

Figure 2.4-4— {Site Drainage Flow Pattern}

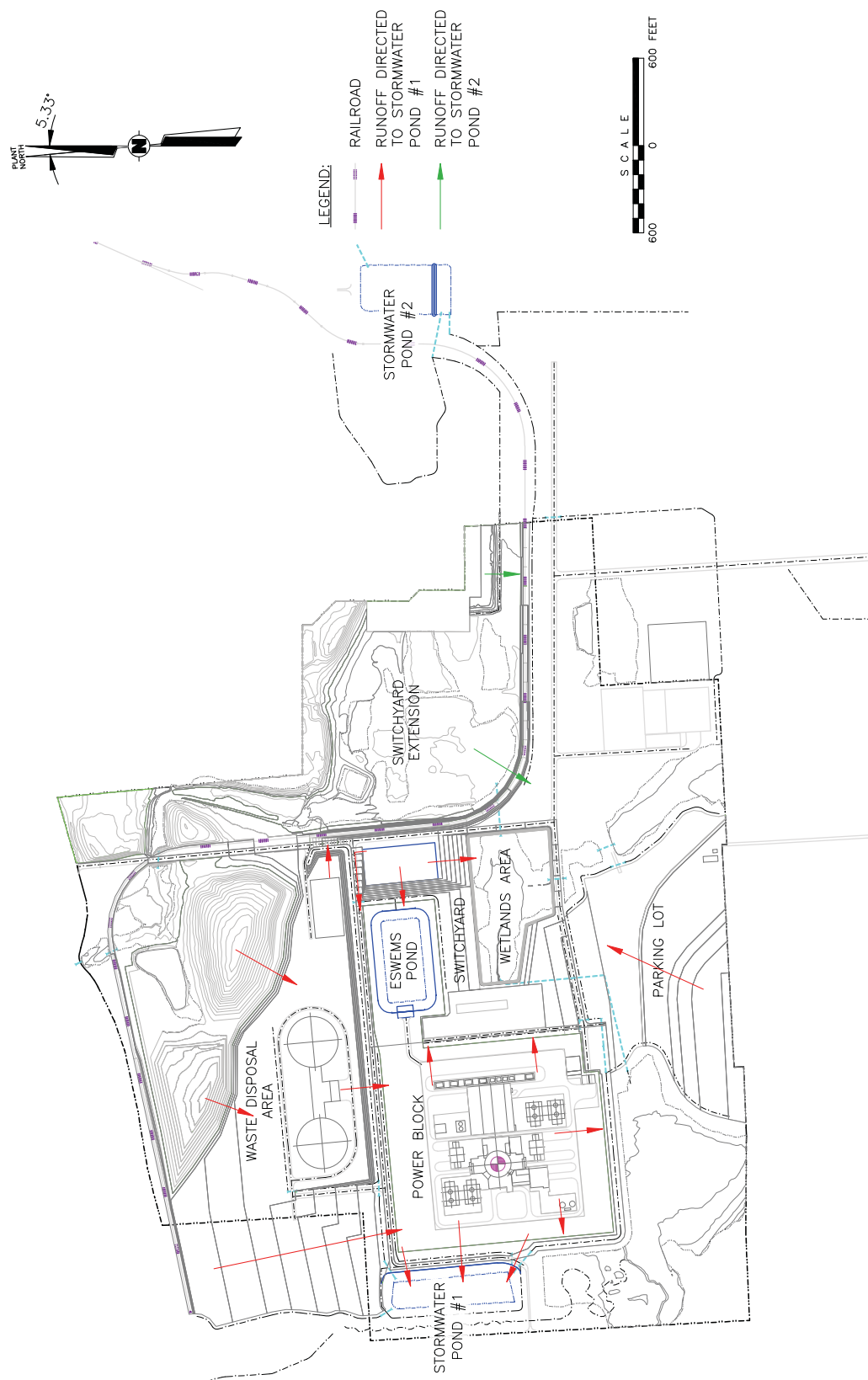


Figure 2.4-5—{Site Utilization Plant Layout}



Figure 2.4-6— {Susquehanna River Profile}

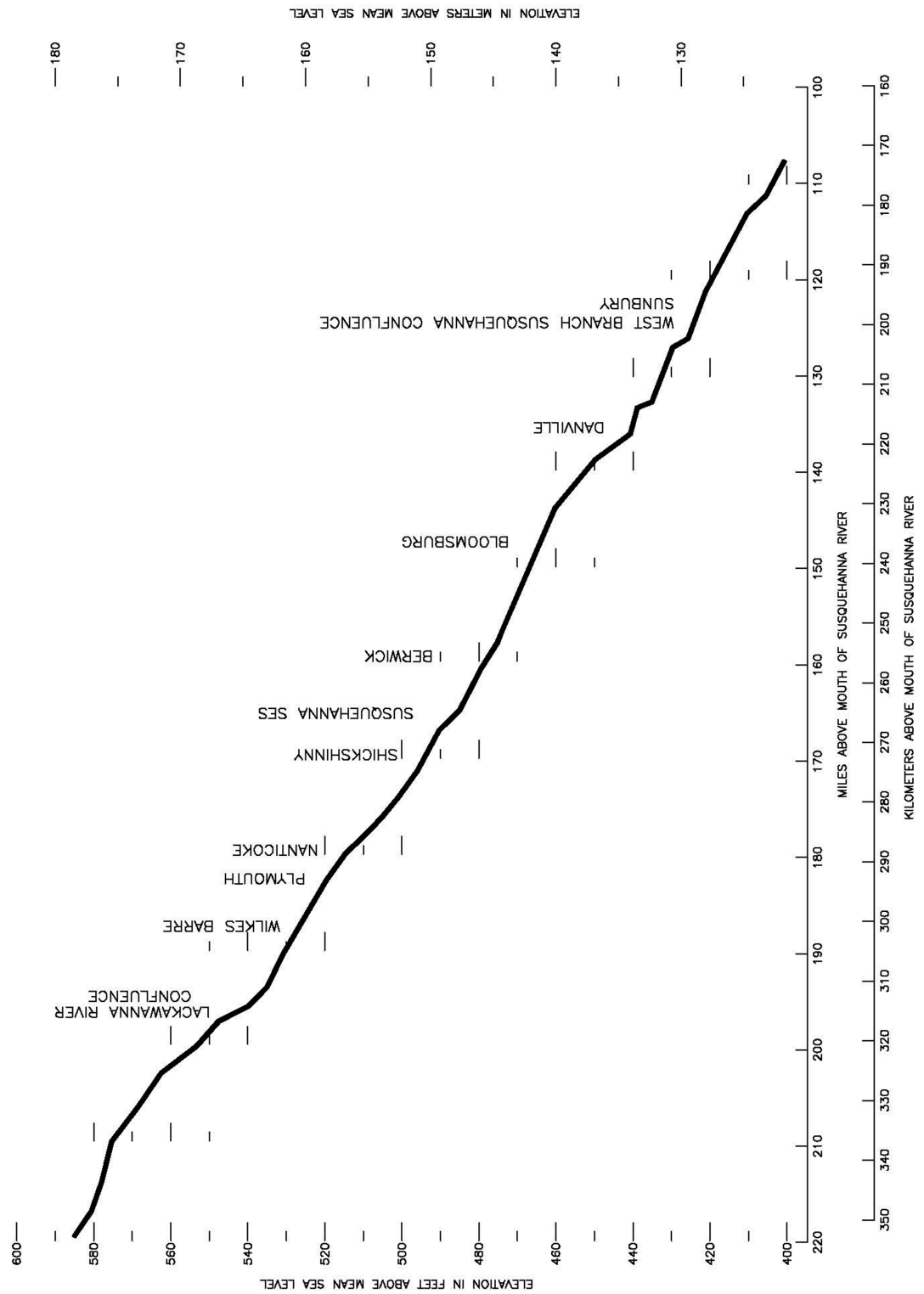
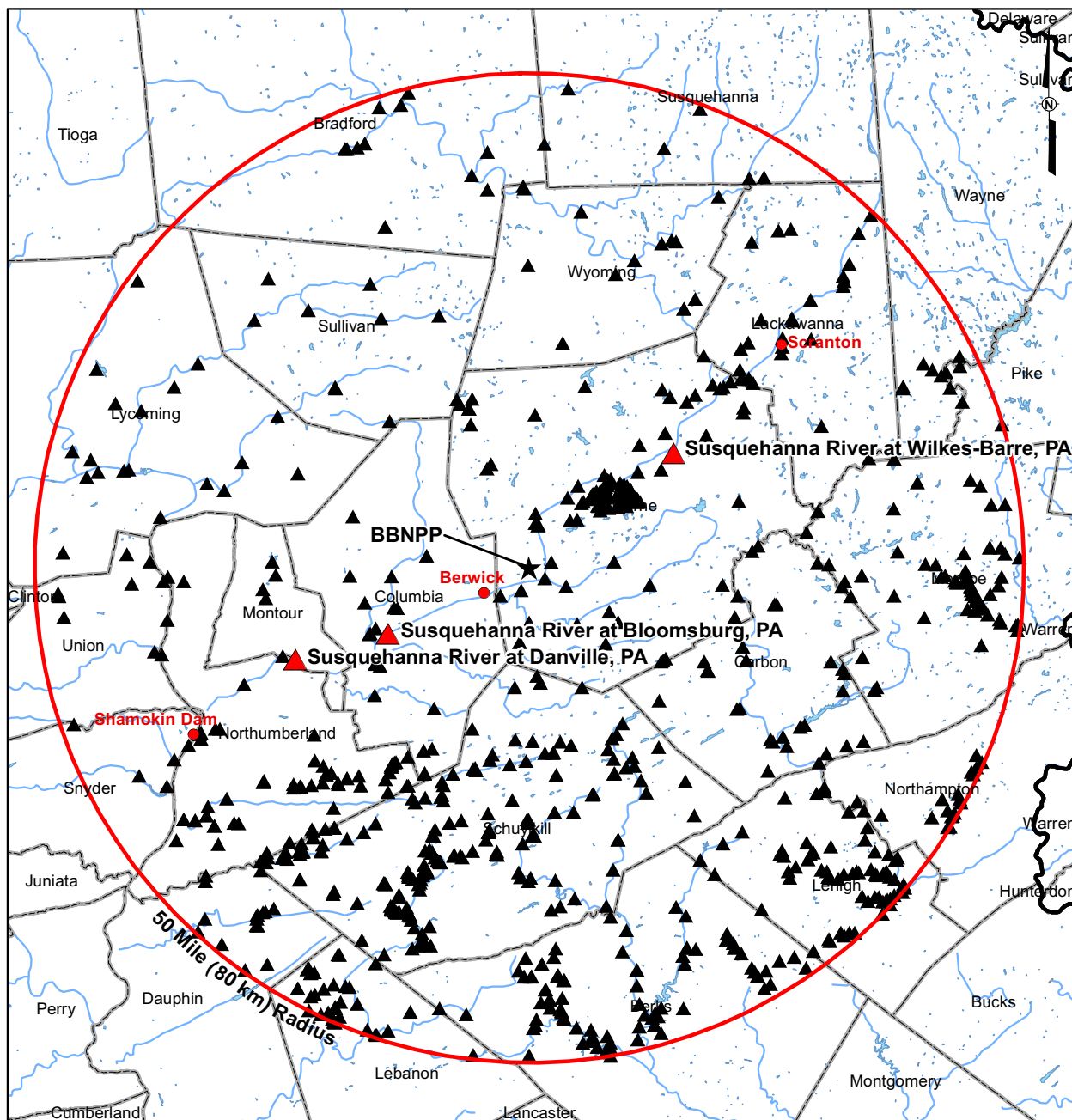


Figure 2.4-7— {USGS Stream Gauges within a 50 Mile (80 Km) Radius}**LEGEND**

- ★ Center Point of Proposed Bell Bend NPP (BBNPP)
- ▲ USGS Stream Gauges
- ▲ Selected USGS Stream Gauges
- City
- Unit 1 Reactor 50 Mile (80 km) Radius
- Waterbody
- County Boundary
- State Boundary

REFERENCES

ESRI StreetMap Pro [CD-ROM], 2007, Cities, Rivers, Waterbodies, County Boundaries.
 USGS, National Water Information System, 2008, Site Inventory for Pennsylvania.

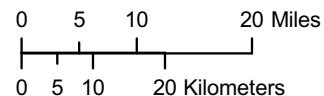
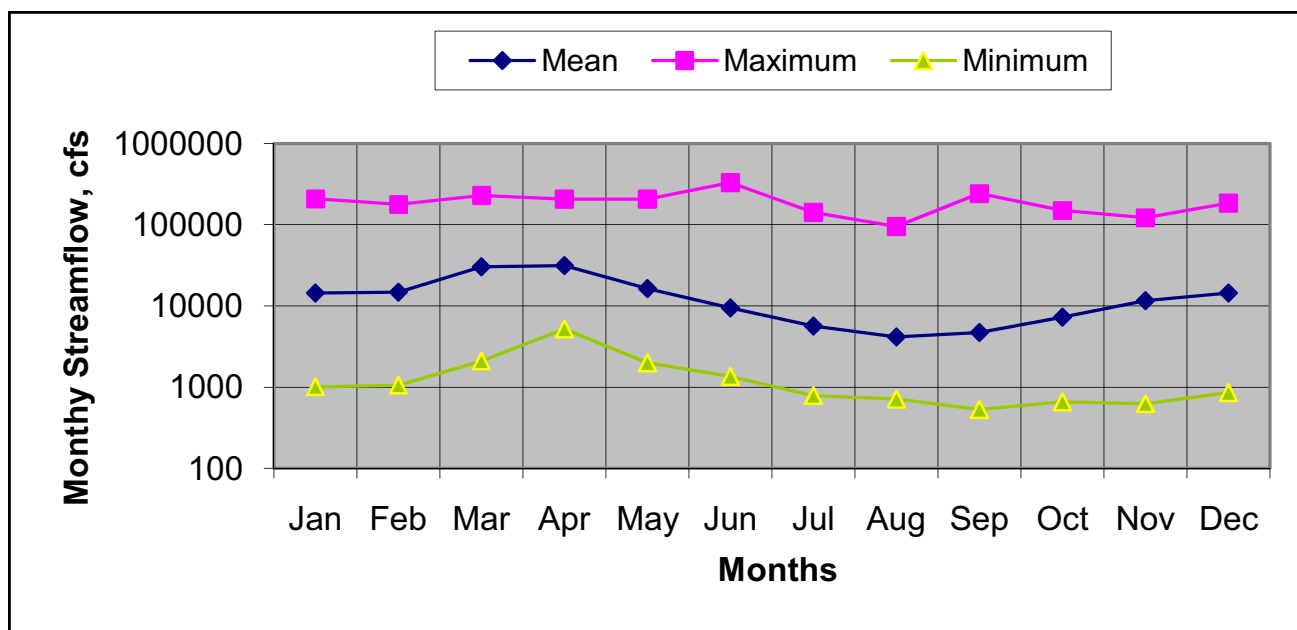
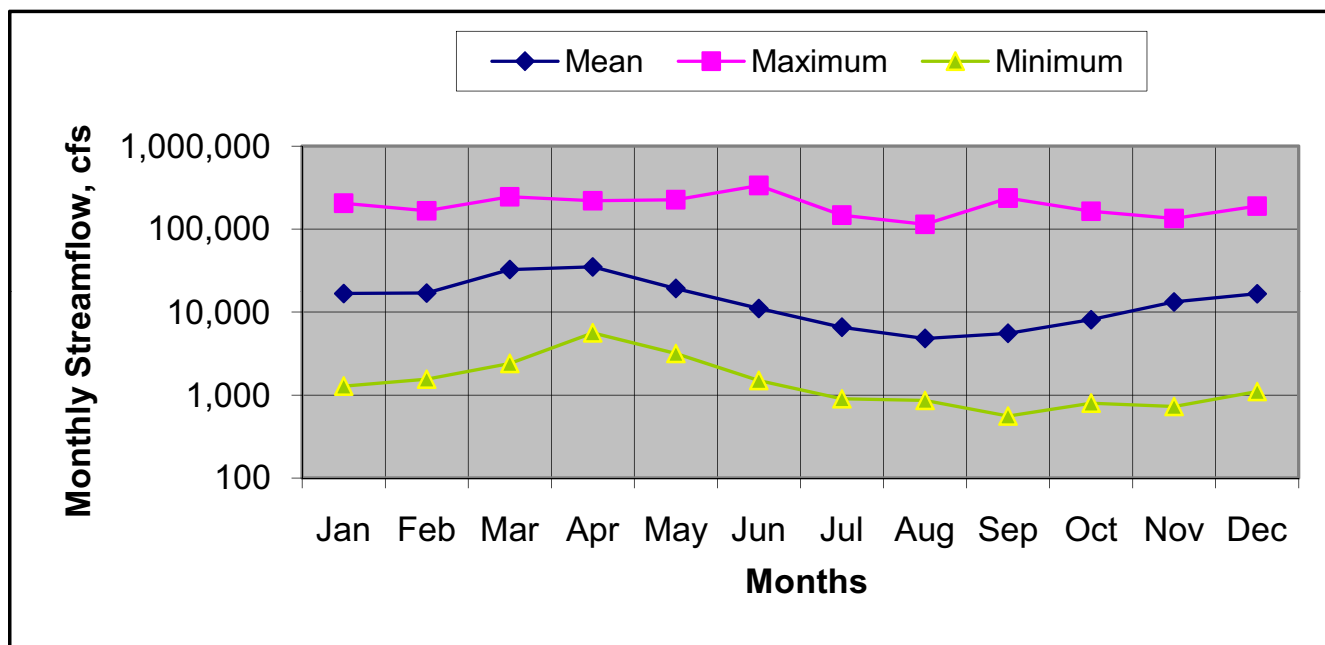


Figure 2.4-8— {Mean, Maximum & Minimum Monthly Streamflows for Wilkes-Barre, PA USGS 01536500, (1900 through 2007)}



Source: USGS, 2008i

Figure 2.4-9— {Mean, Maximum & Minimum Monthly Streamflows for Danville, PA USGS 01540500 (1905 through 2007)}



Source: USGS, 2008h

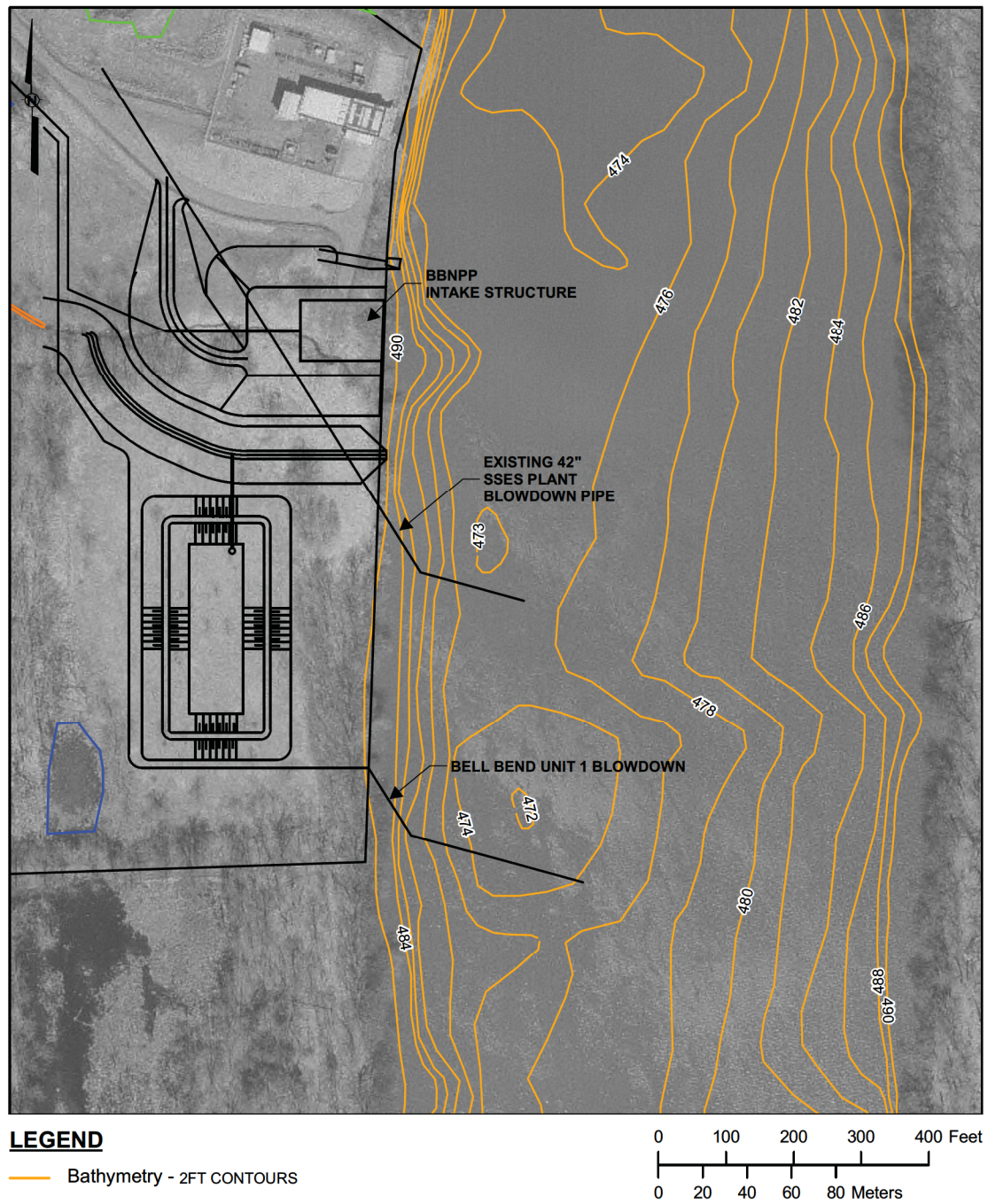
Figure 2.4-10— {Susquehanna River Bathymetry near Intake & Blowdown Structures}

Figure 2.4-11 — {Flood Insurance Map Panel 1 of 4}

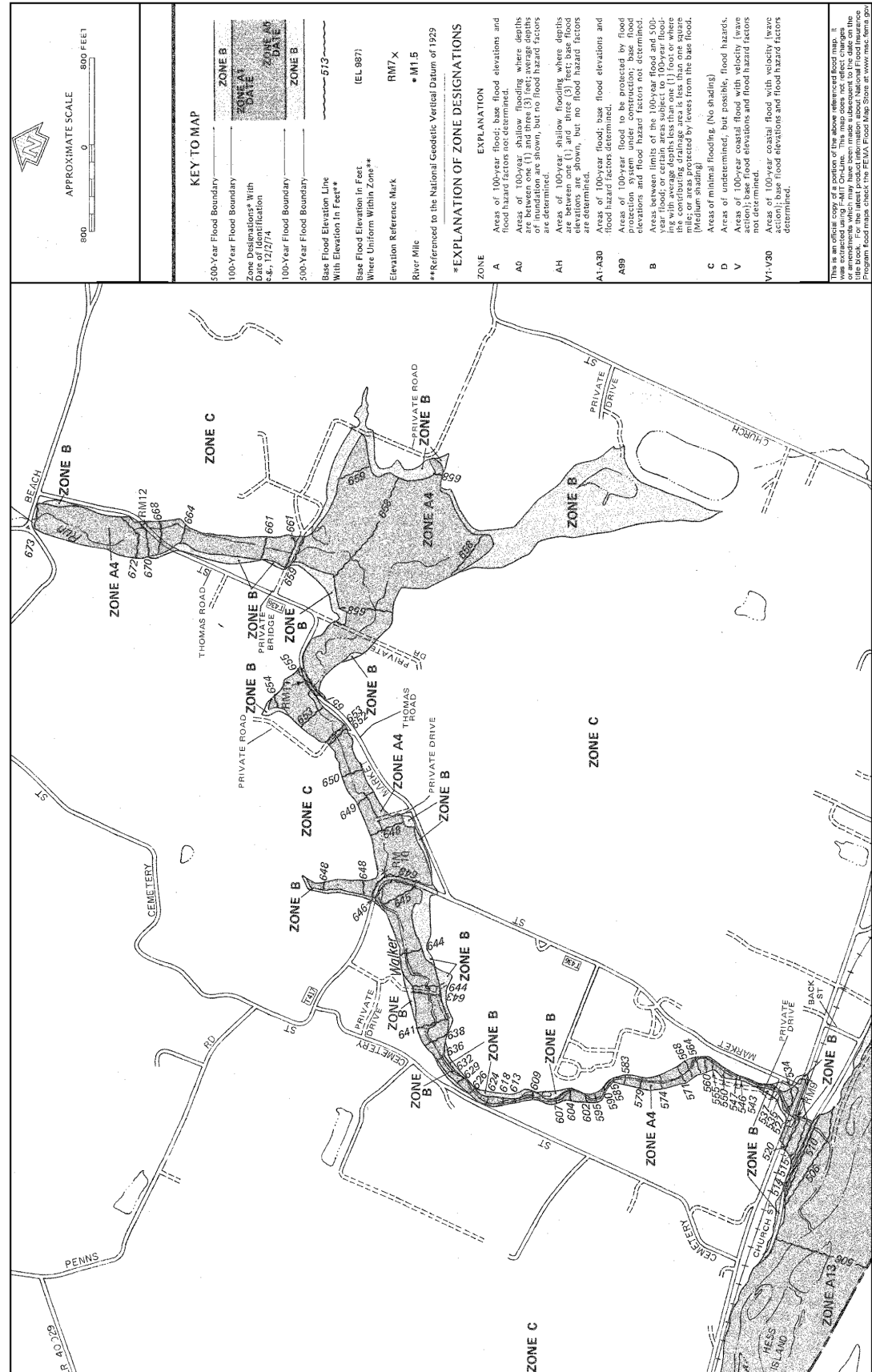
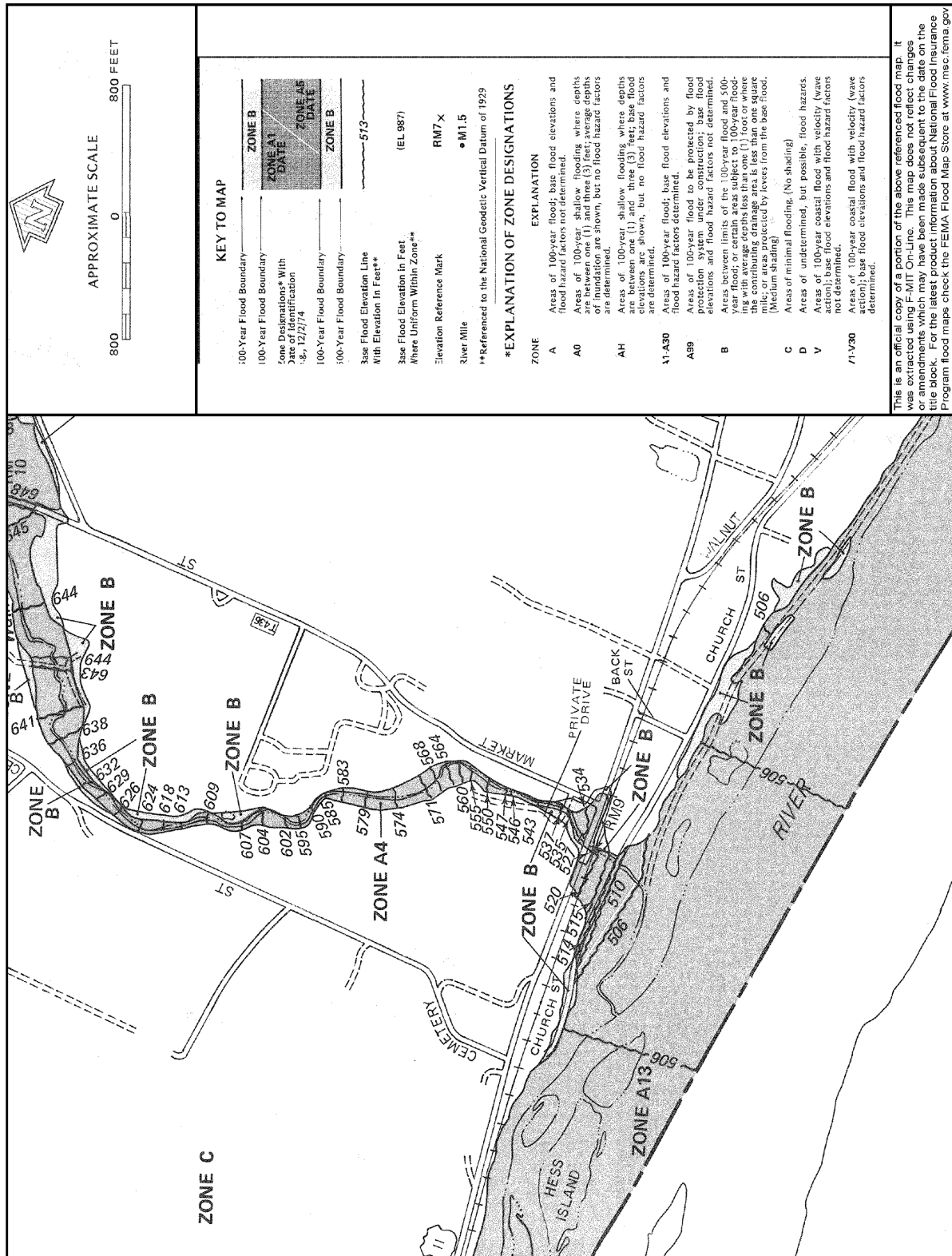


Figure 2.4-12— {Flood Insurance Map Panel 2 of 4}



This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Figure 2.4-13—{Flood Insurance Map Panel 3 of 4}



Figure 2.4-14— {Flood Insurance Map Panel 4 of 4}

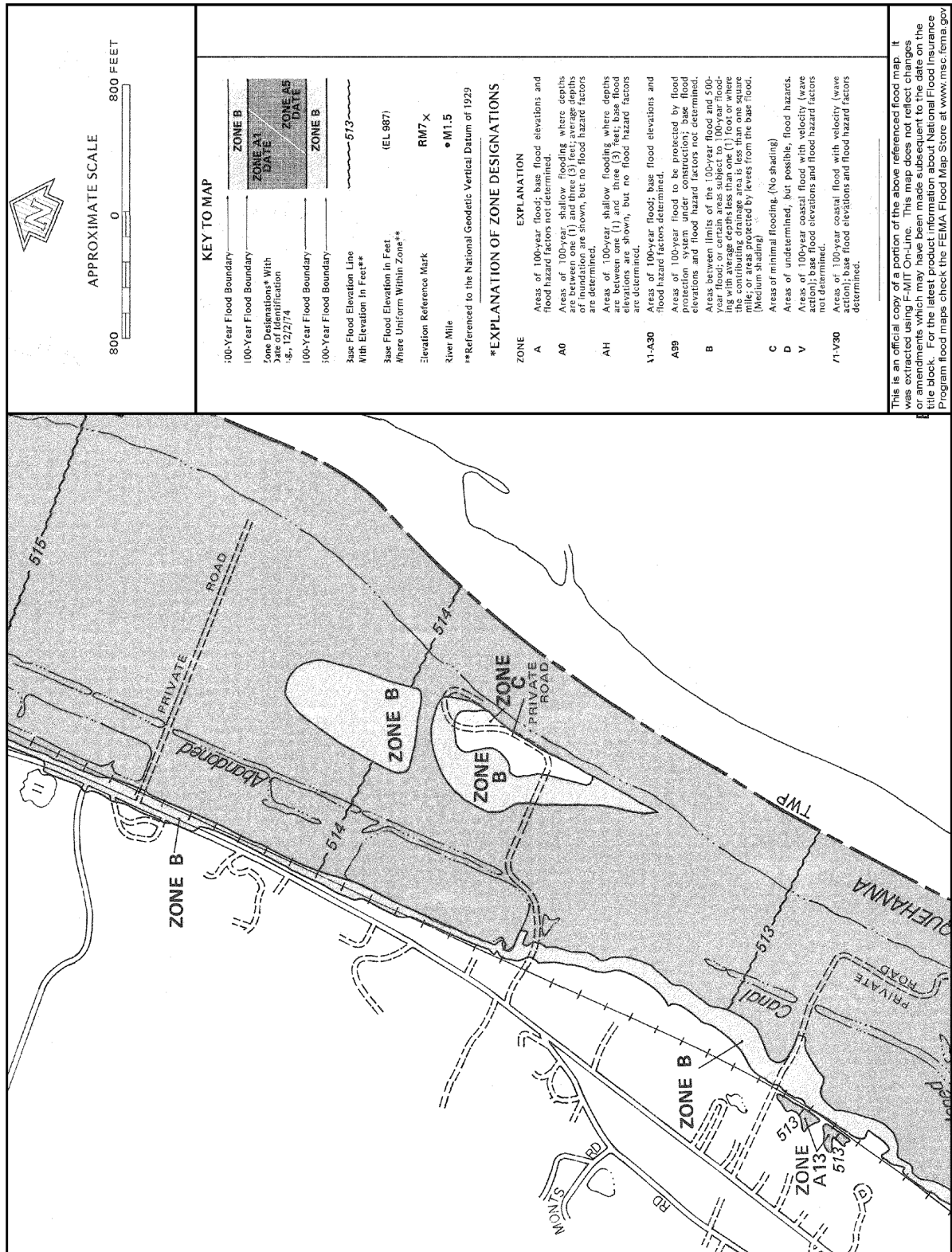


Figure 2.4-15— {Dams within the Susquehanna River Basin}

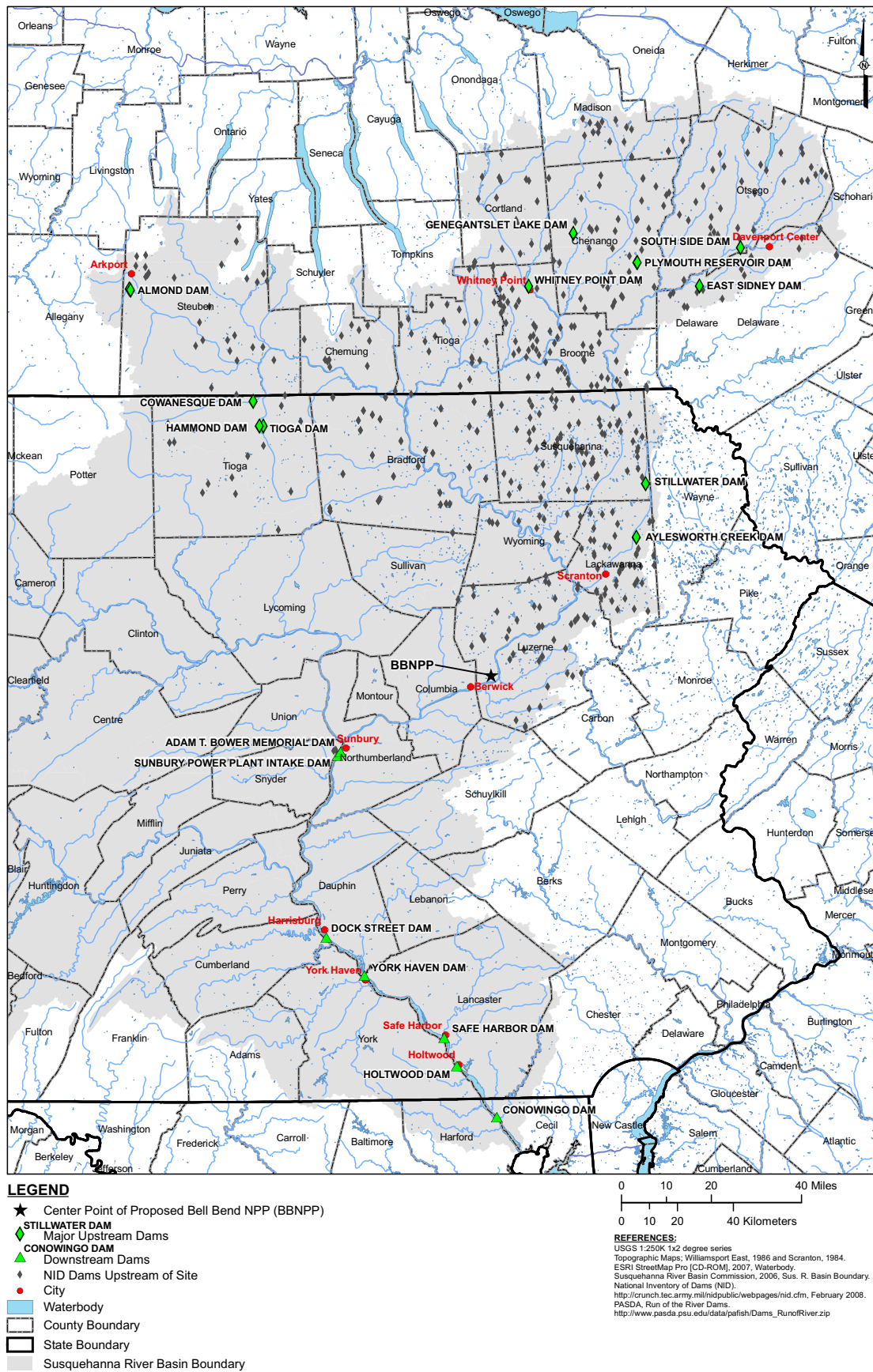
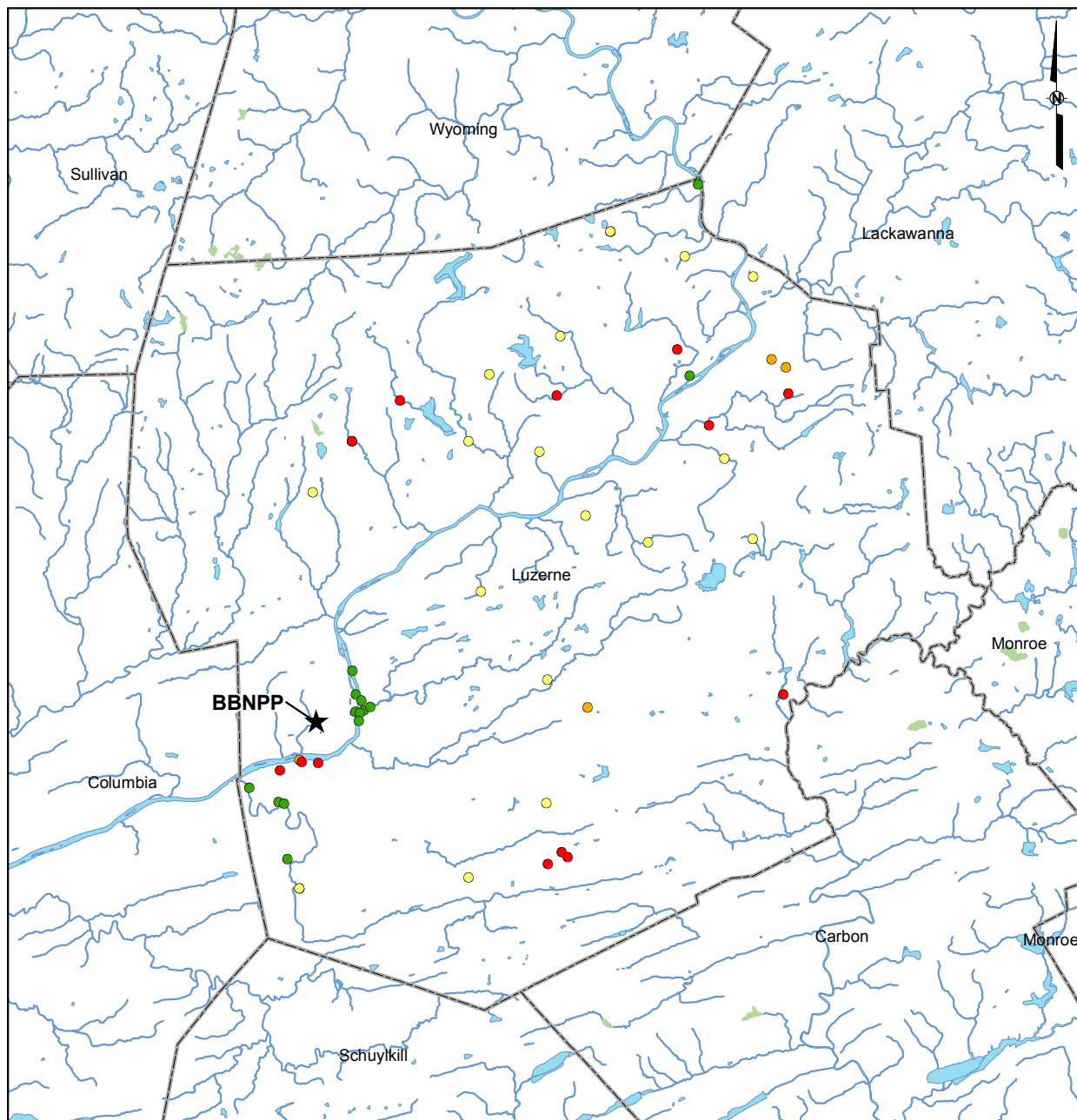


Figure 2.4-16— {Surface Water Withdrawal in Luzerne County}**LEGEND**

★ Center Point of Bell Bend NPP (BBNPP)

Surface Water Withdrawal (PADEP, 2008)

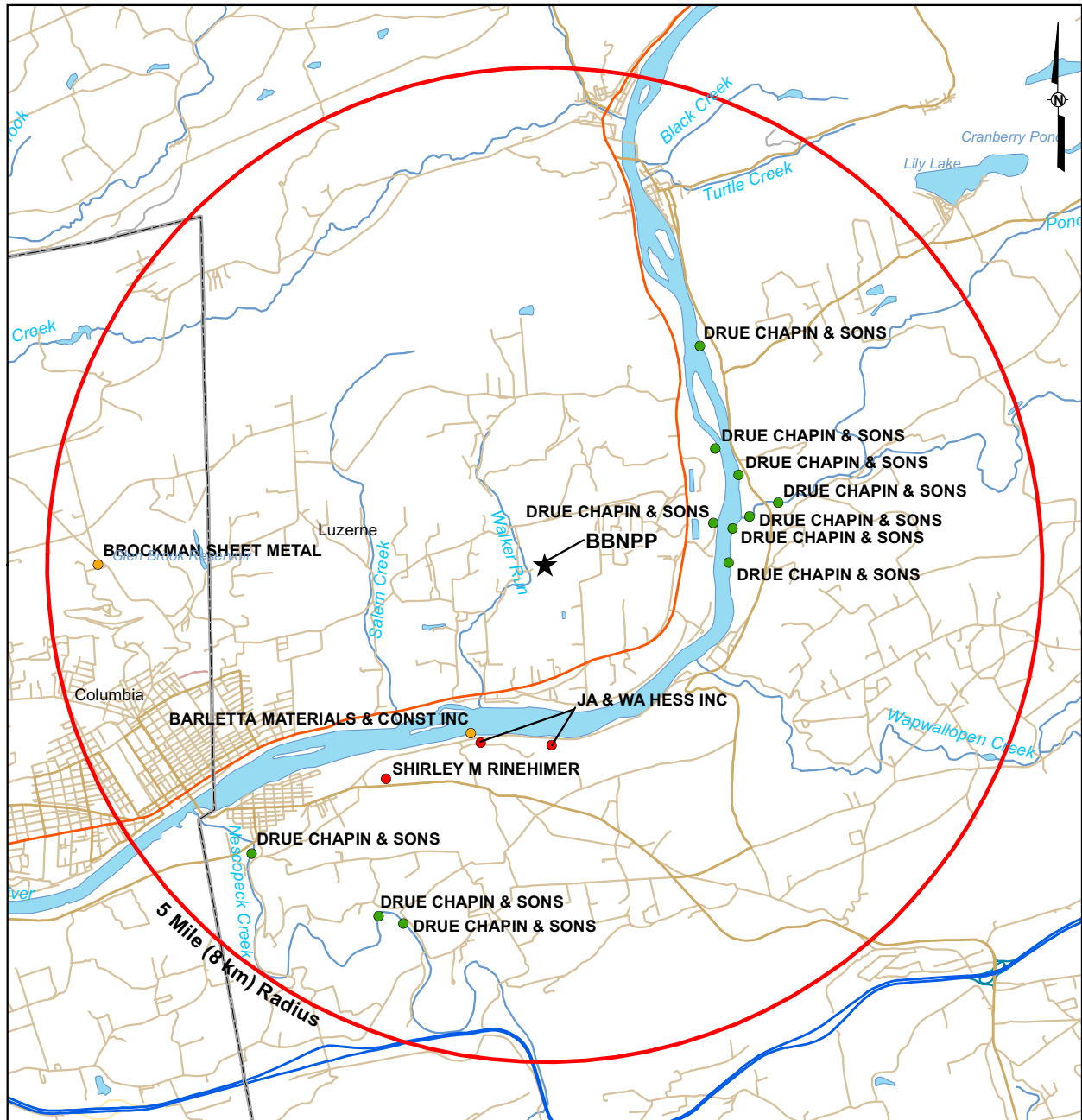
- Agricultural Use
- Commercial Use
- Industrial Use
- Mineral Use

- ▭ County Boundary
- Streams and Rivers
- Waterbody

0 2 4 8 Miles
0 2 4 8 Kilometers

REFERENCES

- ESRI StreetMap Pro [CD-ROM], 2007, rivers, waterbodies, and county boundaries.
- Water Resources from PASDA, published by PADEP. <http://www.pasda.psu.edu/data/dep/> Downloaded May 08, 2008.

Figure 2.4-17— {Surface Water Withdrawal within 5-mile (8 km) Radius}**LEGEND**

★ Center Point of Bell Bend NPP (BBNPP)

Surface Water Withdrawal (PADEP, 2008)

● Agricultural Use ● Industrial Use
● Commercial Use ● Mineral Use

□ BBNPP Reactor 5 Mile (8 km) Radius

□ County Boundary

— Interstate

— Secondary State and County Highway

— Local, Neighborhood, Rural, or City Street

— Streams and Rivers

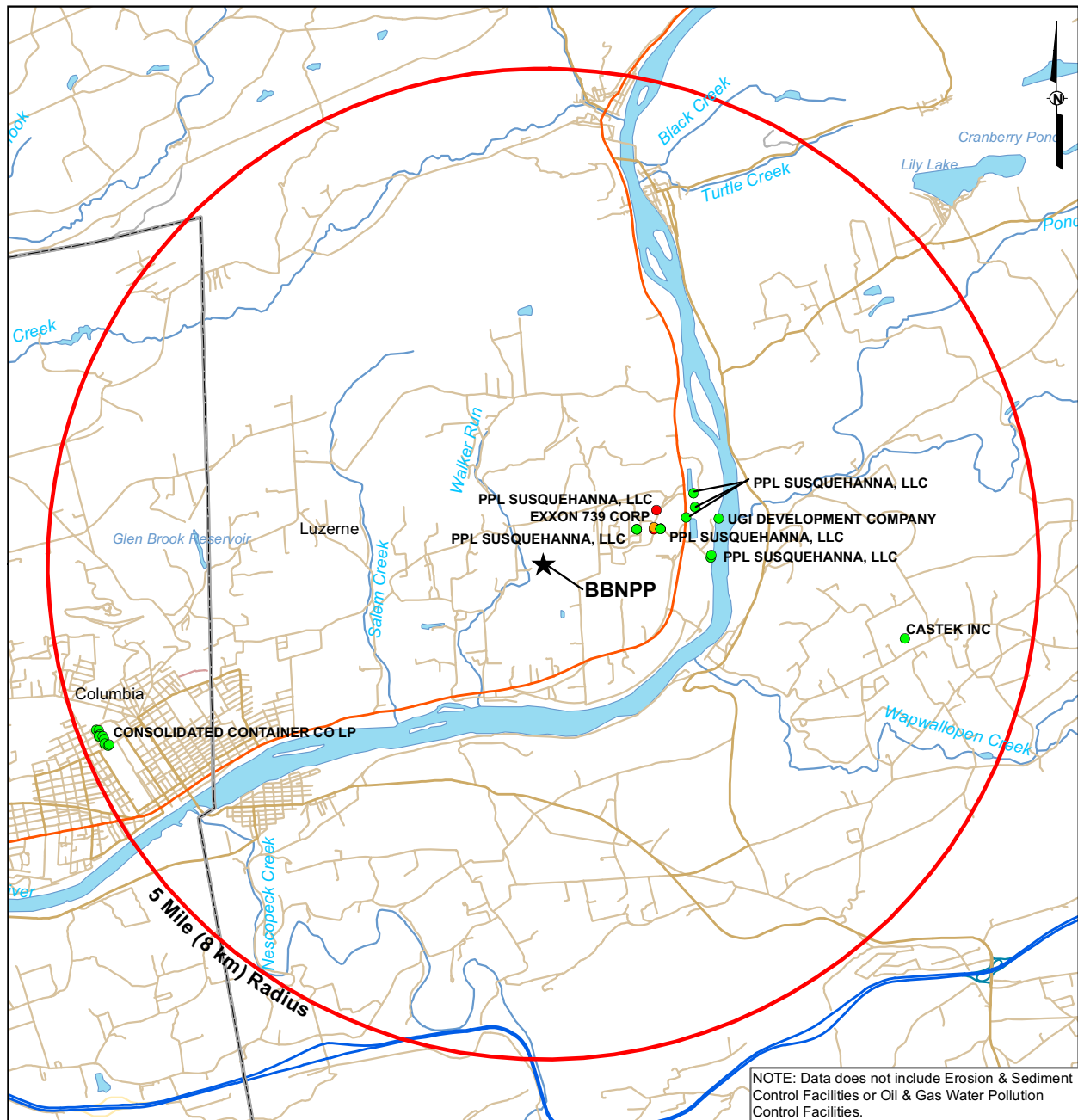
— Waterbody

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

REFERENCES

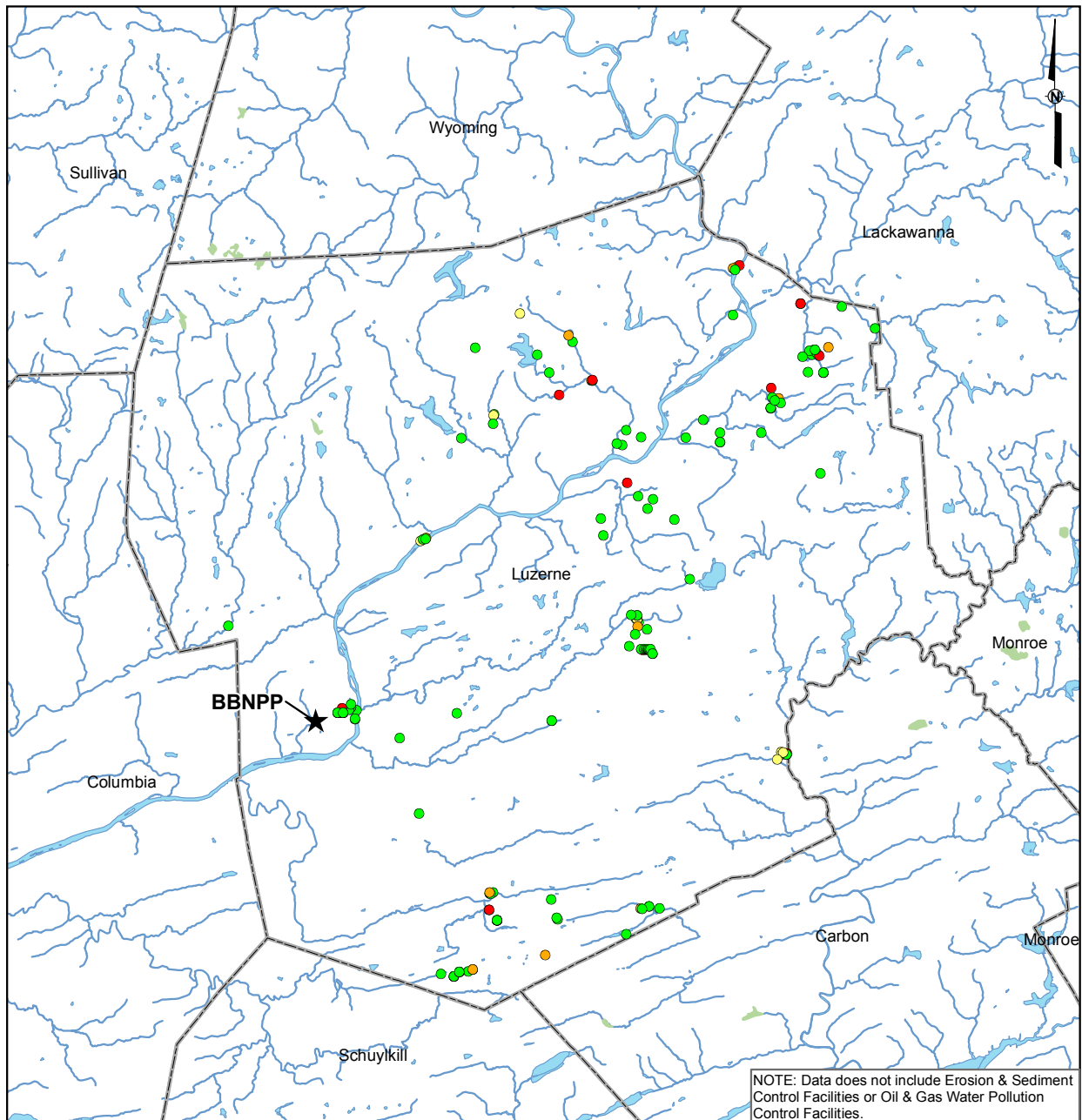
• ESRI StreetMap Pro [CD-ROM], 2007, rivers, waterbodies, and county boundaries.
• Water Resources from PASDA, published by PADEP.
<http://www.pasda.psu.edu/data/dep/>
Downloaded May 08, 2008.

Figure 2.4-18— {Water Pollution Control Facilities Locations within a 5-mile (8-km) Radius}**LEGEND**

- ★ Center Point of Bell Bend NPP (BBNPP)
- Water Pollution Facility (PADEP, 2008) - NPDES
 - Discharge Point
 - Treatment Plant
 - Production Service Unit
- BBNPP Reactor 5 Mile (8 km) Radius
- County Boundary
- Interstate
- Secondary State and County Highway
- Local, Neighborhood, Rural, or City Street
- Streams and Rivers
- Waterbody

**REFERENCE**

- ESRI StreetMap Pro [CD-ROM], 2007, rivers, waterbodies, roads, and county boundaries.
- Water Pollution Facility (NPDES) from PASDA, published by PADEP. <http://www.pasda.psu.edu/data/dep/> Downloaded May 08, 2008.

Figure 2.4-19— {Water Pollution Control Facilities Locations within Luzerne County}**LEGEND**

★ Center Point of Bell Bend NPP (BBNPP)

Water Pollution Facility (PADEP, 2008) - NPDES

- Discharge Point
- Production Service Unit
- Treatment Plant
- Other

- ▭ County Boundary
- Streams and Rivers
- Waterbody

0 2 4 8 Miles
0 2 4 8 Kilometers

REFERENCE

- ESRI StreetMap Pro [CD-ROM], 2007, rivers, waterbodies, roads, and county boundaries.
- Water Pollution Facility (NPDES) from PASDA, published by PADEP. <http://www.pasda.psu.edu/data/dep/> Downloaded May 08, 2008.

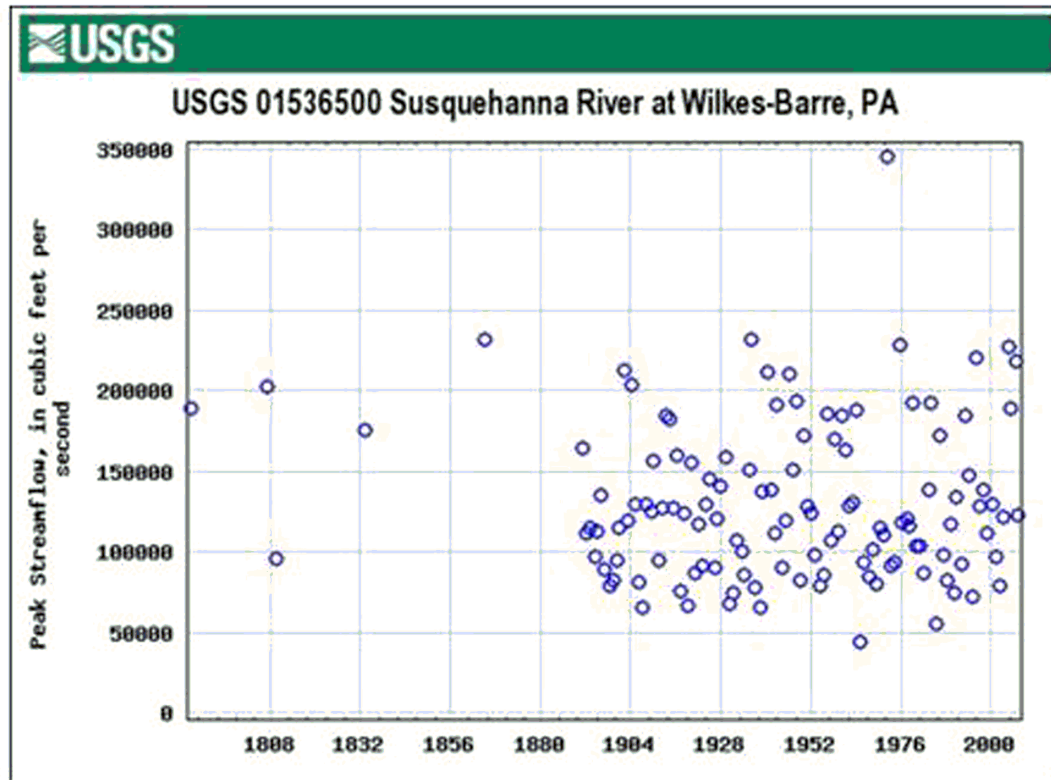
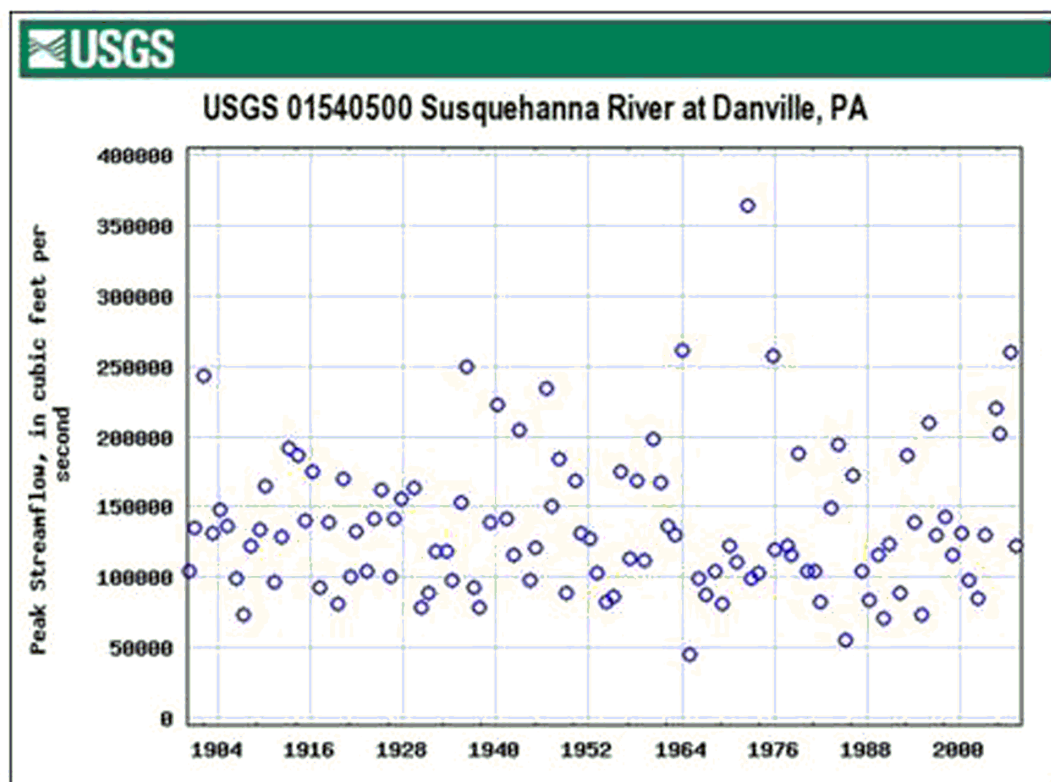
Figure 2.4-20— {Peak Streamflow at Wilkes-Barre and Danville Gauging Stations}**Source: USGS, 2008a****Source: USGS, 2008b**

Figure 2.4-21 — {Sub-basin Site Drainage Delineation}

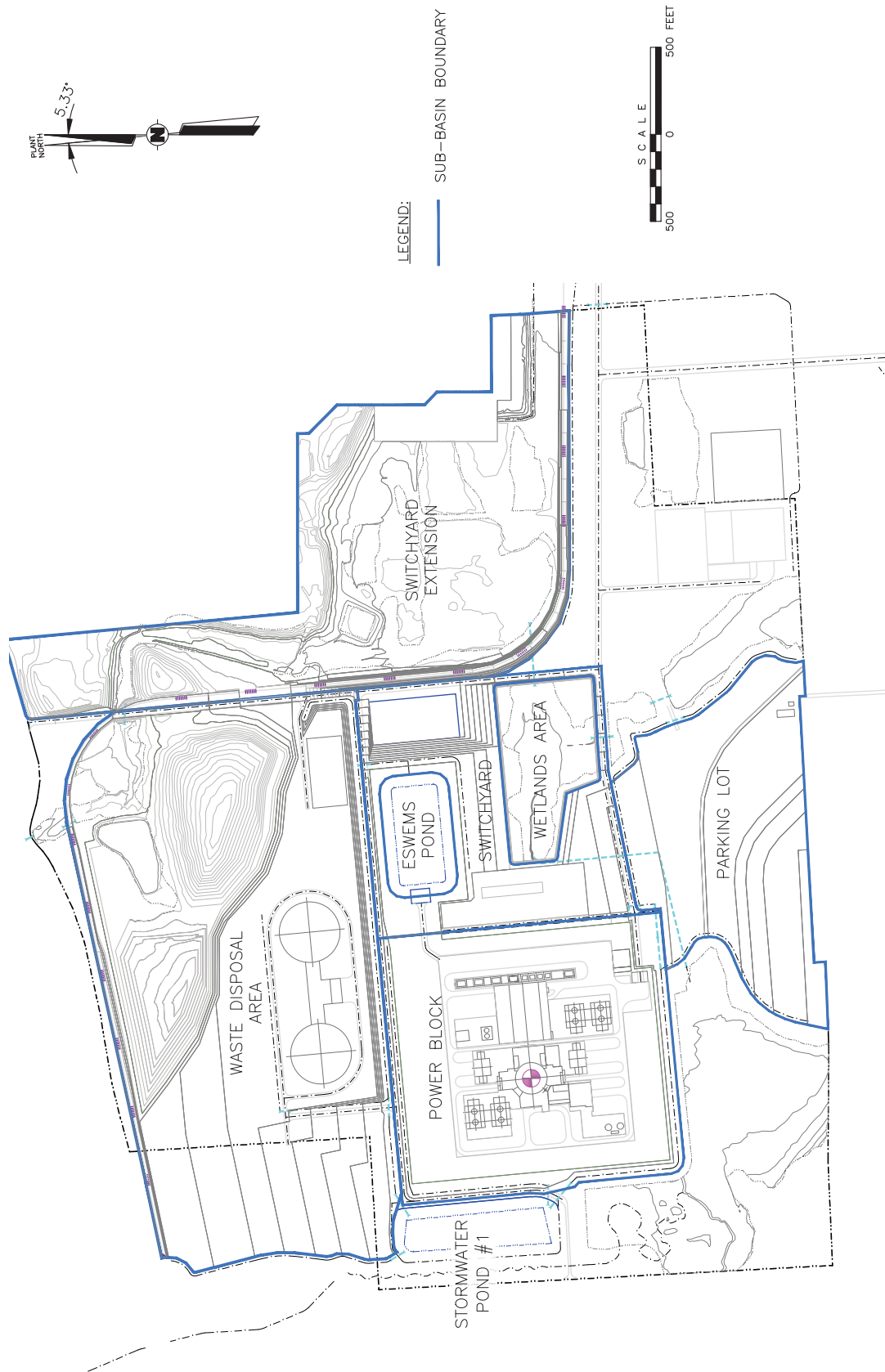


Figure 2.4-22 — {HEC-HMS Hydrologic Diagram}

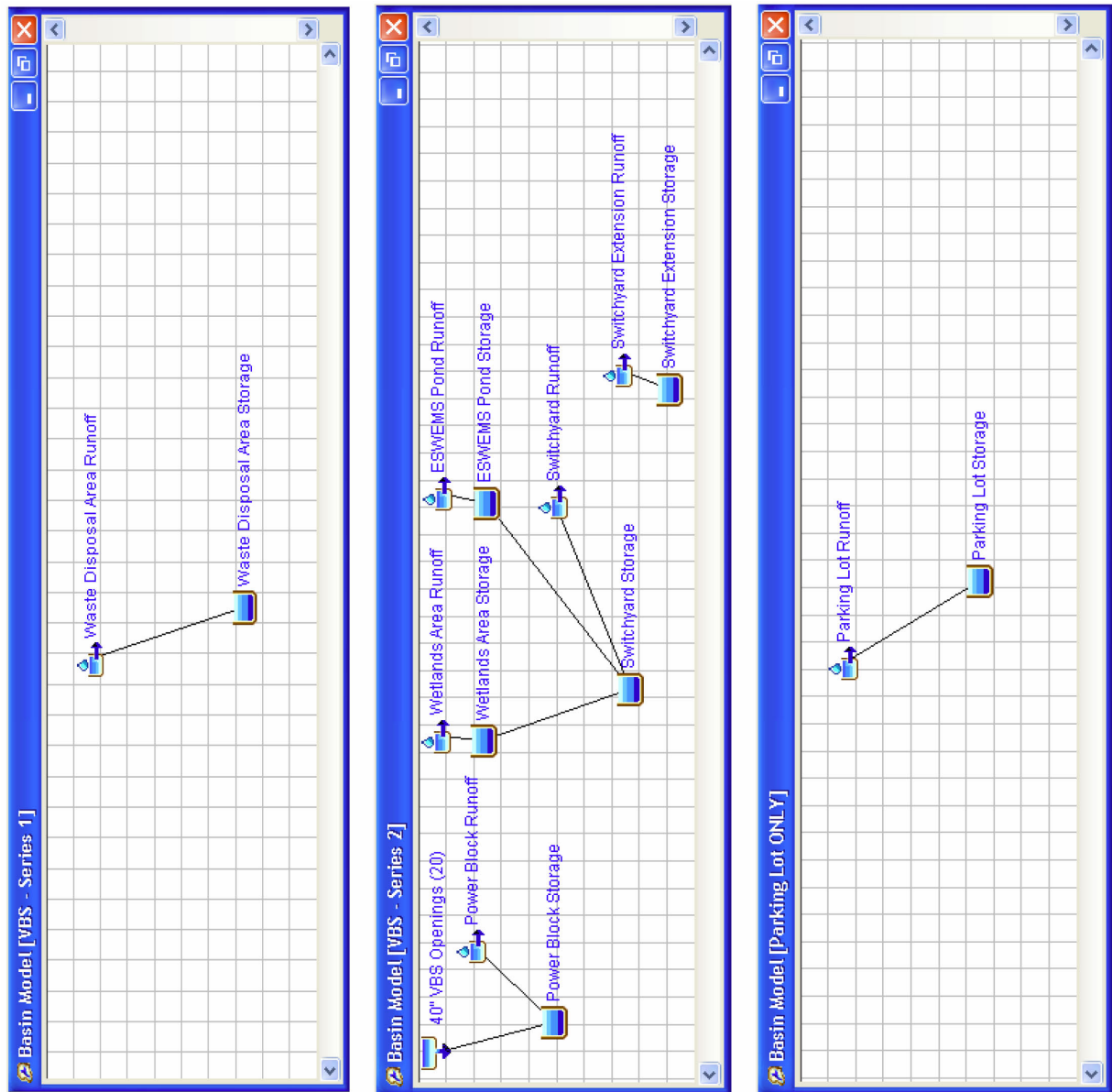


Figure 2.4-23— {BNPP Site Location}

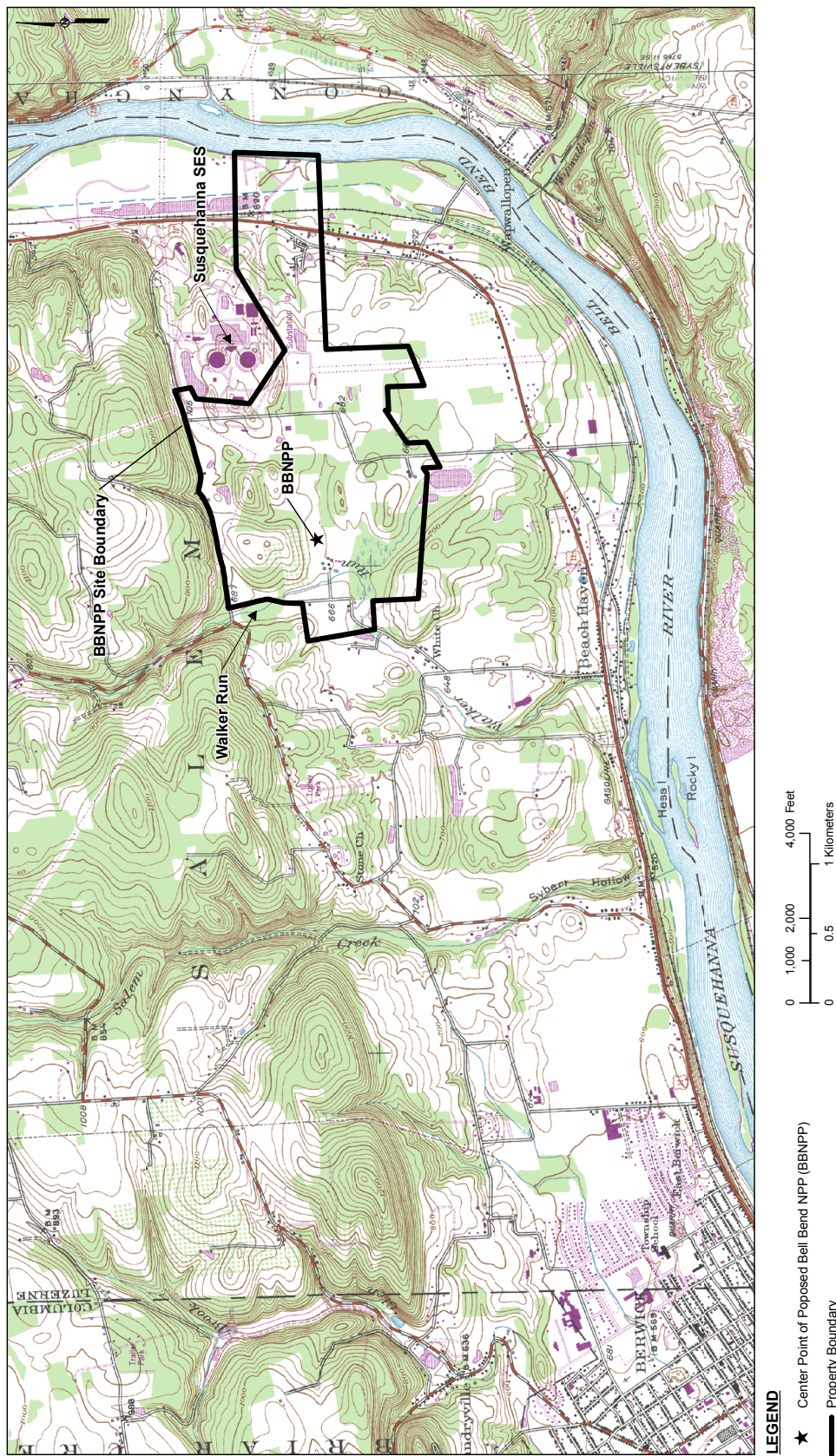


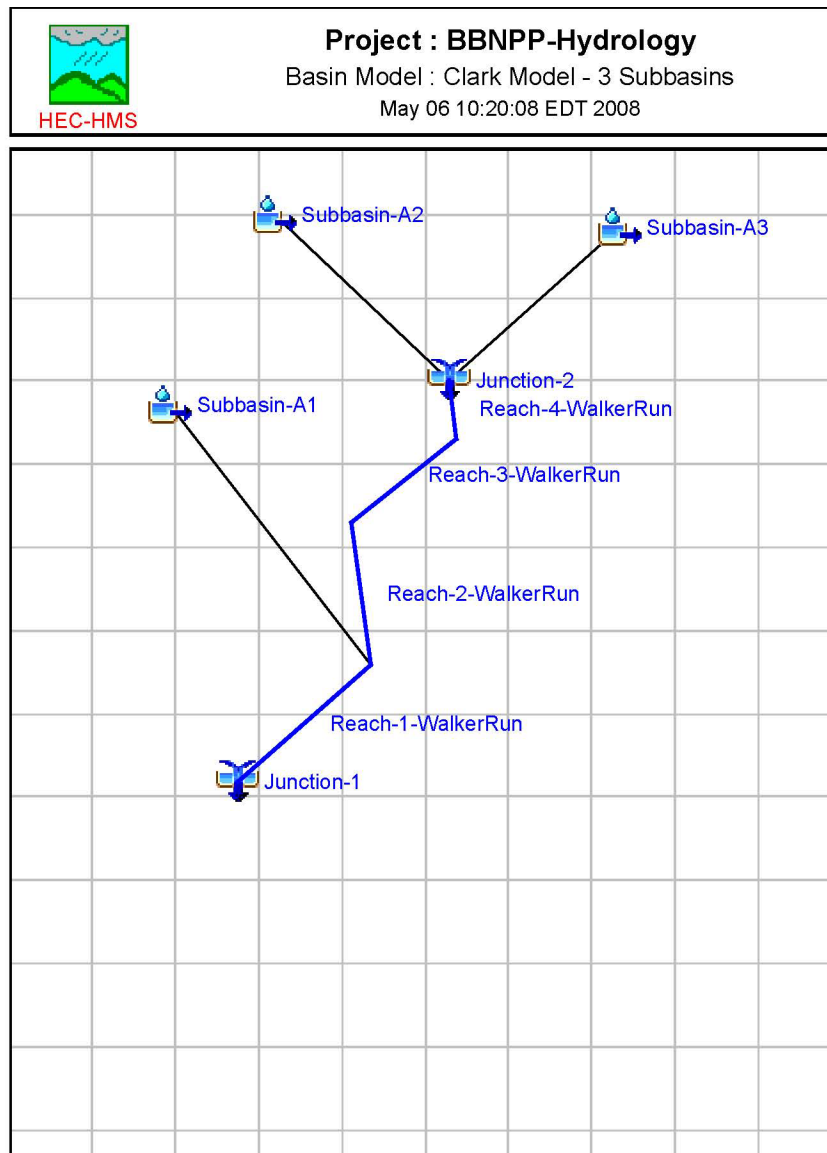
Figure 2.4-24— {HEC-HMS Model Setup of Walker Run Watershed}

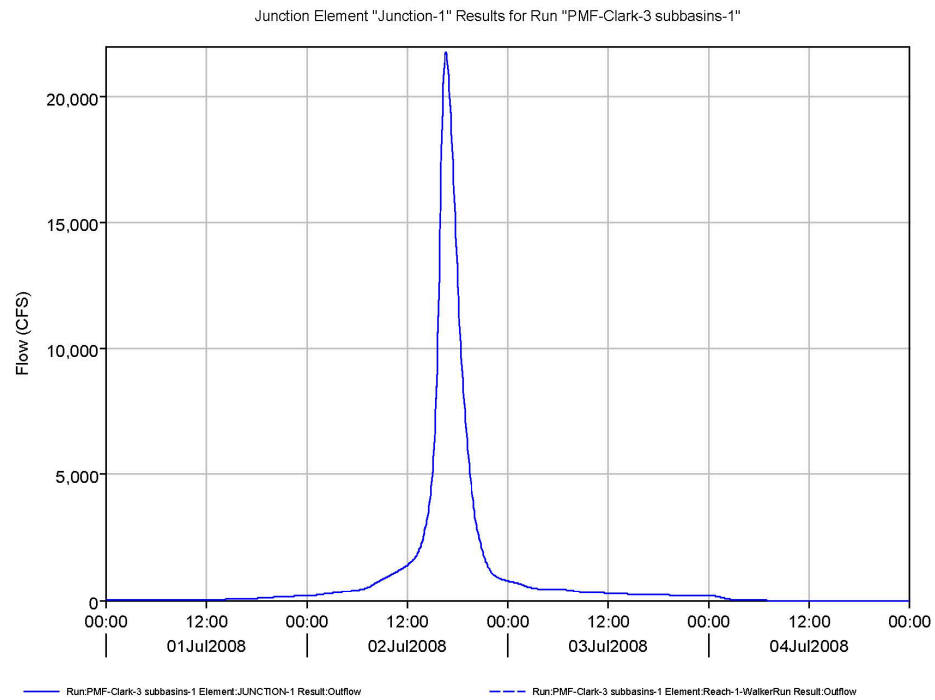
Figure 2.4-25— {Junction 1 Hydrograph}

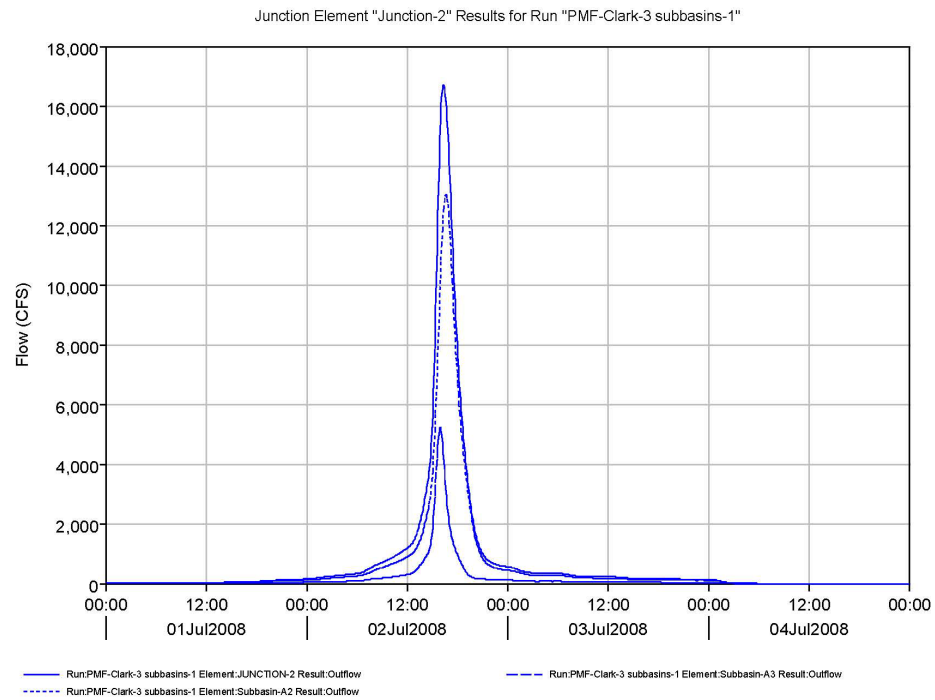
Figure 2.4-26— {Junction 2 Hydrograph}

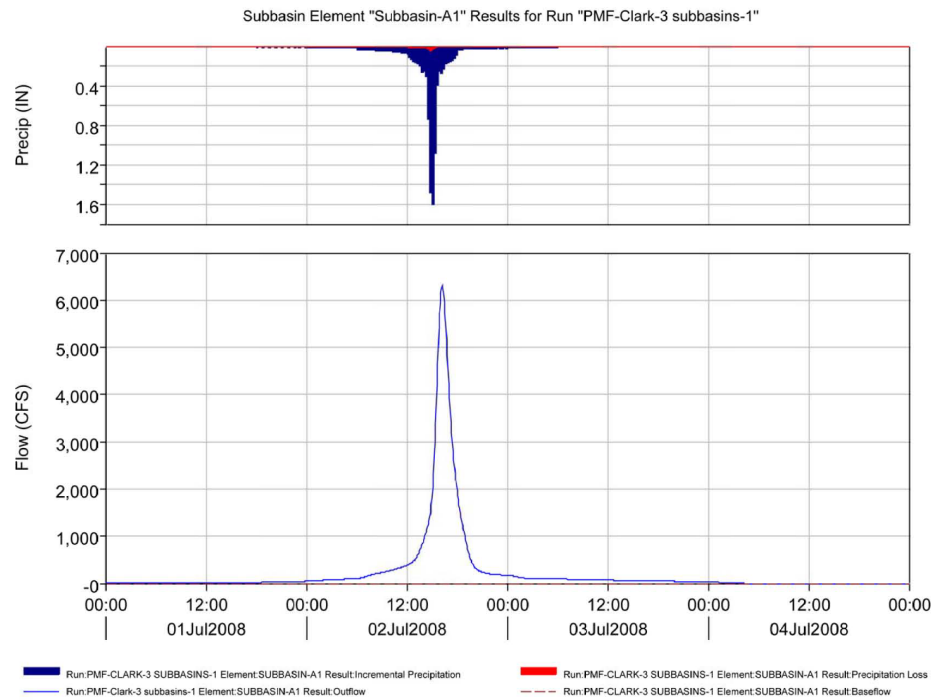
Figure 2.4-27— {Sub-Basin A1 Hydrograph}

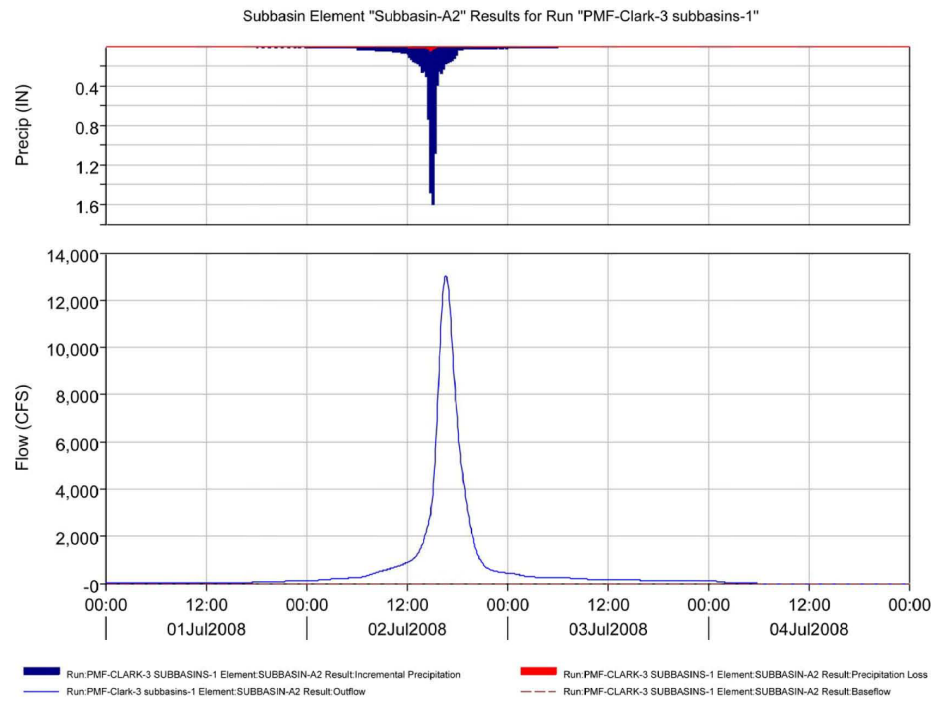
Figure 2.4-28— {Sub-Basin A2 Hydrograph}

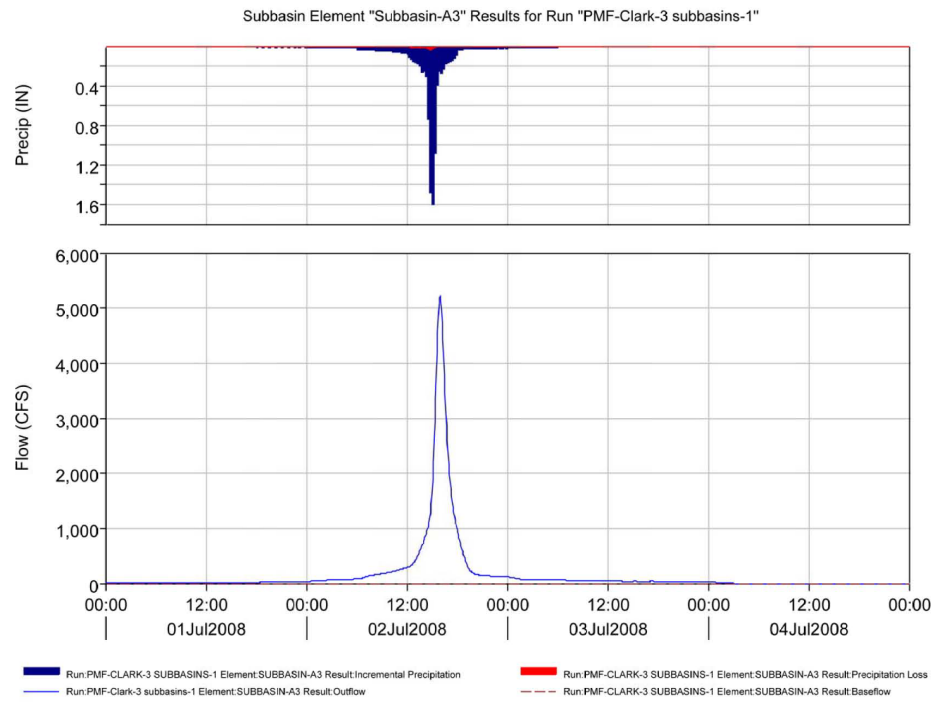
Figure 2.4-29— {Sub-Basin A3 Hydrograph}

Figure 2.4-30—{HEC-RAS Cross Section Locations Near Power Block}

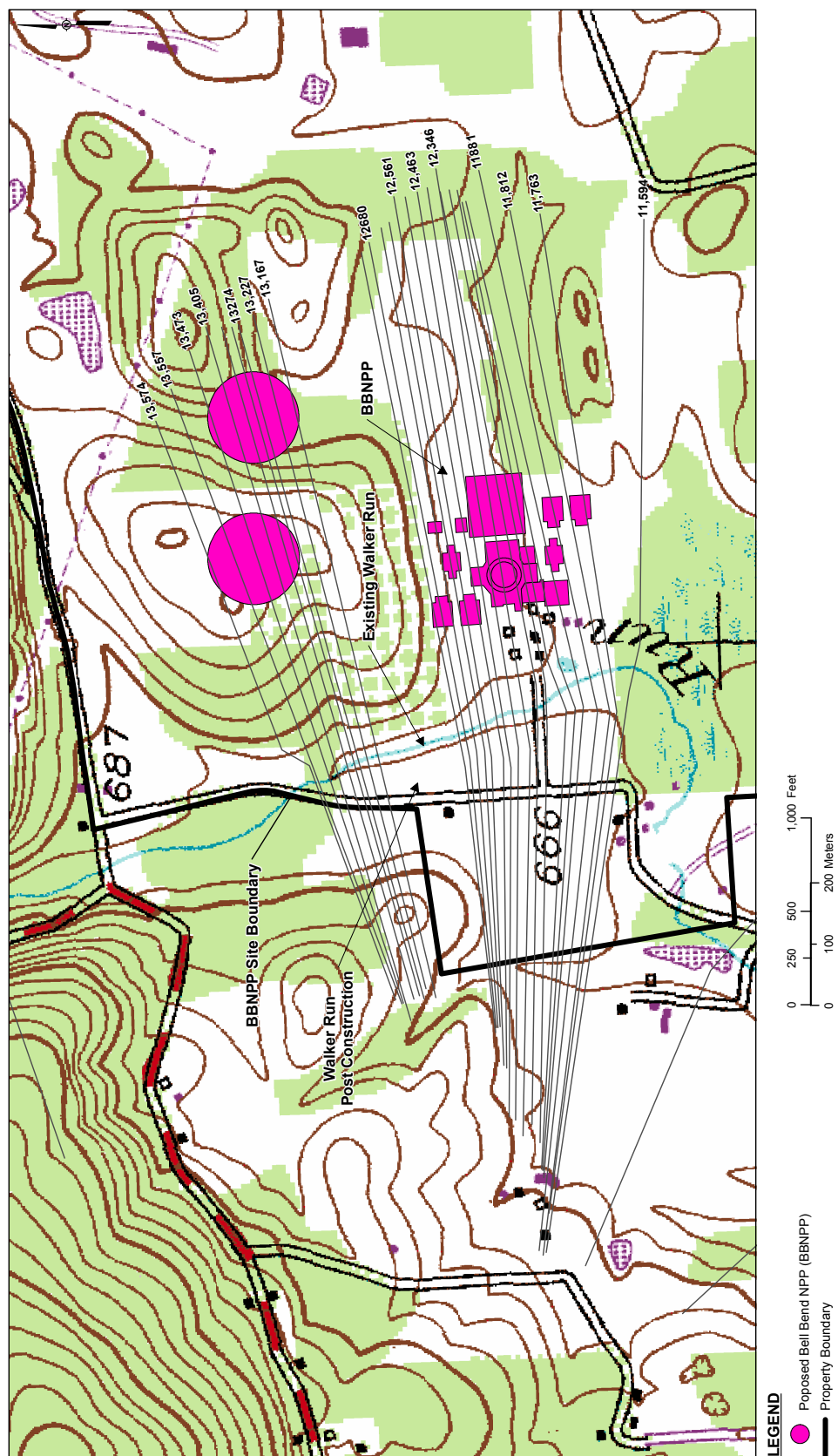
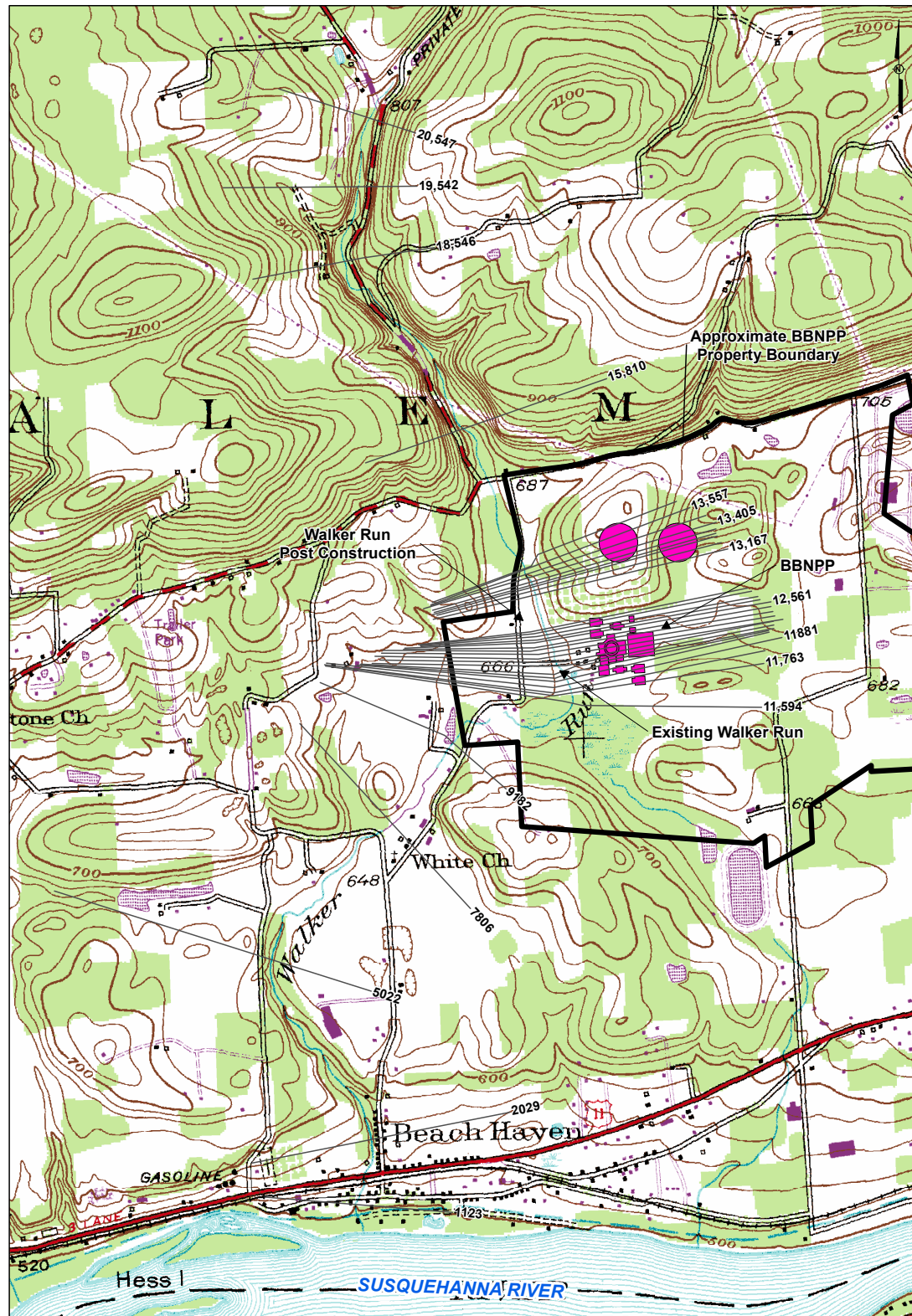


Figure 2.4-31— {HEC-RAS Cross Section Locations}



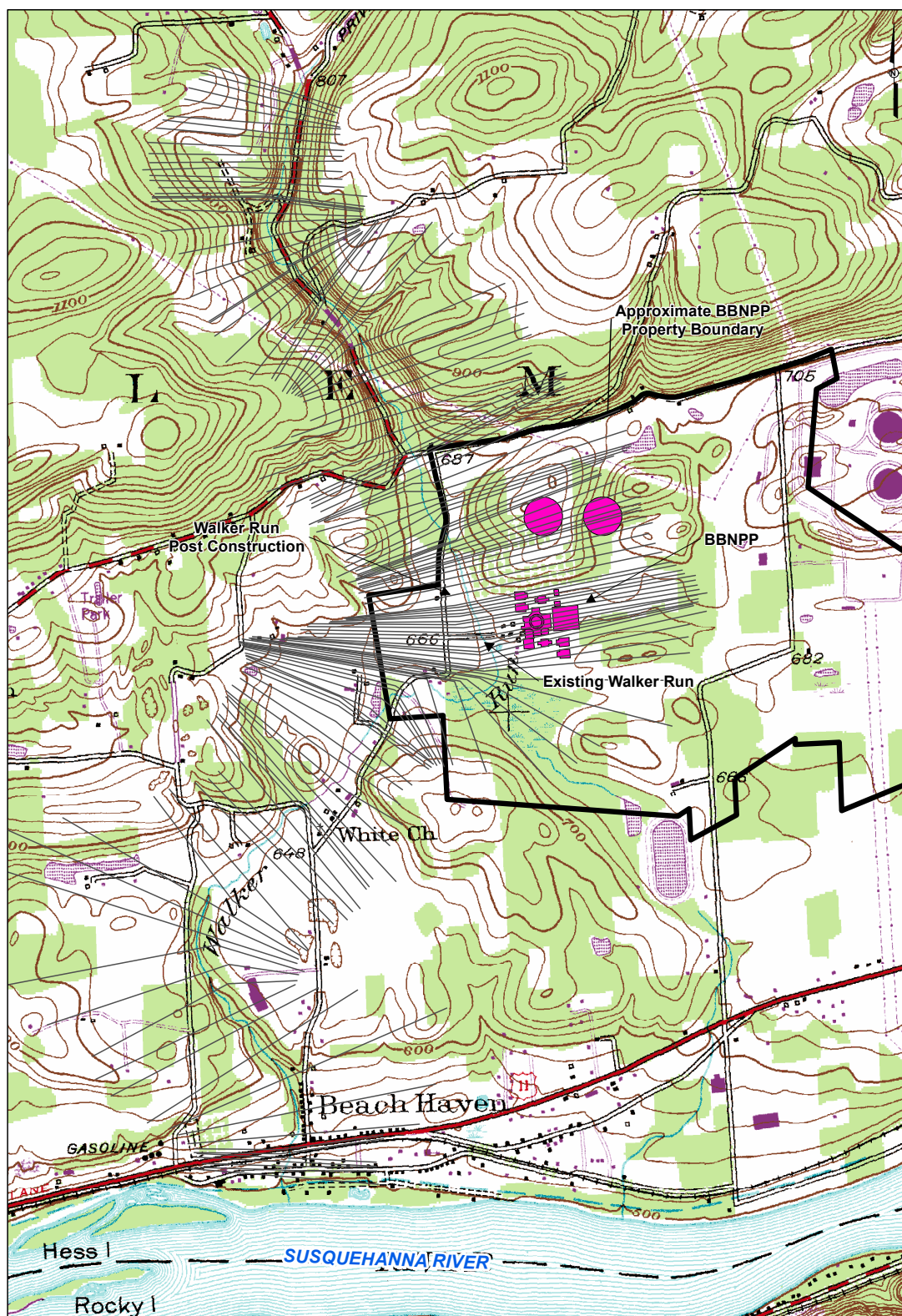
LEGEND

-  Poposed Bell Bend NPP (BBNPP)
 Property Boundary
 Walker Run
 Cross Section

REFERENCES:

REFERENCES:

- Property Boundary from Aerocon Photogrammetric Services, Inc., November 30, 2007.
- Cross Sections created using HEC-GeoRAS 4.1.1.
- USGS 7.5-minute Qaudrangles: Berwick and Sybertsville, 1955, Photorevised 1989.

Figure 2.4-32— {Complete HEC-RAS Cross Section Locations}**LEGEND**

- Proposed Bell Bend NPP (BBNPP)
- Property Boundary
- Walker Run
- Cross Section

REFERENCES:

- Property Boundary from Aerocon Photogrammetric Services, Inc., November 30, 2007.
- Cross Sections created using HEC-GeoRAS 4.1.1.
- USGS 7.5-minute Quadangles: Berwick and Sybertsville, 1955, Photorevised 1989.

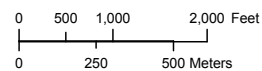


Figure 2.4-33 — {Walker Run PMF Water Surface Profile}

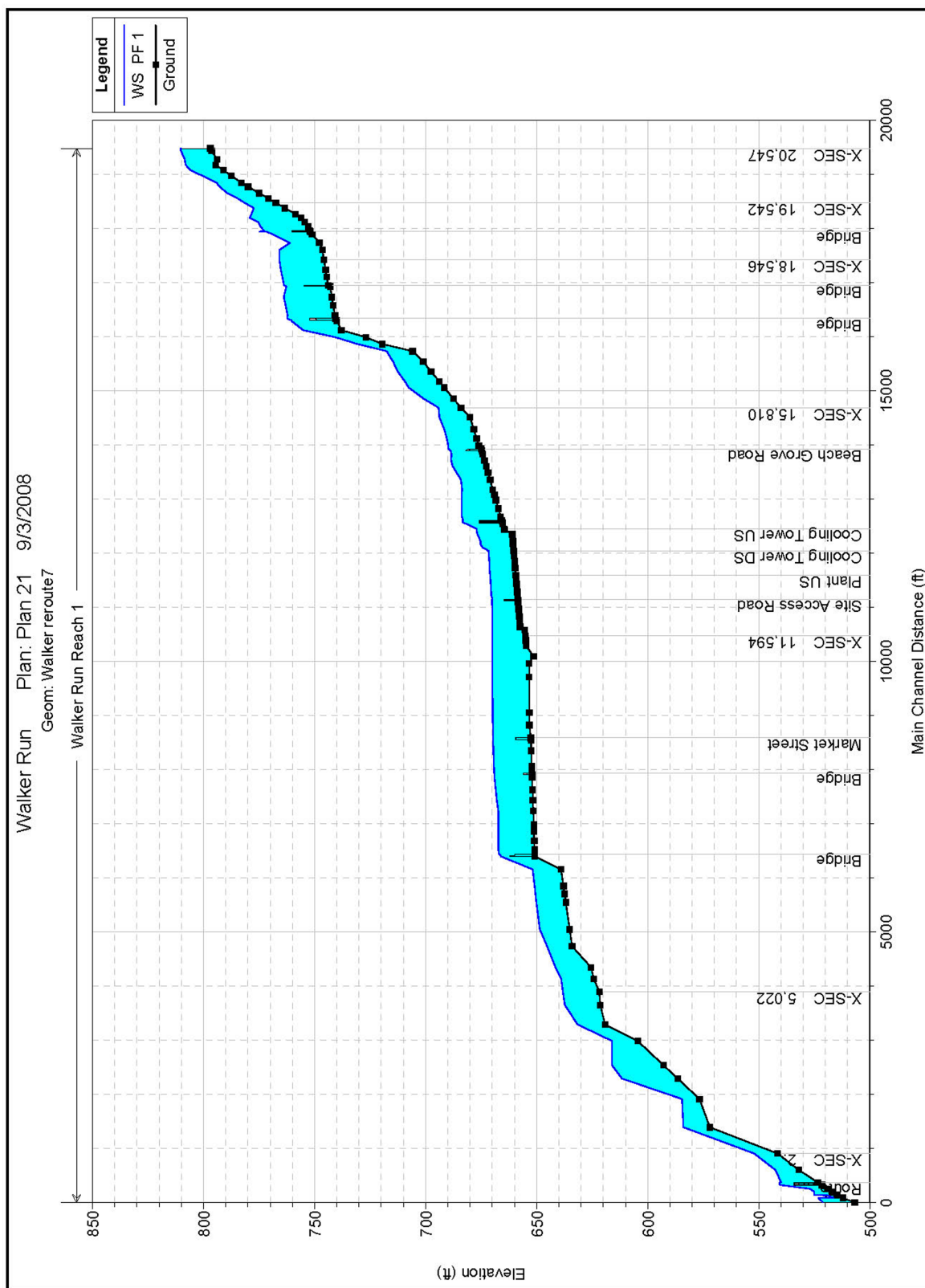
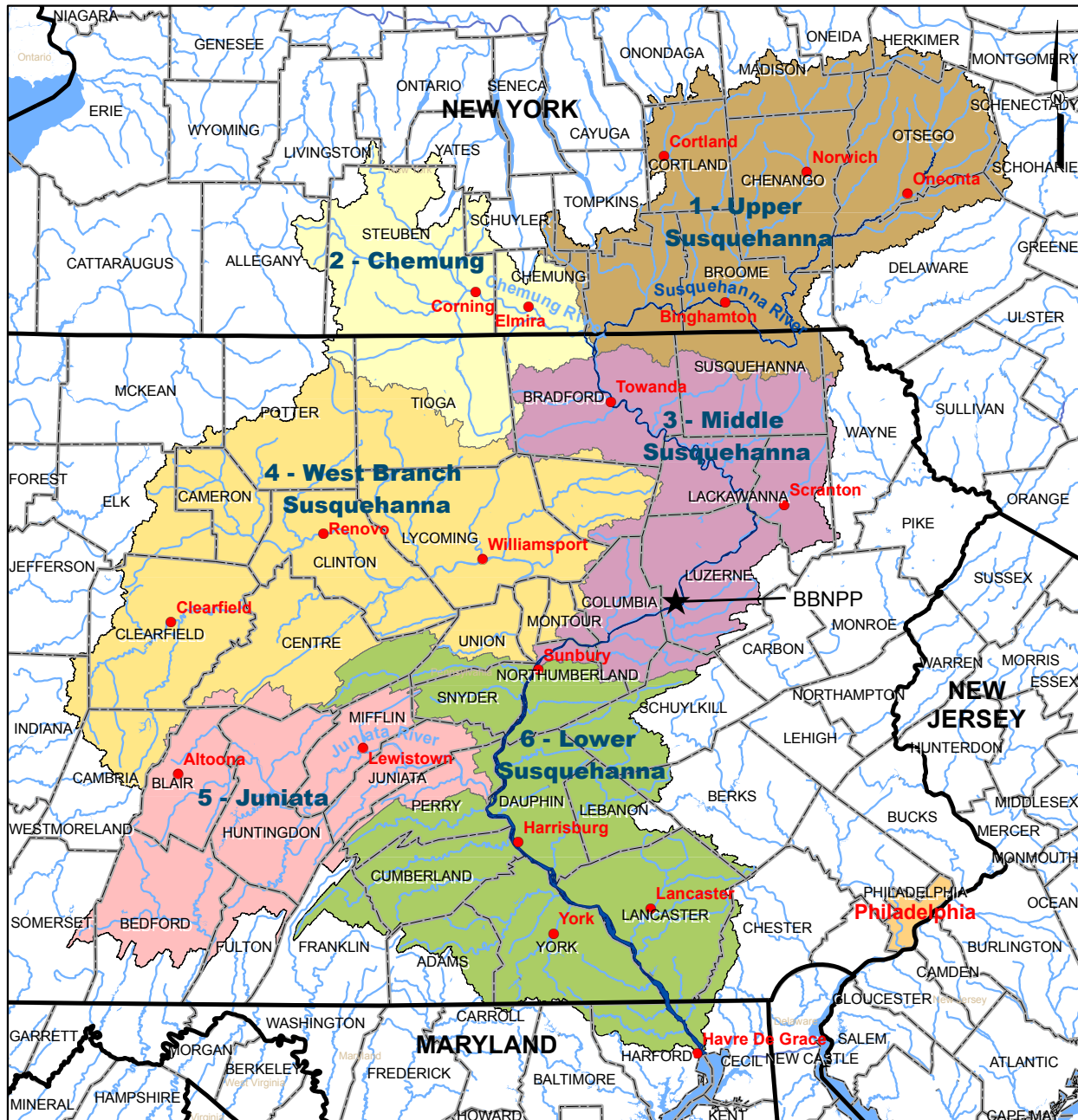


Figure 2.4-34— {Susquehanna River Basin and Sub-Basins}**LEGEND**

★ Center Point of Proposed Bell Bend NPP (BBNPP)

Susquehanna River Subbasins

Chemung

Juniata

Lower Susquehanna

Middle Susquehanna

Upper Susquehanna

West Branch Susquehanna

Waterbody

County Boundary

State Boundary

0 17.5 35 70 Miles

0 17.5 35 70 Kilometers

REFERENCES:

ESRI StreetMap Pro [CD-ROM], 2007, Waterbody, Roads, County, Boundary, and City.
 Susquehanna River Basin Commission, 2006, Susquehanna River Basin Subbasins

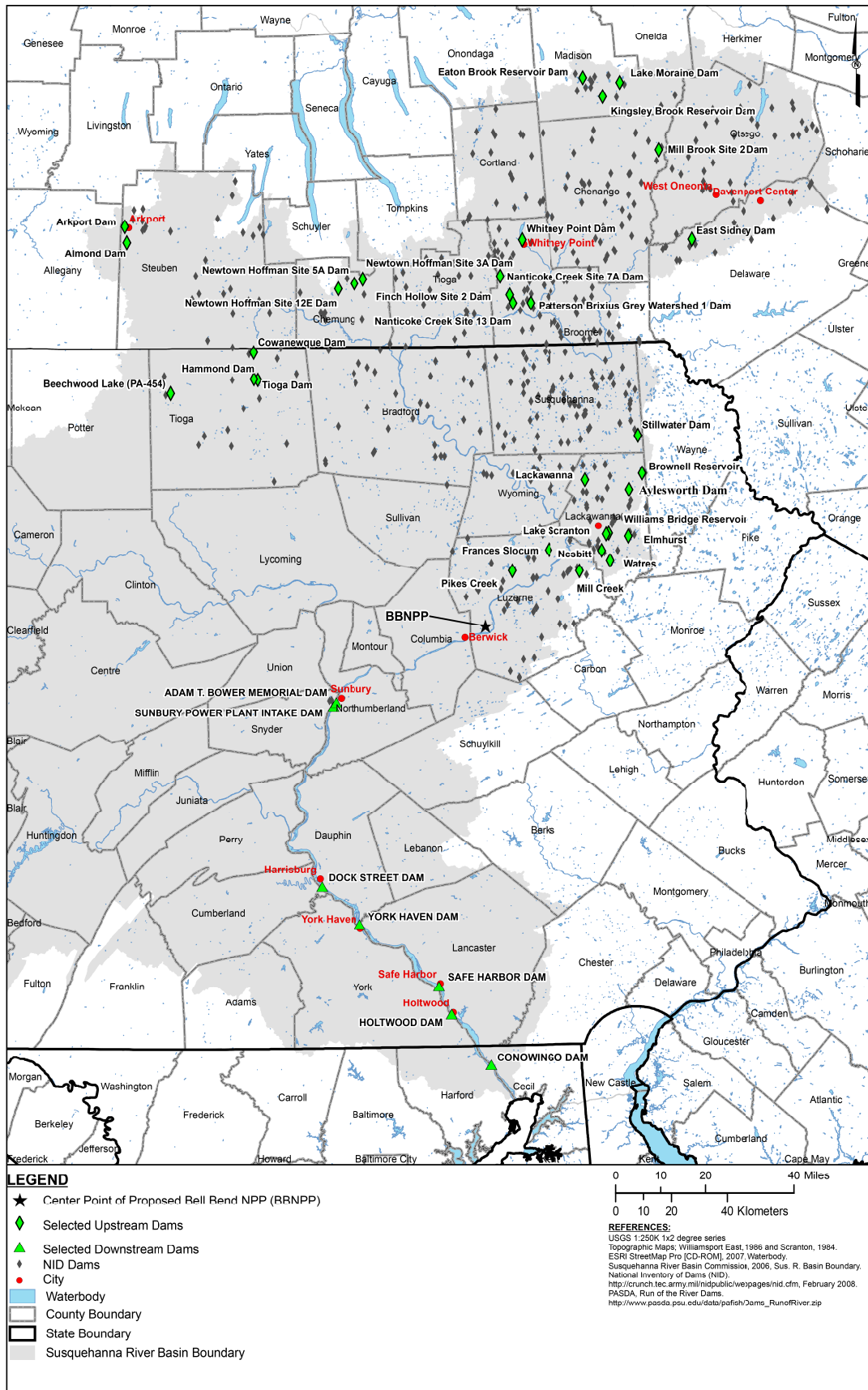
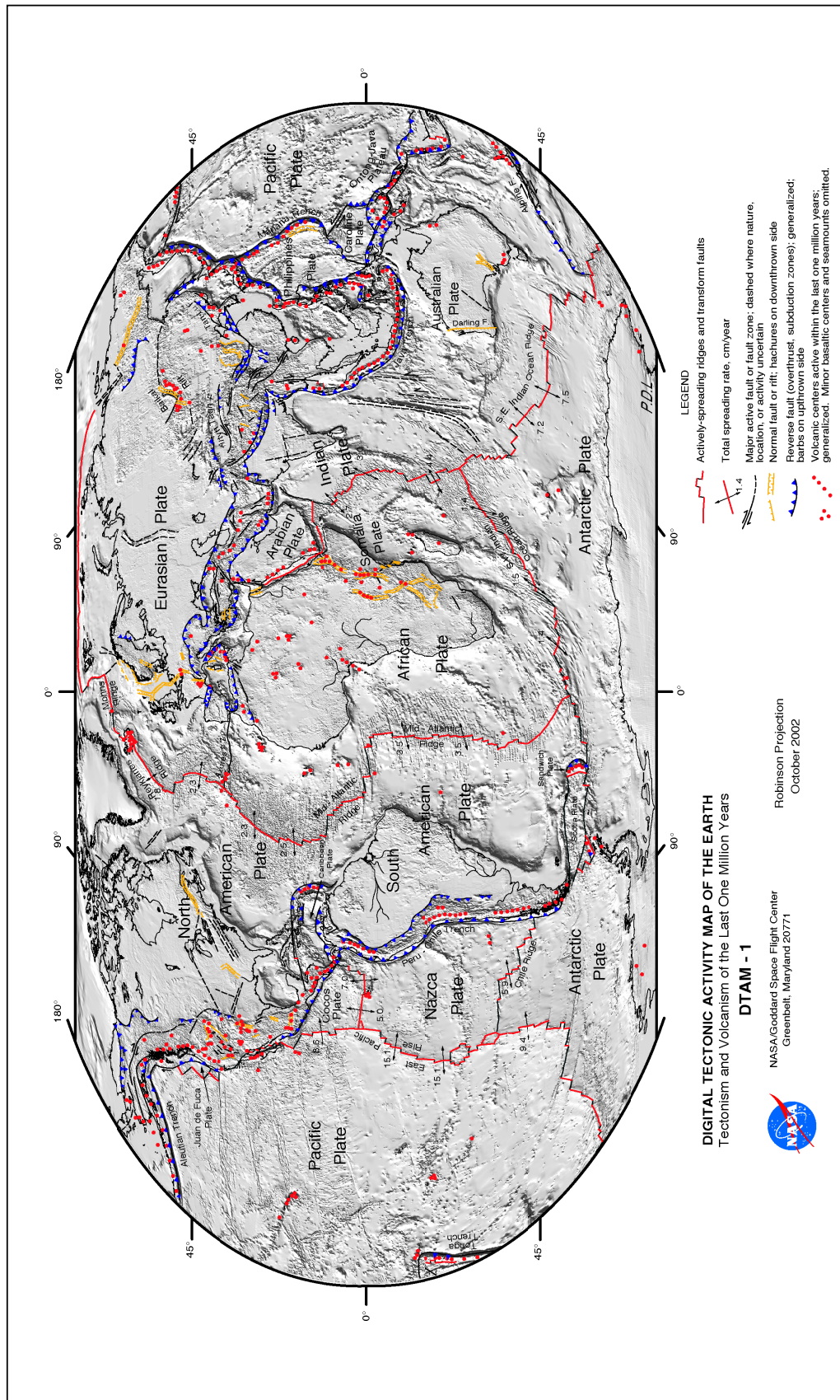
Figure 2.4-35— {Major and Minor Dams Upstream from BBNPP}

Figure 2.4-36— {Digital Tectonic Activity Map of the Earth}



Source: NASA, 2008

Figure 2.4-37—{Pennsylvania Landslide Susceptibility}

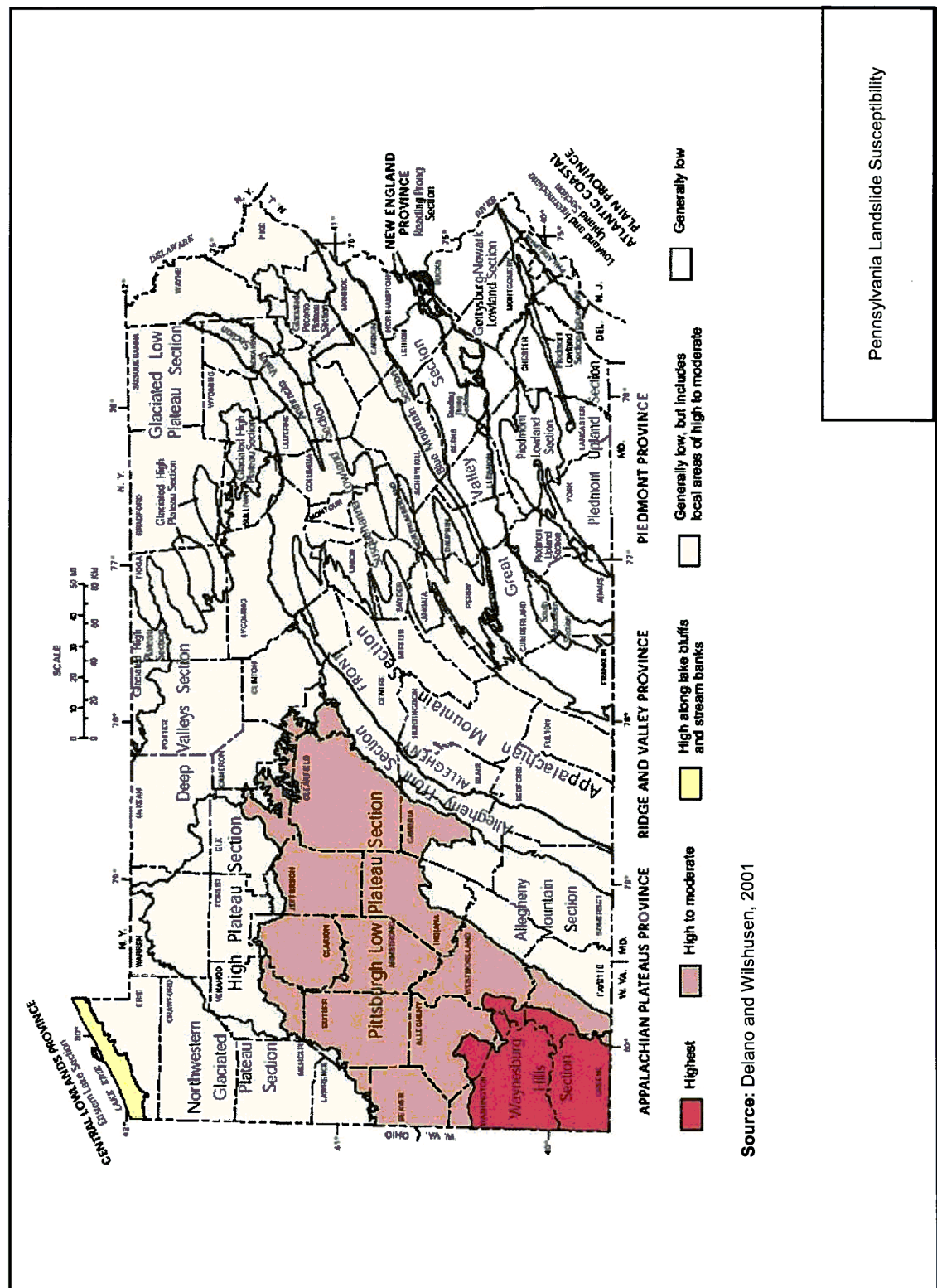
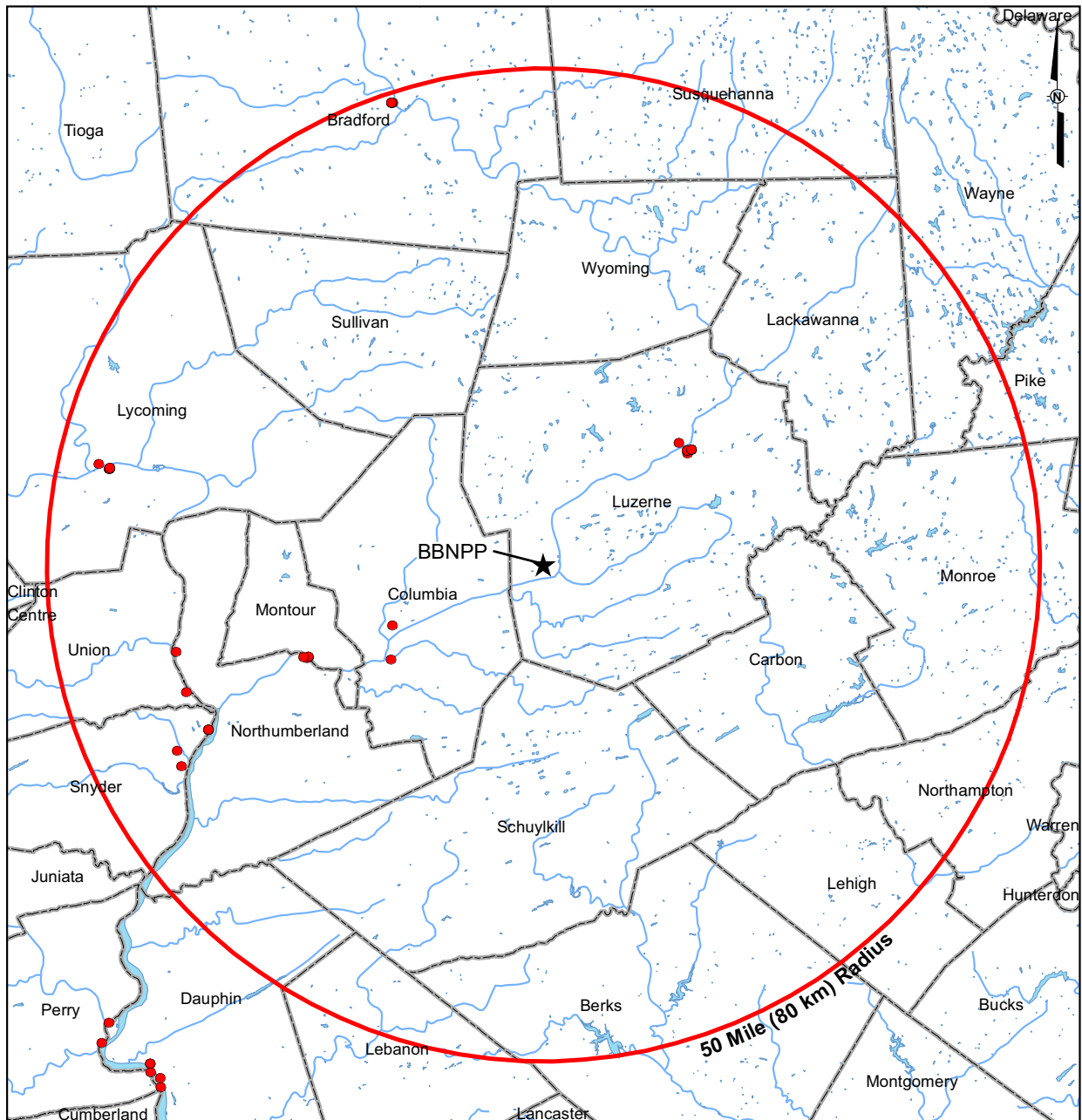


Figure 2.4-38— {Ice Jams within 50 Mile (80 km) Radius}**LEGEND**

- ★ Center Point of Proposed Bell Bend NPP (BBNPP)
- Ice Jams
- Unit 1 Reactor 50 Mile (80 Km) Radius
- ▭ County Boundary
- Streams and Rivers
- Waterbody

REFERENCE

ESRI StreetMap Pro [CD-ROM], 2007, River, Waterbody, and County Boundary
 Army Corps of Engineers, Ica Dam Database.
 Accessed February 2008.

Figure 2.4-39—{ESWEMS Schematic Layout}

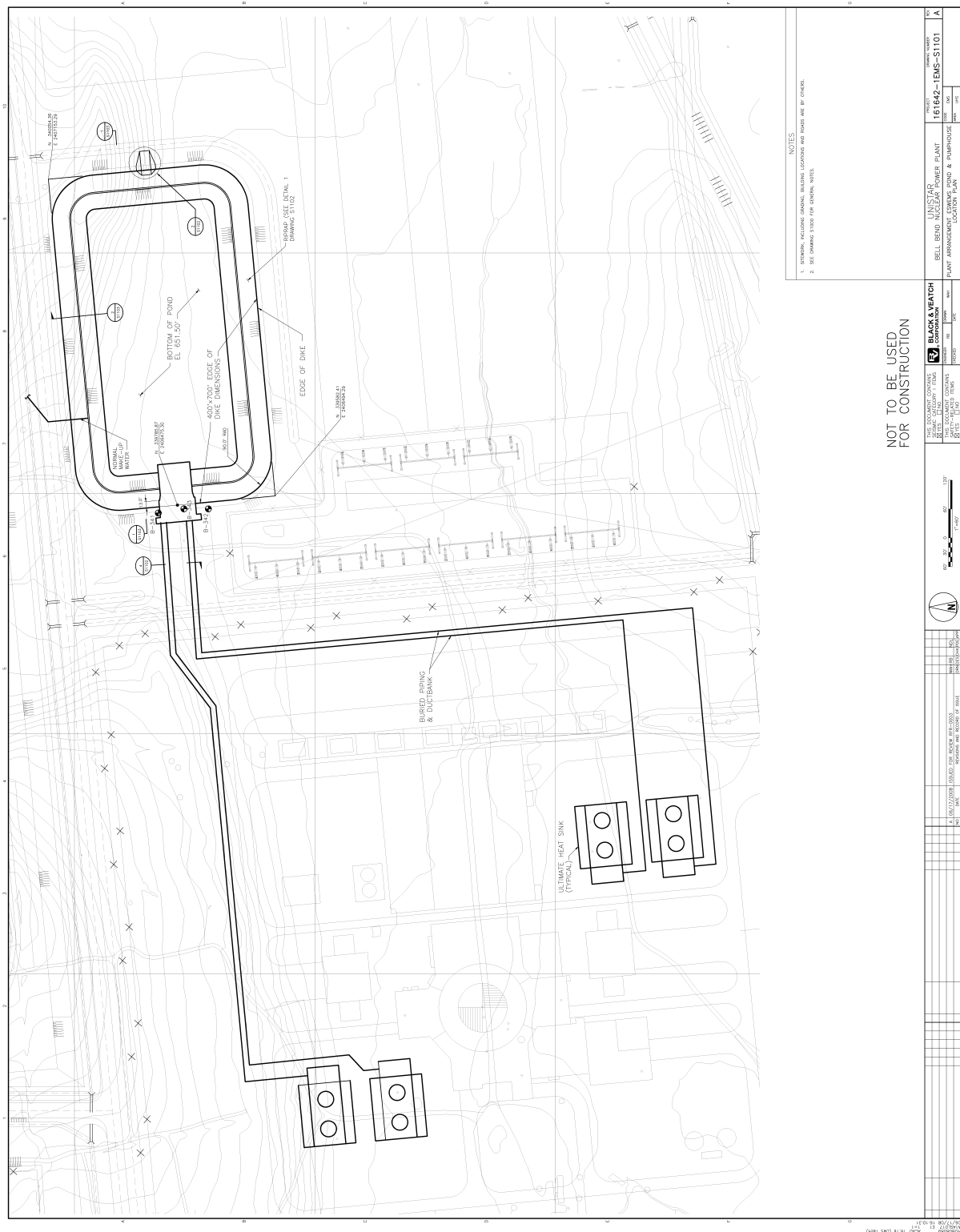


Figure 2.4-40— {Glacial Deposits of Pennsylvania, 25-mile (40 km) and 5-mile (8 km) Radii}

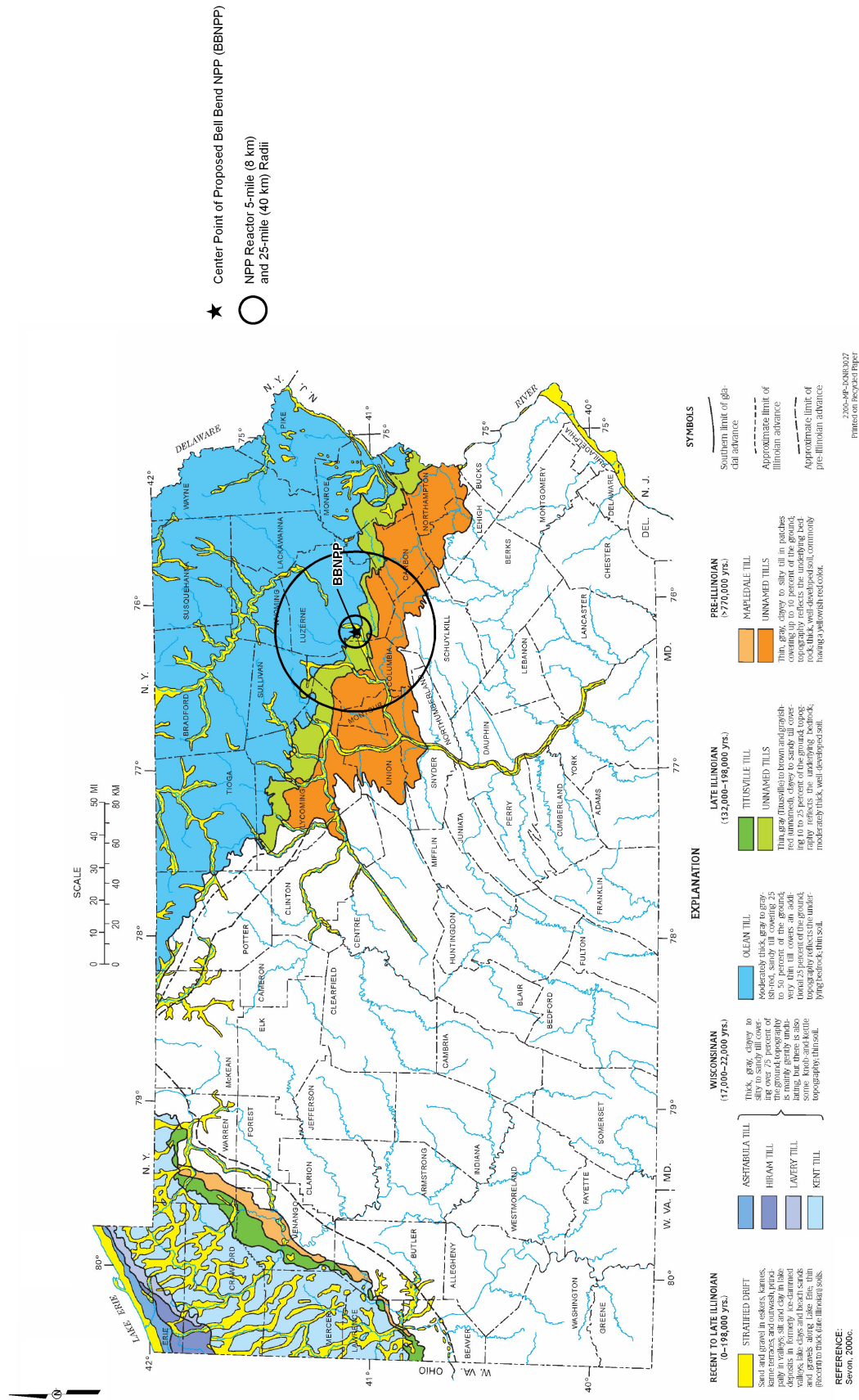


Figure 2.4-41 — {Mean Monthly Minimum Streamflows, 1905 to 2006}

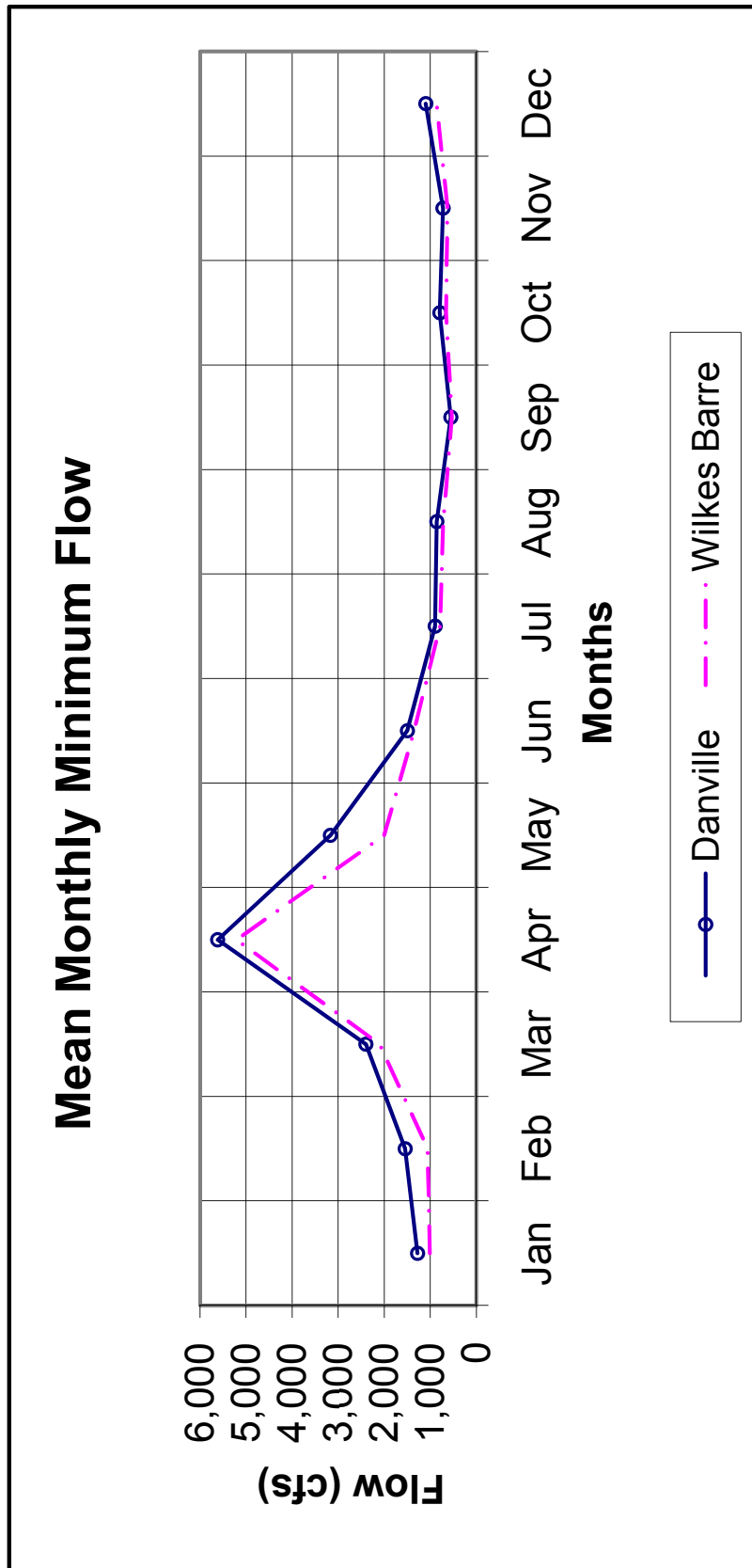
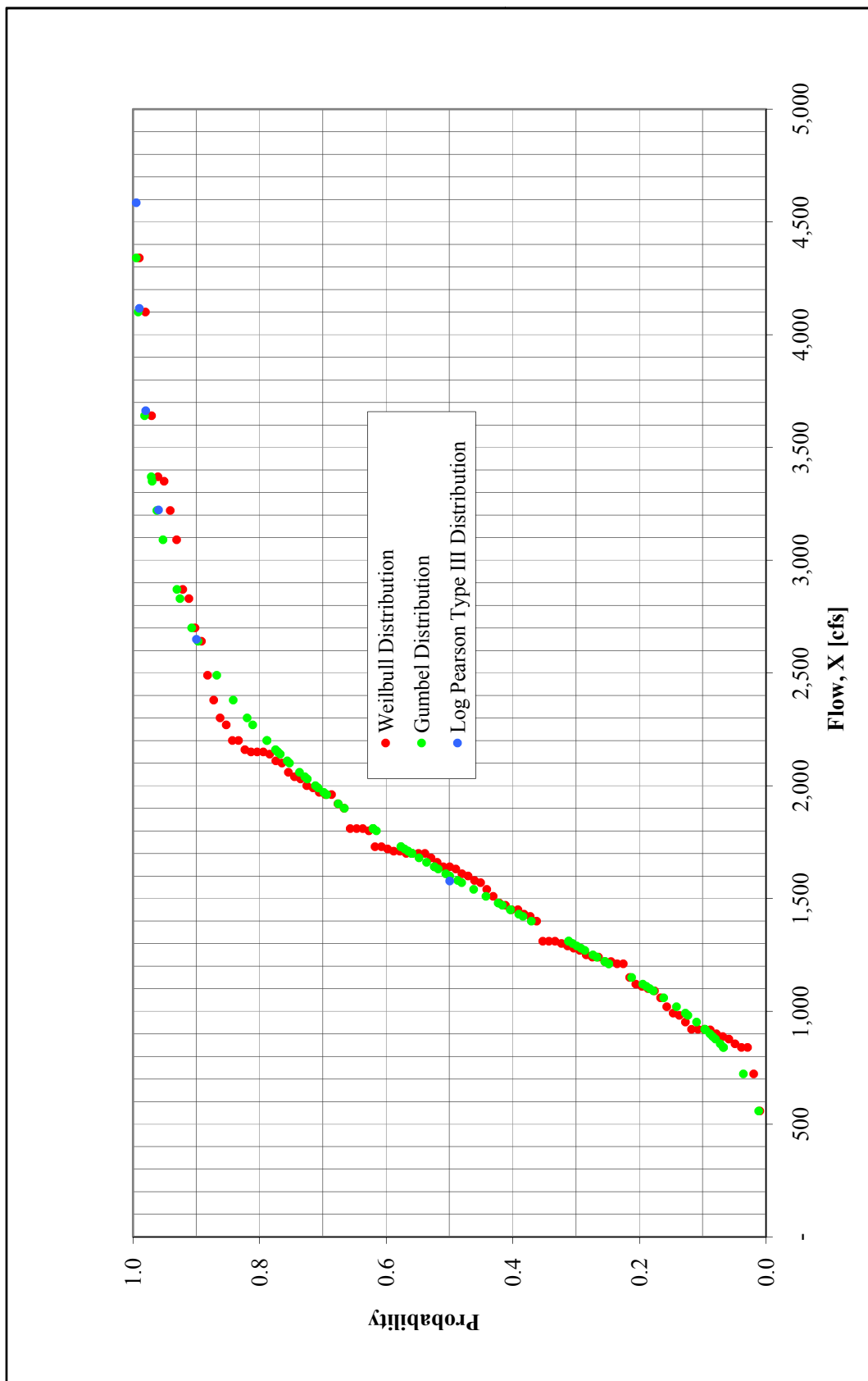
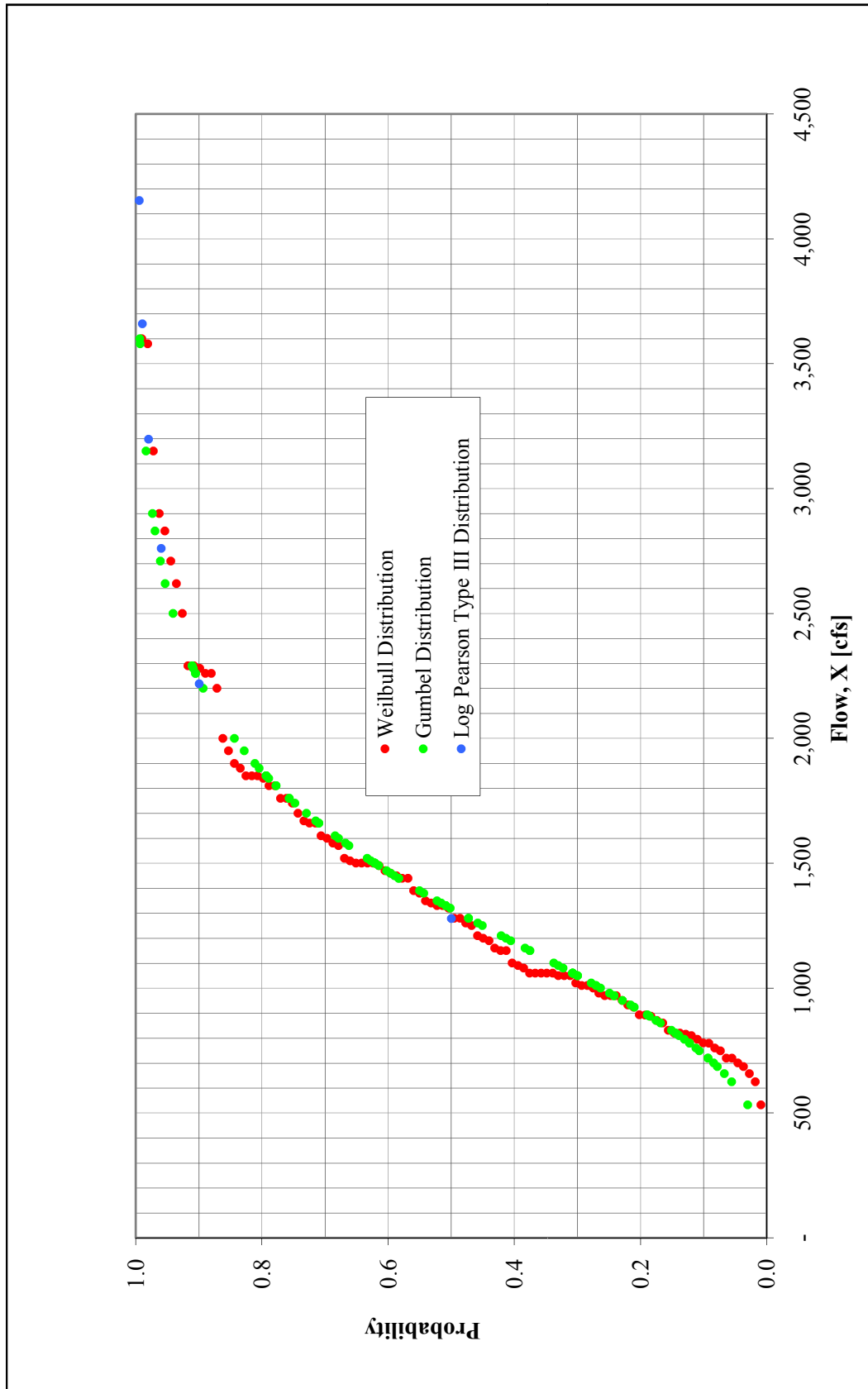


Figure 2.4-42— {Low Flow Frequency Distribution for Danville Station}



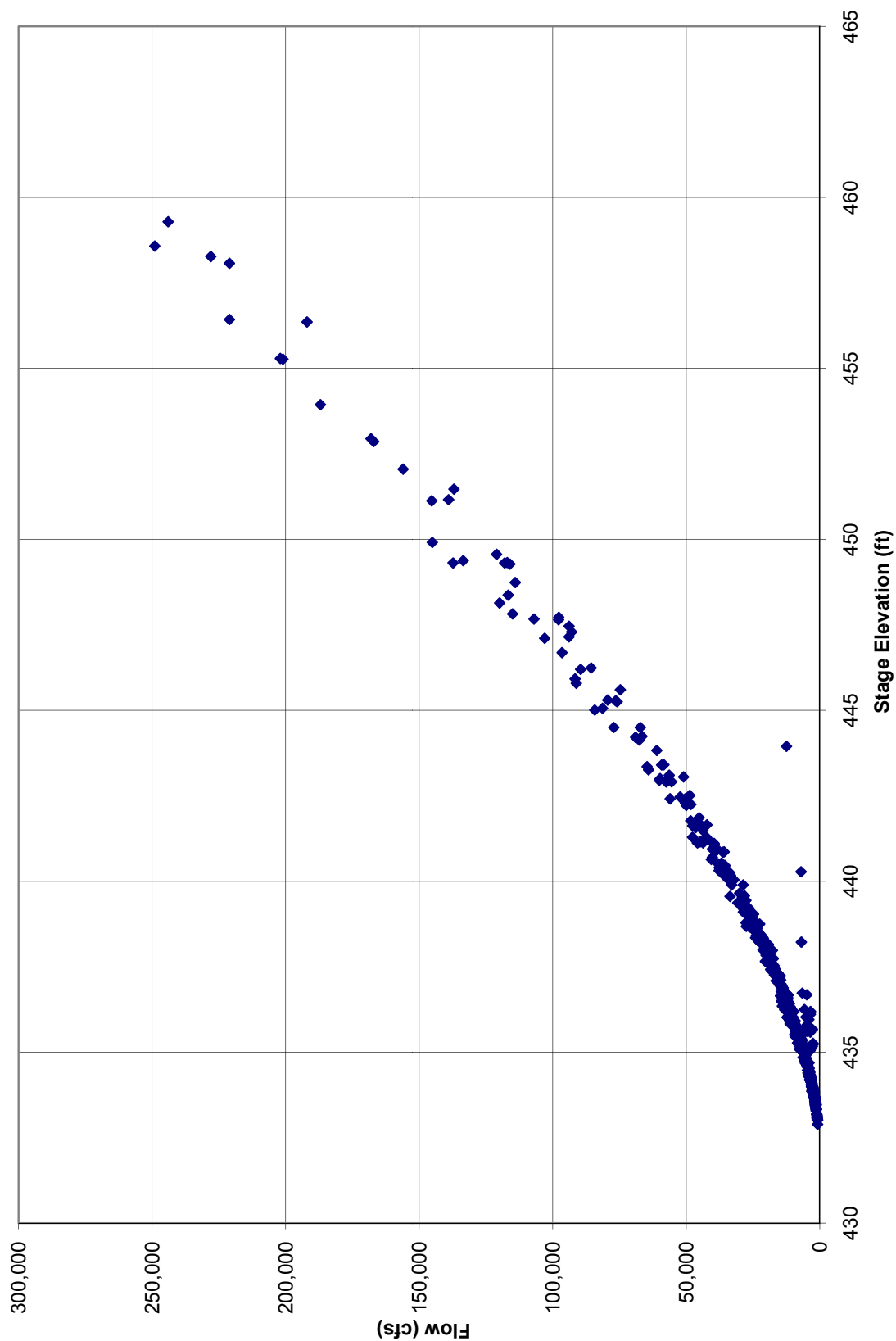
Reference: 2008b.

Figure 2.4-43 — {Low Flow Frequency Distribution for Wilkes-Barre Station}



Reference: USGS, 2008a

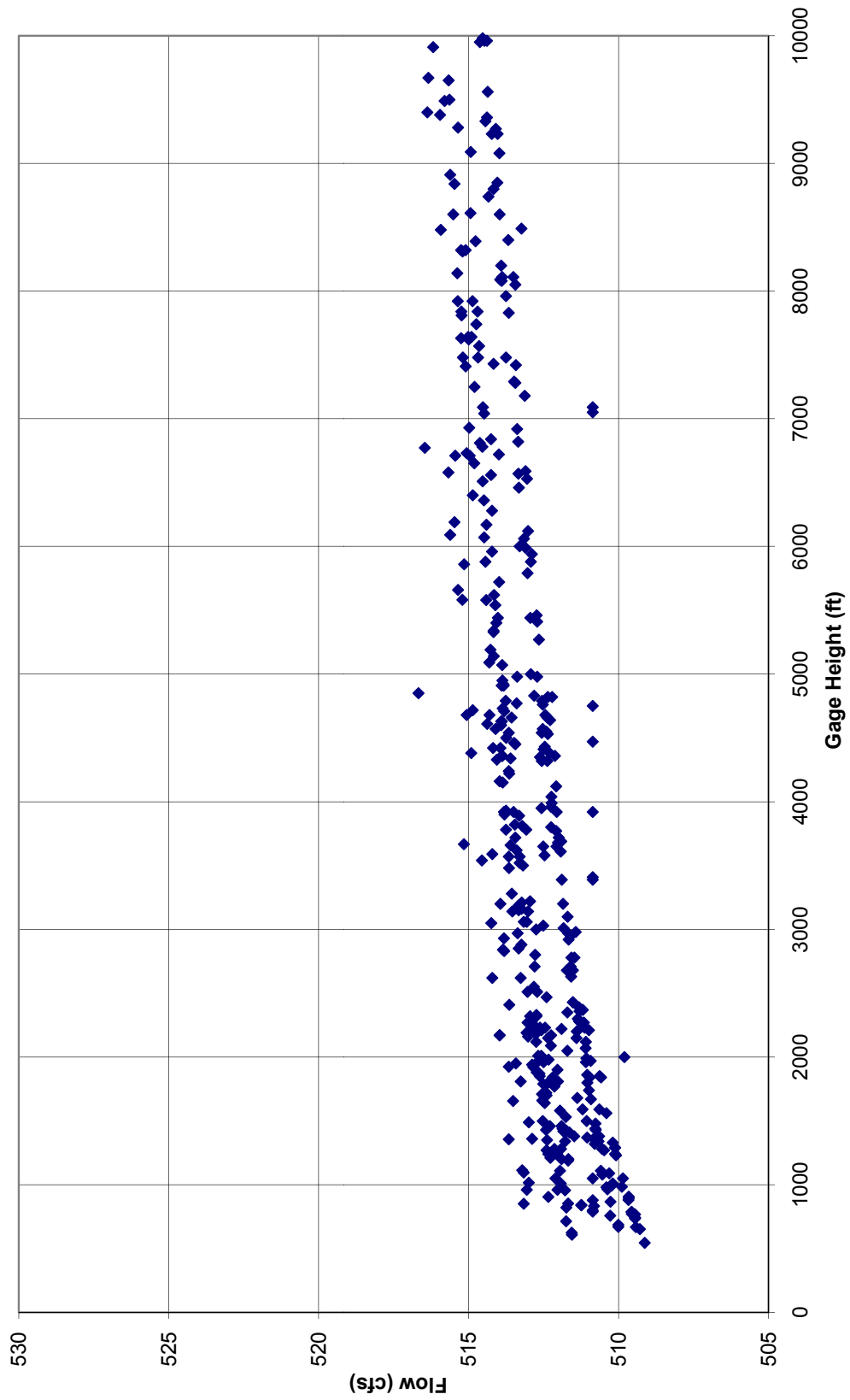
Figure 2.4-44 — {Flow Discharge Curve for Danville Station}



Reference: USGS 2008e.

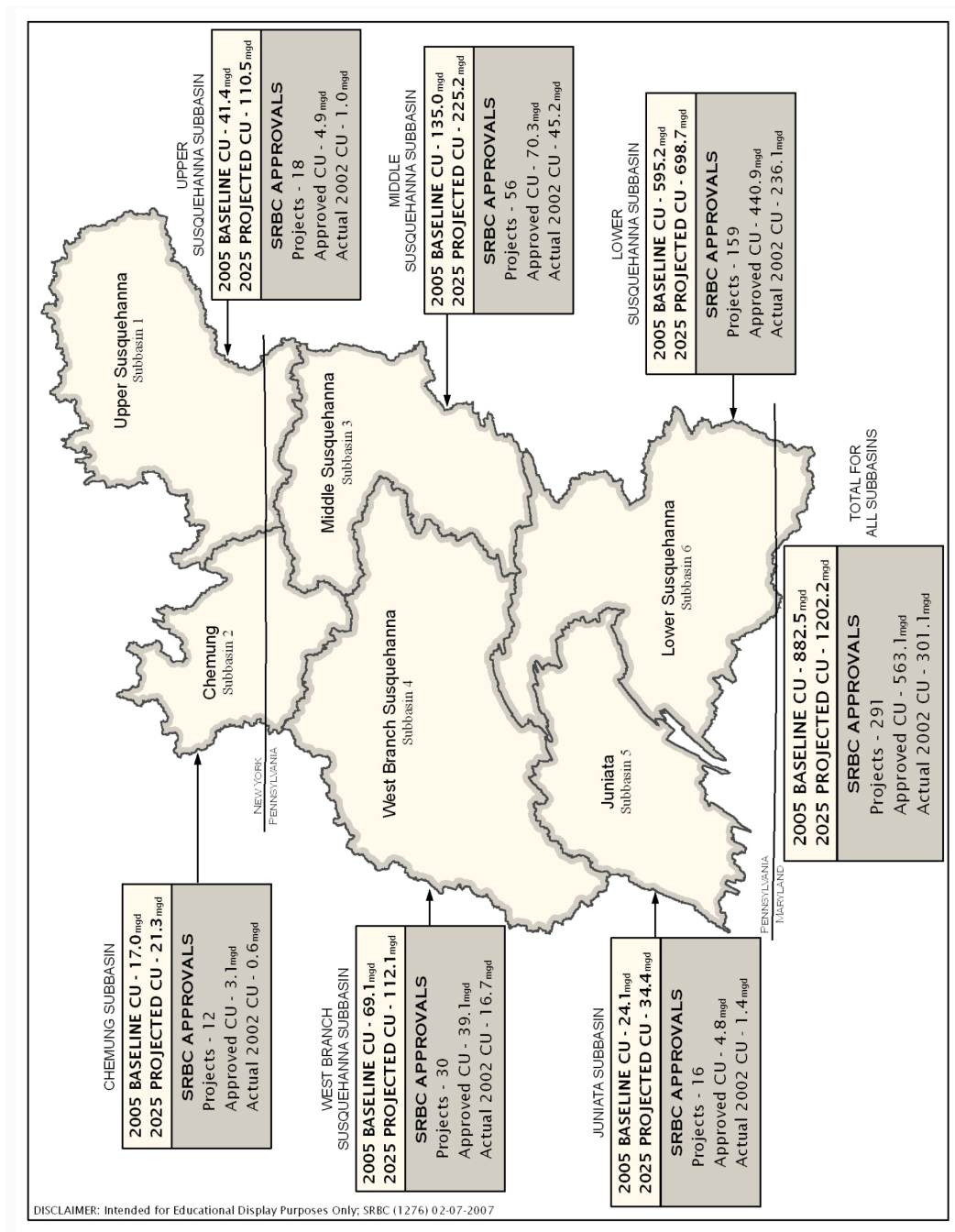
Figure 2.4-45—{Flow Discharge Curve for Wilkes-Barre Station}

Wilkes-Barre Discharge Curve



Reference: USGA 2008f

Figure 2.4-46— {SRBC Water Consumptive Use}



Source: SRBC, 2008b.

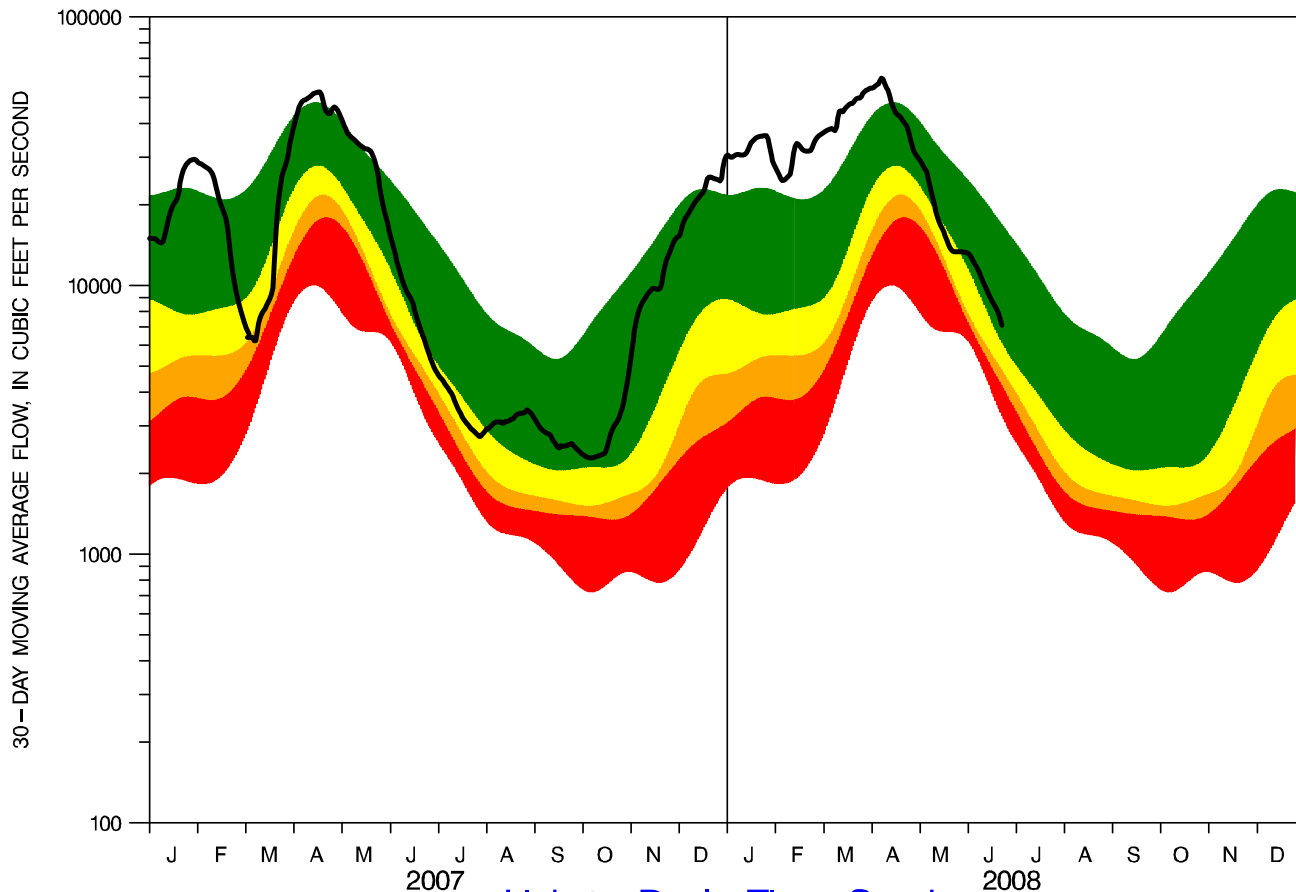
Figure 2.4-47— {30-Day Moving Average for Danville Station}**STATION 01540500 SUSQUEHANNA RIVER AT DANVILLE, PA**

US GEOLOGICAL SURVEY PROVISIONAL DATA — SUBJECT TO CHANGE

30-DAY MOVING AVERAGE DAILY FLOW

DRAINAGE AREA = 11,220 SQUARE MILES

BEGIN YEAR=1905 NUMBER OF YEARS=103.2 DATE OF PLOT=06/19/08


[Link to Real-Time Graph](#)

ALL DATA SHOWN ARE BASED ON 30-DAY MOVING AVERAGES; PERCENTILE BANDS HAVE BEEN SMOOTHED.

SOLID LINE = 30-DAY MOVING AVERAGE OF CURRENT DAILY VALUE FLOW

GREEN (TOP) BAND = 25- TO 75-PERCENTILE FLOWS (NORMAL CONDITIONS)

YELLOW BAND = 10- TO 25-PERCENTILE FLOWS (DROUGHT WATCH CONDITIONS)

ORANGE BAND = 5- TO 10-PERCENTILE FLOWS (DROUGHT WARNING CONDITIONS)

RED (BOTTOM) BAND = 0- TO 5-PERCENTILE FLOWS (DROUGHT EMERGENCY CONDITIONS)

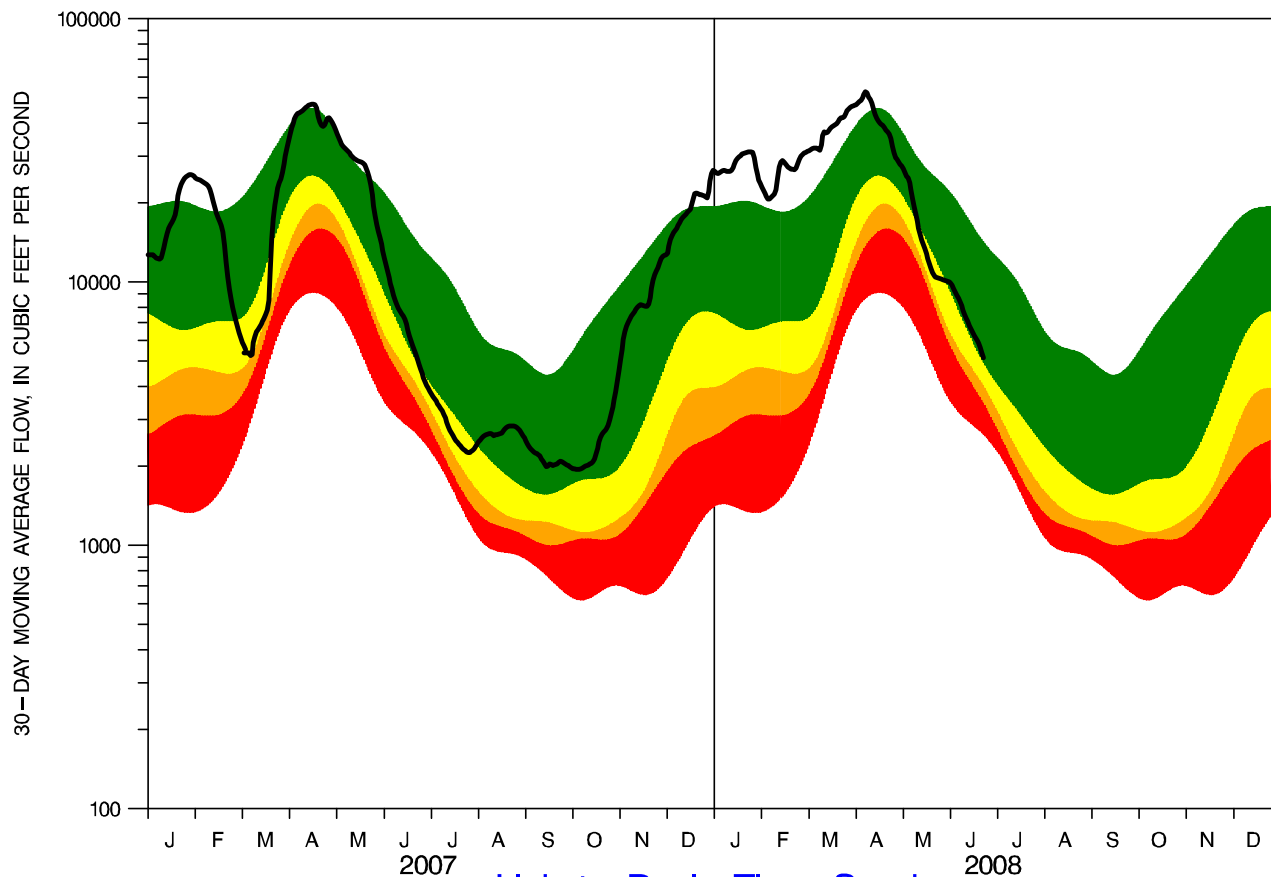
Figure 2.4-48— {30-Day Moving Average for Wilkes-Barre Station}**STATION 01536500 SUSQUEHANNA RIVER AT WILKES—BARRE, PA**

US GEOLOGICAL SURVEY PROVISIONAL DATA — SUBJECT TO CHANGE

30—DAY MOVING AVERAGE DAILY FLOW

DRAINAGE AREA = 9,960 SQUARE MILES

BEGIN YEAR=1899 NUMBER OF YEARS=109.1 DATE OF PLOT=06/19/08



ALL DATA SHOWN ARE BASED ON 30—DAY MOVING AVERAGES; PERCENTILE BANDS HAVE BEEN SMOOTHED.

SOLID LINE = 30—DAY MOVING AVERAGE OF CURRENT DAILY VALUE FLOW

GREEN (TOP) BAND = 25— TO 75—PERCENTILE FLOWS (NORMAL CONDITIONS)

YELLOW BAND = 10— TO 25—PERCENTILE FLOWS (DROUGHT WATCH CONDITIONS)

ORANGE BAND = 5— TO 10—PERCENTILE FLOWS (DROUGHT WARNING CONDITIONS)

RED (BOTTOM) BAND = 0— TO 5—PERCENTILE FLOWS (DROUGHT EMERGENCY CONDITIONS)

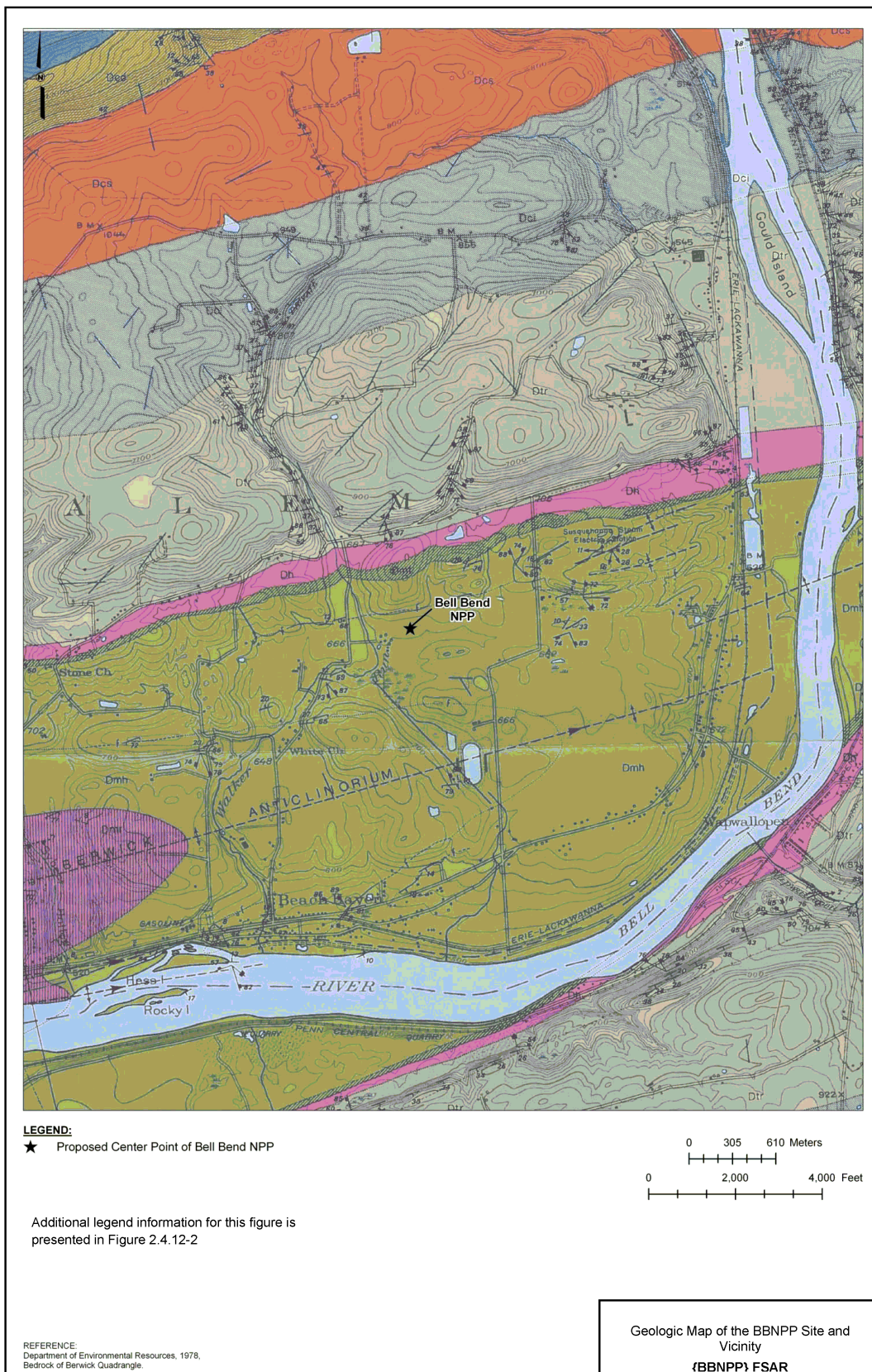
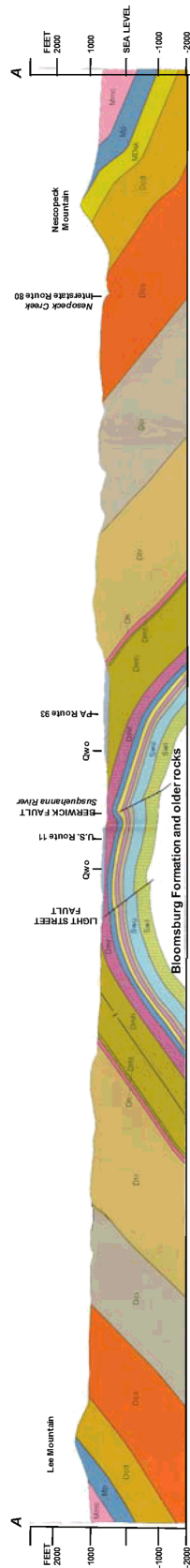
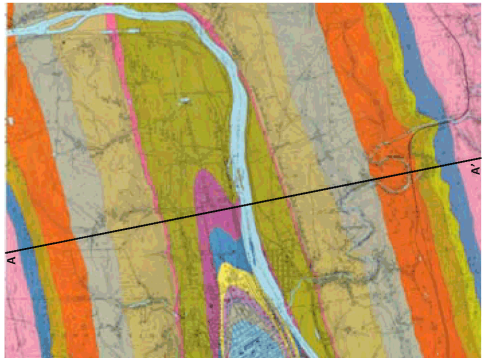
Figure 2.4-49— {Geologic Map of the BBNPP Site and Vicinity}

Figure 2.4-50 — {Stratigraphy and Geologic Cross Section of Berwick Anticlinorium}



Location Map of Cross Section
Figure 2.5.3-2



Legend

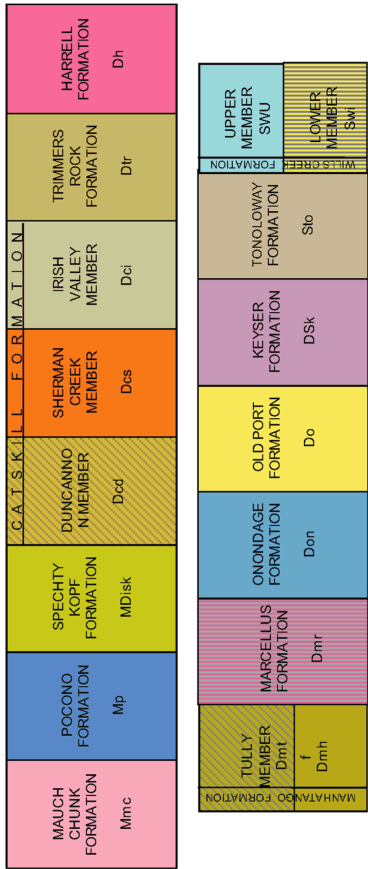


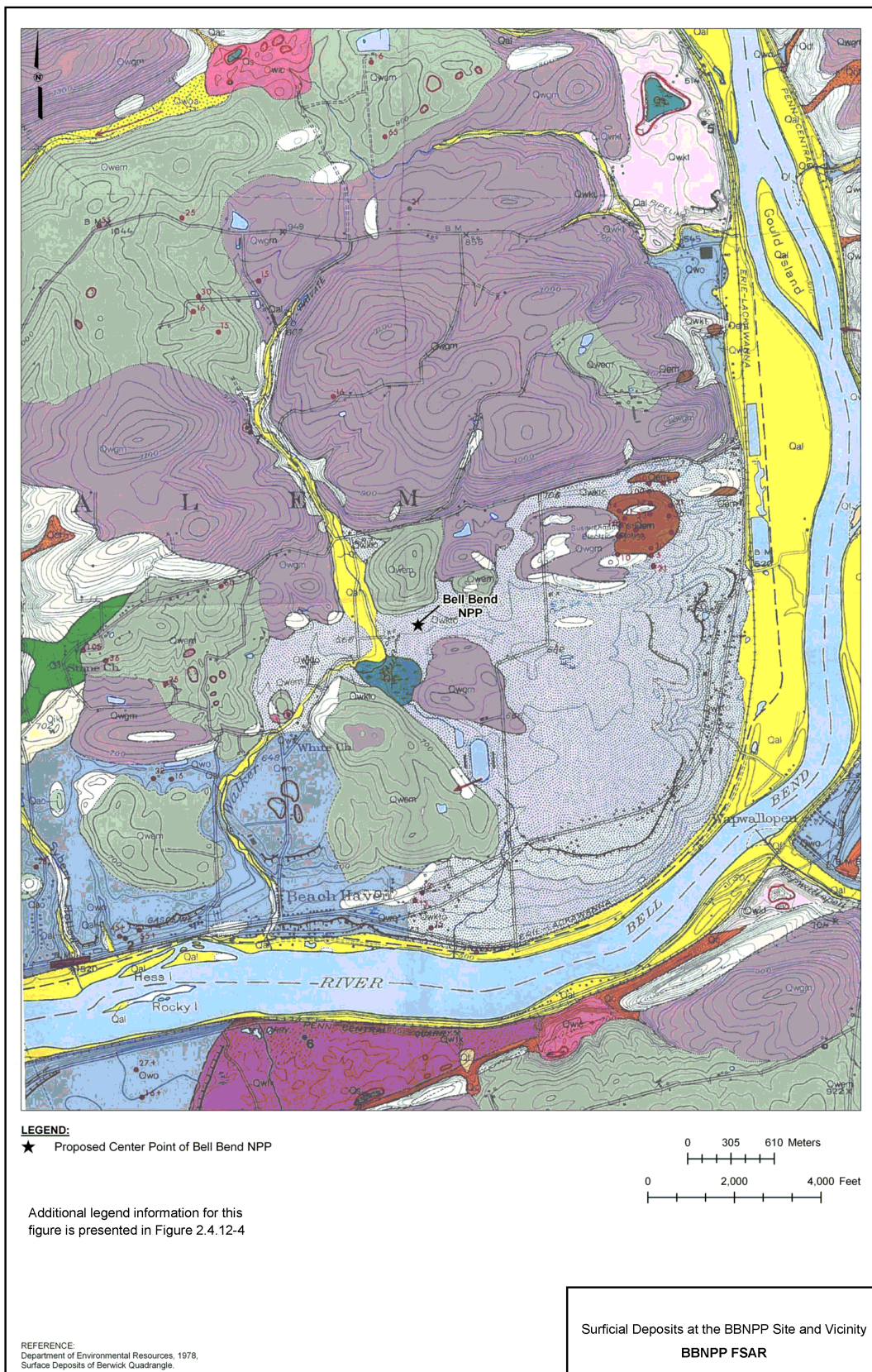
Figure 2.4-51— {Surficial Deposits at BBNPP Site and Vicinity}

Figure 2.4-52—{Legend for Figure 2.4-51}

ARTIFICIAL FILL af	ALLUVIUM Qal	ALLUVIAL FAN Qf	ALLUVIUM AND WOOD-FORDIAN OUTWASH, UNDIVIDED Qwoa	SWAMP DEPOSIT Qs	ALLUVIUM AND COLLUVIUM UNDIVIDED Qao	COLLUVIUM Qc	COLLUVIUM AND TILL, UNDIVIDED Qct	EOLIAN MANTLE Qem	TALUS Qt	BOULDER COLLUVIUM Qbc
WOOD- FORDIAN OUTWASH Qwo	WOOD- FORDIAN KAME TERRACE Qwkt	WOOD- FORDIAN KAME TERRACE AND OUTWASH, UNDIVIDED Qwkto	WOOD- FORDIAN FRONTAL KAME Qwfk	WOOD- FORDIAN ICE- CONTACT STRATIFIED DRIFT Qwic	WOOD- FORDIAN GROUND MORaine Qwgim	WOOD- FORDIAN END MORaine Qwem	ALTONIAN OUTWASH Qao	ALTONIAN TILL Qat	ILLINOIAN KAME TERRACE Qikt	ILLINOIAN TILL Qit

REFERENCE:
Inners, 1978