7.50	181.50	69.14	0.71
USACE-Muncy	17275		Q2	271.00	559.17	561.6	561.29	562.06	0.011332	5.31	51.55	33.32	0.72
USACE-Muncy	17275		Q5	623.00	559.17	562.9	562.33	563.59	0.008814	6.80	101.28	44.89	0.70
USACE-Muncy	17275		Q10	930.00	559.17	563.7	563.06	564.62	0.008038	7.69	142.85	52.80	0.69
USACE-Muncy	17275		Q25	1358.00	559.17	564.6	563.92	565.77	0.008015	8.84	195.74	66.14	0.72
USACE-Muncy	17275		Q50	1711.00	559.17	565.4	564.55	566.63	0.007413	9.38	261.63	150.22	0.71
USACE-Muncy	17275		Q100	2118.00	559.17	565.8	565.35	567.25	0.008365	10.43	308.99	181.07	0.76
USACE-Muncy	17275		Q200	2593.00	559.17	566.5	566.47	567.74	0.006900	10.20	484.76	242.92	0.70
USACE-Muncy	17275		Q500	3260.00	559.17	567.0	567.03	568.34	0.006934	10.80	625.55	265.27	0.71
USACE-Muncy	17275		SEPT2011	1198.00	559.17	564.3	563.62	565.36	0.008058	8.46	175.39	60.63	0.71
USACE-Muncy	17104	V	Q2	271.00	557.51	560.6	559.54	560.86	0.004339	3.90	69.43	31.20	0.46
USACE-Muncy	17104	V	Q5	623.00	557.51	562.0	560.72	562.45	0.004717	5.55	116.20	38.31	0.52
USACE-Muncy	17104	V	Q10	930.00	557.51	562.8	561.45	563.46	0.005218	6.69	149.44	44.42	0.56
USACE-Muncy	17104	V	Q25	1358.00	557.51	563.3	562.34	564.41	0.007787	8.75	172.99	58.24	0.70
USACE-Muncy	17104	V	Q50	1711.00	557.51	563.6	563.01	565.16	0.009499	10.14	199.37	93.37	0.78
USACE-Muncy	17104	V	Q100	2118.00	557.51	564.6	564.61	565.91	0.006833	9.67	350.18	194.48	0.68
USACE-Muncy	17104	V	Q200	2593.00	557.51	565.2	565.21	566.42	0.006212	9.80	477.89	239.15	0.66
USACE-Muncy	17104	V	Q500	3260.00	557.51	565.8	565.82	567.01	0.005958	10.17	629.70	323.95	0.66
USACE-Muncy	17104	V	SEPT2011	1198.00	557.51	563.1	562.01	564.10	0.006555	7.91	166.98	54.76	0.64
USACE-Muncy	16918		Q2	271.00	556.32	559.0	558.73	559.48	0.014944	5.71	47.43	30.66	0.81
USACE-Muncy	16918		Q5	623.00	556.32	559.9	559.83	560.83	0.019376	7.88	79.30	39.80	0.97
USACE-Muncy	16918		Q10	930.00	556.32	560.5	560.47	561.73	0.019325	9.03	104.65	44.68	1.00
USACE-Muncy	16918		Q25	1358.00	556.32	561.6	561.56	562.68	0.011289	8.71	194.38	116.52	0.81
USACE-Muncy	16918		Q50	1711.00	556.32	562.0	562.05	563.21	0.010447	9.12	254.66	141.73	0.80
USACE-Muncy	16918		Q100	2118.00	556.32	562.6	562.57	563.69	0.009222	9.28	346.28	205.64	0.76
USACE-Muncy	16918		Q200	2593.00	556.32	563.1	563.15	564.16	0.007761	9.21	475.01	254.36	0.71
USACE-Muncy	16918		Q500	3260.00	556.32	563.6	563.63	564.68	0.007670	9.72	592.71	325.96	0.72
USACE-Muncy	16918		SEPT2011	1198.00	556.32	561.2	561.21	562.39	0.013322	8.83	154.39	104.65	0.86
USACE-Muncy	16741		Q2	271.00	554.67	557.1	556.67	557.44	0.008571	4.36	62.21	39.69	0.61
USACE-Muncy	16741		Q5	623.00	554.67	558.5	557.58	558.90	0.006085	5.26	119.35	46.93	0.56
USACE-Muncy	16741		Q10	930.00	554.67	559.3	558.18	559.85	0.005507	5.98	161.86	62.64	0.56
USACE-Muncy	16741		Q25	1358.00	554.67	560.3	558.89	560.94	0.004833	6.60	250.18	152.33	0.55

USACE-Muncy	16741		Q50	1711.00	554.67	560.7	559.50	561.49	0.005282	7.33	311.08	235.27	0.58
USACE-Muncy	16741		Q100	2118.00	554.67	561.0	560.21	562.00	0.006142	8.25	368.69	293.26	0.63
USACE-Muncy	16741		Q200	2593.00	554.67	561.4	561.11	562.52	0.007022	9.18	433.63	330.63	0.68
USACE-Muncy	16741		Q500	3260.00	554.67	561.9	561.83	563.11	0.007274	9.88	540.33	375.95	0.71
USACE-Muncy	16741		SEPT2011	1198.00	554.67	560.0	558.63	560.59	0.004925	6.35	214.21	100.57	0.55
USACE-Muncy	16561	U	Q2	271.00	553.10	556.0	555.07	556.26	0.005140	4.10	66.11	29.74	0.48
USACE-Muncy	16561	U	Q5	623.00	553.10	557.3	556.16	557.80	0.006019	5.93	113.54	52.15	0.56
USACE-Muncy	16561	U	Q10	930.00	553.10	557.9	556.97	558.69	0.007415	7.34	155.90	90.32	0.64
USACE-Muncy	16561	U	Q25	1358.00	553.10	558.2	558.21	559.59	0.011600	9.68	189.51	130.14	0.81
USACE-Muncy	16561	U	Q50	1711.00	553.10	558.9	558.93	560.20	0.009417	9.65	287.63	227.10	0.75
USACE-Muncy	16561	U	Q100	2118.00	553.10	559.6	559.59	560.74	0.007928	9.60	422.35	367.86	0.70
USACE-Muncy	16561	U	Q200	2593.00	553.10	560.1	560.11	561.21	0.007422	9.83	559.31	435.81	0.69
USACE-Muncy	16561	U	Q500	3260.00	553.10	560.5	560.55	561.73	0.007901	10.60	682.66	449.83	0.72
USACE-Muncy	16561	U	SEPT2011	1198.00	553.10	558.0	557.68	559.25	0.011140	9.16	166.67	106.65	0.79
USACE-Muncy	16395		Q2	271.00	551.45	554.5	554.10	555.01	0.011412	5.95	50.28	39.86	0.73
USACE-Muncy	16395		Q5	623.00	551.45	555.4	555.43	556.34	0.013302	8.23	117.75	104.17	0.84
USACE-Muncy	16395		Q10	930.00	551.45	556.1	556.10	557.12	0.012302	9.07	178.76	181.55	0.84
USACE-Muncy	16395		Q25	1358.00	551.45	556.9	556.53	557.66	0.009276	8.93	400.23	294.18	0.75
USACE-Muncy	16395		Q50	1711.00	551.45	557.5	557.16	558.06	0.006269	8.06	617.34	365.61	0.63
USACE-Muncy	16395		Q100	2118.00	551.45	557.9	557.60	558.42	0.005651	8.06	774.75	386.17	0.61
USACE-Muncy	16395		Q200	2593.00	551.45	558.3	557.86	558.79	0.005348	8.23	932.16	396.30	0.60
USACE-Muncy	16395		Q500	3260.00	551.45	558.7	558.16	559.22	0.005658	8.83	1088.59	406.94	0.62
USACE-Muncy	16395		SEPT2011	1198.00	551.45	556.5	556.43	557.37	0.010080	8.86	315.48	236.26	0.77
USACE-Muncy	16132		Q2	271.00	549.21	551.3	551.04	551.75	0.013174	5.22	51.87	35.15	0.76
USACE-Muncy	16132		Q5	623.00	549.21	552.5	552.04	553.13	0.010323	6.29	99.57	45.28	0.72
USACE-Muncy	16132		Q10	930.00	549.21	553.2	552.65	554.00	0.009981	7.30	131.41	50.98	0.74
USACE-Muncy	16132		Q25	1358.00	549.21	553.9	553.39	555.00	0.010644	8.63	167.93	66.10	0.79
USACE-Muncy	16132		Q50	1711.00	549.21	554.2	553.89	555.70	0.012451	9.91	191.06	91.80	0.87
USACE-Muncy	16132		Q100	2118.00	549.21	555.0	554.96	556.40	0.009819	9.88	298.29	172.89	0.80
USACE-Muncy	16132		Q200	2593.00	549.21	555.6	555.61	556.97	0.008439	9.96	453.74	298.45	0.75
USACE-Muncy	16132		Q500	3260.00	549.21	556.4	556.35	557.53	0.006858	9.78	702.99	347.16	0.69
USACE-Muncy	16132		SEPT2011	1198.00	549.21	553.6	553.12	554.65	0.010283	8.14	155.35	60.97	0.77
USACE-Muncy	15942	T	Q2	271.00	546.85	549.6		549.93	0.007065	4.74	57.91	30.03	0.58
USACE-Muncy	15942	T	Q5	623.00	546.85	550.8	550.03	551.48	0.007344	6.59	115.69	75.78	0.64
USACE-Muncy	15942	T	Q10	930.00	546.85	551.5	550.98	552.33	0.007797	7.68	178.21	106.53	0.68
USACE-Muncy	15942	T	Q25	1358.00	546.85	552.2	551.95	553.18	0.008344	8.82	265.49	179.33	0.72
USACE-Muncy	15942	T	Q50	1711.00	546.85	552.7	552.61	553.70	0.007852	9.19	372.54	221.00	0.71
USACE-Muncy	15942	T	Q100	2118.00	546.85	553.3	553.01	554.21	0.006490	9.03	530.91	283.20	0.66
USACE-Muncy	15942	T	Q200	2593.00	546.85	553.9	553.51	554.70	0.005943	9.17	695.23	329.18	0.64
USACE-Muncy	15942	T	Q500	3260.00	546.85	554.5	553.96	555.32	0.005838	9.66	918.18	397.68	0.65
USACE-Muncy	15942	T	SEPT2011	1198.00	546.85	551.9	551.66	552.89	0.008230	8.46	228.15	138.28	0.71
USACE-Muncy	15746		Q2	271.00	545.22	548.2		548.52	0.007390	4.63	58.66	30.62	0.59
USACE-Muncy	15746		Q5	623.00	545.22	549.3	548.63	549.98	0.007873	6.47	111.02	79.72	0.65

USACE-Muncy	15746		Q10	930.00	545.22	550.0	549.60	550.79	0.007706	7.32	176.43	105.90	0.67
USACE-Muncy	15746		Q25	1358.00	545.22	550.9		551.65	0.006708	7.81	268.92	116.02	0.64
USACE-Muncy	15746		Q50	1711.00	545.22	551.5		552.28	0.006178	8.15	342.96	128.88	0.63
USACE-Muncy	15746		Q100	2118.00	545.22	552.1	551.20	552.98	0.006058	8.70	433.42	178.34	0.64
USACE-Muncy	15746		Q200	2593.00	545.22	552.6	551.60	553.51	0.006153	9.23	526.76	218.59	0.65
USACE-Muncy	15746		Q500	3260.00	545.22	553.3		554.23	0.005441	9.38	720.85	272.13	0.62
USACE-Muncy	15746		SEPT2011	1198.00	545.22	550.6	550.20	551.34	0.007058	7.66	234.86	112.17	0.65
USACE-Muncy	15584	S	Q2	271.00	543.64	546.9	546.37	547.21	0.008840	4.56	59.40	36.10	0.63
USACE-Muncy	15584	S	Q5	623.00	543.64	547.9	547.41	548.48	0.010835	6.14	101.68	47.79	0.73
USACE-Muncy	15584	S	Q10	930.00	543.64	548.4	548.04	549.27	0.011722	7.29	129.46	53.55	0.78
USACE-Muncy	15584	S	Q25	1358.00	543.64	549.1	548.74	550.22	0.011771	8.47	167.66	66.33	0.81
USACE-Muncy	15584	S	Q50	1711.00	543.64	549.6	549.25	550.90	0.011676	9.24	198.92	87.30	0.83
USACE-Muncy	15584	S	Q100	2118.00	543.64	550.1	549.78	551.62	0.011371	9.93	236.01	106.68	0.84
USACE-Muncy	15584	S	Q200	2593.00	543.64	550.8	550.30	552.23	0.009702	10.06	338.92	156.12	0.79
USACE-Muncy	15584	S	Q500	3260.00	543.64	553.0	551.42	553.52	0.002722	6.80	876.06	388.35	0.45
USACE-Muncy	15584	S	SEPT2011	1198.00	543.64	548.9	548.50	549.88	0.011782	8.07	153.45	58.36	0.81
USACE-Muncy	15380		Q2	271.00	542.08	544.6		544.97	0.013790	5.05	53.63	39.29	0.76
USACE-Muncy	15380		Q5	623.00	542.08	545.7		546.29	0.010500	6.04	103.20	46.99	0.72
USACE-Muncy	15380		Q10	930.00	542.08	546.5		547.18	0.008638	6.64	142.25	54.46	0.68
USACE-Muncy	15380		Q25	1358.00	542.08	547.3		548.19	0.007899	7.49	190.10	61.13	0.68
USACE-Muncy	15380		Q50	1711.00	542.08	547.9		548.92	0.007490	8.06	228.58	66.28	0.68
USACE-Muncy	15380		Q100	2118.00	542.08	548.5	547.54	549.64	0.007568	8.77	267.35	76.33	0.70
USACE-Muncy	15380		Q200	2593.00	542.08	549.0	548.10	550.41	0.008214	9.74	315.38	123.62	0.74
USACE-Muncy	15380		Q500	3260.00	542.08	552.9		553.12	0.001008	4.89	1398.84	404.61	0.28
USACE-Muncy	15380		SEPT2011	1198.00	542.08	547.0		547.83	0.008182	7.21	172.06	58.75	0.68
USACE-Muncy	15166		Q2	271.00	540.22	543.0		543.20	0.005345	3.91	69.23	36.13	0.50
USACE-Muncy	15166		Q5	623.00	540.22	544.4		544.81	0.004586	4.92	126.53	41.29	0.49
USACE-Muncy	15166		Q10	930.00	540.22	545.4		545.89	0.004116	5.59	168.21	45.11	0.49
USACE-Muncy	15166		Q25	1358.00	540.22	545.9		546.73	0.005801	7.20	196.09	67.15	0.59
USACE-Muncy	15166		Q50	1711.00	540.22	546.6	545.15	547.50	0.005791	7.84	250.97	111.41	0.61
USACE-Muncy	15166		Q100	2118.00	540.22	547.1	545.75	548.18	0.006035	8.54	325.79	163.47	0.63
USACE-Muncy	15166		Q200	2593.00	540.22	548.5		549.14	0.003171	7.16	643.72	255.18	0.47
USACE-Muncy	15166		Q500	3260.00	540.22	552.9		552.95	0.000364	3.34	2282.81	467.98	0.17
USACE-Muncy	15166		SEPT2011	1198.00	540.22	545.7		546.36	0.005584	6.77	179.73	51.23	0.58
USACE-Muncy	14922	R	Q2	271.00	538.63	541.5	540.64	541.85	0.005657	4.42	61.36	27.50	0.52
USACE-Muncy	14922	R	Q5	623.00	538.63	542.9	541.85	543.51	0.006111	6.22	102.41	80.78	0.58
USACE-Muncy	14922	R	Q10	930.00	538.63	543.8	542.62	544.61	0.006465	7.40	132.15	101.32	0.62
USACE-Muncy	14922	R	Q25	1358.00	538.63	545.0	543.58	545.51	0.003886	6.73	337.72	132.94	0.50
USACE-Muncy	14922	R	Q50	1711.00	538.63	545.6	544.35	546.24	0.004103	7.42	432.79	211.90	0.53
USACE-Muncy	14922	R	Q100	2118.00	538.63	546.6	544.97	547.05	0.002697	6.66	629.50	294.35	0.44
USACE-Muncy	14922	R	Q200	2593.00	538.63	548.3	545.37	548.54	0.001321	5.36	964.50	332.37	0.32
USACE-Muncy	14922	R	Q500	3260.00	538.63	552.8	546.29	552.87	0.000243	3.03	2007.56	486.05	0.15
USACE-Muncy	14922	R	SEPT2011	1198.00	538.63	544.6	543.24	545.18	0.003951	6.52	296.41	124.76	0.50

USACE-Muncy	14752		Q2	271.00	537.44	540.4	539.70	540.77	0.007089	4.65	58.29	28.74	0.58
USACE-Muncy	14752		Q5	623.00	537.44	541.7	540.87	542.37	0.007262	6.37	100.15	35.00	0.63
USACE-Muncy	14752		Q10	930.00	537.44	542.5	541.65	543.41	0.007653	7.57	129.10	42.94	0.67
USACE-Muncy	14752		Q25	1358.00	537.44	543.6	542.53	544.60	0.006966	8.41	209.99	116.49	0.66
USACE-Muncy	14752		Q50	1711.00	537.44	544.6	543.21	545.43	0.004683	7.83	347.49	159.92	0.56
USACE-Muncy	14752		Q100	2118.00	537.44	546.1	544.42	546.59	0.002649	6.79	570.45	320.18	0.44
USACE-Muncy	14752		Q200	2593.00	537.44	548.1	544.91	548.34	0.001167	5.27	955.95	388.89	0.30
USACE-Muncy	14752		Q500	3260.00	537.44	552.8	545.52	552.83	0.000246	3.16	2056.95	572.79	0.15
USACE-Muncy	14752		SEPT2011	1198.00	537.44	543.1	542.20	544.20	0.007961	8.45	152.12	72.90	0.70
USACE-Muncy	14670		Q2	271.00	536.85	539.8	539.09	540.18	0.007310	4.77	56.87	27.82	0.59
USACE-Muncy	14670		Q5	623.00	536.85	540.7	540.34	541.58	0.012768	7.45	83.79	33.24	0.81
USACE-Muncy	14670		Q10	930.00	536.85	541.6	541.08	542.66	0.010578	8.25	118.43	45.35	0.77
USACE-Muncy	14670		Q25	1358.00	536.85	543.0	542.04	544.03	0.007254	8.46	191.17	124.88	0.67
USACE-Muncy	14670		Q50	1711.00	536.85	544.1	542.69	545.02	0.005215	8.22	297.67	204.99	0.59
USACE-Muncy	14670		Q100	2118.00	536.85	545.7	543.59	546.36	0.002868	7.16	515.68	303.96	0.46
USACE-Muncy	14670		Q200	2593.00	536.85	547.8	544.29	548.22	0.001393	5.88	832.47	340.22	0.33
USACE-Muncy	14670		Q500	3260.00	536.85	552.7	545.34	552.80	0.000338	3.79	1729.81	766.04	0.17
USACE-Muncy	14670		SEPT2011	1198.00	536.85	542.5	541.70	543.54	0.008335	8.44	160.55	87.33	0.71
USACE-Muncy	14583	Q	Q2	271.00	536.58	538.4	538.41	539.04	0.023676	6.37	42.52	33.23	0.99
USACE-Muncy	14583	Q	Q5	623.00	536.58	540.1	539.39	540.59	0.007069	5.78	114.55	62.17	0.62
USACE-Muncy	14583	Q	Q10	930.00	536.58	541.4	540.03	541.84	0.004045	5.65	178.85	94.38	0.50
USACE-Muncy	14583	Q	Q25	1358.00	536.58	542.9	540.72	543.37	0.002832	5.84	254.10	257.50	0.44
USACE-Muncy	14583	Q	Q50	1711.00	536.58	544.0	541.23	544.51	0.002378	6.05	309.64	399.95	0.41
USACE-Muncy	14583	Q	Q100	2118.00	536.58	545.6	541.77	546.10	0.001719	5.94	390.26	527.00	0.36
USACE-Muncy	14583	Q	Q200	2593.00	536.58	547.6	542.33	548.09	0.001215	5.78	491.10	600.73	0.32
USACE-Muncy	14583	Q	Q500	3260.00	536.58	552.4	543.08	552.70	0.000524	4.89	728.77	967.24	0.22
USACE-Muncy	14583	Q	SEPT2011	1198.00	536.58	542.3	540.47	542.82	0.003151	5.76	227.22	189.70	0.45
USACE-Muncy	14392	U.S. Route 180		Culvert									
USACE-Muncy	14169	P	Q2	271.00	529.82	532.8	531.58	532.96	0.003488	3.56	76.03	32.82	0.41
USACE-Muncy	14169	P	Q5	623.00	529.82	534.3	532.67	534.62	0.003735	4.79	130.66	40.36	0.45
USACE-Muncy	14169	P	Q10	930.00	529.82	535.2	533.44	535.67	0.003764	5.63	170.04	45.46	0.47
USACE-Muncy	14169	P	Q25	1358.00	529.82	536.3	534.25	536.91	0.003797	6.54	221.97	51.69	0.49
USACE-Muncy	14169	P	Q50	1711.00	529.82	537.0	534.85	537.80	0.003789	7.14	262.24	57.08	0.51
USACE-Muncy	14169	P	Q100	2118.00	529.82	537.8	535.48	538.69	0.003913	7.82	300.82	74.24	0.52
USACE-Muncy	14169	P	Q200	2593.00	529.82	538.4	536.16	539.56	0.004258	8.68	335.51	151.89	0.55
USACE-Muncy	14169	P	Q500	3260.00	529.82	539.1	537.06	540.61	0.004932	9.91	372.38	228.24	0.61
USACE-Muncy	14169	P	SEPT2011	1198.00	529.82	535.9	533.97	536.47	0.003799	6.23	202.59	49.27	0.49
USACE-Muncy	14058		Q2	271.00	529.47	532.2	531.33	532.45	0.005728	4.30	63.04	29.99	0.52
USACE-Muncy	14058		Q5	623.00	529.47	533.5	532.46	534.05	0.006090	5.76	108.48	36.53	0.57
USACE-Muncy	14058		Q10	930.00	529.47	534.4	533.22	535.09	0.006095	6.76	142.51	44.10	0.60
USACE-Muncy	14058		Q25	1358.00	529.47	535.4	534.07	536.31	0.006001	7.79	191.46	54.14	0.61
USACE-Muncy	14058		Q50	1711.00	529.47	536.1	534.70	537.20	0.005846	8.43	236.59	68.19	0.62
USACE-Muncy	14058		Q100	2118.00	529.47	536.9	535.38	538.10	0.005545	8.95	294.59	77.62	0.62

USACE-Muncy	14058		Q200	2593.00	529.47	537.6	536.24	538.95	0.005698	9.69	350.27	151.58	0.64
USACE-Muncy	14058		Q500	3260.00	529.47	538.1	537.17	539.88	0.006810	11.12	399.18	226.67	0.70
USACE-Muncy	14058		SEPT2011	1198.00	529.47	535.0	533.77	535.86	0.006128	7.47	171.94	50.10	0.61
USACE-Muncy	13878		Q2	271.00	528.09	531.1	530.29	531.35	0.006404	4.34	62.40	32.05	0.55
USACE-Muncy	13878		Q5	623.00	528.09	532.6	531.43	533.02	0.005141	5.29	118.70	41.49	0.53
USACE-Muncy	13878		Q10	930.00	528.09	533.5	532.15	534.08	0.004738	6.05	159.72	47.03	0.53
USACE-Muncy	13878		Q25	1358.00	528.09	534.6	532.93	535.32	0.004469	6.89	215.14	55.45	0.54
USACE-Muncy	13878		Q50	1711.00	528.09	535.4	533.52	536.23	0.004256	7.41	263.15	63.90	0.54
USACE-Muncy	13878		Q100	2118.00	528.09	536.3	534.14	537.18	0.004009	7.87	322.25	111.18	0.53
USACE-Muncy	13878		Q200	2593.00	528.09	537.0	534.81	538.00	0.003933	8.36	435.81	167.66	0.54
USACE-Muncy	13878		Q500	3260.00	528.09	537.3	535.79	538.70	0.005209	9.89	481.39	202.46	0.62
USACE-Muncy	13878		SEPT2011	1198.00	528.09	534.2	532.65	534.85	0.004716	6.67	191.93	52.23	0.54
USACE-Muncy	13740	O	Q2	271.00	526.59	529.5	529.17	530.11	0.013070	6.12	44.27	22.68	0.77
USACE-Muncy	13740	O	Q5	623.00	526.59	530.7	530.51	531.81	0.015904	8.28	75.26	28.16	0.89
USACE-Muncy	13740	O	Q10	930.00	526.59	531.6	531.38	532.92	0.015631	9.26	100.59	32.02	0.91
USACE-Muncy	13740	O	Q25	1358.00	526.59	532.5	532.29	534.20	0.014757	10.51	131.21	36.07	0.92
USACE-Muncy	13740	O	Q50	1711.00	526.59	533.1	532.96	535.13	0.014380	11.42	154.84	38.91	0.93
USACE-Muncy	13740	O	Q100	2118.00	526.59	533.8	533.67	536.12	0.013418	12.16	184.70	50.91	0.92
USACE-Muncy	13740	O	Q200	2593.00	526.59	534.9	534.91	537.06	0.010329	12.02	284.00	123.29	0.83
USACE-Muncy	13740	O	Q500	3260.00	526.59	536.4	536.37	537.89	0.006369	10.80	560.61	248.66	0.68
USACE-Muncy	13740	O	SEPT2011	1198.00	526.59	532.5	531.97	533.81	0.011572	9.29	130.87	36.03	0.81
USACE-Muncy	13631		Q2	271.00	525.69	529.2	528.07	529.37	0.003071	3.20	85.63	45.30	0.39
USACE-Muncy	13631		Q5	648.00	525.69	530.7	529.13	530.97	0.002809	4.36	162.09	58.35	0.41
USACE-Muncy	13631		Q10	983.00	525.69	531.7	529.80	532.05	0.002689	5.02	223.84	66.29	0.41
USACE-Muncy	13631		Q25	1439.00	525.69	532.8	530.57	533.27	0.002557	5.67	306.19	81.63	0.42
USACE-Muncy	13631		Q50	1812.00	525.69	533.6	531.13	534.15	0.002430	6.06	374.65	149.61	0.42
USACE-Muncy	13631		Q100	2255.00	525.69	534.6	531.66	535.11	0.002285	6.41	459.82	200.95	0.41
USACE-Muncy	13631		Q200	2762.00	525.69	535.2	532.36	535.78	0.002247	6.72	703.79	244.28	0.42
USACE-Muncy	13631		Q500	3497.00	525.69	536.0	533.14	536.64	0.002321	7.27	887.07	291.98	0.43
USACE-Muncy	13631		SEPT2011	1349.00	525.69	532.6	530.43	533.04	0.002588	5.57	289.84	75.99	0.42
USACE-Muncy	13482		Q2	271.00	524.96	527.6	527.57	528.33	0.022955	6.99	38.78	25.37	1.00
USACE-Muncy	13482		Q5	648.00	524.96	528.8	528.82	530.00	0.020126	8.71	74.41	31.34	1.00
USACE-Muncy	13482		Q10	983.00	524.96	529.6	529.61	531.09	0.018694	9.70	101.40	35.07	0.99
USACE-Muncy	13482		Q25	1439.00	524.96	530.6	530.50	532.36	0.015581	10.69	137.53	39.91	0.95
USACE-Muncy	13482		Q50	1812.00	524.96	531.3	531.15	533.28	0.014152	11.36	166.71	43.51	0.93
USACE-Muncy	13482		Q100	2255.00	524.96	532.0	531.88	534.27	0.013087	12.07	200.80	82.55	0.92
USACE-Muncy	13482		Q200	2762.00	524.96	533.2	533.16	535.05	0.009168	11.46	346.49	146.44	0.79
USACE-Muncy	13482		Q500	3497.00	524.96	534.1	534.12	535.93	0.007945	11.69	507.45	223.57	0.75
USACE-Muncy	13482		SEPT2011	1349.00	524.96	530.4	530.34	532.13	0.016036	10.51	130.44	38.99	0.96
USACE-Muncy	13349		Q2	271.00	523.56	526.5	525.65	526.78	0.006056	4.59	61.13	39.64	0.54
USACE-Muncy	13349		Q5	648.00	523.56	528.0	526.98	528.54	0.005253	6.07	131.39	49.16	0.55
USACE-Muncy	13349		Q10	983.00	523.56	529.0	527.75	529.70	0.005052	6.98	183.98	54.34	0.56
USACE-Muncy	13349		Q25	1439.00	523.56	530.2	528.67	531.03	0.004859	7.91	250.67	60.48	0.57

USACE-Muncy	13349		Q50	1812.00	523.56	531.0	529.29	531.96	0.004781	8.54	301.83	65.18	0.58
USACE-Muncy	13349		Q100	2255.00	523.56	531.8	529.98	532.95	0.004768	9.23	359.55	95.81	0.59
USACE-Muncy	13349		Q200	2762.00	523.56	532.6	530.69	534.01	0.005145	10.25	463.22	149.36	0.62
USACE-Muncy	13349		Q500	3497.00	523.56	532.8	531.61	534.86	0.007734	12.71	483.55	165.00	0.77
USACE-Muncy	13349		SEPT2011	1349.00	523.56	530.0	528.50	530.78	0.004887	7.74	237.92	59.35	0.57
USACE-Muncy	13228	N	Q2	271.00	522.88	526.0	524.83	526.22	0.003223	3.42	79.30	34.51	0.40
USACE-Muncy	13228	N	Q5	648.00	522.88	527.6	525.95	527.99	0.003240	4.66	139.90	40.53	0.43
USACE-Muncy	13228	N	Q10	983.00	522.88	528.7	526.71	529.16	0.003206	5.48	184.13	44.33	0.44
USACE-Muncy	13228	N	Q25	1439.00	522.88	529.9	527.56	530.49	0.003191	6.34	239.20	55.46	0.46
USACE-Muncy	13228	N	Q50	1812.00	522.88	530.7	528.16	531.42	0.003214	6.94	281.28	95.57	0.47
USACE-Muncy	13228	N	Q100	2255.00	522.88	531.5	528.81	532.40	0.003264	7.58	330.93	186.14	0.49
USACE-Muncy	13228	N	Q200	2762.00	522.88	532.7	529.54	533.40	0.002363	7.10	669.67	346.83	0.42
USACE-Muncy	13228	N	Q500	3497.00	522.88	533.2	530.50	534.02	0.002783	7.99	795.54	364.40	0.46
USACE-Muncy	13228	N	SEPT2011	1349.00	522.88	529.7	527.39	530.24	0.003189	6.19	228.73	48.23	0.46
USACE-Muncy	13091		Q2	271.00	521.99	524.9	524.49	525.43	0.011379	5.67	47.76	25.01	0.72
USACE-Muncy	13091		Q5	648.00	521.99	526.3	525.84	527.19	0.010813	7.50	87.90	32.78	0.76
USACE-Muncy	13091		Q10	983.00	521.99	527.1	526.67	528.34	0.010934	8.85	116.71	37.68	0.80
USACE-Muncy	13091		Q25	1439.00	521.99	528.1	527.66	529.65	0.011016	10.26	155.17	45.84	0.83
USACE-Muncy	13091		Q50	1812.00	521.99	528.7	528.39	530.57	0.010891	11.13	187.54	51.01	0.84
USACE-Muncy	13091		Q100	2255.00	521.99	529.5	529.19	531.54	0.010573	11.94	226.69	61.12	0.85
USACE-Muncy	13091		Q200	2762.00	521.99	530.1	529.77	532.61	0.011071	13.09	291.34	142.23	0.88
USACE-Muncy	13091		Q500	3497.00	521.99	532.3	529.93	533.49	0.004602	10.13	707.75	326.58	0.60
USACE-Muncy	13091		SEPT2011	1349.00	521.99	527.9	527.47	529.41	0.011031	10.01	147.42	44.45	0.82
USACE-Muncy	12974		Q2	271.00	520.96	523.8	523.21	524.24	0.008852	5.16	52.47	25.90	0.64
USACE-Muncy	12974		Q5	648.00	520.96	525.3	524.54	526.01	0.008864	6.89	97.32	38.24	0.68
USACE-Muncy	12974		Q10	983.00	520.96	526.1	525.43	527.13	0.008918	8.11	131.65	42.20	0.71
USACE-Muncy	12974		Q25	1439.00	520.96	527.1	526.37	528.41	0.009061	9.42	173.48	46.08	0.75
USACE-Muncy	12974		Q50	1812.00	520.96	527.8	527.03	529.33	0.009073	10.28	206.54	50.10	0.76
USACE-Muncy	12974		Q100	2255.00	520.96	528.5	527.76	530.32	0.009023	11.14	245.67	55.11	0.78
USACE-Muncy	12974		Q200	2762.00	520.96	529.2	528.49	531.32	0.009424	12.17	293.27	82.95	0.81
USACE-Muncy	12974		Q500	3497.00	520.96	529.8	529.82	532.55	0.010953	13.89	352.23	154.96	0.88
USACE-Muncy	12974		SEPT2011	1349.00	520.96	526.9	526.18	528.17	0.009042	9.19	165.47	45.06	0.74
USACE-Muncy	12848		Q2	271.00	519.91	522.8	522.15	523.19	0.007660	4.85	55.92	27.65	0.60
USACE-Muncy	12848		Q5	648.00	519.91	524.2	523.43	524.89	0.008704	6.61	98.02	32.92	0.68
USACE-Muncy	12848		Q10	983.00	519.91	525.0	524.26	525.98	0.009141	7.82	126.39	36.15	0.72
USACE-Muncy	12848		Q25	1439.00	519.91	526.0	525.17	527.25	0.009248	9.13	161.68	39.96	0.75
USACE-Muncy	12848		Q50	1812.00	519.91	526.7	525.83	528.18	0.009137	9.95	190.40	43.14	0.76
USACE-Muncy	12848		Q100	2255.00	519.91	527.4	526.55	529.19	0.008888	10.74	225.12	46.85	0.77
USACE-Muncy	12848		Q200	2762.00	519.91	527.9	527.32	530.09	0.009961	11.99	263.47	111.04	0.82
USACE-Muncy	12848		Q500	3497.00	519.91	529.5	529.50	530.81	0.005390	10.17	547.67	299.67	0.63
USACE-Muncy	12848		SEPT2011	1349.00	519.91	525.8	525.01	527.01	0.009251	8.90	154.78	39.24	0.74
USACE-Muncy	12740	M	Q2	271.00	518.78	521.6		522.09	0.013775	5.77	47.00	27.94	0.78
USACE-Muncy	12740	M	Q5	648.00	518.78	522.9		523.74	0.012642	7.47	87.35	34.13	0.81

USACE-Muncy	12740	M	Q10	983.00	518.78	523.7		524.85	0.011516	8.54	117.77	37.27	0.81
USACE-Muncy	12740	M	Q25	1439.00	518.78	524.6	524.17	526.12	0.011296	9.86	152.78	40.43	0.83
USACE-Muncy	12740	M	Q50	1812.00	518.78	525.2	524.81	527.01	0.011923	10.97	175.80	42.96	0.87
USACE-Muncy	12740	M	Q100	2255.00	518.78	525.7	525.54	527.98	0.012889	12.22	199.76	46.17	0.92
USACE-Muncy	12740	M	Q200	2762.00	518.78	526.7	526.75	528.99	0.010394	12.30	264.57	92.91	0.85
USACE-Muncy	12740	M	Q500	3497.00	518.78	528.4	528.44	529.75	0.005316	10.26	556.88	226.97	0.63
USACE-Muncy	12740	M	SEPT2011	1349.00	518.78	524.5	524.00	525.89	0.011226	9.60	146.55	39.82	0.82
USACE-Muncy	12601		Q2	271.00	517.89	520.9	519.81	521.12	0.003547	3.43	78.90	37.16	0.42
USACE-Muncy	12601		Q5	648.00	517.89	522.4	520.93	522.75	0.003516	4.80	140.26	48.20	0.45
USACE-Muncy	12601		Q10	983.00	517.89	523.4	521.62	523.86	0.003428	5.59	192.90	57.59	0.46
USACE-Muncy	12601		Q25	1439.00	517.89	524.4	522.46	525.06	0.003475	6.47	256.97	63.80	0.48
USACE-Muncy	12601		Q50	1812.00	517.89	525.1	523.06	525.84	0.003705	7.19	299.68	75.25	0.51
USACE-Muncy	12601		Q100	2255.00	517.89	525.8	523.76	526.67	0.003956	7.95	347.05	121.60	0.53
USACE-Muncy	12601		Q200	2762.00	517.89	526.4	524.41	527.41	0.003943	8.45	470.02	201.87	0.54
USACE-Muncy	12601		Q500	3497.00	517.89	527.1	525.25	528.21	0.004081	9.12	621.72	295.92	0.56
USACE-Muncy	12601		SEPT2011	1349.00	517.89	524.3	522.29	524.85	0.003437	6.30	245.57	62.73	0.48
USACE-Muncy	12427		Q2	271.00	516.94	519.5		520.02	0.013323	5.69	47.60	28.24	0.77
USACE-Muncy	12427		Q5	648.00	516.94	520.7	520.39	521.61	0.013781	7.77	84.48	36.13	0.84
USACE-Muncy	12427		Q10	983.00	516.94	521.3	521.19	522.68	0.015098	9.41	109.58	42.53	0.92
USACE-Muncy	12427		Q25	1439.00	516.94	522.2	522.19	523.88	0.014020	10.61	155.25	60.52	0.92
USACE-Muncy	12427		Q50	1812.00	516.94	522.9	522.94	524.68	0.011882	10.93	206.67	75.88	0.87
USACE-Muncy	12427		Q100	2255.00	516.94	523.6	523.56	525.47	0.011555	11.66	254.29	79.50	0.87
USACE-Muncy	12427		Q200	2762.00	516.94	524.3	524.30	526.26	0.010439	12.05	323.52	106.99	0.85
USACE-Muncy	12427		Q500	3497.00	516.94	525.7	525.67	527.25	0.007059	11.31	555.15	210.22	0.72
USACE-Muncy	12427		SEPT2011	1349.00	516.94	522.0	522.00	523.66	0.014526	10.48	144.44	57.41	0.93
USACE-Muncy	12267	L	Q2	271.00	515.90	518.8	517.69	518.93	0.003558	3.32	81.62	41.65	0.41
USACE-Muncy	12267	L	Q5	648.00	515.90	520.0	518.75	520.36	0.003958	4.84	143.13	65.77	0.47
USACE-Muncy	12267	L	Q10	983.00	515.90	520.8	519.40	521.29	0.004014	5.66	214.31	111.25	0.49
USACE-Muncy	12267	L	Q25	1439.00	515.90	521.8	520.28	522.28	0.003636	6.18	351.86	191.82	0.49
USACE-Muncy	12267	L	Q50	1812.00	515.90	522.5	520.94	522.96	0.003058	6.20	484.67	221.56	0.46
USACE-Muncy	12267	L	Q100	2255.00	515.90	523.3	521.74	523.70	0.002349	5.95	701.22	263.76	0.41
USACE-Muncy	12267	L	Q200	2762.00	515.90	523.8	522.26	524.21	0.002488	6.41	830.30	360.61	0.43
USACE-Muncy	12267	L	Q500	3497.00	515.90	524.2	522.82	524.73	0.002915	7.22	970.61	419.35	0.47
USACE-Muncy	12267	L	SEPT2011	1349.00	515.90	521.6	520.11	522.10	0.003772	6.15	320.97	175.83	0.49
USACE-Muncy	12096		Q2	271.00	514.09	517.4	517.13	517.88	0.012163	5.67	57.32	43.02	0.74
USACE-Muncy	12096		Q5	648.00	514.09	518.7		519.32	0.009931	7.06	125.05	61.14	0.72
USACE-Muncy	12096		Q10	983.00	514.09	519.6		520.31	0.008403	7.74	185.00	73.33	0.69
USACE-Muncy	12096		Q25	1439.00	514.09	520.6		521.42	0.006883	8.25	270.67	85.94	0.65
USACE-Muncy	12096		Q50	1812.00	514.09	521.4		522.22	0.005991	8.49	340.71	92.50	0.63
USACE-Muncy	12096		Q100	2255.00	514.09	522.3	520.83	523.09	0.005250	8.73	481.96	264.53	0.60
USACE-Muncy	12096		Q200	2762.00	514.09	523.1	521.39	523.69	0.003639	7.88	753.16	353.89	0.51
USACE-Muncy	12096		Q500	3497.00	514.09	523.2	522.98	524.05	0.005235	9.55	793.98	359.72	0.61
USACE-Muncy	12096		SEPT2011	1349.00	514.09	520.4		521.21	0.007251	8.21	252.34	84.08	0.67

USACE-Muncy	11902		Q2	271.00	512.22	515.2	514.75	515.64	0.010750	5.33	50.80	27.54	0.69
USACE-Muncy	11902		Q5	648.00	512.22	516.6	515.98	517.34	0.010034	7.11	92.97	35.48	0.72
USACE-Muncy	11902		Q10	983.00	512.22	517.4	516.78	518.46	0.010137	8.39	124.45	41.22	0.75
USACE-Muncy	11902		Q25	1439.00	512.22	518.3	517.76	519.72	0.010146	9.70	165.73	47.52	0.78
USACE-Muncy	11902		Q50	1812.00	512.22	519.0	518.45	520.62	0.010116	10.56	198.68	52.38	0.80
USACE-Muncy	11902		Q100	2255.00	512.22	519.7	519.17	521.60	0.009697	11.30	243.63	79.93	0.80
USACE-Muncy	11902		Q200	2762.00	512.22	520.4	520.00	522.46	0.009548	12.02	334.77	193.23	0.81
USACE-Muncy	11902		Q500	3497.00	512.22	522.2	521.60	523.15	0.004147	9.24	844.09	331.43	0.55
USACE-Muncy	11902		SEPT2011	1349.00	512.22	518.2	517.58	519.51	0.009705	9.34	160.43	46.79	0.76
USACE-Muncy	11764	K	Q2	270.00	511.09	513.8	513.30	514.24	0.009659	5.25	51.48	26.86	0.67
USACE-Muncy	11764	K	Q5	646.00	511.09	515.2	514.57	515.93	0.010275	7.06	91.63	32.59	0.73
USACE-Muncy	11764	K	Q10	978.00	511.09	516.0	515.37	517.04	0.010323	8.31	119.45	36.16	0.76
USACE-Muncy	11764	K	Q25	1429.00	511.09	516.9	516.30	518.31	0.010286	9.62	154.57	40.55	0.79
USACE-Muncy	11764	K	Q50	1797.00	511.09	517.6	516.99	519.22	0.010073	10.44	183.28	44.17	0.80
USACE-Muncy	11764	K	Q100	2236.00	511.09	519.0	517.66	520.39	0.006191	9.64	291.16	121.25	0.65
USACE-Muncy	11764	K	Q200	2745.00	511.09	520.5	518.88	521.39	0.003702	8.49	563.14	278.79	0.52
USACE-Muncy	11764	K	Q500	3477.00	511.09	522.3	520.09	522.64	0.001601	6.36	1168.79	361.77	0.36
USACE-Muncy	11764	K	SEPT2011	1358.00	511.09	516.8	516.18	518.12	0.010291	9.44	149.17	39.83	0.79
USACE-Muncy	11630		Q2	270.00	510.11	513.0	512.12	513.27	0.005028	3.95	68.33	33.77	0.49
USACE-Muncy	11630		Q5	646.00	510.11	514.5	513.27	514.92	0.004834	5.34	123.05	50.63	0.52
USACE-Muncy	11630		Q10	978.00	510.11	515.4	514.01	515.99	0.004780	6.25	167.27	74.79	0.54
USACE-Muncy	11630		Q25	1429.00	510.11	516.5	514.87	517.23	0.004569	7.12	227.18	113.35	0.55
USACE-Muncy	11630		Q50	1797.00	510.11	517.3	515.51	518.13	0.004352	7.64	282.62	141.43	0.55
USACE-Muncy	11630		Q100	2236.00	510.11	519.4	516.11	519.74	0.001362	5.23	816.66	243.32	0.32
USACE-Muncy	11630		Q200	2745.00	510.11	520.7	516.84	520.96	0.000903	4.71	1219.54	385.46	0.27
USACE-Muncy	11630		Q500	3477.00	510.11	522.3	517.79	522.44	0.000581	4.17	1867.31	447.35	0.22
USACE-Muncy	11630		SEPT2011	1358.00	510.11	516.3	514.75	517.04	0.004591	6.99	217.70	108.72	0.55
USACE-Muncy	11464		Q2	270.00	509.10	512.3	511.25	512.51	0.004189	3.84	70.95	34.00	0.45
USACE-Muncy	11464		Q5	646.00	509.10	513.7	512.43	514.17	0.004274	5.39	134.44	56.77	0.50
USACE-Muncy	11464		Q10	978.00	509.10	514.7	513.19	515.24	0.004172	6.22	192.07	65.06	0.51
USACE-Muncy	11464		Q25	1429.00	509.10	515.9	514.17	516.51	0.003742	6.86	284.91	89.51	0.50
USACE-Muncy	11464		Q50	1797.00	509.10	516.8	514.78	517.45	0.003225	7.04	379.69	154.82	0.48
USACE-Muncy	11464		Q100	2236.00	509.10	519.3	515.57	519.53	0.000963	4.75	956.83	408.12	0.28
USACE-Muncy	11464		Q200	2745.00	509.10	520.7	516.00	520.82	0.000567	4.01	1557.04	509.99	0.22
USACE-Muncy	11464		Q500	3477.00	509.10	522.3	517.22	522.35	0.000352	3.46	2237.08	539.45	0.17
USACE-Muncy	11464		SEPT2011	1358.00	509.10	515.7	514.04	516.32	0.003837	6.80	268.83	87.01	0.51
USACE-Muncy	11314		Q2	270.00	508.55	511.5	510.61	511.81	0.005204	4.17	64.76	30.76	0.50
USACE-Muncy	11314		Q5	646.00	508.55	512.8	511.83	513.38	0.006297	6.10	115.65	51.39	0.59
USACE-Muncy	11314		Q10	978.00	508.55	513.8	512.70	514.49	0.005746	6.91	170.35	61.06	0.59
USACE-Muncy	11314		Q25	1429.00	508.55	515.1	513.60	515.89	0.004476	7.32	259.54	71.91	0.54
USACE-Muncy	11314		Q50	1797.00	508.55	516.1	514.23	516.91	0.003840	7.56	364.50	127.55	0.52
USACE-Muncy	11314		Q100	2236.00	508.55	519.1	514.83	519.37	0.001066	5.09	912.48	425.79	0.29
USACE-Muncy	11314		Q200	2745.00	508.55	520.5	515.10	520.71	0.000806	4.85	1206.82	451.82	0.26
USACE-Muncy	11314		Q500	3477.00	508.55	522.1	516.81	522.28	0.000497	4.18	1864.54	474.86	0.21

USACE-Muncy	11314		SEPT2011	1358.00	508.55	514.9	513.47	515.68	0.004605	7.25	245.73	70.11	0.55
USACE-Muncy	11220	J	Q2	270.00	508.38	510.6	510.29	511.05	0.011566	5.32	51.43	34.08	0.72
USACE-Muncy	11220	J	Q5	646.00	508.38	512.1	511.42	512.73	0.007237	6.44	113.38	58.11	0.64
USACE-Muncy	11220	J	Q10	978.00	508.38	513.2	512.13	513.94	0.005868	7.07	160.43	74.30	0.60
USACE-Muncy	11220	J	Q25	1429.00	508.38	514.6	512.95	515.43	0.004708	7.64	220.00	123.43	0.57
USACE-Muncy	11220	J	Q50	1797.00	508.38	515.5	513.55	516.48	0.004387	8.16	260.17	153.68	0.56
USACE-Muncy	11220	J	Q100	2236.00	508.38	518.4	514.20	519.12	0.001924	6.91	385.84	373.12	0.39
USACE-Muncy	11220	J	Q200	2745.00	508.38	519.6	514.93	520.43	0.001933	7.49	437.34	392.22	0.40
USACE-Muncy	11220	J	Q500	3477.00	508.38	522.0	515.86	522.21	0.000644	4.93	1370.68	428.78	0.24
USACE-Muncy	11220	J	SEPT2011	1358.00	508.38	514.4	512.83	515.22	0.004786	7.53	211.85	120.35	0.57
USACE-Muncy	11172	Clarkstown Rd		Bridge									
USACE-Muncy	11126	I	Q2	270.00	507.66	510.0	509.38	510.31	0.007585	4.57	59.12	31.96	0.59
USACE-Muncy	11126	I	Q5	646.00	507.66	511.5	510.50	512.01	0.006628	5.69	113.49	39.44	0.59
USACE-Muncy	11126	I	Q10	978.00	507.66	512.5	511.29	513.15	0.005663	6.28	156.61	44.84	0.57
USACE-Muncy	11126	I	Q25	1429.00	507.66	513.7	512.13	514.48	0.004777	6.94	210.09	52.43	0.55
USACE-Muncy	11126	I	Q50	1797.00	507.66	514.4	512.69	515.27	0.005088	7.74	237.76	56.24	0.58
USACE-Muncy	11126	I	Q100	2236.00	507.66	514.8	513.31	516.04	0.005929	8.84	259.73	59.49	0.63
USACE-Muncy	11126	I	Q200	2745.00	507.66	515.2	513.96	516.79	0.007437	10.26	274.95	61.98	0.72
USACE-Muncy	11126	I	Q500	3477.00	507.66	515.7	514.80	517.88	0.009169	11.99	305.88	74.05	0.80
USACE-Muncy	11126	I	SEPT2011	1358.00	507.66	513.6	512.00	514.30	0.004813	6.81	202.99	51.36	0.55
USACE-Muncy	11035		Q2	270.00	506.48	509.1	508.56	509.51	0.009463	5.20	51.89	27.04	0.66
USACE-Muncy	11035		Q5	646.00	506.48	510.5	509.81	511.23	0.009006	7.09	93.14	33.28	0.70
USACE-Muncy	11035		Q10	978.00	506.48	511.3	510.65	512.39	0.008821	8.27	124.65	37.84	0.72
USACE-Muncy	11035		Q25	1429.00	506.48	512.3	511.63	513.68	0.009310	9.73	165.16	98.16	0.77
USACE-Muncy	11035		Q50	1797.00	506.48	512.9	512.66	514.49	0.008858	10.33	205.27	122.31	0.77
USACE-Muncy	11035		Q100	2236.00	506.48	513.7	513.40	515.30	0.008046	10.71	260.02	173.52	0.74
USACE-Muncy	11035		Q200	2745.00	506.48	514.4	514.17	516.06	0.007932	11.34	320.28	230.24	0.75
USACE-Muncy	11035		Q500	3477.00	506.48	515.1	515.07	516.93	0.007979	12.13	401.19	258.42	0.77
USACE-Muncy	11035		SEPT2011	1358.00	506.48	512.1	511.47	513.50	0.009287	9.54	157.80	89.93	0.76
USACE-Muncy	10915		Q2	270.00	505.30	508.3	507.48	508.59	0.005771	4.25	63.57	31.12	0.52
USACE-Muncy	10915		Q5	646.00	505.30	509.9	508.66	510.37	0.004871	5.68	118.66	40.50	0.53
USACE-Muncy	10915		Q10	978.00	505.30	510.9	509.44	511.51	0.004804	6.61	163.17	50.37	0.55
USACE-Muncy	10915		Q25	1429.00	505.30	512.0	510.41	512.75	0.004323	7.28	250.73	96.18	0.54
USACE-Muncy	10915		Q50	1797.00	505.30	512.9	511.37	513.60	0.003422	7.16	346.06	127.21	0.49
USACE-Muncy	10915		Q100	2236.00	505.30	513.8	512.26	514.47	0.002918	7.20	478.09	236.19	0.46
USACE-Muncy	10915		Q200	2745.00	505.30	514.7	512.81	515.24	0.002401	7.02	654.52	305.86	0.43
USACE-Muncy	10915		Q500	3477.00	505.30	515.4	513.86	515.98	0.002343	7.33	826.35	342.63	0.43
USACE-Muncy	10915		SEPT2011	1358.00	505.30	511.8	510.24	512.57	0.004469	7.25	233.96	90.72	0.54
USACE-Muncy	10814	H	Q2	270.00	504.32	507.5		507.92	0.007444	4.95	54.50	25.13	0.59
USACE-Muncy	10814	H	Q5	646.00	504.32	509.0		509.73	0.007950	6.65	98.40	35.08	0.65
USACE-Muncy	10814	H	Q10	978.00	504.32	509.9		510.85	0.008253	7.91	132.04	44.57	0.69
USACE-Muncy	10814	H	Q25	1429.00	504.32	510.7	510.03	512.07	0.009156	9.44	173.19	54.05	0.75

USACE-Muncy	10814	H	Q50	1797.00	504.32	511.3	510.75	512.95	0.009778	10.50	209.36	74.64	0.79
USACE-Muncy	10814	H	Q100	2236.00	504.32	511.8	511.64	513.82	0.010531	11.61	252.03	81.68	0.83
USACE-Muncy	10814	H	Q200	2745.00	504.32	512.8	512.76	514.68	0.008903	11.73	348.77	133.49	0.78
USACE-Muncy	10814	H	Q500	3477.00	504.32	514.2	514.17	515.54	0.005762	10.67	632.59	271.04	0.65
USACE-Muncy	10814	H	SEPT2011	1358.00	504.32	510.6	509.88	511.89	0.009038	9.22	166.72	52.66	0.74
USACE-Muncy	10679		Q2	270.00	503.61	506.6	505.83	506.94	0.006948	4.68	57.69	27.88	0.57
USACE-Muncy	10679		Q5	646.00	503.61	508.0	507.15	508.61	0.008456	6.31	102.33	36.42	0.66
USACE-Muncy	10679		Q10	978.00	503.61	508.9	507.98	509.66	0.008790	7.19	136.03	41.47	0.70
USACE-Muncy	10679		Q25	1429.00	503.61	509.7	508.89	510.78	0.008841	8.38	172.99	46.52	0.72
USACE-Muncy	10679		Q50	1797.00	503.61	510.3	509.45	511.58	0.009066	9.24	200.52	70.18	0.75
USACE-Muncy	10679		Q100	2236.00	503.61	510.8	510.10	512.36	0.009234	10.05	251.19	114.74	0.77
USACE-Muncy	10679		Q200	2745.00	503.61	511.4	511.38	513.06	0.009209	10.73	329.48	167.31	0.78
USACE-Muncy	10679		Q500	3477.00	503.61	512.3	512.30	513.77	0.007298	10.53	502.00	239.99	0.71
USACE-Muncy	10679		SEPT2011	1358.00	503.61	509.6	508.77	510.62	0.008812	8.20	167.43	45.80	0.72
USACE-Muncy	10528		Q2	270.00	502.81	505.7	504.87	505.95	0.005899	4.17	64.75	33.32	0.53
USACE-Muncy	10528		Q5	646.00	502.81	507.0	506.04	507.50	0.006148	5.84	115.92	46.81	0.58
USACE-Muncy	10528		Q10	978.00	502.81	507.8	506.77	508.53	0.006225	6.88	162.52	69.64	0.61
USACE-Muncy	10528		Q25	1429.00	502.81	508.7	507.54	509.62	0.006167	7.86	229.31	90.69	0.63
USACE-Muncy	10528		Q50	1797.00	502.81	509.3	508.36	510.38	0.006239	8.56	277.93	107.89	0.64
USACE-Muncy	10528		Q100	2236.00	502.81	509.8	508.98	511.09	0.006856	9.50	326.94	131.82	0.69
USACE-Muncy	10528		Q200	2745.00	502.81	510.3	509.79	511.71	0.007015	10.16	426.25	202.80	0.70
USACE-Muncy	10528		Q500	3477.00	502.81	510.9	510.68	512.52	0.007712	11.27	510.44	224.27	0.75
USACE-Muncy	10528		SEPT2011	1358.00	502.81	508.6	507.51	509.47	0.006161	7.72	219.43	88.12	0.62
USACE-Muncy	10387	G	Q2	270.00	501.93	505.0	504.03	505.20	0.004564	3.65	73.96	38.53	0.46
USACE-Muncy	10387	G	Q5	646.00	501.93	506.3	505.16	506.71	0.004561	5.05	131.30	47.83	0.50
USACE-Muncy	10387	G	Q10	978.00	501.93	507.2	505.83	507.72	0.004611	5.96	175.69	58.56	0.53
USACE-Muncy	10387	G	Q25	1429.00	501.93	508.1	506.58	508.80	0.004887	7.02	233.65	89.23	0.56
USACE-Muncy	10387	G	Q50	1797.00	501.93	508.6	507.17	509.53	0.005185	7.78	276.47	123.93	0.59
USACE-Muncy	10387	G	Q100	2236.00	501.93	509.2	507.84	510.16	0.005207	8.32	360.17	211.27	0.60
USACE-Muncy	10387	G	Q200	2745.00	501.93	509.6	508.51	510.74	0.005845	9.21	446.54	242.83	0.64
USACE-Muncy	10387	G	Q500	3477.00	501.93	510.1	509.36	511.45	0.006333	10.12	547.23	314.45	0.68
USACE-Muncy	10387	G	SEPT2011	1358.00	501.93	507.9	506.48	508.65	0.004835	6.86	224.92	86.02	0.56
USACE-Muncy	10251		Q2	270.00	501.35	504.1	503.49	504.42	0.007158	4.40	61.70	36.03	0.58
USACE-Muncy	10251		Q5	646.00	501.35	505.4	504.59	505.95	0.006702	5.99	117.31	65.99	0.61
USACE-Muncy	10251		Q10	978.00	501.35	506.3	505.31	506.97	0.006409	6.91	172.12	162.20	0.62
USACE-Muncy	10251		Q25	1429.00	501.35	507.4	506.25	508.11	0.005218	7.36	290.31	266.33	0.58
USACE-Muncy	10251		Q50	1797.00	501.35	508.1	506.82	508.82	0.004523	7.51	407.60	415.70	0.55
USACE-Muncy	10251		Q100	2236.00	501.35	508.8	507.63	509.46	0.003964	7.59	587.52	529.42	0.53
USACE-Muncy	10251		Q200	2745.00	501.35	509.2	508.17	509.95	0.004205	8.16	690.37	564.06	0.55
USACE-Muncy	10251		Q500	3477.00	501.35	509.8	509.05	510.59	0.004453	8.85	822.91	567.84	0.57
USACE-Muncy	10251		SEPT2011	1358.00	501.35	507.2	506.11	507.95	0.005386	7.32	269.31	243.14	0.59
USACE-Muncy	10111		Q2	270.00	500.69	503.6	502.50	503.74	0.003191	3.15	85.72	43.18	0.39
USACE-Muncy	10111		Q5	646.00	500.69	505.0	503.50	505.25	0.003184	4.39	152.25	53.91	0.43

USACE-Muncy	10111		Q10	978.00	500.69	505.9	504.14	506.26	0.003163	5.14	212.12	79.76	0.44
USACE-Muncy	10111		Q25	1429.00	500.69	507.0	504.87	507.51	0.002710	5.62	342.01	189.33	0.43
USACE-Muncy	10111		Q50	1797.00	500.69	507.8	505.48	508.29	0.002337	5.72	478.28	365.83	0.40
USACE-Muncy	10111		Q100	2236.00	500.69	508.7	506.16	509.00	0.001789	5.43	759.84	469.25	0.36
USACE-Muncy	10111		Q200	2745.00	500.69	509.1	506.79	509.46	0.001896	5.81	892.61	516.63	0.38
USACE-Muncy	10111		Q500	3477.00	500.69	509.7	507.83	510.06	0.001983	6.25	1067.78	552.72	0.39
USACE-Muncy	10111		SEPT2011	1358.00	500.69	506.9	504.76	507.33	0.002802	5.58	313.30	146.29	0.43
USACE-Muncy	9994		Q2	270.00	499.82	502.8	502.26	503.15	0.008183	4.59	58.89	33.62	0.61
USACE-Muncy	9994		Q5	646.00	499.82	504.1	503.37	504.66	0.008235	6.25	104.27	40.40	0.66
USACE-Muncy	9994		Q10	978.00	499.82	504.8	504.06	505.65	0.008393	7.40	136.70	46.00	0.69
USACE-Muncy	9994		Q25	1429.00	499.82	506.2	504.89	507.03	0.005712	7.58	228.35	116.46	0.60
USACE-Muncy	9994		Q50	1797.00	499.82	507.3	505.53	507.94	0.003550	6.87	394.41	189.76	0.49
USACE-Muncy	9994		Q100	2236.00	499.82	508.2	506.71	508.74	0.002565	6.43	617.97	339.52	0.43
USACE-Muncy	9994		Q200	2745.00	499.82	508.6	507.39	509.18	0.002758	6.92	725.73	397.25	0.45
USACE-Muncy	9994		Q500	3477.00	499.82	509.2	508.24	509.77	0.002874	7.42	875.01	488.63	0.46
USACE-Muncy	9994		SEPT2011	1358.00	499.82	505.9	504.76	506.82	0.006240	7.67	203.76	87.99	0.63
USACE-Muncy	9886		Q2	270.00	498.83	501.5	501.22	502.00	0.014013	5.69	47.43	29.32	0.79
USACE-Muncy	9886		Q5	646.00	498.83	503.0	502.41	503.64	0.010760	6.66	97.03	38.60	0.74
USACE-Muncy	9886		Q10	978.00	498.83	503.9	503.18	504.73	0.008535	7.15	137.68	44.46	0.69
USACE-Muncy	9886		Q25	1429.00	498.83	505.8	503.97	506.46	0.004065	6.62	233.71	83.88	0.51
USACE-Muncy	9886		Q50	1797.00	498.83	507.0	504.54	507.59	0.002740	6.27	405.48	209.96	0.44
USACE-Muncy	9886		Q100	2236.00	498.83	508.0	505.18	508.48	0.002132	6.08	624.46	517.07	0.39
USACE-Muncy	9886		Q200	2745.00	498.83	508.3	505.84	508.88	0.002645	6.94	699.70	643.86	0.44
USACE-Muncy	9886		Q500	3477.00	498.83	508.7	507.35	509.43	0.003086	7.78	822.75	652.51	0.48
USACE-Muncy	9886		SEPT2011	1358.00	498.83	505.5	503.85	506.19	0.004413	6.66	217.54	62.64	0.53
USACE-Muncy	9807	F	Q2	270.00	498.20	501.0	500.06	501.27	0.004890	3.97	68.08	32.57	0.48
USACE-Muncy	9807	F	Q5	646.00	498.20	502.6	501.25	502.99	0.004456	5.30	126.06	45.88	0.50
USACE-Muncy	9807	F	Q10	978.00	498.20	503.6	502.00	504.16	0.004110	6.06	179.00	55.20	0.50
USACE-Muncy	9807	F	Q25	1429.00	498.20	505.6	502.89	506.13	0.002281	5.79	335.43	223.46	0.40
USACE-Muncy	9807	F	Q50	1797.00	498.20	506.9	503.53	507.34	0.001593	5.46	583.15	461.70	0.34
USACE-Muncy	9807	F	Q100	2236.00	498.20	507.9	504.21	508.29	0.001324	5.39	815.69	687.40	0.32
USACE-Muncy	9807	F	Q200	2745.00	498.20	508.2	504.96	508.64	0.001717	6.26	874.72	722.95	0.37
USACE-Muncy	9807	F	Q500	3477.00	498.20	508.6	506.29	509.17	0.002200	7.28	966.94	750.70	0.42
USACE-Muncy	9807	F	SEPT2011	1358.00	498.20	505.4	502.77	505.85	0.002417	5.79	300.83	166.93	0.41
USACE-Muncy	9781	Footbridge		Bridge									
USACE-Muncy	9757	E	Q2	270.00	497.79	500.7	499.91	501.01	0.005870	4.22	64.03	32.20	0.53
USACE-Muncy	9757	E	Q5	646.00	497.79	502.3	501.11	502.75	0.004932	5.32	122.88	41.97	0.52
USACE-Muncy	9757	E	Q10	978.00	497.79	503.4	501.86	503.92	0.004328	6.02	170.23	47.83	0.51
USACE-Muncy	9757	E	Q25	1429.00	497.79	504.7	502.68	505.39	0.003547	6.56	242.95	71.81	0.49
USACE-Muncy	9757	E	Q50	1797.00	497.79	505.3	503.28	506.13	0.004034	7.45	286.41	114.27	0.53
USACE-Muncy	9757	E	Q100	2236.00	497.79	506.0	503.94	506.86	0.004023	7.95	380.23	186.57	0.54
USACE-Muncy	9757	E	Q200	2745.00	497.79	506.9	504.65	507.63	0.003165	7.67	558.81	482.70	0.48
USACE-Muncy	9757	E	Q500	3477.00	497.79	507.4	506.52	508.25	0.003409	8.33	686.87	539.52	0.51

USACE-Muncy	9757	E	SEPT2011	1358.00	497.79	504.6	502.55	505.19	0.003575	6.45	232.35	64.44	0.49
USACE-Muncy	9680		Q2	270.00	497.32	500.0	499.47	500.43	0.008896	5.03	53.73	28.27	0.64
USACE-Muncy	9680		Q5	646.00	497.32	501.8	500.73	502.31	0.006060	5.83	111.96	38.39	0.58
USACE-Muncy	9680		Q10	978.00	497.32	502.9	501.52	503.54	0.005057	6.50	158.19	45.58	0.55
USACE-Muncy	9680		Q25	1429.00	497.32	504.4	502.37	505.09	0.003899	6.94	238.72	79.76	0.51
USACE-Muncy	9680		Q50	1797.00	497.32	504.8	503.00	505.77	0.004501	7.88	287.65	167.67	0.56
USACE-Muncy	9680		Q100	2236.00	497.32	505.3	503.74	506.43	0.005315	8.94	346.55	303.54	0.61
USACE-Muncy	9680		Q200	2745.00	497.32	505.4	505.04	507.01	0.007425	10.68	366.10	332.38	0.72
USACE-Muncy	9680		Q500	3477.00	497.32	506.2	506.20	507.70	0.006512	10.80	532.24	576.89	0.69
USACE-Muncy	9680		SEPT2011	1358.00	497.32	504.2	502.24	504.88	0.003963	6.85	226.18	64.03	0.51
USACE-Muncy	9587		Q2	270.00	496.60	499.6	498.50	499.83	0.004196	3.92	68.81	29.28	0.45
USACE-Muncy	9587		Q5	646.00	496.60	501.4	499.72	501.82	0.003901	5.07	127.40	34.72	0.46
USACE-Muncy	9587		Q10	978.00	496.60	502.6	500.56	503.11	0.003623	5.85	169.32	37.85	0.47
USACE-Muncy	9587		Q25	1429.00	496.60	504.1	501.48	504.74	0.003101	6.48	230.71	472.43	0.45
USACE-Muncy	9587		Q50	1797.00	496.60	505.1	502.11	505.40	0.001071	4.21	427.32	548.53	0.27
USACE-Muncy	9587		Q100	2236.00	496.60	505.7	502.83	506.00	0.000894	4.04	524.73	585.35	0.25
USACE-Muncy	9587		Q200	2745.00	496.60	506.1	503.61	506.45	0.000884	4.15	600.20	598.51	0.25
USACE-Muncy	9587		Q500	3477.00	496.60	506.7	504.83	507.07	0.000835	4.21	707.21	601.55	0.25
USACE-Muncy	9587		SEPT2011	1358.00	496.60	503.9	501.36	504.53	0.003096	6.35	222.69	439.11	0.45
USACE-Muncy	9480		Q2	270.00	495.78	499.0	498.06	499.30	0.005748	4.51	59.84	26.14	0.53
USACE-Muncy	9480		Q5	646.00	495.78	500.8	499.41	501.33	0.005202	5.63	114.67	32.90	0.53
USACE-Muncy	9480		Q10	978.00	495.78	502.1	500.29	502.67	0.004426	6.32	157.10	37.00	0.51
USACE-Muncy	9480		Q25	1429.00	495.78	503.7	501.24	504.38	0.003475	6.81	221.36	114.55	0.48
USACE-Muncy	9480		Q50	1797.00	495.78	504.7	501.90	505.21	0.002452	6.32	501.57	394.71	0.41
USACE-Muncy	9480		Q100	2236.00	495.78	505.6	502.63	505.87	0.001568	5.45	822.39	473.65	0.34
USACE-Muncy	9480		Q200	2745.00	495.78	506.0	503.42	506.32	0.001563	5.64	993.24	565.68	0.34
USACE-Muncy	9480		Q500	3477.00	495.78	506.6	505.35	506.92	0.001451	5.69	1236.22	576.56	0.33
USACE-Muncy	9480		SEPT2011	1358.00	495.78	503.5	501.10	504.17	0.003468	6.68	213.65	79.44	0.48
USACE-Muncy	9401	D	Q2	272.00	495.21	498.5	497.63	498.83	0.005749	4.32	62.99	29.79	0.52
USACE-Muncy	9401	D	Q5	640.00	495.21	500.6	498.91	500.94	0.003391	4.85	132.60	44.48	0.44
USACE-Muncy	9401	D	Q10	976.00	495.21	501.8	499.71	502.32	0.002978	5.52	178.23	46.78	0.43
USACE-Muncy	9401	D	Q25	1428.00	495.21	503.5	500.54	504.08	0.002437	6.05	238.42	231.53	0.41
USACE-Muncy	9401	D	Q50	1799.00	495.21	504.6	501.17	504.98	0.001693	5.56	671.92	573.05	0.35
USACE-Muncy	9401	D	Q100	2231.00	495.21	505.4	501.83	505.74	0.001401	5.41	1014.41	650.84	0.33
USACE-Muncy	9401	D	Q200	2725.00	495.21	505.8	502.54	506.17	0.001498	5.77	1239.40	681.96	0.34
USACE-Muncy	9401	D	Q500	3456.00	495.21	506.4	504.76	506.75	0.001640	6.28	1494.51	728.33	0.36
USACE-Muncy	9401	D	SEPT2011	1378.00	495.21	503.3	500.46	503.88	0.002506	6.01	231.37	193.93	0.42
USACE-Muncy	9336	Penn Street		Bridge									
USACE-Muncy	9295	C	Q2	272.00	494.58	498.1	496.90	498.39	0.004943	4.50	60.43	22.76	0.49
USACE-Muncy	9295	C	Q5	640.00	494.58	500.0	498.37	500.54	0.004744	5.75	112.11	30.48	0.51
USACE-Muncy	9295	C	Q10	976.00	494.58	501.2	499.37	501.88	0.004716	6.79	148.30	39.97	0.53
USACE-Muncy	9295	C	Q25	1428.00	494.58	502.3	500.39	503.32	0.004970	8.00	189.35	59.39	0.56

USACE-Muncy	9295	C	Q50	1799.00	494.58	502.8	501.14	504.14	0.006166	9.34	205.67	116.33	0.63
USACE-Muncy	9295	C	Q100	2231.00	494.58	503.3	501.97	504.92	0.006855	10.36	307.65	246.95	0.68
USACE-Muncy	9295	C	Q200	2725.00	494.58	504.3	504.26	505.47	0.005161	9.73	657.79	487.78	0.60
USACE-Muncy	9295	C	Q500	3456.00	494.58	504.8	504.79	506.05	0.005450	10.42	897.83	548.18	0.62
USACE-Muncy	9295	C	SEPT2011	1378.00	494.58	502.2	500.29	503.19	0.004892	7.85	185.82	56.77	0.56
USACE-Muncy	9218		Q2	272.00	493.89	497.3	496.62	497.84	0.008708	5.64	48.24	19.85	0.64
USACE-Muncy	9218		Q5	640.00	493.89	499.2	498.17	499.96	0.008999	7.16	89.39	25.85	0.68
USACE-Muncy	9218		Q10	976.00	493.89	500.3	499.26	501.29	0.009085	8.15	120.15	31.10	0.70
USACE-Muncy	9218		Q25	1428.00	493.89	501.5	500.37	502.75	0.008076	9.11	167.86	75.61	0.69
USACE-Muncy	9218		Q50	1799.00	493.89	502.3	501.16	503.62	0.007253	9.49	241.69	287.01	0.67
USACE-Muncy	9218		Q100	2231.00	493.89	503.1	502.68	504.19	0.005688	9.13	541.39	612.55	0.61
USACE-Muncy	9218		Q200	2725.00	493.89	504.0	503.56	504.71	0.004071	8.33	929.24	688.32	0.52
USACE-Muncy	9218		Q500	3456.00	493.89	504.7	504.02	505.36	0.003612	8.33	1291.81	707.51	0.50
USACE-Muncy	9218		SEPT2011	1378.00	493.89	501.4	500.26	502.62	0.008019	8.98	162.40	61.08	0.69
USACE-Muncy	9135	B	Q2	272.00	493.15	496.9	495.80	497.22	0.005702	4.75	57.29	22.34	0.52
USACE-Muncy	9135	B	Q5	640.00	493.15	498.7	497.29	499.30	0.005955	6.16	103.96	28.56	0.56
USACE-Muncy	9135	B	Q10	976.00	493.15	499.8	498.31	500.62	0.005825	7.18	139.01	34.68	0.58
USACE-Muncy	9135	B	Q25	1428.00	493.15	501.1	499.36	502.13	0.005372	8.10	196.63	115.18	0.58
USACE-Muncy	9135	B	Q50	1799.00	493.15	502.0	500.12	503.05	0.005080	8.59	298.03	422.47	0.58
USACE-Muncy	9135	B	Q100	2231.00	493.15	503.0	501.18	503.73	0.003502	7.81	782.50	644.35	0.49
USACE-Muncy	9135	B	Q200	2725.00	493.15	503.8	502.87	504.39	0.002773	7.42	1175.28	662.25	0.44
USACE-Muncy	9135	B	Q500	3456.00	493.15	504.5	503.42	505.08	0.002733	7.75	1516.51	674.60	0.44
USACE-Muncy	9135	B	SEPT2011	1378.00	493.15	501.0	499.26	502.01	0.005288	7.96	191.24	102.55	0.57
USACE-Muncy	9040		Q2	272.00	492.57	496.3	495.29	496.68	0.005751	4.74	57.35	22.78	0.53
USACE-Muncy	9040		Q5	640.00	492.57	498.2	496.75	498.74	0.005872	6.15	104.31	28.78	0.56
USACE-Muncy	9040		Q10	976.00	492.57	499.3	497.76	500.09	0.005567	7.14	139.84	33.47	0.57
USACE-Muncy	9040		Q25	1428.00	492.57	500.6	498.78	501.63	0.005183	8.10	194.90	93.44	0.57
USACE-Muncy	9040		Q50	1799.00	492.57	501.3	499.53	502.54	0.005519	8.98	245.43	192.17	0.60
USACE-Muncy	9040		Q100	2231.00	492.57	501.8	500.43	503.23	0.006326	10.03	388.95	343.79	0.65
USACE-Muncy	9040		Q200	2725.00	492.57	502.3	502.26	503.89	0.006878	10.91	543.49	443.54	0.69
USACE-Muncy	9040		Q500	3456.00	492.57	503.3	503.25	504.63	0.005688	10.74	981.24	592.58	0.64
USACE-Muncy	9040		SEPT2011	1378.00	492.57	500.6	498.67	501.52	0.005017	7.91	190.97	85.19	0.56
USACE-Muncy	8910		Q2	272.00	492.19	495.7	494.45	496.01	0.004299	4.24	64.13	23.89	0.46
USACE-Muncy	8910		Q5	640.00	492.19	497.5	495.87	498.00	0.005227	5.77	110.85	29.86	0.53
USACE-Muncy	8910		Q10	976.00	492.19	498.7	496.87	499.38	0.004692	6.58	150.84	34.88	0.52
USACE-Muncy	8910		Q25	1428.00	492.19	500.1	497.93	500.97	0.004157	7.34	213.27	75.99	0.51
USACE-Muncy	8910		Q50	1799.00	492.19	501.0	498.66	501.83	0.003921	7.73	306.41	228.29	0.51
USACE-Muncy	8910		Q100	2231.00	492.19	501.5	499.45	502.42	0.004112	8.30	413.44	298.18	0.53
USACE-Muncy	8910		Q200	2725.00	492.19	502.1	501.56	502.97	0.003784	8.39	595.73	501.42	0.51
USACE-Muncy	8910		Q500	3456.00	492.19	503.0	502.18	503.71	0.003008	8.02	962.08	541.94	0.46
USACE-Muncy	8910		SEPT2011	1378.00	492.19	500.1	497.83	500.89	0.003976	7.15	209.89	72.15	0.50
USACE-Muncy	8807		Q2	272.00	491.79	495.5	493.75	495.68	0.002063	3.13	86.80	29.98	0.32
USACE-Muncy	8807		Q5	640.00	491.79	497.3	494.99	497.59	0.002335	4.56	144.68	36.44	0.37

USACE-Muncy	8807		Q10	976.00	491.79	498.5	495.84	498.98	0.002347	5.37	194.73	42.68	0.39
USACE-Muncy	8807		Q25	1428.00	491.79	500.0	496.80	500.58	0.002232	6.09	280.59	102.37	0.39
USACE-Muncy	8807		Q50	1799.00	491.79	500.8	497.51	501.45	0.002359	6.69	384.93	198.37	0.41
USACE-Muncy	8807		Q100	2231.00	491.79	501.2	498.27	502.03	0.002907	7.67	482.91	347.41	0.46
USACE-Muncy	8807		Q200	2725.00	491.79	501.6	499.04	502.60	0.003380	8.54	614.32	428.42	0.50
USACE-Muncy	8807		Q500	3456.00	491.79	502.2	500.74	503.32	0.003840	9.48	809.19	475.11	0.54
USACE-Muncy	8807		SEPT2011	1378.00	491.79	500.0	496.70	500.51	0.002122	5.91	276.63	96.77	0.38
USACE-Muncy	8669	A	Q2	279.00	491.54	495.1	493.71	495.32	0.003188	3.63	76.83	30.01	0.40
USACE-Muncy	8669	A	Q5	640.00	491.54	496.9	494.95	497.21	0.003205	4.74	135.81	37.56	0.43
USACE-Muncy	8669	A	Q10	982.00	491.54	498.2	495.84	498.63	0.002787	5.38	189.35	77.92	0.42
USACE-Muncy	8669	A	Q25	1407.00	491.54	499.9	496.72	500.26	0.001757	5.17	452.83	215.72	0.35
USACE-Muncy	8669	A	Q50	1772.00	491.54	500.7	497.34	501.11	0.001625	5.37	648.74	370.67	0.34
USACE-Muncy	8669	A	Q100	2210.00	491.54	501.1	498.05	501.60	0.001998	6.16	776.49	428.08	0.38
USACE-Muncy	8669	A	Q200	2711.00	491.54	501.6	498.79	502.09	0.002235	6.74	1039.26	457.74	0.41
USACE-Muncy	8669	A	Q500	3458.00	491.54	502.1	500.26	502.74	0.002514	7.47	1305.27	466.10	0.44
USACE-Muncy	8669	A	SEPT2011	1391.00	491.54	499.8	496.69	500.20	0.001786	5.18	440.12	214.16	0.35
USACE-Muncy	8568		Q2	279.00	491.46	494.7	493.47	494.97	0.003627	3.84	72.61	28.33	0.42
USACE-Muncy	8568		Q5	640.00	491.46	496.5	494.69	496.86	0.003643	5.12	125.95	73.75	0.45
USACE-Muncy	8568		Q10	982.00	491.46	497.8	495.58	498.32	0.003159	5.80	176.69	251.02	0.44
USACE-Muncy	8568		Q25	1407.00	491.46	499.5	496.47	500.03	0.002474	6.15	263.39	383.67	0.41
USACE-Muncy	8568		Q50	1772.00	491.46	500.3	497.17	500.89	0.002342	6.45	433.37	522.82	0.41
USACE-Muncy	8568		Q100	2210.00	491.46	500.6	497.91	501.32	0.003032	7.50	500.40	556.52	0.47
USACE-Muncy	8568		Q200	2711.00	491.46	500.8	498.80	501.77	0.003672	8.45	580.97	601.47	0.51
USACE-Muncy	8568		Q500	3458.00	491.46	501.7	501.13	502.45	0.003018	8.16	830.81	764.47	0.47
USACE-Muncy	8568		SEPT2011	1391.00	491.46	499.4	496.45	499.97	0.002505	6.15	259.03	372.70	0.41
USACE-Muncy	8489		Q2	279.00	491.43	494.2	493.45	494.56	0.006827	4.70	59.40	28.14	0.57
USACE-Muncy	8489		Q5	640.00	491.43	496.1	494.65	496.52	0.004911	5.42	118.23	271.45	0.52
USACE-Muncy	8489		Q10	982.00	491.43	497.5	495.55	498.06	0.003418	5.76	171.89	441.16	0.46
USACE-Muncy	8489		Q25	1407.00	491.43	499.5	496.38	499.74	0.001506	4.76	418.25	880.81	0.32
USACE-Muncy	8489		Q50	1772.00	491.43	500.4	497.00	500.57	0.000839	3.88	693.48	1067.26	0.25
USACE-Muncy	8489		Q100	2210.00	491.43	500.7	497.68	500.91	0.000961	4.26	784.72	1082.23	0.26
USACE-Muncy	8489		Q200	2711.00	491.43	501.1	499.66	501.27	0.001066	4.61	882.28	1110.00	0.28
USACE-Muncy	8489		Q500	3458.00	491.43	501.8	500.02	502.05	0.000917	4.54	1111.50	1160.95	0.26
USACE-Muncy	8489		SEPT2011	1391.00	491.43	499.4	496.34	499.69	0.001600	4.87	400.08	867.26	0.33
USACE-Muncy	8460	Carpenter St		Bridge									
USACE-Muncy	8410		Q2	279.00	490.81	493.9	492.82	494.11	0.004223	3.82	73.08	33.23	0.45
USACE-Muncy	8410		Q5	640.00	490.81	495.7	493.96	496.00	0.003056	4.71	140.70	250.49	0.42
USACE-Muncy	8410		Q10	982.00	490.81	497.0	494.72	497.46	0.002494	5.22	200.12	513.71	0.40
USACE-Muncy	8410		Q25	1407.00	490.81	498.5	495.54	498.94	0.002216	5.76	289.77	691.03	0.39
USACE-Muncy	8410		Q50	1772.00	490.81	499.2	496.18	499.72	0.002004	5.91	460.85	1030.77	0.38
USACE-Muncy	8410		Q100	2210.00	490.81	499.7	496.82	500.24	0.002299	6.58	587.16	1105.85	0.41
USACE-Muncy	8410		Q200	2711.00	490.81	500.2	497.51	500.81	0.002445	7.08	737.73	1166.35	0.43
USACE-Muncy	8410		Q500	3458.00	490.81	501.1	499.49	501.67	0.002335	7.39	988.97	1255.84	0.43

USACE-Muncy	8410		SEPT2011	1391.00	490.81	498.4	495.51	498.90	0.002224	5.75	284.81	676.01	0.39
USACE-Muncy	8332		Q2	279.00	490.24	493.6	492.37	493.80	0.003514	3.70	75.49	31.00	0.42
USACE-Muncy	8332		Q5	640.00	490.24	495.4	493.52	495.77	0.002847	4.80	137.27	211.56	0.41
USACE-Muncy	8332		Q10	982.00	490.24	496.8	494.32	497.24	0.002562	5.49	191.89	469.53	0.41
USACE-Muncy	8332		Q25	1407.00	490.24	498.3	495.18	498.77	0.002130	5.86	410.65	900.50	0.39
USACE-Muncy	8332		Q50	1772.00	490.24	499.1	495.85	499.56	0.001917	5.98	710.20	1123.14	0.37
USACE-Muncy	8332		Q100	2210.00	490.24	499.5	496.62	500.06	0.002228	6.67	872.28	1217.10	0.41
USACE-Muncy	8332		Q200	2711.00	490.24	500.0	498.28	500.62	0.002387	7.19	1070.67	1246.56	0.43
USACE-Muncy	8332		Q500	3458.00	490.24	500.9	499.35	501.48	0.002267	7.46	1413.92	1358.08	0.42
USACE-Muncy	8332		SEPT2011	1391.00	490.24	498.2	495.16	498.72	0.002163	5.88	392.89	865.44	0.39
USACE-Muncy	8234		Q2	279.00	489.63	493.3	491.75	493.50	0.002568	3.39	82.41	30.04	0.36
USACE-Muncy	8234		Q5	640.00	489.63	495.2	492.96	495.50	0.002397	4.52	146.15	80.97	0.38
USACE-Muncy	8234		Q10	982.00	489.63	496.6	493.83	497.00	0.002230	5.23	201.85	435.74	0.38
USACE-Muncy	8234		Q25	1407.00	489.63	498.4	494.73	498.55	0.000905	3.97	643.76	1243.20	0.25
USACE-Muncy	8234		Q50	1772.00	489.63	499.2	495.37	499.37	0.000557	3.35	1019.51	1361.88	0.20
USACE-Muncy	8234		Q100	2210.00	489.63	499.7	496.10	499.84	0.000541	3.42	1222.17	1393.19	0.20
USACE-Muncy	8234		Q200	2711.00	489.63	500.2	498.21	500.39	0.000501	3.42	1456.04	1427.09	0.20
USACE-Muncy	8234		Q500	3458.00	489.63	501.1	498.53	501.27	0.000414	3.30	1837.72	1487.49	0.18
USACE-Muncy	8234		SEPT2011	1391.00	489.63	498.3	494.68	498.49	0.000957	4.06	616.17	1210.70	0.26
USACE-Muncy	8156		Q2	279.00	489.27	492.8	491.89	493.19	0.006359	4.84	57.70	24.29	0.55
USACE-Muncy	8156		Q5	640.00	489.27	494.6	493.26	495.21	0.004990	6.15	108.61	32.46	0.54
USACE-Muncy	8156		Q10	982.00	489.27	496.0	494.19	496.74	0.004210	6.87	158.51	284.62	0.52
USACE-Muncy	8156		Q25	1407.00	489.27	497.6	495.25	498.38	0.003248	7.17	321.73	1244.02	0.47
USACE-Muncy	8156		Q50	1772.00	489.27	498.6	495.99	499.23	0.002800	7.22	576.39	1431.28	0.45
USACE-Muncy	8156		Q100	2210.00	489.27	498.7	497.23	499.67	0.003865	8.61	628.95	1448.56	0.53
USACE-Muncy	8156		Q200	2711.00	489.27	499.0	498.50	500.19	0.005029	10.00	694.27	1496.56	0.61
USACE-Muncy	8156		Q500	3458.00	489.27	499.9	499.22	501.10	0.004546	10.23	976.93	1688.02	0.59
USACE-Muncy	8156		SEPT2011	1391.00	489.27	497.6	495.21	498.31	0.003326	7.20	304.45	1204.64	0.48
USACE-Muncy	8086		Q2	279.00	489.12	492.6	491.22	492.80	0.003443	3.77	73.95	28.69	0.41
USACE-Muncy	8086		Q5	640.00	489.12	494.5	492.47	494.84	0.002949	4.81	135.54	36.18	0.41
USACE-Muncy	8086		Q10	982.00	489.12	495.9	493.36	496.38	0.002521	5.42	190.53	344.29	0.40
USACE-Muncy	8086		Q25	1407.00	489.12	497.6	494.25	498.08	0.002042	5.78	332.29	1341.99	0.38
USACE-Muncy	8086		Q50	1772.00	489.12	498.5	494.94	499.00	0.002003	6.17	540.25	1638.32	0.38
USACE-Muncy	8086		Q100	2210.00	489.12	498.6	495.68	499.37	0.002923	7.53	569.68	1644.19	0.46
USACE-Muncy	8086		Q200	2711.00	489.12	498.7	496.45	499.82	0.004113	9.02	600.77	1649.55	0.55
USACE-Muncy	8086		Q500	3458.00	489.12	498.8	498.32	500.54	0.006389	11.32	622.45	1653.53	0.68
USACE-Muncy	8086		SEPT2011	1391.00	489.12	497.5	494.21	498.01	0.002076	5.79	319.20	1285.50	0.38
USACE-Muncy	8045	Water St		Bridge									
USACE-Muncy	8006		Q2	279.00	488.27	492.2	491.32	492.54	0.006811	4.80	58.13	26.21	0.57
USACE-Muncy	8006		Q5	640.00	488.27	493.8	492.64	494.39	0.005979	6.16	106.47	33.40	0.57
USACE-Muncy	8006		Q10	982.00	488.27	494.8	493.55	495.63	0.005939	7.25	142.99	67.39	0.60
USACE-Muncy	8006		Q25	1407.00	488.27	495.3	494.47	496.61	0.008789	9.39	160.63	165.55	0.74

USACE-Muncy	8006	Q50	1772.00	488.27	495.6	495.20	497.43	0.011327	11.08	181.85	311.83	0.84
USACE-Muncy	8006	Q100	2210.00	488.27	497.1	497.09	497.75	0.003995	7.77	747.16	1497.26	0.52
USACE-Muncy	8006	Q200	2711.00	488.27	497.6	497.55	498.05	0.003299	7.37	1071.44	1781.72	0.48
USACE-Muncy	8006	Q500	3458.00	488.27	497.7	497.66	498.35	0.004557	8.76	1163.51	1794.67	0.57
USACE-Muncy	8006	SEPT2011	1391.00	488.27	495.3	494.44	496.58	0.008654	9.31	160.20	161.12	0.73
USACE-Muncy	7948	Q2	279.00	487.94	492.0	490.62	492.19	0.003774	3.80	73.49	30.54	0.43
USACE-Muncy	7948	Q5	640.00	487.94	493.7	491.95	494.04	0.003291	4.99	132.76	39.16	0.44
USACE-Muncy	7948	Q10	982.00	487.94	494.7	492.77	495.24	0.003450	5.96	176.32	112.55	0.47
USACE-Muncy	7948	Q25	1407.00	487.94	495.1	493.66	496.01	0.005354	7.81	196.77	204.08	0.59
USACE-Muncy	7948	Q50	1772.00	487.94	495.4	494.33	496.60	0.006641	9.03	226.74	312.23	0.66
USACE-Muncy	7948	Q100	2210.00	487.94	496.0	495.86	497.20	0.006520	9.52	344.44	591.97	0.67
USACE-Muncy	7948	Q200	2711.00	487.94	496.7	496.74	497.55	0.004410	8.45	634.96	1121.13	0.56
USACE-Muncy	7948	Q500	3458.00	487.94	497.5	497.09	498.06	0.003050	7.54	1059.34	1576.94	0.47
USACE-Muncy	7948	SEPT2011	1391.00	487.94	495.1	493.63	495.98	0.005262	7.74	196.31	202.71	0.58
USACE-Muncy	7871	Q2	279.00	487.70	491.8	489.90	491.97	0.001786	2.92	95.92	34.98	0.31
USACE-Muncy	7871	Q5	640.00	487.70	493.6	491.16	493.81	0.001934	4.03	165.62	55.56	0.34
USACE-Muncy	7871	Q10	982.00	487.70	494.7	492.00	494.98	0.001472	4.13	273.88	187.49	0.31
USACE-Muncy	7871	Q25	1407.00	487.70	495.4	492.84	495.63	0.001263	4.11	440.73	368.74	0.29
USACE-Muncy	7871	Q50	1772.00	487.70	496.0	494.06	496.15	0.000931	3.75	697.09	511.56	0.25
USACE-Muncy	7871	Q100	2210.00	487.70	496.6	495.01	496.75	0.000695	3.44	994.71	803.98	0.22
USACE-Muncy	7871	Q200	2711.00	487.70	497.1	495.20	497.23	0.000645	3.46	1223.34	1110.32	0.22
USACE-Muncy	7871	Q500	3458.00	487.70	497.7	495.84	497.85	0.000612	3.54	1517.09	1429.91	0.21
USACE-Muncy	7871	SEPT2011	1391.00	487.70	495.4	492.82	495.61	0.001265	4.11	434.72	348.92	0.29
USACE-Muncy	7798	Q2	279.00	487.56	491.5	490.24	491.76	0.004058	4.04	69.06	27.59	0.45
USACE-Muncy	7798	Q5	640.00	487.56	493.1	491.57	493.58	0.004128	5.58	117.57	33.03	0.49
USACE-Muncy	7798	Q10	982.00	487.56	494.1	492.45	494.76	0.004653	6.82	153.62	95.45	0.54
USACE-Muncy	7798	Q25	1407.00	487.56	495.1	493.38	495.48	0.002571	5.73	393.05	396.26	0.41
USACE-Muncy	7798	Q50	1772.00	487.56	495.9	495.05	496.07	0.001121	4.12	786.55	527.13	0.28
USACE-Muncy	7798	Q100	2210.00	487.56	496.6	495.35	496.69	0.000759	3.61	1111.78	631.90	0.23
USACE-Muncy	7798	Q200	2711.00	487.56	497.0	495.56	497.18	0.000683	3.57	1354.45	906.81	0.22
USACE-Muncy	7798	Q500	3458.00	487.56	497.7	495.81	497.81	0.000632	3.61	1663.04	1345.93	0.22
USACE-Muncy	7798	SEPT2011	1391.00	487.56	495.0	493.34	495.46	0.002660	5.80	381.62	379.55	0.42
USACE-Muncy	7732	Q2	279.00	487.54	491.3	489.88	491.51	0.003563	3.83	72.76	28.09	0.42
USACE-Muncy	7732	Q5	640.00	487.54	492.9	491.21	493.30	0.003897	5.24	123.84	45.97	0.47
USACE-Muncy	7732	Q10	982.00	487.54	494.2	492.12	494.44	0.001699	4.22	281.38	321.14	0.33
USACE-Muncy	7732	Q25	1407.00	487.54	495.2	493.93	495.30	0.000779	3.21	665.20	620.31	0.23
USACE-Muncy	7732	Q50	1772.00	487.54	495.9	494.24	495.99	0.000514	2.80	996.75	700.40	0.19
USACE-Muncy	7732	Q100	2210.00	487.54	496.6	494.53	496.63	0.000416	2.68	1305.30	959.05	0.17
USACE-Muncy	7732	Q200	2711.00	487.54	497.1	494.84	497.12	0.000410	2.77	1541.62	1158.85	0.17
USACE-Muncy	7732	Q500	3458.00	487.54	497.7	495.09	497.75	0.000414	2.93	1842.83	1326.84	0.17
USACE-Muncy	7732	SEPT2011	1391.00	487.54	495.2	493.92	495.27	0.000793	3.22	651.93	617.94	0.23
USACE-Muncy	7672	Q2	279.00	487.51	491.1	489.67	491.29	0.003532	3.82	73.12	28.35	0.42
USACE-Muncy	7672	Q5	640.00	487.51	492.6	490.99	493.07	0.003770	5.40	123.23	40.48	0.47

USACE-Muncy	7672		Q10	982.00	487.51	493.7	491.85	494.26	0.003777	6.29	179.20	162.80	0.49
USACE-Muncy	7672		Q25	1407.00	487.51	494.9	492.80	495.20	0.002050	5.32	486.18	615.23	0.37
USACE-Muncy	7672		Q50	1772.00	487.51	495.7	494.50	495.93	0.001359	4.70	768.59	769.44	0.31
USACE-Muncy	7672		Q100	2210.00	487.51	496.4	494.82	496.58	0.001135	4.57	1013.37	961.63	0.29
USACE-Muncy	7672		Q200	2711.00	487.51	496.9	495.13	497.07	0.001160	4.80	1185.31	1130.14	0.29
USACE-Muncy	7672		Q500	3458.00	487.51	497.5	495.49	497.70	0.001220	5.16	1401.95	1218.37	0.30
USACE-Muncy	7672		SEPT2011	1391.00	487.51	494.9	492.77	495.17	0.002085	5.35	475.13	609.15	0.37
USACE-Muncy	7596		Q2	279.00	487.50	490.7	489.55	491.00	0.004155	4.02	69.49	28.26	0.45
USACE-Muncy	7596		Q5	640.00	487.50	492.3	490.82	492.75	0.004585	5.48	117.49	34.12	0.50
USACE-Muncy	7596		Q10	982.00	487.50	493.3	491.70	493.95	0.004353	6.32	180.01	147.10	0.51
USACE-Muncy	7596		Q25	1407.00	487.50	494.6	492.61	495.02	0.002498	5.63	421.26	489.17	0.40
USACE-Muncy	7596		Q50	1772.00	487.50	495.5	494.06	495.81	0.001654	5.03	689.34	701.57	0.34
USACE-Muncy	7596		Q100	2210.00	487.50	496.2	494.54	496.48	0.001445	5.01	909.77	914.75	0.32
USACE-Muncy	7596		Q200	2711.00	487.50	496.7	494.96	496.96	0.001504	5.32	1073.29	1086.51	0.33
USACE-Muncy	7596		Q500	3458.00	487.50	497.3	495.39	497.58	0.001575	5.71	1285.25	1292.34	0.34
USACE-Muncy	7596		SEPT2011	1391.00	487.50	494.6	492.55	494.99	0.002541	5.65	410.48	483.15	0.41
USACE-Muncy	7534		Q2	279.00	487.51	490.1	489.61	490.57	0.009765	5.34	52.24	26.78	0.67
USACE-Muncy	7534		Q5	640.00	487.51	491.6	490.83	492.32	0.008161	6.58	97.50	32.70	0.66
USACE-Muncy	7534		Q10	982.00	487.51	492.6	491.68	493.51	0.007832	7.69	130.54	79.00	0.67
USACE-Muncy	7534		Q25	1407.00	487.51	494.4	492.57	494.84	0.002942	6.03	444.17	482.29	0.44
USACE-Muncy	7534		Q50	1772.00	487.51	495.4	494.14	495.70	0.001678	5.08	721.75	583.71	0.34
USACE-Muncy	7534		Q100	2210.00	487.51	496.2	494.52	496.39	0.001454	5.05	916.62	747.81	0.32
USACE-Muncy	7534		Q200	2711.00	487.51	496.6	494.86	496.87	0.001538	5.40	1045.40	997.71	0.34
USACE-Muncy	7534		Q500	3458.00	487.51	497.2	495.22	497.48	0.001677	5.91	1206.44	1247.53	0.35
USACE-Muncy	7534		SEPT2011	1391.00	487.51	494.3	492.54	494.80	0.003070	6.11	428.19	477.88	0.45
USACE-Muncy	7491	Green St		Bridge									
USACE-Muncy	7455		Q2	279.00	487.07	489.8	488.92	490.11	0.005285	4.24	65.87	30.09	0.50
USACE-Muncy	7455		Q5	640.00	487.07	491.3	490.07	491.81	0.005267	5.56	115.49	36.00	0.54
USACE-Muncy	7455		Q10	982.00	487.07	492.2	490.91	492.92	0.005623	6.72	147.67	39.51	0.58
USACE-Muncy	7455		Q25	1407.00	487.07	493.1	491.75	494.08	0.005851	7.82	194.06	75.06	0.61
USACE-Muncy	7455		Q50	1772.00	487.07	493.9	492.38	494.95	0.005777	8.48	261.58	250.74	0.62
USACE-Muncy	7455		Q100	2210.00	487.07	494.2	493.18	495.68	0.007190	9.85	309.04	473.05	0.70
USACE-Muncy	7455		Q200	2711.00	487.07	495.0	494.97	496.24	0.006003	9.71	556.95	868.42	0.65
USACE-Muncy	7455		Q500	3458.00	487.07	495.6	495.57	496.86	0.006070	10.31	752.80	947.99	0.66
USACE-Muncy	7455		SEPT2011	1391.00	487.07	493.1	491.72	494.03	0.005921	7.82	190.60	70.58	0.61
USACE-Muncy	7394		Q2	282.00	486.06	489.7	488.21	489.83	0.002580	3.25	86.71	34.31	0.36
USACE-Muncy	7394		Q5	618.00	486.06	491.2	489.26	491.50	0.002661	4.31	144.06	40.28	0.39
USACE-Muncy	7394		Q10	948.00	486.06	492.1	490.05	492.54	0.003067	5.33	181.58	106.21	0.43
USACE-Muncy	7394		Q25	1355.00	486.06	493.1	490.84	493.63	0.002997	5.99	323.21	371.57	0.44
USACE-Muncy	7394		Q50	1731.00	486.06	493.9	491.46	494.43	0.002562	6.07	507.37	761.47	0.42
USACE-Muncy	7394		Q100	2172.00	486.06	494.4	492.15	494.97	0.002837	6.69	621.09	922.24	0.45
USACE-Muncy	7394		Q200	2662.00	486.06	494.8	493.68	495.48	0.003157	7.34	725.54	996.67	0.48
USACE-Muncy	7394		Q500	3401.00	486.06	495.4	494.32	496.15	0.003547	8.16	866.58	1037.03	0.51

USACE-Muncy	7394	SEPT2011	1335.00	486.06	493.0	490.80	493.57	0.003037	5.99	312.19	346.06	0.45
USACE-Muncy	7286	Q2	282.00	485.34	489.2	487.87	489.48	0.003944	4.01	70.38	27.40	0.44
USACE-Muncy	7286	Q5	618.00	485.34	490.6	489.16	491.11	0.004450	5.60	112.94	33.67	0.50
USACE-Muncy	7286	Q10	948.00	485.34	491.2	490.04	492.03	0.006651	7.47	132.02	47.09	0.63
USACE-Muncy	7286	Q25	1355.00	485.34	491.3	490.95	492.94	0.012085	10.29	137.63	61.57	0.85
USACE-Muncy	7286	Q50	1731.00	485.34	492.4	492.38	493.86	0.008841	10.12	213.21	470.07	0.75
USACE-Muncy	7286	Q100	2172.00	485.34	493.3	493.32	494.48	0.006306	9.47	399.73	830.20	0.65
USACE-Muncy	7286	Q200	2662.00	485.34	493.8	493.76	494.95	0.006425	9.98	507.75	925.74	0.66
USACE-Muncy	7286	Q500	3401.00	485.34	494.3	494.27	495.57	0.006904	10.84	636.60	992.29	0.70
USACE-Muncy	7286	SEPT2011	1335.00	485.34	491.3	490.92	492.90	0.011659	10.12	137.94	62.49	0.83
USACE-Muncy	7146	Q2	282.00	484.71	488.7	487.36	488.96	0.003423	3.75	75.26	29.60	0.41
USACE-Muncy	7146	Q5	618.00	484.71	490.1	488.56	490.52	0.003737	5.18	135.86	185.80	0.46
USACE-Muncy	7146	Q10	948.00	484.71	490.7	489.39	491.21	0.003967	5.90	244.58	336.65	0.49
USACE-Muncy	7146	Q25	1355.00	484.71	491.2	490.98	491.69	0.004095	6.41	383.65	483.34	0.51
USACE-Muncy	7146	Q50	1731.00	484.71	491.5	491.36	491.99	0.004256	6.79	479.01	712.18	0.52
USACE-Muncy	7146	Q100	2172.00	484.71	491.8	491.61	492.28	0.004565	7.27	577.43	832.25	0.54
USACE-Muncy	7146	Q200	2662.00	484.71	492.0	491.83	492.56	0.004736	7.64	682.49	918.84	0.56
USACE-Muncy	7146	Q500	3401.00	484.71	492.4	492.12	492.94	0.004958	8.13	825.39	1103.07	0.58
USACE-Muncy	7146	SEPT2011	1335.00	484.71	491.2	490.98	491.67	0.004098	6.40	377.75	475.23	0.51
USACE-Muncy	7006	Q2	282.00	484.39	488.4	486.68	488.59	0.001979	3.10	91.00	31.81	0.32
USACE-Muncy	7006	Q5	618.00	484.39	489.8	487.78	490.08	0.002288	4.31	177.51	293.87	0.37
USACE-Muncy	7006	Q10	948.00	484.39	490.3	488.59	490.70	0.002989	5.32	284.61	529.95	0.43
USACE-Muncy	7006	Q25	1355.00	484.39	490.7	489.88	491.15	0.003440	6.02	434.92	773.46	0.47
USACE-Muncy	7006	Q50	1731.00	484.39	491.0	490.90	491.44	0.003402	6.22	593.21	896.73	0.47
USACE-Muncy	7006	Q100	2172.00	484.39	491.4	491.12	491.71	0.003226	6.29	762.03	975.68	0.46
USACE-Muncy	7006	Q200	2662.00	484.39	491.7	491.30	491.98	0.003107	6.38	929.08	1095.82	0.45
USACE-Muncy	7006	Q500	3401.00	484.39	492.0	491.51	492.35	0.003009	6.53	1145.74	1344.87	0.45
USACE-Muncy	7006	SEPT2011	1335.00	484.39	490.7	489.88	491.14	0.003427	6.00	427.03	764.77	0.46
USACE-Muncy	6921	Q2	282.00	484.31	488.2	486.76	488.38	0.002951	3.53	80.01	31.72	0.39
USACE-Muncy	6921	Q5	618.00	484.31	489.5	487.89	489.85	0.002971	4.66	180.21	330.22	0.42
USACE-Muncy	6921	Q10	948.00	484.31	490.1	488.85	490.43	0.003266	5.32	312.38	743.42	0.44
USACE-Muncy	6921	Q25	1355.00	484.31	490.5	490.20	490.83	0.003481	5.82	456.97	1116.26	0.47
USACE-Muncy	6921	Q50	1731.00	484.31	490.8	490.52	491.13	0.003429	6.02	579.51	1345.85	0.47
USACE-Muncy	6921	Q100	2172.00	484.31	491.1	490.73	491.41	0.003437	6.25	702.53	1547.52	0.47
USACE-Muncy	6921	Q200	2662.00	484.31	491.4	490.94	491.70	0.003437	6.47	825.99	1639.39	0.48
USACE-Muncy	6921	Q500	3401.00	484.31	491.7	491.19	492.06	0.003587	6.87	977.47	1790.29	0.49
USACE-Muncy	6921	SEPT2011	1335.00	484.31	490.5	490.19	490.82	0.003486	5.81	449.93	1106.04	0.47
USACE-Muncy	6791	Q2	282.00	483.99	487.7	486.42	487.93	0.003889	3.95	71.54	29.38	0.44
USACE-Muncy	6791	Q5	618.00	483.99	489.1	487.63	489.43	0.003431	4.98	177.79	225.03	0.45
USACE-Muncy	6791	Q10	948.00	483.99	489.6	489.28	489.98	0.003649	5.59	310.78	505.83	0.47
USACE-Muncy	6791	Q25	1355.00	483.99	490.1	489.81	490.40	0.002974	5.42	488.36	1131.76	0.43
USACE-Muncy	6791	Q50	1731.00	483.99	490.5	490.06	490.71	0.002673	5.38	622.65	1591.57	0.41
USACE-Muncy	6791	Q100	2172.00	483.99	490.8	490.25	491.01	0.002560	5.47	746.86	1837.20	0.41

USACE-Muncy	6791		Q200	2662.00	483.99	491.1	490.45	491.30	0.002501	5.58	864.82	1946.15	0.41
USACE-Muncy	6791		Q500	3401.00	483.99	491.4	490.69	491.64	0.002708	6.01	990.46	2038.54	0.43
USACE-Muncy	6791		SEPT2011	1335.00	483.99	490.1	489.79	490.38	0.003009	5.44	479.80	1109.03	0.43
USACE-Muncy	6678		Q2	282.00	483.68	487.4	485.93	487.54	0.002800	3.28	85.91	35.97	0.37
USACE-Muncy	6678		Q5	618.00	483.68	488.8	487.03	489.07	0.002842	4.39	173.01	285.04	0.40
USACE-Muncy	6678		Q10	948.00	483.68	489.4	487.80	489.63	0.002047	4.16	472.42	718.60	0.35
USACE-Muncy	6678		Q25	1355.00	483.68	490.0	489.41	490.14	0.001266	3.57	812.80	1419.84	0.28
USACE-Muncy	6678		Q50	1731.00	483.68	490.4	489.61	490.48	0.001124	3.52	1023.44	1682.03	0.27
USACE-Muncy	6678		Q100	2172.00	483.68	490.7	489.77	490.78	0.001119	3.65	1202.77	1940.14	0.27
USACE-Muncy	6678		Q200	2662.00	483.68	491.0	489.93	491.07	0.001138	3.80	1373.17	2071.43	0.28
USACE-Muncy	6678		Q500	3401.00	483.68	491.3	490.14	491.39	0.001288	4.18	1549.93	2176.57	0.30
USACE-Muncy	6678		SEPT2011	1335.00	483.68	490.0	489.40	490.11	0.001285	3.58	798.57	1396.68	0.29
USACE-Muncy	6559		Q2	282.00	483.38	487.1	485.37	487.26	0.001833	2.88	98.74	52.25	0.31
USACE-Muncy	6559		Q5	618.00	483.38	488.8	486.42	488.83	0.000874	2.65	463.86	570.23	0.23
USACE-Muncy	6559		Q10	948.00	483.38	489.4	487.60	489.45	0.000693	2.59	814.08	1095.03	0.21
USACE-Muncy	6559		Q25	1355.00	483.38	490.0	488.33	490.02	0.000574	2.55	1179.77	1537.07	0.19
USACE-Muncy	6559		Q50	1731.00	483.38	490.3	488.72	490.37	0.000565	2.63	1408.44	1703.48	0.19
USACE-Muncy	6559		Q100	2172.00	483.38	490.6	489.05	490.67	0.000608	2.83	1600.69	1945.86	0.20
USACE-Muncy	6559		Q200	2662.00	483.38	490.9	489.31	490.96	0.000658	3.03	1783.40	2084.00	0.21
USACE-Muncy	6559		Q500	3401.00	483.38	491.2	489.53	491.25	0.000793	3.42	1967.04	2208.75	0.23
USACE-Muncy	6559		SEPT2011	1335.00	483.38	489.9	488.37	490.00	0.000578	2.55	1164.06	1524.73	0.19
USACE-Muncy	6435		Q2	282.00	482.93	486.7	485.36	486.94	0.003734	4.04	70.06	27.13	0.43
USACE-Muncy	6435		Q5	618.00	482.93	488.4	486.60	488.63	0.002564	4.61	245.95	284.96	0.39
USACE-Muncy	6435		Q10	948.00	482.93	489.0	488.19	489.28	0.002451	4.95	465.31	576.26	0.39
USACE-Muncy	6435		Q25	1355.00	482.93	489.7	488.86	489.89	0.001788	4.61	800.39	980.73	0.34
USACE-Muncy	6435		Q50	1731.00	482.93	490.1	489.22	490.24	0.001762	4.77	1032.18	1340.10	0.34
USACE-Muncy	6435		Q100	2172.00	482.93	490.4	489.52	490.53	0.001892	5.10	1233.33	1543.98	0.36
USACE-Muncy	6435		Q200	2662.00	482.93	490.7	489.73	490.82	0.001776	5.10	1447.69	1715.61	0.35
USACE-Muncy	6435		Q500	3401.00	482.93	490.9	490.15	491.09	0.002030	5.59	1627.79	1971.55	0.37
USACE-Muncy	6435		SEPT2011	1335.00	482.93	489.7	488.83	489.86	0.001803	4.62	785.22	960.79	0.34
USACE-Muncy	6366		Q2	282.00	482.70	485.8	485.42	486.41	0.012417	6.07	46.48	23.03	0.75
USACE-Muncy	6366		Q5	618.00	482.70	486.7	486.74	487.97	0.020393	8.89	69.55	28.35	1.00
USACE-Muncy	6366		Q10	948.00	482.70	488.0	487.98	488.82	0.009324	7.86	180.82	252.04	0.72
USACE-Muncy	6366		Q25	1355.00	482.70	488.5	488.54	489.44	0.009155	8.57	269.48	458.39	0.73
USACE-Muncy	6366		Q50	1731.00	482.70	490.0	489.06	490.11	0.001536	4.26	857.72	1368.23	0.31
USACE-Muncy	6366		Q100	2172.00	482.70	490.2	489.37	490.40	0.001762	4.70	970.49	1534.65	0.34
USACE-Muncy	6366		Q200	2662.00	482.70	490.5	489.39	490.69	0.001872	5.00	1118.98	1784.64	0.35
USACE-Muncy	6366		Q500	3401.00	482.70	490.7	489.69	490.92	0.002512	5.89	1203.13	1892.15	0.41
USACE-Muncy	6366		SEPT2011	1335.00	482.70	488.5	488.51	489.41	0.009222	8.56	263.83	446.94	0.73
USACE-Muncy	6318	Mechanic St		Bridge									
USACE-Muncy	6252		Q2	282.00	482.40	485.7	484.44	485.85	0.002917	2.99	94.27	114.26	0.37
USACE-Muncy	6252		Q5	618.00	482.40	486.1	485.41	486.58	0.007323	5.40	114.69	154.49	0.61

USACE-Muncy	6252	Q10	948.00	482.40	486.5	486.04	487.30	0.010636	7.16	132.69	209.61	0.76
USACE-Muncy	6252	Q25	1355.00	482.40	487.1	487.06	487.91	0.009736	7.73	234.20	359.23	0.75
USACE-Muncy	6252	Q50	1731.00	482.40	487.2	487.10	487.60	0.006059	6.25	441.56	392.28	0.59
USACE-Muncy	6252	Q100	2172.00	482.40	487.4	487.11	487.88	0.007362	7.12	501.11	435.98	0.66
USACE-Muncy	6252	Q200	2662.00	482.40	487.6	487.35	488.17	0.007940	7.70	583.36	495.97	0.69
USACE-Muncy	6252	Q500	3401.00	482.40	487.9	487.71	488.54	0.008499	8.37	696.23	558.03	0.72
USACE-Muncy	6252	SEPT2011	1335.00	482.40	487.0	487.04	487.88	0.009763	7.71	229.50	344.58	0.75
USACE-Muncy	6172	Q2	282.00	482.00	484.4	484.35	485.15	0.022608	7.15	39.47	208.09	1.00
USACE-Muncy	6172	Q5	618.00	482.00	485.5	485.46	485.87	0.009835	6.02	161.14	414.85	0.70
USACE-Muncy	6172	Q10	948.00	482.00	485.8	485.77	486.25	0.011016	6.92	218.63	459.72	0.75
USACE-Muncy	6172	Q25	1355.00	482.00	486.2	486.15	486.64	0.010315	7.34	323.67	567.62	0.75
USACE-Muncy	6172	Q50	1731.00	482.00	486.4	486.36	486.89	0.010810	7.86	392.21	614.38	0.77
USACE-Muncy	6172	Q100	2172.00	482.00	486.6	486.58	487.14	0.010425	8.11	488.31	679.18	0.77
USACE-Muncy	6172	Q200	2662.00	482.00	486.8	486.74	487.38	0.011006	8.64	571.56	711.13	0.80
USACE-Muncy	6172	Q500	3401.00	482.00	487.3	486.95	487.73	0.008641	8.27	805.42	887.09	0.72
USACE-Muncy	6172	SEPT2011	1335.00	482.00	486.1	486.14	486.63	0.010228	7.29	320.69	565.96	0.74
USACE-Muncy	6079	Q2	282.00	481.47	483.8	482.98	483.87	0.003385	3.06	218.75	290.02	0.39
USACE-Muncy	6079	Q5	618.00	481.47	484.8	483.71	484.89	0.001313	2.49	776.41	1343.41	0.26
USACE-Muncy	6079	Q10	948.00	481.47	485.6	484.16	485.65	0.000589	1.96	1428.44	1859.60	0.18
USACE-Muncy	6079	Q25	1355.00	481.47	486.2	484.34	486.18	0.000478	1.93	1955.40	2115.00	0.17
USACE-Muncy	6079	Q50	1731.00	481.47	486.5	484.39	486.54	0.000461	2.01	2348.79	2401.10	0.17
USACE-Muncy	6079	Q100	2172.00	481.47	486.8	484.91	486.86	0.000473	2.13	2735.05	2698.94	0.17
USACE-Muncy	6079	Q200	2662.00	481.47	487.0	485.04	487.07	0.000554	2.37	2990.50	2808.70	0.19
USACE-Muncy	6079	Q500	3401.00	481.47	487.4	485.21	487.46	0.000584	2.55	3512.06	2917.99	0.19
USACE-Muncy	6079	SEPT2011	1335.00	481.47	486.2	484.34	486.19	0.000458	1.90	1964.03	2125.78	0.16
USACE-Muncy	6000	Q2	290.00	481.32	483.6	482.85	483.67	0.001620	1.93	411.69	900.48	0.27
USACE-Muncy	6000	Q5	631.00	481.32	484.8	483.29	484.81	0.000498	1.33	1351.29	1845.09	0.16
USACE-Muncy	6000	Q10	967.00	481.32	485.6	483.50	485.62	0.000253	1.16	2261.25	2332.33	0.12
USACE-Muncy	6000	Q25	1388.00	481.32	486.1	483.76	486.15	0.000248	1.27	2920.70	2663.95	0.12
USACE-Muncy	6000	Q50	1776.00	481.32	486.5	483.92	486.51	0.000255	1.38	3414.78	2930.36	0.12
USACE-Muncy	6000	Q100	2226.00	481.32	486.8	484.09	486.83	0.000274	1.50	3898.55	3034.60	0.13
USACE-Muncy	6000	Q200	2731.00	481.32	487.0	484.25	487.03	0.000330	1.70	4210.82	3082.85	0.14
USACE-Muncy	6000	Q500	3495.00	481.32	487.4	484.47	487.42	0.000362	1.88	4844.00	3188.39	0.15
USACE-Muncy	6000	SEPT2011	1374.00	481.32	486.2	483.65	486.16	0.000240	1.25	2932.53	2669.76	0.12
USACE-Muncy	5923	Q2	290.00	481.10	483.4	482.88	483.50	0.002926	2.56	279.10	1416.45	0.36
USACE-Muncy	5923	Q5	631.00	481.10	484.8	483.32	484.77	0.000664	1.64	1025.21	2153.11	0.18
USACE-Muncy	5923	Q10	967.00	481.10	485.6	483.59	485.59	0.000397	1.54	1620.50	2500.25	0.15
USACE-Muncy	5923	Q25	1388.00	481.10	486.1	483.93	486.13	0.000403	1.72	2081.53	2789.79	0.16
USACE-Muncy	5923	Q50	1776.00	481.10	486.5	484.10	486.48	0.000429	1.88	2453.82	2923.50	0.16
USACE-Muncy	5923	Q100	2226.00	481.10	486.8	484.29	486.80	0.000467	2.06	2814.64	2980.54	0.17
USACE-Muncy	5923	Q200	2731.00	481.10	487.0	484.44	486.99	0.000574	2.35	3037.90	3034.98	0.19
USACE-Muncy	5923	Q500	3495.00	481.10	487.3	484.60	487.38	0.000642	2.61	3530.57	3251.85	0.20
USACE-Muncy	5923	SEPT2011	1374.00	481.10	486.1	483.92	486.14	0.000390	1.69	2091.64	2794.05	0.15

USACE-Muncy	5861		Q2	290.00	480.90	483.2	482.67	483.28	0.003049	2.75	247.24	760.16	0.37
USACE-Muncy	5861		Q5	631.00	480.90	484.7	483.25	484.72	0.000470	1.55	1084.44	1255.63	0.16
USACE-Muncy	5861		Q10	967.00	480.90	485.6	483.49	485.57	0.000326	1.53	1651.02	1681.79	0.14
USACE-Muncy	5861		Q25	1388.00	480.90	486.1	483.71	486.10	0.000360	1.75	2057.23	2165.10	0.15
USACE-Muncy	5861		Q50	1776.00	480.90	486.4	483.87	486.45	0.000409	1.97	2350.94	2359.34	0.16
USACE-Muncy	5861		Q100	2226.00	480.90	486.7	484.04	486.76	0.000506	2.28	2616.44	2548.21	0.18
USACE-Muncy	5861		Q200	2731.00	480.90	486.9	484.20	486.94	0.000647	2.64	2771.96	2660.34	0.21
USACE-Muncy	5861		Q500	3495.00	480.90	487.3	484.44	487.33	0.000581	2.63	3927.59	2845.61	0.20
USACE-Muncy	5861		SEPT2011	1374.00	480.90	486.1	483.70	486.11	0.000349	1.73	2066.65	2172.30	0.15
USACE-Muncy	5810	Main Street		Mult Open									
USACE-Muncy	5745		Q2	290.00	479.90	482.9	481.78	483.08	0.003627	3.53	84.78	334.40	0.42
USACE-Muncy	5745		Q5	631.00	479.90	484.2	482.78	484.53	0.003484	4.39	171.94	858.39	0.44
USACE-Muncy	5745		Q10	967.00	479.90	485.1	483.57	485.40	0.003220	4.93	316.85	1478.28	0.44
USACE-Muncy	5745		Q25	1388.00	479.90	485.6	484.34	486.05	0.003691	5.76	485.38	1950.07	0.48
USACE-Muncy	5745		Q50	1776.00	479.90	485.8	485.12	486.38	0.004727	6.72	578.66	2070.57	0.55
USACE-Muncy	5745		Q100	2226.00	479.90	486.0	485.57	486.72	0.006025	7.78	665.80	2159.91	0.62
USACE-Muncy	5745		Q200	2731.00	479.90	486.7	486.22	486.90	0.002475	5.42	1572.03	2561.90	0.41
USACE-Muncy	5745		Q500	3495.00	479.90	487.1	486.22	487.27	0.002249	5.42	2125.95	2818.05	0.39
USACE-Muncy	5745		SEPT2011	1374.00	479.90	485.6	484.33	486.05	0.003580	5.69	490.47	1965.71	0.47
USACE-Muncy	5651		Q2	290.00	479.72	482.1	481.67	482.47	0.011074	5.12	56.66	339.32	0.71
USACE-Muncy	5651		Q5	631.00	479.72	482.7	482.66	483.66	0.020701	8.03	78.59	482.83	1.00
USACE-Muncy	5651		Q10	967.00	479.72	483.5	483.47	484.58	0.017472	8.50	121.82	781.18	0.95
USACE-Muncy	5651		Q25	1388.00	479.72	484.4	484.43	485.36	0.010385	8.07	266.09	1408.42	0.77
USACE-Muncy	5651		Q50	1776.00	479.72	485.0	485.05	485.78	0.007525	7.67	502.05	1885.11	0.67
USACE-Muncy	5651		Q100	2226.00	479.72	485.4	485.44	486.11	0.006794	7.76	718.84	2046.49	0.65
USACE-Muncy	5651		Q200	2731.00	479.72	485.7	485.69	486.40	0.007230	8.29	867.64	2096.34	0.68
USACE-Muncy	5651		Q500	3495.00	479.72	486.0	485.99	486.76	0.007858	9.02	1069.46	2223.34	0.71
USACE-Muncy	5651		SEPT2011	1374.00	479.72	484.4	484.36	485.34	0.011151	8.24	248.02	1349.20	0.80
USACE-Muncy	5447		Q2	290.00	479.31	481.8	481.06	481.84	0.001089	1.16	378.68	946.07	0.20
USACE-Muncy	5447		Q5	631.00	479.31	482.4	481.35	482.42	0.000933	1.42	725.65	1335.53	0.20
USACE-Muncy	5447		Q10	967.00	479.31	482.8	481.48	482.77	0.001002	1.66	1008.09	1649.42	0.22
USACE-Muncy	5447		Q25	1388.00	479.31	483.0	481.67	483.05	0.001157	1.93	1276.21	1867.09	0.24
USACE-Muncy	5447		Q50	1776.00	479.31	483.2	481.83	483.27	0.001302	2.17	1510.53	2000.63	0.25
USACE-Muncy	5447		Q100	2226.00	479.31	483.4	482.01	483.47	0.001373	2.34	1728.56	2073.09	0.26
USACE-Muncy	5447		Q200	2731.00	479.31	483.6	482.14	483.66	0.001453	2.51	1960.53	2168.21	0.27
USACE-Muncy	5447		Q500	3495.00	479.31	483.8	482.34	483.87	0.001654	2.82	2225.74	2249.76	0.30
USACE-Muncy	5447		SEPT2011	1374.00	479.31	483.0	481.66	483.05	0.001133	1.91	1276.87	1867.49	0.23
USACE-Muncy	5265		Q2	286.00	479.05	481.0	480.93	481.33	0.013983	5.11	77.05	454.86	0.77
USACE-Muncy	5265		Q5	647.00	479.05	481.6	481.58	481.97	0.011911	5.76	202.25	870.47	0.75
USACE-Muncy	5265		Q10	973.00	479.05	482.1	481.90	482.33	0.009870	5.76	365.24	1256.78	0.69
USACE-Muncy	5265		Q25	1402.00	479.05	482.4	482.25	482.60	0.007692	5.44	599.48	1731.66	0.62
USACE-Muncy	5265		Q50	1767.00	479.05	482.6	482.38	482.80	0.006745	5.38	813.99	2018.29	0.59
USACE-Muncy	5265		Q100	2231.00	479.05	482.8	482.53	483.00	0.006183	5.43	1039.86	2172.89	0.57

USACE-Muncy	5265		Q200	2749.00	479.05	483.0	482.69	483.19	0.005426	5.34	1273.17	2297.62	0.54
USACE-Muncy	5265		Q500	3541.00	479.05	483.3	482.87	483.42	0.004111	4.93	1842.93	2434.00	0.48
USACE-Muncy	5265		SEPT2011	1399.00	479.05	482.4	482.25	482.59	0.007702	5.44	597.77	1728.76	0.62
USACE-Muncy	5093		Q2	286.00	478.79	480.4	479.59	480.40	0.002372	1.82	233.11	521.69	0.31
USACE-Muncy	5093		Q5	647.00	478.79	480.9	480.00	480.97	0.002875	2.41	406.51	722.81	0.35
USACE-Muncy	5093		Q10	973.00	478.79	481.3	480.26	481.32	0.003327	2.87	549.82	879.69	0.39
USACE-Muncy	5093		Q25	1402.00	478.79	481.6	480.52	481.66	0.003556	3.27	729.69	1157.85	0.41
USACE-Muncy	5093		Q50	1767.00	478.79	481.8	480.69	481.91	0.003568	3.54	888.96	1366.21	0.42
USACE-Muncy	5093		Q100	2231.00	478.79	482.1	480.88	482.18	0.003343	3.70	1101.01	1595.60	0.42
USACE-Muncy	5093		Q200	2749.00	478.79	482.4	481.15	482.49	0.002768	3.65	1381.61	1854.21	0.39
USACE-Muncy	5093		Q500	3541.00	478.79	482.8	481.41	482.90	0.002103	3.49	2042.28	2062.52	0.34
USACE-Muncy	5093		SEPT2011	1399.00	478.79	481.6	480.51	481.66	0.003549	3.26	729.04	1157.17	0.41
USACE-Muncy	4869		Q2	286.00	478.18	479.7	479.16	479.75	0.003111	2.10	243.97	558.92	0.35
USACE-Muncy	4869		Q5	647.00	478.18	480.3	479.52	480.33	0.002389	2.18	532.59	891.69	0.32
USACE-Muncy	4869		Q10	973.00	478.18	480.6	479.71	480.67	0.002139	2.22	774.25	1088.96	0.31
USACE-Muncy	4869		Q25	1402.00	478.18	481.0	479.93	481.07	0.001705	2.14	1114.24	1273.77	0.28
USACE-Muncy	4869		Q50	1767.00	478.18	481.4	480.07	481.38	0.001393	2.15	1404.25	1368.01	0.26
USACE-Muncy	4869		Q100	2231.00	478.18	481.7	480.26	481.70	0.001253	2.23	1726.04	1577.86	0.25
USACE-Muncy	4869		Q200	2749.00	478.18	482.0	480.40	482.08	0.001099	2.30	2179.70	1677.57	0.24
USACE-Muncy	4869		Q500	3541.00	478.18	482.6	480.56	482.59	0.000820	2.23	2835.01	1852.40	0.22
USACE-Muncy	4869		SEPT2011	1399.00	478.18	481.0	479.93	481.07	0.001683	2.13	1117.84	1275.01	0.28
USACE-Muncy	4601		Q2	286.00	477.59	479.5	477.80	479.50	0.000414	0.84	517.33	656.66	0.13
USACE-Muncy	4601		Q5	647.00	477.59	480.0	478.38	480.03	0.000629	1.19	894.18	788.52	0.17
USACE-Muncy	4601		Q10	973.00	477.59	480.4	478.71	480.38	0.000621	1.27	1193.17	912.82	0.17
USACE-Muncy	4601		Q25	1402.00	477.59	480.8	479.00	480.81	0.000609	1.35	1623.76	1114.90	0.17
USACE-Muncy	4601		Q50	1767.00	477.59	481.1	479.28	481.14	0.000612	1.48	2010.13	1215.18	0.17
USACE-Muncy	4601		Q100	2231.00	477.59	481.5	479.42	481.48	0.000546	1.54	2430.44	1266.85	0.17
USACE-Muncy	4601		Q200	2749.00	477.59	481.9	479.55	481.89	0.000467	1.57	2965.93	1342.10	0.16
USACE-Muncy	4601		Q500	3541.00	477.59	482.4	479.67	482.44	0.000382	1.59	3746.52	1497.06	0.15
USACE-Muncy	4601		SEPT2011	1399.00	477.59	480.8	478.99	480.81	0.000597	1.34	1633.03	1117.96	0.17
USACE-Muncy	4348		Q2	286.00	477.10	479.3	478.85	479.33	0.001161	1.61	399.10	638.18	0.23
USACE-Muncy	4348		Q5	647.00	477.10	479.8	479.08	479.82	0.001090	1.75	741.28	779.52	0.23
USACE-Muncy	4348		Q10	973.00	477.10	480.2	479.20	480.19	0.000906	1.72	1049.13	878.57	0.21
USACE-Muncy	4348		Q25	1402.00	477.10	480.6	479.39	480.64	0.000736	1.72	1471.24	1044.55	0.19
USACE-Muncy	4348		Q50	1767.00	477.10	481.0	479.49	480.97	0.000673	1.79	1846.88	1174.62	0.19
USACE-Muncy	4348		Q100	2231.00	477.10	481.3	479.59	481.33	0.000604	1.84	2284.03	1262.03	0.18
USACE-Muncy	4348		Q200	2749.00	477.10	481.7	479.70	481.77	0.000486	1.80	2848.64	1319.07	0.17
USACE-Muncy	4348		Q500	3541.00	477.10	482.3	479.86	482.34	0.000391	1.78	3620.19	1423.74	0.15
USACE-Muncy	4348		SEPT2011	1399.00	477.10	480.6	479.38	480.65	0.000716	1.70	1484.12	1050.01	0.19
USACE-Muncy	4014		Q2	286.00	476.50	478.7	477.67	478.71	0.002967	2.53	220.32	443.54	0.36
USACE-Muncy	4014		Q5	647.00	476.50	479.3	478.62	479.30	0.002005	2.33	557.84	679.00	0.30
USACE-Muncy	4014		Q10	973.00	476.50	479.8	478.82	479.84	0.001100	1.88	986.67	903.02	0.23
USACE-Muncy	4014		Q25	1402.00	476.50	480.4	479.01	480.37	0.000742	1.78	1520.35	1076.60	0.19

USACE-Muncy	4014	Q50	1767.00	476.50	480.7	479.13	480.75	0.000582	1.72	1943.97	1173.94	0.18
USACE-Muncy	4014	Q100	2231.00	476.50	481.1	479.25	481.13	0.000512	1.75	2402.61	1219.31	0.17
USACE-Muncy	4014	Q200	2749.00	476.50	481.6	479.37	481.61	0.000409	1.71	3001.10	1300.07	0.15
USACE-Muncy	4014	Q500	3541.00	476.50	482.2	479.56	482.21	0.000347	1.73	3798.89	1366.89	0.14
USACE-Muncy	4014	SEPT2011	1399.00	476.50	480.4	479.01	480.39	0.000707	1.75	1542.90	1083.30	0.19
USACE-Muncy	3779	Q2	286.00	476.17	478.3	477.05	478.33	0.000991	1.46	302.65	520.72	0.21
USACE-Muncy	3779	Q5	647.00	476.17	479.0	477.50	478.99	0.000897	1.64	749.95	868.19	0.21
USACE-Muncy	3779	Q10	973.00	476.17	479.7	477.88	479.69	0.000377	1.20	1489.36	1209.26	0.14
USACE-Muncy	3779	Q25	1402.00	476.17	480.3	478.36	480.26	0.000287	1.18	2243.23	1381.57	0.12
USACE-Muncy	3779	Q50	1767.00	476.17	480.7	478.50	480.66	0.000237	1.17	2803.71	1437.09	0.12
USACE-Muncy	3779	Q100	2231.00	476.17	481.0	478.66	481.05	0.000218	1.21	3375.34	1485.37	0.11
USACE-Muncy	3779	Q200	2749.00	476.17	481.5	478.80	481.54	0.000185	1.22	4116.96	1530.15	0.11
USACE-Muncy	3779	Q500	3541.00	476.17	482.1	479.03	482.15	0.000165	1.26	5056.21	1588.30	0.10
USACE-Muncy	3779	SEPT2011	1399.00	476.17	480.3	478.36	480.29	0.000273	1.16	2278.79	1386.01	0.12
USACE-Muncy	3505	Q2	286.00	475.70	478.1	476.74	478.07	0.001040	1.56	287.25	416.79	0.21
USACE-Muncy	3505	Q5	647.00	475.70	478.8	477.24	478.77	0.000897	1.70	676.31	737.59	0.21
USACE-Muncy	3505	Q10	973.00	475.70	479.6	477.57	479.60	0.000326	1.18	1514.10	1235.04	0.13
USACE-Muncy	3505	Q25	1402.00	475.70	480.2	478.11	480.20	0.000246	1.17	2316.96	1456.30	0.12
USACE-Muncy	3505	Q50	1767.00	475.70	480.6	478.27	480.60	0.000223	1.20	2929.89	1543.27	0.11
USACE-Muncy	3505	Q100	2231.00	475.70	481.0	478.44	481.00	0.000202	1.23	3546.57	1587.80	0.11
USACE-Muncy	3505	Q200	2749.00	475.70	481.5	478.59	481.50	0.000169	1.21	4349.34	1644.25	0.10
USACE-Muncy	3505	Q500	3541.00	475.70	482.1	478.81	482.11	0.000143	1.22	5366.20	1678.23	0.10
USACE-Muncy	3505	SEPT2011	1399.00	475.70	480.2	478.11	480.23	0.000233	1.14	2359.56	1471.22	0.11
USACE-Muncy	3281	Q2	286.00	475.18	477.8	476.53	477.80	0.001397	2.01	242.10	507.92	0.26
USACE-Muncy	3281	Q5	647.00	475.18	478.6	477.28	478.58	0.000801	1.82	780.06	858.14	0.20
USACE-Muncy	3281	Q10	973.00	475.18	479.5	477.89	479.55	0.000214	1.17	1819.08	1313.99	0.11
USACE-Muncy	3281	Q25	1402.00	475.18	480.1	478.08	480.16	0.000159	1.13	2679.86	1553.08	0.10
USACE-Muncy	3281	Q50	1767.00	475.18	480.6	478.26	480.56	0.000143	1.14	3339.15	1646.45	0.09
USACE-Muncy	3281	Q100	2231.00	475.18	481.0	478.39	480.96	0.000138	1.18	3998.47	1671.30	0.09
USACE-Muncy	3281	Q200	2749.00	475.18	481.5	478.57	481.47	0.000117	1.16	4844.21	1716.57	0.09
USACE-Muncy	3281	Q500	3541.00	475.18	482.1	478.75	482.09	0.000105	1.18	5896.93	1828.17	0.08
USACE-Muncy	3281	SEPT2011	1399.00	475.18	480.2	478.09	480.19	0.000151	1.10	2728.67	1564.34	0.10
USACE-Muncy	3070	Q2	286.00	474.48	477.4	476.69	477.43	0.002049	2.43	253.31	597.93	0.31
USACE-Muncy	3070	Q5	647.00	474.48	478.4	477.38	478.44	0.000458	1.39	994.98	893.34	0.15
USACE-Muncy	3070	Q10	973.00	474.48	479.5	477.55	479.51	0.000136	0.93	2173.16	1362.79	0.09
USACE-Muncy	3070	Q25	1402.00	474.48	480.1	477.70	480.12	0.000114	0.94	3104.61	1660.79	0.08
USACE-Muncy	3070	Q50	1767.00	474.48	480.5	477.81	480.53	0.000115	1.01	3816.67	1804.02	0.08
USACE-Muncy	3070	Q100	2231.00	474.48	480.9	477.93	480.93	0.000111	1.05	4540.08	1922.86	0.08
USACE-Muncy	3070	Q200	2749.00	474.48	481.4	478.06	481.44	0.000093	1.02	5472.62	2017.17	0.08
USACE-Muncy	3070	Q500	3541.00	474.48	482.1	478.23	482.06	0.000083	1.04	6626.81	2159.30	0.07
USACE-Muncy	3070	SEPT2011	1399.00	474.48	480.2	477.70	480.16	0.000108	0.93	3159.33	1675.03	0.08
USACE-Muncy	2837	Q2	286.00	473.98	477.1	476.17	477.11	0.000983	1.59	428.95	888.95	0.21
USACE-Muncy	2837	Q5	647.00	473.98	478.4	476.72	478.40	0.000099	0.69	2037.77	1546.47	0.07

USACE-Muncy	2837		Q10	973.00	473.98	479.5	477.05	479.49	0.000035	0.51	3857.46	1811.51	0.04
USACE-Muncy	2837		Q25	1402.00	473.98	480.1	477.18	480.11	0.000034	0.55	5035.73	1975.35	0.05
USACE-Muncy	2837		Q50	1767.00	473.98	480.5	477.27	480.52	0.000035	0.59	5856.79	2032.62	0.05
USACE-Muncy	2837		Q100	2231.00	473.98	480.9	477.36	480.92	0.000037	0.64	6670.03	2072.06	0.05
USACE-Muncy	2837		Q200	2749.00	473.98	481.4	477.45	481.43	0.000035	0.66	7717.23	2096.12	0.05
USACE-Muncy	2837		Q500	3541.00	473.98	482.0	477.58	482.05	0.000035	0.70	9000.12	2158.68	0.05
USACE-Muncy	2837		SEPT2011	1399.00	473.98	480.1	477.17	480.14	0.000033	0.54	5101.63	1979.37	0.04
USACE-Muncy	2682		Q2	286.00	473.42	476.9	476.36	476.96	0.000920	1.59	444.01	809.22	0.21
USACE-Muncy	2682		Q5	647.00	473.42	478.4	476.78	478.38	0.000082	0.70	2019.89	1416.20	0.07
USACE-Muncy	2682		Q10	973.00	473.42	479.5	476.91	479.49	0.000034	0.54	3880.34	1950.67	0.05
USACE-Muncy	2682		Q25	1402.00	473.42	480.1	477.04	480.10	0.000035	0.60	5145.71	2104.56	0.05
USACE-Muncy	2682		Q50	1767.00	473.42	480.5	477.13	480.52	0.000034	0.62	6015.69	2144.49	0.05
USACE-Muncy	2682		Q100	2231.00	473.42	480.9	477.24	480.91	0.000035	0.66	6862.83	2163.14	0.05
USACE-Muncy	2682		Q200	2749.00	473.42	481.4	477.33	481.42	0.000033	0.68	7949.11	2172.20	0.05
USACE-Muncy	2682		Q500	3541.00	473.42	482.0	477.46	482.05	0.000033	0.72	9278.79	2182.01	0.05
USACE-Muncy	2682		SEPT2011	1399.00	473.42	480.1	477.03	480.14	0.000033	0.59	5216.24	2109.45	0.05
USACE-Muncy	2540		Q2	279.00	473.18	476.8	476.06	476.82	0.001031	1.83	392.28	880.98	0.22
USACE-Muncy	2540		Q5	609.00	473.18	478.4	476.70	478.37	0.000052	0.56	2321.34	1565.71	0.05
USACE-Muncy	2540		Q10	930.00	473.18	479.5	476.85	479.48	0.000025	0.47	4442.37	2165.06	0.04
USACE-Muncy	2540		Q25	1327.00	473.18	480.1	476.99	480.10	0.000023	0.49	5796.17	2269.53	0.04
USACE-Muncy	2540		Q50	1686.00	473.18	480.5	477.07	480.51	0.000023	0.51	6713.19	2287.42	0.04
USACE-Muncy	2540		Q100	2099.00	473.18	480.9	477.16	480.91	0.000023	0.55	7604.15	2306.57	0.04
USACE-Muncy	2540		Q200	2605.00	473.18	481.4	477.25	481.42	0.000023	0.57	8747.58	2363.03	0.04
USACE-Muncy	2540		Q500	3383.00	473.18	482.0	477.35	482.04	0.000024	0.62	10147.00	2401.19	0.04
USACE-Muncy	2540		SEPT2011	1390.00	473.18	480.1	477.00	480.13	0.000024	0.50	5870.77	2271.18	0.04
USACE-Muncy	2343		Q2	279.00	472.63	476.7	475.78	476.69	0.000522	1.62	504.54	1040.16	0.16
USACE-Muncy	2343		Q5	609.00	472.63	478.4	476.33	478.37	0.000033	0.55	2754.60	1663.97	0.04
USACE-Muncy	2343		Q10	930.00	472.63	479.5	476.64	479.48	0.000017	0.45	4824.70	2053.95	0.03
USACE-Muncy	2343		Q25	1327.00	472.63	480.1	476.76	480.10	0.000019	0.51	6185.48	2319.62	0.04
USACE-Muncy	2343		Q50	1686.00	472.63	480.5	476.86	480.51	0.000020	0.54	7140.16	2332.91	0.04
USACE-Muncy	2343		Q100	2099.00	472.63	480.9	476.98	480.91	0.000021	0.57	8069.21	2336.48	0.04
USACE-Muncy	2343		Q200	2605.00	472.63	481.4	477.08	481.42	0.000020	0.59	9260.90	2338.97	0.04
USACE-Muncy	2343		Q500	3383.00	472.63	482.0	477.20	482.04	0.000021	0.63	10717.48	2342.01	0.04
USACE-Muncy	2343		SEPT2011	1390.00	472.63	480.1	476.80	480.13	0.000020	0.53	6262.73	2320.57	0.04
USACE-Muncy	2163		Q2	279.00	472.11	476.6	474.75	476.62	0.000331	1.31	587.59	950.38	0.13
USACE-Muncy	2163		Q5	609.00	472.11	478.4	476.29	478.36	0.000029	0.53	2670.27	1459.56	0.04
USACE-Muncy	2163		Q10	930.00	472.11	479.5	476.48	479.47	0.000018	0.48	4513.11	1926.51	0.03
USACE-Muncy	2163		Q25	1327.00	472.11	480.1	476.65	480.09	0.000020	0.54	5777.25	2137.33	0.04
USACE-Muncy	2163		Q50	1686.00	472.11	480.5	476.74	480.50	0.000023	0.60	6677.15	2267.30	0.04
USACE-Muncy	2163		Q100	2099.00	472.11	480.9	476.86	480.90	0.000024	0.64	7579.17	2269.22	0.04
USACE-Muncy	2163		Q200	2605.00	472.11	481.4	476.96	481.41	0.000023	0.65	8736.85	2271.66	0.04
USACE-Muncy	2163		Q500	3383.00	472.11	482.0	477.11	482.03	0.000024	0.70	10151.32	2275.24	0.04
USACE-Muncy	2163		SEPT2011	1390.00	472.11	480.1	476.66	480.13	0.000021	0.56	5848.14	2144.26	0.04

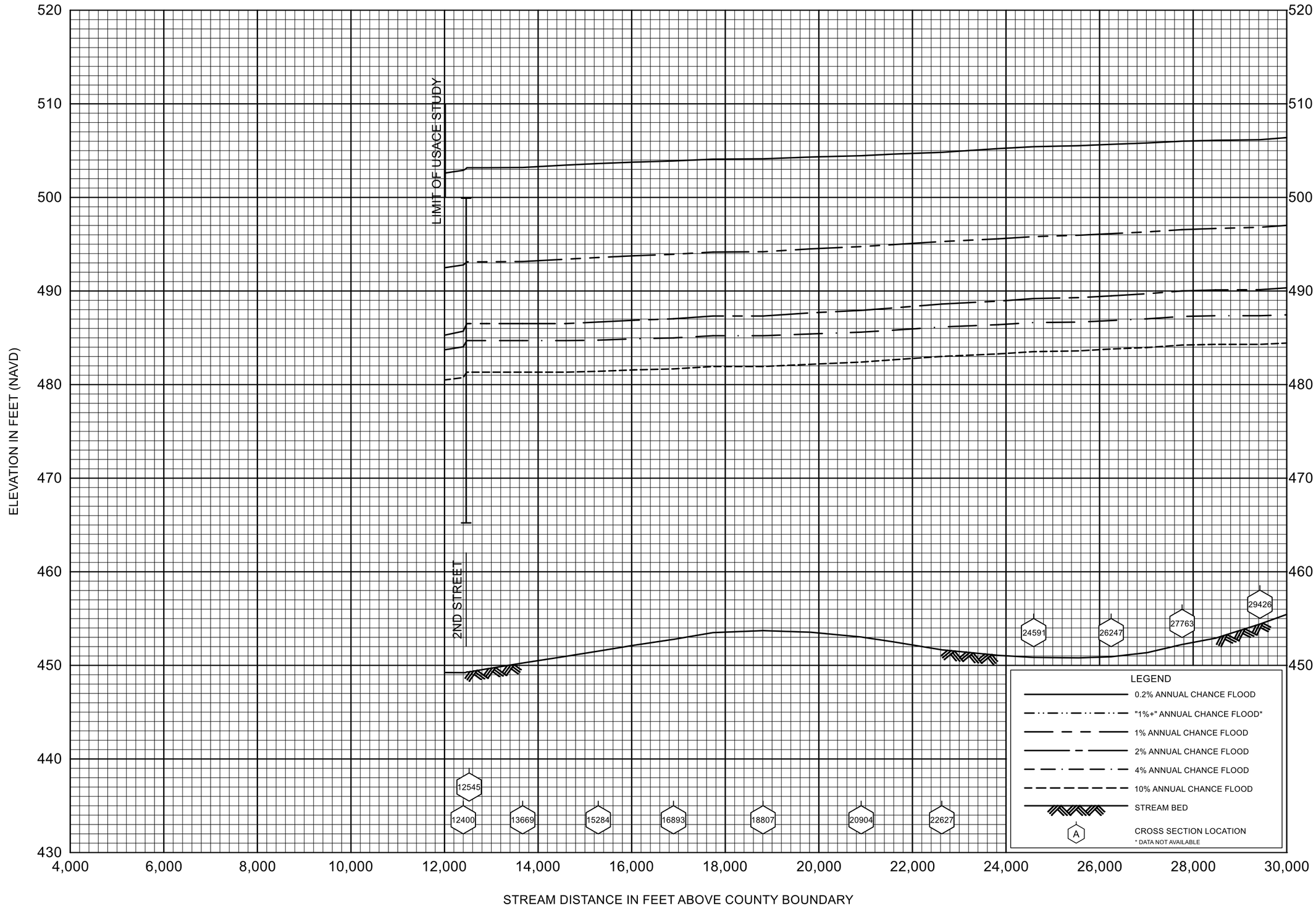
USACE-Muncy	1978	Q2	279.00	471.47	476.5	474.05	476.55	0.000435	1.48	429.48	685.66	0.15
USACE-Muncy	1978	Q5	609.00	471.47	478.4	475.30	478.36	0.000041	0.63	2259.76	1372.71	0.05
USACE-Muncy	1978	Q10	930.00	471.47	479.5	476.46	479.47	0.000023	0.54	4140.06	1932.69	0.04
USACE-Muncy	1978	Q25	1327.00	471.47	480.1	476.68	480.09	0.000025	0.60	5414.98	2142.85	0.04
USACE-Muncy	1978	Q50	1686.00	471.47	480.5	476.81	480.50	0.000027	0.65	6301.82	2182.28	0.04
USACE-Muncy	1978	Q100	2099.00	471.47	480.9	476.95	480.90	0.000028	0.68	7173.50	2197.08	0.04
USACE-Muncy	1978	Q200	2605.00	471.47	481.4	477.08	481.41	0.000027	0.70	8294.88	2200.20	0.04
USACE-Muncy	1978	Q500	3383.00	471.47	482.0	477.25	482.03	0.000027	0.75	9664.71	2204.16	0.05
USACE-Muncy	1978	SEPT2011	1390.00	471.47	480.1	476.70	480.12	0.000026	0.62	5485.50	2149.03	0.04
USACE-Muncy	1773	Q2	279.00	471.19	476.5	473.96	476.47	0.000338	1.33	477.67	684.35	0.13
USACE-Muncy	1773	Q5	609.00	471.19	478.3	475.46	478.35	0.000039	0.62	2227.02	1328.93	0.05
USACE-Muncy	1773	Q10	930.00	471.19	479.5	476.29	479.47	0.000022	0.54	3924.16	1692.53	0.04
USACE-Muncy	1773	Q25	1327.00	471.19	480.1	476.49	480.08	0.000027	0.63	5034.86	1891.18	0.04
USACE-Muncy	1773	Q50	1686.00	471.19	480.5	476.62	480.49	0.000028	0.67	5815.22	1921.89	0.04
USACE-Muncy	1773	Q100	2099.00	471.19	480.9	476.74	480.89	0.000030	0.72	6591.88	2000.26	0.05
USACE-Muncy	1773	Q200	2605.00	471.19	481.4	476.91	481.40	0.000030	0.76	7626.53	2046.37	0.05
USACE-Muncy	1773	Q500	3383.00	471.19	482.0	477.07	482.02	0.000031	0.81	8900.67	2050.36	0.05
USACE-Muncy	1773	SEPT2011	1390.00	471.19	480.1	476.52	480.12	0.000029	0.65	5096.41	1893.02	0.04
USACE-Muncy	1618	Q2	279.00	470.98	476.4	472.75	476.44	0.000135	1.06	529.19	624.36	0.09
USACE-Muncy	1618	Q5	609.00	470.98	478.3	473.75	478.34	0.000035	0.69	2166.19	1207.06	0.05
USACE-Muncy	1618	Q10	930.00	470.98	479.5	474.47	479.46	0.000022	0.62	3849.42	1678.36	0.04
USACE-Muncy	1618	Q25	1327.00	470.98	480.1	475.56	480.08	0.000027	0.72	4934.39	1843.28	0.04
USACE-Muncy	1618	Q50	1686.00	470.98	480.5	476.41	480.49	0.000028	0.76	5693.85	1873.99	0.05
USACE-Muncy	1618	Q100	2099.00	470.98	480.9	476.61	480.89	0.000031	0.82	6444.72	1910.61	0.05
USACE-Muncy	1618	Q200	2605.00	470.98	481.4	476.81	481.40	0.000032	0.86	7438.52	2002.86	0.05
USACE-Muncy	1618	Q500	3383.00	470.98	482.0	477.05	482.02	0.000034	0.93	8726.27	2082.89	0.05
USACE-Muncy	1618	SEPT2011	1390.00	470.98	480.1	475.70	480.11	0.000028	0.74	4993.93	1845.17	0.05
USACE-Muncy	1436	Q2	279.00	470.49	476.4	472.95	476.39	0.000369	1.69	311.22	360.02	0.15
USACE-Muncy	1436	Q5	609.00	470.49	478.3	474.17	478.33	0.000109	1.19	1284.66	682.53	0.08
USACE-Muncy	1436	Q10	930.00	470.49	479.4	475.30	479.46	0.000075	1.10	2233.45	1095.71	0.07
USACE-Muncy	1436	Q25	1327.00	470.49	480.1	476.58	480.07	0.000092	1.29	2883.11	1700.38	0.08
USACE-Muncy	1436	Q50	1686.00	470.49	480.5	476.83	480.48	0.000100	1.39	3340.35	1886.96	0.09
USACE-Muncy	1436	Q100	2099.00	470.49	480.9	477.11	480.88	0.000107	1.49	3810.82	2023.47	0.09
USACE-Muncy	1436	Q200	2605.00	470.49	481.4	477.34	481.39	0.000104	1.52	4420.80	2041.85	0.09
USACE-Muncy	1436	Q500	3383.00	470.49	482.0	477.65	482.01	0.000107	1.62	5163.64	2043.87	0.09
USACE-Muncy	1436	SEPT2011	1390.00	470.49	480.1	476.63	480.10	0.000097	1.33	2917.86	1724.48	0.08
USACE-Muncy	1262	Q2	279.00	470.23	476.3	472.79	476.33	0.000357	1.68	342.29	492.63	0.14
USACE-Muncy	1262	Q5	609.00	470.23	478.3	474.08	478.31	0.000084	1.06	1508.67	906.72	0.07
USACE-Muncy	1262	Q10	930.00	470.23	479.4	475.12	479.44	0.000059	0.99	2346.80	1563.89	0.06
USACE-Muncy	1262	Q25	1327.00	470.23	480.0	476.57	480.06	0.000069	1.13	2840.91	1888.98	0.07
USACE-Muncy	1262	Q50	1686.00	470.23	480.5	476.80	480.46	0.000084	1.28	3168.98	1916.77	0.08
USACE-Muncy	1262	Q100	2099.00	470.23	480.8	477.00	480.86	0.000096	1.42	3487.97	1918.27	0.08
USACE-Muncy	1262	Q200	2605.00	470.23	481.4	477.19	481.37	0.000104	1.53	3901.03	1920.17	0.09
USACE-Muncy	1262	Q500	3383.00	470.23	482.0	477.40	481.99	0.000119	1.71	4403.57	1922.23	0.10

USACE-Muncy	1262		SEPT2011	1390.00	470.23	480.1	476.60	480.09	0.000074	1.17	2865.53	1891.89	0.07
USACE-Muncy	1092		Q2	279.00	469.91	476.3	472.03	476.29	0.000181	1.40	368.60	479.44	0.11
USACE-Muncy	1092		Q5	609.00	469.91	478.3	473.14	478.30	0.000077	1.13	1253.94	1448.23	0.07
USACE-Muncy	1092		Q10	930.00	469.91	479.4	473.95	479.43	0.000066	1.15	1813.86	1831.70	0.07
USACE-Muncy	1092		Q25	1327.00	469.91	480.0	474.94	480.04	0.000085	1.37	2114.28	1833.23	0.08
USACE-Muncy	1092		Q50	1686.00	469.91	480.4	475.88	480.45	0.000104	1.56	2312.49	1834.23	0.09
USACE-Muncy	1092		Q100	2099.00	469.91	480.8	476.79	480.84	0.000126	1.77	2504.55	1835.18	0.10
USACE-Muncy	1092		Q200	2605.00	469.91	481.3	477.06	481.34	0.000145	1.96	2753.91	1836.40	0.11
USACE-Muncy	1092		Q500	3383.00	469.91	481.9	477.39	481.96	0.000176	2.24	3055.58	1837.88	0.12
USACE-Muncy	1092		SEPT2011	1390.00	469.91	480.1	475.40	480.07	0.000091	1.43	2128.64	1833.30	0.08
USACE-Muncy	987		Q2	279.00	469.70	476.2	471.60	476.27	0.000178	1.42	208.52	425.47	0.11
USACE-Muncy	987		Q5	609.00	469.70	478.3	472.67	478.29	0.000117	1.42	804.70	1044.81	0.09
USACE-Muncy	987		Q10	930.00	469.70	479.4	473.48	479.42	0.000110	1.51	1146.77	1750.71	0.09
USACE-Muncy	987		Q25	1327.00	469.70	480.0	474.27	480.03	0.000149	1.84	1327.46	1767.87	0.11
USACE-Muncy	987		Q50	1686.00	469.70	480.4	474.88	480.43	0.000189	2.13	1445.61	1768.98	0.12
USACE-Muncy	987		Q100	2099.00	469.70	480.8	476.92	480.81	0.000235	2.44	1559.43	1770.00	0.14
USACE-Muncy	987		Q200	2605.00	469.70	481.3	477.32	481.31	0.000276	2.73	1708.27	1771.33	0.15
USACE-Muncy	987		Q500	3383.00	469.70	481.8	477.75	481.92	0.000346	3.17	1886.53	1772.83	0.17
USACE-Muncy	987		SEPT2011	1390.00	469.70	480.0	474.37	480.05	0.000161	1.92	1335.41	1767.96	0.11
USACE-Muncy	928	Railroad		Culvert									
USACE-Muncy	874		Q2	279.00	468.59	472.4	470.66	472.48	0.001827	2.87	142.72	186.16	0.31
USACE-Muncy	874		Q5	609.00	468.59	473.7	472.42	473.73	0.000990	2.47	392.83	197.03	0.23
USACE-Muncy	874		Q10	930.00	468.59	474.2	472.81	474.27	0.001175	2.95	495.71	205.27	0.26
USACE-Muncy	874		Q25	1327.00	468.59	474.7	473.13	474.84	0.001311	3.40	606.58	230.20	0.28
USACE-Muncy	874		Q50	1686.00	468.59	475.2	473.37	475.31	0.001379	3.71	698.46	283.29	0.29
USACE-Muncy	874		Q100	2099.00	468.59	475.7	473.60	475.81	0.001437	4.02	794.90	312.05	0.30
USACE-Muncy	874		Q200	2605.00	468.59	476.2	473.82	476.35	0.001496	4.36	902.73	378.73	0.31
USACE-Muncy	874		Q500	3383.00	468.59	477.0	474.18	477.17	0.001507	4.76	1066.40	520.57	0.32
USACE-Muncy	874		SEPT2011	1390.00	468.59	474.8	473.17	474.93	0.001326	3.46	623.13	234.79	0.28
USACE-Muncy	807		Q2	279.00	467.94	472.4	469.39	472.39	0.000286	1.32	233.75	207.02	0.13
USACE-Muncy	807		Q5	609.00	467.94	473.6	470.12	473.68	0.000333	1.66	504.35	215.50	0.14
USACE-Muncy	807		Q10	930.00	467.94	474.2	470.70	474.21	0.000480	2.10	614.31	218.84	0.17
USACE-Muncy	807		Q25	1327.00	467.94	474.7	471.32	474.77	0.000605	2.52	733.71	222.77	0.20
USACE-Muncy	807		Q50	1686.00	467.94	475.1	471.79	475.24	0.000677	2.82	834.31	226.28	0.21
USACE-Muncy	807		Q100	2099.00	467.94	475.6	472.82	475.72	0.000741	3.11	951.80	291.30	0.22
USACE-Muncy	807		Q200	2605.00	467.94	476.1	473.20	476.26	0.000789	3.40	1127.27	379.30	0.23
USACE-Muncy	807		Q500	3383.00	467.94	476.9	473.64	477.07	0.000772	3.63	1468.28	584.24	0.24
USACE-Muncy	807		SEPT2011	1390.00	467.94	474.8	471.40	474.85	0.000620	2.57	751.73	223.41	0.20
USACE-Muncy	731		Q2	279.00	467.13	472.3	469.47	472.35	0.000880	2.22	153.59	212.79	0.22
USACE-Muncy	731		Q5	609.00	467.13	473.5	470.64	473.63	0.000872	2.66	431.98	224.14	0.23
USACE-Muncy	731		Q10	930.00	467.13	474.0	471.55	474.13	0.001250	3.40	533.76	233.98	0.28
USACE-Muncy	731		Q25	1327.00	467.13	474.5	472.86	474.67	0.001597	4.11	644.30	244.20	0.32

USACE-Muncy	731		Q50	1686.00	467.13	474.9	473.22	475.12	0.001811	4.60	738.39	250.73	0.34
USACE-Muncy	731		Q100	2099.00	467.13	475.3	473.54	475.59	0.002003	5.09	837.97	257.28	0.36
USACE-Muncy	731		Q200	2605.00	467.13	475.8	473.89	476.12	0.002196	5.60	949.48	264.96	0.39
USACE-Muncy	731		Q500	3383.00	467.13	476.6	474.36	476.91	0.002334	6.21	1123.85	463.29	0.41
USACE-Muncy	731		SEPT2011	1390.00	467.13	474.6	472.93	474.75	0.001640	4.20	661.10	245.45	0.32
USACE-Muncy	654	Abandoned Rd		Bridge									
USACE-Muncy	572		Q2	279.00	466.95	471.5	468.56	471.54	0.000400	1.56	210.91	227.17	0.15
USACE-Muncy	572		Q5	609.00	466.95	472.5	469.42	472.55	0.000677	2.26	439.33	237.72	0.20
USACE-Muncy	572		Q10	930.00	466.95	473.1	470.08	473.21	0.000834	2.72	591.66	246.67	0.23
USACE-Muncy	572		Q25	1327.00	466.95	473.7	470.76	473.83	0.000982	3.20	738.16	268.03	0.25
USACE-Muncy	572		Q50	1686.00	466.95	474.2	471.82	474.32	0.001086	3.57	853.50	274.79	0.27
USACE-Muncy	572		Q100	2099.00	466.95	474.6	472.25	474.81	0.001199	3.96	969.03	284.86	0.29
USACE-Muncy	572		Q200	2605.00	466.95	475.1	472.64	475.34	0.001318	4.38	1095.82	304.96	0.30
USACE-Muncy	572		Q500	3383.00	466.95	475.8	473.08	476.10	0.001455	4.93	1275.53	323.19	0.32
USACE-Muncy	572		SEPT2011	1390.00	466.95	473.8	470.85	473.92	0.001003	3.28	758.90	269.17	0.25
USACE-Muncy	471		Q2	279.00	466.77	471.5	468.42	471.49	0.000390	1.54	251.38	223.64	0.15
USACE-Muncy	471		Q5	609.00	466.77	472.4	469.31	472.48	0.000639	2.20	471.72	241.00	0.19
USACE-Muncy	471		Q10	930.00	466.77	473.0	470.00	473.12	0.000789	2.68	624.63	252.37	0.22
USACE-Muncy	471		Q25	1327.00	466.77	473.6	470.73	473.73	0.000947	3.18	773.05	257.88	0.25
USACE-Muncy	471		Q50	1686.00	466.77	474.1	471.75	474.21	0.001058	3.55	891.25	262.39	0.26
USACE-Muncy	471		Q100	2099.00	466.77	474.5	472.12	474.69	0.001178	3.95	1010.55	267.63	0.28
USACE-Muncy	471		Q200	2605.00	466.77	475.0	472.48	475.21	0.001307	4.38	1143.63	281.75	0.30
USACE-Muncy	471		Q500	3383.00	466.77	475.7	472.92	475.94	0.001455	4.94	1351.26	393.15	0.32
USACE-Muncy	471		SEPT2011	1390.00	466.77	473.7	470.84	473.82	0.000970	3.25	794.16	258.66	0.25
USACE-Muncy	289		Q2	279.00	466.70	471.3	468.89	471.40	0.000703	1.89	209.88	381.25	0.19
USACE-Muncy	289		Q5	609.00	466.70	472.3	469.84	472.34	0.000953	2.55	442.20	545.44	0.23
USACE-Muncy	289		Q10	930.00	466.70	472.8	470.54	472.94	0.001104	3.02	597.99	590.94	0.26
USACE-Muncy	289		Q25	1327.00	466.70	473.4	471.69	473.52	0.001288	3.54	749.03	681.30	0.29
USACE-Muncy	289		Q50	1686.00	466.70	473.8	472.00	473.98	0.001408	3.92	886.54	766.33	0.30
USACE-Muncy	289		Q100	2099.00	466.70	474.2	472.29	474.43	0.001549	4.34	1037.28	832.88	0.32
USACE-Muncy	289		Q200	2605.00	466.70	474.7	472.61	474.93	0.001700	4.79	1222.53	897.39	0.34
USACE-Muncy	289		Q500	3383.00	466.70	475.4	473.02	475.64	0.001725	5.18	1521.27	951.23	0.35
USACE-Muncy	289		SEPT2011	1390.00	466.70	473.5	471.75	473.60	0.001314	3.62	771.32	693.97	0.29
USACE-Muncy	65		Q2	279.00	466.57	471.2	468.76	471.24	0.000701	2.00	220.29	733.80	0.20
USACE-Muncy	65		Q5	609.00	466.57	472.1	469.81	472.15	0.000701	2.37	689.86	1106.67	0.21
USACE-Muncy	65		Q10	930.00	466.57	472.7	470.50	472.74	0.000701	2.59	1035.71	1323.52	0.21
USACE-Muncy	65		Q25	1327.00	466.57	473.2	471.70	473.29	0.000700	2.79	1389.37	1545.19	0.21
USACE-Muncy	65		Q50	1686.00	466.57	473.7	471.94	473.73	0.000700	2.94	1677.33	1663.62	0.22
USACE-Muncy	65		Q100	2099.00	466.57	474.1	472.17	474.17	0.000700	3.09	1968.78	1711.00	0.22
USACE-Muncy	65		Q200	2605.00	466.57	474.6	472.39	474.65	0.000701	3.25	2290.21	1745.24	0.22
USACE-Muncy	65		Q500	3383.00	466.57	475.3	472.58	475.36	0.000700	3.48	2776.33	1859.87	0.23
USACE-Muncy	65		SEPT2011	1390.00	466.57	473.3	471.74	473.37	0.000700	2.82	1439.84	1591.02	0.22

APPENDIX F

Flood Profiles



FLOOD PROFILES

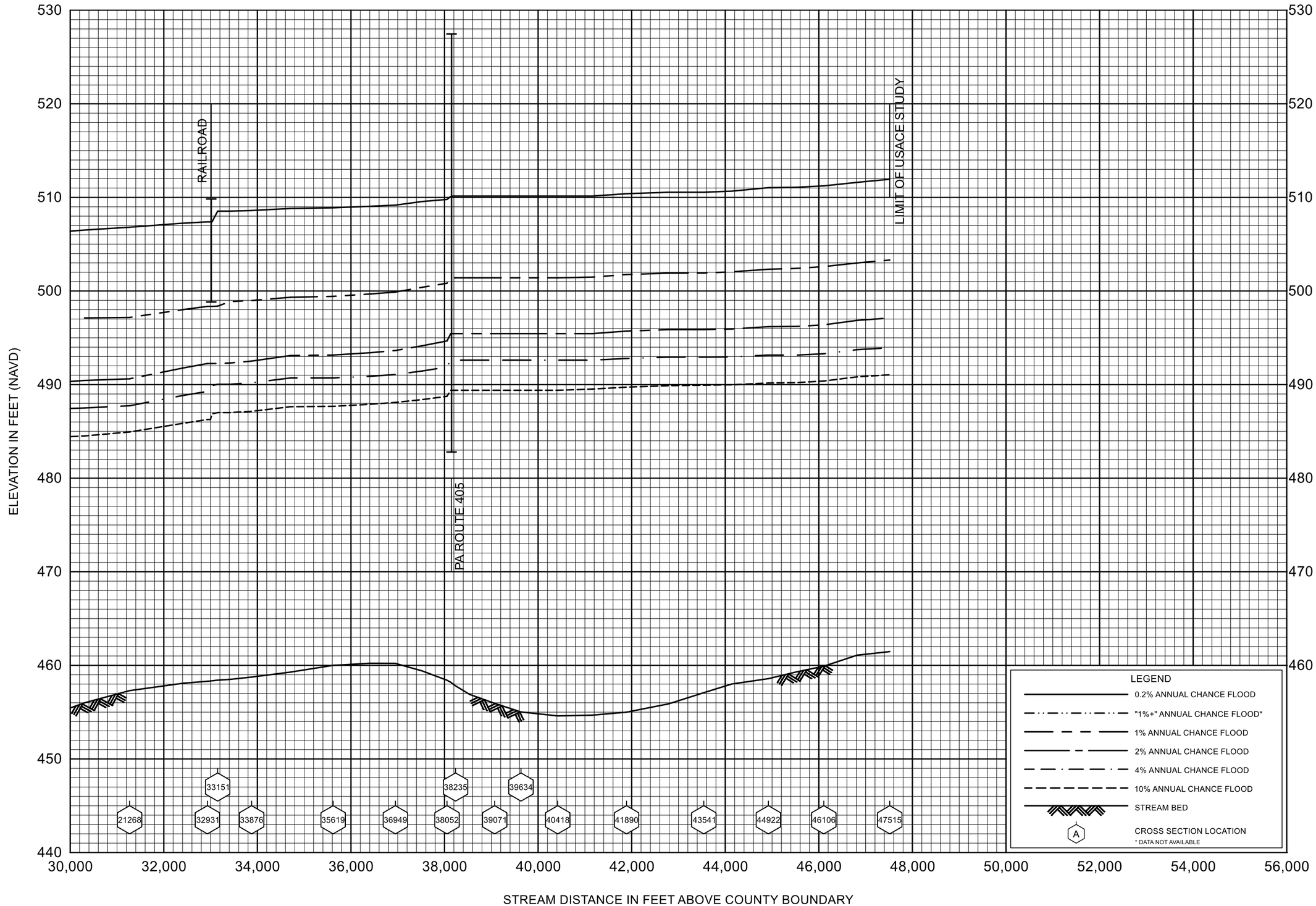
WEST BRANCH SUSQUEHANNA RIVER

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

01P



FLOOD PROFILES

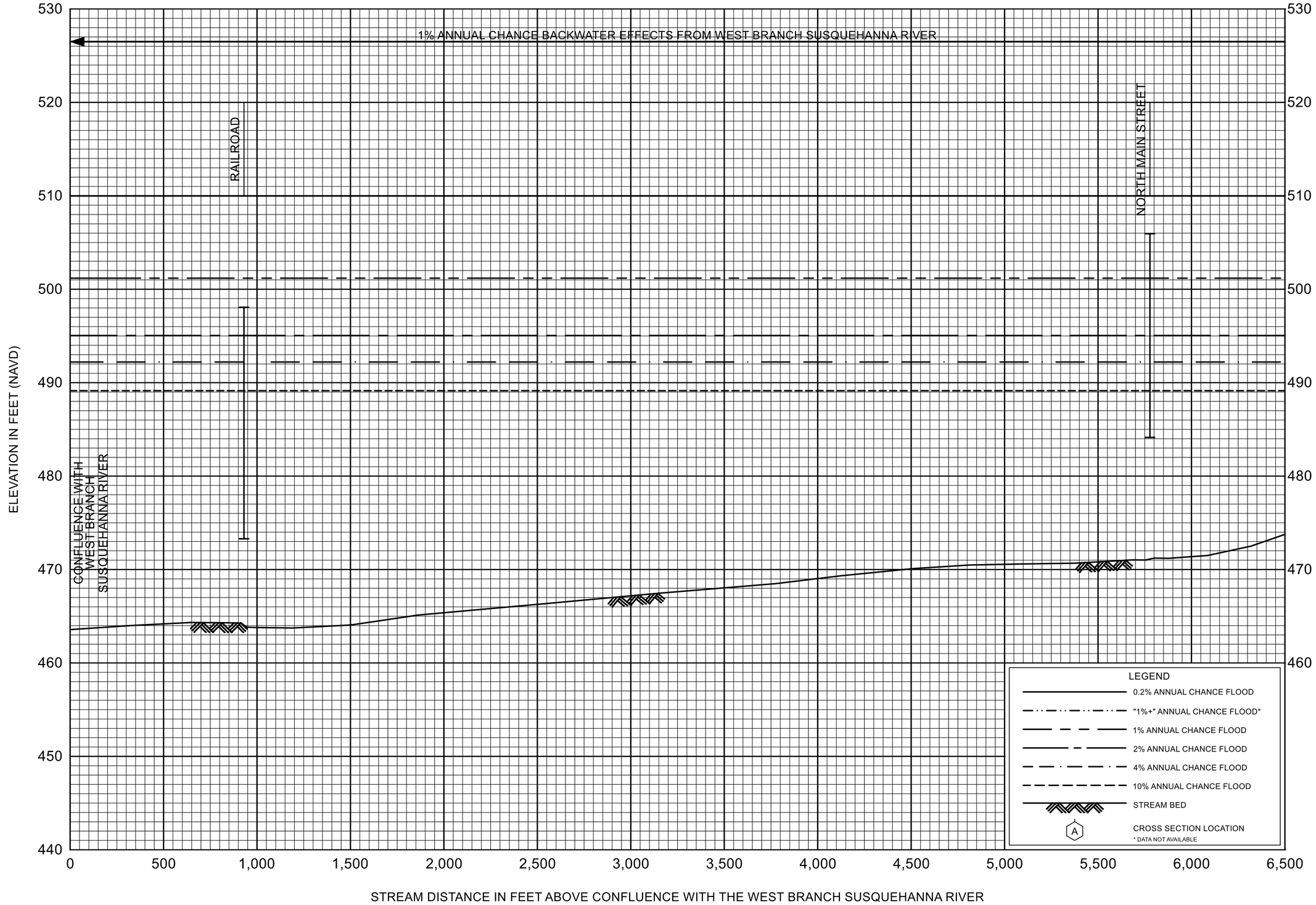
WEST BRANCH SUSQUEHANNA RIVER

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

02P



FLOOD PROFILES

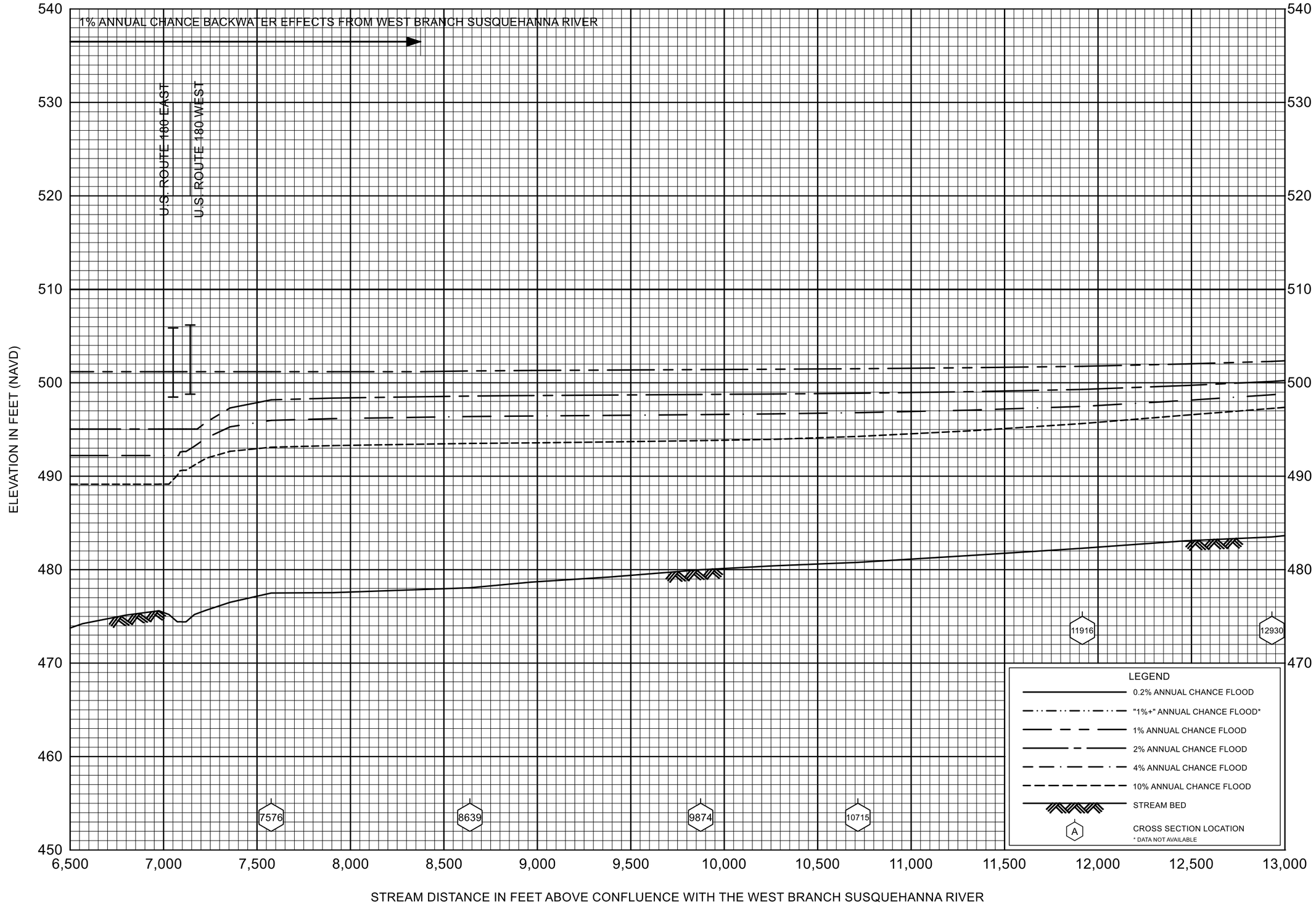
MUNCY CREEK

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

01P



FLOOD PROFILES

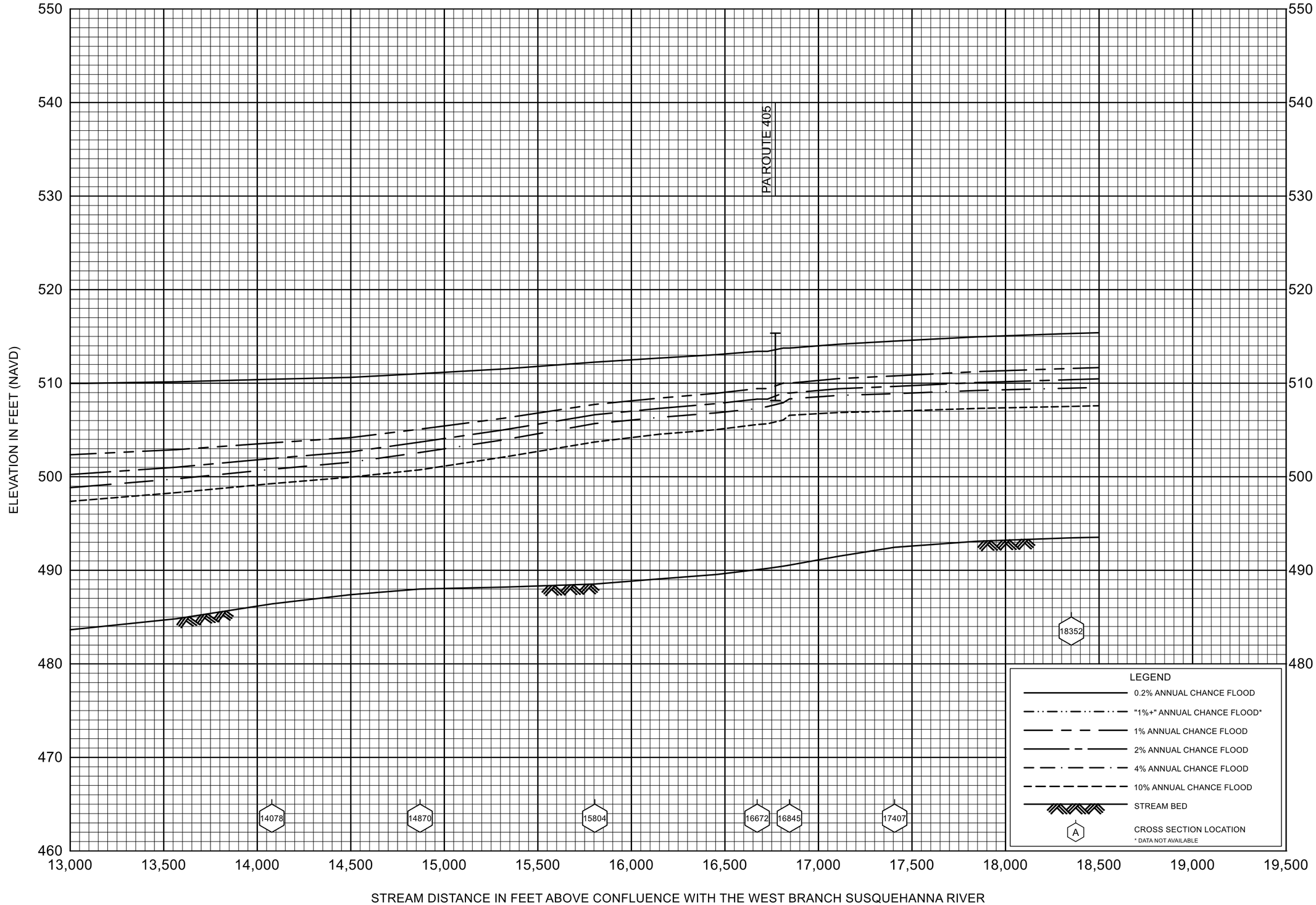
MUNCY CREEK

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

02P



FLOOD PROFILES

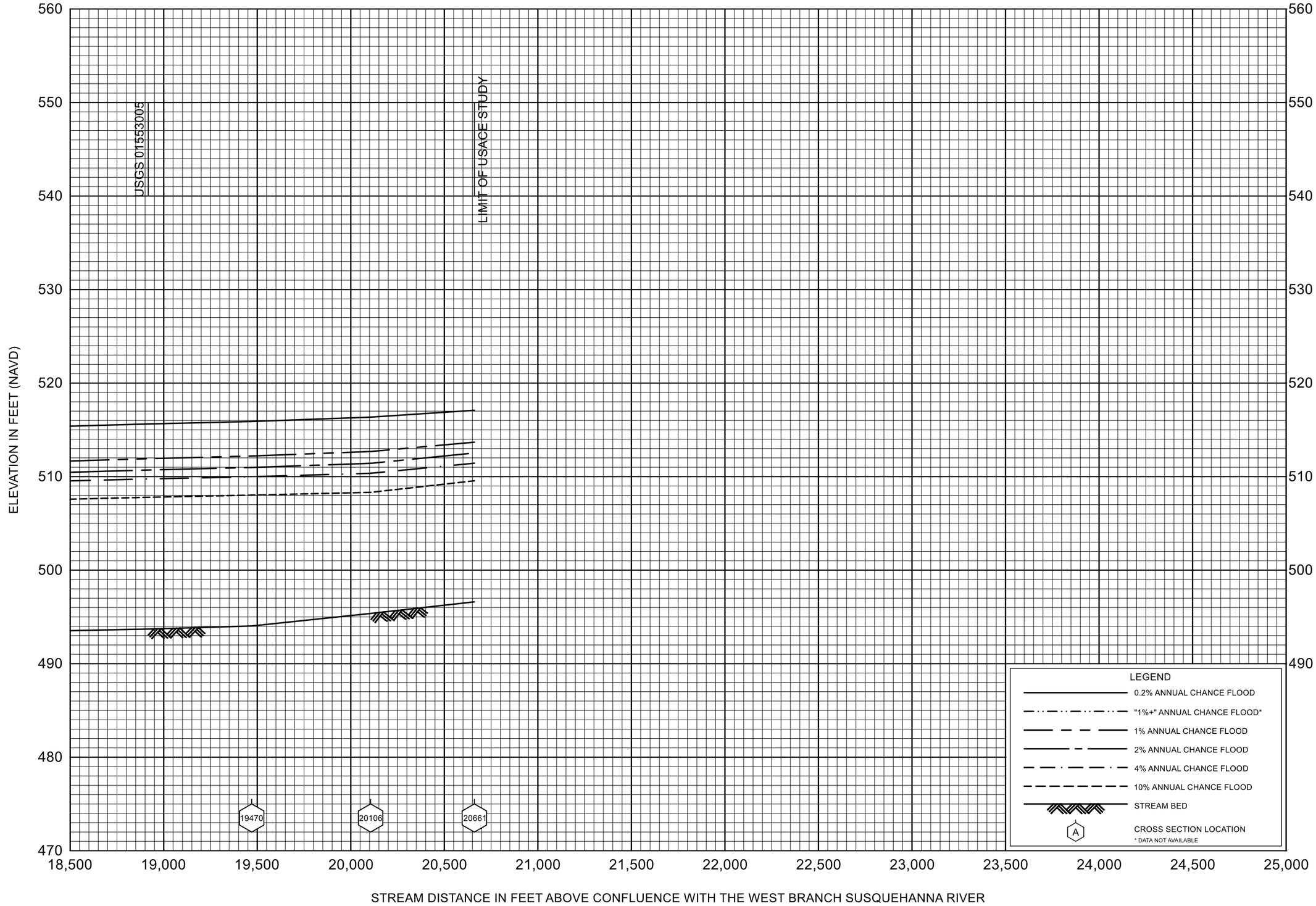
MUNCY CREEK

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

03P



FLOOD PROFILES

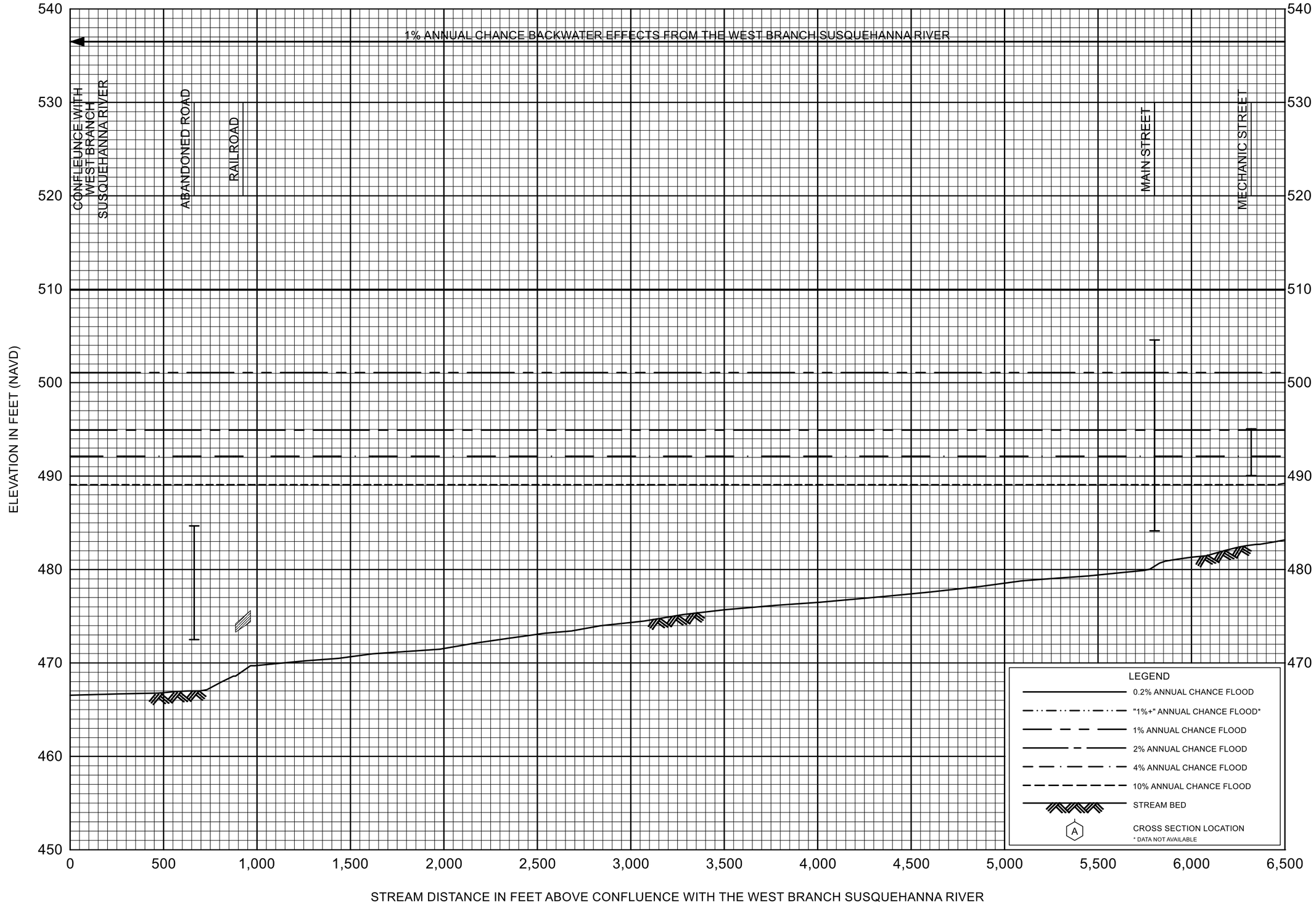
MUNCY CREEK

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

04P



FLOOD PROFILES

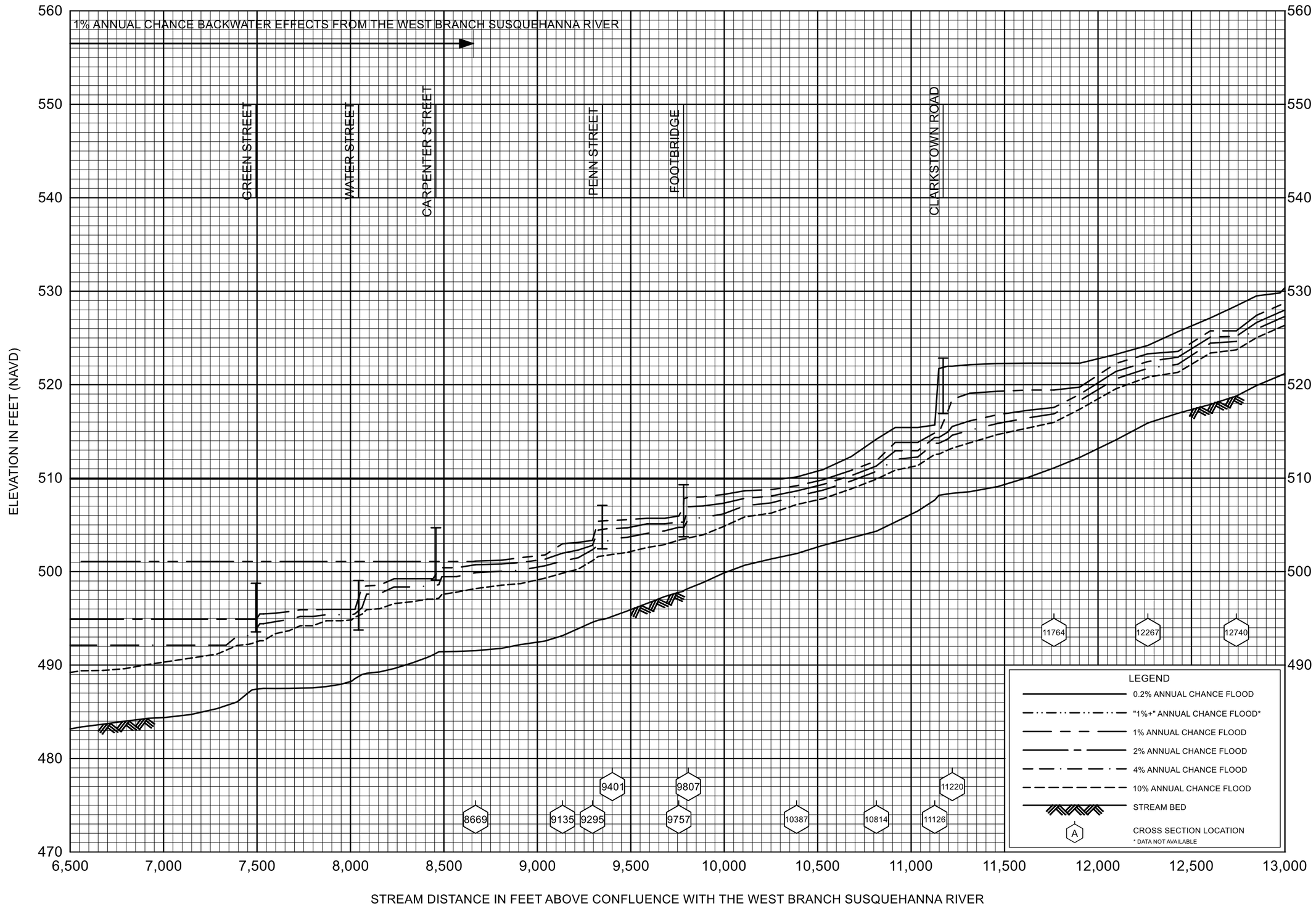
GLADE RUN

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

01P



FLOOD PROFILES

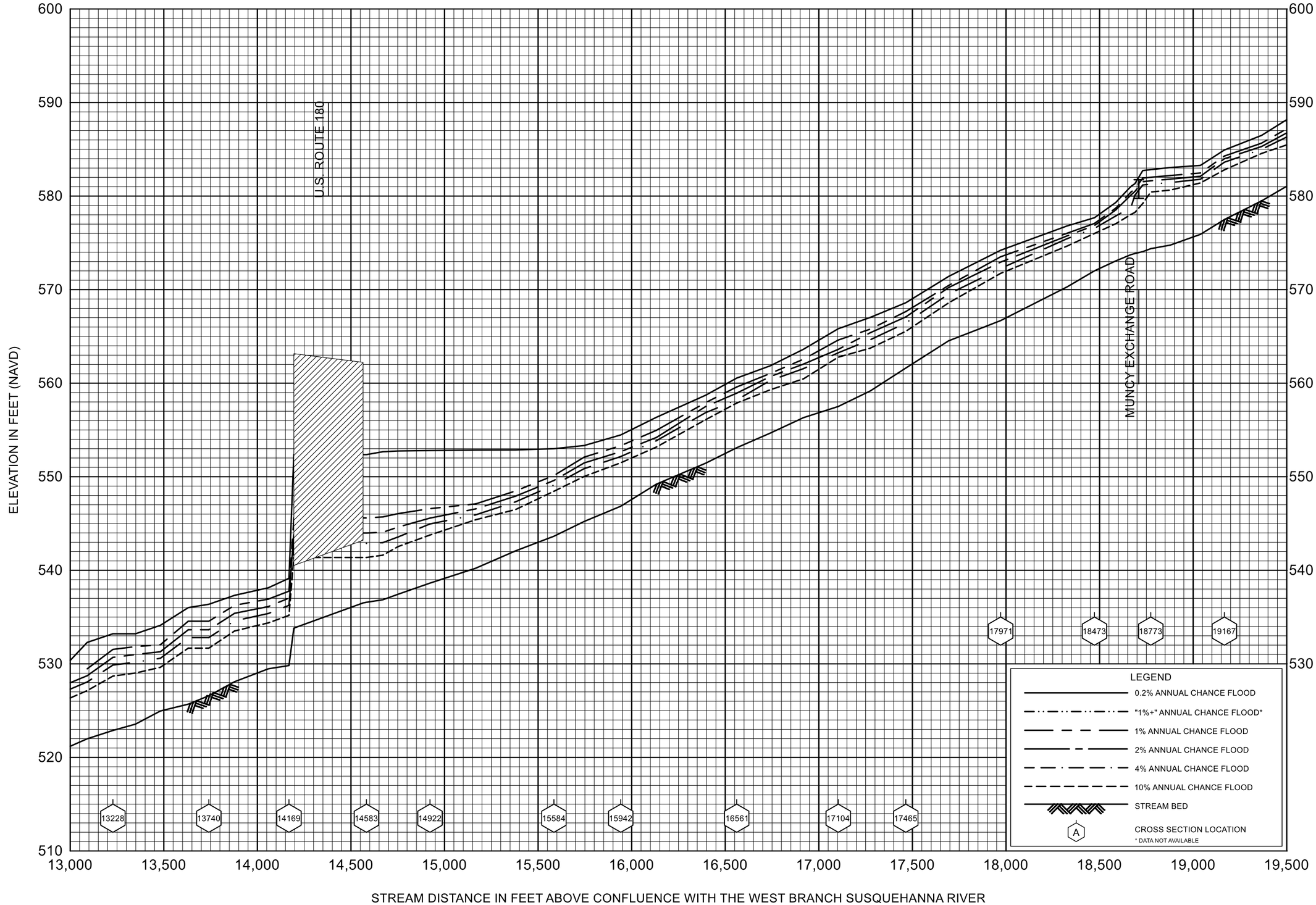
GLADE RUN

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

02P



FLOOD PROFILES

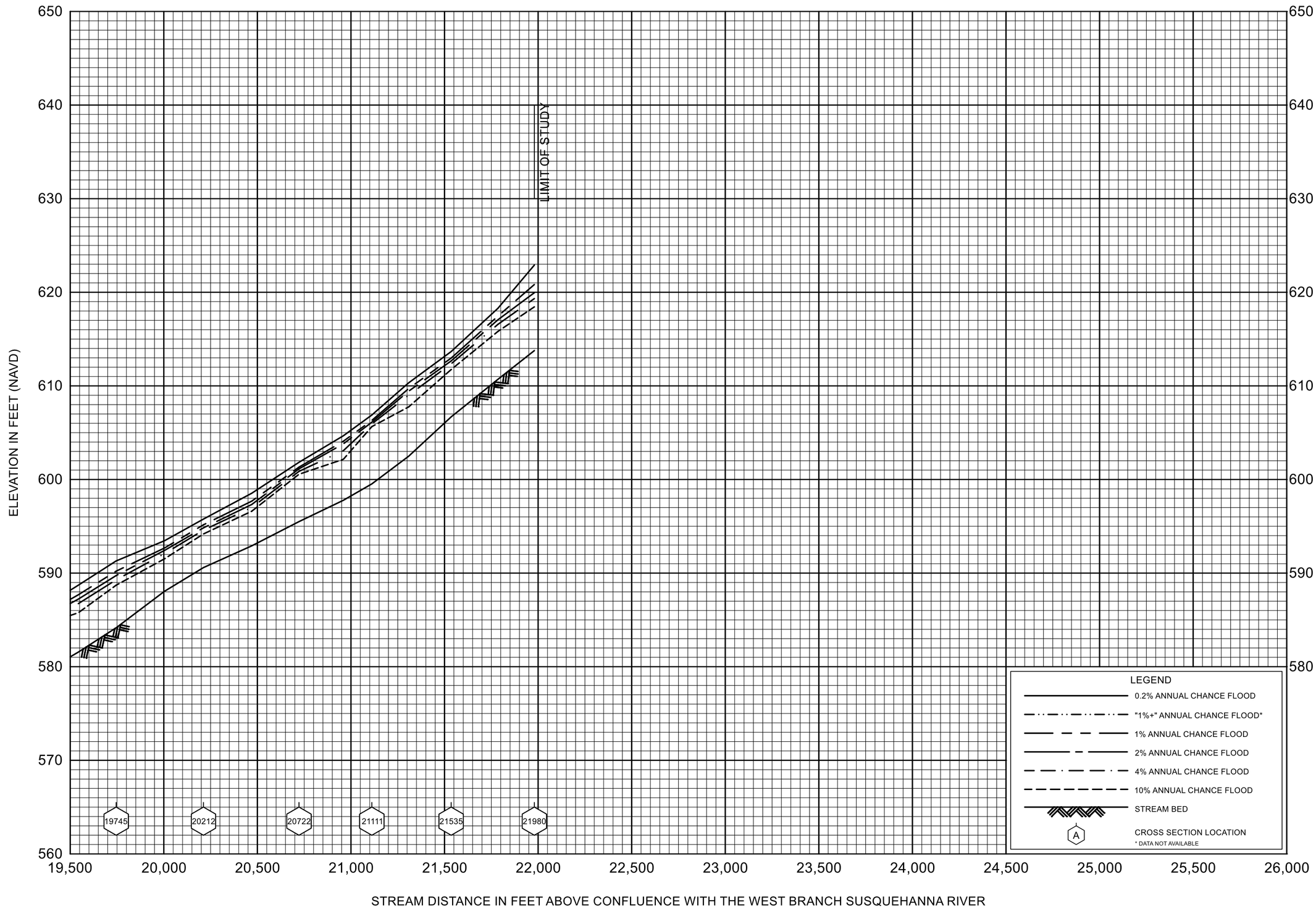
GLADE RUN

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

03P



FLOOD PROFILES

GLADE RUN

U.S. ARMY CORPS OF ENGINEERS

LYCOMING COUNTY, PA

(ALL JURISDICTIONS)

APPENDIX G

Floodway Data Tables

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
12,400	12,400	2,710	67,470	4.3	492.8	492.8	492.8	0.0
12,525	12,525	2,586	63,120	4.6	493.0	493.0	493.0	0.0
13,669	13,669	2,180	59,088	5.0	493.1	493.1	493.2	0.1
15,284	15,284	2,457	61,528	4.8	493.6	493.6	493.6	0.0
16,893	16,893	2,420	65,323	4.5	493.9	493.9	494.0	0.1
18,807	18,807	2,133	49,918	5.9	494.2	494.2	494.3	0.1
20,904	20,904	1,978	49,935	5.9	494.7	494.7	494.9	0.2
22,627	22,627	1,896	51,398	5.7	495.3	495.3	495.5	0.2
24,591	24,591	1,990	54,587	5.4	495.8	495.8	496.1	0.3
26,247	26,247	2,059	51,203	5.7	496.1	496.1	496.4	0.3
27,763	27,763	2,016	52,894	5.5	496.6	496.6	496.9	0.3
29,426	29,426	1,840	46,991	6.2	496.8	496.8	497.0	0.2
31,268	31,268	1,499	40,046	7.3	497.2	497.2	497.8	0.6
32,931	32,931	1,122	39,737	7.4	498.4	498.4	499.1	0.7
33,151	33,151	1,065	38,068	7.7	498.4	498.4	499.2	0.8
33,876	33,876	3,050	56,096	5.2	499.0	499.0	499.8	0.8
35,619	35,619	3,570	55,229	5.3	499.4	499.4	500.3	0.9
36,949	36,949	2,754	56,177	5.6	499.9	499.9	500.7	0.8
38,052	38,052	2,770	63,635	5.3	500.8	500.8	501.4	0.6
38,235	38,235	2,620	64,199	5.2	500.9	500.9	501.5	0.6
39,071	39,071	3,451	64,951	4.5	501.1	501.1	501.8	0.7

[1] Feet above county boundary

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
39,634	39,634	2,726	51,088	5.7	501.2	501.2	501.8	0.6
40,418	40,418	1,638	45,039	6.4	501.1	501.1	502.0	0.9
41,890	41,890	1,512	46,963	6.1	501.8	501.8	502.6	0.8
43,541	43,541	1,401	42,836	6.7	501.9	501.9	502.8	0.9
44,922	44,922	1,568	42,179	6.8	502.3	502.3	503.2	0.9
46,106	46,106	1,601	39,316	7.3	502.6	502.6	503.4	0.8
47,515	47,515	1,859	42,230	6.8	503.3	503.3	504.1	0.8

[1]Feet above county boundary

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
7,576	7,576	678	11,704	3.5	501.2	500.8[2]	500.9	0.1
8,639	8,639	1,527	24,956	1.7	501.3	501.3	501.3	0.0
9,874	9,874	2,591	32,301	1.3	501.4	501.4	501.5	0.1
10,715	10,715	2,475	27,548	1.6	501.5	501.5	501.6	0.1
11,916	11,916	2,550	23,814	1.7	501.8	501.8	501.9	0.1
12,930	12,930	2,257	19,708	2.0	502.3	502.3	502.5	0.2
14,078	14,078	1,939	15,664	2.7	503.6	503.6	503.8	0.2
14,870	14,870	1,743	11,038	3.7	505.1	505.1	505.2	0.1
15,804	15,804	1,958	13,220	3.1	507.7	507.7	507.8	0.1
16,672	16,672	1,512	9,288	4.3	509.4	509.4	509.5	0.1
16,844	16,844	1,538	13,503	3.0	510.0	510.0	511.0	1.0
17,407	17,407	1,600	16,517	2.4	510.8	510.8	511.6	0.8
18,352	18,352	2,325	24,266	1.7	511.6	511.6	512.3	0.7
19,470	19,470	2,442	25,101	1.6	512.2	512.2	512.8	0.6
20,106	20,106	2,160	16,494	2.4	512.7	512.7	513.3	0.6
20,661	20,661	2,018	14,127	2.8	513.7	513.7	514.1	0.4

[1] Feet above confluence with the West Branch Susquehanna River
[2] Elevation computed without consideration of backwater effects from the West Branch Susquehanna River

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
8,669	8,669	339	779	2.8	501.1	501.1	501.1	0.0
9,135	9,135	382	731	3.1	503.0	503.0	503.0	0.0
9,295	9,295	222	329	7.1	503.3	503.3	503.4	0.1
9,401	9,401	408	1,001	2.2	505.4	505.4	505.4	0.0
9,757	9,757	160	383	5.8	506.0	506.0	506.0	0.0
9,808	9,808	195	785	2.8	507.9	507.9	508.1	0.2
10,387	10,387	86	332	6.7	509.2	509.2	509.3	0.1
10,814	10,814	48	231	9.7	511.8	511.8	512.0	0.2
11,126	11,126	45	284	8.4	514.8	514.8	515.0	0.2
11,220	11,220	43	611	5.8	518.4	518.4	518.4	0.0
11,764	11,764	82	274	8.2	519.4	519.4	519.4	0.0
12,267	12,267	72	362	6.2	523.3	523.3	523.4	0.1
12,740	12,740	33	206	11.0	525.8	525.8	526.5	0.7
13,228	13,228	38	319	7.1	531.5	531.5	532.4	0.9
13,741	13,741	32	187	11.3	534.6	534.6	534.6	0.0
14,169	14,169	50	330	6.4	537.8	537.8	538.4	0.6
14,583	14,583	49	494	5.5	545.6	545.6	545.6	0.0
14,922	14,922	135	590	3.6	546.6	546.6	546.9	0.3
15,584	15,584	47	221	9.6	550.1	550.1	550.4	0.3
15,942	15,942	47	241	8.8	553.3	553.3	553.7	0.4
16,561	16,561	90	354	6.0	559.6	559.6	560.5	0.9

[1] Feet above confluence with West Branch Susquehanna River

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
17,104	17,104	139	291	7.3	564.6	564.6	564.6	0.0
17,465	17,465	82	272	7.8	567.7	567.7	567.9	0.2
17,971	17,971	71	291	7.3	573.5	573.5	574.1	0.6
18,473	18,473	60	222	9.5	577.1	577.1	577.6	0.5
18,773	18,773	166	654	3.2	582.0	582.0	582.6	0.6
19,167	19,167	96	275	7.7	584.3	584.3	584.5	0.2
19,745	19,745	143	565	3.8	590.2	590.2	591.0	0.8
20,212	20,212	198	425	5.0	595.2	595.2	595.7	0.5
20,722	20,722	137	364	5.8	601.3	601.3	601.7	0.4
21,112	21,112	94	265	7.6	606.3	606.3	607.0	0.7
21,535	21,535	57	234	8.6	613.0	613.0	613.4	0.4
21,980	21,980	21	143	14.1	620.8	620.8	621.4	0.6

[1] Feet above confluence with West Branch Susquehanna River

EXHIBIT 1

Flood Mapping

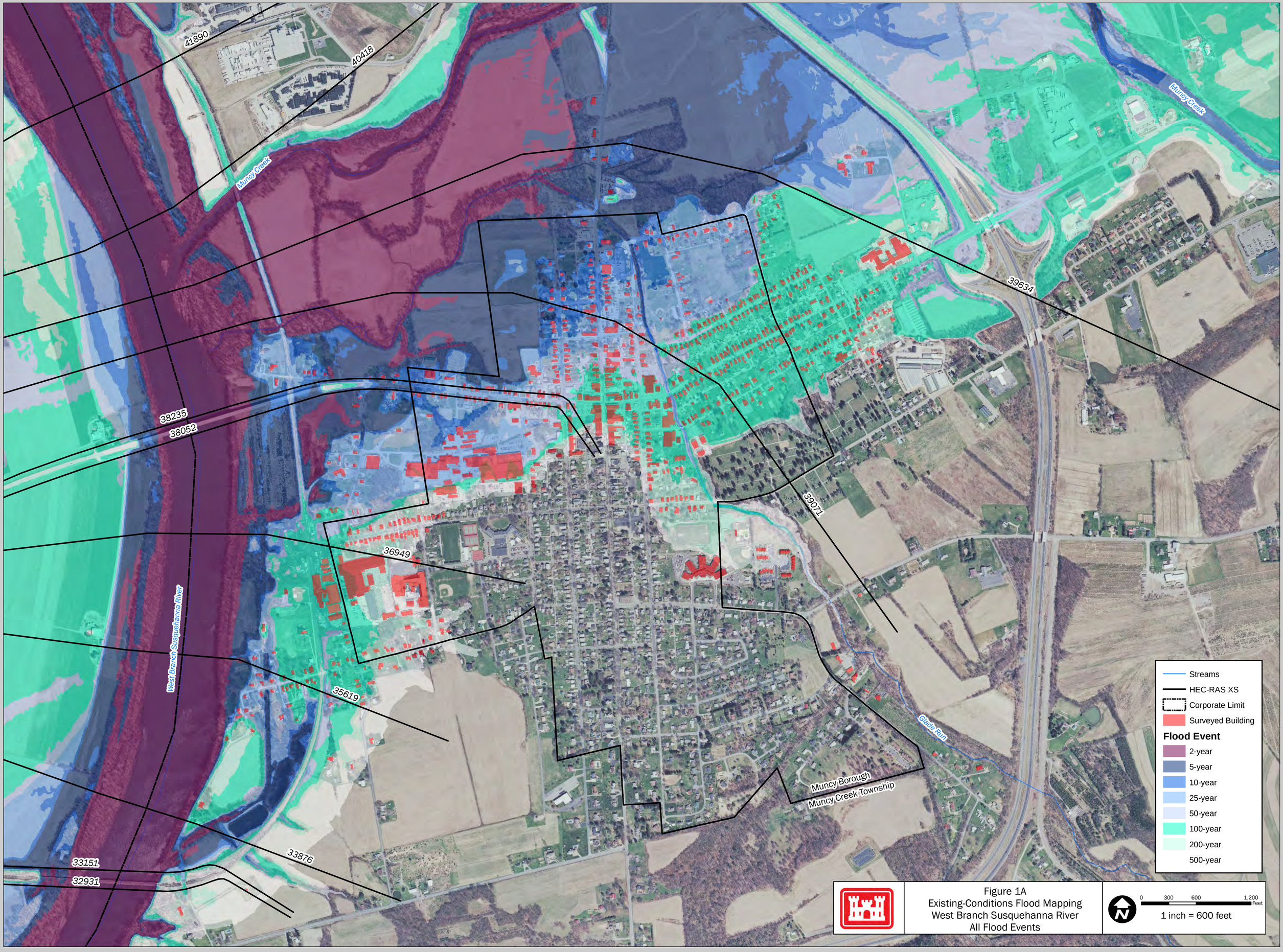


Figure 1A
Existing-Conditions Flood Mapping
West Branch Susquehanna River
All Flood Events

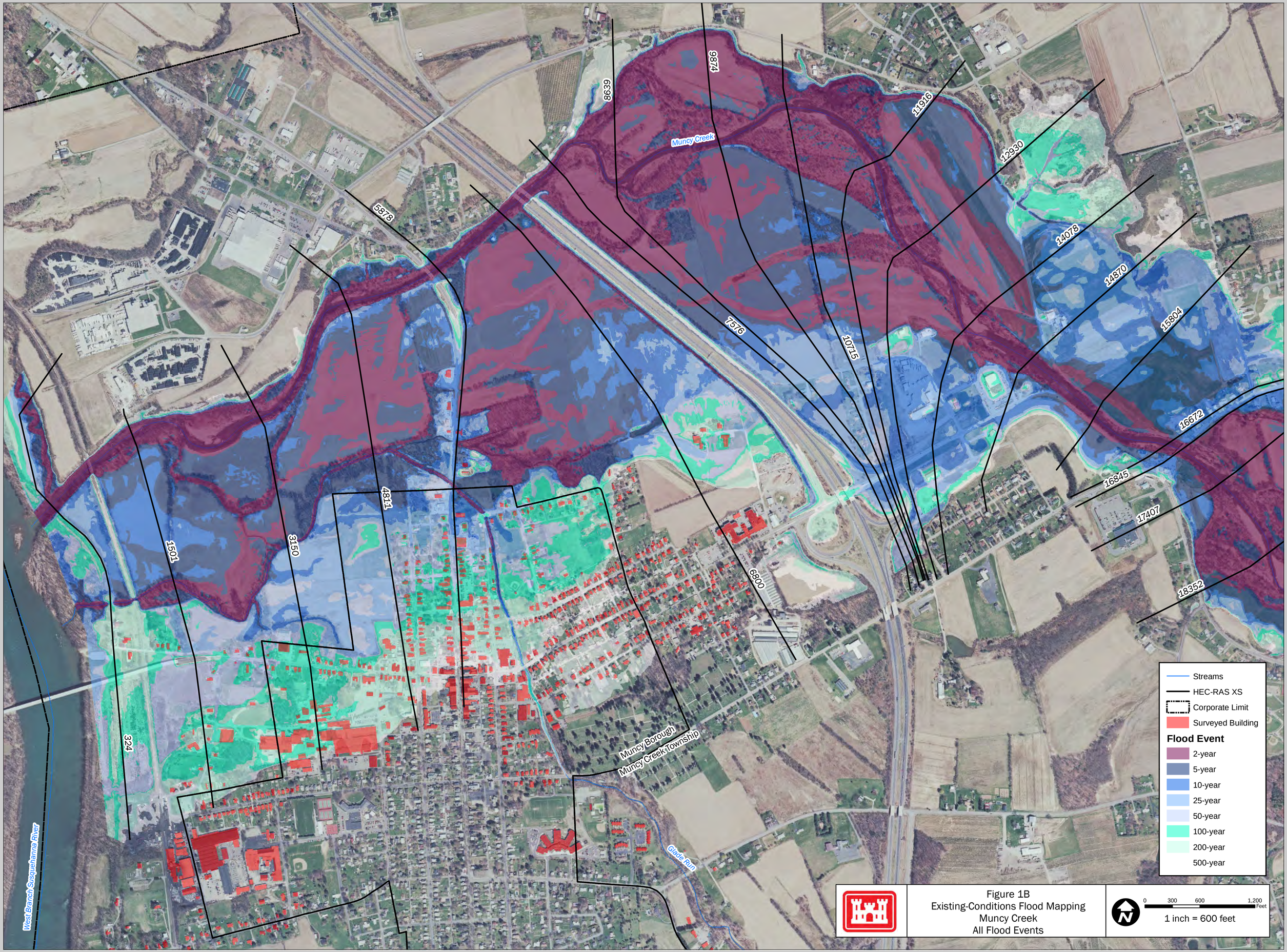


Figure 1B
Existing-Conditions Flood Mapping
Muncy Creek
All Flood Events

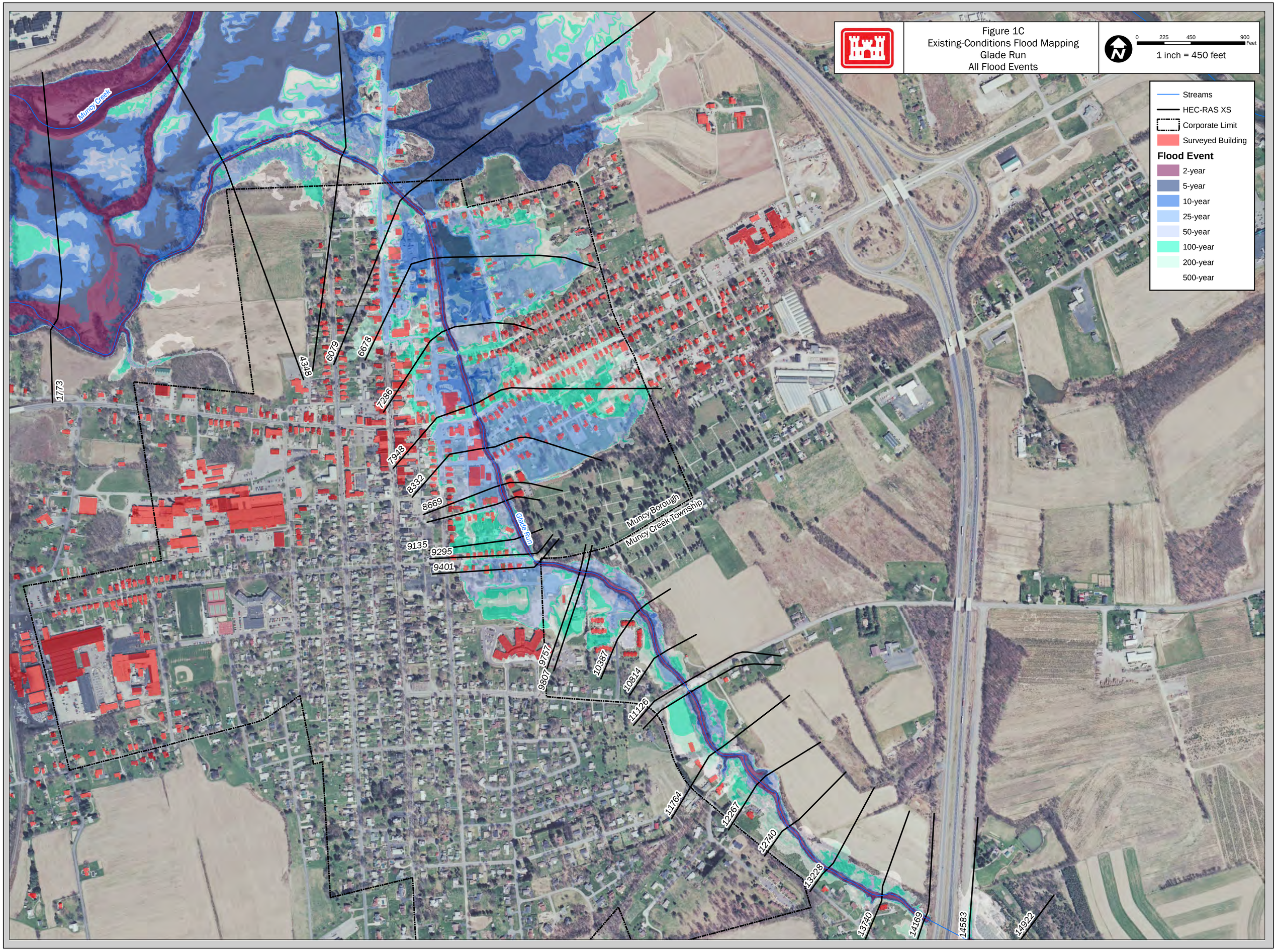


Figure 1C
Existing-Conditions Flood Mapping
Glade Run
All Flood Events
0 225 450 900 Feet
1 inch = 450 feet
Streams
HEC-RAS XS
Corporate Limit
Surveyed Building
Flood Event
2-year
5-year
10-year
25-year
50-year
100-year
200-year
500-year
Muncy Creek
Glade Run
Muncy Borough
Muncy Creek Township
1773
4348
6079
6678
7286
7948
8332
8669
9135
9295
9401
9757
9807
10387
10814
11126
11764
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12740
13228
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14169
14583
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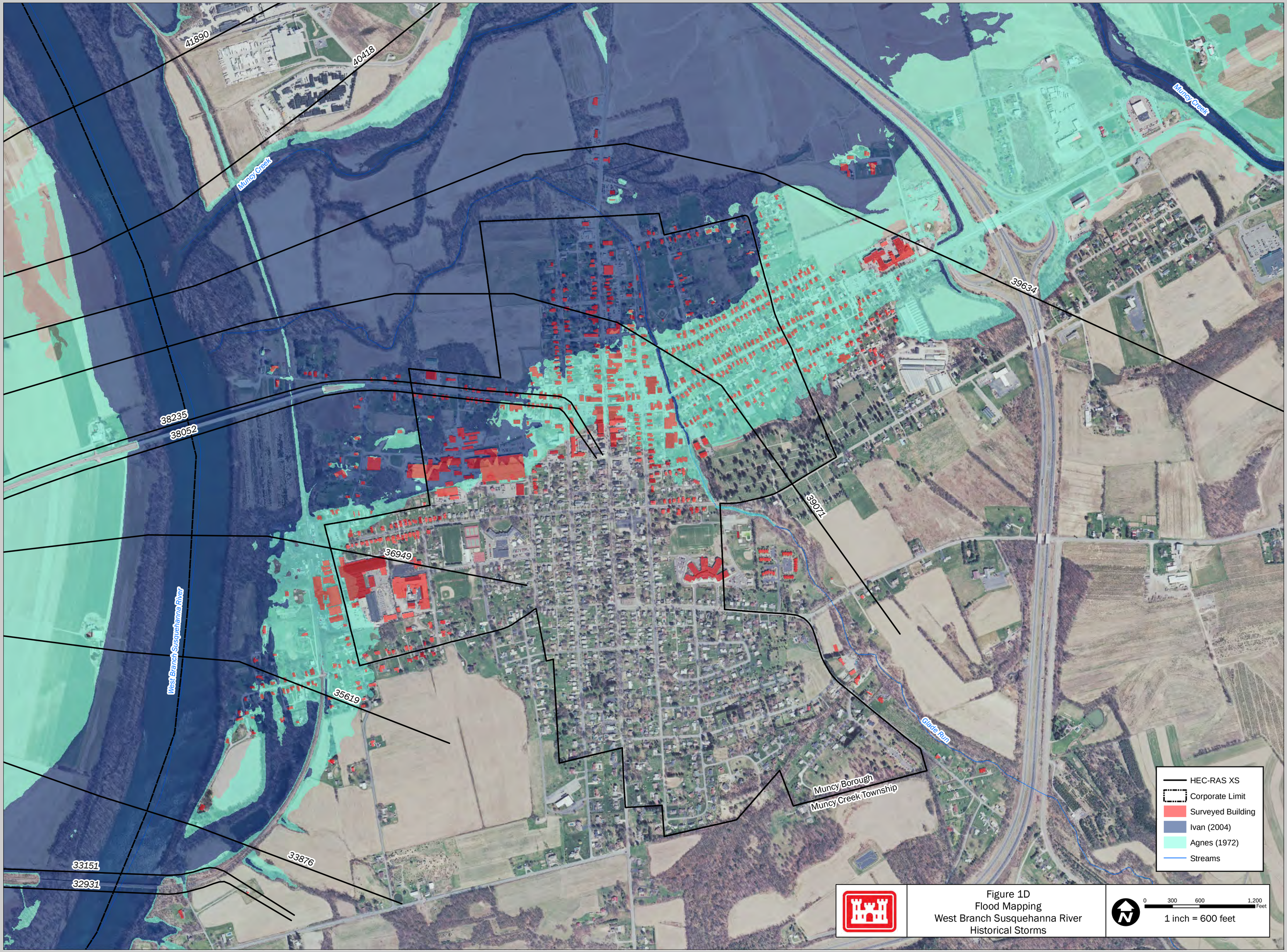

Figure 1D
Flood Mapping
West Branch Susquehanna River
Historical Storms

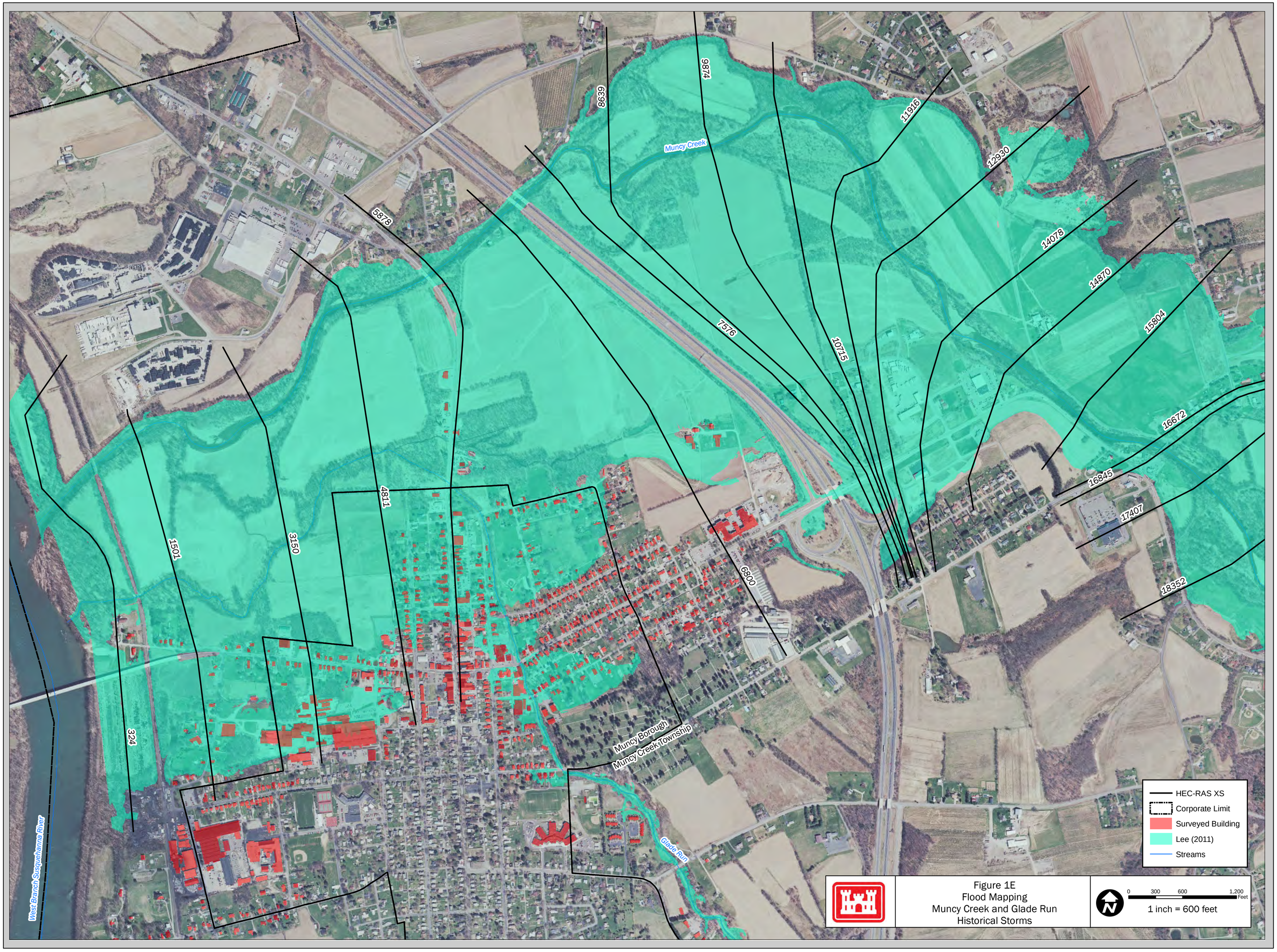

Figure 1E
Flood Mapping
Muncy Creek and Glade Run
Historical Storms

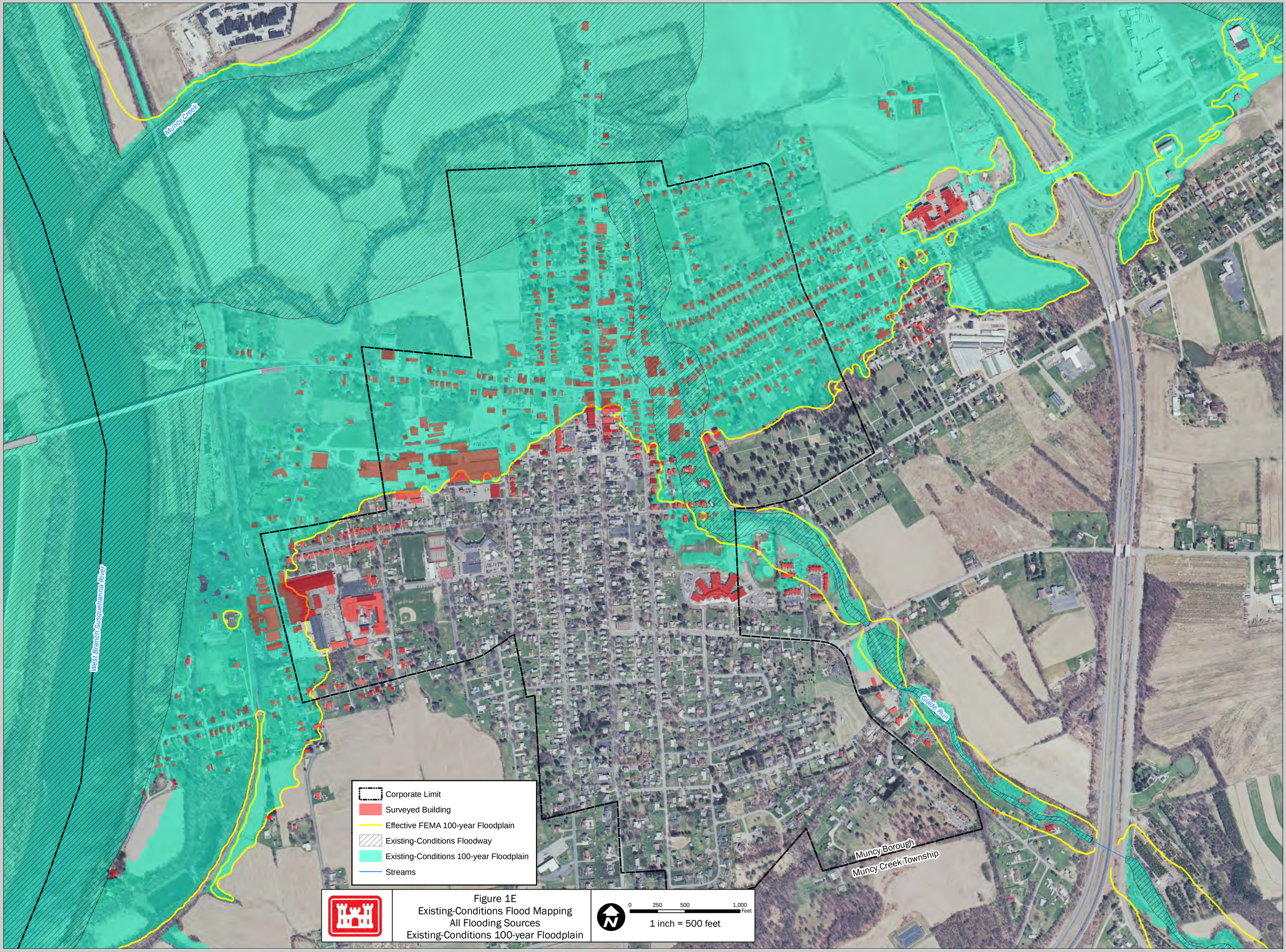

Figure 1E
Existing-Conditions Flood Mapping
All Flooding Sources
Existing-Conditions 100-year Floodplain

ATTACHMENT