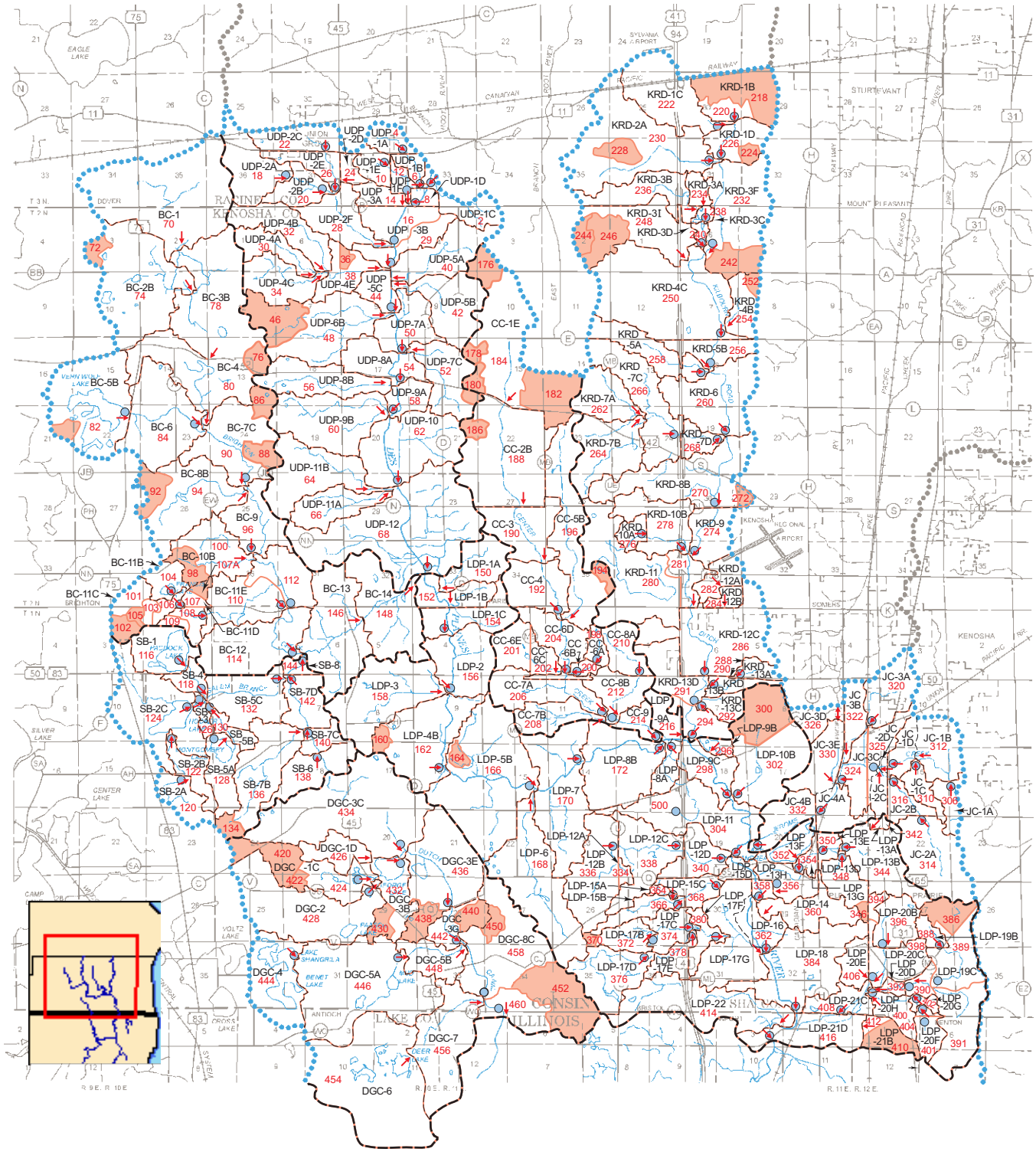
PLATES

Map 54

REPRESENTATIONS OF THE DES PLAINES RIVER WATERSHED FOR HYDROLOGIC-HYDRAULIC SIMULATION



DES PLAINES RIVER WATERSHED BOUNDARY AS DELINEATED BY SEWRPC USING FIELD CHECKED DATA AND LARGE SCALE MAPPING, SUPPLEMENTED WITH STORM SEWER MAPS WHERE AVAILABLE.

SUBWATERSHED BOUNDARY

SUBBASIN BOUNDARY

SUBBASIN DISCHARGE POINT

UDP-9B SUBBASIN IDENTIFICATION CODE

HYDROLOGIC LAND SEGMENT BOUNDARY

192 HYDROLOGIC LAND SEGMENT IDENTIFICATION

SIMULATED STREAMFLOW OUTPUT LOCATION

INTERNALLY DRAINED SUBBASIN — FOR SIMULATION PURPOSES THESE AREAS CONTRIBUTE TO SUBSURFACE FLOW ONLY

IDENTIFICATION OF SUBWATERSHEDS

BC	BRIGHTON CREEK	KRD	KILBOURN ROAD DITCH
CC	CENTER CREEK	LDP	LOWER DES PLAINES RIVER
DGC	DUTCH GAP CANAL	SB	SALEM BRANCH OF BRIGHTON CREEK
JC	JEROME CREEK	UDP	UPPER DES PLAINES RIVER

GRAPHIC SCALE 0 1/2 1 MILE

For purposes of hydrologic-hydraulic modeling, the watershed land surface was partitioned into 192 hydrologic land segments and co hydrologic land segment type has a particular combination of soil type, land cover, and proximity to a meteorologic station and is used w conversion of rainfall and snowmelt to streamflow. Each hydrologic land segment has unique hydrologic-hydraulic characteristics in the runoff from land surface in the stream system and the transport of that flow through the watershed.

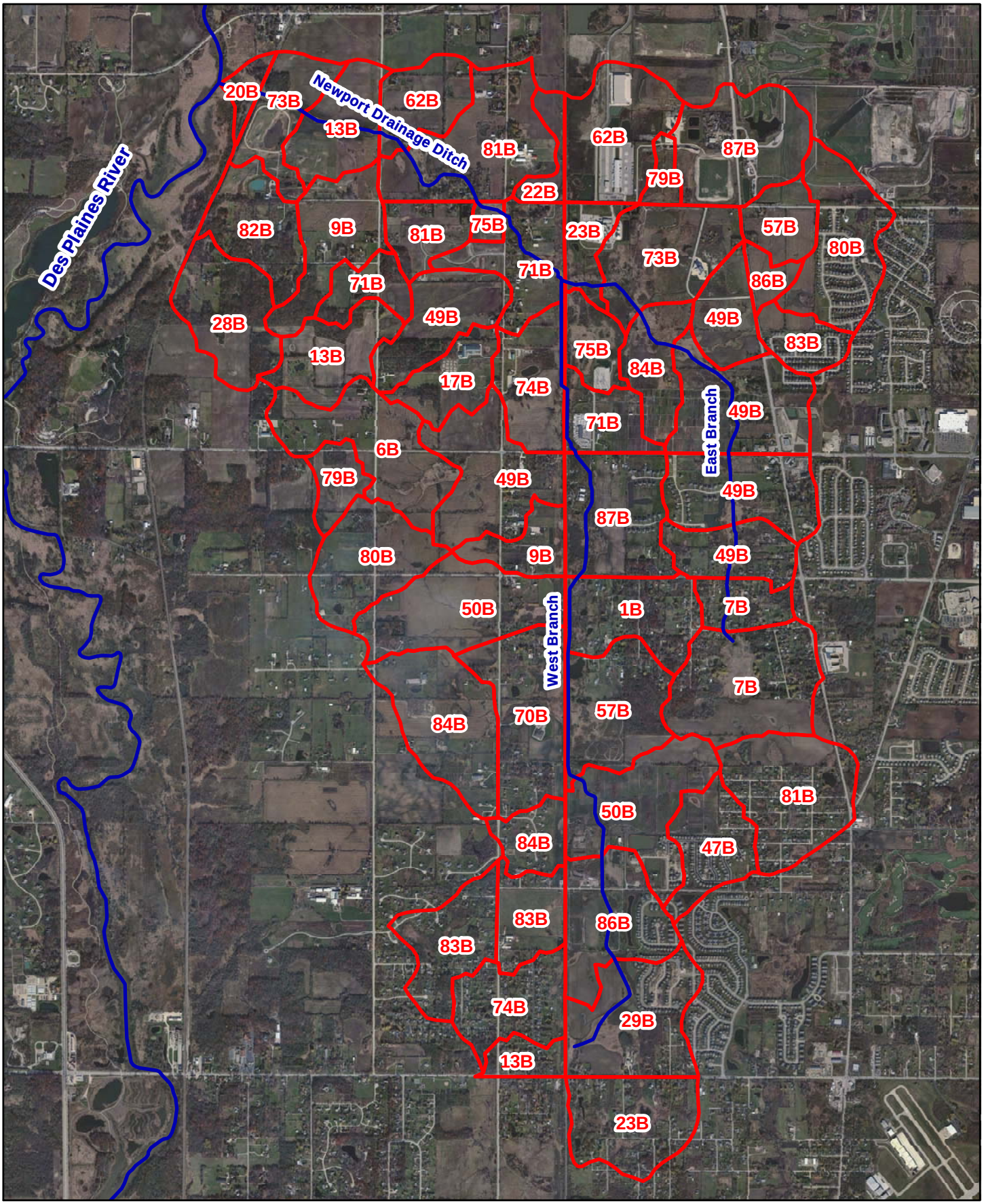
Source: SEWRPC.

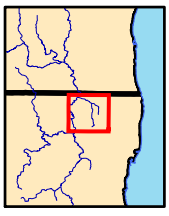
Upper Des Plaines River and Tributaries Feasibility Report
Appendix A – Hydraulics and Hydrology

Wisconsin Tributaries Subbasins

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-1





Legend

Streams

Newport Drainage Ditch Subbasin Boundaries

0 0.125 0.25 Miles

US Army Corps of Engineers
Chicago District

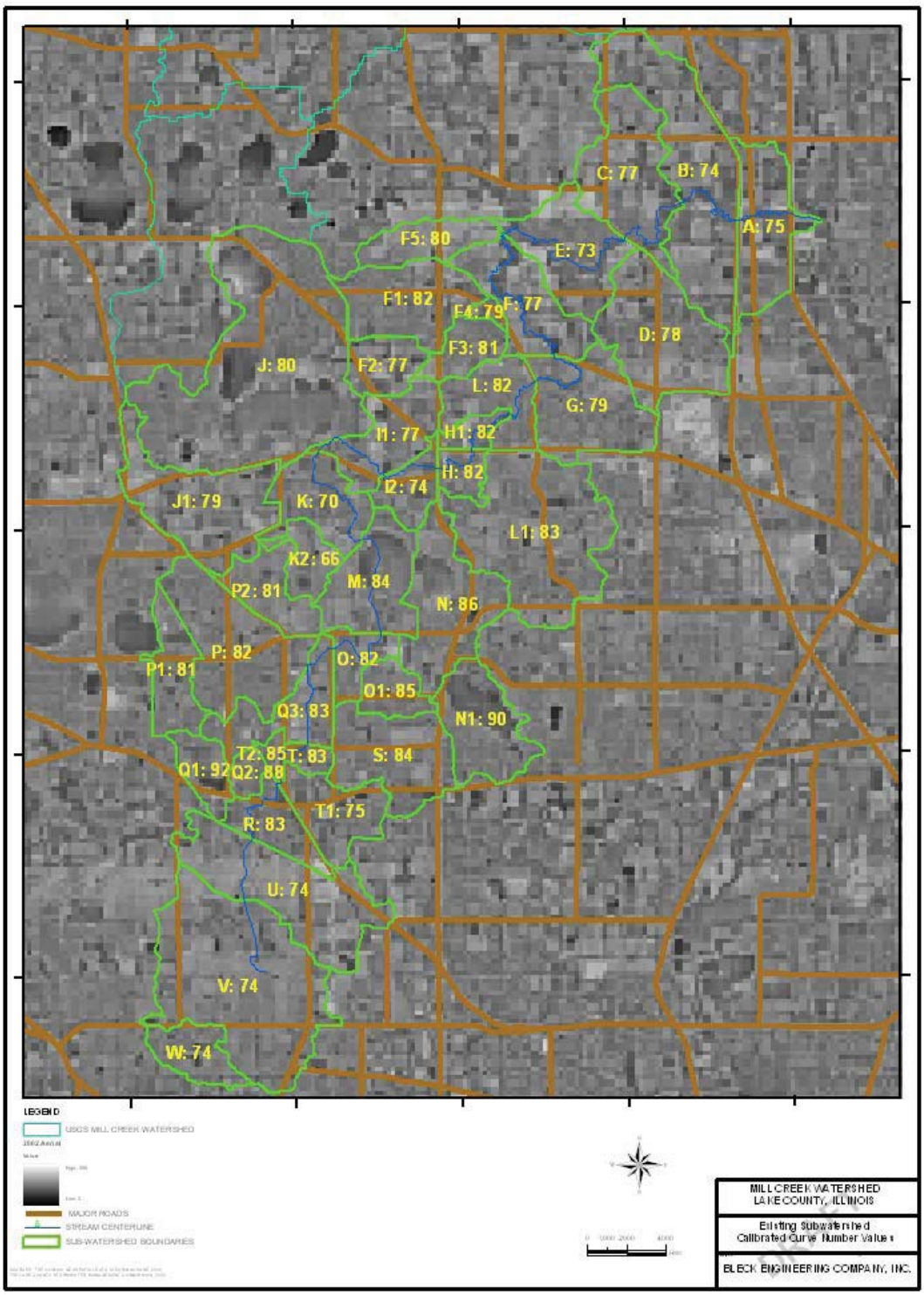
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

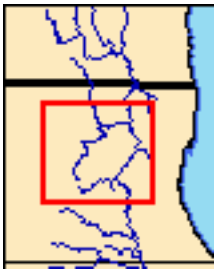
Newport Drainage Ditch Subbasin

Chicago District, U.S. Army Corps of Engineers

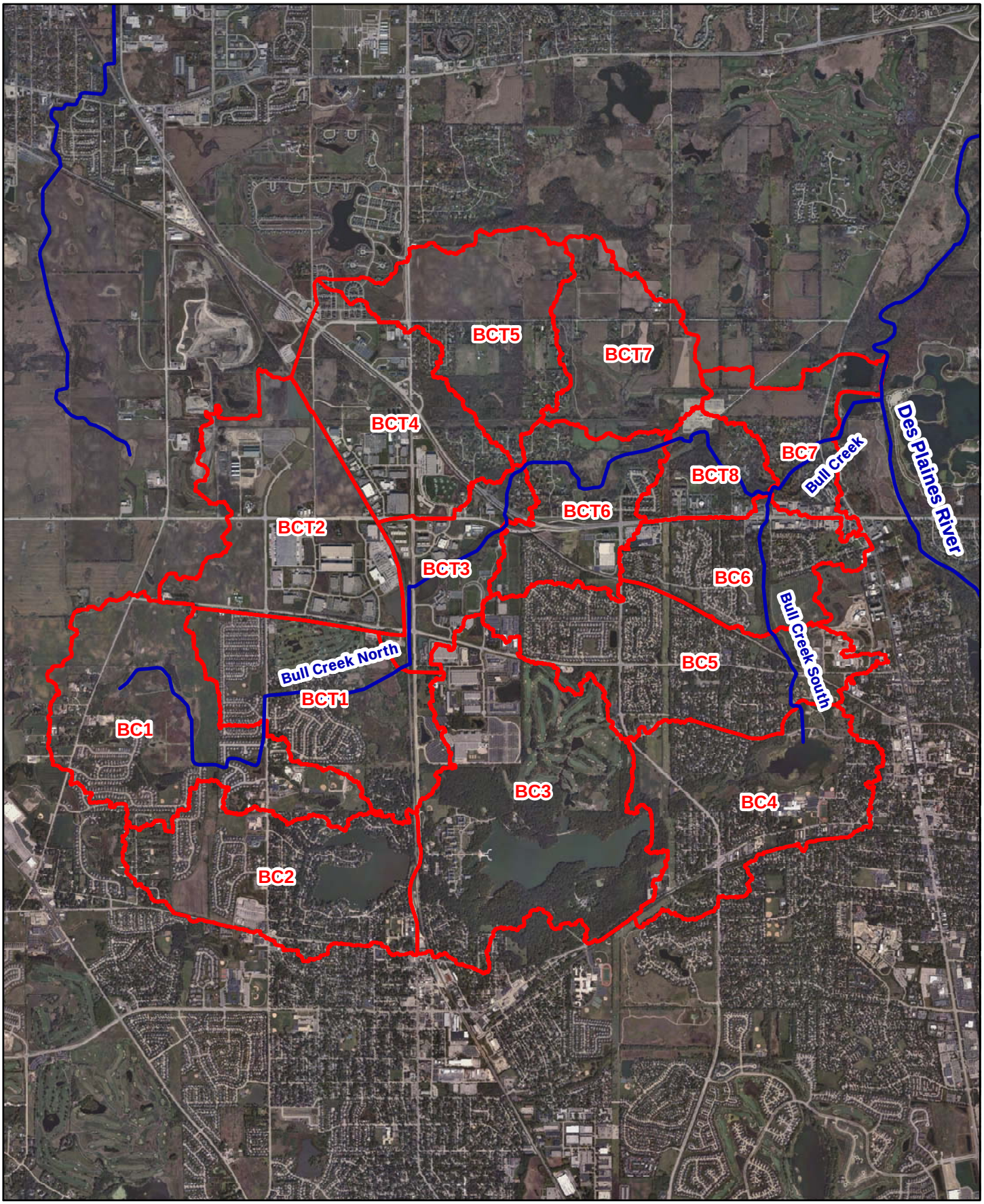
August 2010 | Plate A-2

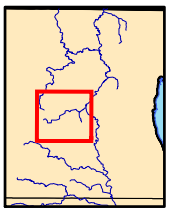
FIGURE 3. SUBWATERSHED DELINEATION





Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Mill Creek Subbasin	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-3





Legend

Streams

Bull Creek Subbasin Boundaries

0 0.2 0.4 Miles

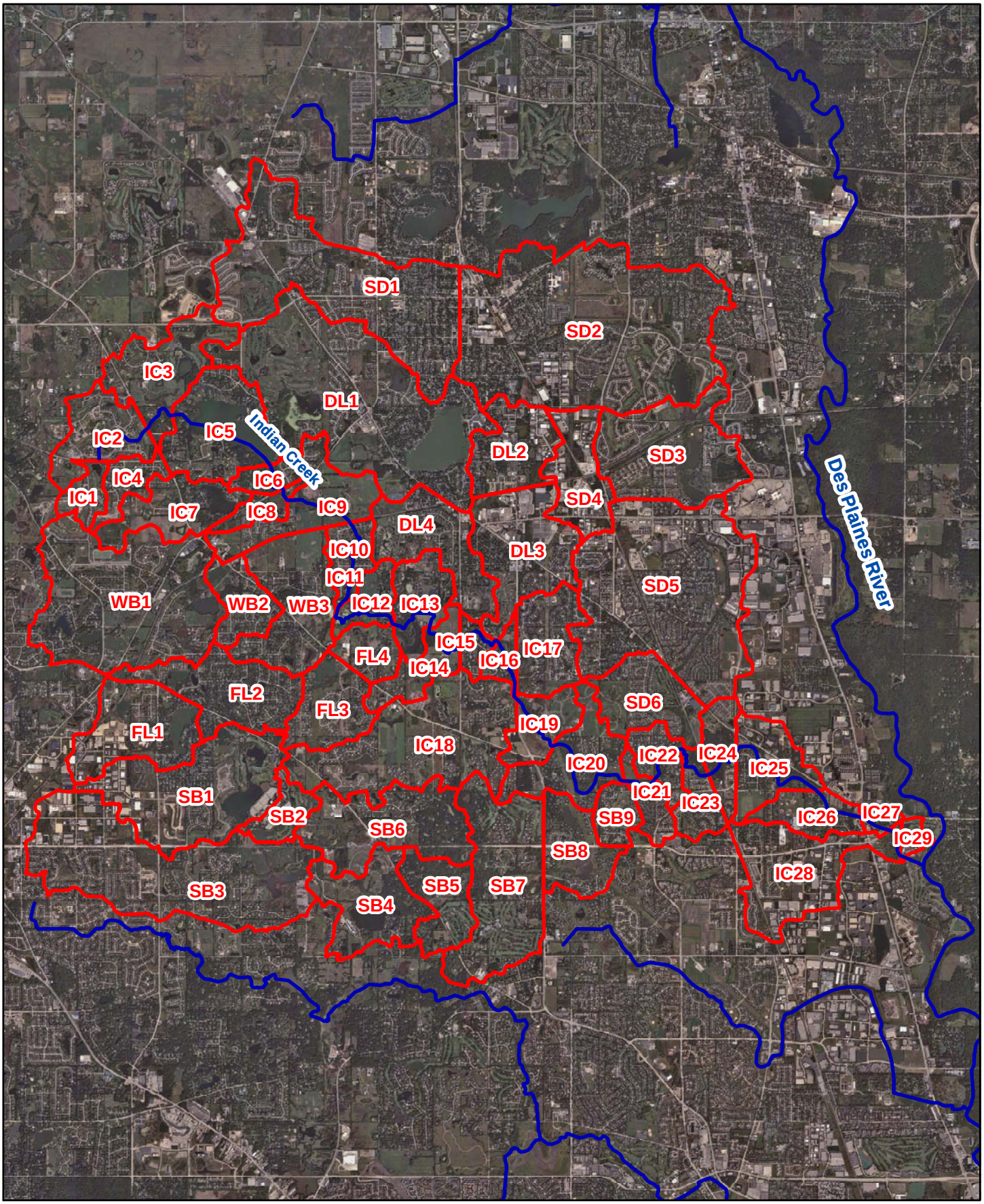
US Army Corps of Engineers
Chicago District

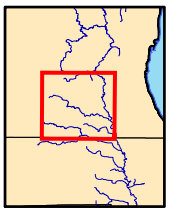
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

Bull Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-4





Legend

Streams

Indian Creek Subbasin Boundaries

0 0.3 0.6 Miles

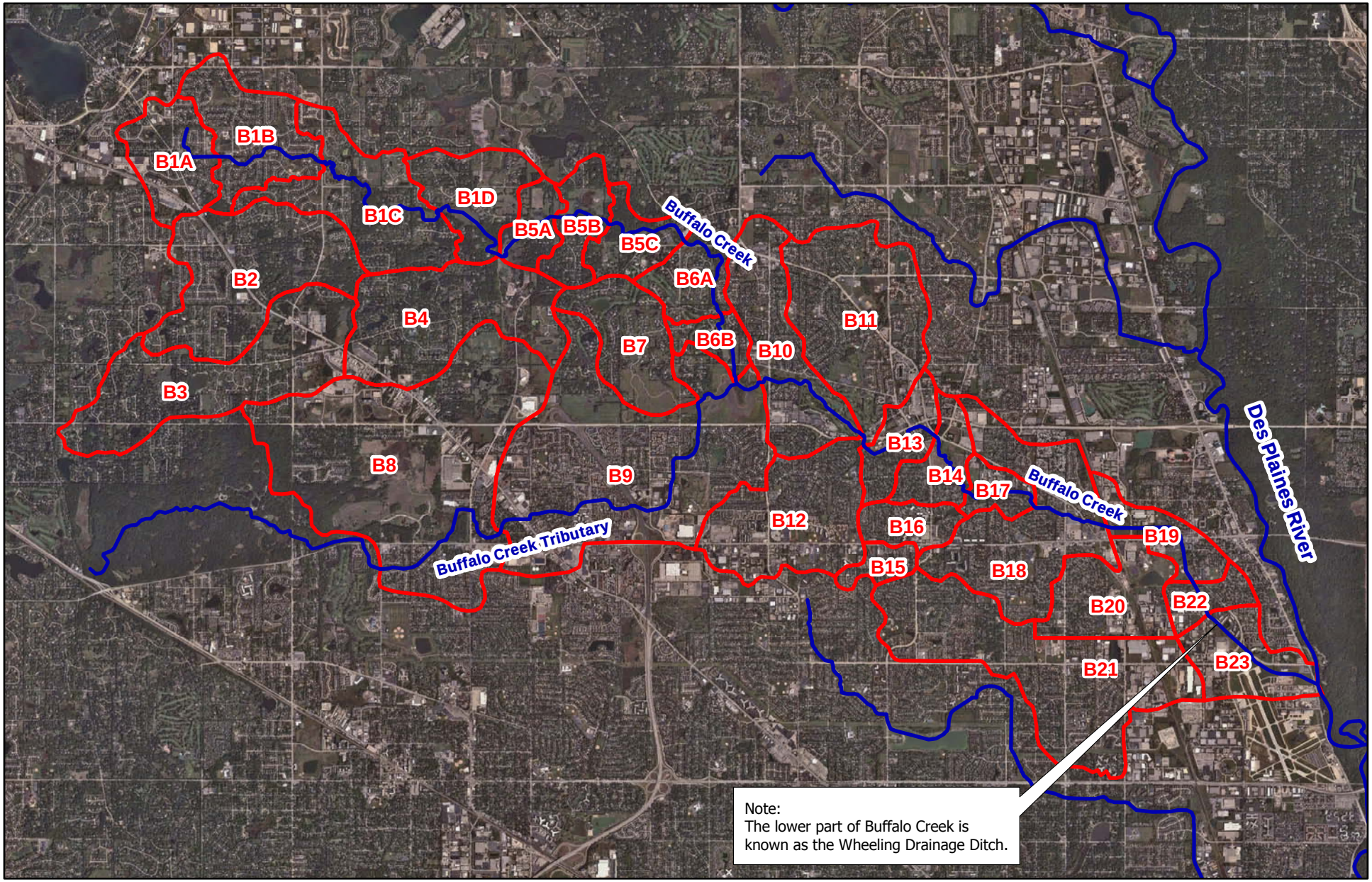
US Army Corps of Engineers
Chicago District

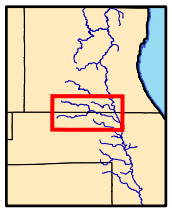
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

Indian Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-5





Legend

Streams

Buffalo Creek Subbasin Boundaries

0 0.2 0.4 Miles

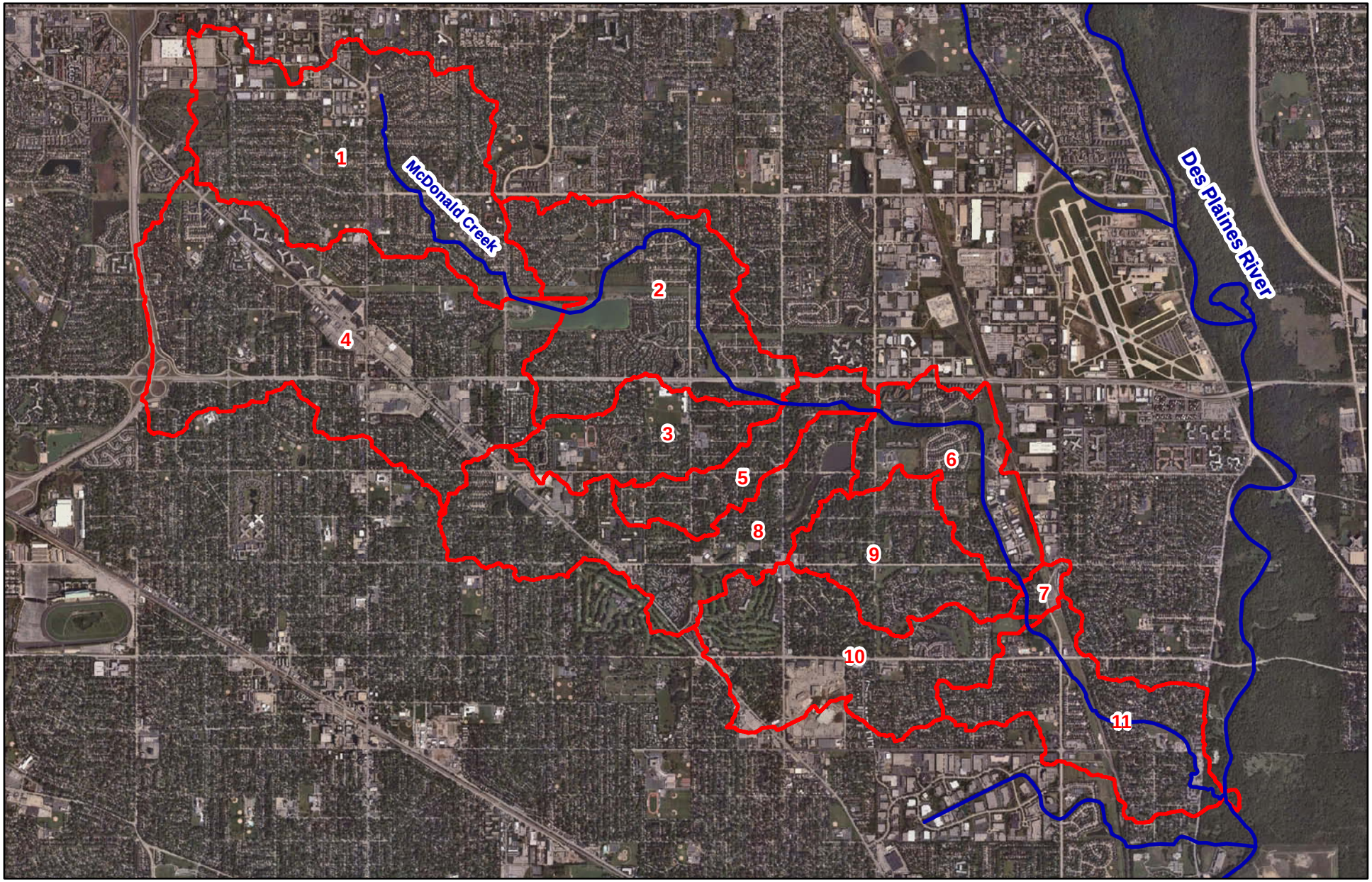
US Army Corps of Engineers
Chicago District

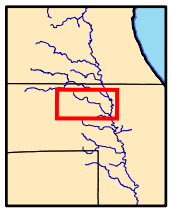
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

Buffalo Creek/Wheeling Drainage Ditch Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-6





Legend

Streams

McDonald Creek Subbasin Boundaries

0 0.15 0.3 Miles

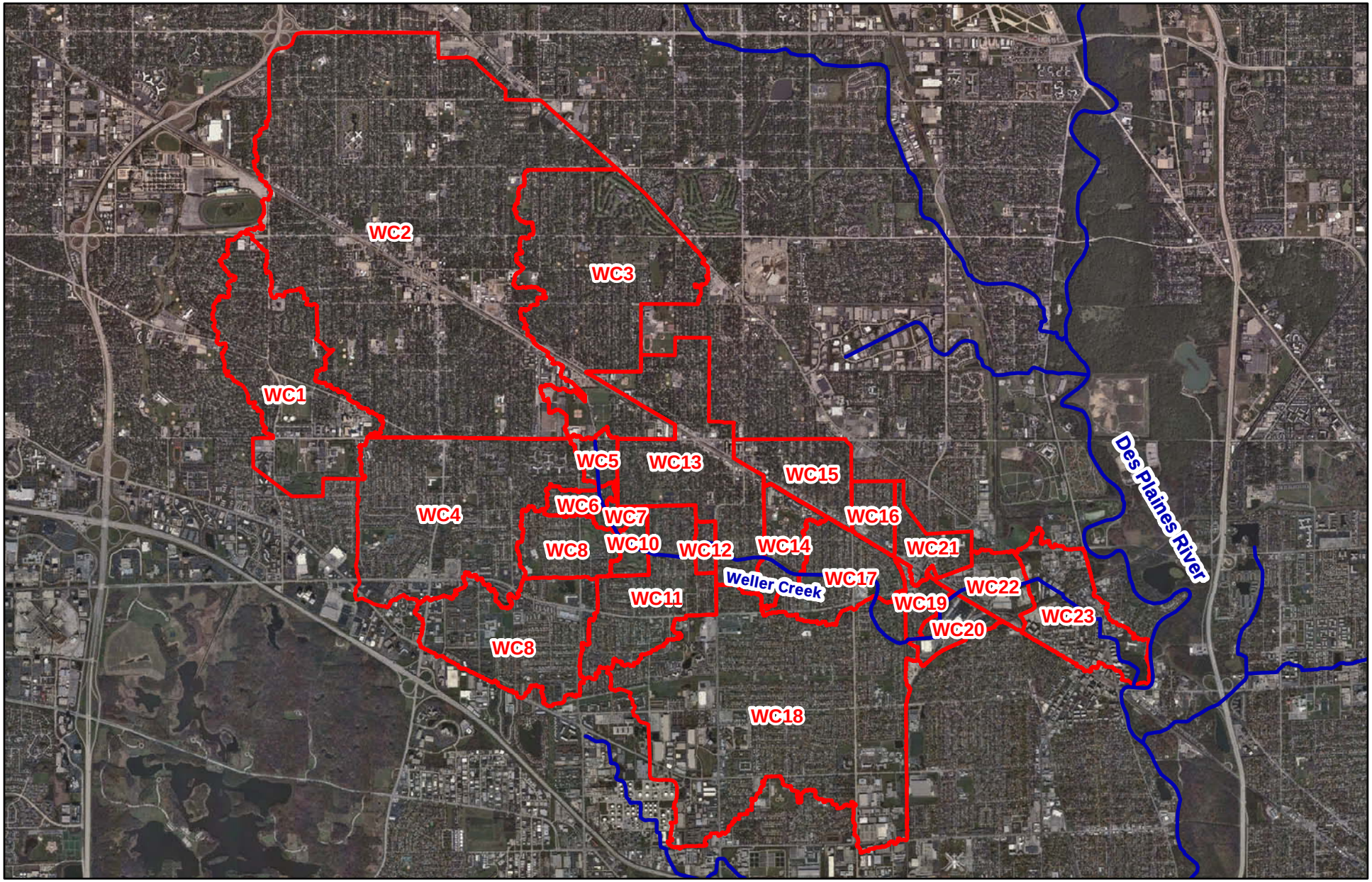
US Army Corps of Engineers
Chicago District

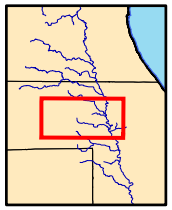
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

McDonald Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-7





Legend

Streams

Weller Creek Subbasin Boundaries

0 0.15 0.3 Miles

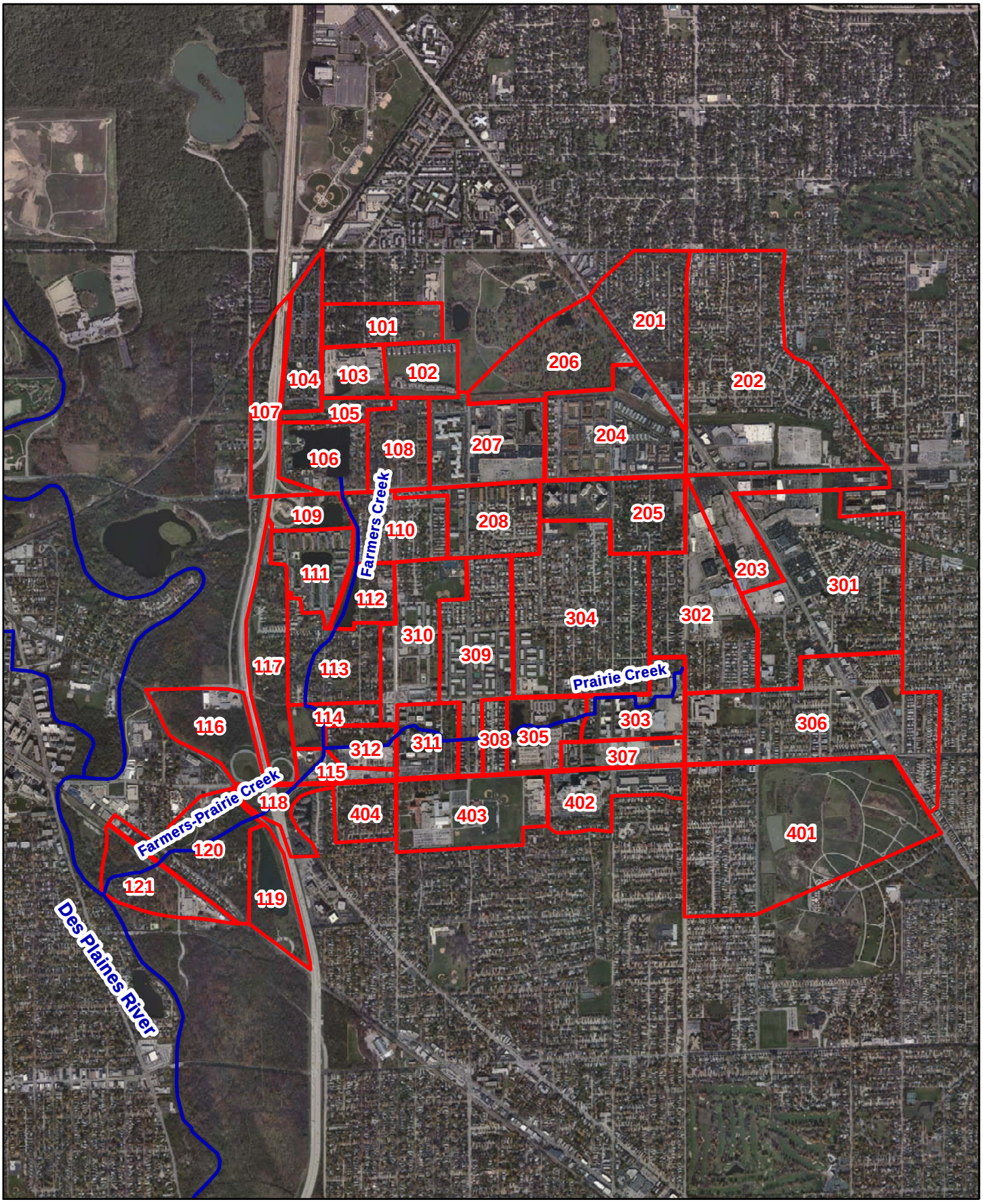
US Army Corps of Engineers
Chicago District

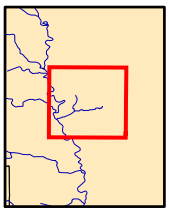
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

Weller Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-8





Legend

Streams

Farmers-Prairie Creek Subbasin Boundaries

0 0.125 0.25 Miles

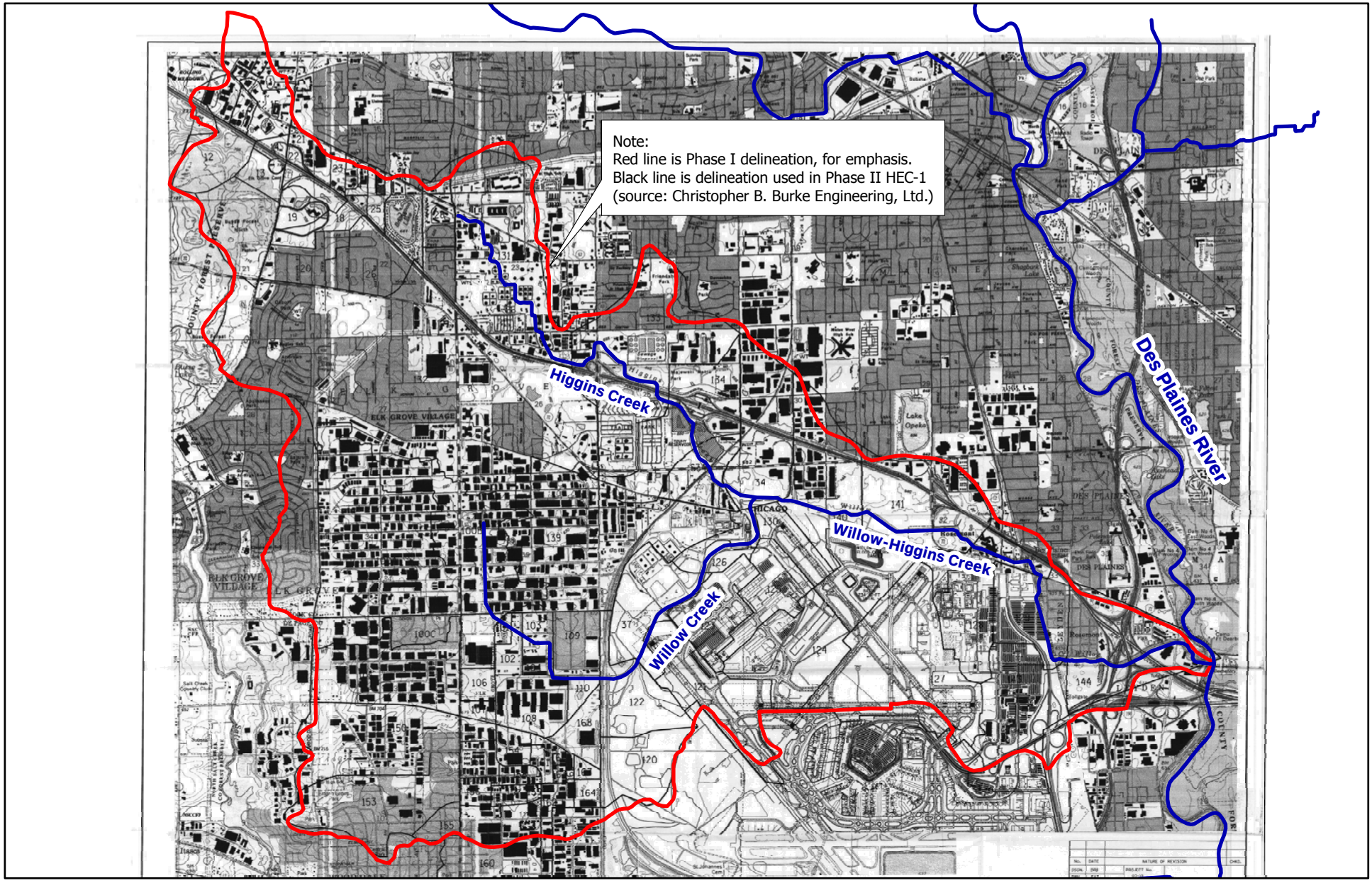
US Army Corps of Engineers
Chicago District

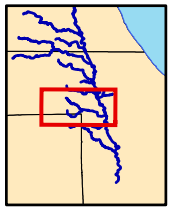
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

Farmers-Prairie Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-9





Legend

Streams

Willow-Higgins Creek Subbasin

0 0.2 0.4 Miles

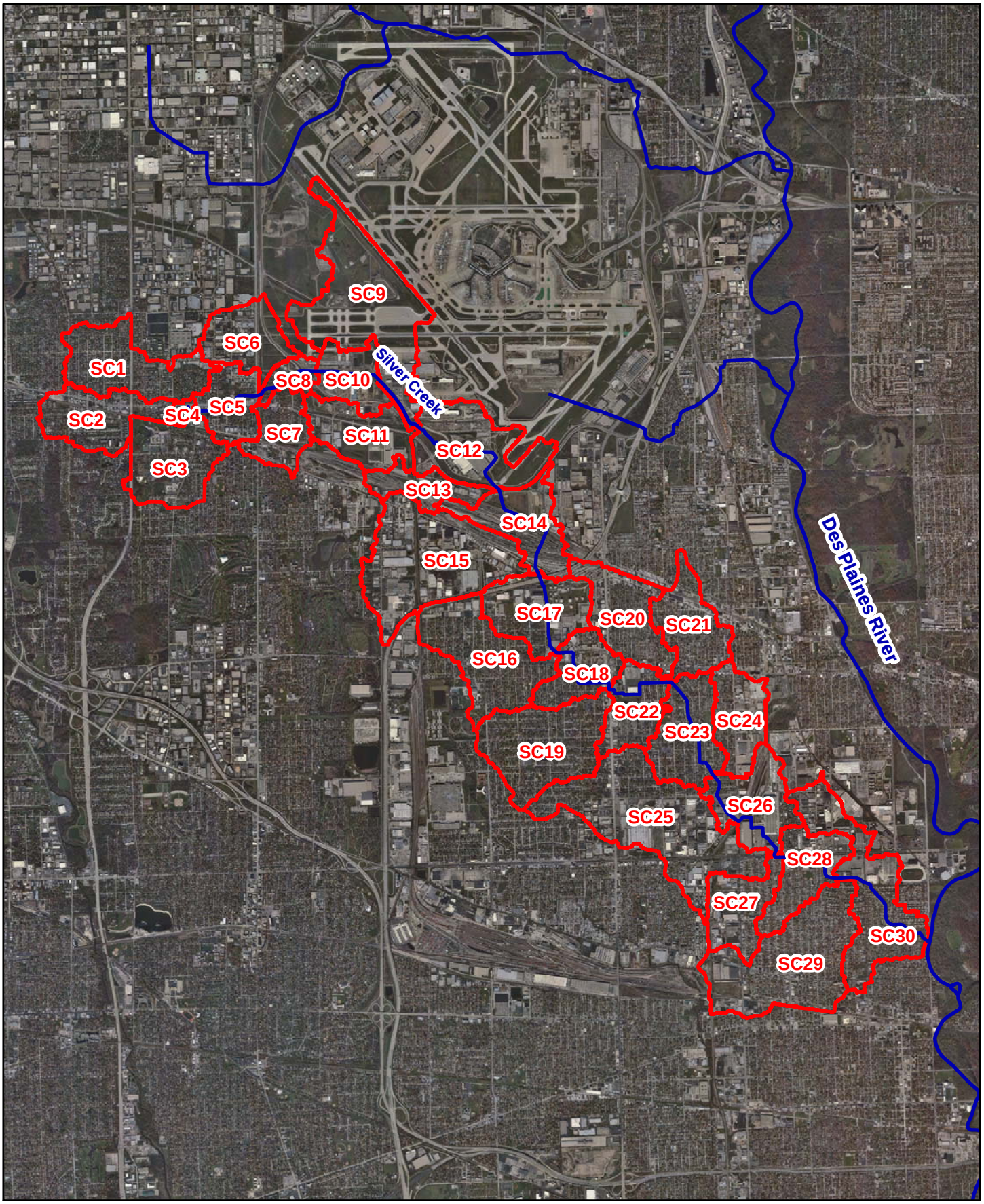
US Army Corps of Engineers
Chicago District

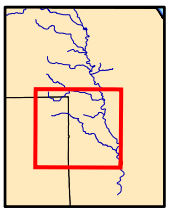
Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

Willow-Higgins Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-10





Legend

Streams

Silver Creek Subbasin Boundaries

0 0.25 0.5 Miles

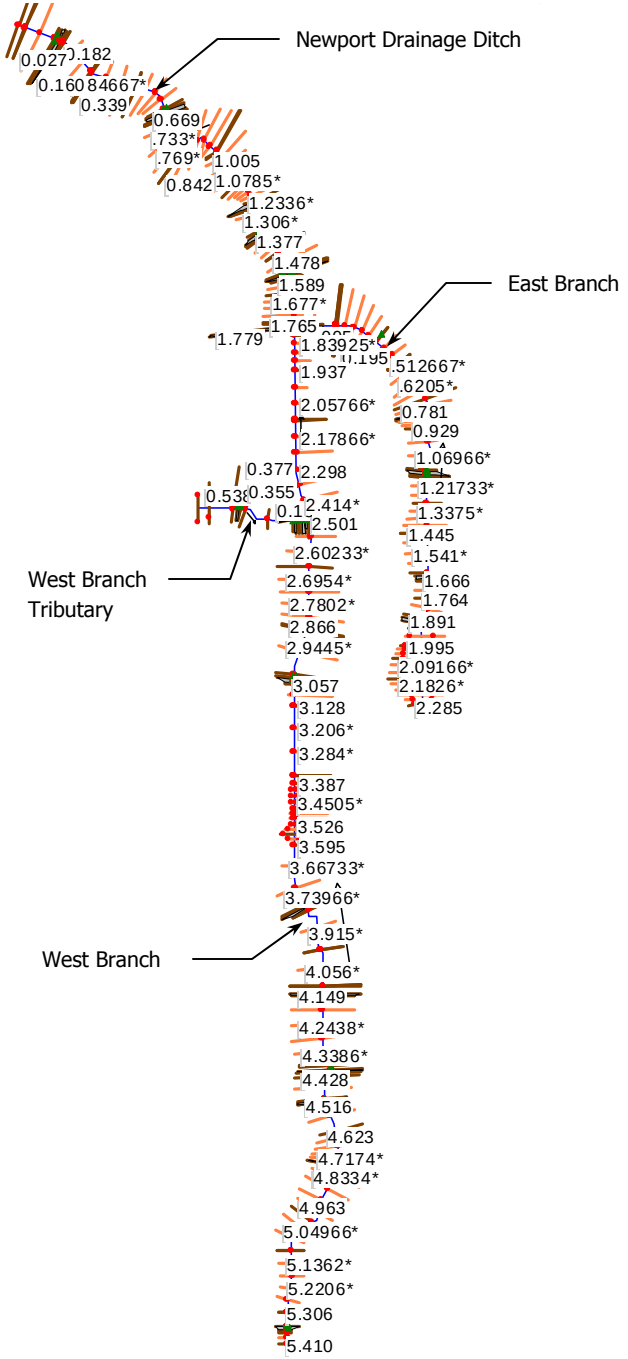
US Army Corps of Engineers
Chicago District

Upper Des Plaines River and Tributaries
Feasibility Report
Appendix A - Hydrology and Hydraulics

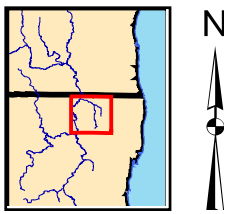
Silver Creek Subbasin

Chicago District, U.S. Army Corps of Engineers

August 2010 | Plate A-11

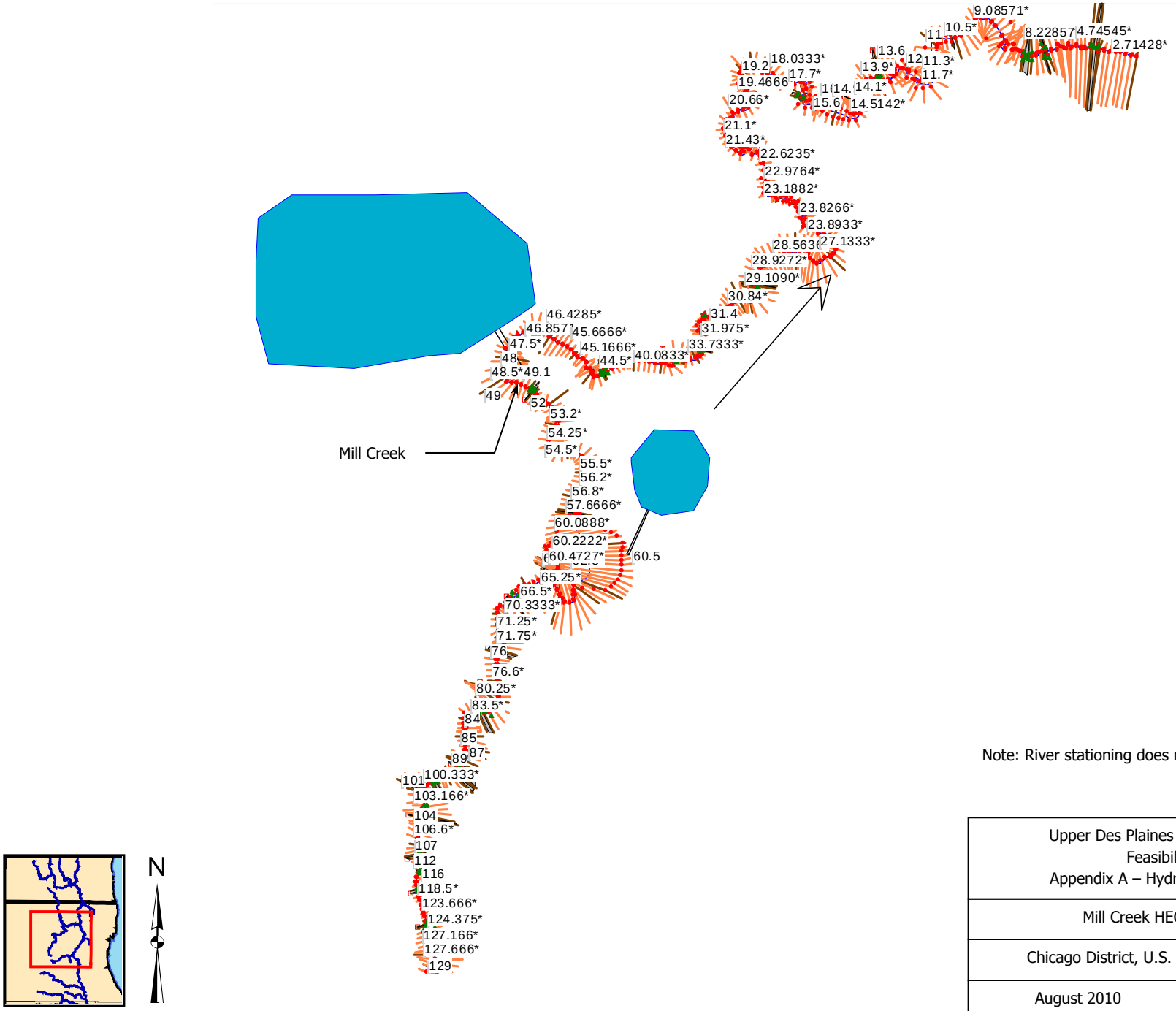


Note: River stationing in miles



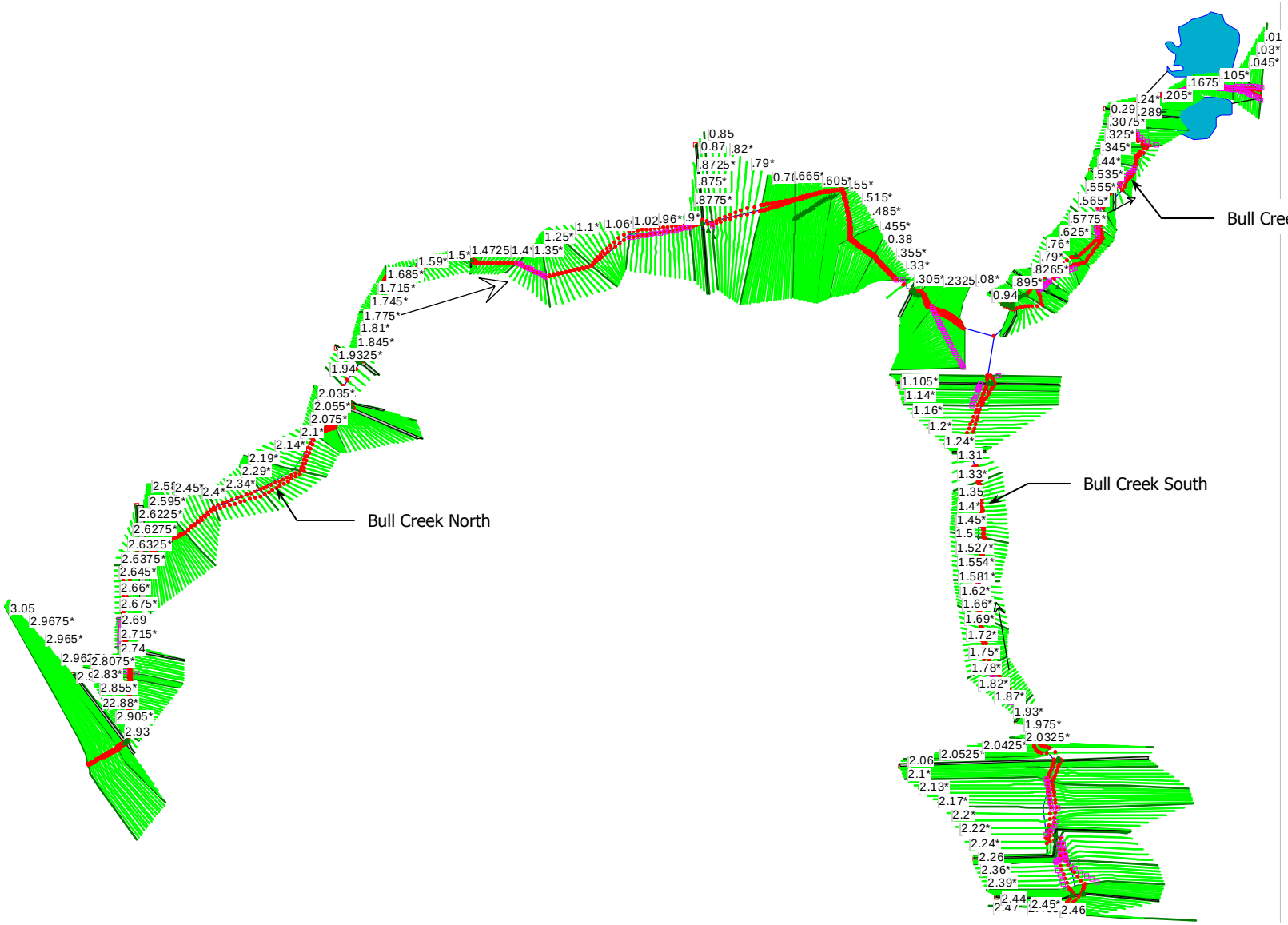
N

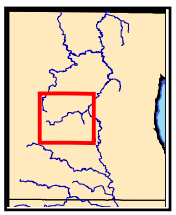
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Newport Drainage Ditch HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-12



Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Mill Creek HEC-RAS Schematic
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-13

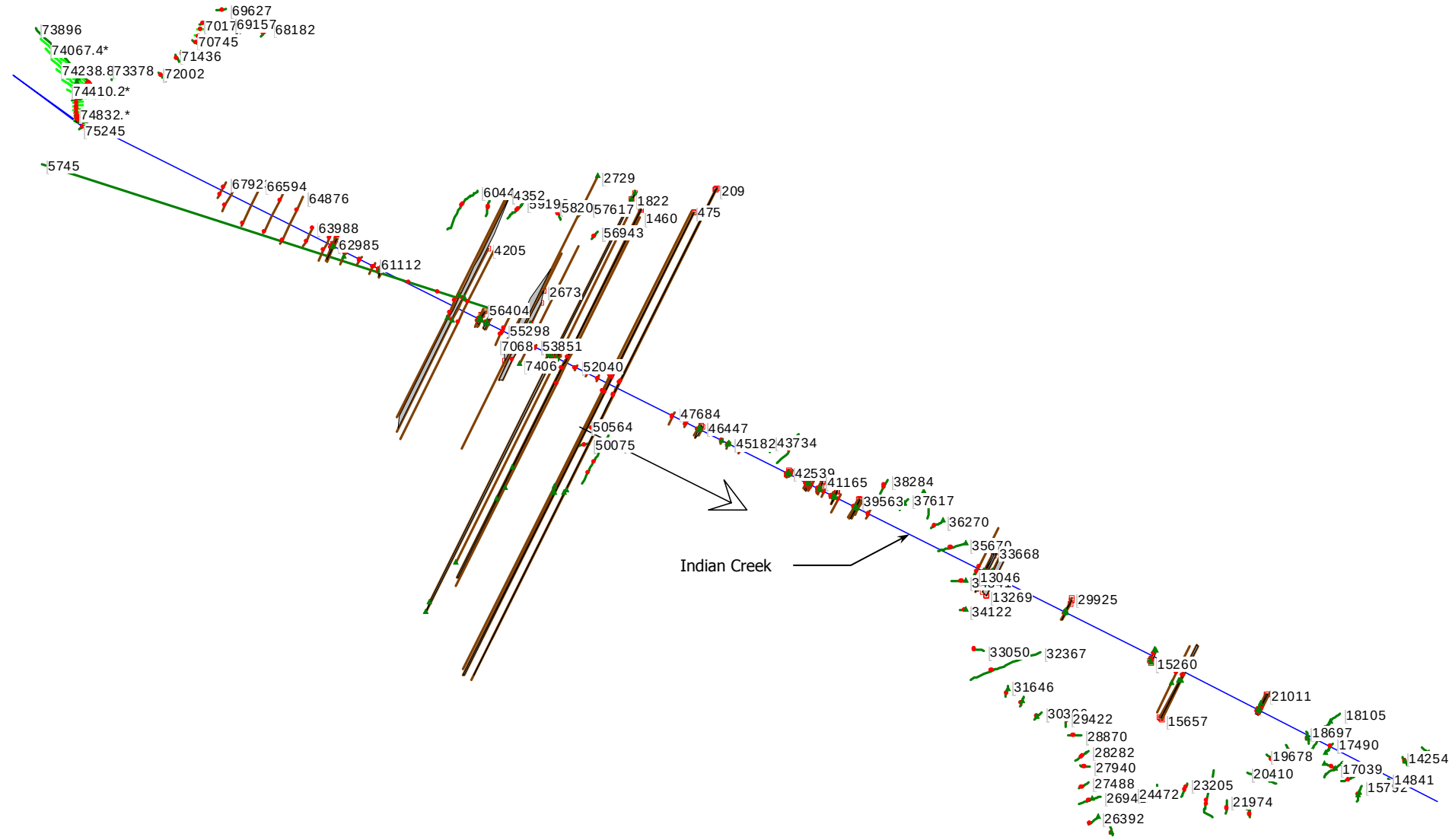




N

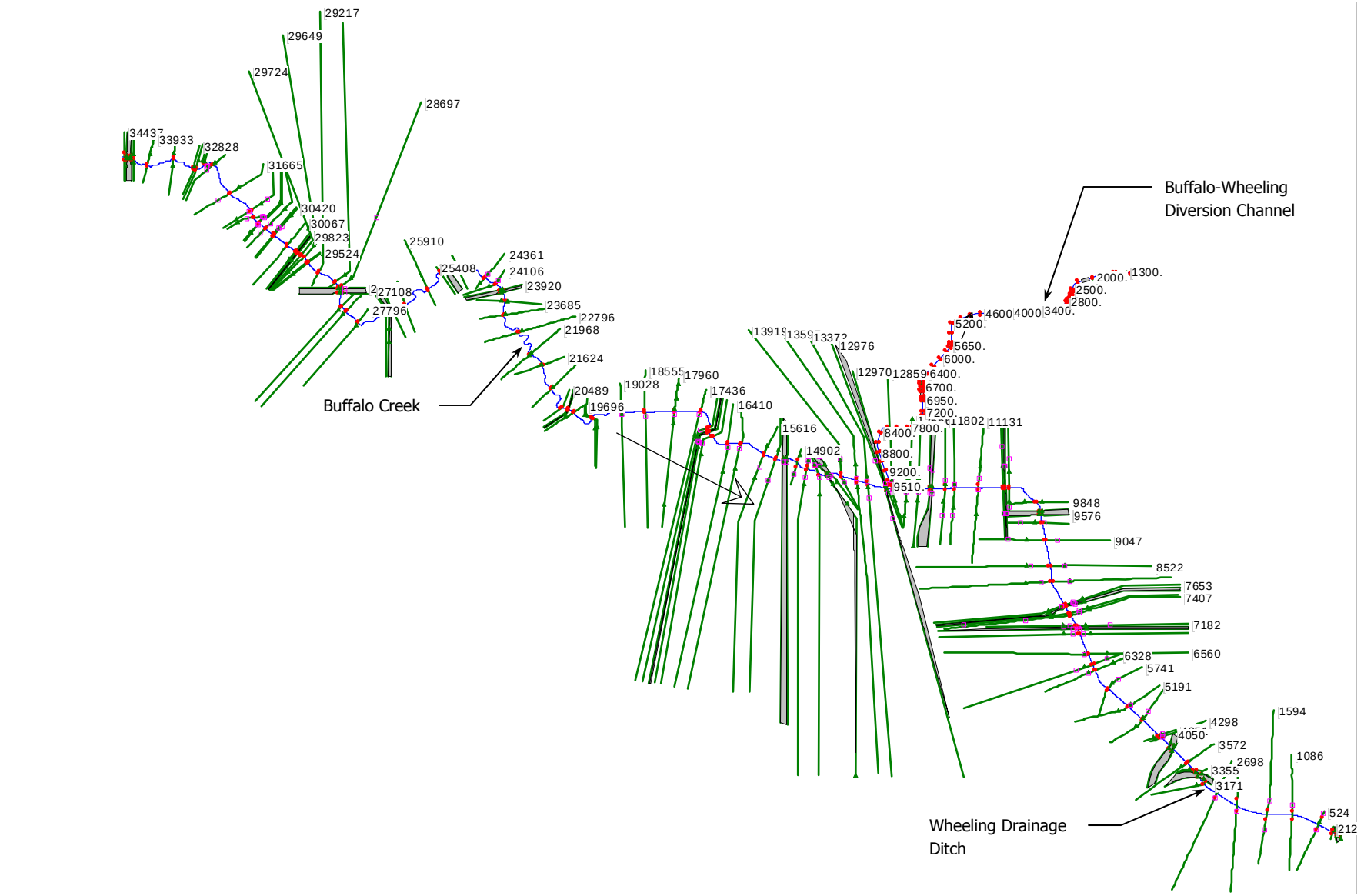
Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Bull Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-14



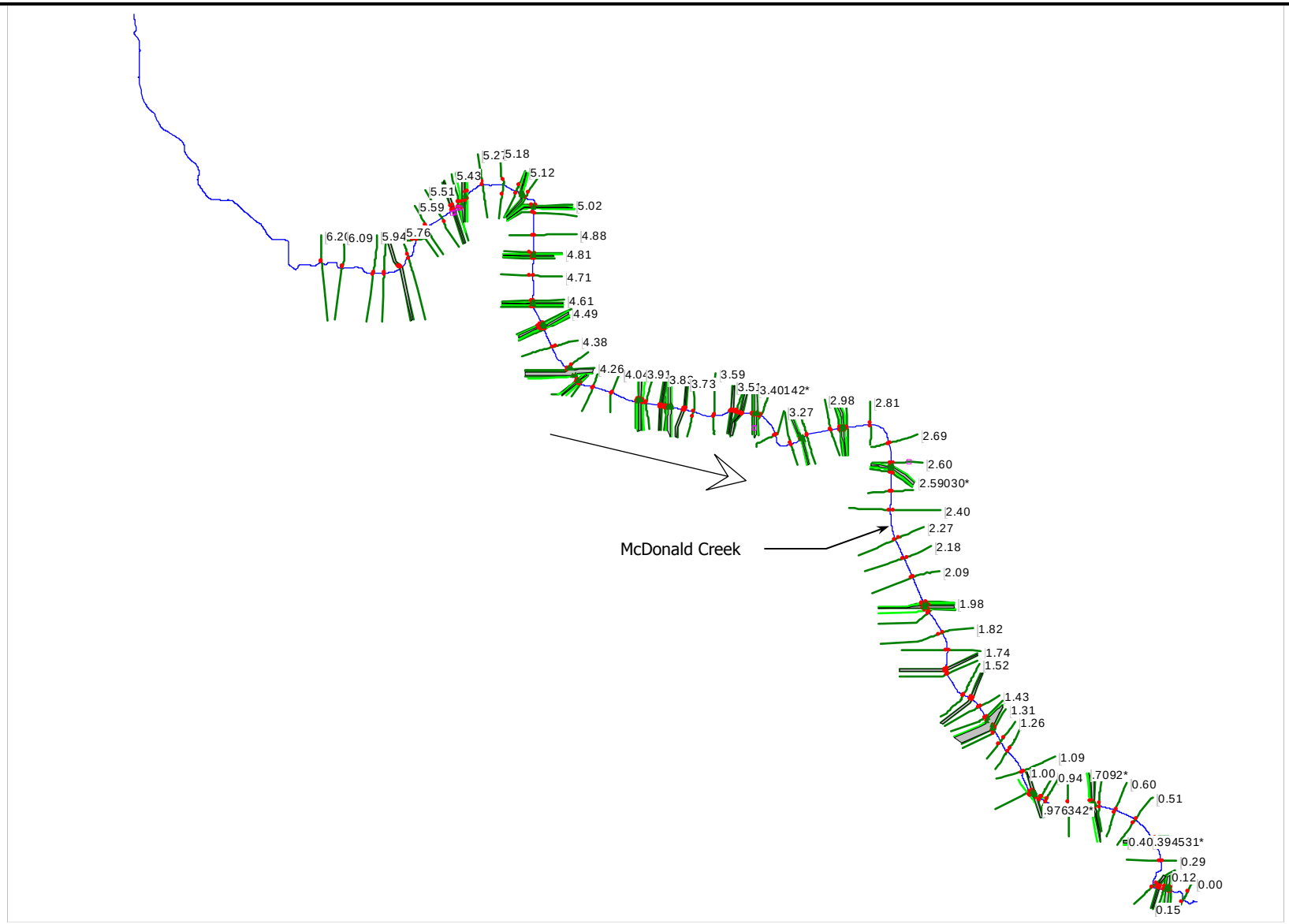
Note: River stationing does not correlate to river mileage

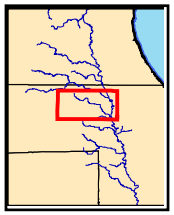
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Indian Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-15



Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Buffalo Creek/Wheeling Drainage Ditch HEC-RAS Schematic
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-16

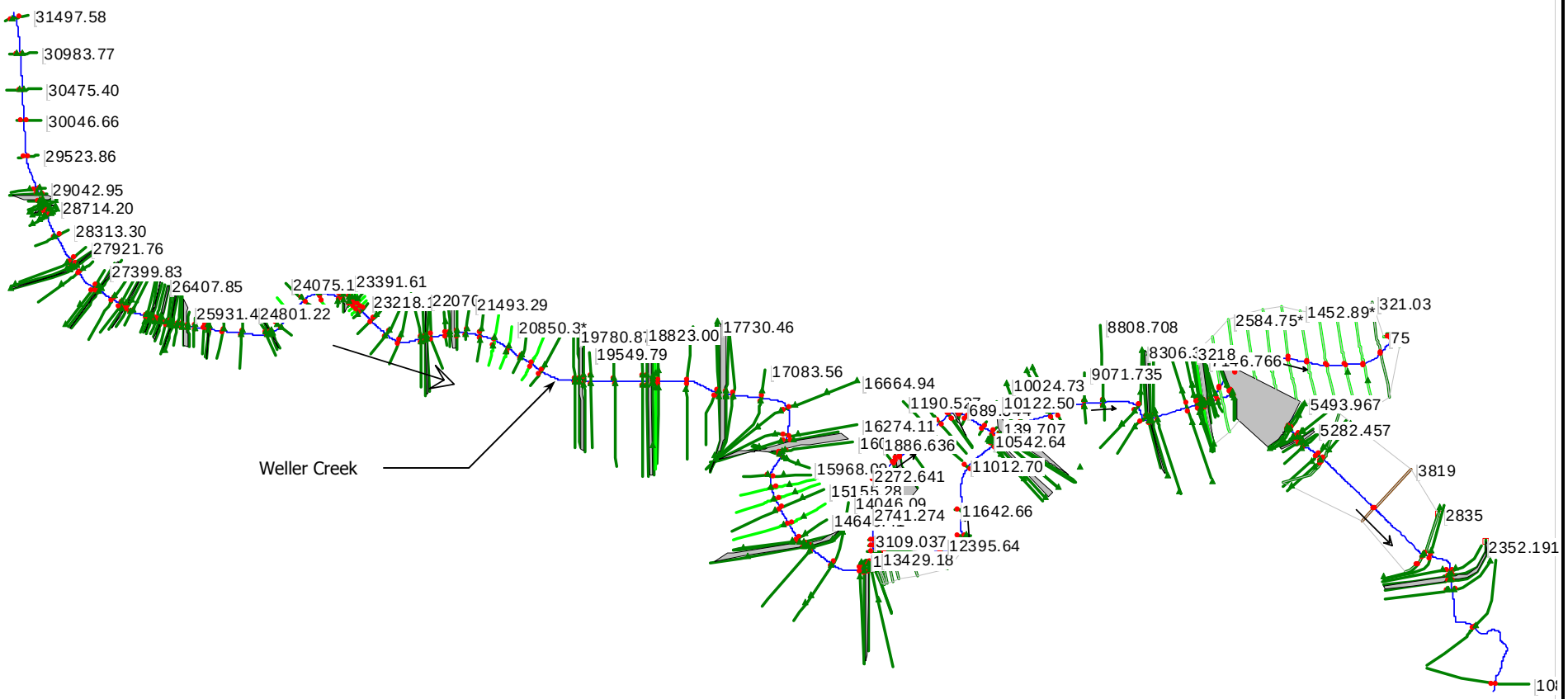




N

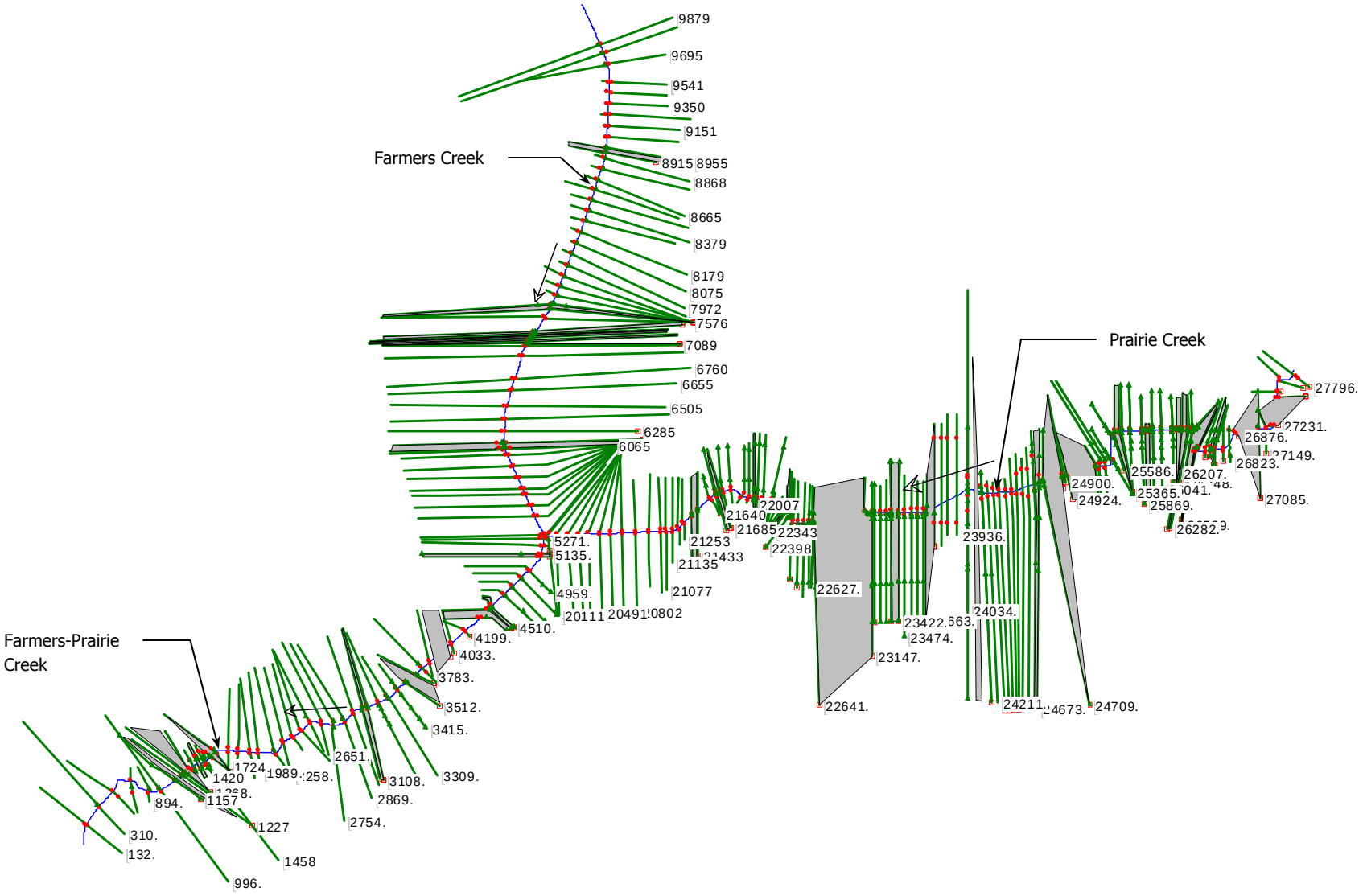
Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
McDonald Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-17



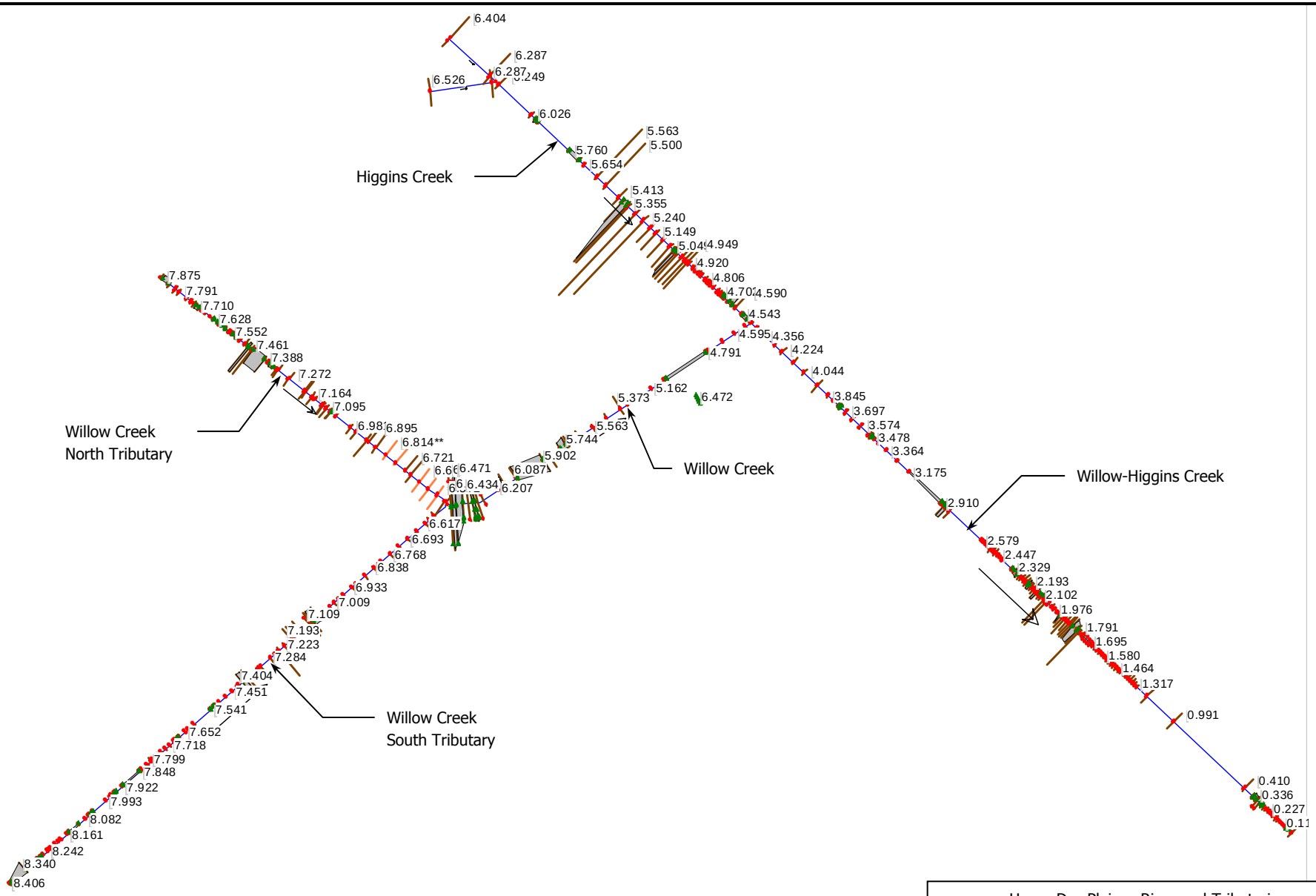
Note: River stationing in feet

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Weller Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-18



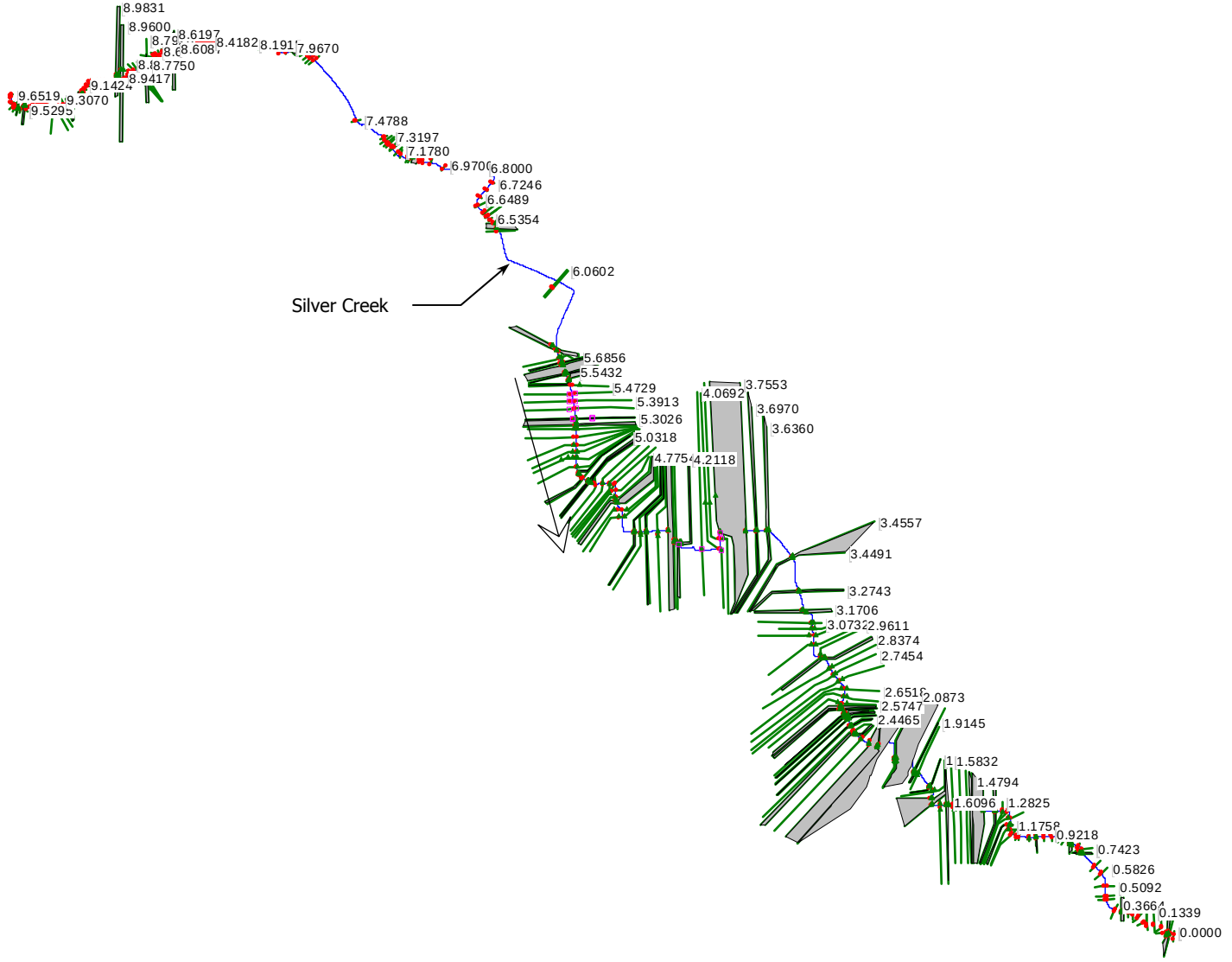
Note: River stationing in feet

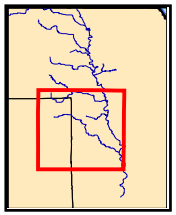
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Farmers-Prairie Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-19



Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Willow-Higgins Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-20

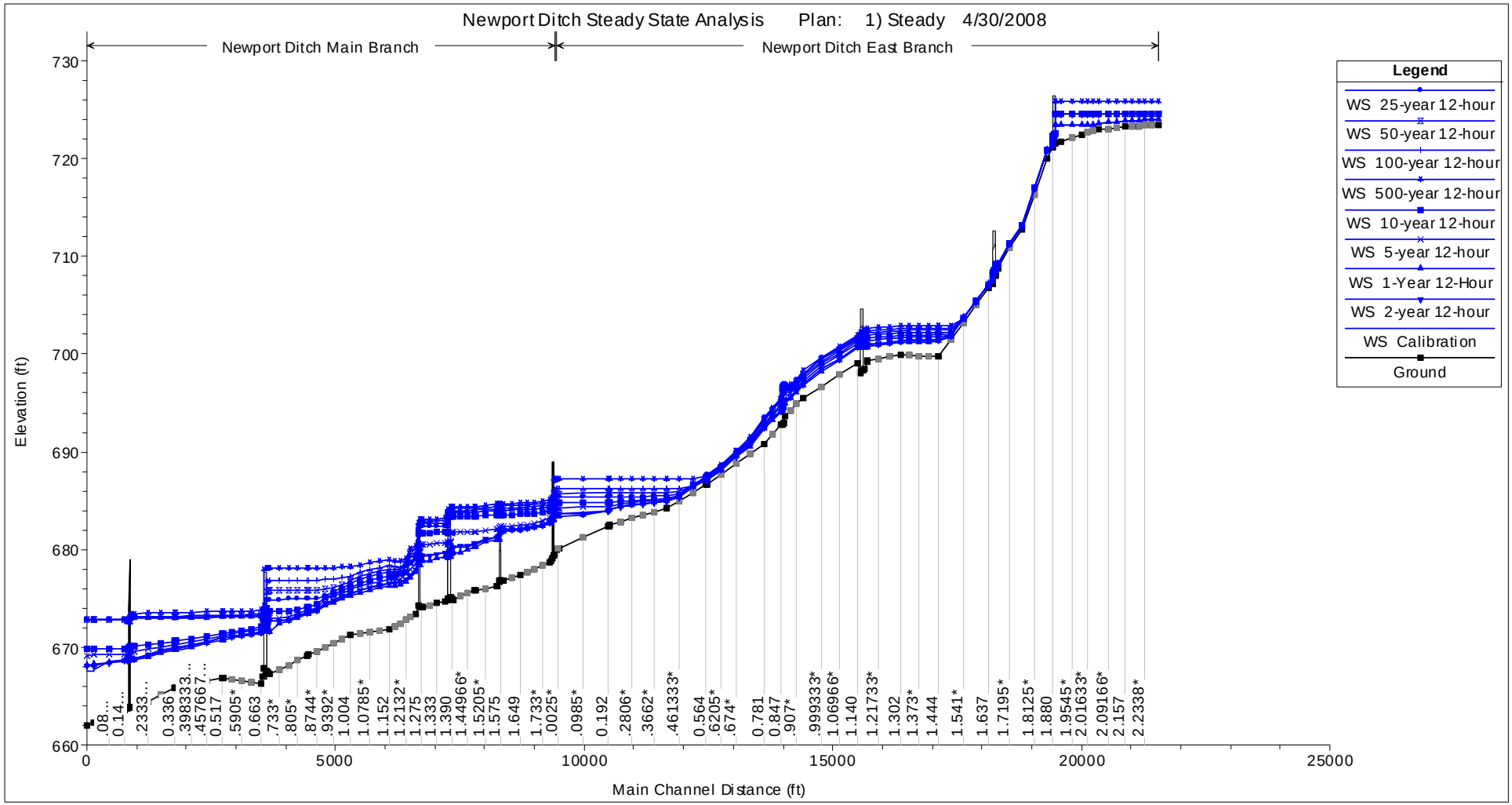




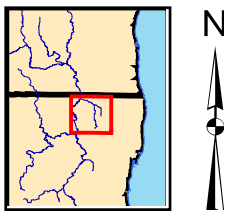
N

Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Silver Creek HEC-RAS Schematic	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-21

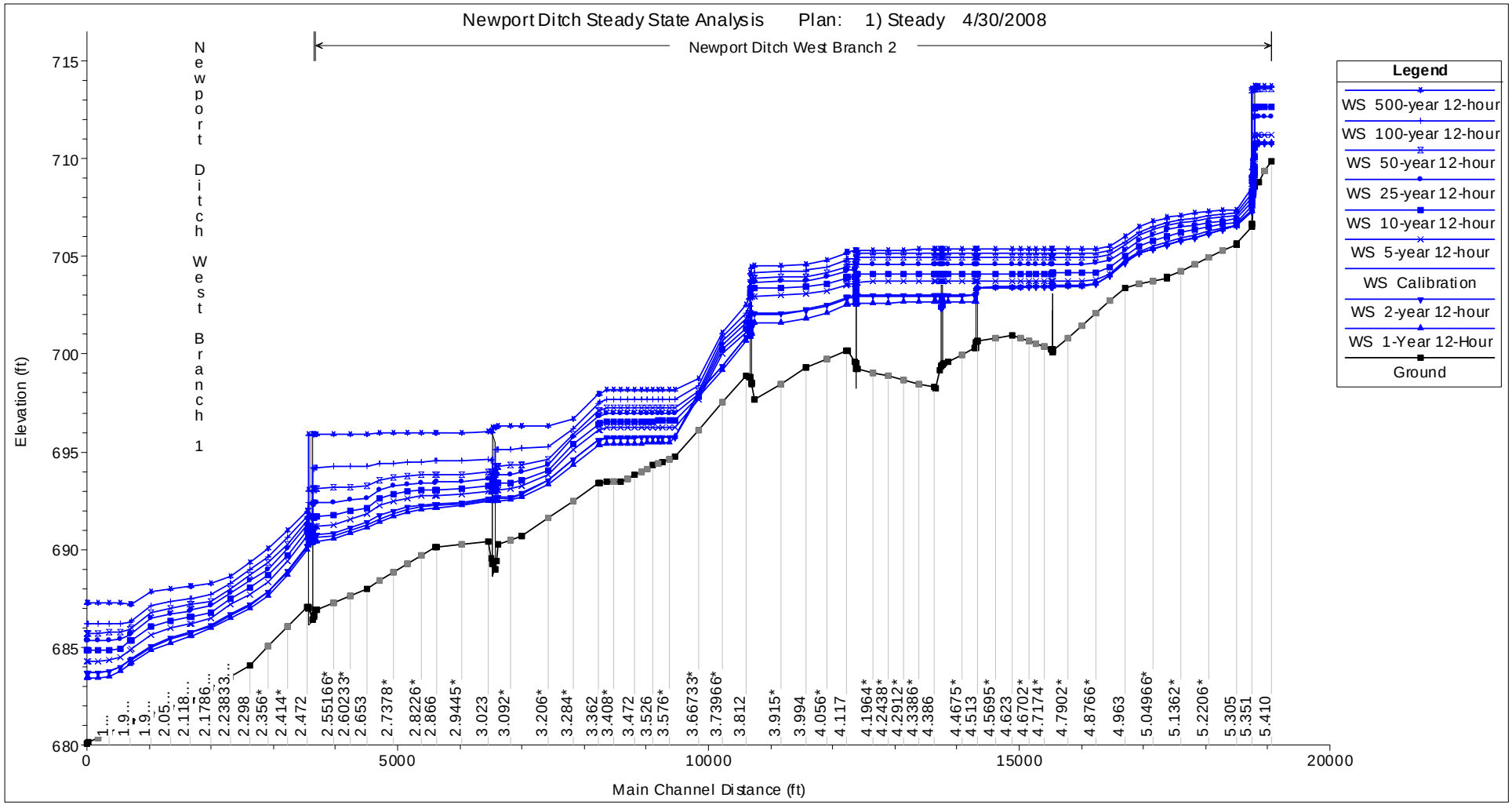


Newport Ditch + East Branch
(see Plate A-22b for West Branch)
Elevations are in ft NGVD29

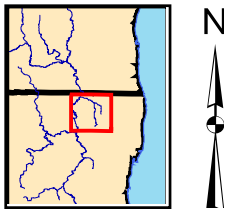


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Newport Drainage Ditch HEC-RAS Baseline Profiles (1 of 2)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-22a

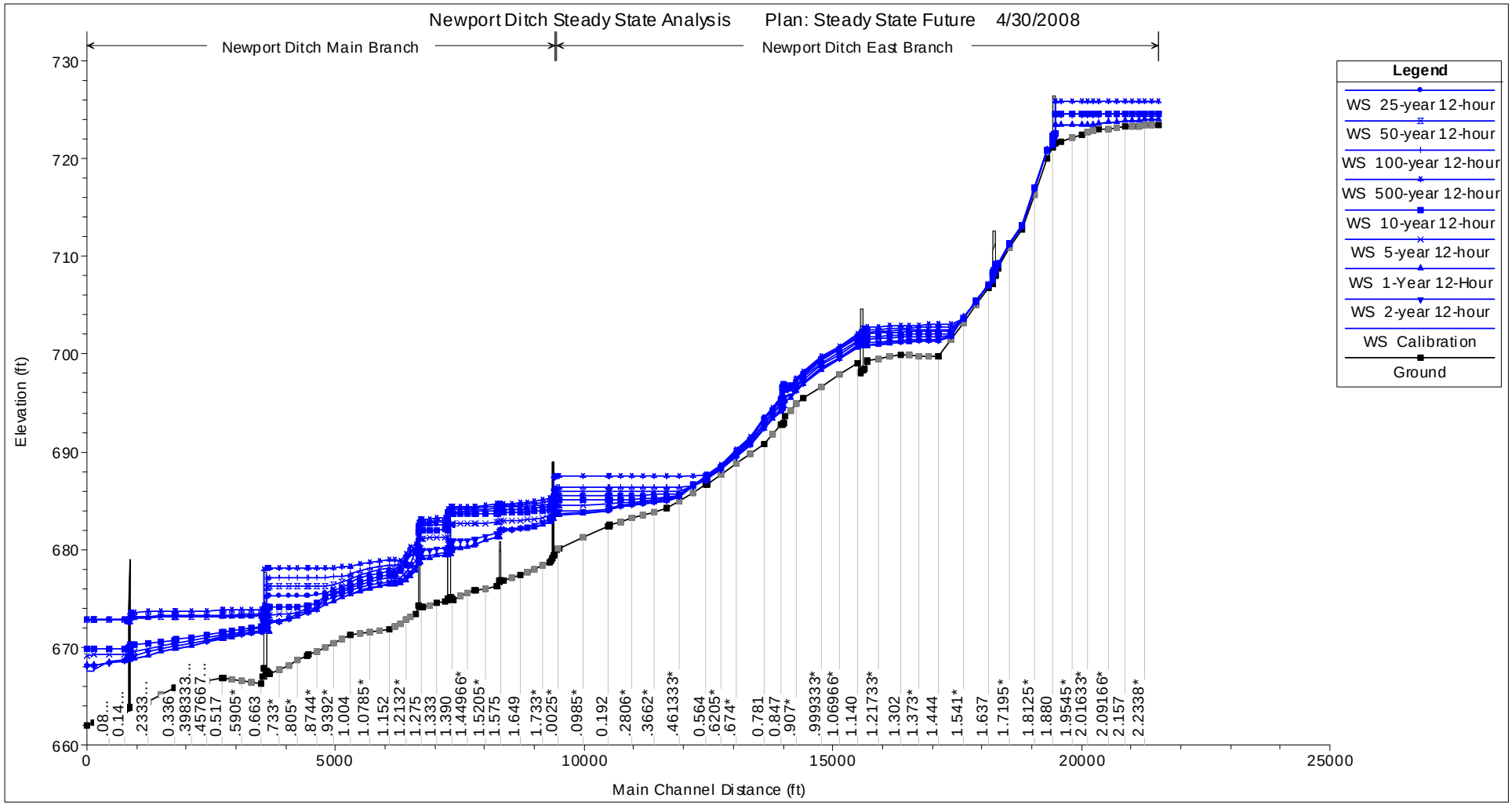


West Branch
(see Plate A-22a for Newport Ditch)
Elevations are in ft NGVD29

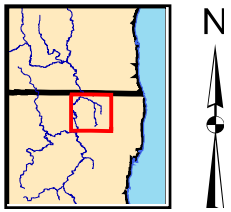


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Newport Drainage Ditch HEC-RAS Baseline Profiles (2 of 2)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-22b

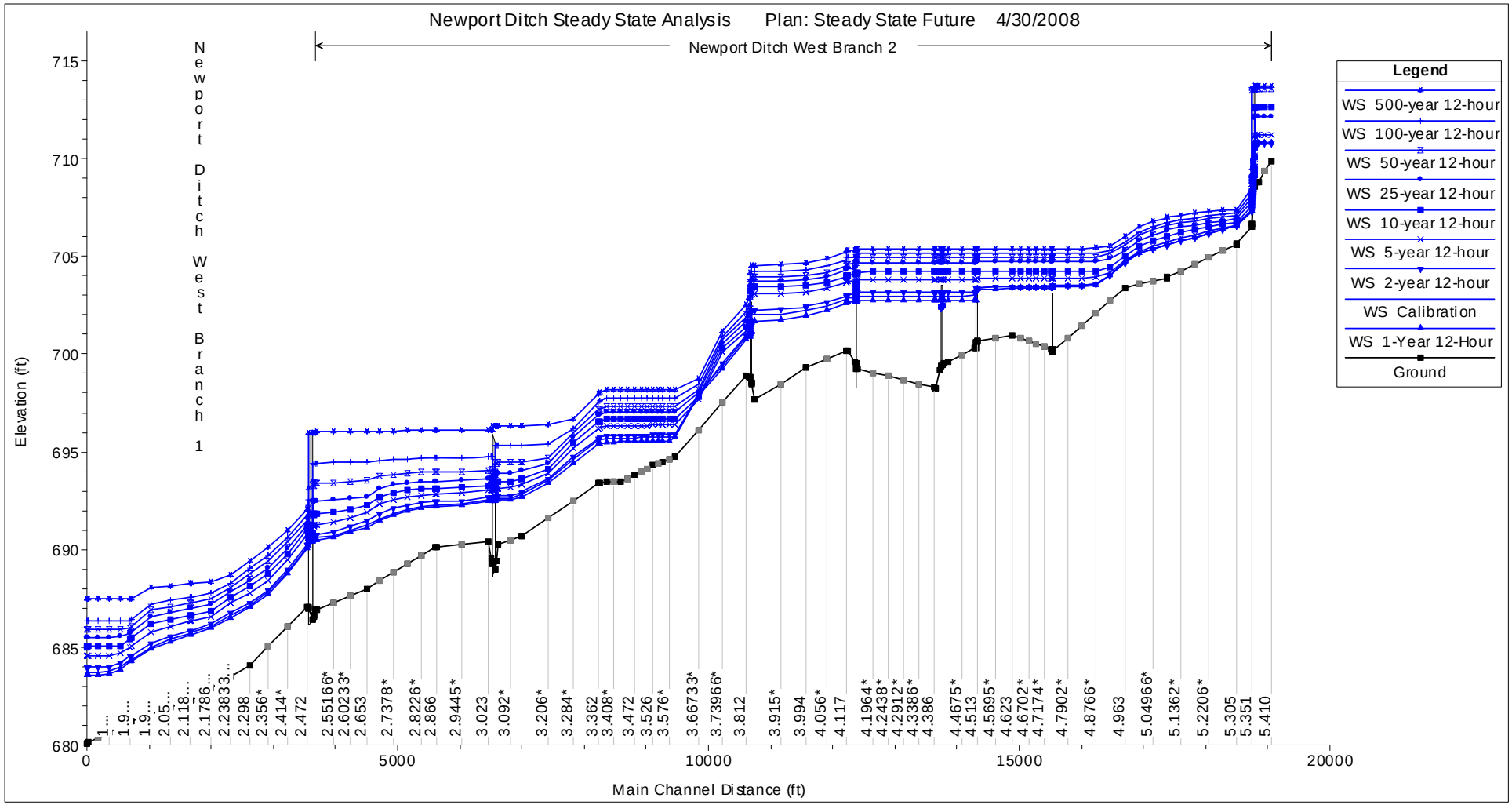


Newport Ditch + East Branch
(see Plate A-23b for West Branch)
Elevations are in ft NGVD29

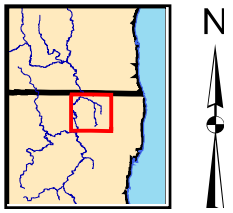


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Newport Drainage Ditch HEC-RAS Future Profiles (1 of 2)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-23a

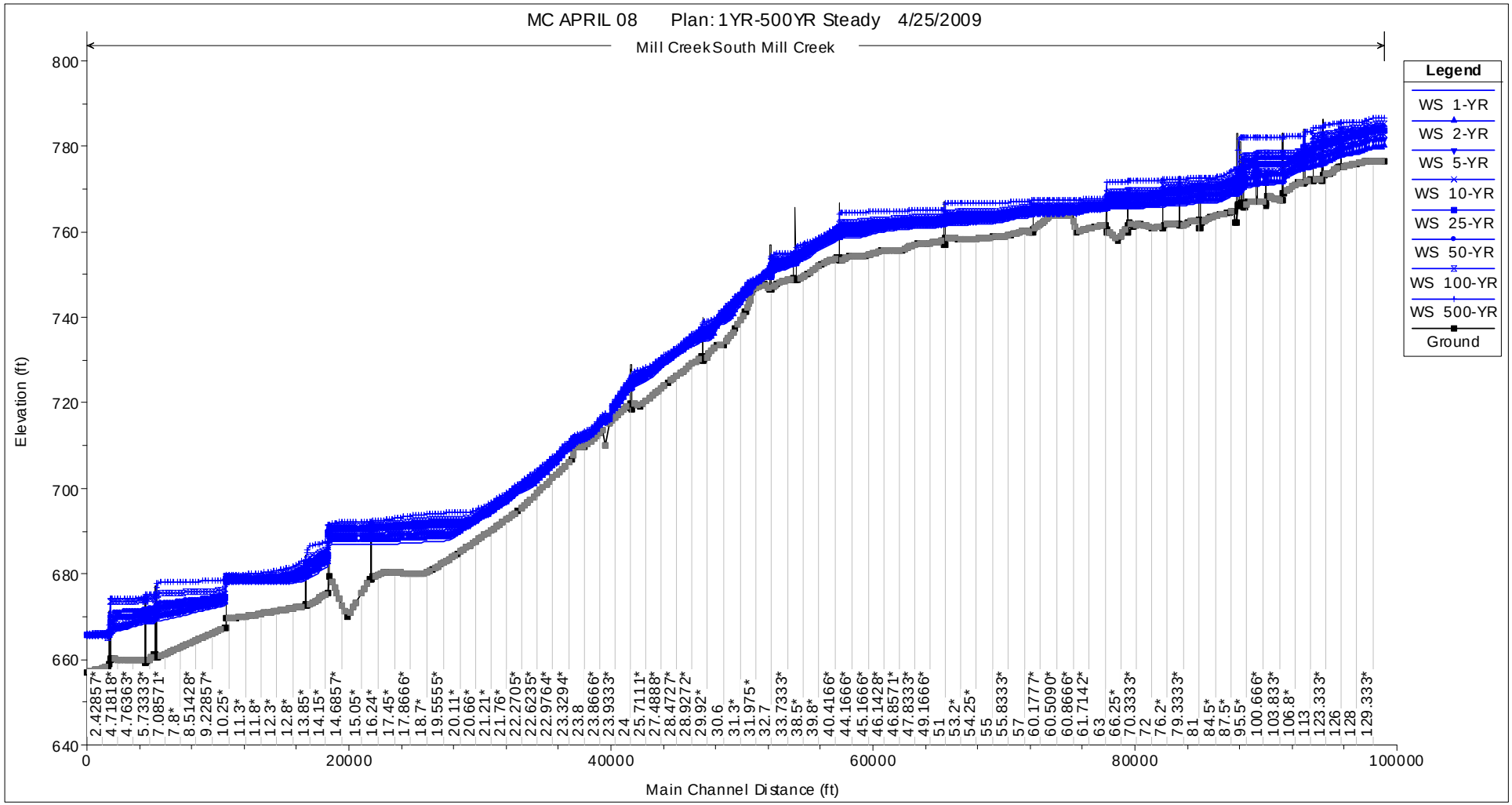


West Branch
(see Plate A-23a for Newport Ditch)
Elevations are in ft NGVD29

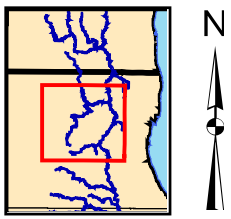


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Newport Drainage Ditch HEC-RAS Future Profiles (2 of 2)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-23b

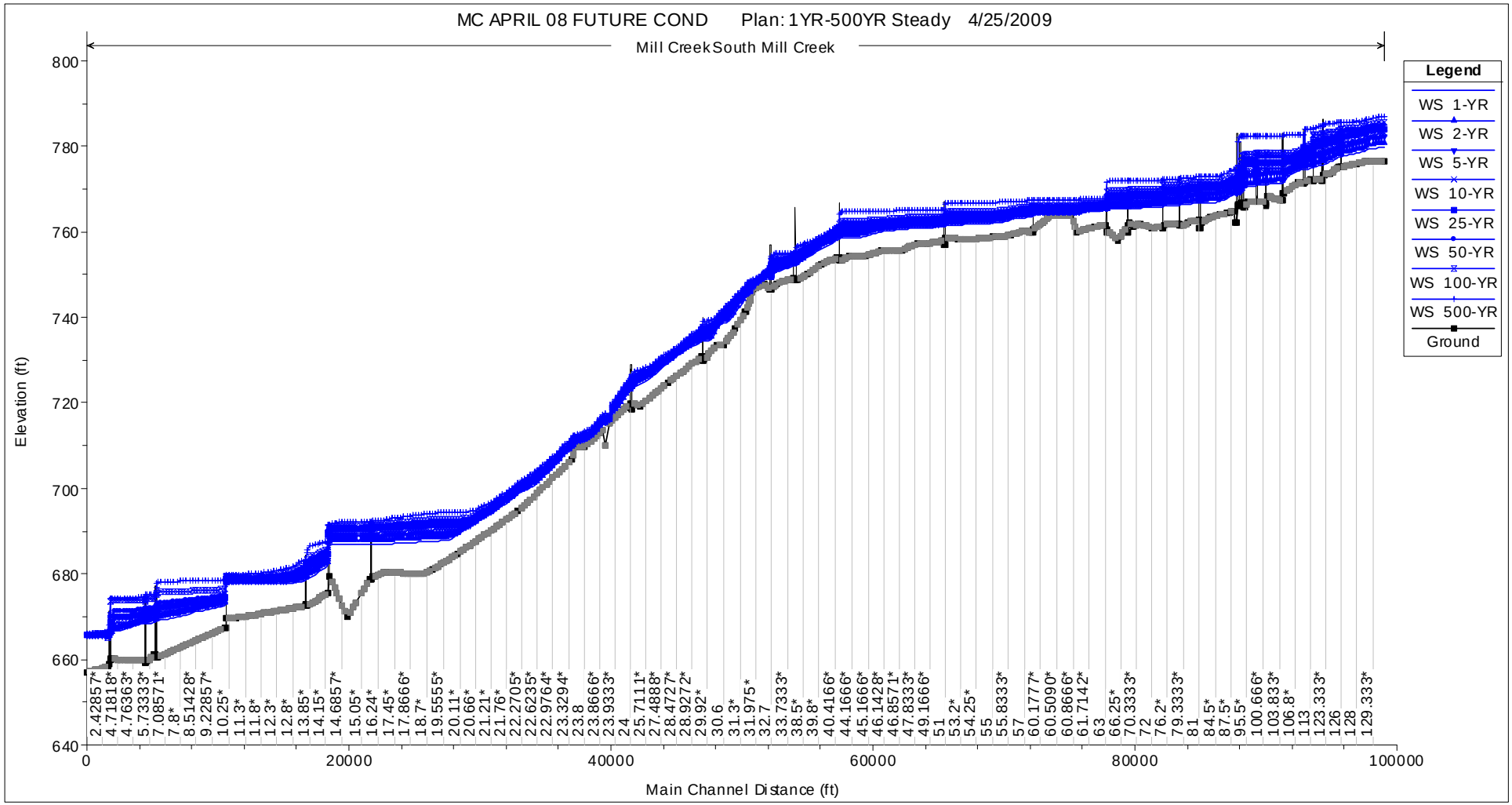


Elevations are in ft NAVD88

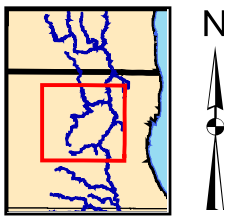


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Mill Creek HEC-RAS Baseline Profiles
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-24

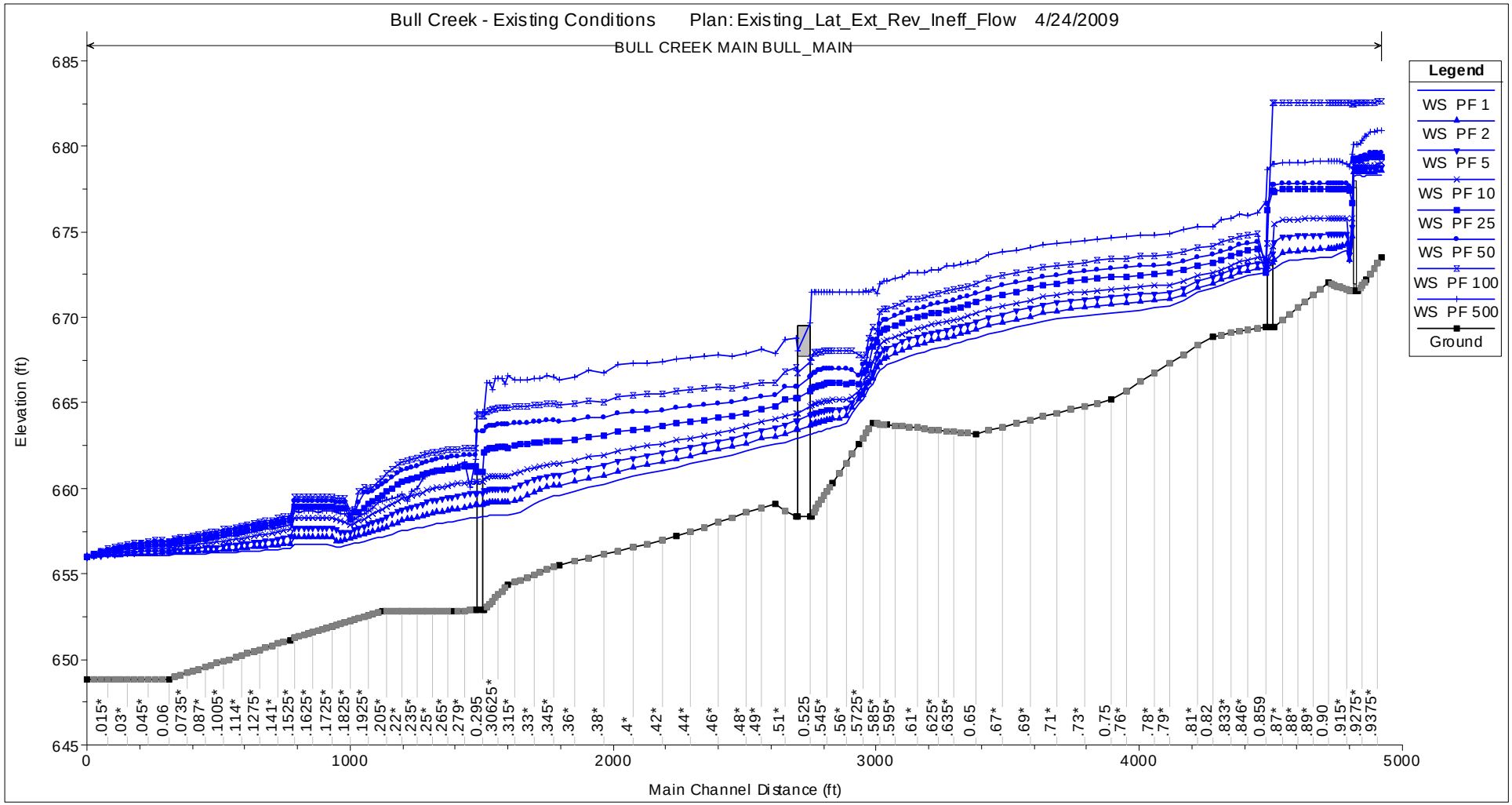


Elevations are in ft NAVD88

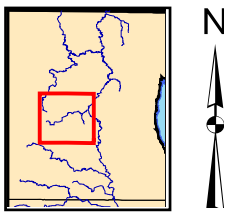


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Mill Creek HEC-RAS Future Profiles
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-25

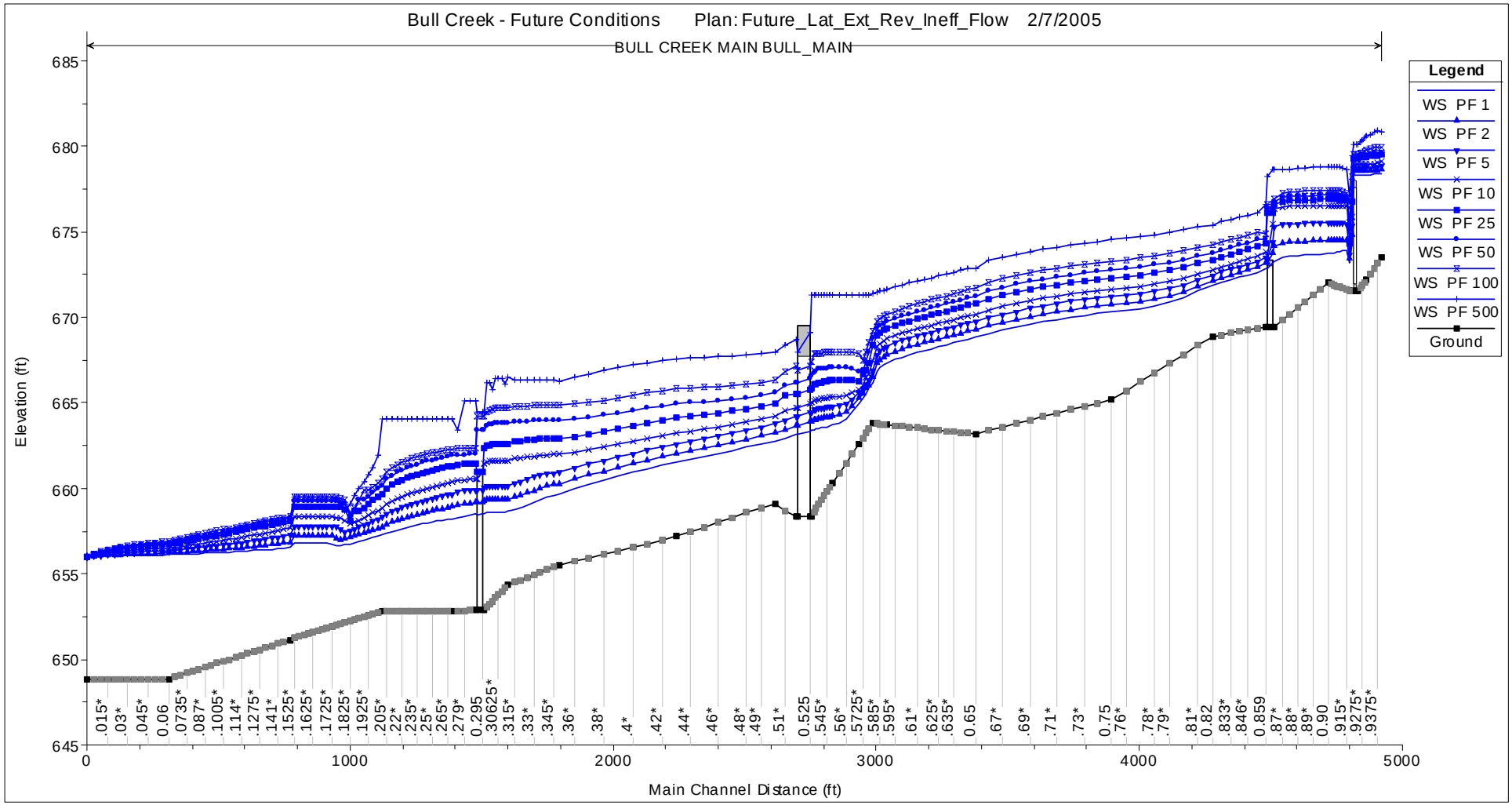


Elevations are in ft NGVD29

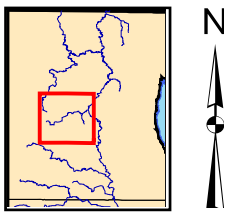


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Bull Creek HEC-RAS Profiles
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-26

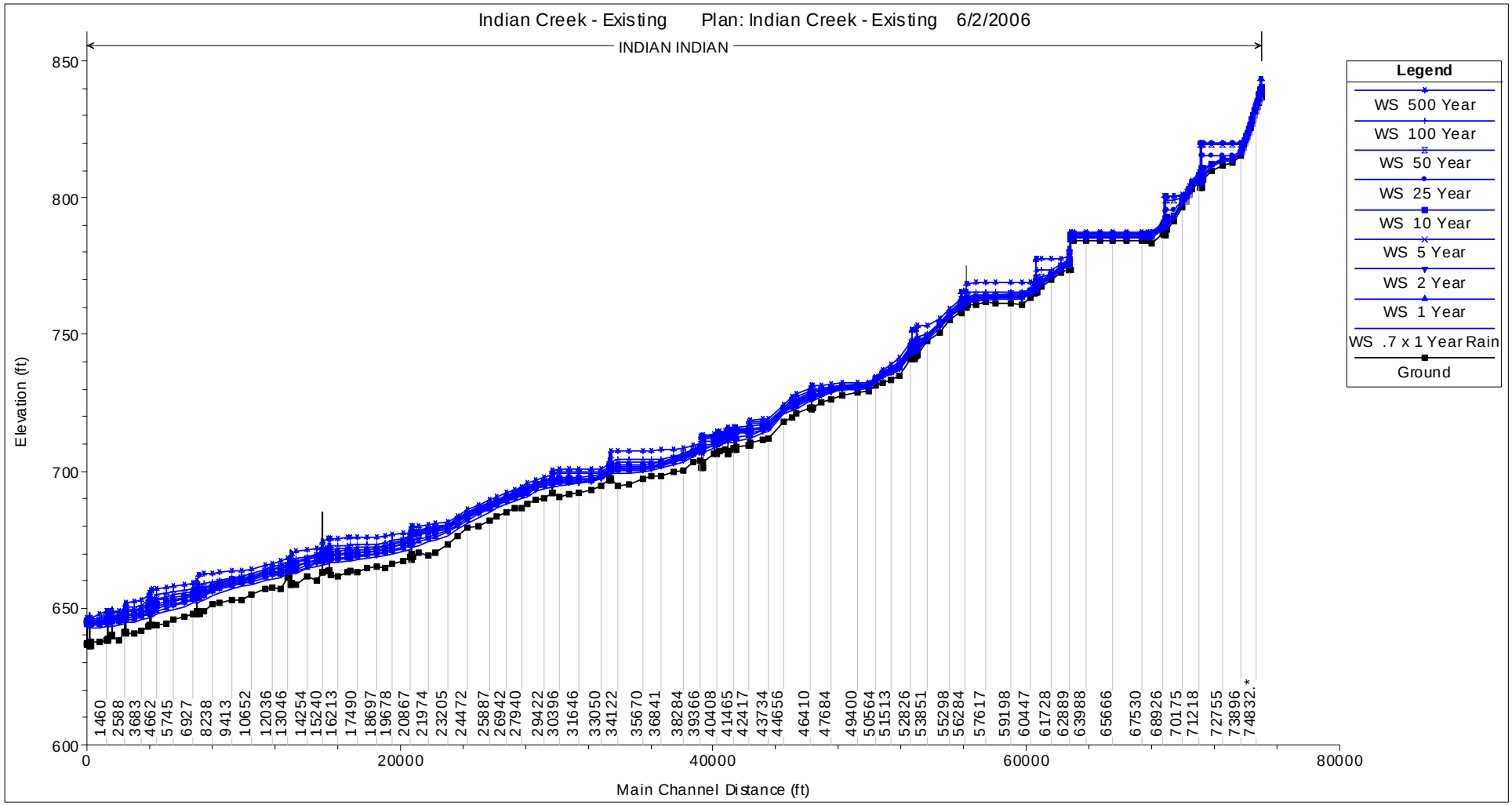


Elevations are in ft NGVD29

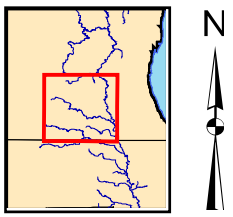


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Bull Creek HEC-RAS Future Profiles
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-27

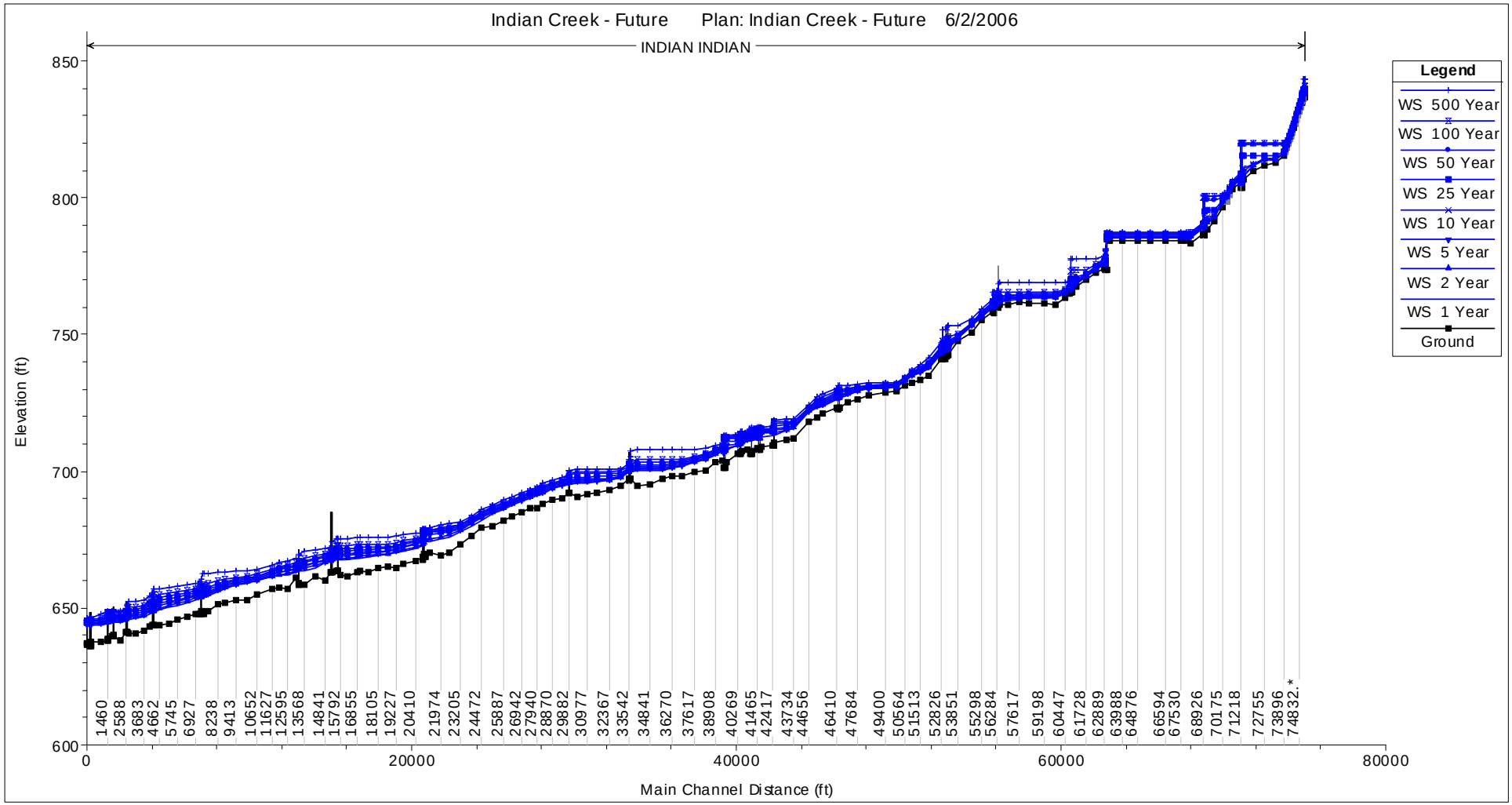


Elevations are in ft NGVD29

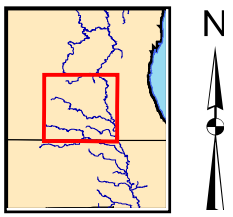


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Indian Creek HEC-RAS Baseline Profiles
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-28

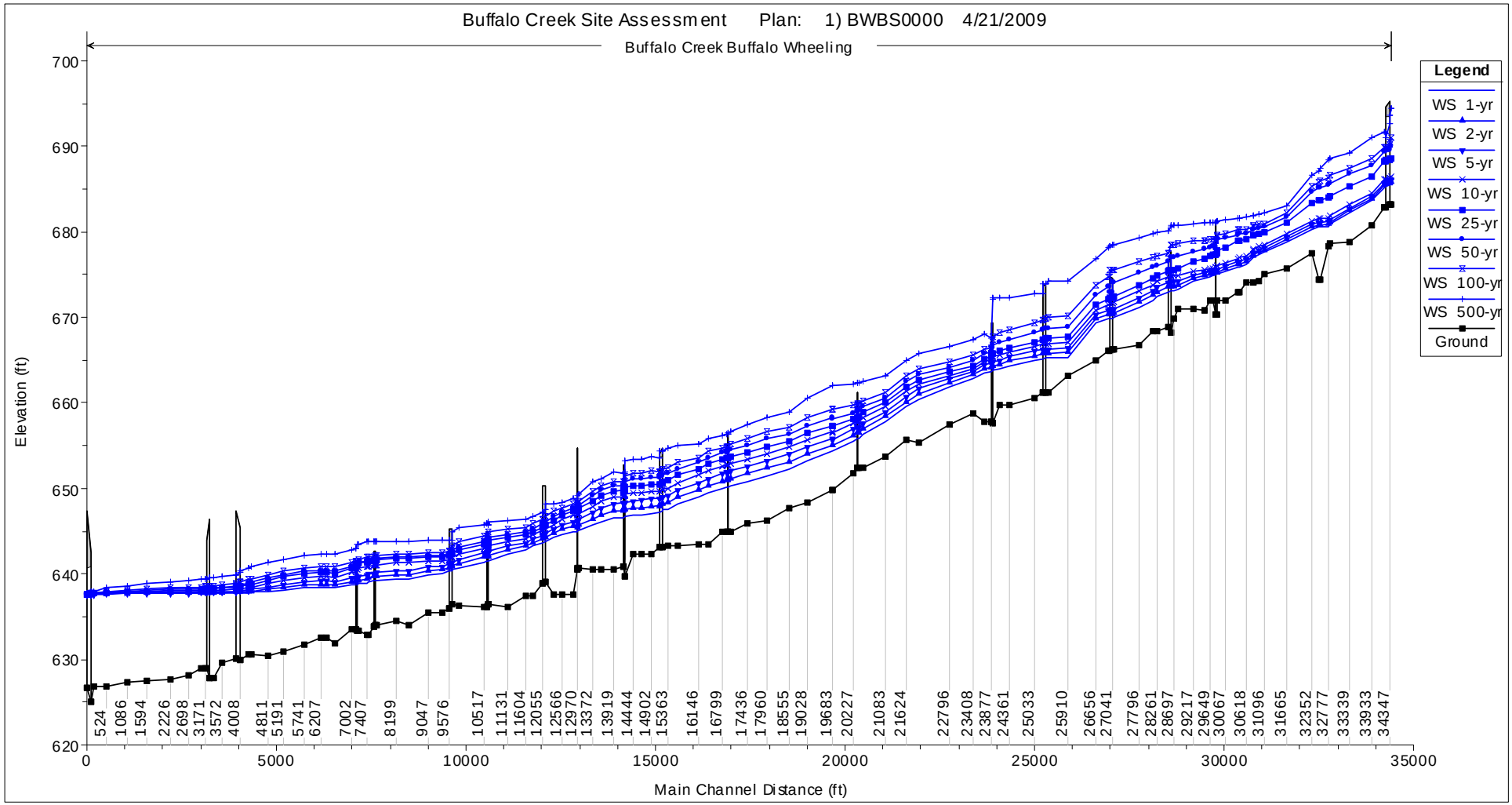


Elevations are in ft NGVD29

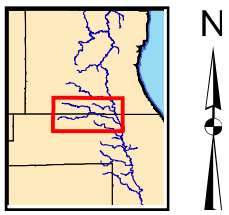


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Indian Creek HEC-RAS Future Profiles
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-29

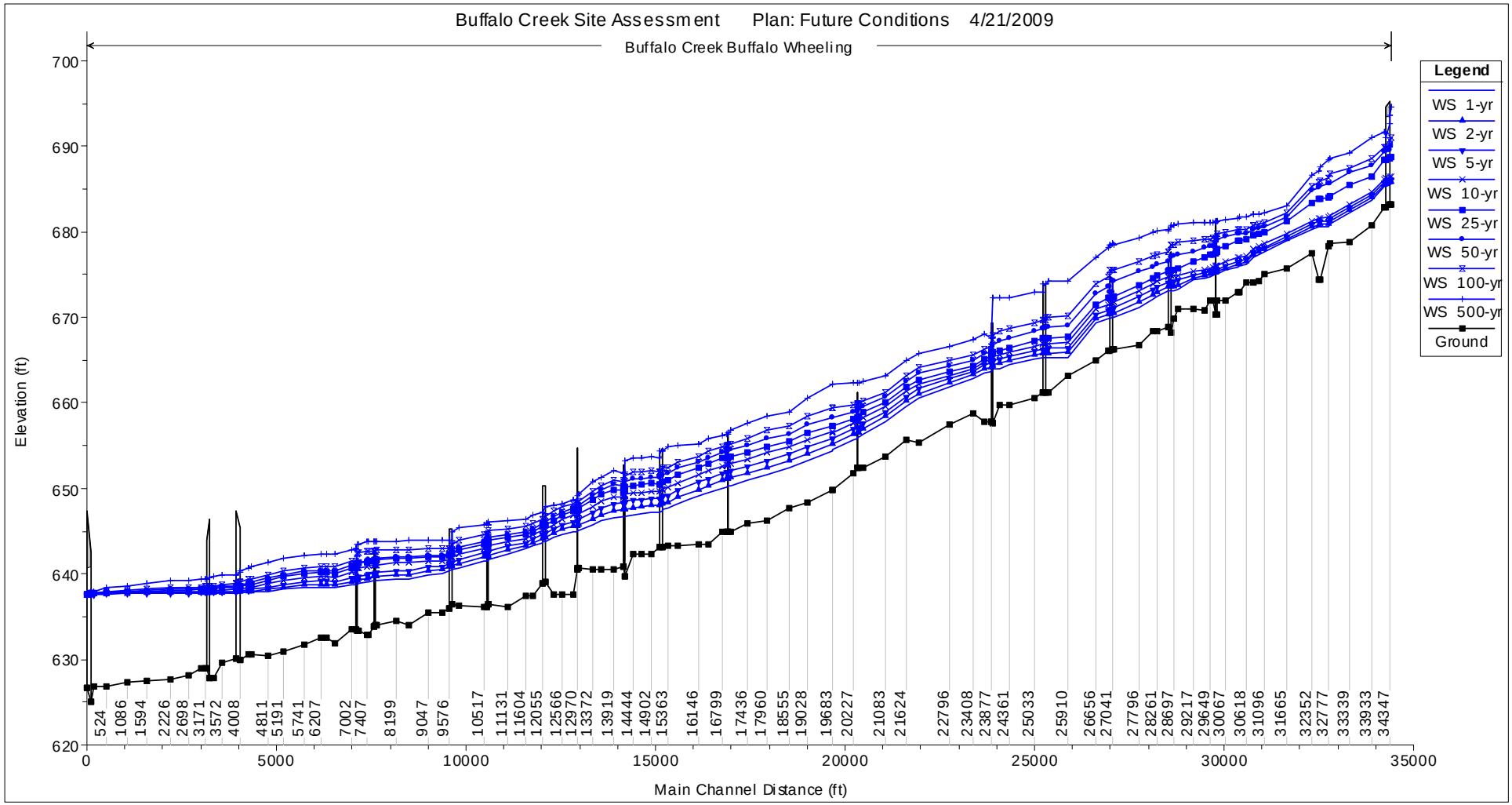


Elevations are in ft NAVD88

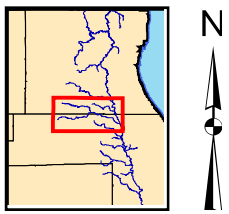


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Buffalo Creek HEC-RAS Baseline Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-30

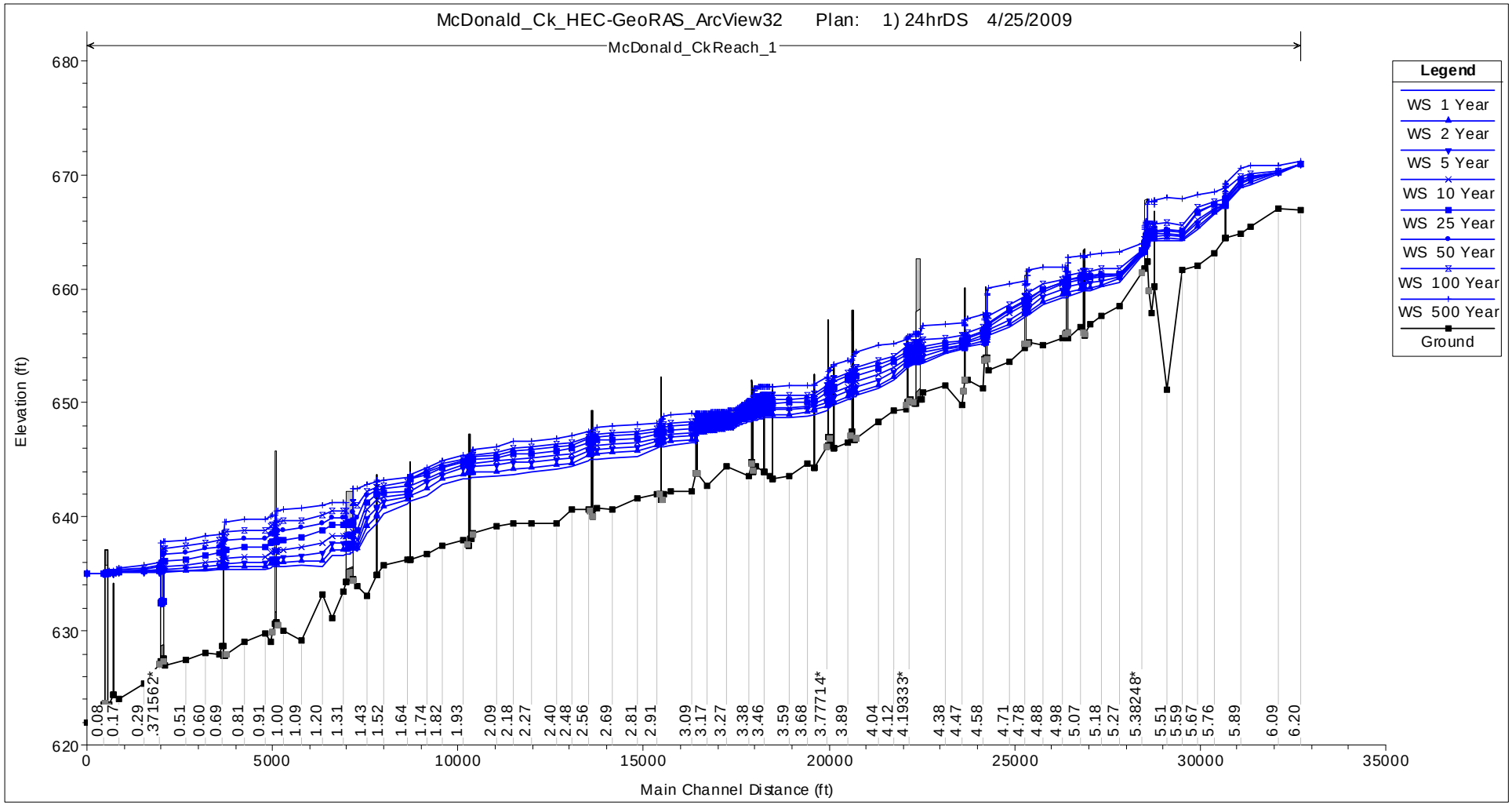


Elevations are in ft NAVD88

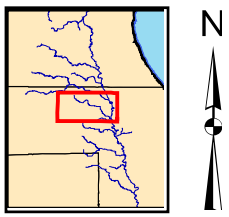


Note: River stationing does not correlate to river mileage

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Buffalo Creek HEC-RAS Future Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-31

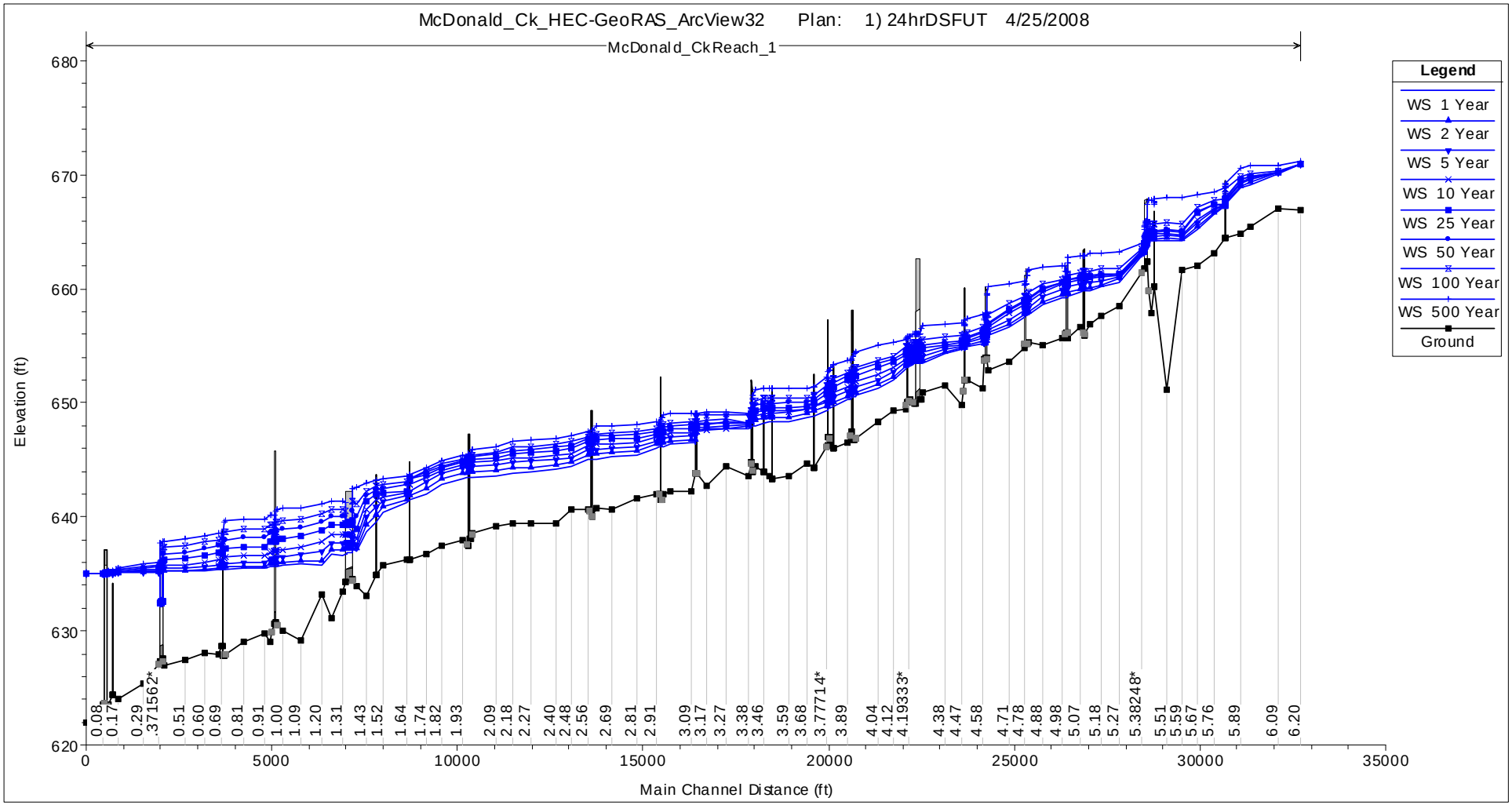


Elevations are in ft NGVD29

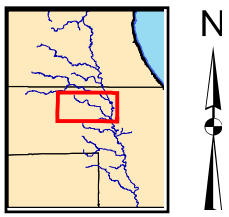


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
McDonald Creek HEC-RAS Baseline Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-32

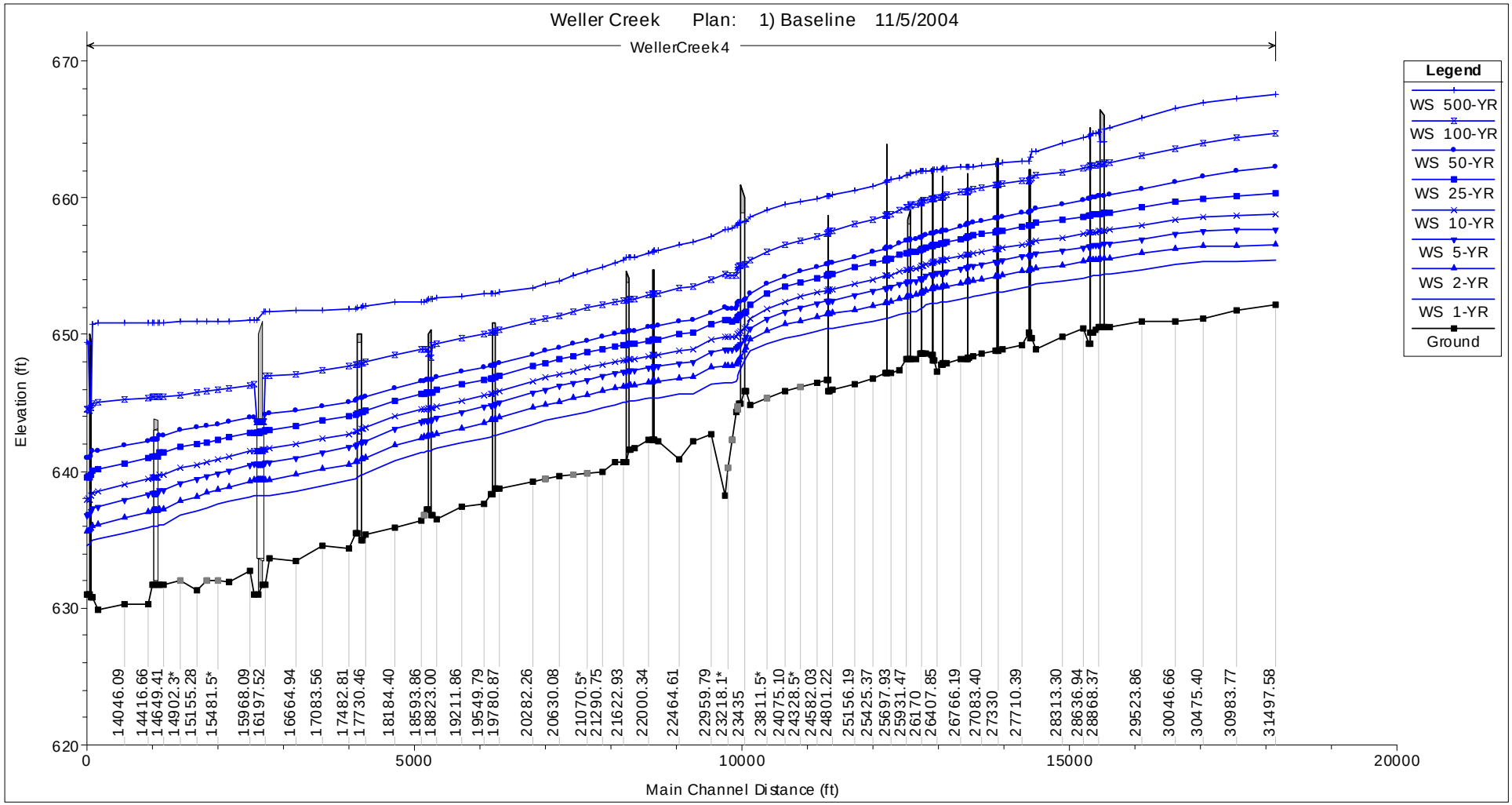


Elevations are in ft NGVD29

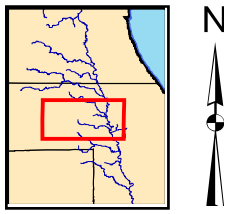


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
McDonald Creek HEC-RAS Future Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-33



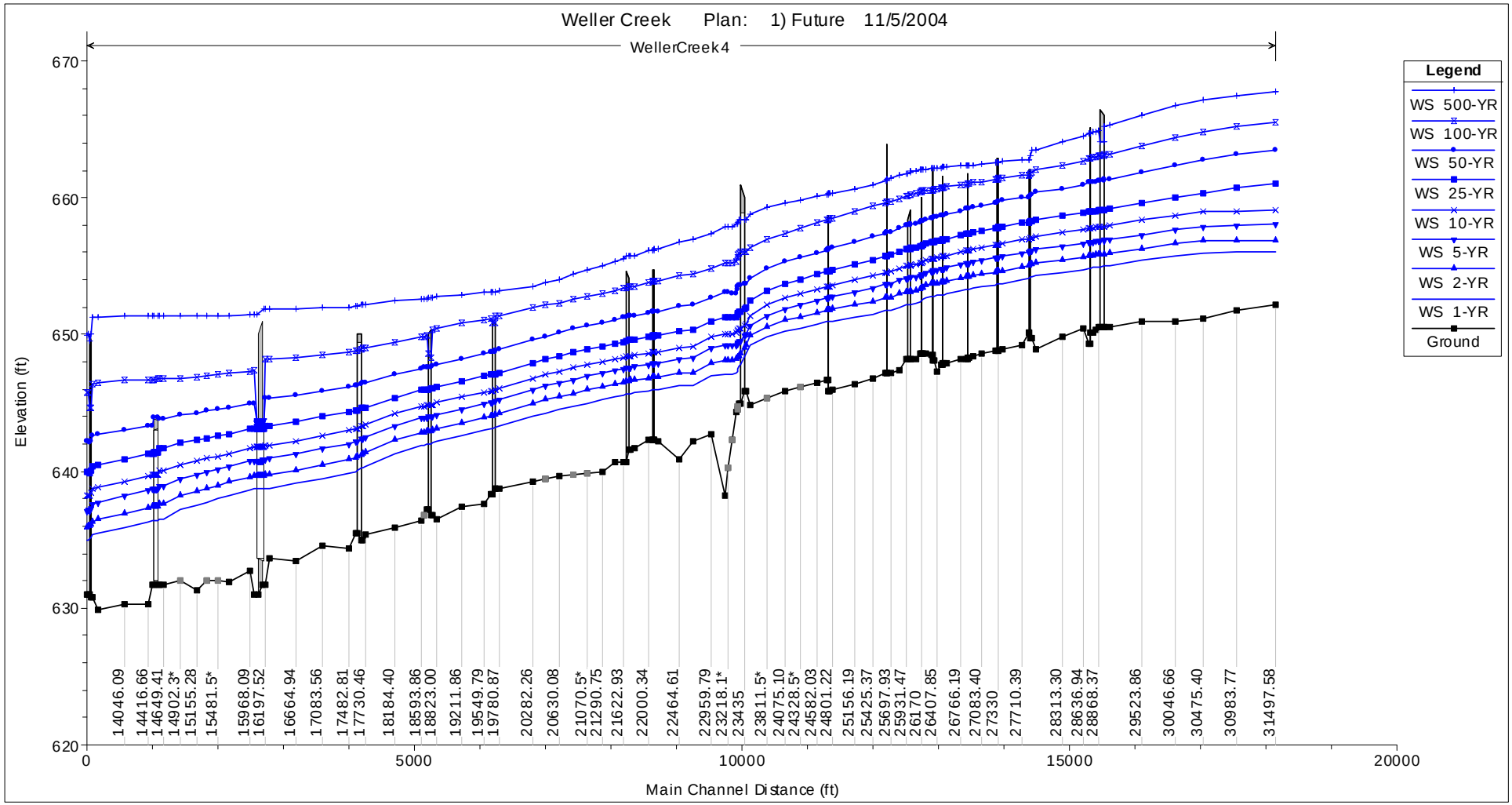
Elevations are in ft NGVD29



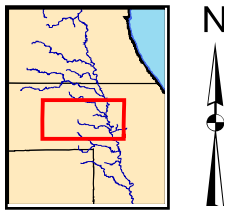
N

Note: River stationing in feet

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Weller Creek HEC-RAS Baseline Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-34

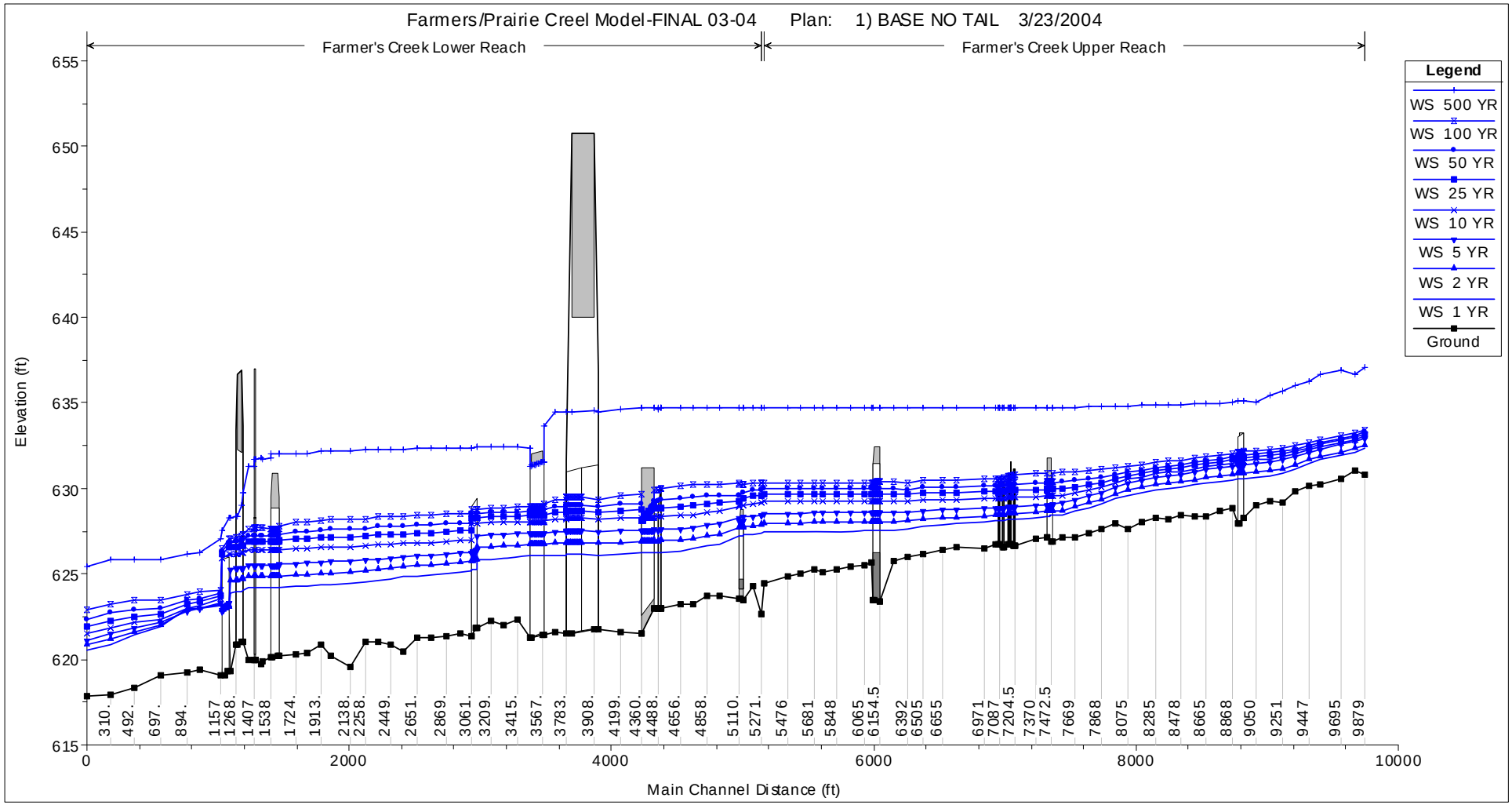


Elevations are in ft NGVD29

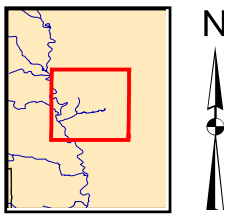


Note: River stationing in feet

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Weller Creek HEC-RAS Future Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-35

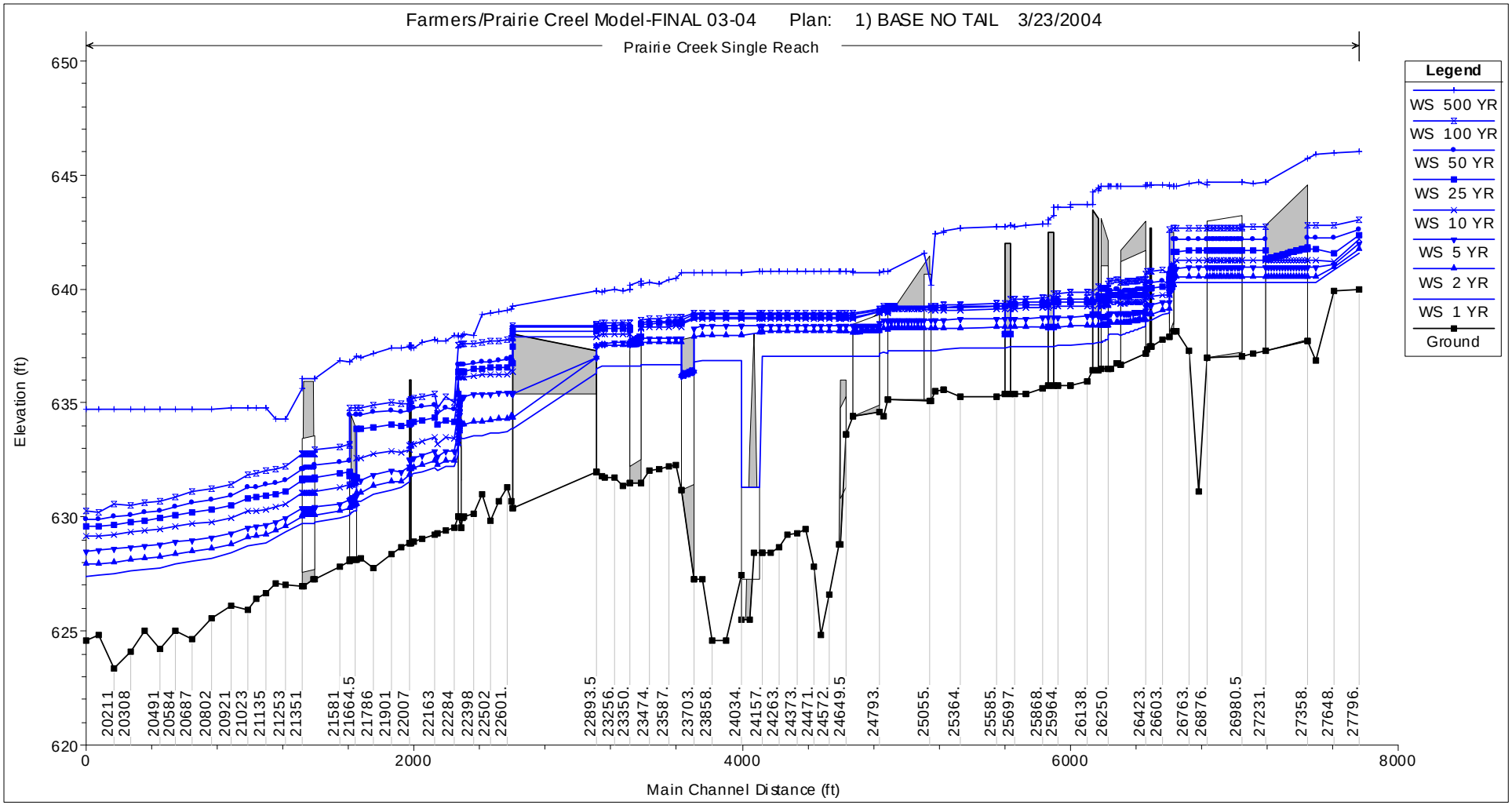


Farmers-Prairie Creek + Farmers Creek
(see Plate A-36b for Prairie Creek)
Elevations are in ft NGVD29

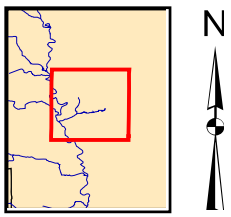


Note: River stationing in feet

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Farmers-Prairie Creek HEC-RAS Baseline Profiles (1 of 2)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-36a

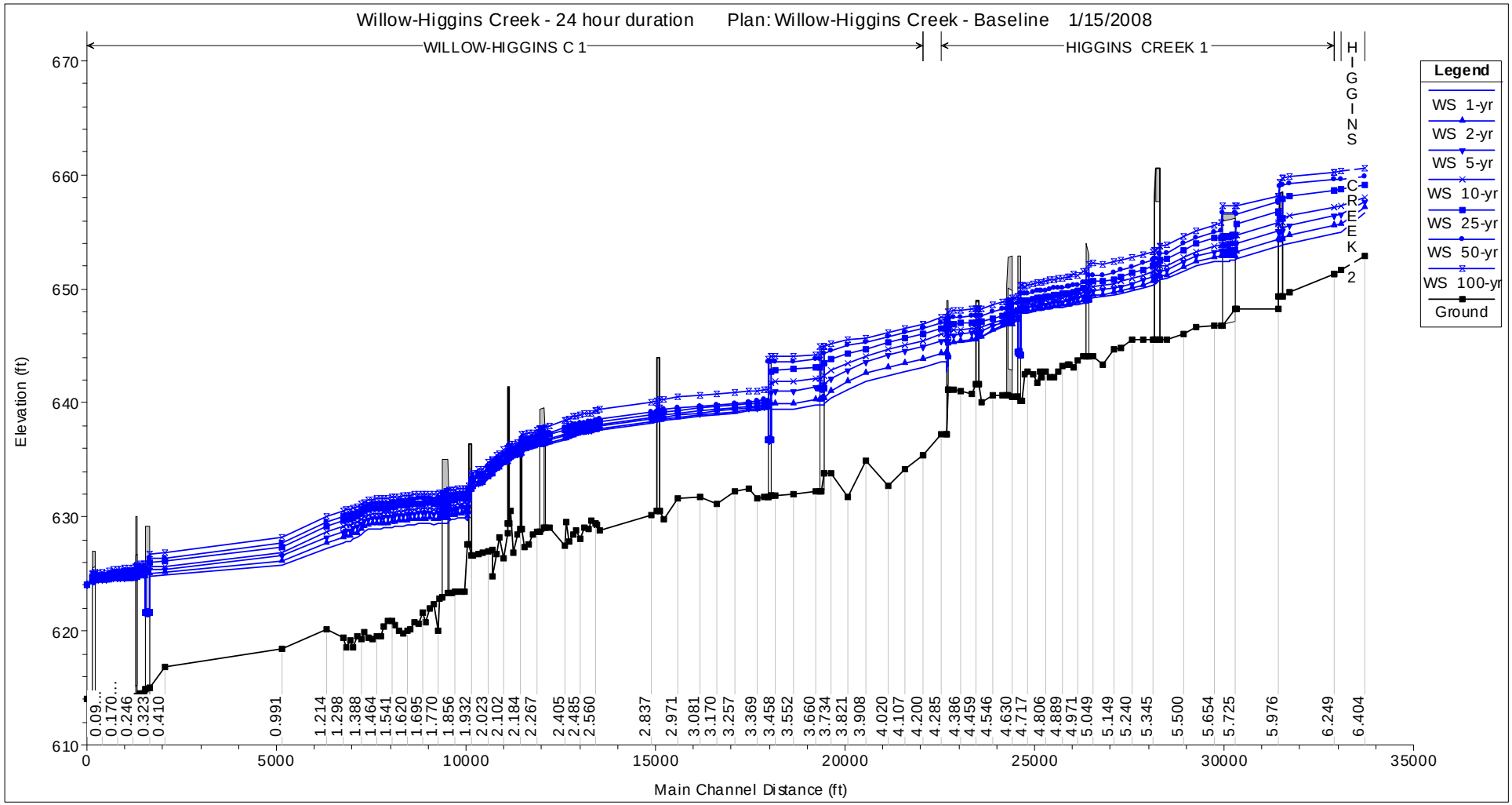


Prairie Creek
(see Plate A-36a for Farmers-Prairie Creek)
Elevations are in ft NGVD29

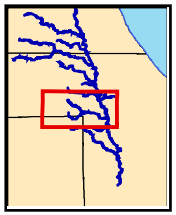


Note: River stationing in feet

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Farmers-Prairie Creek HEC-RAS Baseline Profiles (2 of 2)
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-36b



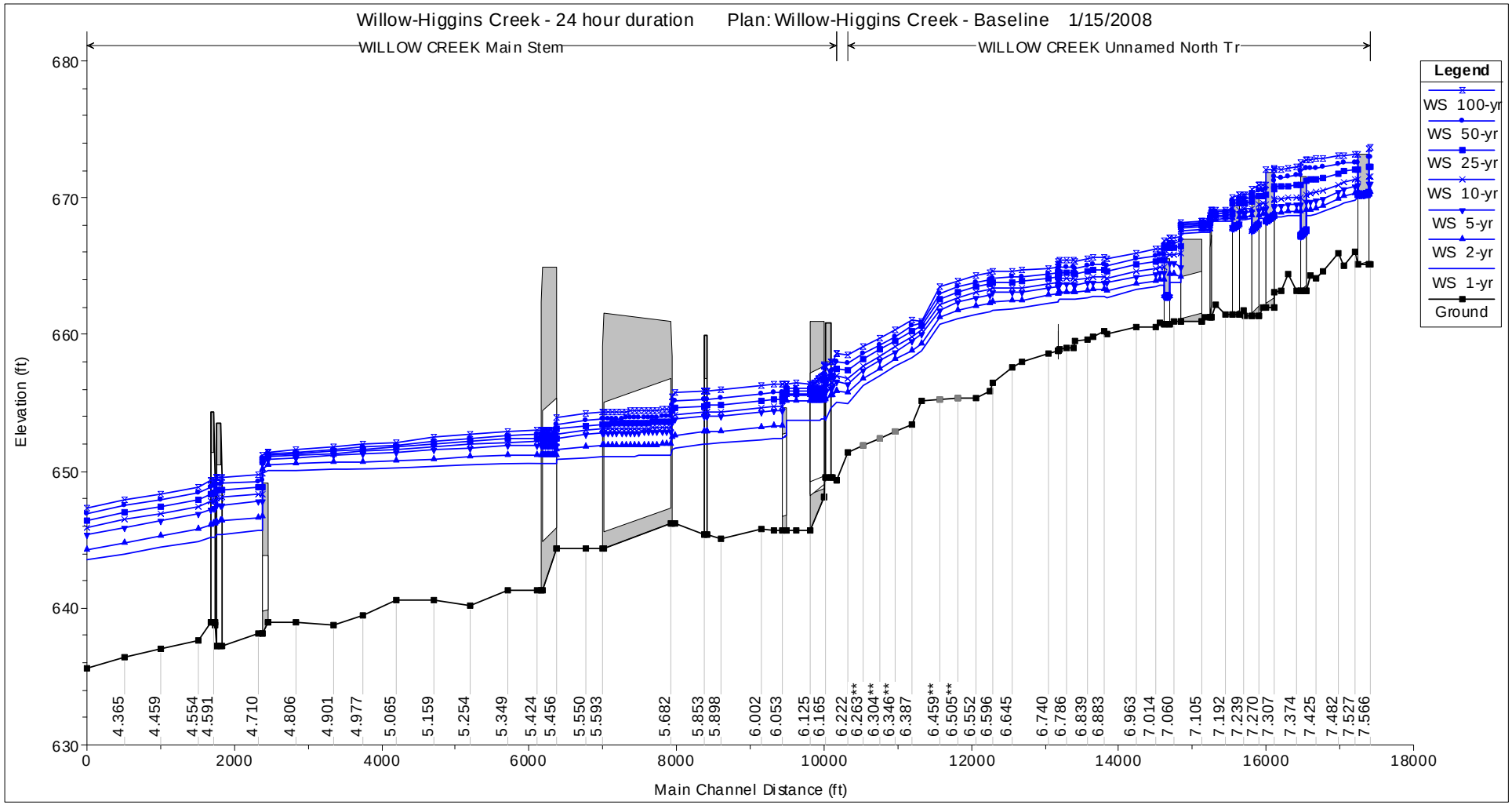
Willow-Higgins Creek + Higgins Creek
(see Plate A-37b for Willow Creek)
Elevations are in ft NGVD29



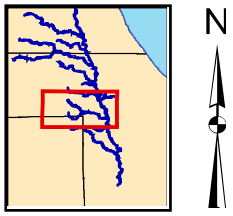
N

Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Willow-Higgins Creek HEC-RAS Baseline Profiles (1 of 3)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-37a

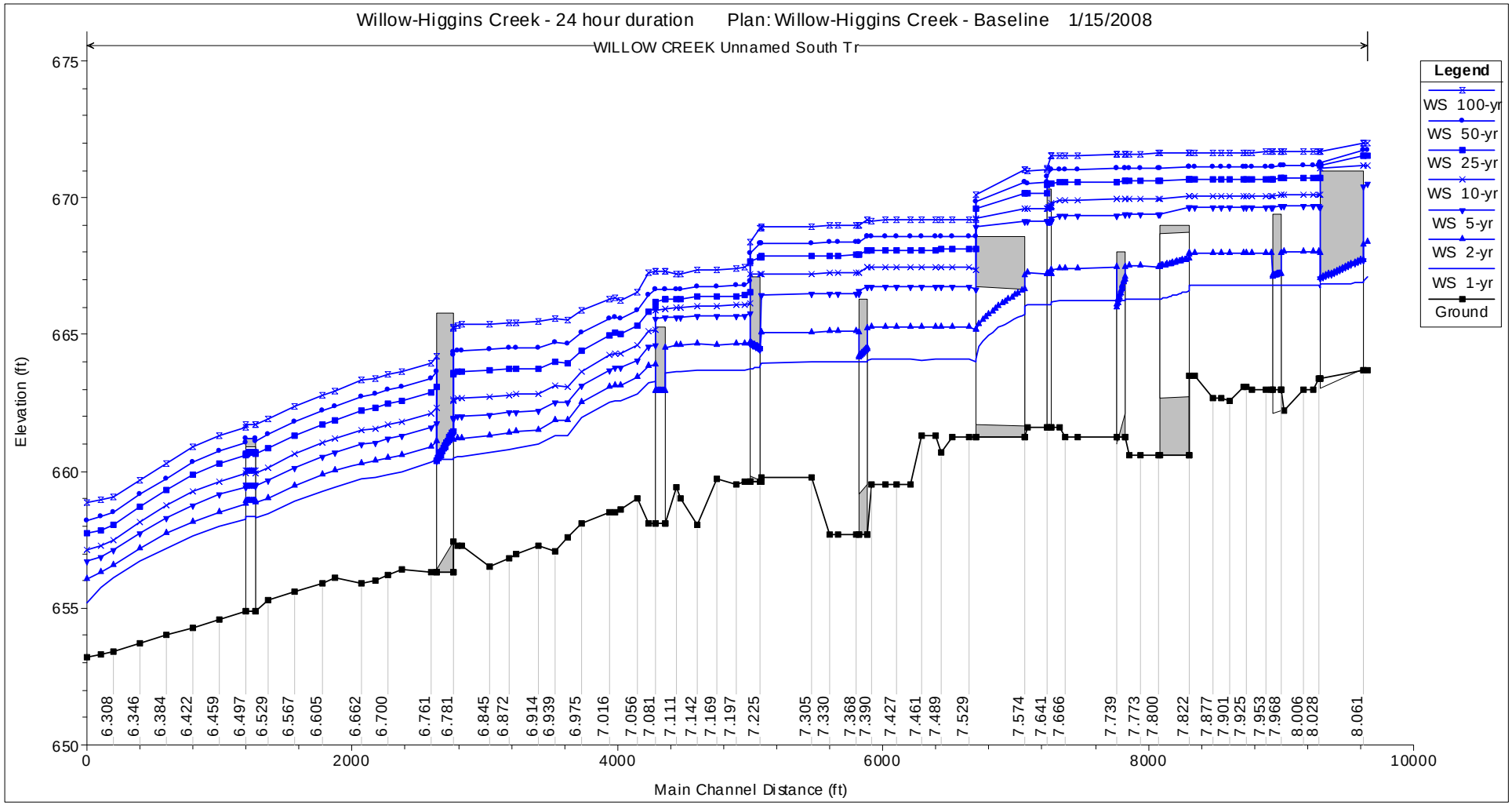


Willow Creek + Willow Creek North Tributary
(see Plate A-37a for Willow Higgins Creek)
(see Plate A-37c for Willow Creek South Tributary)
Elevations are in NGVD29

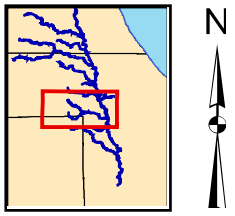


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Willow-Higgins Creek HEC-RAS Baseline Profiles (2 of 3)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-37b

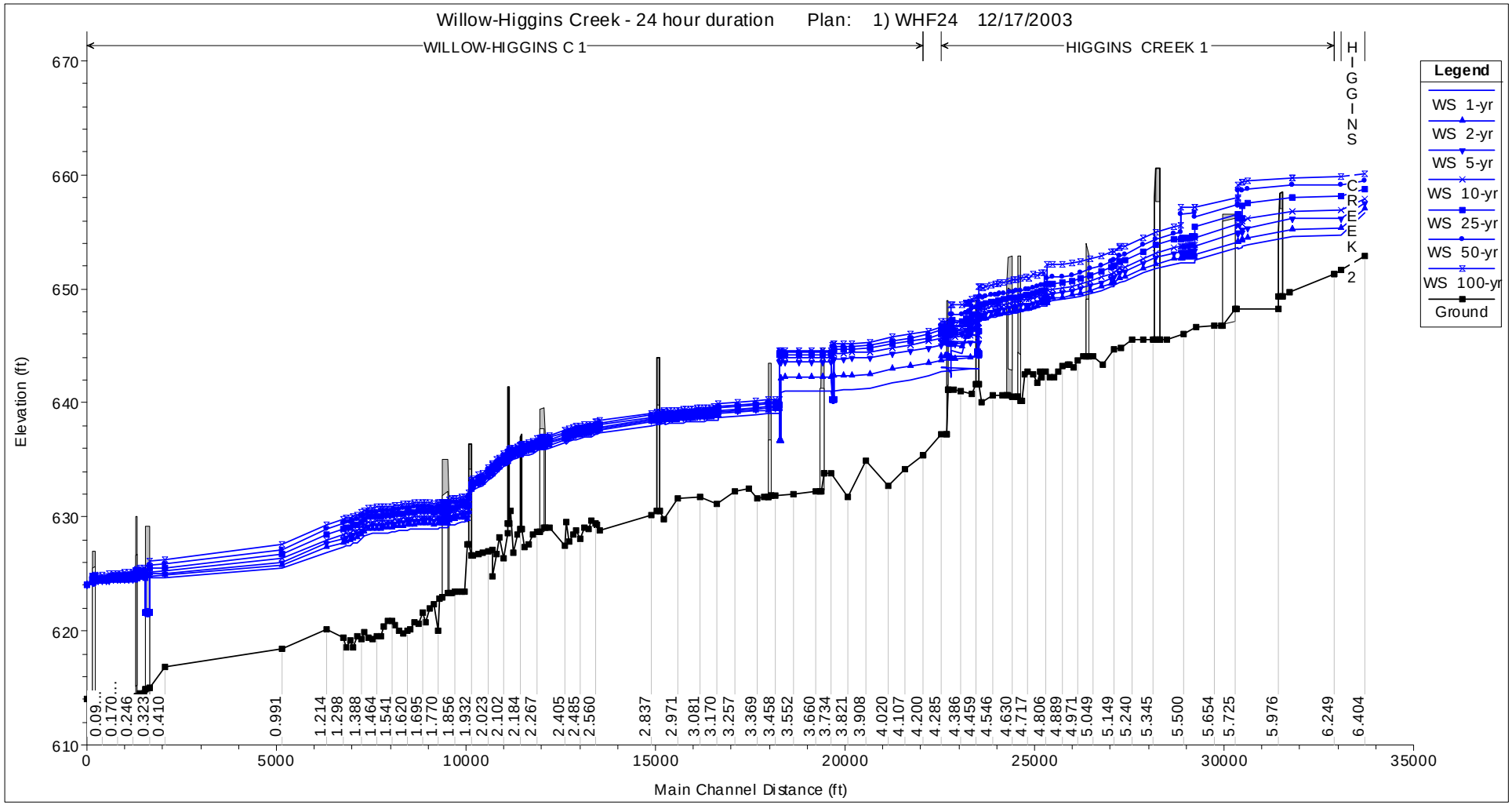


Willow Creek South Tributary
(see Plate A-37b for Willow Creek)
Elevations are in NGVD29

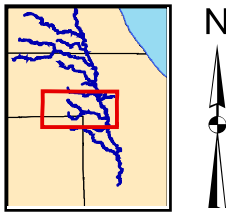


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Willow-Higgins Creek HEC-RAS Baseline Profiles (3 of 3)
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-37c

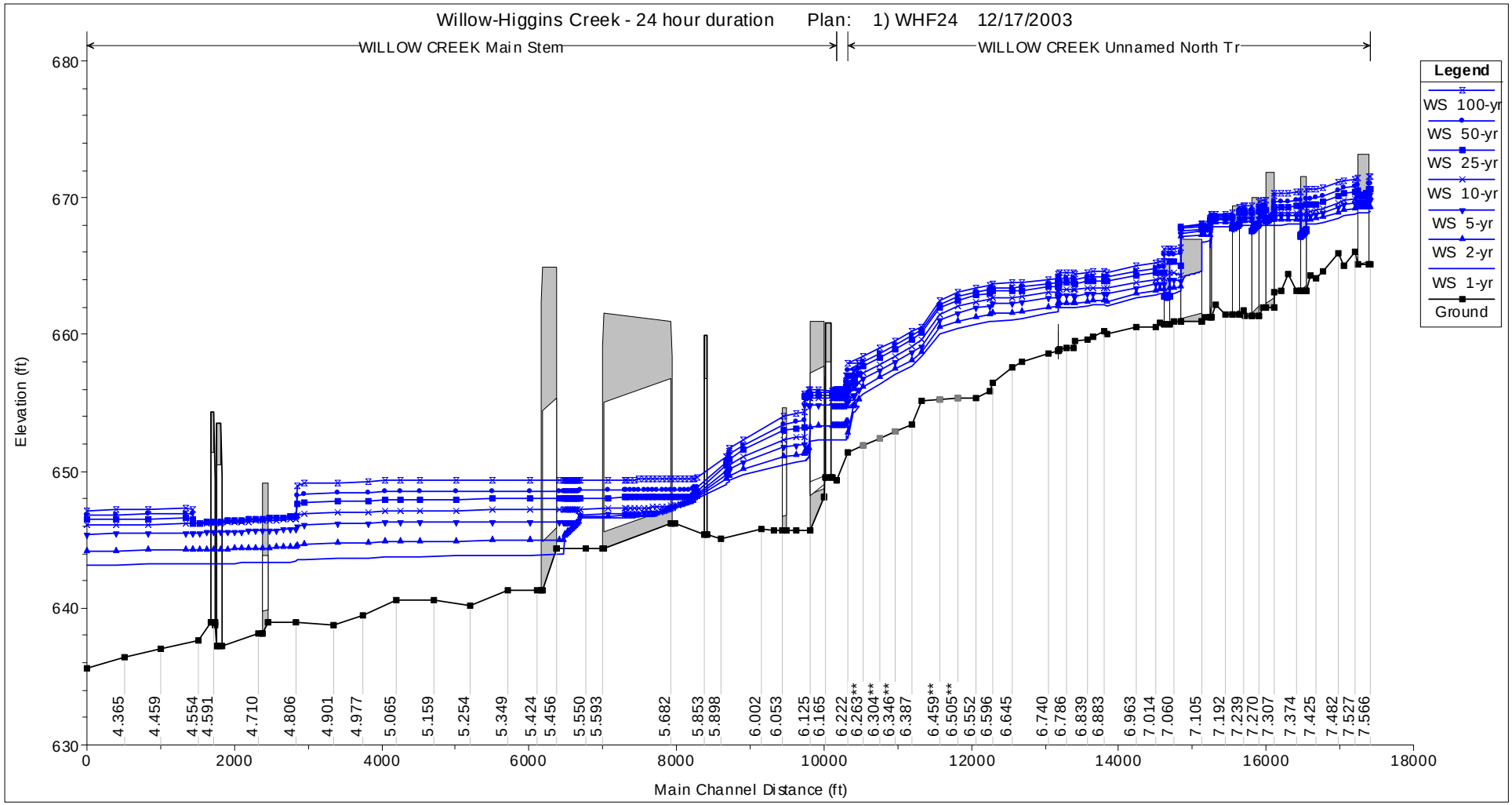


Willow-Higgins Creek + Higgins Creek
(see Plate A-38b for Willow Creek)
Elevations are in NGVD29

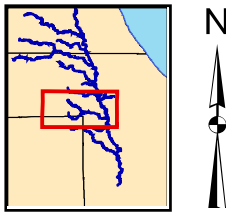


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Willow-Higgins Creek HEC-RAS Future Profiles (1 of 3)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-38a

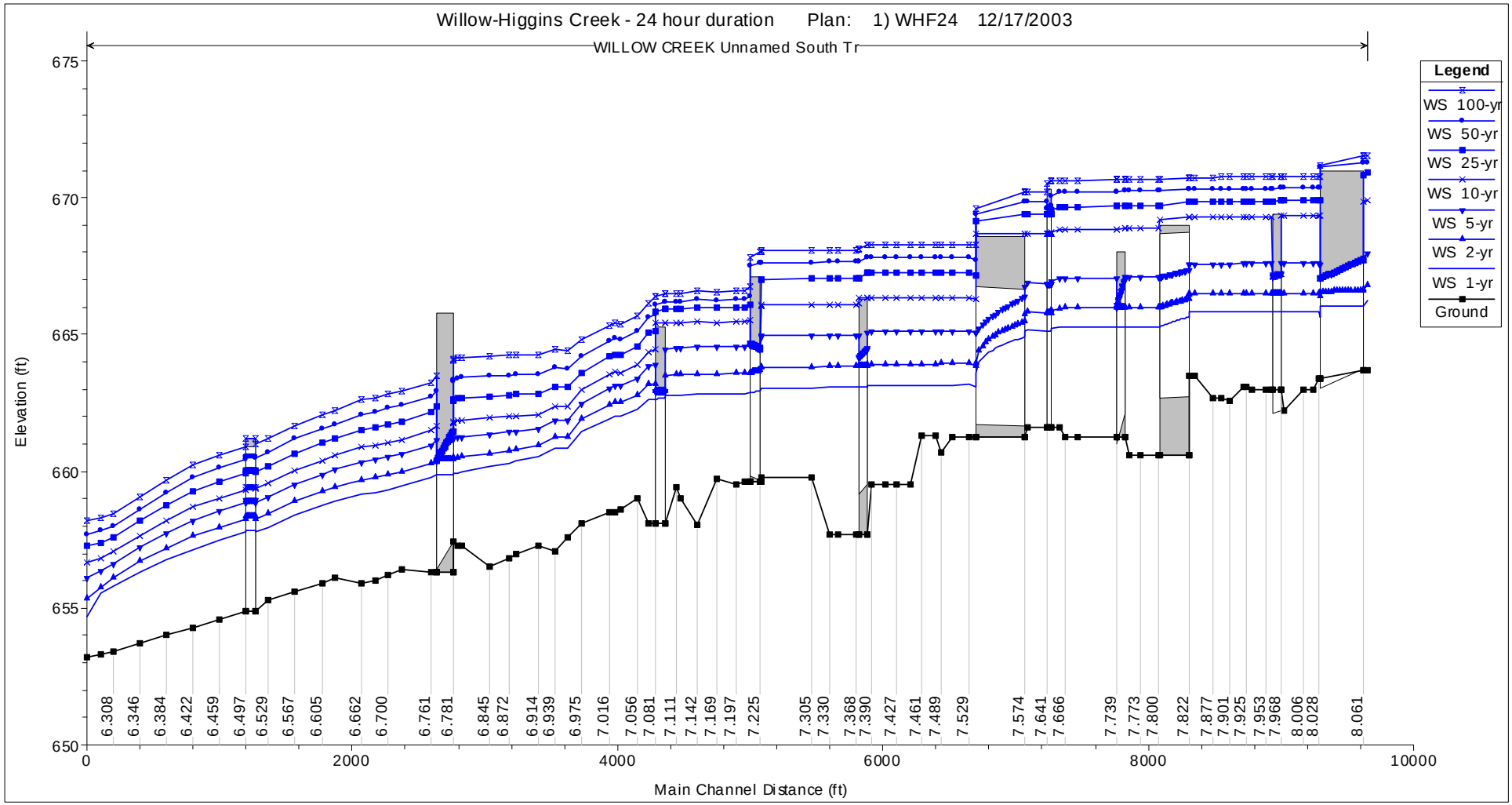


Willow Creek + Willow Creek North Tributary
(see Plate A-38a for Willow Higgins Creek)
(see Plate A-38c for Willow Creek South Tributary)
Elevations are in NGVD29

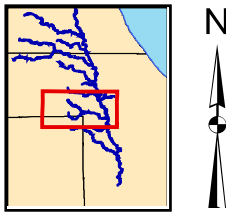


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Willow-Higgins Creek HEC-RAS Future Profiles (2 of 3)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-38b

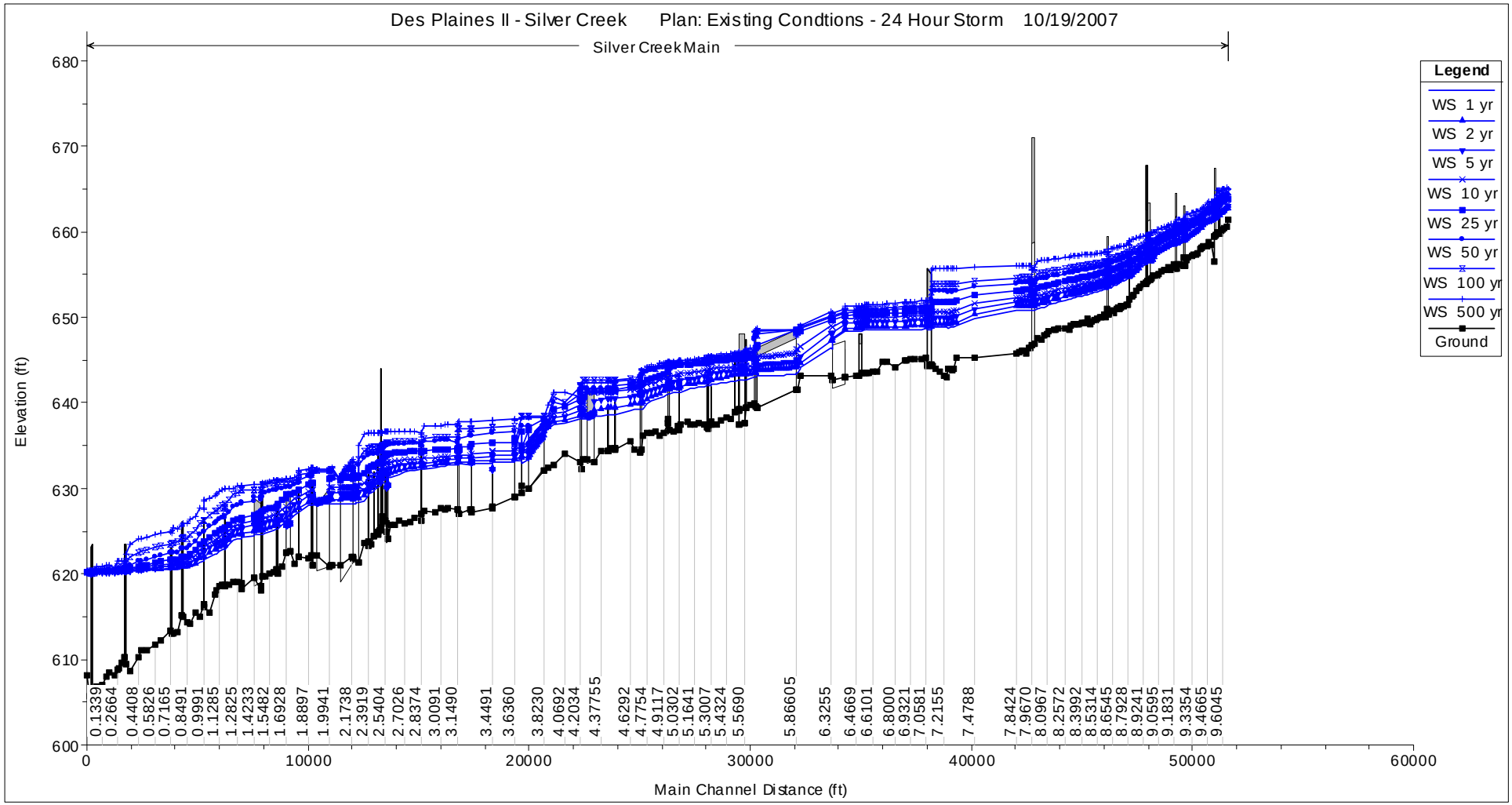


Willow Creek South Tributary
(see Plate A-38b for Willow Creek)
Elevations are in NGVD29

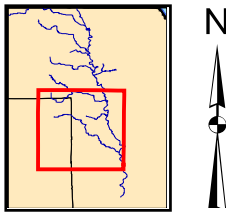


Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Willow-Higgins Creek HEC-RAS Future Profiles (3 of 3)	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-38c



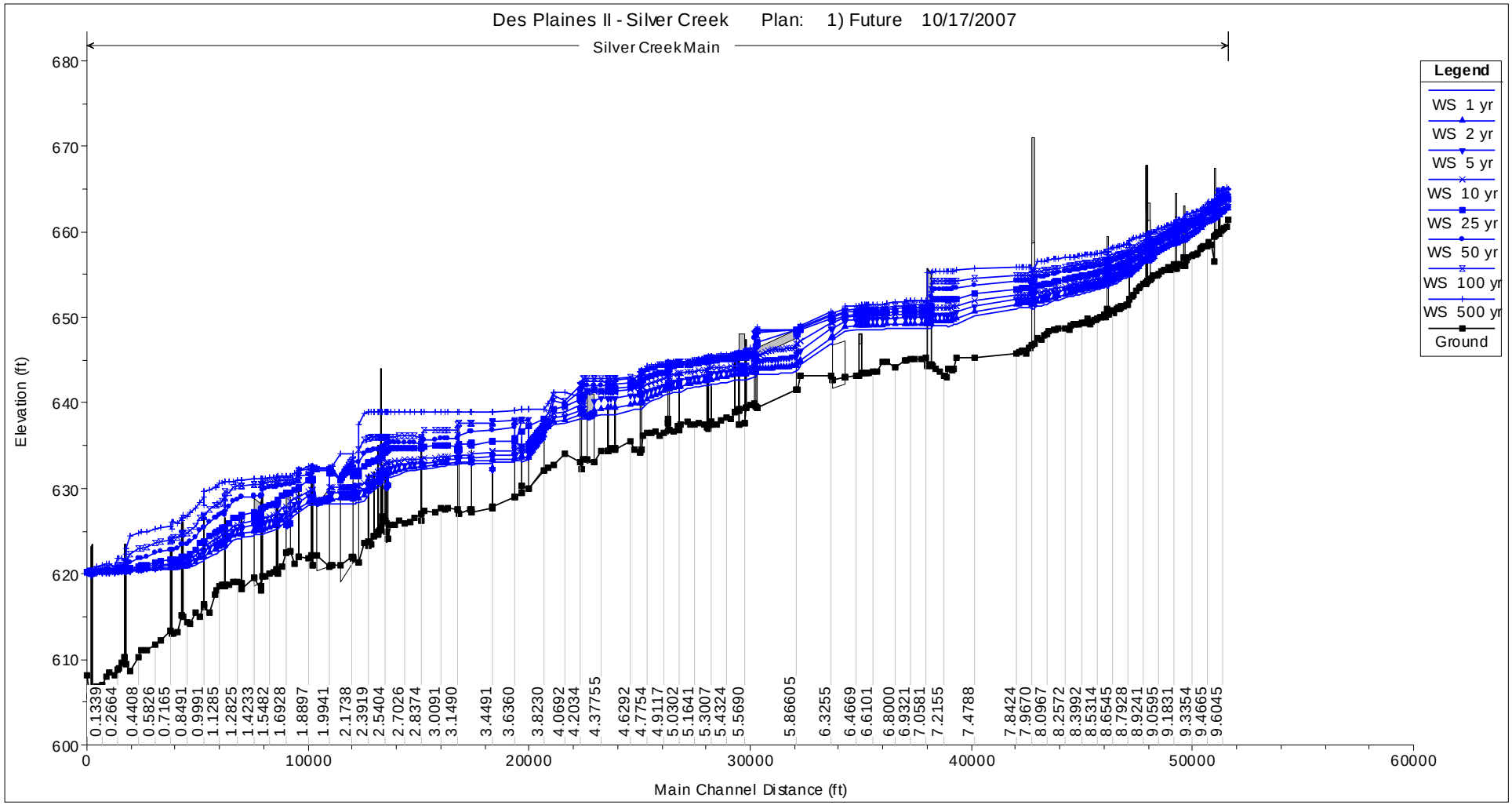
Elevations are in NAVD88



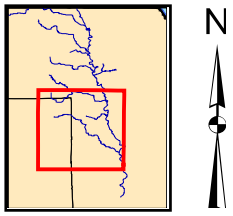
N

Note: River stationing in miles

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Silver Creek HEC-RAS Baseline Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-39



Elevations are in ft NAVD88

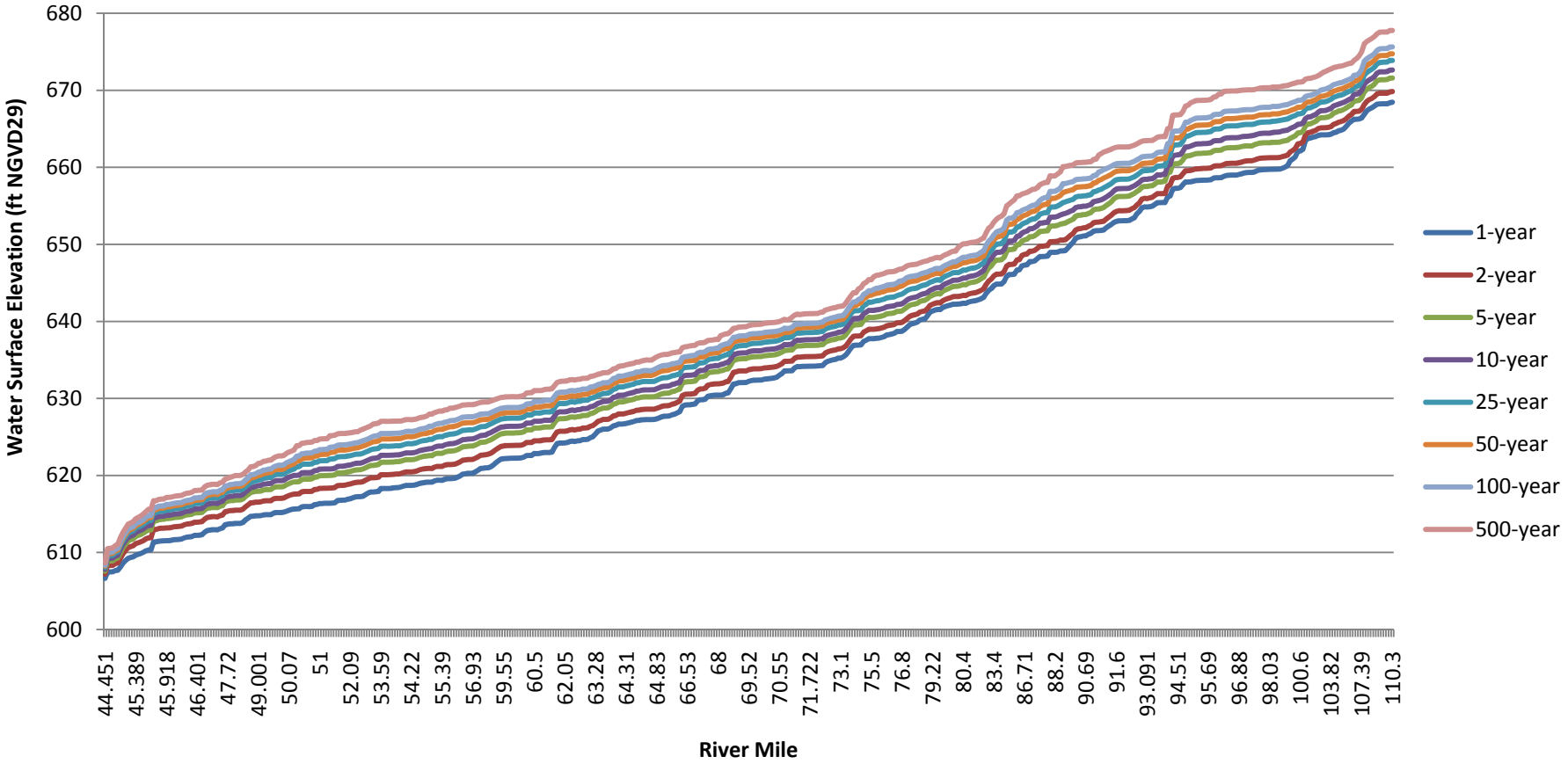


N

Note: River stationing in miles

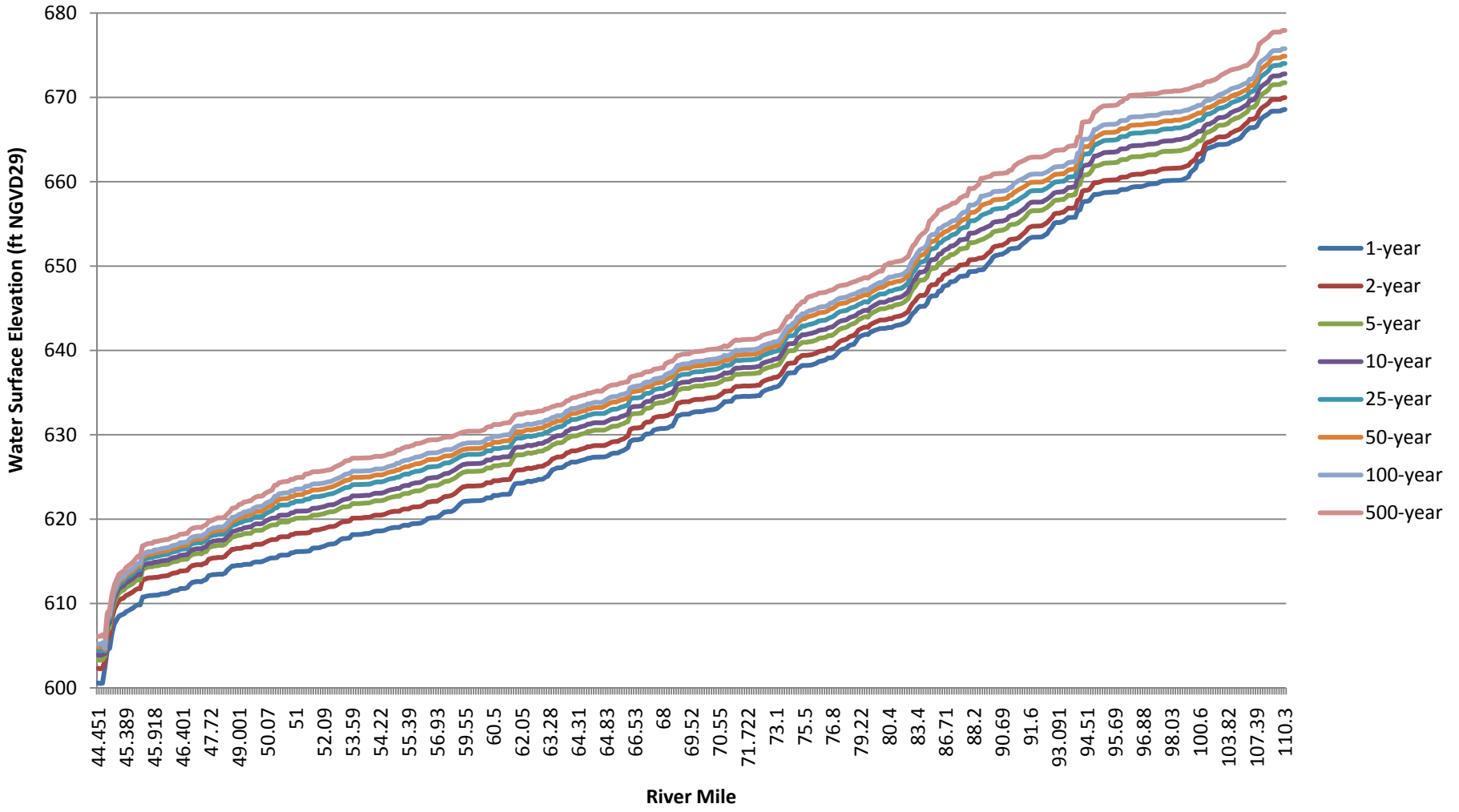
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Silver Creek HEC-RAS Future Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-40

Des Plaines River Baseline - Without Project Conditions



Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Des Plaines River HEC-2 Baseline Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-41

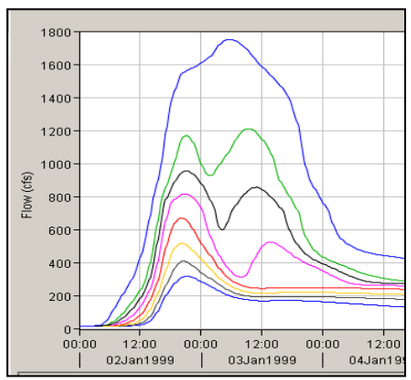
Des Plaines River Future - Without Project Conditions



Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Des Plaines River HEC-2 Future Profiles	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-42

Procedure for Flood Depth and Duration Calculations

Hydrograph



Discharge over time

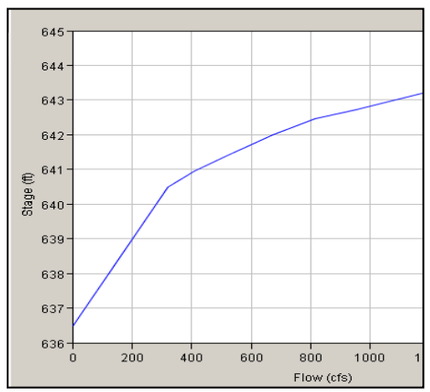
Source: HEC-1

8 synthetic events:
1-, 2-, 5-, 10-, 25-,
50-, 100-, 500-yr

2 hydrologic conditions:
Baseline (2010), Future (2020)

+

Rating Curve



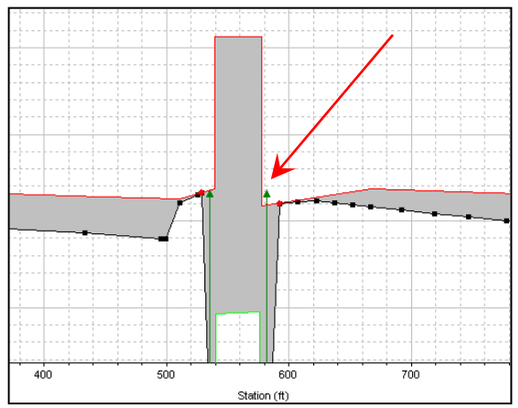
Water surface elevation for different discharges

Source: HEC-RAS
***OR** HEC-2, FIS*

Some curves extrapolated for high flows

+

Lowest Road Elevation

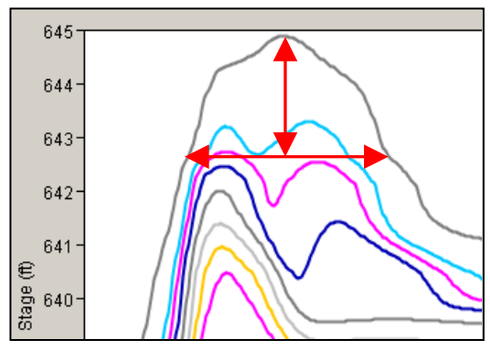


Lowest road elevation where water will first inundate

Source: HEC-RAS
***OR** HEC-2, FIS, GIS terrain*

=

Depth & Duration



Water surface elevation over time

(Calculated)

Duration of flooding and maximum depth computed for each frequency

Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Transportation Design Calculations	
Chicago District, U.S. Army Corps of Engineers	
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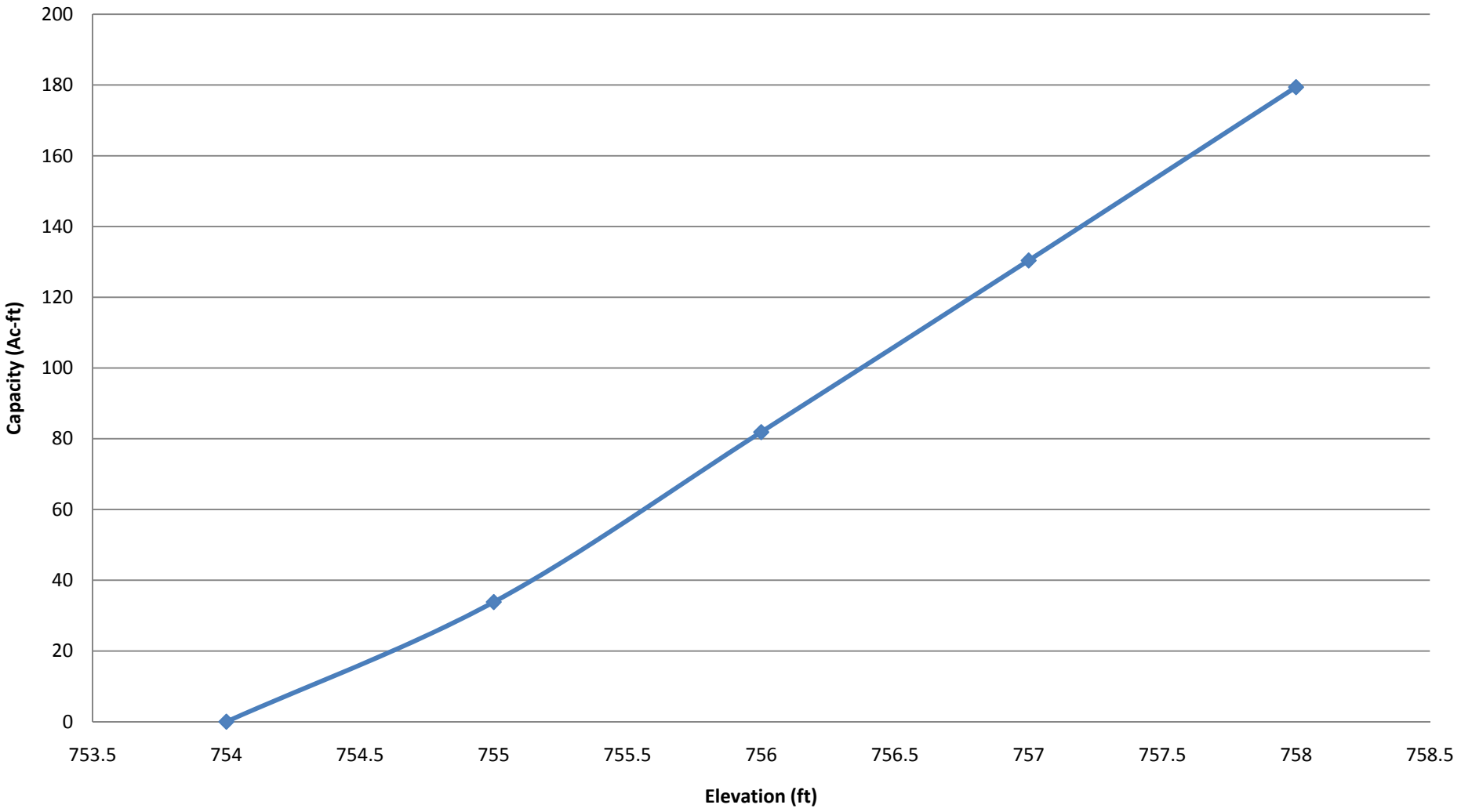
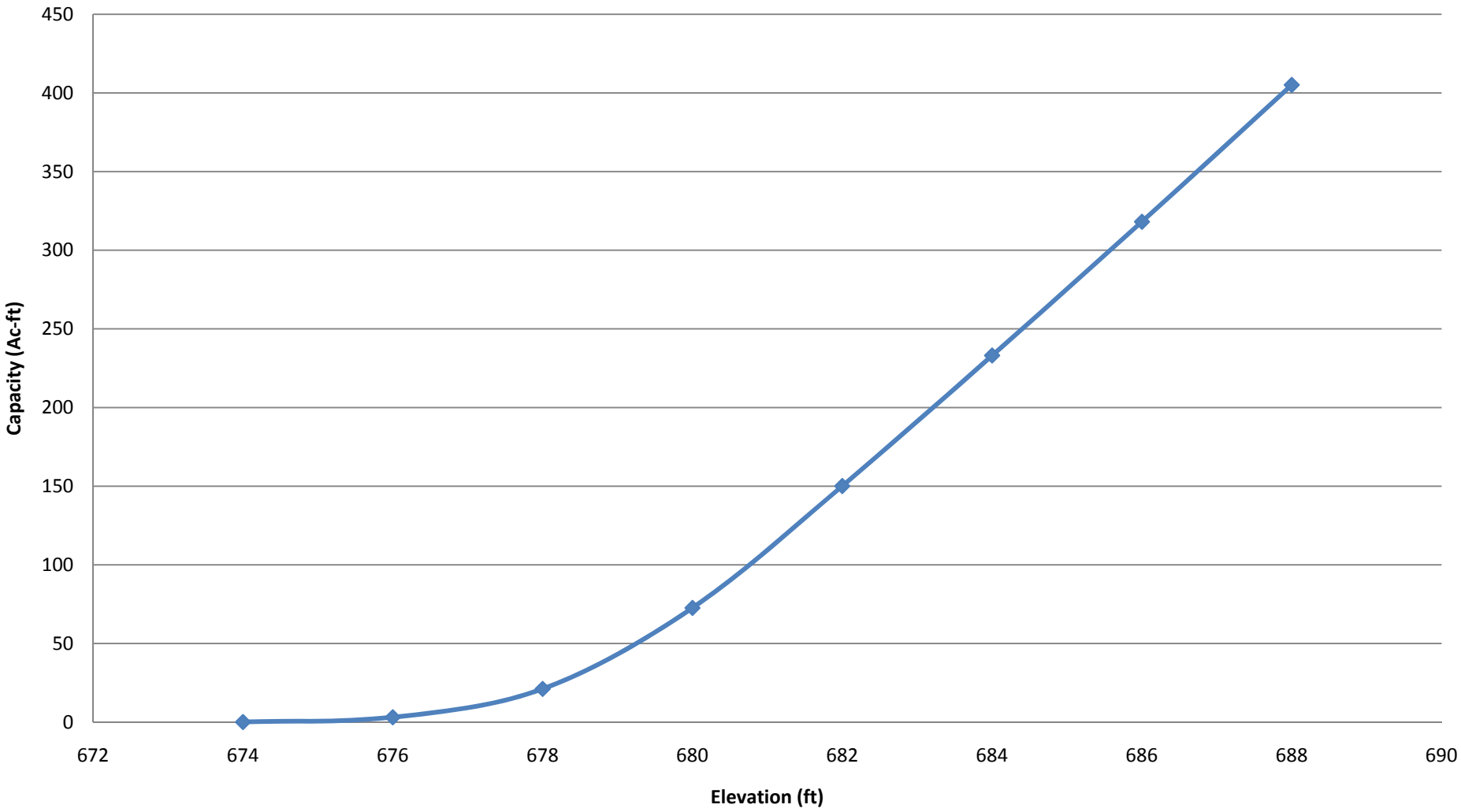
BCRS02 Capacity Curve

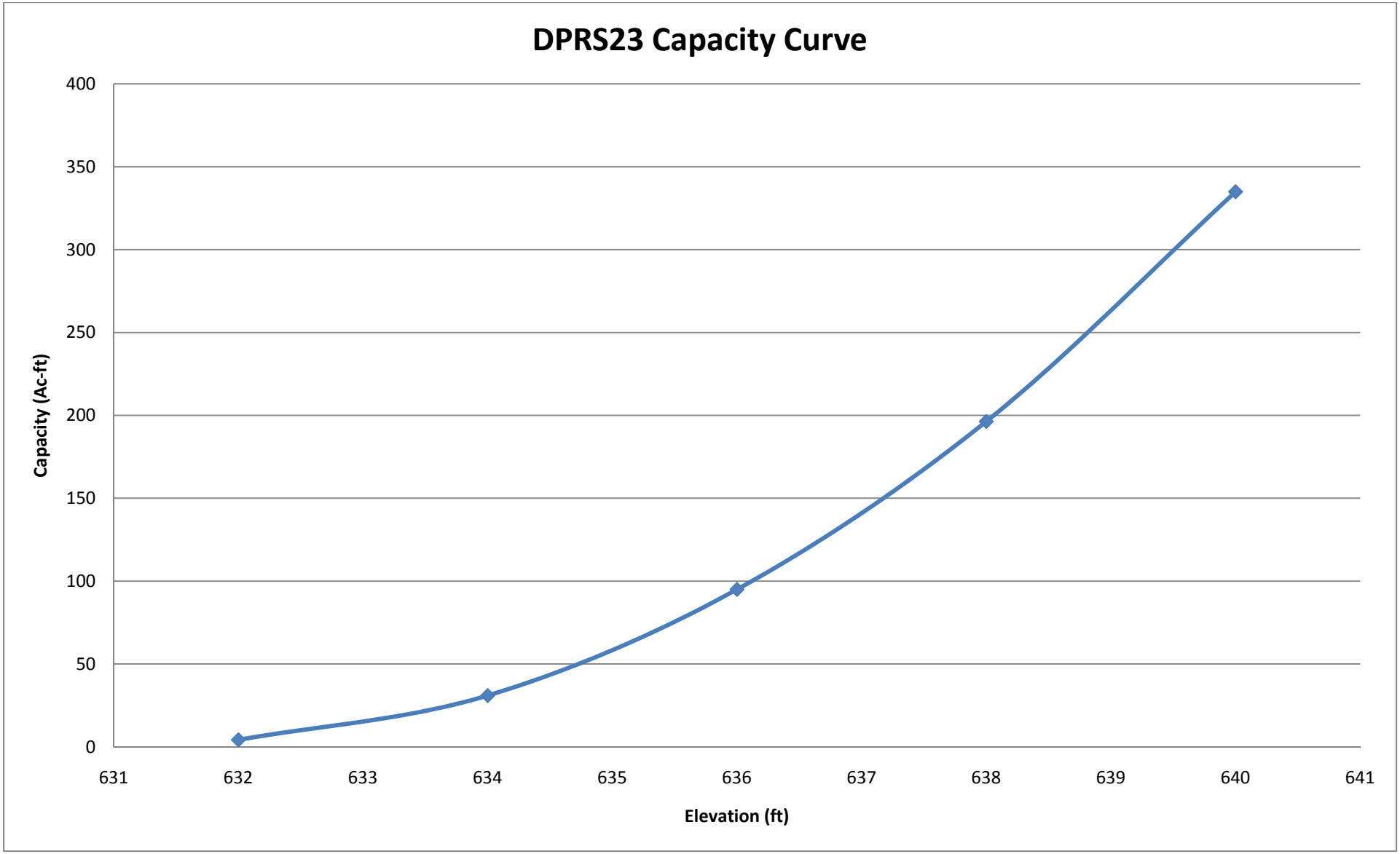


Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
BCRS02 Capacity Curve
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-44

ACRS08 Capacity Curve

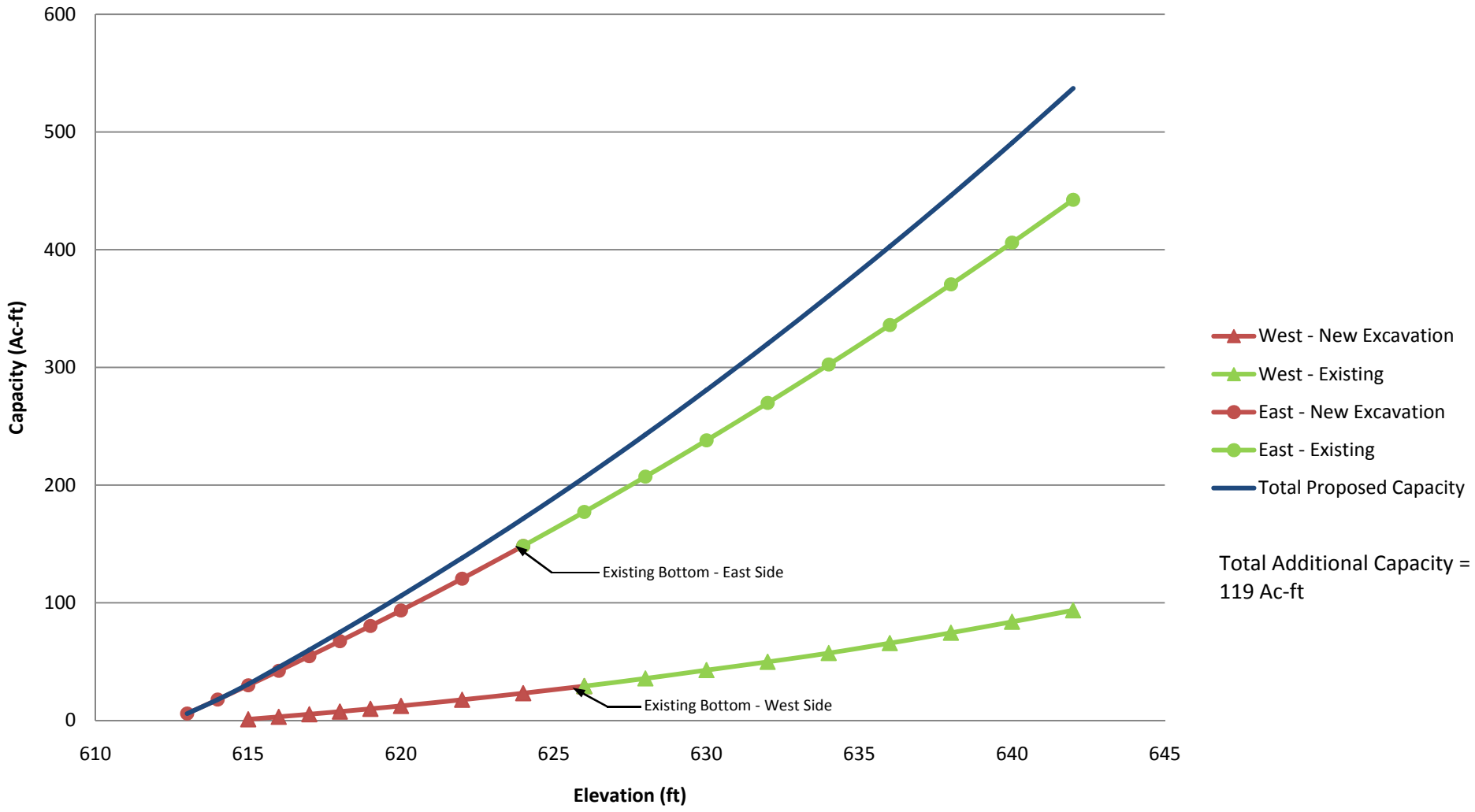


Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
ACRS08 Capacity Curve
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-45



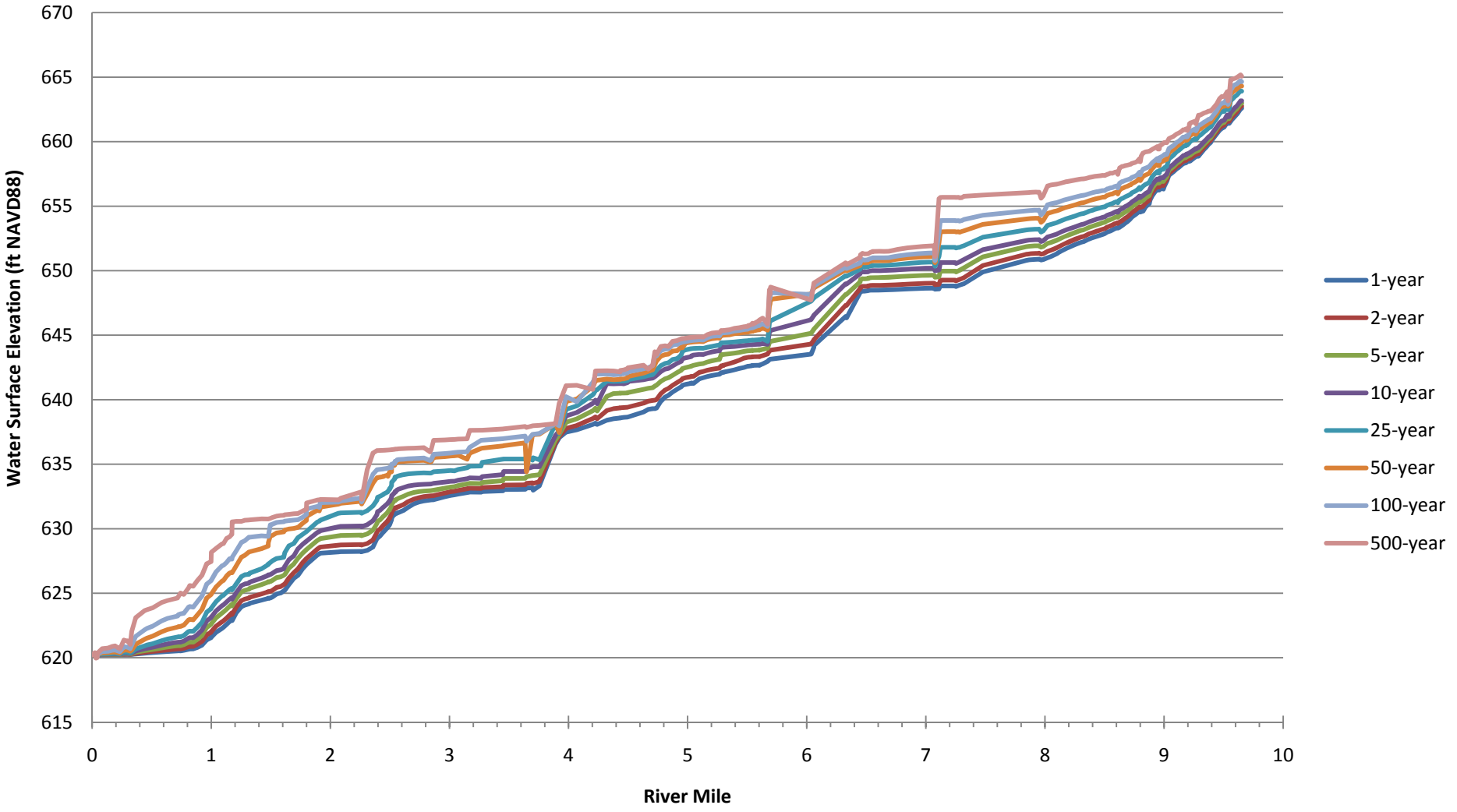
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
DPRS23 Capacity Curve
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-46

SCME02 Capacity Curve



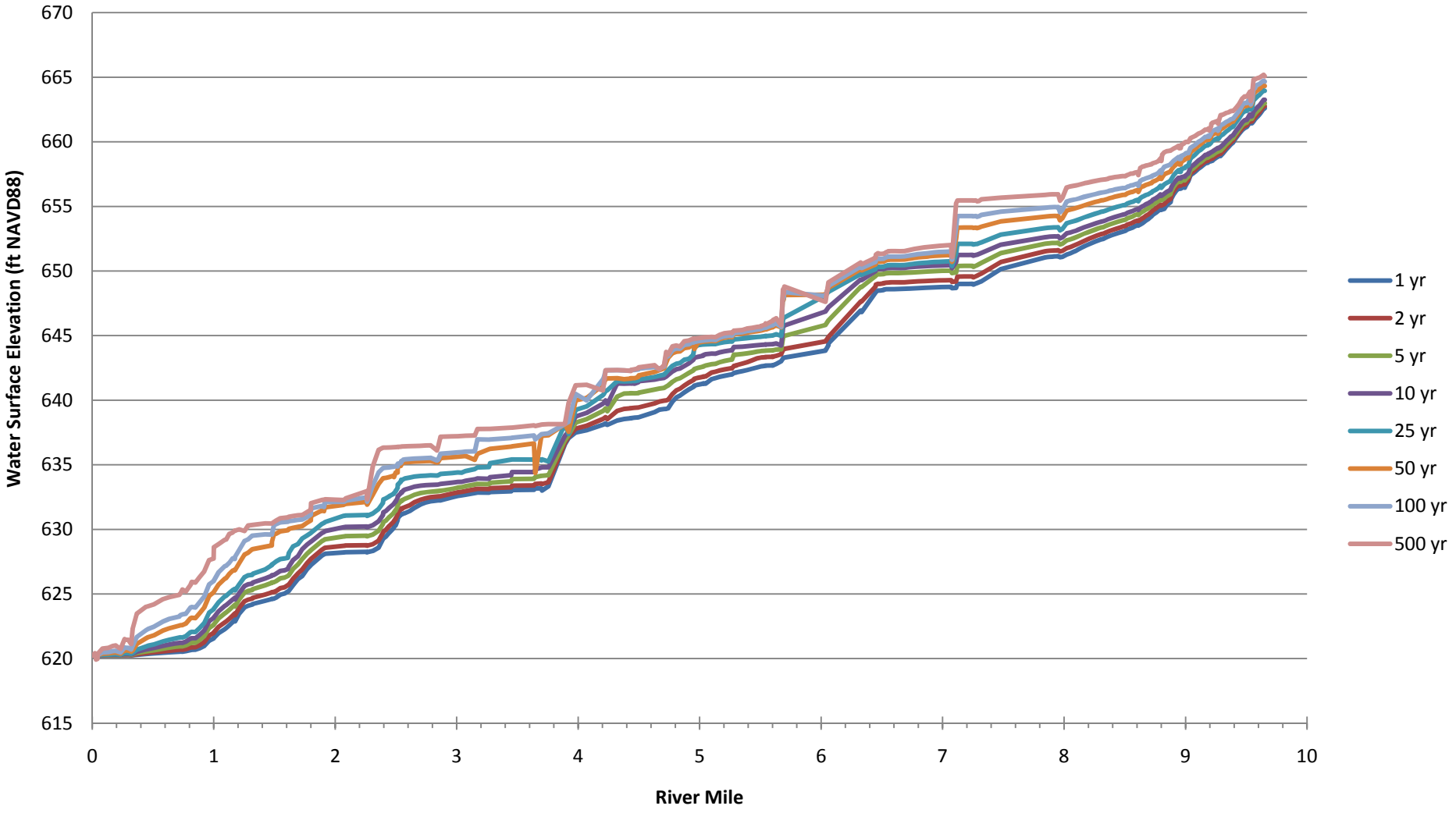
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
SCME02 Capacity Curve
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-47

Silver Creek w/ Project - Baseline



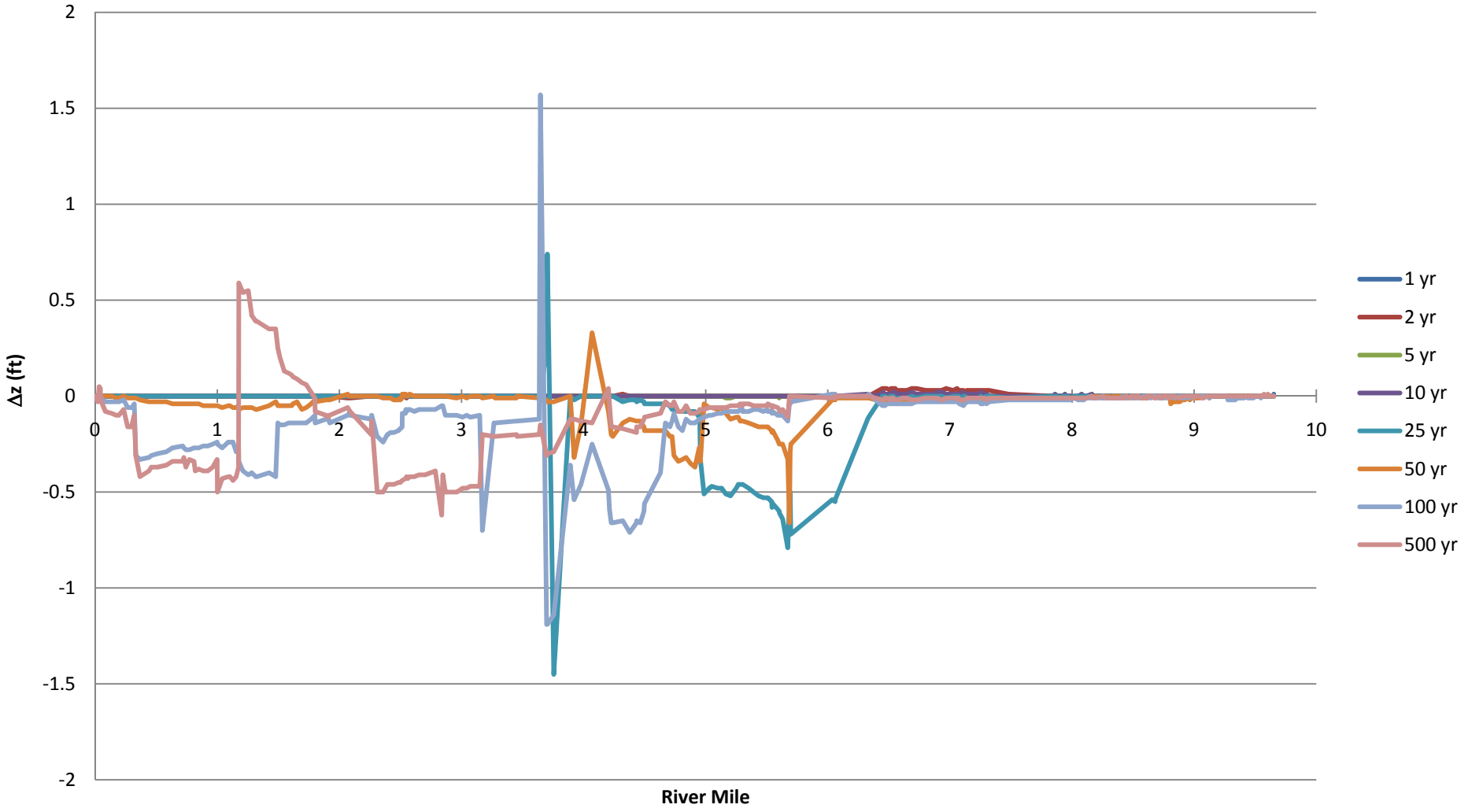
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Silver Creek HEC-RAS Baseline Profiles, NED Plan	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-48

Silver Creek w/ Project - Future



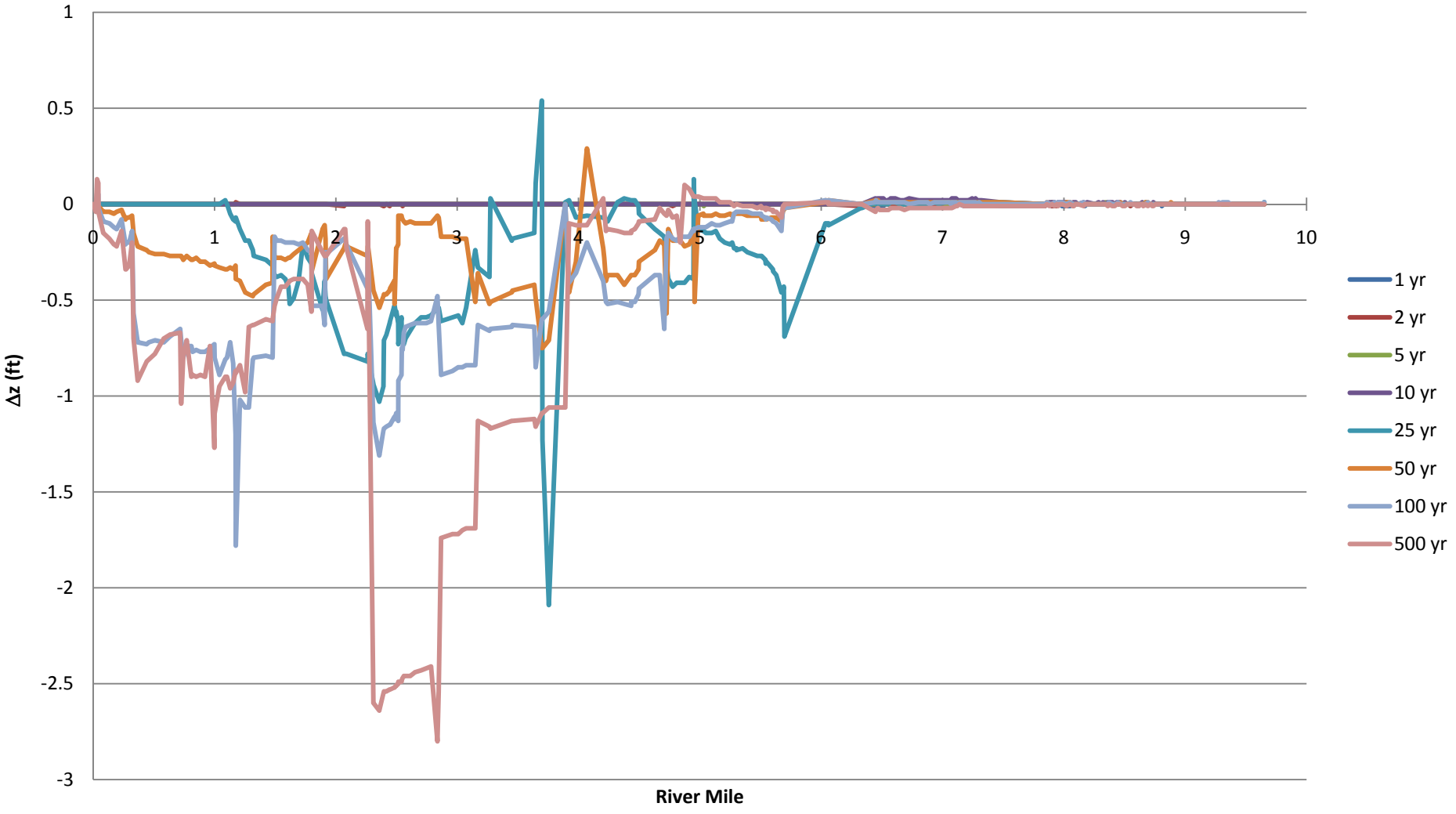
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology
Silver Creek HEC-RAS Future Profiles, NED Plan
Chicago District, U.S. Army Corps of Engineers
August 2010 | Plate A-49

Silver Creek Baseline Δz

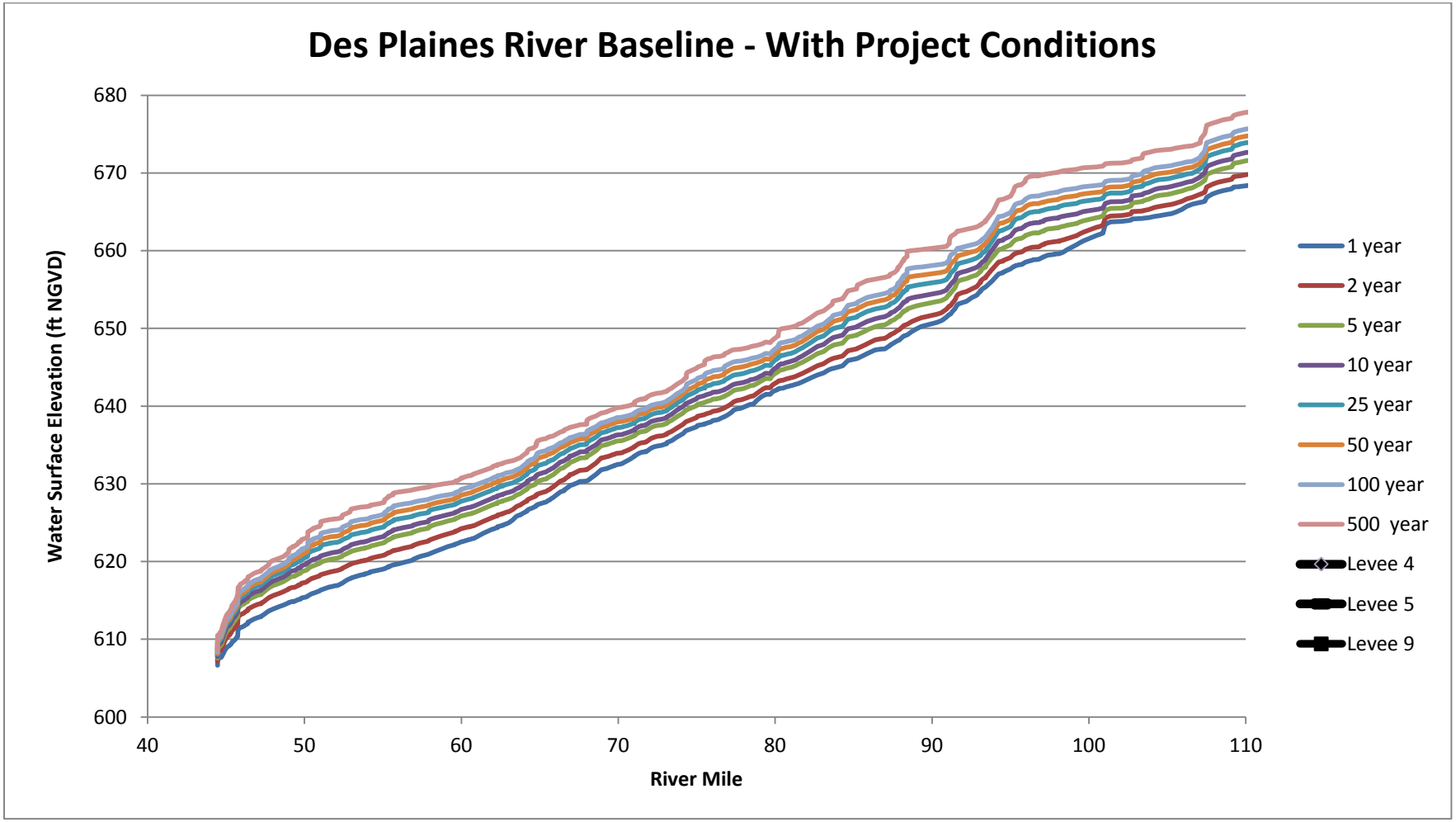


Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Silver Creek Δz Baseline Profiles, NED Plan	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-50

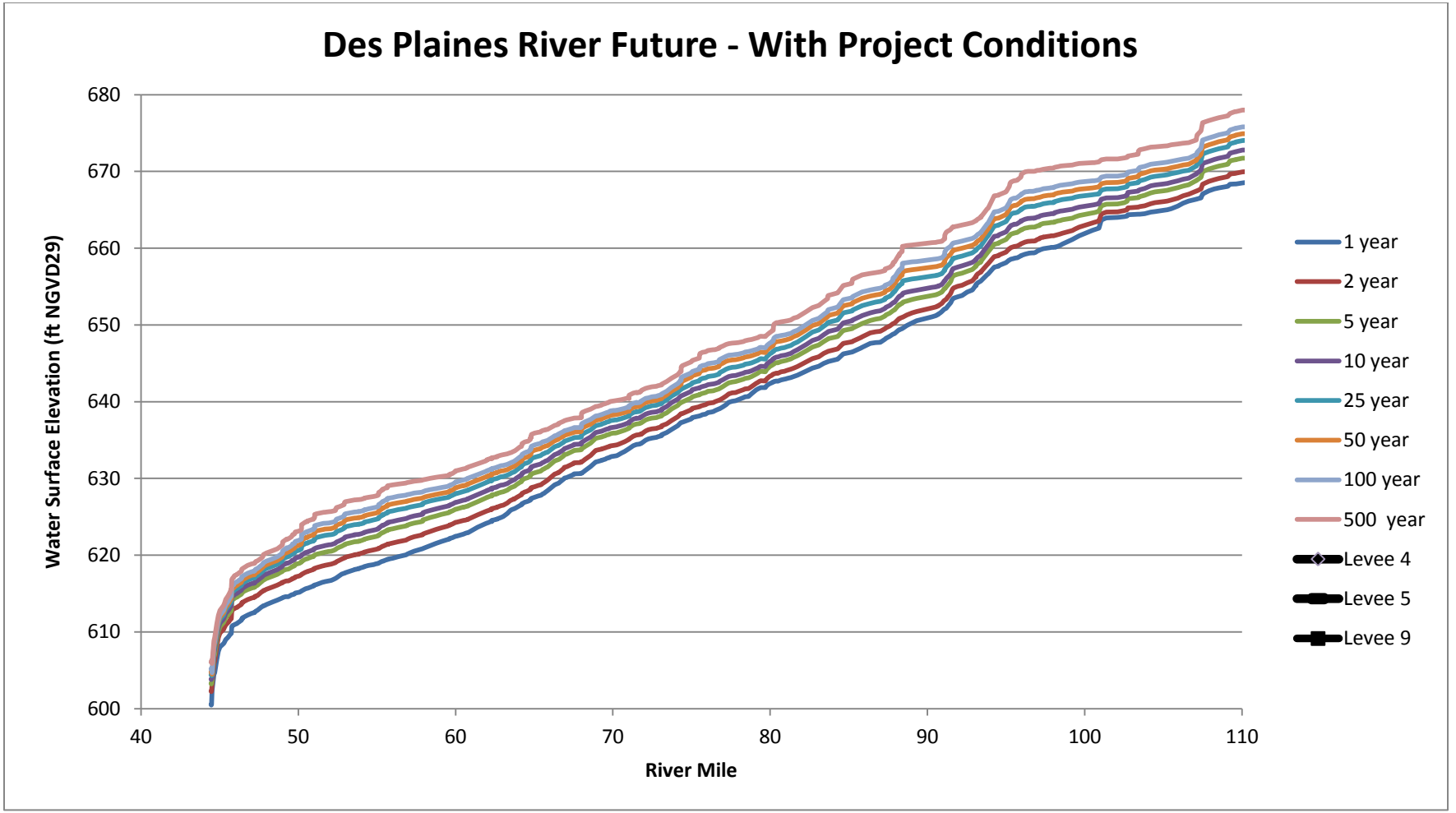
Silver Creek Future Δz



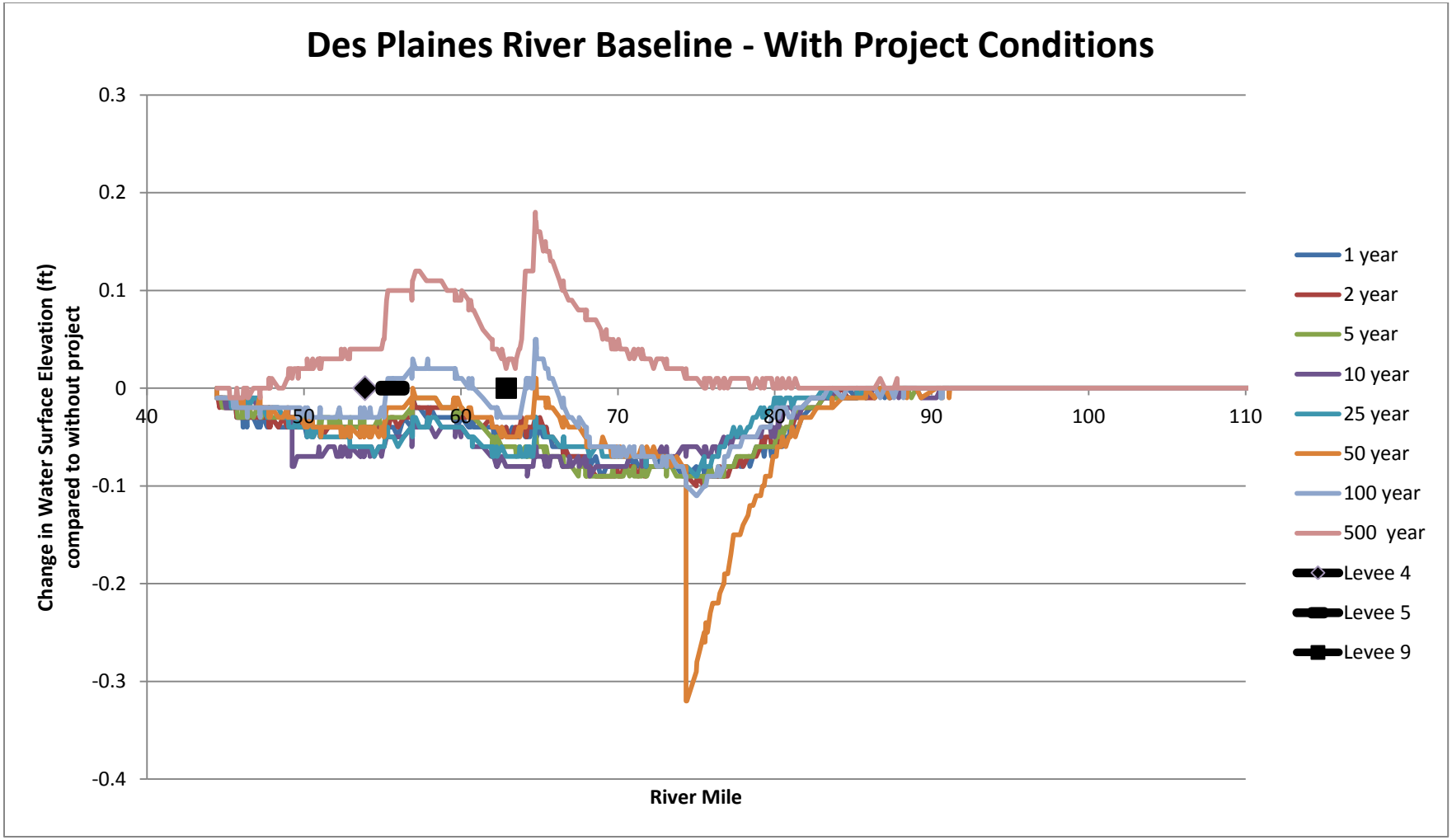
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Silver Creek Δz Future Profiles, NED Plan	
Chicago District, U.S. Army Corps of Engineers	
August 2010	Plate A-51



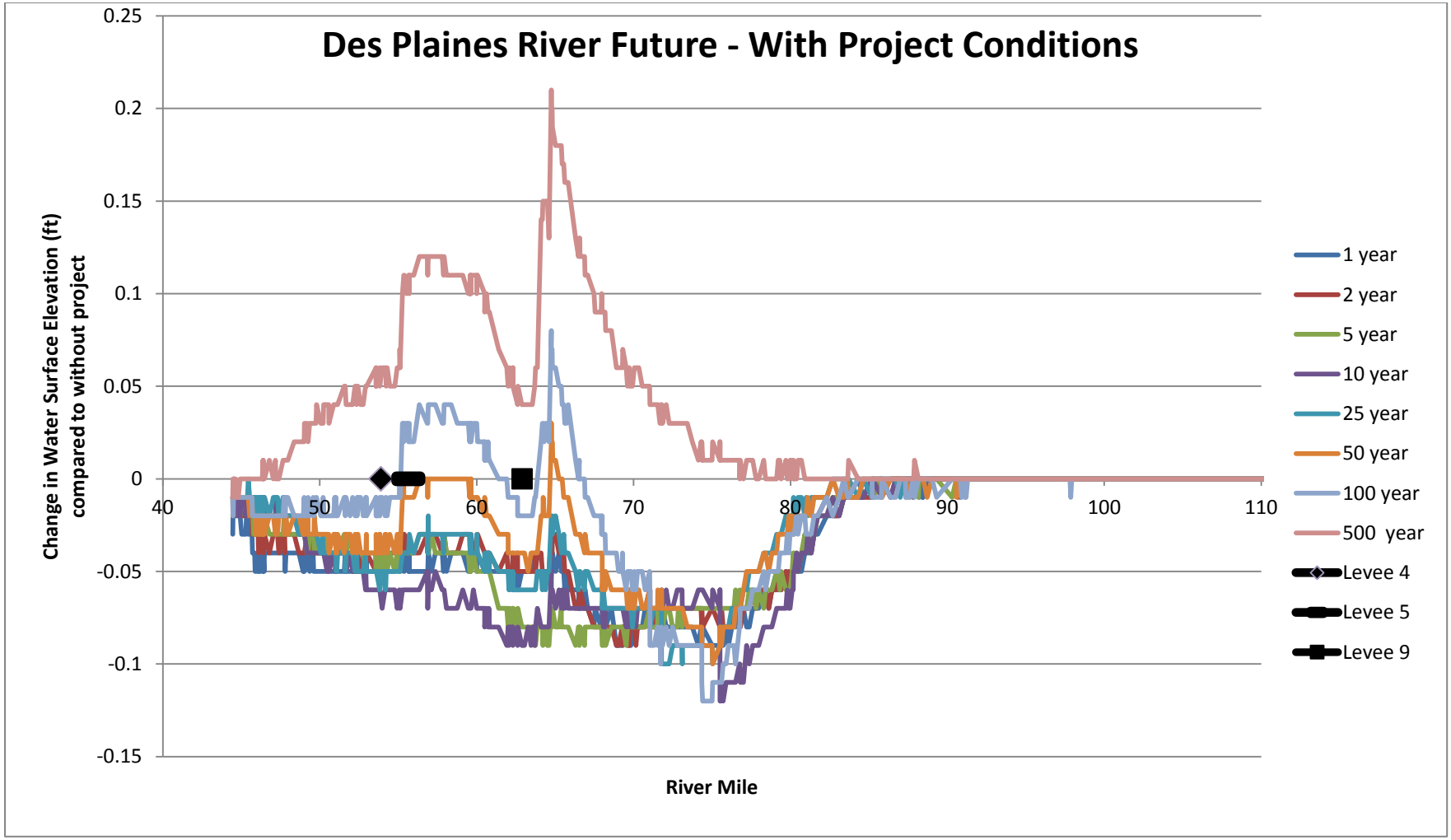
Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Des Plaines River HEC-2 Baseline Profiles, NED Plan	
Chicago District, U. S. Army Corps of Engineers	
August 10	Plate A-52



Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Des Plaines River HEC-2 Future Profiles, NED Plan	
Chicago District, U. S. Army Corps of Engineers	
August 10	Plate A-53



Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Des Plaines River HEC-2 Difference Baseline Profiles, NED Plan	
Chicago District, U. S. Army Corps of Engineers	
August 10	Plate A-54



Upper Des Plaines River and Tributaries Feasibility Report Appendix A – Hydraulics and Hydrology	
Des Plaines River HEC-2 Difference Future Profiles, NED Plan	
Chicago District, U. S. Army Corps of Engineers	
August 10	Plate A-55

ATTACHMENT A-1

Issue White Paper: Upper Des Plaines River Mainstem H&H Modeling

UPPER DES PLAINES RIVER FEASIBILITY PHASE II STUDY

ISSUE WHITE PAPER
UPPER DES PLAINES RIVER MAINSTEM H&H MODELING

January 2008

ISSUE:

What is the applicability of using the Phase I mainstem H&H modeling as the basis for baseline, future and with-project conditions mainstem damages and benefits for the Phase II Study?

BACKGROUND:

The Upper Des Plaines River watershed in northeastern Illinois was extensively studied by the Chicago District after the 1986 and 1987 floods that together caused more than $100 million in damages to more than 10,000 residential, commercial and public structures along with major damages attributed to traffic impacts. The Corps completed the Upper Des Plaines River Feasibility Phase I Study, which was approved in November 1999. The Phase I study focused primarily on flooding problems along the mainstem of the Upper Des Plaines River and authorized the implementation of six projects to reduce main stem flooding. Study recommendations were authorized in the Water Resources Development Act of 1999 (P.L. 106-53). A Limited Reevaluation Report (LRR) was recently completed and approved in June 2007. The purpose of the LRR was to provide current estimates of project benefits, construction costs, value of real estate requirements, and economic justification for the authorized project as required for execution of a Project Cooperation Agreement (PCA). The analysis contained in this issue white paper was completed during the development of the LRR.

The Upper Des Plaines River Feasibility Phase II Study is a continuation and extension of the Phase I Study. The Phase II study has three primary objectives: further reduction of main stem flooding; reduction of tributary flooding; and environmental restoration of degraded ecosystems within the basin. The study will consider sites located within tributary watersheds and along the main stem for both Flood Damage Reduction (FDR) and Ecosystem Restoration (ER) potential. The affects of FDR sites within tributary watersheds on main stem flooding will also be evaluated.

As part of the Phase II Study, the hydrology and hydraulics of several tributaries have been updated and new H&H models developed. The new tributary models incorporate finer sub-basin delineation, updated landuse conditions, and model calibration for each tributary. The Phase II study team would prefer to use the mainstem H&H models that were developed for the Phase I Study if possible. Watershed conditions have changed since the development of the Phase I mainstem models including additional development, increased impervious areas, construction of hydraulic

structures, and bridge improvements. Updating the mainstem H&H models would be a significant effort requiring additional study funds and time.

The purpose of this issue white paper is to assess the applicability of the Phase I mainstem H&H modeling as the basis for baseline and with-project conditions damages and benefits for the Phase II Study. This evaluation involves a re-examination of the flow-frequency relationships at 4 long-term mainstem gages for current conditions versus the flow-frequency relationships developed for the 1999 Phase I Feasibility Report. The flow-frequency relationships at the mainstem gages were the basis for the development and calibration of the hydrologic modeling for the mainstem Upper Des Plaines River. The hydrologic modeling output becomes one of the primary inputs to the hydraulic modeling. The water surface profiles which are output from the hydraulic modeling for baseline, future and with-project conditions represent one of the primary inputs for project economic analyses. The Phase I H&H modeling should only be used for the Phase II Study if the models can accurately represent current watershed conditions.

MAINSTEM H&H MODEL UPDATES:

Since the completion of the Phase I Study in 1999, the numerical modeling has not remained static and has been updated as needed during Pre-Construction, Engineering and Design (PED) phase. The current version of the numerical models (HEC-1 and HEC-2) is an updated version of the feasibility study modeling. In a joint effort between the Chicago District and IDNR-OWR, the baseline hydrologic and hydraulic models were revised in the area of the Levee 37 project from those that were used in the Phase I Study to better represent cross section geometry, better agreement of cross section placement with existing topographic mapping and the addition of modifications associated with the reconstruction of Euclid Avenue bridge. This modeling was completed in October 2001 and was accepted by both agencies as the current modeling to be carried forward for analysis of Levee 37 and other Phase I projects.

WATERSHED DESCRIPTION:

The Des Plaines River flows generally southerly from its headwaters in Racine County, Wisconsin to its confluence with Salt Creek near Riverside, Illinois, then southwesterly to its confluence with the Chicago Sanitary and Ship Canal near Lockport, Illinois. The study area includes the mainstem of the Des Plaines River and all tributary streams above the confluence with Salt Creek. The study area encompasses a portion of four counties including Kenosha and Racine counties in Wisconsin and Lake and Cook counties in Illinois. The upper Des Plaines River watershed is approximately 475 square miles with 135 square miles in Wisconsin and 340 square miles in Illinois. The watershed is aligned primarily along a north-south axis with a length of 82 miles and average width of 9 miles. Elevations in the upper Des Plaines River watershed upstream of Salt Creek vary from nearly 900 to 600 feet NGVD. From the junction with Salt Creek upstream to the junction with Root River, the Des Plaines River rises 76 feet over 69 miles for an average gradient of 1.1 ft/mi.

Most of the southern areas of the Upper Des Plaines River watershed within Cook County are fully developed. The open areas currently remaining in the southern portion are primarily golf courses, forest preserves, parks, and cemeteries. The northern portion of the watershed continues to be developed primarily as residential area with commercial development to support the residential area. In general, urbanization of the watershed is occurring from south to north. Flood and flow control modifications have occurred on the Upper Des Plaines River and its tributaries primarily in the southern half of its length.

The Upper Des Plaines River Feasibility Phase I Study was completed under a joint effort between the Chicago District, the Illinois Department of Natural Resources, Office of Water Resources (IDNR-OWR) and several local water resources agencies in both Cook and Lake Counties in Illinois. Detailed modeling was completed as part of the study, including greater sub-basin detail; revised loss rates and hydrograph parameters; and calibration of the hydrologic and hydraulic modeling against revised flow-frequency relationships at 4 mainstem gages, and flood events which were of significant magnitude. The HEC-1 model for the Upper Des Plaines River watershed has 271 sub-basins which include the mainstem Des Plaines River and 15 major tributaries in Cook, Lake and Kenosha Counties. The HEC-2 model contained detailed cross section modeling extending approximately 93 river miles from the Illinois-Wisconsin Stateline to the confluence with Salt Creek. The Hydrology and Hydraulics Appendix A of the Phase I Feasibility Study (Chicago District 1999) contains a detailed description of the baseline model development, calibration and evaluation of with-project conditions.

TECHNICAL ANALYSIS APPROACH:

The intent of this analysis is to evaluate the applicability of the Phase I mainstem H&H modeling as the basis for baseline and with-project conditions damages and benefits for the Phase II Study. This evaluation involves a re-examination of the flow-frequency relationships at 4 long term mainstem gages for current watershed conditions versus the flow-frequency relationships developed for the 1999 Phase I Feasibility Report.

Since the major change in the Upper Des Plaines River watershed has been continued development in the northern portions of the watershed (Lake County, Illinois and Kenosha County, Wisconsin), a re-examination of the flow-frequency at the northern gages should capture the changes in runoff that would in turn result in significant changes to water surface profiles for the mainstem Des Plaines River. New flow-frequency relationships were developed for the four mainstem gages located at Russell Road (near the Illinois-Wisconsin Stateline), Gurnee (major damage area during the May 2004 event), Des Plaines (perpetual major damage area) and Riverside. The gage records were adjusted to take into account urbanization changes and reservoir construction in order to develop a more uniform period of record at each of the gages. The same process for adjusting the gage records to account for urbanization and reservoir construction utilized during the development of the Phase I Study was used. The process as applied to the gage records as outlined in the Hydrology and Hydraulics Appendix A of the Phase I

Feasibility Study (Chicago District 1999) used a procedure developed by USGS for Northeastern Illinois (USGS, WRI 79-36) to account for urbanization effects.

The USGS procedure for adjusting a gage record to account for urbanization involves relating population density (persons per square mile) to the percentage of imperviousness per total land area. Weighted percent imperviousness values were then used to determine ratios of urban to rural flood magnitudes for each decade. The ratios of flood magnitudes, from urban to rural, varied by decade depending on the percent imperviousness and the frequency storm observed. For historical data adjustment purposes, the base condition frequency-discharge relationship was set at 1940. An urban adjustment multiplier was determined for each decade based on the ratio of a given decade urban to rural ratio to the baseline ratio. The gage record was modified by decade based on the urban adjustment multiplier.

The construction of reservoirs that would impact the gage record was accounted for by first compiling an inventory of all reservoirs constructed in the basin. Based on the inventory and location of each reservoir, it was determined if reservoirs impacted the gage record and if so when the gage record was impacted. Only the Des Plaines and Riverside gages were determined to be impacted by reservoir construction. These records were adjusted by creating a no-reservoir hydrologic model and comparing discharges to current conditions.

The gage records at the four mainstem stream gages were adjusted to take into account urbanization effects and reservoir construction that occurred between 1995 and 2005. Comparing gage frequency analysis results between the adjusted period of record used to calibrate the mainstem H&H models developed for the Phase I Study to an updated period of record taking into account additional urbanization and reservoir construction since the development of the mainstem H&H models would determine whether the existing mainstem models are applicable for use in the Phase II Study.

GAGE FREQUENCY ANALYSIS:

Four mainstem stream gages were reanalyzed by extending the gage records to 2005 and making adjustments for urbanization and reservoir construction. An effort was made to adjust the gage record to account for added imperviousness as a result of urbanization and any flood control projects (i.e. reservoirs) that had been implemented since the frequency analysis was last updated in 1995. The extended annual maximum series was used as input to the Flood Frequency Analysis software package developed by the Hydrologic Engineering Center, HEC-FFA. The generalized skew and mean square error of -0.16 and 0.20, respectively, were held consistent with the previous analysis. The HEC-FFA analysis was performed for the Russell Road, Gurnee, Des Plaines and Riverside gages. HEC-FFA output from the current analysis is contained in attachment 1 to this appendix. For comparison reasons, computed urban and reservoir adjustments were translated back to the Des Plaines I Study baseline year of 1995.

A comparison of peak flows for various frequency events is presented in *Table 1*. The Phase I mainstem H&H models results are shown in *Column A* (baseline 1995 land use conditions) and *Column B* (future 2010 land use conditions). The Phase I study gage frequency analysis results used in calibrating the mainstem H&H models is shown in *Column C*. The updated frequency analysis based on an extended period of record corrected for urbanization effects and reservoir construction is shown in *Column D*. Comparing peak flows from the Phase I frequency analysis (*Column C*) with the updated frequency analysis (*Column D*) showed a reasonable comparison (approximately 10% difference or less, but usually less). The Russell Road Gage showed the largest change. The updated frequency analysis for the Russell Gage includes the effects of urbanization where the Phase I analysis did not. Also there was an event of record (May 2004) in the updated analysis which had an impact on the updated results. Adjustments to the hydrologic model upstream of the Russell gage may be necessary.

In order to check the reasonableness of the H&H model future landuse conditions results, the calculated urban and reservoir construction adjustments were applied to the Phase I frequency analysis results (*Column C*) as shown in *Column F*. As shown in *Column G*, there is a reasonable comparison with the mainstem H&H model future conditions results.

Table 1 – Comparison of Gage Frequency Analyses Results and Simulated Peak Flows at Mainstem Upper Des Plaines River Gage Locations

	A	B	C	D	E	F	G
Recurrence Interval (Years)	(1995) Phase I Baseline Model (cfs)[1]	(2010) Phase I Future Model (cfs) [2]	(1995) Phase I Frequency Analysis (cfs) [3]	(1995) Updated Frequency Analysis (cfs)	Percent change (D-C)/C	(2010) Adjusted Frequency Analysis (cfs)	Percent change (F-B)/B
Russell Rd. Gage							
2 yr	624	658	624	694	11%	636	3%
5 yr	1230	1283	1230	1340	9%	1242	3%
10 yr	1727	1792	1730	1860	8%	1747	3%
25 yr/20yr*	2468	2547	2280*	2430*	7%	2303*	N/A*
50 yr	3086	3174	3090	3260	6%	3152	1%
100 yr	3773	3863	3770	3950	5%	3808	1%
500 yr	5580	5688	5580	5770	3%	5636	1%
Gurnee Gage							
2 yr	1323	1504	1320	1290	-2%	1492	1%
5 yr	2294	2486	2280	2210	-3%	2508	-1%
10 yr	3062	3255	3000	2900	-3%	3270	0%
25 yr/20yr*	4050	4277	3750*	3610*	-4%	4050*	N/A*
50 yr	4829	5097	4790	4580	-4%	5077	0%
100 yr	5644	5910	5620	5370	-4%	5957	-1%
500 yr	7647	8021	7720	7320	-5%	8183	-2%
Des Plaines Gage							
2 yr	2599	2866	2610	2660	2%	2714	6%
5 yr	3610	3950	3610	3550	-2%	3718	6%
10 yr	4226	4584	4240	4150	-2%	4325	6%
25 yr/20yr*	4992	5340	4840*	4710*	-3%	4937*	N/A*
50 yr	5564	5900	5590	5410	-3%	5702	3%
100 yr	6144	6455	6140	5920	-4%	6201	4%
500 yr	7386	7711	7400	7090	-4%	7474	3%

Riverside Gage							
2 yr	4505	4620	4580	4620	1%	4626	0%
5 yr	5797	5971	5940	5940	0%	5881	2%
10 yr	6623	6814	6780	6740	-1%	6712	2%
25 yr/20yr*	7570	7744	7550*	7460*	-1%	7475*	N/A*
50 yr	8225	8399	8490	8340	-2%	8405	0%
100 yr	8827	9017	9160	8980	-2%	9068	-1%
500 yr	10108	10333	10700	10400	-3%	10593	-2%

* readily available data is presented , 25 yr from models and 20 yr from freq. analysis, 20 yr values are marked with an asterisk *

[1] Peak flows from Phase I mainstem HEC-1 model at gage locations from revised baseline modeling.

[2] Peak flows from Phase I mainstem HEC-1 modeling for 2010 future conditions.

[3] Excerpted from Hydrology and Hydraulics Appendix A, 1999 Feasibility Study.

Flow-frequency curves were developed from HEC-FFA runs, as well as the statistical analyses documented in Hydrology and Hydraulics Appendix A of the 1999 Feasibility Study. The updated flow-frequency relationships were plotted along with the Phase I relationships utilizing computed probability curves as well as the upper and lower confidence intervals for the Phase I gage frequency analysis. Peak flow results from the mainstem HEC-1 model at the gage locations for baseline and future conditions were also incorporated into the plots. The plots for Russell Road, Gurnee, Des Plaines and Riverside gages are contained on *Plates 1-4*.

For three of the four gages (Gurnee, Des Plaines and Riverside), the trend shows a decrease in flows for a given frequency despite increases in watershed urbanization. This is due to the extended period of record, which experienced smaller peak flows resulting in lower overall frequency analysis results. The extended Russell Road gage record included an extreme event in May 2004 and urbanization effects that resulted in greater peak flows and increased frequency analysis results. The revised frequency curves fall well within the upper and lower confidence intervals of the original Phase I gage frequency analysis, indicating that the changes observed within the watershed still fall within the statistical reliability of the gage analysis. Since there is not a statistically significant change in the frequency record, the original frequency analysis for the numerical modeling is still valid. Therefore, since there is no significant statistical change in the flow data, the mainstem H&H models developed as part of the Phase I Study are still valid for use in developing baseline, future and with-project flow and stage information used in NED economic analyses.

RECCOMENDATION:

Through the above analyses of extending and updating the mainstem gage records for urbanization and reservoir construction and comparing frequency analysis results with that used to calibrate the Phase I mainstem H&H models, it can been shown that the existing mainstem H&H produces reasonable results. The mainstem H&H model produces results that are within 6% for both baseline and future conditions for all gages except the Russell Road gage. Due to an extremely large event occurring in the extended period of record for the Russell Road gage and incorporating urbanization effects, the baseline frequency analysis results increased. The other three gages showed a decrease in the gage frequency analyses with the updated period of record. Comparisons to the

updated frequency curves indicate that the mainstem H&H models developed for the Phase I Study will estimate with reasonable closeness the baseline, future and with-project conditions for evaluation of damages and benefits associated with Phase II Study project features. As noted above the trend in the watershed is for continued development in the northern portions of the watershed in Lake and Kenosha Counties. It is anticipated that growth in the watershed will continue, and with it increases in runoff volumes and flooding. This trend is noted in the increase in peak flows for the Russell Road gage, however reduced flows observed at the downstream gages is a result of extended period of record. Comparisons of the revised flow-frequency results versus those developed for the 1999 Phase I Feasibility Report indicate that the changes are within the statistical limits of the original analysis.

Based on the above analyses, it is applicable to use the Phase I mainstem H&H models as the basis for baseline, future and with-project conditions analyses in the computation of mainstem damages and benefits for the Phase II Study.

REFERENCES:

Upper Des Plaines River, Flood Damage Reduction Study, Appendix A, Hydrology and Hydraulics, U.S. Army Corps of Engineers Chicago District, June 1999.

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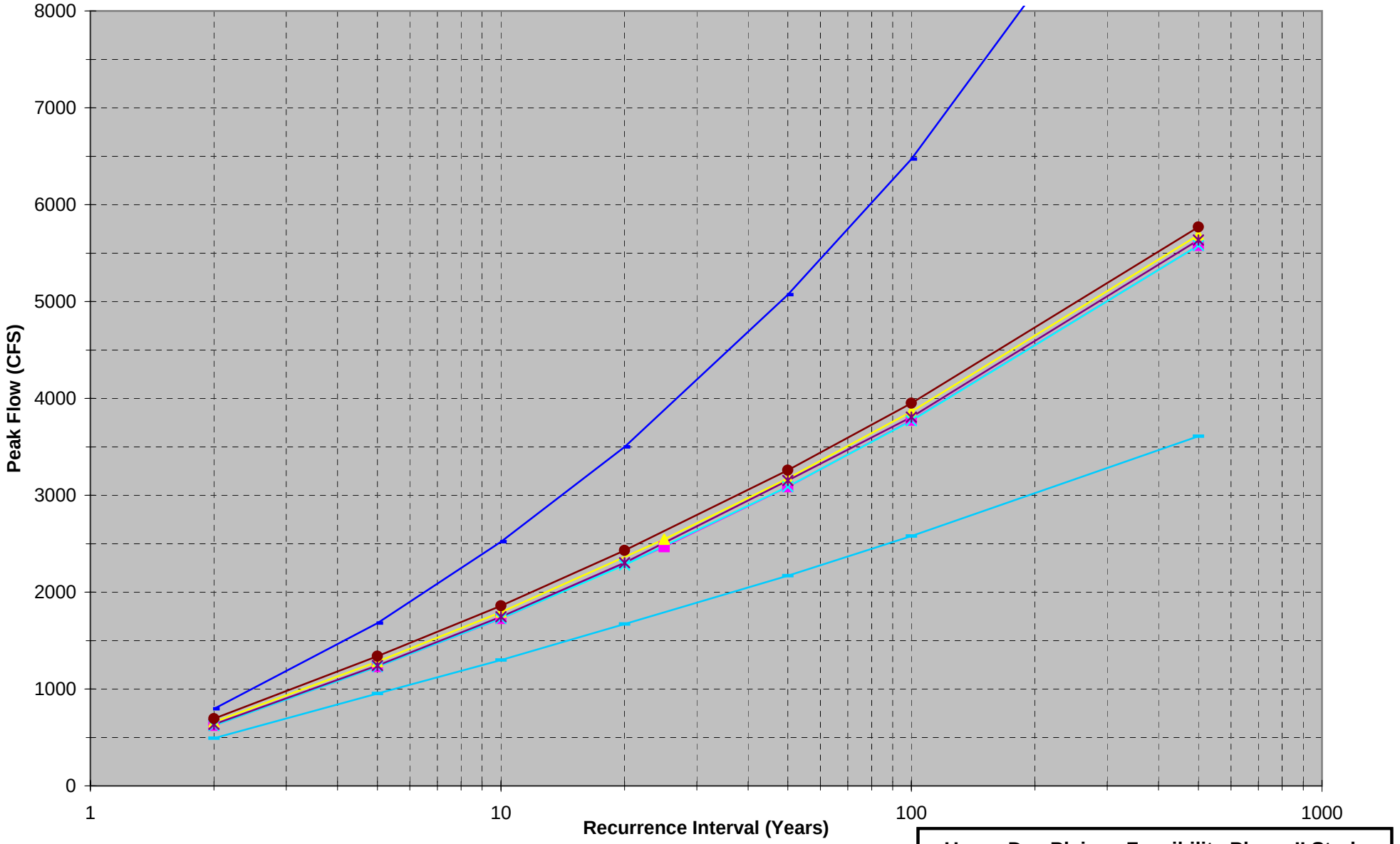
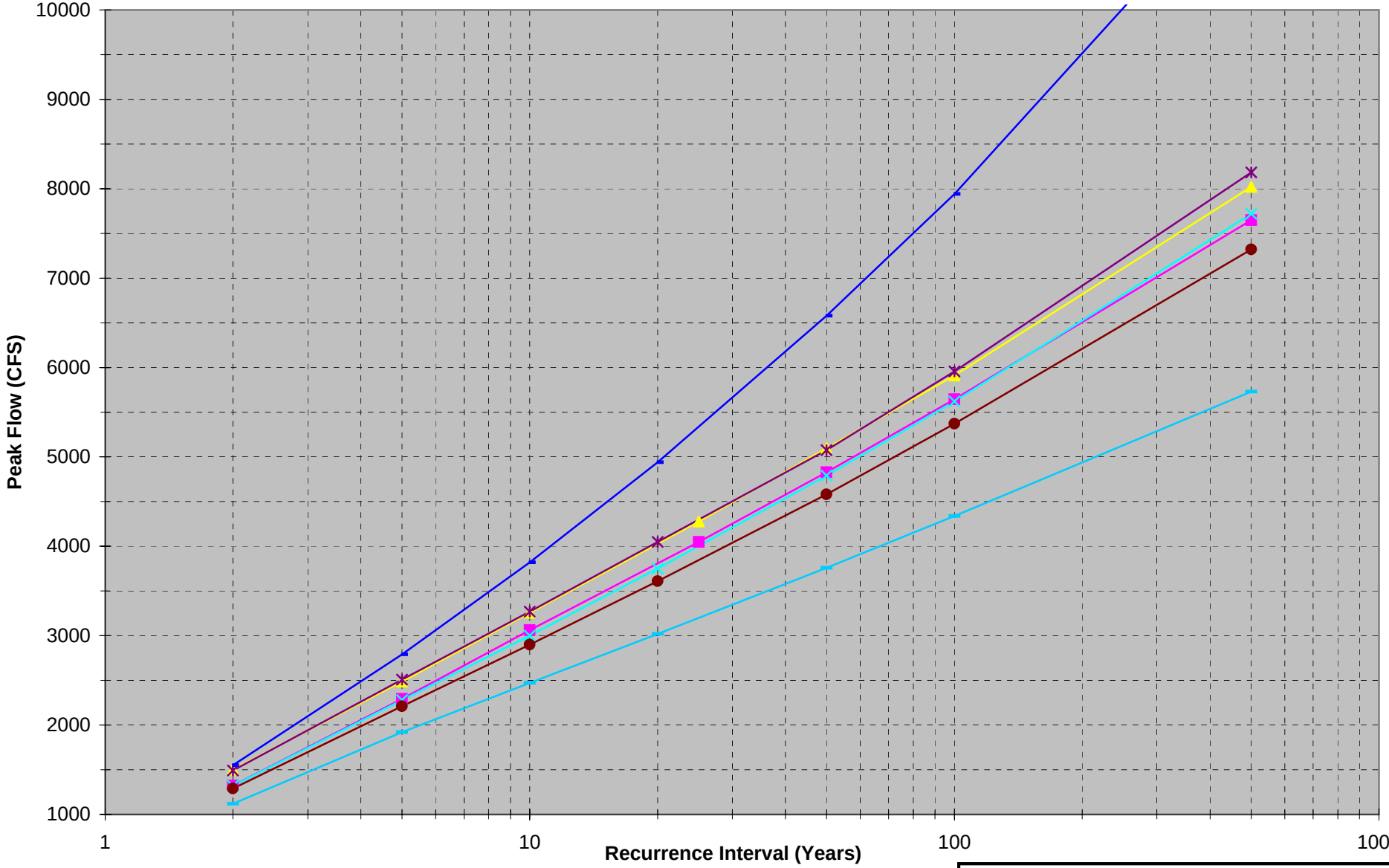


Upper Des Plaines Feasibility Phase II Study
Issue White Paper
Mainstem H&H Modeling

Flow-Frequency at Russell Road Gage

Chicago District, U.S. Army Corps of Engineers

January 2008 | Plate 1

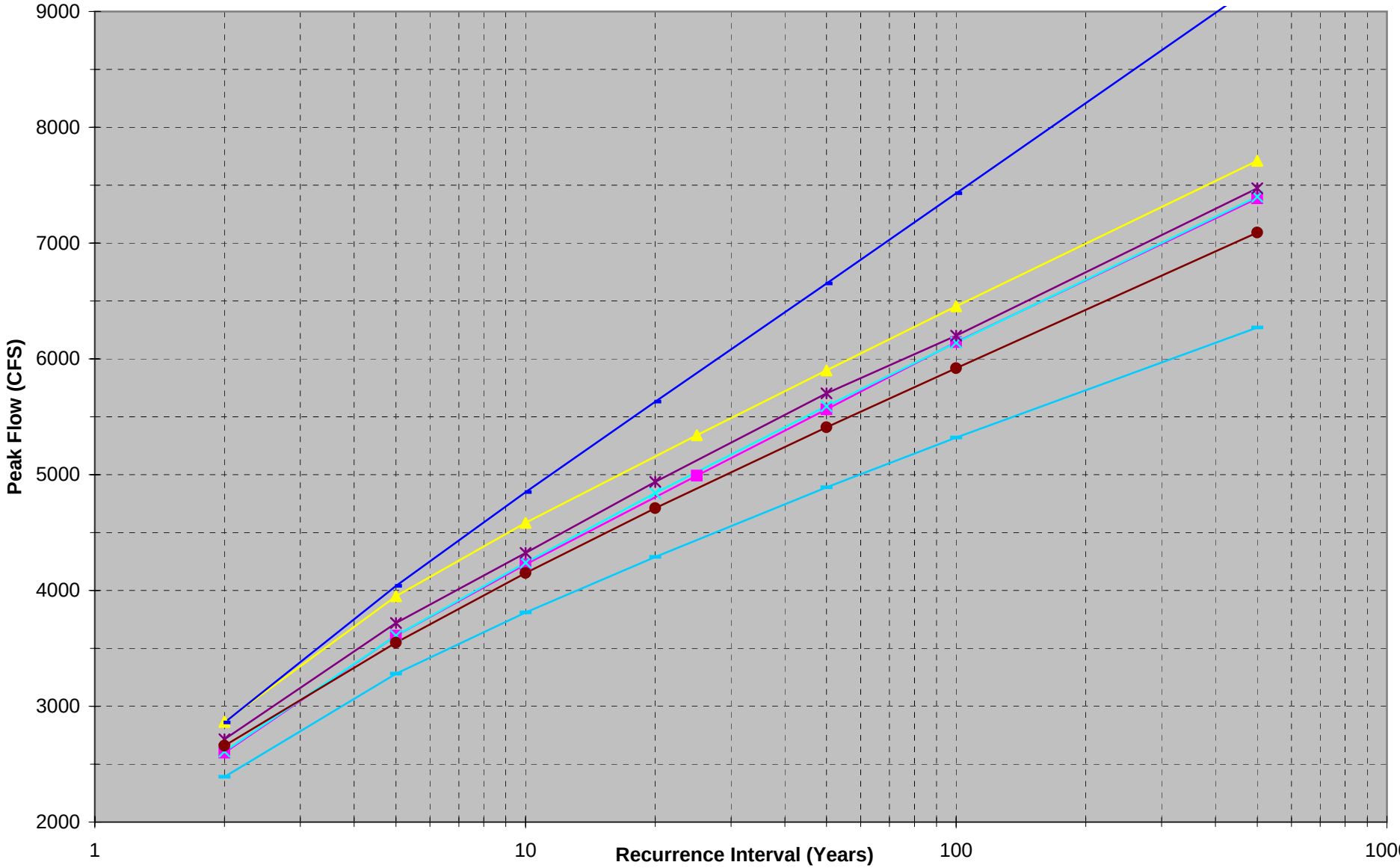


Upper Des Plaines Feasibility Phase II Study
Issue White Paper
Mainstem H&H Modeling

Flow-Frequency at Gurnee Gage

Chicago District, U.S. Army Corps of Engineers

January 2008 | Plate 2

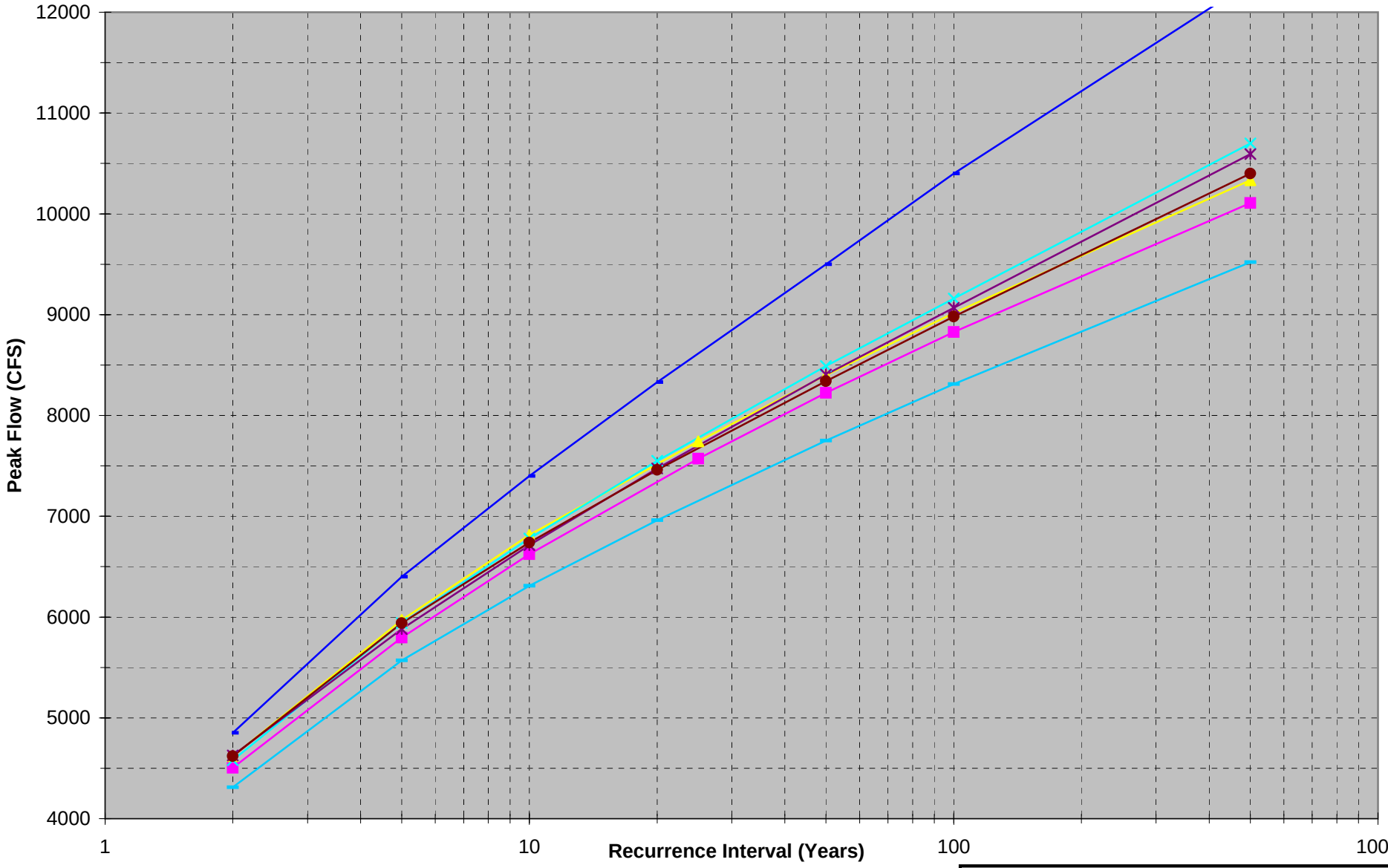


Upper Des Plaines Feasibility Phase II Study
Issue White Paper
Mainstem H&H Modeling

Flow-Frequency at Des Plaines Gage

Chicago District, U.S. Army Corps of Engineers

January 2008 | Plate 3



Upper Des Plaines Feasibility Phase II Study
Issue White Paper
Mainstem H&H Modeling

Flow-Frequency at Riverside Gage	
Chicago District, U.S. Army Corps of Engineers	
January 2008	Plate 4

ATTACHMENT A-2

VISTA Model Inputs: Road Closure Schedule and Duration

Flooded Roads, 1-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_1YR	DUR_1YR
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	17.31	338
184	HUTCHINS	MILL CREEK	RS 47038	33.38	1411

Flooded Roads, 2-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_2YR	DUR_2YR
157	WINCHESTER	BULL CREEK	RS 14652	14.12	178
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	1442
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	345
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	4050
307	TOBIN	DESPLAINES RIVER	RS 1.09	18.71	30
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	16.91	438
184	HUTCHINS	MILL CREEK	RS 47038	27.94	2656
26	IRVING PARK	SILVER CREEK	RS 34306.8	16.90	280

Flooded Roads, 5-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_5YR	DUR_5YR
111	NORTHGATE	BUFFALO CREEK	RS 12111	14.60	312
224	WHEELING	BUFFALO CREEK	RS 7653	14.31	367
157	WINCHESTER	BULL CREEK	RS 14652	13.13	314
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	3944
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	10145
210	RIVER	DESPLAINES RIVER	RS 56.84	120.78	3112
213	RIVER	DESPLAINES RIVER	RS 64.50R	110.19	1633
247	BUSSE	DESPLAINES RIVER	RS 64.50B	110.19	1356
246	MINER	DESPLAINES RIVER	RS 65.03	108.16	231
214	RIVER	DESPLAINES RIVER	RS 71.033R	103.41	9997
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	103.41	8042
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	11334
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	89.75	3142
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	89.75	4382
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	89.75	4876
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	89.75	6899
244	RIVER	DESPLAINES RIVER	RS 2500R	19.41	8220
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.91	1343
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.96	60
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	16.61	593
82	RIVER	FEEHANVILLE DITCH	RS 1780	107.06	432
184	HUTCHINS	MILL CREEK	RS 47038	13.56	4324
200	IL-173	MILL CREEK	RS 27800	17.86	361
194	KELLEY	MILL CREEK	RS 18400	20.69	15
193	ADAMS	NEWPORT DITCH	RS 23258	19.76	300
26	IRVING PARK	SILVER CREEK	RS 34306.8	14.80	533

Flooded Roads, 10-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_10YR	DUR_10YR
301	60TH	BRIGHTON CREEK	RS 0.84A	15.46	30
313	85TH	BRIGHTON CREEK	RS 1.29	16.21	90
111	NORTHGATE	BUFFALO CREEK	RS 12111	13.21	544
224	WHEELING	BUFFALO CREEK	RS 7653	13.06	583
157	WINCHESTER	BULL CREEK	RS 14652	12.48	465
10	CHICAGO	DESPLAINES RIVER	RS 51.63	114.00	2547
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	11122
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	12481
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	103.41	322
179	GRAND	DESPLAINES RIVER	RS 97.12	89.75	1882
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	89.75	453
218	RIVER	DESPLAINES RIVER	RS 54.78	119.97	2764
219	RIVER	DESPLAINES RIVER	RS 55.27	120.09	2656
210	RIVER	DESPLAINES RIVER	RS 56.84	120.78	9791
212	RIVER	DESPLAINES RIVER	RS 63.04	116.38	2240
213	RIVER	DESPLAINES RIVER	RS 64.50R	110.19	9533
247	BUSSE	DESPLAINES RIVER	RS 64.50B	110.19	8552
246	MINER	DESPLAINES RIVER	RS 65.03	108.16	8371
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	108.16	7644
214	RIVER	DESPLAINES RIVER	RS 71.033R	103.41	12287
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	103.41	10868
215	RIVER	DESPLAINES RIVER	RS 76.8	40.50	2210
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	15901
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	89.75	7080
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	89.75	7843
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	89.75	8287
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	89.75	10748
244	RIVER	DESPLAINES RIVER	RS 2500R	19.41	13315
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.91	1142
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.91	1588
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.71	75
339	I-94	DESPLAINES RIVER	RS 6.36	28.71	2505
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	16.45	727
82	RIVER	FEEHANVILLE DITCH	RS 1780	107.06	7399
184	HUTCHINS	MILL CREEK	RS 47038	12.13	4914
200	IL-173	MILL CREEK	RS 27800	15.36	729
194	KELLEY	MILL CREEK	RS 18400	16.04	611
193	ADAMS	NEWPORT DITCH	RS 23258	17.42	748
201	DELANEY	NEWPORT DITCH	RS 7321D	19.36	109
202	9TH	NEWPORT DITCH	RS 6710	19.37	142
230	9TH	NEWPORT DITCH	RS 7321N	17.89	336
14	NORTH	SILVER CREEK	RS 9030.912	14.40	163
19	MANNHEIM	SILVER CREEK	RS 22601.568	16.10	61
26	IRVING PARK	SILVER CREEK	RS 34306.8	13.77	657

Flooded Roads, 25-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_25YR	DUR_25YR
301	60TH	BRIGHTON CREEK	RS 0.84A	14.71	90
309	60TH	BRIGHTON CREEK	RS 1.14	23.46	330
313	85TH	BRIGHTON CREEK	RS 1.29	15.46	300
106	DUNDEE	BUFFALO CREEK	RS 56983	12.50	300
111	NORTHGATE	BUFFALO CREEK	RS 12111	12.20	1579
224	WHEELING	BUFFALO CREEK	RS 7653	12.08	1645
157	WINCHESTER	BULL CREEK	RS 14652	11.63	593
159	US HWY 45	BULL CREEK	RS 13780.8	13.92	248
160	PETERSON	BULL CREEK	RS 10560	14.25	203
10	CHICAGO	DESPLAINES RIVER	RS 51.63	114.00	4056
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	13791
21	GRAND	DESPLAINES RIVER	RS 55.101	119.97	1777
23	BELMONT	DESPLAINES RIVER	RS 55.651	120.09	287
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	116.38	1437
70	RAND	DESPLAINES RIVER	RS 65.391	107.06	1855
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	15178
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	103.41	8991
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	106.94	779
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.28	1985
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	60.28	3137
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.44	6370
179	GRAND	DESPLAINES RIVER	RS 97.12	89.75	6589
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	89.75	6069
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	63.53	2823
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.41	2968
218	RIVER	DESPLAINES RIVER	RS 54.78	119.97	8704
219	RIVER	DESPLAINES RIVER	RS 55.27	120.09	4033
210	RIVER	DESPLAINES RIVER	RS 56.84	120.78	12743
212	RIVER	DESPLAINES RIVER	RS 63.04	116.38	10339
213	RIVER	DESPLAINES RIVER	RS 64.50R	110.19	12258
247	BUSSE	DESPLAINES RIVER	RS 64.50B	110.19	11541
246	MINER	DESPLAINES RIVER	RS 65.03	108.16	11283
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	108.16	10855
214	RIVER	DESPLAINES RIVER	RS 71.033R	103.41	15027
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	103.41	13398
215	RIVER	DESPLAINES RIVER	RS 76.8	40.50	9948
216	RIVER	DESPLAINES RIVER	RS 77.8	40.50	2011
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	21193
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	89.75	10903
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	89.75	11867
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	89.75	12391
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	89.75	15057
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.41	963
244	RIVER	DESPLAINES RIVER	RS 2500R	19.41	17580
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.91	1481
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.91	2094
294	122ND	DESPLAINES RIVER	RS 0.69	49.21	1635
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	19.21	15
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.46	75
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	18.46	30
339	I-94	DESPLAINES RIVER	RS 6.36	24.46	3360
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	16.30	983
82	RIVER	FEEHANVILLE DITCH	RS 1780	107.06	10923

Flooded Roads, 25-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_25YR	DUR_25YR
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	10.22	311
305	93RD	JEROME CREEK	RS 1.04JC	19.68	60
254	WILLOW	MCDONALD CREEK	RS 1850	18.79	86
184	HUTCHINS	MILL CREEK	RS 47038	10.26	5821
228	BARRON	MILL CREEK	RS 84067	20.11	478
206	128TH	MILL CREEK	RS 39650	14.19	782
200	IL-173	MILL CREEK	RS 27800	12.93	1146
194	KELLEY	MILL CREEK	RS 18400	13.44	1041
274	GRAND	MILL CREEK	RS 26200	15.31	520
193	ADAMS	NEWPORT DITCH	RS 23258	16.14	1259
201	DELANEY	NEWPORT DITCH	RS 7321D	16.76	444
202	9TH	NEWPORT DITCH	RS 6710	16.86	459
230	9TH	NEWPORT DITCH	RS 7321N	16.22	563
13	15TH	SILVER CREEK	RS 6966.432	14.19	171
14	NORTH	SILVER CREEK	RS 9030.912	13.19	774
19	MANNHEIM	SILVER CREEK	RS 22601.568	13.85	743
20	SCOTT	SILVER CREEK	RS 19226.592	21.89	273
26	IRVING PARK	SILVER CREEK	RS 34306.8	12.74	784
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	15.28	194
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	13.84	166
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	14.69	42

Flooded Roads, 50-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_50YR	DUR_50YR
292	75TH	BRIGHTON CREEK	RS 0.58	14.71	30
300	89TH	BRIGHTON CREEK	RS 0.84	15.96	30
301	60TH	BRIGHTON CREEK	RS 0.84A	14.46	105
309	60TH	BRIGHTON CREEK	RS 1.14	20.96	705
313	85TH	BRIGHTON CREEK	RS 1.29	14.96	465
106	DUNDEE	BUFFALO CREEK	RS 56983	11.58	462
111	NORTHGATE	BUFFALO CREEK	RS 12111	11.45	1799
112	MCHENRY	BUFFALO CREEK	RS 14213	13.43	1064
113	RAND	BUFFALO CREEK	RS 50820	14.21	30
124	CHECKER	BUFFALO CREEK	RS 37164.41	21.95	396
222	DUNDEE	BUFFALO CREEK	RS 14444	13.25	1098
224	WHEELING	BUFFALO CREEK	RS 7653	11.33	1864
155	LAKE	BULL CREEK	RS 12856.8	24.08	614
158	WINCHESTER	BULL CREEK	RS 11008.8	23.70	688
157	WINCHESTER	BULL CREEK	RS 14652	11.05	693
159	US HWY 45	BULL CREEK	RS 13780.8	13.07	337
160	PETERSON	BULL CREEK	RS 10560	13.38	302
209	IRVING PARK	CRYSTAL CREEK	RS 20121	15.60	103
10	CHICAGO	DESPLAINES RIVER	RS 51.63	114.00	10916
15	NORTH	DESPLAINES RIVER	RS 52.93	125.06	1023
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	15628
21	GRAND	DESPLAINES RIVER	RS 55.101	119.97	3313
23	BELMONT	DESPLAINES RIVER	RS 55.651	120.09	2880
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	116.38	8467
70	RAND	DESPLAINES RIVER	RS 65.391	107.06	9863
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	17336
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	103.41	10971
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	106.94	5059
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.28	5529
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	60.28	5906
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.44	8633
179	GRAND	DESPLAINES RIVER	RS 97.12	89.75	8728
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	89.75	8131
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	63.53	4734
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.41	4570
218	RIVER	DESPLAINES RIVER	RS 54.78	119.97	11823
219	RIVER	DESPLAINES RIVER	RS 55.27	120.09	11696
210	RIVER	DESPLAINES RIVER	RS 56.84	120.78	14545
212	RIVER	DESPLAINES RIVER	RS 63.04	116.38	12353
213	RIVER	DESPLAINES RIVER	RS 64.50R	110.19	14081
247	BUSSE	DESPLAINES RIVER	RS 64.50B	110.19	13384
246	MINER	DESPLAINES RIVER	RS 65.03	108.16	13059
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	108.16	12651
214	RIVER	DESPLAINES RIVER	RS 71.033R	103.41	17158
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	103.41	15365
215	RIVER	DESPLAINES RIVER	RS 76.8	40.50	11942
216	RIVER	DESPLAINES RIVER	RS 77.8	40.50	5701
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	23515
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	89.75	13699
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	89.75	14725
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	89.75	15273
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	89.75	17886
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.41	5038

Flooded Roads, 50-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_50YR	DUR_50YR
244	RIVER	DESPLAINES RIVER	RS 2500R	19.41	20008
241	GUERIN	DESPLAINES RIVER	RS 7025	19.41	4187
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.91	1620
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.91	2515
294	122ND	DESPLAINES RIVER	RS 0.69	44.71	2595
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	18.71	45
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.46	90
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	18.21	45
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	7.21	15
339	I-94	DESPLAINES RIVER	RS 6.36	19.46	3795
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	16.20	1263
82	RIVER	FEEHANVILLE DITCH	RS 1780	107.06	12868
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	8.54	664
150	GILMER	INDIAN CREEK	RS 71326	9.95	69
305	93RD	JEROME CREEK	RS 1.04JC	19.43	75
254	WILLOW	MCDONALD CREEK	RS 1850	16.46	451
184	HUTCHINS	MILL CREEK	RS 47038	8.71	6474
228	BARRON	MILL CREEK	RS 84067	16.68	1087
206	128TH	MILL CREEK	RS 39650	12.41	1103
200	IL-173	MILL CREEK	RS 27800	11.53	1422
194	KELLEY	MILL CREEK	RS 18400	11.96	1318
274	GRAND	MILL CREEK	RS 26200	13.66	773
193	ADAMS	NEWPORT DITCH	RS 23258	15.57	1396
201	DELANEY	NEWPORT DITCH	RS 7321D	15.94	570
202	9TH	NEWPORT DITCH	RS 6710	16.04	585
230	9TH	NEWPORT DITCH	RS 7321N	15.61	688
13	15TH	SILVER CREEK	RS 6966.432	13.07	675
14	NORTH	SILVER CREEK	RS 9030.912	12.39	935
19	MANNHEIM	SILVER CREEK	RS 22601.568	12.99	911
20	SCOTT	SILVER CREEK	RS 19226.592	13.99	862
22	GRAND	SILVER CREEK	RS 24899.424	20.17	70
26	IRVING PARK	SILVER CREEK	RS 34306.8	11.90	882
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	14.36	323
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	13.09	273
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	13.56	198

Flooded Roads, 100-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_100YR	DUR_100YR
125	MILWAUKEE	APTAKISIC CREEK	RS 1950	107.94	4171
292	75TH	BRIGHTON CREEK	RS 0.58	14.21	45
300	89TH	BRIGHTON CREEK	RS 0.84	15.46	180
301	60TH	BRIGHTON CREEK	RS 0.84A	14.21	135
309	60TH	BRIGHTON CREEK	RS 1.14	19.71	990
313	85TH	BRIGHTON CREEK	RS 1.29	14.46	615
340	31ST	BRIGHTON CREEK	RS 7.85	19.71	150
106	DUNDEE	BUFFALO CREEK	RS 56983	10.95	597
111	NORTHGATE	BUFFALO CREEK	RS 12111	10.80	1989
112	MCHENRY	BUFFALO CREEK	RS 14213	12.55	1320
113	RAND	BUFFALO CREEK	RS 50820	12.28	305
118	APTAKISIC	BUFFALO CREEK	RS 23920	23.55	231
119	LAKE COOK	BUFFALO CREEK	RS 28633	22.05	404
124	CHECKER	BUFFALO CREEK	RS 37164.41	20.18	609
223	DUNDEE	BUFFALO CREEK	RS 15616	14.51	974
222	DUNDEE	BUFFALO CREEK	RS 14444	12.43	1335
224	WHEELING	BUFFALO CREEK	RS 7653	10.66	2064
155	LAKE	BULL CREEK	RS 12856.8	21.65	948
158	WINCHESTER	BULL CREEK	RS 11008.8	21.42	1005
157	WINCHESTER	BULL CREEK	RS 14652	10.27	796
159	US HWY 45	BULL CREEK	RS 13780.8	12.47	411
160	PETERSON	BULL CREEK	RS 10560	12.77	378
162	PETERSON	BULL CREEK	RS 5913.6	23.48	362
209	IRVING PARK	CRYSTAL CREEK	RS 20121	14.92	219
9	LAKE	DESPLAINES RIVER	RS 51.041	114.00	2067
10	CHICAGO	DESPLAINES RIVER	RS 51.63	114.00	12832
15	NORTH	DESPLAINES RIVER	RS 52.93	125.06	3016
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	17300
21	GRAND	DESPLAINES RIVER	RS 55.101	119.97	9983
23	BELMONT	DESPLAINES RIVER	RS 55.651	120.09	3920
27	IRVING PARK	DESPLAINES RIVER	RS 56.921	120.78	2132
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	116.38	10541
70	RAND	DESPLAINES RIVER	RS 65.391	107.06	11309
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	19067
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	103.41	12298
110	DUNDEE	DESPLAINES RIVER	RS 74.341	40.50	3902
126	DEERFIELD	DESPLAINES RIVER	RS 76.76	40.50	3576
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	106.94	7051
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.28	7448
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	60.28	7792
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.44	10856
179	GRAND	DESPLAINES RIVER	RS 97.12	89.75	10865
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	89.75	10178
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	63.53	6235
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.41	6059
218	RIVER	DESPLAINES RIVER	RS 54.78	119.97	13345
219	RIVER	DESPLAINES RIVER	RS 55.27	120.09	13227
210	RIVER	DESPLAINES RIVER	RS 56.84	120.78	16098
212	RIVER	DESPLAINES RIVER	RS 63.04	116.38	13796
213	RIVER	DESPLAINES RIVER	RS 64.50R	110.19	15631
247	BUSSE	DESPLAINES RIVER	RS 64.50B	110.19	14903
246	MINER	DESPLAINES RIVER	RS 65.03	108.16	14514
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	108.16	14079

Flooded Roads, 100-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_100YR	DUR_100YR
214	RIVER	DESPLAINES RIVER	RS 71.033R	103.41	18906
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	103.41	16974
215	RIVER	DESPLAINES RIVER	RS 76.8	40.50	13632
216	RIVER	DESPLAINES RIVER	RS 77.8	40.50	10086
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	24798
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	89.75	16241
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	89.75	17275
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	89.75	17819
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	89.75	20188
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.41	6982
244	RIVER	DESPLAINES RIVER	RS 2500R	19.41	21777
241	GUERIN	DESPLAINES RIVER	RS 7025	19.41	6350
242	GUERIN	DESPLAINES RIVER	RS 4650	19.41	4669
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.91	1951
172	WASHINGTON	DESPLAINES RIVER	RS 4350W	18.91	559
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.91	4767
294	122ND	DESPLAINES RIVER	RS 0.69	41.71	3255
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	18.46	75
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.21	90
310	TIMBER RIDGE	DESPLAINES RIVER	RS 1.17	19.46	15
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	17.96	45
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	6.96	30
339	I-94	DESPLAINES RIVER	RS 6.36	17.71	4200
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	16.11	1534
65	MINER/DEMSTER	FARMERS-PRAIRIE CREEK	RS 4409	18.21	60
69	BALLARD	FARMERS-PRAIRIE CREEK	RS 26980.5	17.25	58
82	RIVER	FEEHANVILLE DITCH	RS 1780	107.06	14296
84	FEEHANVILLE	FEEHANVILLE DITCH	RS 7870	20.38	569
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	7.42	1196
150	GILMER	INDIAN CREEK	RS 71326	7.50	406
151	CHEVY CHASE	INDIAN CREEK	RS 69013	9.14	217
225	US HIGHWAY 45	INDIAN CREEK	RS 8238	13.60	446
227	IL ROUTE 83	INDIAN CREEK	RS 34841	9.47	468
264	GILMER	INDIAN CREEK	RS 3850G	7.67	552
267	TOWNLINE	INDIAN CREEK	RS 13350	11.35	603
305	93RD	JEROME CREEK	RS 1.04JC	19.18	75
298	I-94	KILBOURN DITCH	RS 0.78	17.44	15
341	12TH	KILBOURN DITCH	RS 8.01	22.19	120
86	KENSINGTON	MCDONALD CREEK	RS 2059	16.61	254
99	HINTZ	MCDONALD CREEK	RS 38122	15.44	204
254	WILLOW	MCDONALD CREEK	RS 1850	15.59	606
167	IL ROUTE 83	MILL CREEK	RS 89335	19.76	470
184	HUTCHINS	MILL CREEK	RS 47038	6.58	7263
189	DILLEYS	MILL CREEK	RS 4469	16.64	483
190	US HIGHWAY 41	MILL CREEK	RS 1838	19.19	517
228	BARRON	MILL CREEK	RS 84067	14.46	1229
229	CENTER	MILL CREEK	RS 89420	21.21	14
206	128TH	MILL CREEK	RS 39650	10.74	1443
200	IL-173	MILL CREEK	RS 27800	9.66	1748
194	KELLEY	MILL CREEK	RS 18400	10.29	1632
191	MILLBURN	MILL CREEK	RS 5900	16.61	362
274	GRAND	MILL CREEK	RS 26200	12.11	1035
193	ADAMS	NEWPORT DITCH	RS 23258	15.12	1488

Flooded Roads, 100-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_100YR	DUR_100YR
201	DELANEY	NEWPORT DITCH	RS 7321D	15.42	690
202	9TH	NEWPORT DITCH	RS 6710	15.49	705
230	9TH	NEWPORT DITCH	RS 7321N	15.14	796
13	15TH	SILVER CREEK	RS 6966.432	12.50	747
14	NORTH	SILVER CREEK	RS 9030.912	11.90	1012
18	FULLERTON	SILVER CREEK	RS 16683.744	17.69	107
19	MANNHEIM	SILVER CREEK	RS 22601.568	12.54	981
20	SCOTT	SILVER CREEK	RS 19226.592	13.19	955
22	GRAND	SILVER CREEK	RS 24899.424	18.14	264
26	IRVING PARK	SILVER CREEK	RS 34306.8	11.34	945
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	13.68	418
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	12.51	364
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	12.89	294

Flooded Roads, 500-year Storm, 2010 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
125	MILWAUKEE	APTAKISIC CREEK	RS 1950	107.94	10907
129	DEERFIELD	APTAKISIC CREEK	RS 15150	19.72	335
292	75TH	BRIGHTON CREEK	RS 0.58	13.71	75
300	89TH	BRIGHTON CREEK	RS 0.84	14.71	315
301	60TH	BRIGHTON CREEK	RS 0.84A	13.96	195
309	60TH	BRIGHTON CREEK	RS 1.14	18.21	1500
313	85TH	BRIGHTON CREEK	RS 1.29	14.21	795
340	31ST	BRIGHTON CREEK	RS 7.85	15.96	555
106	DUNDEE	BUFFALO CREEK	RS 56983	9.41	820
111	NORTHGATE	BUFFALO CREEK	RS 12111	8.71	2844
112	MCHENRY	BUFFALO CREEK	RS 14213	10.90	1718
113	RAND	BUFFALO CREEK	RS 50820	10.56	630
115	HICKS	BUFFALO CREEK	RS 54492	11.95	333
117	BALDWIN	BUFFALO CREEK	RS 47397	13.05	673
118	APTAKISIC	BUFFALO CREEK	RS 23920	13.08	1178
119	LAKE COOK	BUFFALO CREEK	RS 28633	15.86	1054
120	BUFFALO GROVE	BUFFALO CREEK	RS 25322	19.63	288
124	CHECKER	BUFFALO CREEK	RS 37164.41	16.23	1067
116	STATE HWY 53	BUFFALO CREEK	RS 46107.14	18.56	310
133	ROBERT PARKER COFFIN	BUFFALO CREEK	RS 47614.24	18.06	453
135	CUBA	BUFFALO CREEK	RS 69025.67	14.83	180
223	DUNDEE	BUFFALO CREEK	RS 15616	11.91	1434
222	DUNDEE	BUFFALO CREEK	RS 14444	10.80	1734
224	WHEELING	BUFFALO CREEK	RS 7653	8.50	3165
279	LAKE	BULL CREEK	RS 3160	14.67	428
155	LAKE	BULL CREEK	RS 12856.8	18.57	1451
158	WINCHESTER	BULL CREEK	RS 11008.8	18.43	1515
157	WINCHESTER	BULL CREEK	RS 14652	7.78	1436
159	US HWY 45	BULL CREEK	RS 13780.8	11.20	566
160	PETERSON	BULL CREEK	RS 10560	11.50	529
162	PETERSON	BULL CREEK	RS 5913.6	14.17	1313
304	75TH	CENTER CREEK	RS 1.04	19.47	15
30	25TH	CRYSTAL CREEK	RS 6278	15.05	276
209	IRVING PARK	CRYSTAL CREEK	RS 20121	13.85	393
7	MADISON	DESPLAINES RIVER	RS 50.211	113.44	2828
9	LAKE	DESPLAINES RIVER	RS 51.041	114.00	10857
10	CHICAGO	DESPLAINES RIVER	RS 51.63	114.00	15756
15	NORTH	DESPLAINES RIVER	RS 52.93	125.06	12119
17	1ST	DESPLAINES RIVER	RS 54.201	125.06	20761
21	GRAND	DESPLAINES RIVER	RS 55.101	119.97	13700
23	BELMONT	DESPLAINES RIVER	RS 55.651	120.09	13278
27	IRVING PARK	DESPLAINES RIVER	RS 56.921	120.78	11495
36	LAWRENCE	DESPLAINES RIVER	RS 57.921	120.78	1475
53	TOUHY	DESPLAINES RIVER	RS 62.001	116.38	674
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	116.38	13361
70	RAND	DESPLAINES RIVER	RS 65.391	107.06	13934
78	GOLF	DESPLAINES RIVER	RS 66.911G	108.16	22584
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	103.41	15132
110	DUNDEE	DESPLAINES RIVER	RS 74.341	40.50	10594
126	DEERFIELD	DESPLAINES RIVER	RS 76.76	40.50	9828
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	106.94	12554
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.28	12351
153	PARK	DESPLAINES RIVER	RS 87.81	18.28	6696
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	60.28	12931

Flooded Roads, 500-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
161	BUCKLEY	DESPLAINES RIVER	RS 91.11	60.28	3453
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.44	15886
179	GRAND	DESPLAINES RIVER	RS 97.12	89.75	15946
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	89.75	15168
192	WADSWORTH	DESPLAINES RIVER	RS 103.41	70.91	3694
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	63.53	10471
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.41	10339
211	RIVER	DESPLAINES RIVER	RS 51.67	114.00	3906
218	RIVER	DESPLAINES RIVER	RS 54.78	119.97	16191
219	RIVER	DESPLAINES RIVER	RS 55.27	120.09	16064
210	RIVER	DESPLAINES RIVER	RS 56.84	120.78	19381
212	RIVER	DESPLAINES RIVER	RS 63.04	116.38	16776
213	RIVER	DESPLAINES RIVER	RS 64.50R	110.19	18849
247	BUSSE	DESPLAINES RIVER	RS 64.50B	110.19	18081
246	MINER	DESPLAINES RIVER	RS 65.03	108.16	17609
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	108.16	17137
214	RIVER	DESPLAINES RIVER	RS 71.033R	103.41	21730
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	103.41	20204
215	RIVER	DESPLAINES RIVER	RS 76.8	40.50	17322
216	RIVER	DESPLAINES RIVER	RS 77.8	40.50	13419
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	89.75	29531
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	89.75	21503
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	89.75	22494
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	89.75	23050
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	89.75	25090
253	KILBOURNE	DESPLAINES RIVER	RS 110.3	19.41	4015
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.41	11707
244	RIVER	DESPLAINES RIVER	RS 2500R	19.41	21777
241	GUERIN	DESPLAINES RIVER	RS 7025	19.41	10884
242	GUERIN	DESPLAINES RIVER	RS 4650	19.41	8663
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.91	3801
178	IL ROUTE 132	DESPLAINES RIVER	RS 2500G	18.91	1344
172	WASHINGTON	DESPLAINES RIVER	RS 4350W	18.91	1455
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.91	12207
288	I-94	DESPLAINES RIVER	RS 0.34	18.71	135
294	122ND	DESPLAINES RIVER	RS 0.69	37.21	4545
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	18.21	120
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.21	120
310	TIMBER RIDGE	DESPLAINES RIVER	RS 1.17	18.71	60
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	17.71	75
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	6.71	75
324	I-94	DESPLAINES RIVER	RS 2	18.71	45
339	I-94	DESPLAINES RIVER	RS 6.36	13.96	6120
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	15.86	1991
62	BUSSE	FARMERS-PRAIRIE CREEK	RS 1566	18.43	286
65	MINER/DEMSTER	FARMERS-PRAIRIE CREEK	RS 4409	16.38	506
67	POTTER	FARMERS-PRAIRIE CREEK	RS 21392	18.63	83
68	BALLARD	FARMERS-PRAIRIE CREEK	RS 6154.5	17.20	373
69	BALLARD	FARMERS-PRAIRIE CREEK	RS 26980.5	16.25	249
82	RIVER	FEEHANVILLE DITCH	RS 1780	107.06	17364
83	WOLF	FEEHANVILLE DITCH	RS 6620	20.38	904
84	FEEHANVILLE	FEEHANVILLE DITCH	RS 7870	20.38	1804
143	PORT CLINTON	INDIAN CREEK	RS 7238	15.89	60
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	5.69	2108

Flooded Roads, 500-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
147	INDIAN CREEK	INDIAN CREEK	RS 52877	20.50	335
149	MIDLOTHIAN	INDIAN CREEK	RS 60783	13.42	372
150	GILMER	INDIAN CREEK	RS 71326	5.59	773
151	CHEVY CHASE	INDIAN CREEK	RS 69013	6.19	773
225	US HIGHWAY 45	INDIAN CREEK	RS 8238	9.40	1236
227	IL ROUTE 83	INDIAN CREEK	RS 34841	6.95	1297
226	PORT CLINTON	INDIAN CREEK	RS 520	7.47	1019
259	HALF DAY	INDIAN CREEK	RS 3475	10.29	372
264	GILMER	INDIAN CREEK	RS 3850G	5.54	996
267	TOWNLINE	INDIAN CREEK	RS 13350	8.39	1096
268	BUTTERFIELD	INDIAN CREEK	RS 24500	11.22	185
289	BAIN STATION	JEROME CREEK	RS 0.48	19.93	210
305	93RD	JEROME CREEK	RS 1.04JC	18.68	120
335	93RD	JEROME CREEK	RS 4.45	19.93	75
291	75TH	KILBOURN DITCH	RS 0.51	17.94	15
298	I-94	KILBOURN DITCH	RS 0.78	16.94	75
315	248TH	KILBOURN DITCH	RS 1.33	27.94	150
329	60TH	KILBOURN DITCH	RS 2.81	16.94	540
332	52ND	KILBOURN DITCH	RS 3.46	16.94	570
341	12TH	KILBOURN DITCH	RS 8.01	19.44	480
86	KENSINGTON	MCDONALD CREEK	RS 2059	15.23	658
99	HINTZ	MCDONALD CREEK	RS 38122	14.24	392
254	WILLOW	MCDONALD CREEK	RS 1850	14.64	774
165	BELVIDERE	MILL CREEK	RS 92963	17.21	244
167	IL ROUTE 83	MILL CREEK	RS 89335	14.98	1378
168	CENTER	MILL CREEK	RS 88133	22.48	317
171	ATKINSON	MILL CREEK	RS 82208	16.01	1431
182	ROLLINS	MILL CREEK	RS 65515	30.76	148
184	HUTCHINS	MILL CREEK	RS 47038	1.96	8685
187	HUNT CLUB	MILL CREEK	RS 16756	14.43	564
188	I 94	MILL CREEK	RS 5368	17.76	317
189	DILLEYS	MILL CREEK	RS 4469	12.88	1297
190	US HIGHWAY 41	MILL CREEK	RS 1838	14.66	1330
228	BARRON	MILL CREEK	RS 84067	10.98	1854
229	CENTER	MILL CREEK	RS 89420	15.06	1185
206	128TH	MILL CREEK	RS 39650	7.08	2109
200	IL-173	MILL CREEK	RS 27800	5.26	2417
194	KELLEY	MILL CREEK	RS 18400	5.96	2295
191	MILLBURN	MILL CREEK	RS 5900	12.16	1010
274	GRAND	MILL CREEK	RS 26200	8.74	1552
281	GRAND	MILL CREEK	RS 60846	30.46	2525
193	ADAMS	NEWPORT DITCH	RS 23258	14.61	1865
198	IL ROUTE 173	NEWPORT DITCH	RS 13144	19.12	64
201	DELANEY	NEWPORT DITCH	RS 7321D	14.84	844
202	9TH	NEWPORT DITCH	RS 6710	14.92	857
204	KILBOURNE	NEWPORT DITCH	RS 3627	17.51	489
230	9TH	NEWPORT DITCH	RS 7321N	14.61	932
13	15TH	SILVER CREEK	RS 6966.432	11.80	858
14	NORTH	SILVER CREEK	RS 9030.912	11.35	1128
18	FULLERTON	SILVER CREEK	RS 16683.744	16.12	292
19	MANNHEIM	SILVER CREEK	RS 22601.568	11.77	1100
20	SCOTT	SILVER CREEK	RS 19226.592	12.32	1080
22	GRAND	SILVER CREEK	RS 24899.424	14.69	550
26	IRVING PARK	SILVER CREEK	RS 34306.8	10.25	1059

Flooded Roads, 500-year Storm, 2010 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
74	GOLF	WELLER CREEK	RS 16100	5.52	129
76	MOUNT PROSPECT	WELLER CREEK	RS 17645	3.29	296
43	RIVER	WILLOW-HIGGINS CREEK	RS 1774	23.29	534
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	12.59	568
46	HIGGINS	WILLOW-HIGGINS CREEK	RS 10243	22.09	677
47	MANNHEIM	WILLOW-HIGGINS CREEK	RS 12181	21.91	719
50	BUSSE	WILLOW-HIGGINS CREEK	RS 39922	13.89	219
51	WOLF	WILLOW-HIGGINS CREEK	RS 19557	13.74	1022
52	TOUHY	WILLOW-HIGGINS CREEK	RS 24520	21.13	372
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	11.49	543
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	11.88	479
49	LUNT	WILLOW-HIGGINS CREEK	RS 39072	14.79	98

Flooded Roads, 1-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_1YR	DUR_1YR
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	15.72	338
184	HUTCHINS	MILL CREEK	RS 47038	50.59	1486

Flooded Roads, 2-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_2YR	DUR_2YR
157	WINCHESTER	BULL CREEK	RS 14652	14.47	105
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	1634
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	1367
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	944
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	5690
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	957
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.59	30
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	15.32	438
184	HUTCHINS	MILL CREEK	RS 47038	45.25	2682
26	IRVING PARK	SILVER CREEK	RS 34306.8	25.46	327

Flooded Roads, 5-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_5YR	DUR_5YR
111	NORTHGATE	BUFFALO CREEK	RS 12111	17.56	324
224	WHEELING	BUFFALO CREEK	RS 7653	17.29	380
157	WINCHESTER	BULL CREEK	RS 14652	13.30	274
10	CHICAGO	DESPLAINES RIVER	RS 51.63	155.59	907
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	4319
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	10814
218	RIVER	DESPLAINES RIVER	RS 54.78	141.56	1613
219	RIVER	DESPLAINES RIVER	RS 55.27	141.69	1348
210	RIVER	DESPLAINES RIVER	RS 56.84	142.28	3506
212	RIVER	DESPLAINES RIVER	RS 63.04	143.19	1070
213	RIVER	DESPLAINES RIVER	RS 64.50R	136.34	2177
247	BUSSE	DESPLAINES RIVER	RS 64.50B	136.34	1912
246	MINER	DESPLAINES RIVER	RS 65.03	125.97	1378
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	125.97	1125
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	10725
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	106.31	9215
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	12608
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	86.38	4466
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	86.38	5409
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	86.38	5879
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	86.38	8063
244	RIVER	DESPLAINES RIVER	RS 2500R	19.16	9905
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.59	963
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	1501
307	TOBIN	DESPLAINES RIVER	RS 1.09	17.09	45
339	I-94	DESPLAINES RIVER	RS 6.36	34.59	1695
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	15.02	593
82	RIVER	FEEHANVILLE DITCH	RS 1780	124.25	1499
184	HUTCHINS	MILL CREEK	RS 47038	30.95	4309
200	IL-173	MILL CREEK	RS 27800	35.45	361
194	KELLEY	MILL CREEK	RS 18400	38.29	15
193	ADAMS	NEWPORT DITCH	RS 23258	21.15	433
230	9TH	NEWPORT DITCH	RS 7321N	20.92	196
26	IRVING PARK	SILVER CREEK	RS 34306.8	23.69	540

Flooded Roads, 10-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_10YR	DUR_10YR
301	60TH	BRIGHTON CREEK	RS 0.84A	26.09	30
313	85TH	BRIGHTON CREEK	RS 1.29	26.59	135
111	NORTHGATE	BUFFALO CREEK	RS 12111	16.23	551
224	WHEELING	BUFFALO CREEK	RS 7653	16.06	591
157	WINCHESTER	BULL CREEK	RS 14652	12.60	363
10	CHICAGO	DESPLAINES RIVER	RS 51.63	155.59	3015
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	11909
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	13067
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	106.31	6167
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	106.31	11631
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.22	2369
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.59	1330
179	GRAND	DESPLAINES RIVER	RS 97.12	86.38	3271
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	86.38	2072
210	RIVER	DESPLAINES RIVER	RS 56.84	142.28	10738
212	RIVER	DESPLAINES RIVER	RS 63.04	143.19	2631
213	RIVER	DESPLAINES RIVER	RS 64.50R	136.34	10333
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	12959
215	RIVER	DESPLAINES RIVER	RS 76.8	38.97	7779
218	RIVER	DESPLAINES RIVER	RS 54.78	141.56	3212
219	RIVER	DESPLAINES RIVER	RS 55.27	141.69	3106
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	86.38	9251
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	17097
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	86.38	8713
244	RIVER	DESPLAINES RIVER	RS 2500R	19.16	14618
246	MINER	DESPLAINES RIVER	RS 65.03	125.97	9098
247	BUSSE	DESPLAINES RIVER	RS 64.50B	136.34	9464
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	125.97	8688
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	86.38	7824
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	86.38	12011
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	1688
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	18.09	15
307	TOBIN	DESPLAINES RIVER	RS 1.09	16.59	60
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	17.59	30
339	I-94	DESPLAINES RIVER	RS 6.36	27.34	2580
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	14.85	727
82	RIVER	FEEHANVILLE DITCH	RS 1780	124.25	8688
305	93RD	JEROME CREEK	RS 1.04JC	28.81	15
184	HUTCHINS	MILL CREEK	RS 47038	29.59	4887
194	KELLEY	MILL CREEK	RS 18400	33.64	611
200	IL-173	MILL CREEK	RS 27800	32.95	729
193	ADAMS	NEWPORT DITCH	RS 23258	19.40	839
201	DELANEY	NEWPORT DITCH	RS 7321D	20.12	227
202	9TH	NEWPORT DITCH	RS 6710	20.02	303
230	9TH	NEWPORT DITCH	RS 7321N	18.87	467
19	MANNHEIM	SILVER CREEK	RS 22601.568	25.26	67
26	IRVING PARK	SILVER CREEK	RS 34306.8	22.76	655

Flooded Roads, 25-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_25YR	DUR_25YR
292	75TH	BRIGHTON CREEK	RS 0.58	25.34	30
301	60TH	BRIGHTON CREEK	RS 0.84A	25.34	90
309	60TH	BRIGHTON CREEK	RS 1.14	34.34	300
313	85TH	BRIGHTON CREEK	RS 1.29	25.84	315
106	DUNDEE	BUFFALO CREEK	RS 56983	15.39	322
111	NORTHGATE	BUFFALO CREEK	RS 12111	15.23	1594
222	DUNDEE	BUFFALO CREEK	RS 14444	18.39	58
224	WHEELING	BUFFALO CREEK	RS 7653	15.09	1661
157	WINCHESTER	BULL CREEK	RS 14652	11.84	544
159	US HWY 45	BULL CREEK	RS 13780.8	13.77	255
160	PETERSON	BULL CREEK	RS 10560	14.07	109
10	CHICAGO	DESPLAINES RIVER	RS 51.63	155.59	4560
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	14389
21	GRAND	DESPLAINES RIVER	RS 55.101	141.56	2444
23	BELMONT	DESPLAINES RIVER	RS 55.651	141.69	1752
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	143.19	2080
70	RAND	DESPLAINES RIVER	RS 65.391	124.25	7825
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	15770
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	106.31	9798
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	115.25	3158
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.75	3610
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	70.22	4303
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.22	6876
179	GRAND	DESPLAINES RIVER	RS 97.12	86.38	7095
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	86.38	6529
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	53.06	3320
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.34	3288
218	RIVER	DESPLAINES RIVER	RS 54.78	141.56	10309
219	RIVER	DESPLAINES RIVER	RS 55.27	141.69	10141
210	RIVER	DESPLAINES RIVER	RS 56.84	142.28	13332
212	RIVER	DESPLAINES RIVER	RS 63.04	143.19	10809
213	RIVER	DESPLAINES RIVER	RS 64.50R	136.34	12843
247	BUSSE	DESPLAINES RIVER	RS 64.50B	136.34	12108
246	MINER	DESPLAINES RIVER	RS 65.03	125.97	11712
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	125.97	11428
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	15677
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	106.31	14141
215	RIVER	DESPLAINES RIVER	RS 76.8	38.97	10917
216	RIVER	DESPLAINES RIVER	RS 77.8	38.97	4125
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	21197
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	86.38	11674
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	86.38	12733
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	86.38	13329
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	86.38	16264
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.16	2947
244	RIVER	DESPLAINES RIVER	RS 2500R	19.16	18600
241	GUERIN	DESPLAINES RIVER	RS 7025	19.16	1230
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.59	1564
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	2413
294	122ND	DESPLAINES RIVER	RS 0.69	48.84	1500
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	17.59	45
307	TOBIN	DESPLAINES RIVER	RS 1.09	16.59	75
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	17.34	30

Flooded Roads, 25-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_25YR	DUR_25YR
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	6.34	30
339	I-94	DESPLAINES RIVER	RS 6.36	22.59	3405
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	14.70	983
82	RIVER	FEEHANVILLE DITCH	RS 1780	124.25	11528
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	14.96	312
305	93RD	JEROME CREEK	RS 1.04JC	28.56	45
254	WILLOW	MCDONALD CREEK	RS 1850	17.95	149
184	HUTCHINS	MILL CREEK	RS 47038	27.79	5777
228	BARRON	MILL CREEK	RS 84067	36.79	636
206	128TH	MILL CREEK	RS 39650	31.79	782
200	IL-173	MILL CREEK	RS 27800	30.52	1146
194	KELLEY	MILL CREEK	RS 18400	31.04	1041
274	GRAND	MILL CREEK	RS 26200	32.90	520
193	ADAMS	NEWPORT DITCH	RS 23258	18.34	1232
201	DELANEY	NEWPORT DITCH	RS 7321D	18.45	475
202	9TH	NEWPORT DITCH	RS 6710	18.52	506
230	9TH	NEWPORT DITCH	RS 7321N	17.97	633
13	15TH	SILVER CREEK	RS 6966.432	23.46	538
14	NORTH	SILVER CREEK	RS 9030.912	23.01	667
19	MANNHEIM	SILVER CREEK	RS 22601.568	23.06	781
20	SCOTT	SILVER CREEK	RS 19226.592	31.11	103
26	IRVING PARK	SILVER CREEK	RS 34306.8	21.74	777
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	21.33	193
51	WOLF	WILLOW-HIGGINS CREEK	RS 19557	21.04	185
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	19.89	165
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	20.73	41

Flooded Roads, 50-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_50YR	DUR_50YR
125	MILWAUKEE	APTAKISIC CREEK	RS 1950	118.19	2731
292	75TH	BRIGHTON CREEK	RS 0.58	24.84	30
300	89TH	BRIGHTON CREEK	RS 0.84	26.84	30
301	60TH	BRIGHTON CREEK	RS 0.84A	25.09	120
309	60TH	BRIGHTON CREEK	RS 1.14	31.84	705
313	85TH	BRIGHTON CREEK	RS 1.29	25.34	495
106	DUNDEE	BUFFALO CREEK	RS 56983	14.53	480
111	NORTHGATE	BUFFALO CREEK	RS 12111	14.48	1809
112	MCHENRY	BUFFALO CREEK	RS 14213	16.44	1080
113	RAND	BUFFALO CREEK	RS 50820	16.59	118
124	CHECKER	BUFFALO CREEK	RS 37164.41	24.93	406
222	DUNDEE	BUFFALO CREEK	RS 14444	16.26	1111
224	WHEELING	BUFFALO CREEK	RS 7653	14.34	1877
155	LAKE	BULL CREEK	RS 12856.8	23.87	617
158	WINCHESTER	BULL CREEK	RS 11008.8	23.64	656
157	WINCHESTER	BULL CREEK	RS 14652	11.20	636
159	US HWY 45	BULL CREEK	RS 13780.8	12.94	339
160	PETERSON	BULL CREEK	RS 10560	13.24	304
209	IRVING PARK	CRYSTAL CREEK	RS 20121	17.38	103
10	CHICAGO	DESPLAINES RIVER	RS 51.63	155.59	11846
15	NORTH	DESPLAINES RIVER	RS 52.93	148.50	1895
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	16255
21	GRAND	DESPLAINES RIVER	RS 55.101	141.56	3806
23	BELMONT	DESPLAINES RIVER	RS 55.651	141.69	3438
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	143.19	9434
70	RAND	DESPLAINES RIVER	RS 65.391	124.25	10428
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	17913
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	106.31	11561
110	DUNDEE	DESPLAINES RIVER	RS 74.341	38.97	1528
126	DEERFIELD	DESPLAINES RIVER	RS 76.76	38.97	1610
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	115.25	5954
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.75	6212
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	70.22	6596
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.22	9132
179	GRAND	DESPLAINES RIVER	RS 97.12	86.38	9232
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	86.38	8585
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	53.06	5115
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.34	4808
218	RIVER	DESPLAINES RIVER	RS 54.78	141.56	12480
219	RIVER	DESPLAINES RIVER	RS 55.27	141.69	12354
210	RIVER	DESPLAINES RIVER	RS 56.84	142.28	15122
212	RIVER	DESPLAINES RIVER	RS 63.04	143.19	12659
213	RIVER	DESPLAINES RIVER	RS 64.50R	136.34	14676
247	BUSSE	DESPLAINES RIVER	RS 64.50B	136.34	13930
246	MINER	DESPLAINES RIVER	RS 65.03	125.97	13464
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	125.97	13174
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	17832
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	106.31	16118
215	RIVER	DESPLAINES RIVER	RS 76.8	38.97	12883
216	RIVER	DESPLAINES RIVER	RS 77.8	38.97	9401
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	24536
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	86.38	14457
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	86.38	15557

Flooded Roads, 50-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_50YR	DUR_50YR
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	86.38	16158
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	86.38	18966
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.16	5768
244	RIVER	DESPLAINES RIVER	RS 2500R	19.16	20780
241	GUERIN	DESPLAINES RIVER	RS 7025	19.16	5024
242	GUERIN	DESPLAINES RIVER	RS 4650	19.16	2611
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.59	1697
172	WASHINGTON	DESPLAINES RIVER	RS 4350W	18.59	93
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	3114
294	122ND	DESPLAINES RIVER	RS 0.69	44.34	2445
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	17.34	90
307	TOBIN	DESPLAINES RIVER	RS 1.09	16.34	75
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	17.09	45
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	6.09	45
339	I-94	DESPLAINES RIVER	RS 6.36	18.09	3840
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	14.60	1263
82	RIVER	FEEHANVILLE DITCH	RS 1780	124.25	13416
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	13.28	666
150	GILMER	INDIAN CREEK	RS 71326	14.69	69
267	TOWNLINE	INDIAN CREEK	RS 13350	19.79	100
305	93RD	JEROME CREEK	RS 1.04JC	28.31	60
335	93RD	JEROME CREEK	RS 4.45	29.56	30
254	WILLOW	MCDONALD CREEK	RS 1850	16.00	469
184	HUTCHINS	MILL CREEK	RS 47038	26.24	6422
228	BARRON	MILL CREEK	RS 84067	33.89	1181
206	128TH	MILL CREEK	RS 39650	30.00	1103
200	IL-173	MILL CREEK	RS 27800	29.12	1422
194	KELLEY	MILL CREEK	RS 18400	29.55	1318
274	GRAND	MILL CREEK	RS 26200	31.25	773
193	ADAMS	NEWPORT DITCH	RS 23258	17.82	1489
201	DELANEY	NEWPORT DITCH	RS 7321D	17.87	591
202	9TH	NEWPORT DITCH	RS 6710	17.94	617
230	9TH	NEWPORT DITCH	RS 7321N	17.50	743
13	15TH	SILVER CREEK	RS 6966.432	22.29	674
14	NORTH	SILVER CREEK	RS 9030.912	21.99	809
19	MANNHEIM	SILVER CREEK	RS 22601.568	22.17	914
20	SCOTT	SILVER CREEK	RS 19226.592	28.02	382
22	GRAND	SILVER CREEK	RS 24899.424	28.36	36
26	IRVING PARK	SILVER CREEK	RS 34306.8	20.89	873
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	20.39	322
51	WOLF	WILLOW-HIGGINS CREEK	RS 19557	19.98	434
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	19.13	273
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	19.59	197

Flooded Roads, 100-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_100YR	DUR_100YR
125	MILWAUKEE	APTAKISIC CREEK	RS 1950	118.19	8321
292	75TH	BRIGHTON CREEK	RS 0.58	24.59	45
300	89TH	BRIGHTON CREEK	RS 0.84	26.09	180
301	60TH	BRIGHTON CREEK	RS 0.84A	24.84	150
309	60TH	BRIGHTON CREEK	RS 1.14	30.34	975
313	85TH	BRIGHTON CREEK	RS 1.29	25.09	630
340	31ST	BRIGHTON CREEK	RS 7.85	30.09	180
106	DUNDEE	BUFFALO CREEK	RS 56983	13.91	610
111	NORTHGATE	BUFFALO CREEK	RS 12111	13.81	1999
112	MCHENRY	BUFFALO CREEK	RS 14213	15.58	1327
113	RAND	BUFFALO CREEK	RS 50820	15.23	322
118	APTAKISIC	BUFFALO CREEK	RS 23920	26.18	270
119	LAKE COOK	BUFFALO CREEK	RS 28633	24.79	429
124	CHECKER	BUFFALO CREEK	RS 37164.41	23.18	616
223	DUNDEE	BUFFALO CREEK	RS 15616	17.49	988
222	DUNDEE	BUFFALO CREEK	RS 14444	15.46	1343
224	WHEELING	BUFFALO CREEK	RS 7653	13.68	2078
155	LAKE	BULL CREEK	RS 12856.8	21.52	931
158	WINCHESTER	BULL CREEK	RS 11008.8	21.39	960
157	WINCHESTER	BULL CREEK	RS 14652	10.55	744
159	US HWY 45	BULL CREEK	RS 13780.8	12.37	410
160	PETERSON	BULL CREEK	RS 10560	12.64	379
162	PETERSON	BULL CREEK	RS 5913.6	23.27	364
304	75TH	CENTER CREEK	RS 1.04	28.38	15
209	IRVING PARK	CRYSTAL CREEK	RS 20121	16.70	219
9	LAKE	DESPLAINES RIVER	RS 51.041	155.59	2866
10	CHICAGO	DESPLAINES RIVER	RS 51.63	155.59	13508
15	NORTH	DESPLAINES RIVER	RS 52.93	148.50	3543
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	17956
21	GRAND	DESPLAINES RIVER	RS 55.101	141.56	11050
23	BELMONT	DESPLAINES RIVER	RS 55.651	141.69	10418
27	IRVING PARK	DESPLAINES RIVER	RS 56.921	142.28	2724
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	143.19	11153
70	RAND	DESPLAINES RIVER	RS 65.391	124.25	11787
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	19745
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	106.31	12861
110	DUNDEE	DESPLAINES RIVER	RS 74.341	38.97	4738
126	DEERFIELD	DESPLAINES RIVER	RS 76.76	38.97	4813
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	115.25	7936
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.75	8113
153	PARK	DESPLAINES RIVER	RS 87.81	18.75	2176
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	70.22	8485
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.22	11325
179	GRAND	DESPLAINES RIVER	RS 97.12	86.38	11375
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	86.38	10625
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	53.06	6703
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.34	6337
218	RIVER	DESPLAINES RIVER	RS 54.78	141.56	13927
219	RIVER	DESPLAINES RIVER	RS 55.27	141.69	13803
210	RIVER	DESPLAINES RIVER	RS 56.84	142.28	16706
212	RIVER	DESPLAINES RIVER	RS 63.04	143.19	14075
213	RIVER	DESPLAINES RIVER	RS 64.50R	136.34	16237
247	BUSSE	DESPLAINES RIVER	RS 64.50B	136.34	15459

Flooded Roads, 100-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_100YR	DUR_100YR
246	MINER	DESPLAINES RIVER	RS 65.03	125.97	14918
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	125.97	14605
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	19743
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	106.31	17718
215	RIVER	DESPLAINES RIVER	RS 76.8	38.97	14570
216	RIVER	DESPLAINES RIVER	RS 77.8	38.97	10935
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	25874
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	86.38	16915
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	86.38	18015
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	86.38	18606
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	86.38	21075
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.16	7664
244	RIVER	DESPLAINES RIVER	RS 2500R	19.16	22394
241	GUERIN	DESPLAINES RIVER	RS 7025	19.16	7006
242	GUERIN	DESPLAINES RIVER	RS 4650	19.16	5411
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.59	2261
178	IL ROUTE 132	DESPLAINES RIVER	RS 2500G	18.59	328
172	WASHINGTON	DESPLAINES RIVER	RS 4350W	18.59	1149
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	6665
294	122ND	DESPLAINES RIVER	RS 0.69	41.34	3060
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	17.34	105
307	TOBIN	DESPLAINES RIVER	RS 1.09	16.34	90
310	TIMBER RIDGE	DESPLAINES RIVER	RS 1.17	18.59	15
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	16.84	60
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	5.84	60
317	I-94	DESPLAINES RIVER	RS 1.63	18.34	45
339	I-94	DESPLAINES RIVER	RS 6.36	16.34	4260
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	14.52	1534
65	MINER/DEMSTER	FARMERS-PRAIRIE CREEK	RS 4409	16.62	60
69	BALLARD	FARMERS-PRAIRIE CREEK	RS 26980.5	15.65	58
82	RIVER	FEEHANVILLE DITCH	RS 1780	124.25	14856
84	FEEHANVILLE	FEEHANVILLE DITCH	RS 7870	20.28	43
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	12.16	1199
150	GILMER	INDIAN CREEK	RS 71326	12.24	406
151	CHEVY CHASE	INDIAN CREEK	RS 69013	13.88	217
264	GILMER	INDIAN CREEK	RS 3850G	12.41	552
267	TOWNLINE	INDIAN CREEK	RS 13350	15.98	616
305	93RD	JEROME CREEK	RS 1.04JC	28.31	60
335	93RD	JEROME CREEK	RS 4.45	29.06	75
298	I-94	KILBOURN DITCH	RS 0.78	26.13	15
341	12TH	KILBOURN DITCH	RS 8.01	31.13	120
86	KENSINGTON	MCDONALD CREEK	RS 2059	16.08	280
99	HINTZ	MCDONALD CREEK	RS 38122	15.08	206
254	WILLOW	MCDONALD CREEK	RS 1850	15.17	618
167	IL ROUTE 83	MILL CREEK	RS 89335	36.59	576
171	ATKINSON	MILL CREEK	RS 82208	40.09	470
184	HUTCHINS	MILL CREEK	RS 47038	24.07	7205
189	DILLEYS	MILL CREEK	RS 4469	34.37	468
190	US HIGHWAY 41	MILL CREEK	RS 1838	36.60	533
228	BARRON	MILL CREEK	RS 84067	31.79	1326
229	CENTER	MILL CREEK	RS 89420	37.59	38
206	128TH	MILL CREEK	RS 39650	28.34	1443
200	IL-173	MILL CREEK	RS 27800	27.25	1748

Flooded Roads, 100-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_100YR	DUR_100YR
194	KELLEY	MILL CREEK	RS 18400	27.89	1632
191	MILLBURN	MILL CREEK	RS 5900	34.20	361
274	GRAND	MILL CREEK	RS 26200	29.70	1035
193	ADAMS	NEWPORT DITCH	RS 23258	17.40	1569
201	DELANEY	NEWPORT DITCH	RS 7321D	17.42	711
202	9TH	NEWPORT DITCH	RS 6710	17.49	734
204	KILBOURNE	NEWPORT DITCH	RS 3627	22.10	142
230	9TH	NEWPORT DITCH	RS 7321N	17.09	845
13	15TH	SILVER CREEK	RS 6966.432	21.74	744
14	NORTH	SILVER CREEK	RS 9030.912	21.54	884
18	FULLERTON	SILVER CREEK	RS 16683.744	26.86	8
19	MANNHEIM	SILVER CREEK	RS 22601.568	21.74	984
20	SCOTT	SILVER CREEK	RS 19226.592	26.71	498
22	GRAND	SILVER CREEK	RS 24899.424	26.66	226
26	IRVING PARK	SILVER CREEK	RS 34306.8	20.29	937
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	19.71	417
51	WOLF	WILLOW-HIGGINS CREEK	RS 19557	19.24	654
52	TOUHY	WILLOW-HIGGINS CREEK	RS 24520	30.76	121
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	18.54	364
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	18.93	294

Flooded Roads, 500-year Storm, 2020 Conditions.

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
125	MILWAUKEE	APTAKISIC CREEK	RS 1950	118.19	11536
129	DEERFIELD	APTAKISIC CREEK	RS 15150	19.72	335
292	75TH	BRIGHTON CREEK	RS 0.58	24.34	75
300	89TH	BRIGHTON CREEK	RS 0.84	25.34	315
301	60TH	BRIGHTON CREEK	RS 0.84A	24.59	195
309	60TH	BRIGHTON CREEK	RS 1.14	28.84	1485
313	85TH	BRIGHTON CREEK	RS 1.29	24.59	825
340	31ST	BRIGHTON CREEK	RS 7.85	26.34	570
106	DUNDEE	BUFFALO CREEK	RS 56983	12.38	829
111	NORTHGATE	BUFFALO CREEK	RS 12111	11.71	2872
112	MCHENRY	BUFFALO CREEK	RS 14213	13.94	1723
113	RAND	BUFFALO CREEK	RS 50820	13.54	638
115	HICKS	BUFFALO CREEK	RS 54492	14.93	343
117	BALDWIN	BUFFALO CREEK	RS 47397	16.01	682
118	APTAKISIC	BUFFALO CREEK	RS 23920	16.11	1183
119	LAKE COOK	BUFFALO CREEK	RS 28633	18.79	1065
120	BUFFALO GROVE	BUFFALO CREEK	RS 25322	22.43	310
124	CHECKER	BUFFALO CREEK	RS 37164.41	19.19	1075
116	STATE HWY 53	BUFFALO CREEK	RS 46107.14	21.56	318
133	ROBERT PARKER COFFIN	BUFFALO CREEK	RS 47614.24	21.06	460
135	CUBA	BUFFALO CREEK	RS 69025.67	17.76	191
223	DUNDEE	BUFFALO CREEK	RS 15616	14.96	1439
222	DUNDEE	BUFFALO CREEK	RS 14444	13.83	1739
224	WHEELING	BUFFALO CREEK	RS 7653	11.48	3226
279	LAKE	BULL CREEK	RS 3160	14.64	428
155	LAKE	BULL CREEK	RS 12856.8	18.50	1416
158	WINCHESTER	BULL CREEK	RS 11008.8	18.42	1447
157	WINCHESTER	BULL CREEK	RS 14652	8.57	1099
159	US HWY 45	BULL CREEK	RS 13780.8	11.10	567
160	PETERSON	BULL CREEK	RS 10560	11.39	532
162	PETERSON	BULL CREEK	RS 5913.6	14.10	1289
304	75TH	CENTER CREEK	RS 1.04	27.88	45
30	25TH	CRYSTAL CREEK	RS 6278	16.83	276
209	IRVING PARK	CRYSTAL CREEK	RS 20121	15.63	393
7	MADISON	DESPLAINES RIVER	RS 50.211	155.41	3666
9	LAKE	DESPLAINES RIVER	RS 51.041	155.59	11995
10	CHICAGO	DESPLAINES RIVER	RS 51.63	155.59	16339
15	NORTH	DESPLAINES RIVER	RS 52.93	148.50	12822
17	1ST	DESPLAINES RIVER	RS 54.201	148.50	21198
21	GRAND	DESPLAINES RIVER	RS 55.101	141.56	14234
23	BELMONT	DESPLAINES RIVER	RS 55.651	141.69	13869
27	IRVING PARK	DESPLAINES RIVER	RS 56.921	142.28	12145
36	LAWRENCE	DESPLAINES RIVER	RS 57.921	142.28	2441
53	TOUHY	DESPLAINES RIVER	RS 62.001	143.19	7961
60	ALGONQUIN	DESPLAINES RIVER	RS 64.221	143.19	13844
70	RAND	DESPLAINES RIVER	RS 65.391	124.25	14386
78	GOLF	DESPLAINES RIVER	RS 66.911G	125.97	23427
91	MILWAUKEE	DESPLAINES RIVER	RS 71.033M	106.31	15685
110	DUNDEE	DESPLAINES RIVER	RS 74.341	38.97	11031
126	DEERFIELD	DESPLAINES RIVER	RS 76.76	38.97	10606
141	HALF DAY	DESPLAINES RIVER	RS 80.21	115.25	1100
148	IL ROUTE 60	DESPLAINES RIVER	RS 83.66	115.25	13291
152	ROCKLAND	DESPLAINES RIVER	RS 87.31	18.75	13007
153	PARK	DESPLAINES RIVER	RS 87.81	18.75	7276

Flooded Roads, 500-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
154	OAK SPRING	DESPLAINES RIVER	RS 88.41	70.22	13740
161	BUCKLEY	DESPLAINES RIVER	RS 91.11	70.22	4127
166	IL ROUTE 120	DESPLAINES RIVER	RS 94.51	18.22	16181
179	GRAND	DESPLAINES RIVER	RS 97.12	86.38	16389
180	US HIGHWAY 41	DESPLAINES RIVER	RS 98.08H	86.38	15563
192	WADSWORTH	DESPLAINES RIVER	RS 103.41	63.38	4323
199	IL ROUTE 173	DESPLAINES RIVER	RS 107.11	53.06	10966
205	RUSSELL	DESPLAINES RIVER	RS 109.60	19.34	10682
211	RIVER	DESPLAINES RIVER	RS 51.67	155.59	4672
218	RIVER	DESPLAINES RIVER	RS 54.78	141.56	16770
219	RIVER	DESPLAINES RIVER	RS 55.27	141.69	16634
210	RIVER	DESPLAINES RIVER	RS 56.84	142.28	19920
212	RIVER	DESPLAINES RIVER	RS 63.04	143.19	17039
213	RIVER	DESPLAINES RIVER	RS 64.50R	136.34	19441
247	BUSSE	DESPLAINES RIVER	RS 64.50B	136.34	18622
246	MINER	DESPLAINES RIVER	RS 65.03	125.97	17994
248	COLLEGE CIRCLE	DESPLAINES RIVER	RS 67.48	125.97	17654
214	RIVER	DESPLAINES RIVER	RS 71.033R	106.31	22716
98	MILWAUKEE	DESPLAINES RIVER	RS 72.86	106.31	21091
215	RIVER	DESPLAINES RIVER	RS 76.8	38.97	18144
216	RIVER	DESPLAINES RIVER	RS 77.8	38.97	14212
238	OLD GRAND	DESPLAINES RIVER	RS 97.02	86.38	30799
251	MILWAUKEE	DESPLAINES RIVER	RS 97.08M	86.38	22314
239	IL ROUTE 132	DESPLAINES RIVER	RS 97.08L	86.38	23362
237	KILBOURNE	DESPLAINES RIVER	RS 97.81	86.38	24266
252	US HIGHWAY 41	DESPLAINES RIVER	RS 98.59	86.38	25694
253	KILBOURNE	DESPLAINES RIVER	RS 110.3	19.34	4199
243	BUCKLEY	DESPLAINES RIVER	RS 2500T	19.16	12425
244	RIVER	DESPLAINES RIVER	RS 2500R	19.16	22394
241	GUERIN	DESPLAINES RIVER	RS 7025	19.16	11634
242	GUERIN	DESPLAINES RIVER	RS 4650	19.16	9302
177	OPLAINE	DESPLAINES RIVER	RS 1125	18.59	5224
178	IL ROUTE 132	DESPLAINES RIVER	RS 2500G	18.59	1404
172	WASHINGTON	DESPLAINES RIVER	RS 4350W	18.59	1500
273	GREENLEAF	DESPLAINES RIVER	RS 8550	18.59	13603
231	DELANEY	DESPLAINES RIVER	RS 11625	18.59	181
288	I-94	DESPLAINES RIVER	RS 0.34	17.59	135
294	122ND	DESPLAINES RIVER	RS 0.69	36.84	4320
295	GREEN BAY	DESPLAINES RIVER	RS 0.69A	16.84	150
307	TOBIN	DESPLAINES RIVER	RS 1.09	16.09	105
310	TIMBER RIDGE	DESPLAINES RIVER	RS 1.17	17.59	60
311	SPRINGBROOL	DESPLAINES RIVER	RS 1.18	16.59	75
312	COUNTY LINE	DESPLAINES RIVER	RS 1.25	5.59	75
316	88TH	DESPLAINES RIVER	RS 1.41	17.09	210
317	I-94	DESPLAINES RIVER	RS 1.63	17.84	90
324	I-94	DESPLAINES RIVER	RS 2	17.59	45
339	I-94	DESPLAINES RIVER	RS 6.36	12.84	6180
342	160TH	DESPLAINES RIVER	RS 9.82	13.34	465
61	CHICAGO	FARMERS-PRAIRIE CREEK	RS 1296.5	14.27	1991
62	BUSSE	FARMERS-PRAIRIE CREEK	RS 1566	16.84	286
65	MINER/DEMSTER	FARMERS-PRAIRIE CREEK	RS 4409	14.79	506
67	POTTER	FARMERS-PRAIRIE CREEK	RS 21392	17.04	83
68	BALLARD	FARMERS-PRAIRIE CREEK	RS 6154.5	15.60	373
69	BALLARD	FARMERS-PRAIRIE CREEK	RS 26980.5	14.65	249

Flooded Roads, 500-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
82	RIVER	FEEHANVILLE DITCH	RS 1780	124.25	17928
83	WOLF	FEEHANVILLE DITCH	RS 6620	20.28	564
84	FEEHANVILLE	FEEHANVILLE DITCH	RS 7870	20.28	1604
143	PORT CLINTON	INDIAN CREEK	RS 7238	19.98	135
146	DIAMOND LAKE	INDIAN CREEK	RS 39463	10.43	2112
147	INDIAN CREEK	INDIAN CREEK	RS 52877	25.23	337
149	MIDLOTHIAN	INDIAN CREEK	RS 60783	18.16	372
150	GILMER	INDIAN CREEK	RS 71326	10.33	773
151	CHEVY CHASE	INDIAN CREEK	RS 69013	10.93	773
225	US HIGHWAY 45	INDIAN CREEK	RS 8238	16.19	758
227	IL ROUTE 83	INDIAN CREEK	RS 34841	12.66	725
226	PORT CLINTON	INDIAN CREEK	RS 520	12.09	1055
259	HALF DAY	INDIAN CREEK	RS 3475	14.74	416
264	GILMER	INDIAN CREEK	RS 3850G	10.28	996
267	TOWNLINE	INDIAN CREEK	RS 13350	13.06	1101
268	BUTTERFIELD	INDIAN CREEK	RS 24500	15.64	227
272	DIAMOND LAKE	INDIAN CREEK	RS 10875	40.46	1592
289	BAIN STATION	JEROME CREEK	RS 0.48	29.56	105
305	93RD	JEROME CREEK	RS 1.04JC	28.06	105
335	93RD	JEROME CREEK	RS 4.45	28.81	150
291	75TH	KILBOURN DITCH	RS 0.51	26.63	15
298	I-94	KILBOURN DITCH	RS 0.78	25.63	75
315	248TH	KILBOURN DITCH	RS 1.33	35.63	240
329	60TH	KILBOURN DITCH	RS 2.81	25.88	405
332	52ND	KILBOURN DITCH	RS 3.46	25.63	570
341	12TH	KILBOURN DITCH	RS 8.01	28.38	480
86	KENSINGTON	MCDONALD CREEK	RS 2059	14.78	672
88	WOLF	MCDONALD CREEK	RS 7181	17.27	60
99	HINTZ	MCDONALD CREEK	RS 38122	13.90	393
254	WILLOW	MCDONALD CREEK	RS 1850	14.23	783
165	BELVIDERE	MILL CREEK	RS 92963	34.14	318
167	IL ROUTE 83	MILL CREEK	RS 89335	32.22	1430
168	CENTER	MILL CREEK	RS 88133	39.55	360
171	ATKINSON	MILL CREEK	RS 82208	33.27	1483
173	WASHINGTON	MILL CREEK	RS 77902	40.00	436
182	ROLLINS	MILL CREEK	RS 65515	46.79	358
184	HUTCHINS	MILL CREEK	RS 47038	19.50	8611
187	HUNT CLUB	MILL CREEK	RS 16756	31.90	574
188	I 94	MILL CREEK	RS 5368	34.94	386
189	DILLEYS	MILL CREEK	RS 4469	30.52	1287
190	US HIGHWAY 41	MILL CREEK	RS 1838	32.12	1342
228	BARRON	MILL CREEK	RS 84067	28.27	1902
229	CENTER	MILL CREEK	RS 89420	32.40	1186
206	128TH	MILL CREEK	RS 39650	24.67	2109
200	IL-173	MILL CREEK	RS 27800	22.85	2417
194	KELLEY	MILL CREEK	RS 18400	23.55	2295
191	MILLBURN	MILL CREEK	RS 5900	29.75	1010
274	GRAND	MILL CREEK	RS 26200	26.34	1552
281	GRAND	MILL CREEK	RS 60846	47.24	2655
193	ADAMS	NEWPORT DITCH	RS 23258	16.89	2067
198	IL ROUTE 173	NEWPORT DITCH	RS 13144	20.79	139
201	DELANEY	NEWPORT DITCH	RS 7321D	16.87	867
202	9TH	NEWPORT DITCH	RS 6710	16.94	886
204	KILBOURNE	NEWPORT DITCH	RS 3627	19.35	509

Flooded Roads, 500-year Storm, 2020 Conditions (continued).

VISTA ID	Road Name	Watershed	RoadStation	TIME_500YR	DUR_500YR
230	9TH	NEWPORT DITCH	RS 7321N	16.52	980
13	15TH	SILVER CREEK	RS 6966.432	21.02	857
14	NORTH	SILVER CREEK	RS 9030.912	20.92	1001
18	FULLERTON	SILVER CREEK	RS 16683.744	25.29	204
19	MANNHEIM	SILVER CREEK	RS 22601.568	20.97	1102
20	SCOTT	SILVER CREEK	RS 19226.592	23.39	762
22	GRAND	SILVER CREEK	RS 24899.424	24.74	449
26	IRVING PARK	SILVER CREEK	RS 34306.8	19.14	1053
74	GOLF	WELLER CREEK	RS 16100	5.53	148
76	MOUNT PROSPECT	WELLER CREEK	RS 17645	3.09	379
43	RIVER	WILLOW-HIGGINS CREEK	RS 1774	27.91	293
44	DEVON	WILLOW-HIGGINS CREEK	RS 38634	18.63	568
46	HIGGINS	WILLOW-HIGGINS CREEK	RS 10243	26.58	751
47	MANNHEIM	WILLOW-HIGGINS CREEK	RS 12181	26.54	760
50	BUSSE	WILLOW-HIGGINS CREEK	RS 39922	19.93	219
51	WOLF	WILLOW-HIGGINS CREEK	RS 19557	18.09	1252
52	TOUHY	WILLOW-HIGGINS CREEK	RS 24520	25.21	732
56	WILLE	WILLOW-HIGGINS CREEK	RS 30413	17.53	543
57	ELMHURST	WILLOW-HIGGINS CREEK	RS 31638	17.91	479
49	LUNT	WILLOW-HIGGINS CREEK	RS 39072	20.83	98

ATTACHMENT A-3

Correspondence: Wisconsin Floodwater Storage Letter

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
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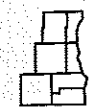

May 21, 2010

Mr. David F. Bucaro, P.E.
Chief, Economic Formulation & Analysis Section
U.S. Army Corps of Engineers
Chicago District (CELRC)
111 N. Canal Street, Suite 600
Chicago, IL 60606

Dear Mr. Bucaro:

We are writing to provide you with the results of a hydrologic analysis of the effects on peak flood flows of providing additional floodwater storage at selected locations in the Des Plaines River watershed in Wisconsin. This analysis, which was initially discussed during an August 24, 2009 meeting involving you, Laura C. Vandenberg of your staff, and Michael G. Hahn of the Commission staff, was performed in support of the Upper Des Plaines River and Tributaries Phase II Feasibility Study that the Chicago District is conducting along with Kenosha County, Wisconsin; the Southeastern Wisconsin Regional Planning Commission (SEWRPC); Cook and Lake Counties, Illinois; and the Illinois Department of Natural Resources Division of Water Resources. The purpose of the study documented herein was to prepare a screening-level analysis of the effects on peak flood flows of providing additional floodwater storage in the overbanks along the main stem of the Des Plaines River, Brighton Creek, Kilbourn Road Ditch, and Dutch Gap Canal, all in Wisconsin.

Potential floodwater storage sites were initially identified by the Chicago District staff in March of 2009. Those sites were reviewed by the staff of the Kenosha County Department of Planning and Development in March of 2009, and the areal extents of the sites were reduced to remove areas of planned urban development, higher-quality agricultural areas that are intended to be preserved, and wetlands that are regulated by the State of Wisconsin. Mr. Hahn reviewed those adjusted areas with the Phase II Feasibility Study Project Delivery Team at its March 26, 2009 meeting.

As shown in Exhibit A and on Exhibit B, 27 possible floodwater storage sites were identified. For purposes of the hydrologic analysis, some storage areas were combined, resulting in a total of 16 stream reaches for which enhanced floodwater storage was analyzed. One of the areas identified under the initial screening (the southwestern part of DPRS48) was eliminated because the entire site is contained within the one-percent-probability floodplain and offers little opportunity for creation of additional floodwater storage. For the remaining locations, the additional floodwater storage volume was generally provided above the 50-percent-annual-probability flood stage elevation in each reach, and the storage areas were configured to maximize the volume provided, without consideration of minimizing excavation and the associated costs. Thus, the storage sites were configured to provide an upper bound estimate of the degree of peak flood flow reduction that could be achieved. For the stream reaches along the Des Plaines River, Brighton Creek, and Kilbourn Road Ditch in which potential storage sites are located, the existing volume within the one-percent-probability floodplain could be increased by about 83 percent through the addition of floodwater storage. For Dutch Gap Canal, the increase in volume could be about 19 percent.

The current study was conducted using the U.S. Environmental Protection Agency HSPF continuous simulation hydrologic model developed by the SEWRPC staff under the 2003 Des Plaines River watershed study, documented in SEWRPC Planning Report No. 44. Under the watershed study and the current study, flood flows were simulated for the period of meteorological record from 1940 through 1994

under buildout land use conditions. Statistical analyses of the annual peak flows generated with HSPF were performed using the U.S. Army Corps of Engineers HEC-FFA flood frequency analysis program that follows the procedures set forth in U.S. Water Resources Council Bulletin 17B, *Guidelines for Determining Flood Flow Frequency,* September 1981.

Based on the analyses performed for the 2003 SEWRPC Des Plaines River watershed study, it is estimated that, during a one-percent-annual-probability flood occurring under buildout land use and existing channel conditions, 101 buildings in the Wisconsin portion of the watershed could be flooded to some degree. Because those buildings are generally scattered throughout the watershed in Wisconsin, the watershed study concluded that, for most buildings, nonstructural approaches to flood mitigation would be the most cost-effective means for resolving flooding problems. The exceptions where structural measures are recommended to provide flood protection include 16 houses along Unnamed Tributary No. 6 to Brighton Creek and two houses along Unnamed Tributary No. 1 to Hooker Lake. Thus, the provision of floodwater storage is not seen as a flood mitigation measure to address problems in Wisconsin, but rather as a possible approach to reducing peak flood flows and stages in areas of potential flood damage in Illinois.

Because of the focus on flood damage reduction in Illinois, a relative comparison was made of peak flood flows in the main stem of the Des Plaines River and in Dutch Gap Canal (North Mill Creek) at the Wisconsin-Illinois State line (see Exhibit C). As seen from Exhibit C, if the additional floodwater storage volume were provided, the peak 50-, 10-, 2-, 1-, and 0.2-percent-annual-probability flood flows in the Des Plaines River main stem at the State line could decrease by up to 2.5, 3.7, 4.8, 5.1, and 5.6 percent, respectively. (The manner in which the storage areas were configured resulted in provision of additional storage below a 50-percent-probability flood stage in several storage areas, thus, some decrease was computed in the 50-percent-probability flood flow.) The peak 10-, 2-, 1-, and 0.2-percent-annual-probability flood flows in Dutch Gap Canal at the State line could decrease by up to 5.8, 10.7, 12.6, and 16.9 percent, respectively. The relatively small potential decreases in peak flood flows in the Des Plaines River main stem are in large part attributable to the flow-attenuating effect of the large floodplain wetland complex located along the eight-mile reach of the River extending upstream from the State line.

We trust that this information will be useful to you, the Plan Formulation Subcommittee, and the Project Delivery Team. Should you have any questions regarding this matter, please contact Mr. Hahn directly.

Sincerely,

Kenneth R. Yunker, P.E.
Executive Director

KRY/MGH/pk
#151567 V1 - UDPRW PH II - WIS FLOODWATER STORAGE LETTER

Enclosures

cc: Mr. George E. Melcher, Kenosha County
Mr. Richard Gosch, IDNR, Division of Water Resources

Exhibit A

UPPER DES PLAINES RIVER AND TRIBUTARIES PHASE II FEASIBILITY STUDY
EVALUATION OF POTENTIAL ADDITIONAL FLOODWATER STORAGE AREAS IN WISCONSIN
BRIGHTON CREEK, DUTCH GAP CANAL, AND KILBOURN ROAD DITCH AND DES PLAINES RIVER MAINSTEM

POTENTIAL STORAGE AREA DESIGNATION	ADJACENT STREAM	Storage Location/ Side of Stream	Original Total HSPF Reach Volume (acre-feet)	Reach Additional Volume 2-100 Year (acre-feet)	Reach New Total Volume (acre-feet)	Reach Change in Total Volume (percent)	Stream Totals for Reaches Evaluated Only		
							Total Original Volume by Stream (acre-feet)	Total Additional Volume by Stream (acre-feet)	Total Change in Volume by Stream (percent)
DPRS53 WEST (53A)	Des Plaines River	West side north of STH 142	105	558	663	531%			
DPRS 53 EAST (53B)	Des Plaines River	East side north of STH 142	with 53A						
DPRS52 WEST (52B)	Des Plaines River	Mid east side north of CTH N	with 52A						
DPR52 EAST (52A)	Des Plaines River	East side between STH 142 and CTH N	1136	133	1269	12%			
DPRS51 NW (51A)	Des Plaines River	East side south of CTH N - west of CTH D	882	86	968	10%			
DPRS51 NE (51B)	Des Plaines River	East side south of CTH N - just west of CTH D	with 51A						
DPRS51 SW (51C)	Brighton Creek	East side north of CTH K	230	89	319	39%			
DPRS51 SC (51D)	Des Plaines River	West side north of CTH K	352	314	666	89%			
DPRS51 SE (51E)	Des Plaines River	East side north of CTH K	with 51D						
DPRS48 NW (48A)	Des Plaines River	North side at CTH U/136th Ave extended	645	255	900	40%			
DPRS48 SE (48B)	Des Plaines River	South side just west of IH 94	NA	0	--	--			
			TOTAL FOR DES PLAINES RIVER ONLY				3120	1346	43%
BRRS03 NE (3A)	Brighton Creek	East side south of CTH NN	897	540	1437	60%			
BRRS03 SW (3B)	Brighton Creek	West side north of CTH K	with BR3A						
BRRS02 N (2A)	Brighton Creek	Northwest side north of STH 50	261	33	294	13%			
BRRS02 S (2B)	Brighton Creek	Southeast side north of STH 50	with BR2A						
BRRS01	Brighton Creek	West side south of CTH K - east of USH 45	with DPR 51C						
				TOTAL FOR BRIGHTON CREEK			1388	662	48%

Exhibit A (continued)

POTENTIAL STORAGE AREA DESIGNATION	ADJACENT STREAM	Storage Location/ Side of Stream	Original Total HSPF Reach Volume (acre-feet)	Reach Additional Volume 2-100 Year (acre-feet)	Reach New Total Volume (acre-feet)	Reach Change in Total Volume (percent)	Stream Totals for Reaches Evaluated Only		
							Total Original Volume by Stream (acre-feet)	Total Additional Volume by Stream (acre-feet)	Total Change in Volume by Stream (percent)
KRRS06 W (6A)	Kilbourn Road Ditch	West side south of CTH KR	331	755	1086	228%			
KRRS06 E (6B)	Kilbourn Road Ditch	East side between CTH KR and CTH A	with KR6A						
KRRS05 N (5A)	Kilbourn Road Ditch	East side between CTH A and CTH E	462	1360	1822	294%			
KRRS05 S (5B)	Kilbourn Road Ditch	East side south of CTH E	113	428	541	379%			
KRRS04	Kilbourn Road Ditch	East side north of STH 142	334	425	759	127%			
KRRS02	Kilbourn Road Ditch	Both sides south of CTH K	274	46	320	17%			
				TOTAL FOR KILBOURN ROAD DITCH			1514	3014	199%
	TOTAL FOR STREAMS TRIBUTARY TO THE DES PLAINES RIVER AT THE STATE LINE						6022	5022	83%
NMRS07	Dutch Gap Canal	West side north of CTH Q	1136	52	1188	5%			
NMRS05 N (5A)	Dutch Gap Canal	Both sides south of CTH CJ	486	172	658	35%			
NMRS05 CTR (5B)	Dutch Gap Canal	Northeast side just north of State line	48	89	137	185%			
NMRS05 S (5C)	Dutch Gap Canal	West side at State line - west of 5D	with DGC5B						
NMRS05 (5D)	Dutch Gap Canal	West side at State line	with DGC5B						
				TOTAL FOR DUTCH GAP CANAL			1670	313	19%
				STUDY TOTAL			7692	5335	69%

Exhibit C

UPPER DES PLAINES RIVER AND TRIBUTARIES PHASE II FEASIBILITY STUDY

FLOOD DISCHARGE COMPARISON
DES PLAINES RIVER WATERSHED STUDY VERSUS WITH CORPS OF ENGINEERS SUGGESTED FLOODWATER STORAGE SITES

Buildout Land Use, Existing Channel Condition

HSPF Reach No.	Stream	Location	50-Percent-Annual-Probability Floodplain (2-Year R.I.)			10-Percent-Annual-Probability Floodplain (10-Year R.I.)			2-Percent-Annual-Probability Floodplain (50-Year R.I.)			1-Percent-Annual-Probability Floodplain (100-Year R.I.)			0.2-Percent-Annual-Probability Floodplain (500-Year R.I.)		
			DPRWS	With Floodwater Detention	Percent Difference	DPRWS	With Floodwater Detention	Percent Difference	DPRWS	With Floodwater Detention	Percent Difference	DPRWS	With Floodwater Detention	Percent Difference	DPRWS	With Floodwater Detention	Percent Difference
384	Des Plaines River	State Line	855	834	-2.5	1,620	1,560	-3.7	2,290	2,180	-4.8	2,570	2,440	-5.1	3,210	3,030	-5.6
460	Dutch Gap Canal	State Line	205	205	0.0	431	406	-5.8	673	601	-10.7	787	688	-12.6	1,080	897	-16.9

ATTACHMENT A-4

Memoranda Supporting Tree-Trimming / Greenway Analysis

CELRC-ED-HH

MEMORANDUM FOR CELRD-PM-M

SUBJECT: Des Plaines Levee 37, Hydraulic Analysis for Tree Trimming to Mitigate for Project Induced Stage Increases Beyond State Regulatory Limits

1. The Des Plaines River Levee 37 project induces stage increases greater than the 0.04 ft maximum increase allowed by the state. The maximum increase with the levee project is 0.12 ft. The proposed improvement to raise Milwaukee Avenue bridge reduces the maximum increase to 0.08 ft. The levee project increases stages above the regulatory limit for approximately 10 miles downstream of the project.

2. The Buffalo Creek Reservoir project combined with the Levee 37 project brings stages below the required regulatory limits, however, Levee 37 is scheduled to be built first. To mitigate for the project induced stage increases we propose a one time trimming of trees along the river. This would include selective trimming of small overhanging branches up to the 100 year event water level (15 to 20 feet above the channel invert).

3. HEC-1 and HEC-2 models of the Des Plaines River were used to estimate the amount of tree trimming required to bring stages within regulatory limits. The base model is a model developed conjointly between the Corps and IDNR. This model is the FIS that has been corrected for errors with some of the cross sections and updated with the new bridge at Euclid Avenue. This was the existing condition base model used for comparing with project, with road raise and with tree trimming conditions.

4. Various tree trimming scenarios were tried until one was found to bring stages within regulatory limits for two proposed conditions. These were the with project alone and the combined with project/with road raise conditions.

5. Tree trimming was simulated by reducing Manning's "n" values for the channel. "n" values were reduced between river miles 46.01 and 73.095. Existing channel "n" values range from 0.040 to 0.050 for this reach. "n" value reductions were applied as follows:

Table 1 – Manning's "n" Reduction for Tree Trimming Simulation

River mile range	Approximate Landmarks	"n" value reduction
46.01 to 60. 721	Forest Ave. to Devon Ave.	0.0005
60.77 to 69.61	Devon Ave. to Euclid Ave.	0.001
69.70 to 73.095	Euclid to Dam # 1 (D. S. Dundee Rd.)	0.002

6. As a crude method to give some quantification to the tree trimming, output from the HEC-2 model runs were used along with tables from an ERDC (formerly WES) report on determining drag forces for vegetation.

7. Channel shear stress was output for each cross section for both with and without tree trimming scenarios. The difference in the shear stress between the two conditions was then determined for each cross section.

8. The shear stress was multiplied by the area of the channel bottom to find the difference in force applied to the water between the with and without tree trimming conditions. Wetted perimeter of the channel is not an output variable available in HEC-2, so it was estimated by using the difference in the channel stations (channel top width) plus two times the depth. This estimated wetted perimeter was multiplied by the channel length to estimate the area of the channel bottom.

9. Tables 2 and 3 (enclosures 1 and 2) in the appendix to the ERDC report number TN-EMRRP-SR-08, titled "Determining Drag Coefficients and Area for Vegetation" by Craig Fischenich and Syndi Dudley (http://www.wes.army.mil/el/emrrp/pdf/sr08.pdf), was used to estimate the force applied to the water by a single branch. The average 100 year velocity of the tree trim reach is 2.26 ft/sec. Drag forces were interpolated from the values in tables 2 and 3 of the report for this velocity for both with leaves and without leaves from both tables. The four values were averaged with a result of 0.28 pounds of drag force per branch.

10. The difference in the forces determined from the HEC-2 runs was equated to the number of branches needed to provide an equal force (i.e. branches to be trimmed for stage mitigation). This was computed for each of the reaches in table 1. The results are provided in table 2.

Table 2 – Trimming Requirements

Reach	Branches trimmed per 100 foot river length
Forest Ave. to Devon Ave.	180
Devon Ave. to Euclid Ave.	300
Euclid to Dam # 1 (D. S. Dundee Rd.)	590

11. Photos are enclosed as an aid in visualizing some of the typical tree and branch situations along the river.

12. It should be noted that the average channel width in the model was 183 feet wide for the tree trimming reach. The reach was canoed and from this field trip, the estimated average width between overhanging branches from one side of the river to the other would be about 100 feet or less, so the trees encroach into the channel on the average about 40 to 50 feet on each side.

13. Branches would be trimmed on both sides of the river (except in a few areas where there are no trees or where trees are in private residential yards). They would be trimmed from trees immediately adjacent to the river or up to 50 feet landward of branches overhanging the river. They could be trimmed anywhere on the trees up to height 10 feet above the waterline. Individual trimmed branches are relatively small branches, assumed to be between one and a half to two feet in length with stems approximately three eights to one half inch in diameter (to reflect ERDC report tables).

14. Contractor quantities could be developed to determine a weight per mile of trimmed branches, rather than counting individual branches.

15. Please refer questions to Mr. Jim Mazanec at extension 3113 or Rick Ackerson at extension 3119.

LINDA M. SORN, P.E.
Chief H&E Engineering Branch

Encls

RA 6/12/02
Ackerson
(X3119)
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Table 2 Parametric Data for Dogwood (Fischenich 1995)

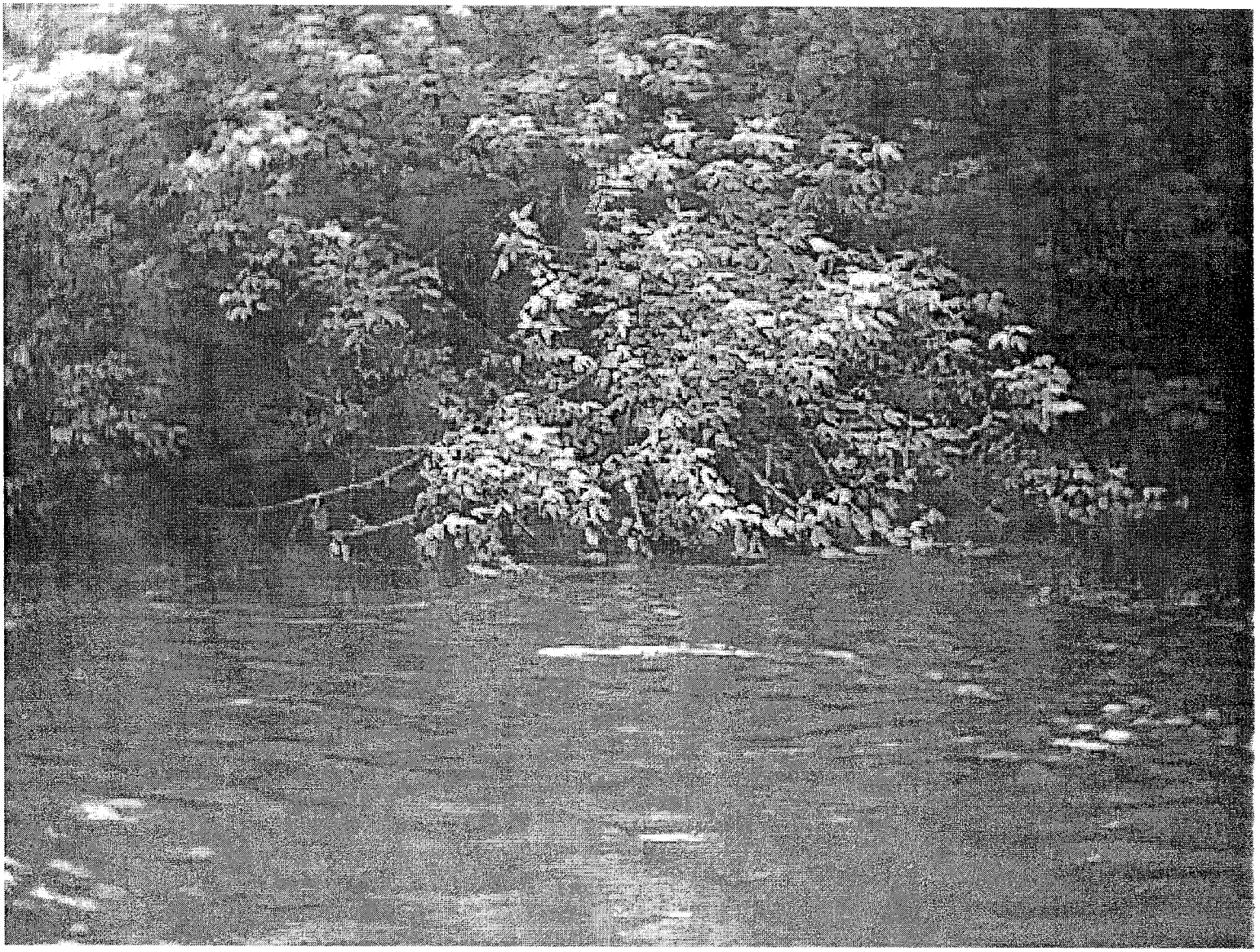
Plant Type	Dogwood 1-1				Drag and Velocity Data							
					With Leaves					Without Leaves		
Height (in)	17	Run #	Vel. (ft/sec)	Drag (lbs)	Cd_d	Cd_r	Cd_w	Vel. (ft/sec)	Drag (lbs)	Cd_d	Cd_r	Cd_w
Stem to First Branch (in)												
Stem Diameter (in)	0.375	1	1.68	0.108	0.05 56	0.04 85	0.05 98	1.41	0.108	0.0024 6	0.0021 4	0.0026 4
No. Stems	1	2	2.01	0.162	0.05 83	0.05 09	0.06 26	2.04	0.206	0.0022 4	0.0019 5	0.0024 0
No. Branches	11	3	2.18	0.201	0.06 15	0.05 37	0.06 61	2.51	0.294	0.0021 1	0.0018 4	0.0022 7
No. Leaves	50	4	2.62	0.245	0.05 19	0.04 53	0.05 58	3.31	0.412	0.0017 0	0.0014 8	0.0018 3
Leaf Thickness (in)		5	3.26	0.392	0.05 36	0.04 68	0.05 76	3.61	0.451	0.0015 6	0.0013 7	0.0016 8
Leaf Width (in)	0.5	6	3.53	0.480	0.05 60	0.04 89	0.06 02	3.92	0.451	0.0013 3	0.0011 6	0.0014 3
Leaf Length (in)	3	7	4.22	0.593	0.04 84	0.04 22	0.05 20	4.44	0.623	0.0014 3	0.0012 5	0.0015 4
Ave. Branch Diameter (in)		8	4.44	0.618	0.04 56	0.03 98	0.04 90	4.50	0.627	0.0014 0	0.0012 2	0.0015 0
Height Leaf Area (in)	13	9	4.55	0.647	0.04 54	0.03 96	0.04 88	4.55	0.657	0.0014 3	0.0012 5	0.0015 4
Width Leaf Area (in)	9	10	4.53	0.642	0.04 55	0.03 97	0.04 89	4.75	0.588	0.0011 8	0.0010 3	0.0012 7

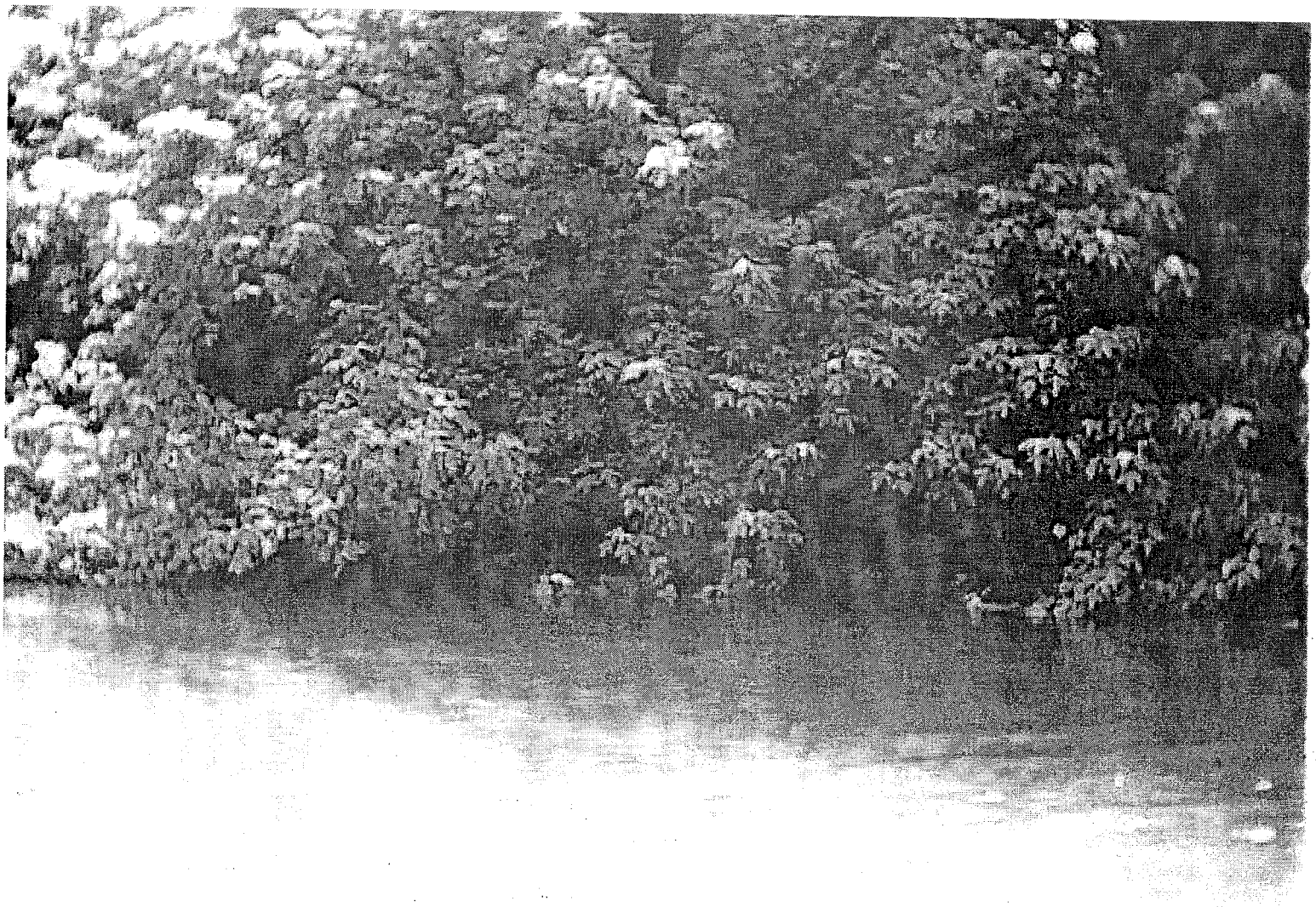
Computed A_d (ft^{-1})	0.709150 3
Computed A_r (ft^2)	0.8125
Computed A_w (ft^2)	0.659843 8

Table 3 Parametric Data for Willow (Fischenich 1995)

Plant Type	Arctic Blue Willow (Salix purpurea nana)											
					Drag and Velocity Data							
					With Leaves					Without Leaves		
Height (in)	22	Run #	Vel. (ft/sec)	Drag (lbs)	Cd_d	Cd_f	Cd_w	Vel. (ft/sec)	Drag (lbs)	Cd_d	Cd_f	Cd_w
Stem to First Branch (in)	2											
Stem Diameter (in)	0.509	1	1.02	0.207	0.2415	0.1469	0.1392	1.43	0.129	0.00238	0.00145	0.00137
No. Stems	1	2	1.32	0.289	0.2013	0.1225	0.1160	1.82	0.155	0.00177	0.00107	0.00102
No. Branches	50	3	1.79	0.366	0.1386	0.0843	0.0799	2.46	0.207	0.00129	0.00079	0.00074
No. Leaves	700	4	2.15	0.431	0.1132	0.0688	0.0652	2.95	0.224	0.00097	0.00059	0.00056
Leaf Thickness (in)	0.014	5	2.34	0.483	0.1071	0.0651	0.0617	3.50	0.272	0.00084	0.00051	0.00048
Leaf Width (in)	0.125	6	2.73	0.526	0.0857	0.0521	0.0494	4.25	0.345	0.00072	0.00044	0.00042
Leaf Length (in)	1	7	2.92	0.560	0.0797	0.0485	0.0460	4.66	0.397	0.00069	0.00042	0.00040
Ave. Branch Diameter (in)	0.114	8	2.98	0.578	0.0790	0.0481	0.0455	4.77	0.440	0.00073	0.00044	0.00042
Height Leaf Area (in)	20	9	3.48	0.733	0.0735	0.0447	0.0423	4.94	0.466	0.00072	0.00044	0.00042
Width Leaf Area (in)	10	10	4.39	0.922	0.0581	0.0353	0.0335	5.19	0.517	0.00072	0.00044	0.00042

Computed A_d (ft^{-1})	0.8492618
Computed A_f (ft^2)	1.3959583
Computed A_w (ft^2)	1.4732758





CELRC-TS-D-HH August 25, 2010

MEMORANDUM FOR RECORD

SUBJECT: Des Plaines Greenway, Hydraulic Analysis for Tree Trimming to Mitigate for Project Induced Stage Increases Beyond State Regulatory Limits

1. The Des Plaines River Levee 37 project induces stage increases greater than the 0.04 ft maximum increase allowed by the state. In 2002 the Chicago District used the HEC-1 and HEC-2 models to estimate tree-trimming along the river as a means to mitigate for these project-induced stages. Tree trimming was simulated by reducing Manning's "n" in the channel over a 27-mile reach of the river.

2. The Greenway Analysis was refined in August 2010 to consider six shorter reaches in greater detail. The six reaches were delineated by selecting the union of the inundation area for the two-year storm and Forest Preserve property where tree-trimming could conceivably be performed. Proximity to threatened structures was also considered. In these areas, overbank "n" was reduced from 0.19 to 0.08, and channel "n" values were reduced by an increment of 0.001. The steps followed in this analysis are described below.

3. Channel geometry was exported from HEC-2 into HEC-RAS, and then to an .xml that was imported into GIS. However, the scale of the cross-sections transferred incorrectly in this case; the cross-sections fell at the correct stationing along the river, but the lateral extent of each cross-section was exaggerated. To correct this problem we split each cross-section at the center of the channel and trimmed the left and right overbank to the length specified in the HEC-2 geometry. The split cross-sections were then reunified (using Data Management Tools/Generalization/Dissolve).

4. The inundation area for the two year storm was drawn in GIS by adding a field to the attribute table of the river cross-section layer. This additional column included the water surface elevations associated with each cross-section from the HEC-2 base model output. Then a Digital Elevation Model (DEM) for the project area terrain was subtracted from the water surface elevation layer (using Spatial Analyst/Math/Minus). The two-year inundation area is equal to wherever [WSEL-terrain>0]. *Note: split the layer into two classes using (Reclass/Reclassify/2 classes/Classify/Equal Interval/Break value=0). Using 3D Analyst, convert the raster to polygon and delete the polygon(s) where values are less than zero. What remains is the two-year inundation area. Clip two-year inundation area to Forest Preserve boundaries (using Analysis Tools/Extract/Clip).*

5. Next, we placed points at each intersection of the river cross-sections and the clipped inundation area (using the ET GeoWizards add-in). The distance between the left end of each cross section and the clipped floodplain was found (using Linear Referencing Tools/Create Routes/Locate Features Along Routes). With these distances we were able to modify the NH cards in the HEC 2 input to reduce the Manning's "n" value in the proposed

Greenway reaches. The "n" values outside of the Forest Preserve/two-year storm inundation area remained the same as in the base model.

6. The routing was changed using HEC-1 to reflect the resultant flow changes due to trimming. The routing changes produced some stage increases downstream, so the initial Greenway reaches were shortened to reduce the downstream impacts. The Flood Damage Reduction Analysis (HEC-FDA) model was run for each Greenway reach. Reaches 1-4 showed a BCR greater than one, but reaches 5 and 6 did not prove to be economically justified. In the last-added analysis, where the benefits of the Greenway projects were ranked among the other Des Plaines Flood Damage Reduction projects, all but Greenway Reach 2 were eliminated.

Table 1 – "Greenway" Tree-Trimming Project Reaches

Reach	Reach code	RM range	Approximate Landmarks
Reach 1	GW21	50.46 – 51.62	Washington Blvd. to Chicago Ave.
Reach 2	GW32	53.83 – 55.35	Armitage Ave. to south of Belmont Ave.
Reach 3	GW13	62.3 – 64.18	Touhy Ave. to Algonquin Rd.
Reach 4	GW24	69.93 – 72.86	West Lake St. to Hintz Rd.
Reach 5	GW05	76.4 – 78.82	Aptakistic Creek to end of FP
Reach 6	GW06	91.67 – 97.11	Bull Creek to IL Route 132

ATTACHMENT A-5

Interior Drainage Analysis

CELRC-TS-D-HH September 3, 2010

MEMORANDUM FOR RECORD

SUBJECT: Interior Drainage Facilities for Levee 15

The proposed location of Levee 15 (DPLV15) south of Buckley Road (Route 137) and just south of the previously constructed North Libertyville Estates Levee in Lake County, Illinois on the east side of the Des Plaines River. To develop interior drainage facility alternatives, a general comparison was made between the existing North Libertyville Estates Levee and the proposed DPLV15. The North Libertyville Estates Levee System has several gravity drainage outlets, as well as a 2,000 GPM pump station. The interior drainage area of DPLV15 is approximately 0.8 sq. miles, or 4 times the size of the interior drainage area of North Libertyville Estates. The following interior drainage facilities were evaluated; 4-24 inch diameter gravity, 4-48 inch diameter gravity, 4-48 inch diameter gravity with a 2,000 GPM pump station, and 4-48 inch diameter gravity with a 20,000 GPM pump station. Since there is little space for a constructed ponding area, the existing stage-storage relationship was used for the interior drainage analysis (Attachment 1).

An interior drainage analysis for LV15 was performed using HEC-RAS (4.1.0) and HEC-HMS (3.4). HEC-HMS was used to develop an interior hydrograph for a period of record (POR) between 1969 and 2009 using hourly rainfall from the rainfall gage in McHenry, Illinois. The drainage basin delineation was assumed to follow existing topography. Land use and NRCS soils data were used to develop the basin model inputs. A Clark Unit Hydrograph was used with the Green-Ampt loss method. The 100 year synthetic event was also modeled with a 6 hour, 12 hour, and 24 hour duration for each alternative. Table 1 contains model inputs used for the interior hydrograph development.

Table 1 – DPLV 15 Interior Basin Model Inputs

Area (Sq. Miles)	0.83	Moisture Deficit	0.20
Tc (hr)	1.1	Suction (in)	18.3
Storage Coef. (hr)	1.7	Conductivity (in/hr)	0.2
Initial Loss (in)	0.40	Impervious (%)	20

A section of the Des Plaines mainstem river model between the Gurnee gage and downstream of DPLV15 (RS 95.0 to RS 79.9) was used to develop an unsteady flow model for the period of record. The interior drainage basin was modeled as an overbank storage area in HEC-RAS with a lateral weir connection to the Des Plaines River. Historic daily flows from the Gurnee gage were used as the upstream boundary condition, and the stage-discharge relationship from the synthetic events was used for the downstream boundary condition. A USGS gage (Drainage Ditch at Libertville, 05528035) just upstream of the proposed DPLV15 has operated from 1999 to present and allows for a comparison between the modeled stage hydrograph and the observed stages. This data was used as verification that the model provides a reasonable exterior stage hydrograph for the interior drainage analysis.

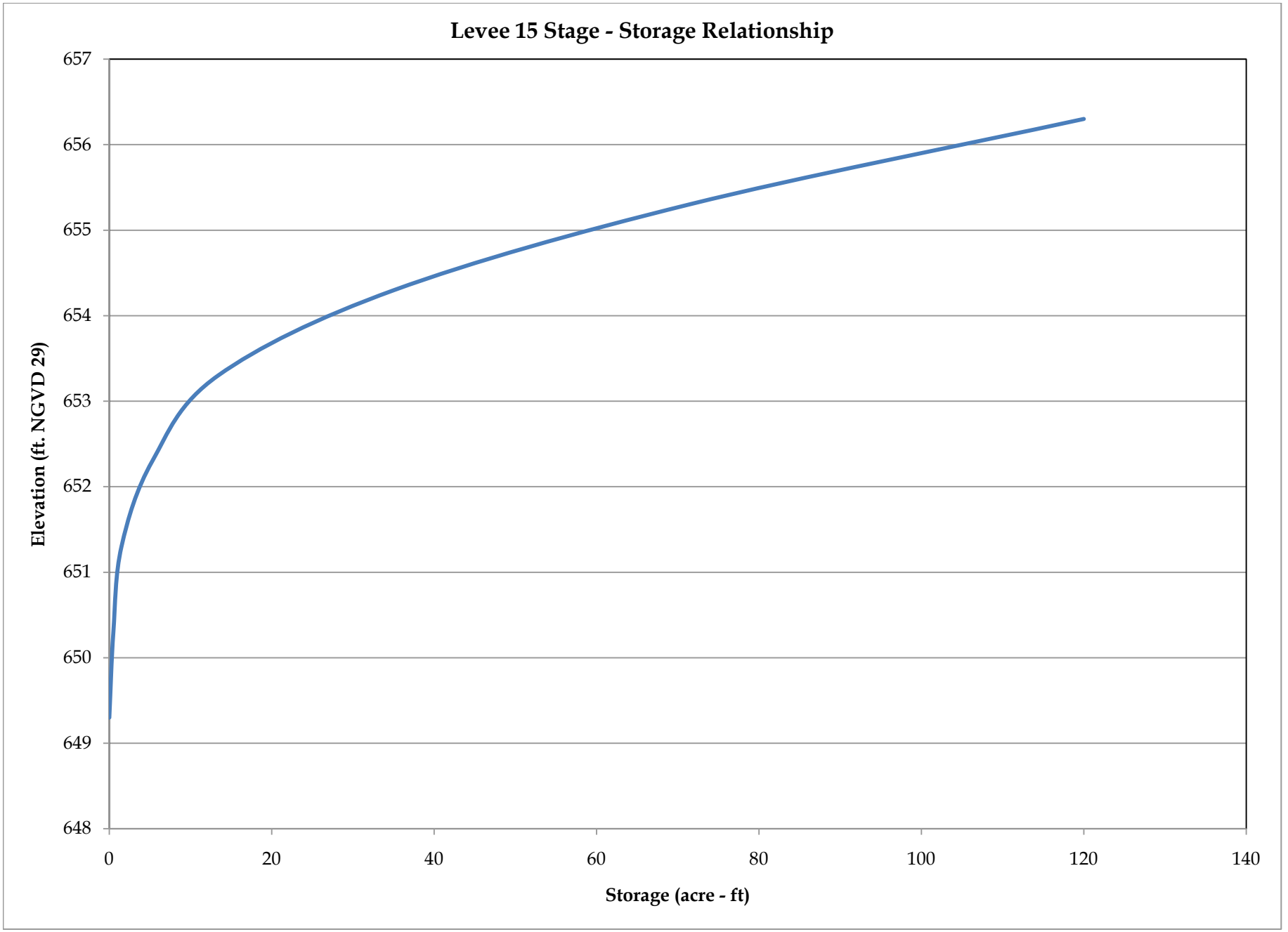
The annual interior stages for each alternative were plotted using Weibull plotting positions and are shown on Attachment 2 along with the 100 year synthetic event. The largest event in 1986 produced high interior stages for all alternatives; however, the 20,000 GPM pump station provides significant reduction

in the flood stages for this event. Attachment 2 also shows the 100 year, 6 hour synthetic event since the short duration event produced the highest interior stages. Since the Des Plaines River response significantly lags the smaller interior response, the exterior stages have little effect on the interior drainage facilities. Table 2 contains a comparison of the 100 year events for each alternative.

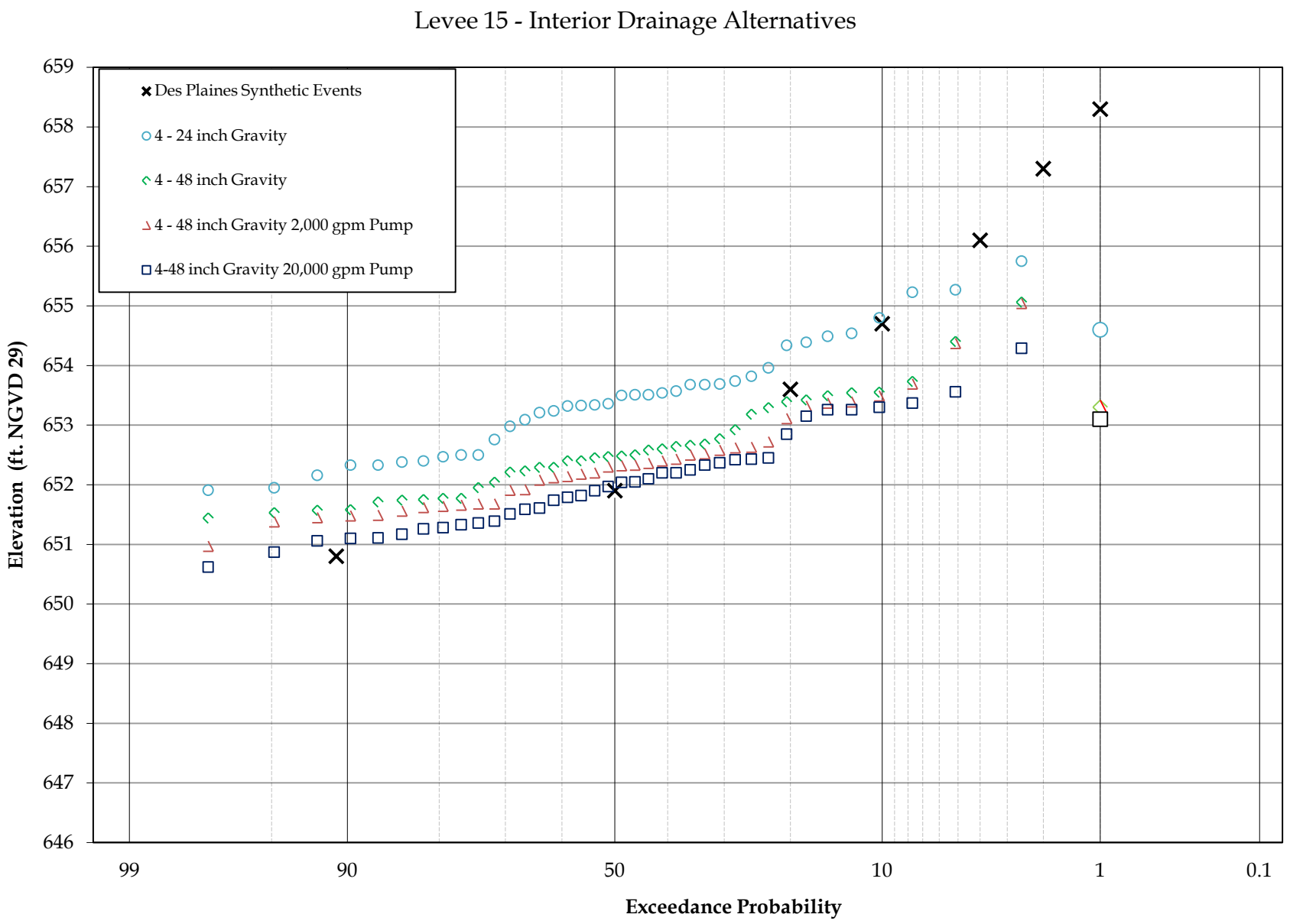
Table 2 – Maximum Interior Stages for the 100 Year Event (ft NGVD 29)

Alternative	6 Hour Event	12 Hour Event	24 Hour Event	Max POR
4 – 24 inch Dia.	654.6	654.6	653.9	655.8
4 - 48 inch Dia.	653.3	653.3	652.6	655.1
4 - 48 inch Dia. 2,000 GPM PS	653.3	653.2	652.5	655.0
4 - 48 inch Dia. 20,000 GPM PS	653.1	652.9	652.2	654.3

The period of record analysis demonstrates that exterior stages affect interior drainage. The 20,000 GPM pump station results in significant stage reductions for both the period of record and the 100 year synthetic events. Base on this analysis, the interior drainage facility will require both gravity outlets and a pump station as the minimum facility.



Attachment 1



Attachment 2

ATTACHMENT A-6

Levee 4 and Levee 5 Analysis Memorandum

CELRC-TS-DH

05 AUG 2013

MEMORANDUM FOR CELRC-PM-PL

SUBJECT: Des Plaines River Phase II Feasibility Study – H & H Analyses of Levees 4, 5 and Combination Levee 945.

1. A request was made by PM-PL to provide HH documentation regarding the analysis of recent levee additions to the Des Plaines Phase II study, Levee 4 and Levee 5 and the Combination Levee that includes levees 9, 4 and 5. In addition to these levee analyses, the request included the analyses of mitigation measures in conjunction with these levees.
2. These levees were analyzed using the latest relevant DP II HEC-1 and HEC-2 models. In the HEC-2 model, Levee 4 is located between cross sections at river miles 54.29 and 55.27, Levee 5 between river miles 55.99 and 56.93 and in addition to these new levees, Levee 9 is located between river miles 62.88 and 64.60 and is included in the combination levee that includes levees 9, 4 and 5.
3. Three basic mitigation reservoirs were considered for the combination levee 9, 4 and 5, and included; the Aptakisic Creek Reservoir as proposed in the Des Plaines Phase II Feasibility Report, the Aptakisic Creek Reservoir expanded to 550 acre-ft (not included in the previous report) and Reservoir DPRS15, also previously included in the report.
4. The mitigation reservoirs were investigated to find stage mitigation that would satisfy Illinois Department of Natural Resources – Office of Water Management (IDNR-OWR), construction in a floodway permit requirements. No stage impacts are allowed for the one percent chance exceedence flood event (100 year recurrence interval), and all the flood events more frequent than the one percent event. IDNR-OWR interprets no stage impacts as 0.0 ft. (0.044 ft stage increase and less is rounded to zero as a courtesy). Also stage impacts that do not impact structures can be mitigated with flowage easements. The baseline condition models were used to determine stage differences for permitting for this analysis.
5. Baseline condition stage impacts without mitigation are shown for Levees 4, 5 and the combination levee in figures 1, 2 and 3 below, respectively.
6. Both the Aptakisic Reservoir as proposed in the Feasibility Study and Reservoir DPRS15 did not provide sufficient stage reductions to satisfy the IDNR-OWR permit requirements for the Combination Levee 9, 4, and 5. Only the Aptakisic reservoir expanded to 550 acre-ft satisfied the IDNR-OWR permitting requirements. The stage differences for the three mitigation reservoir conditions on figures 4, 5, and 6 respectively, below. Only one small area located in the Cook County Forest preserve will require a flowage easement (stage impact of 0.05 ft). see area in pink on figure 7

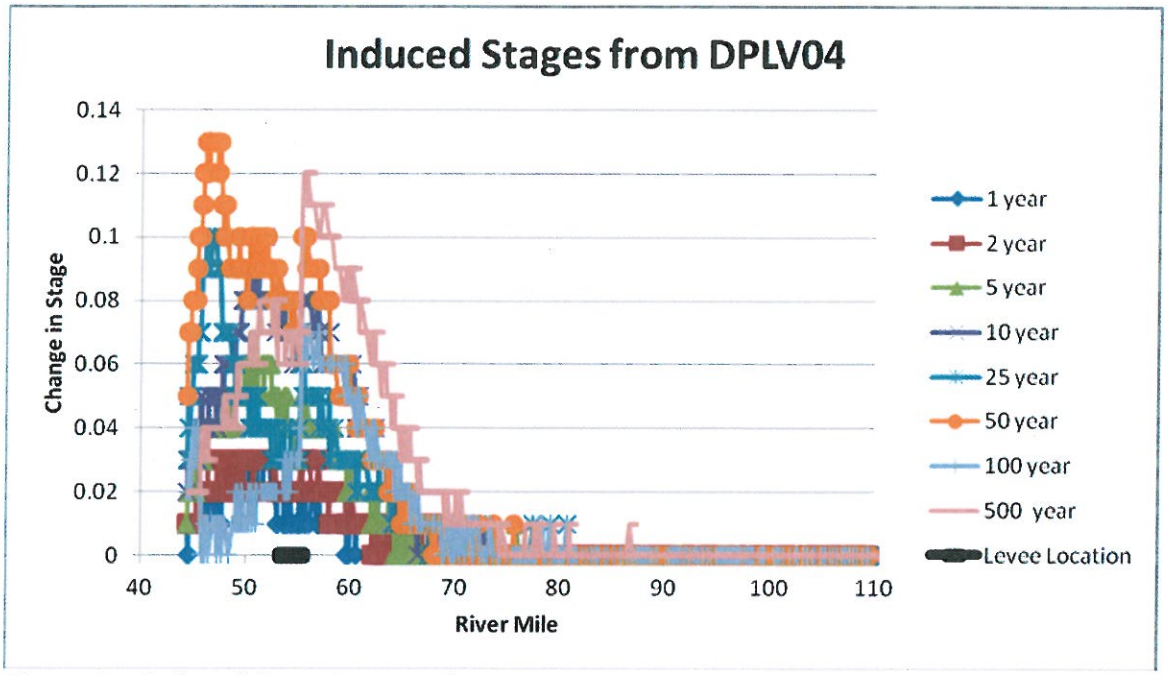


Figure 1 – Induced Stage Impacts for Levee 04

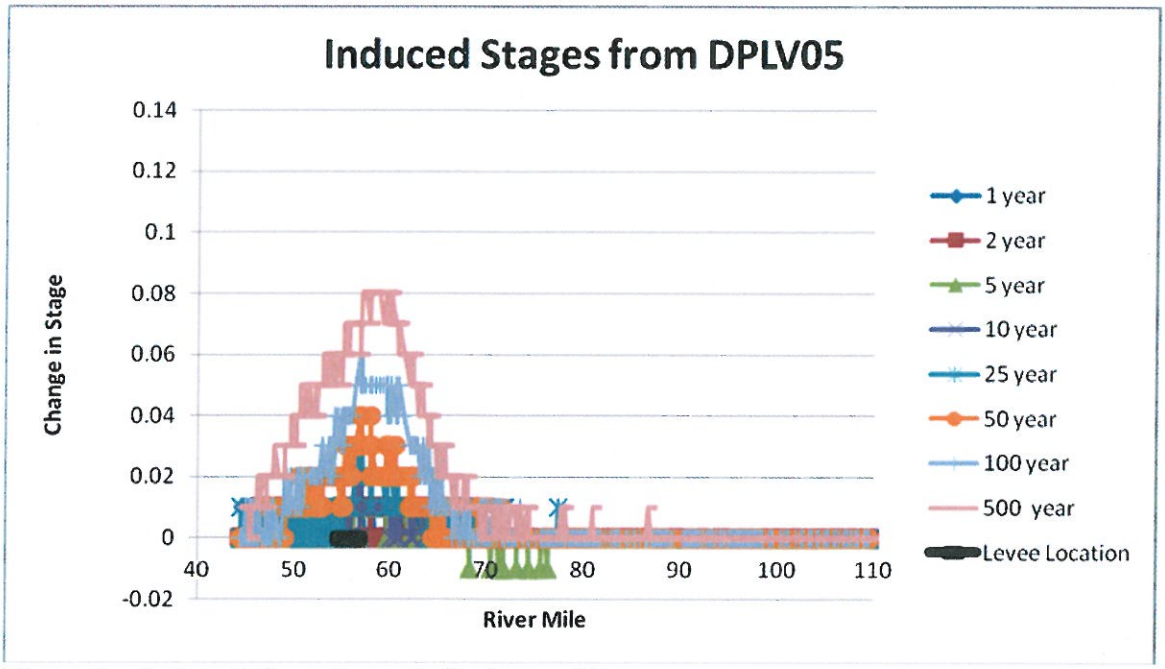


Figure 2 – Induced Stage Impacts for Levee 05

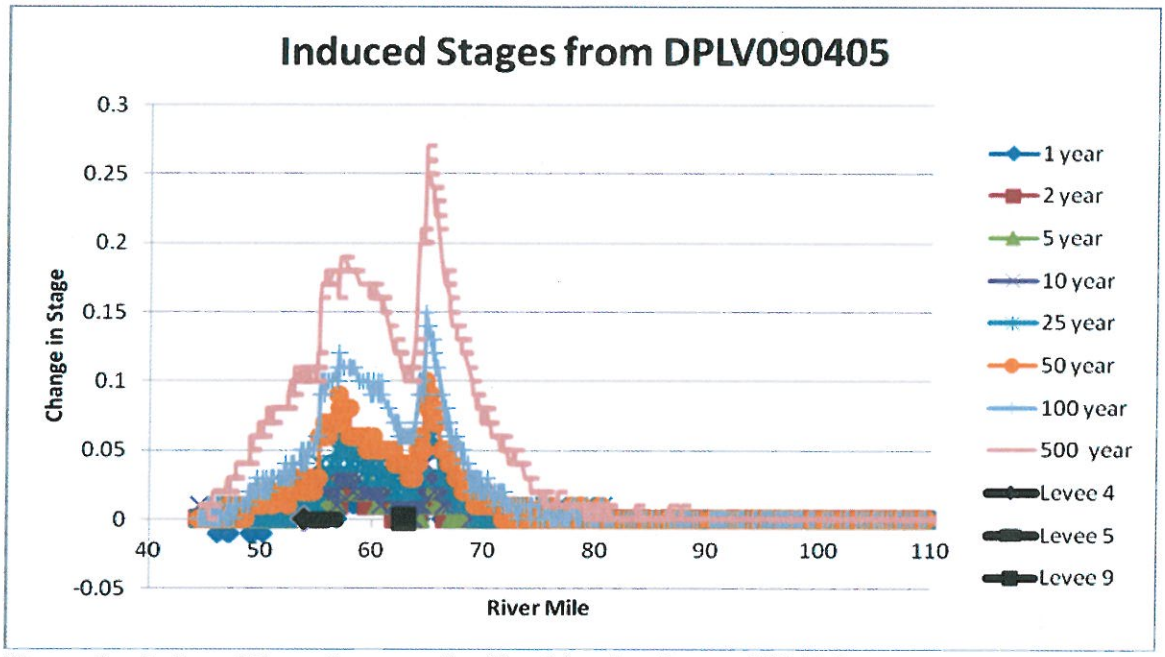


Figure 3 – Induced Stage Impacts for Combination Levee 090405

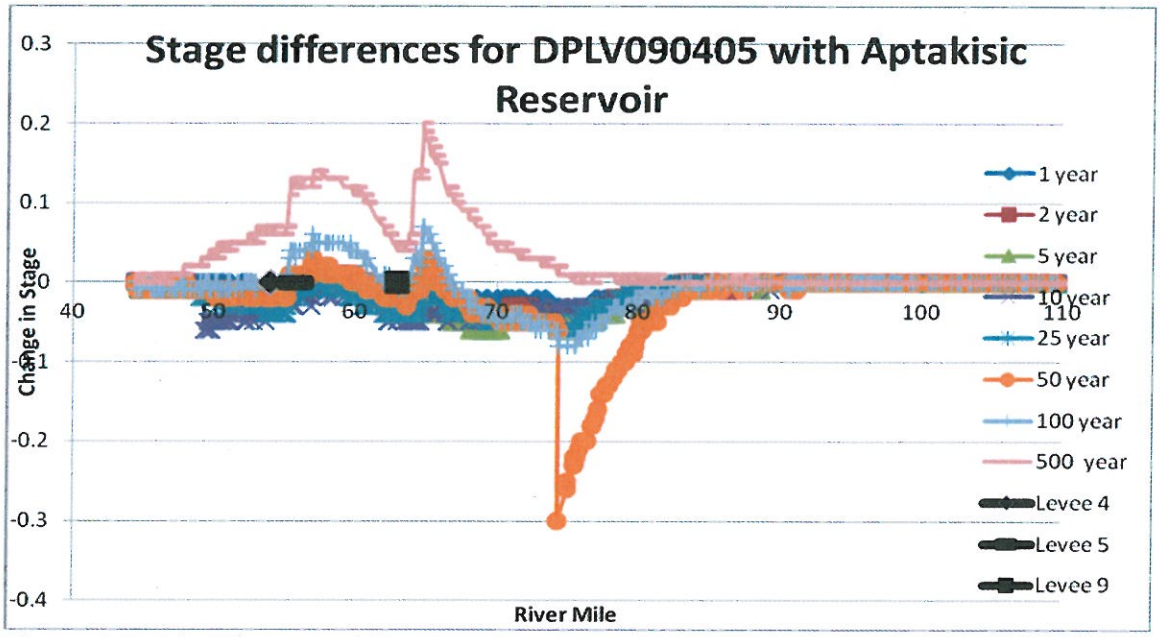


Figure 4 – Induced Stage Differences for Combination Levee 090405 with Aptakisic Reservoir (note: 50 yr spike is due to class A vs pressure flow at bridge)

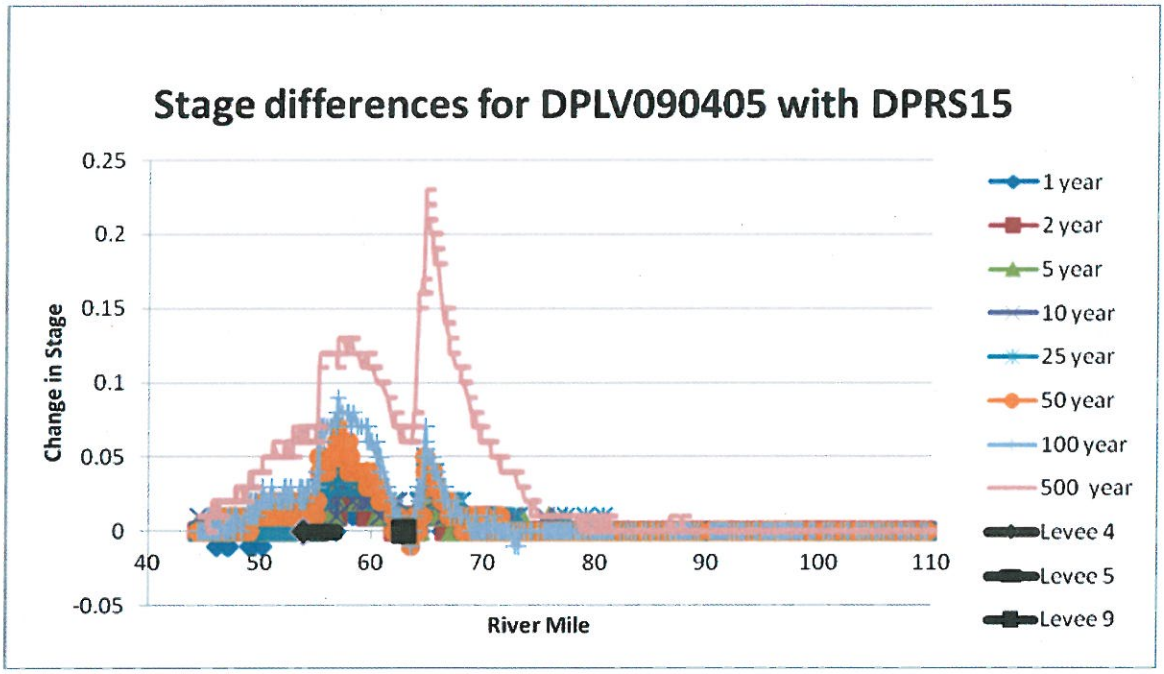


Figure 5 – Induced Stage Differences for Combination Levee 090405 with DPRS15

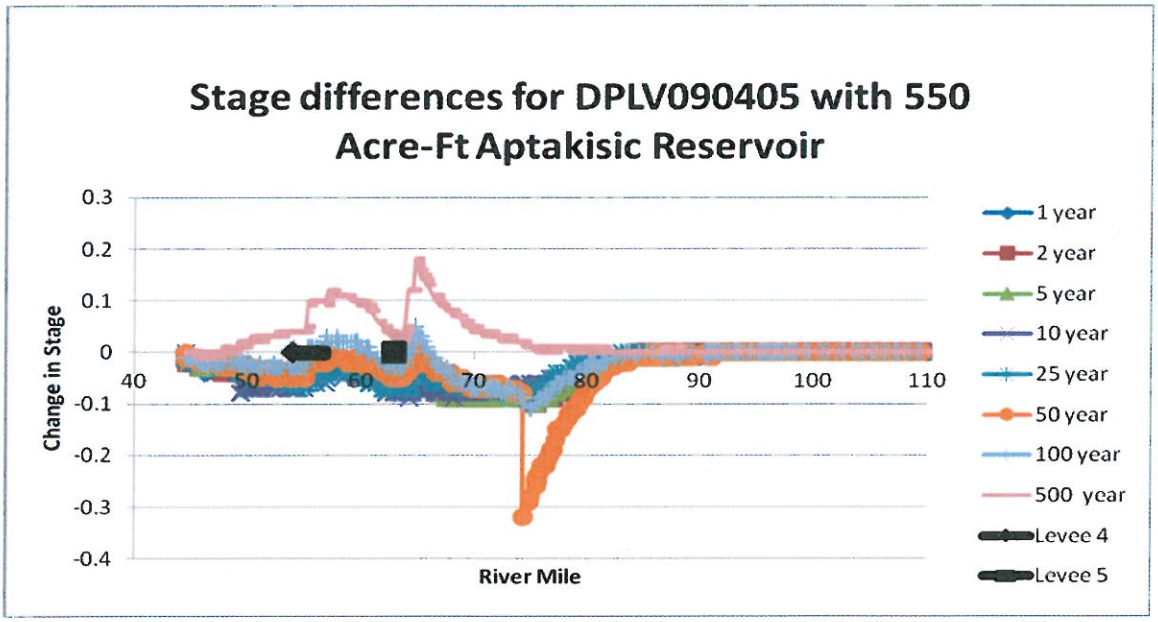


Figure 6 – Induced Stage Differences for Combination Levee 090405 with the 550 Acre-Ft Aptakisic Reservoir (note: 50 yr spike is due to class A vs pressure flow at bridge)

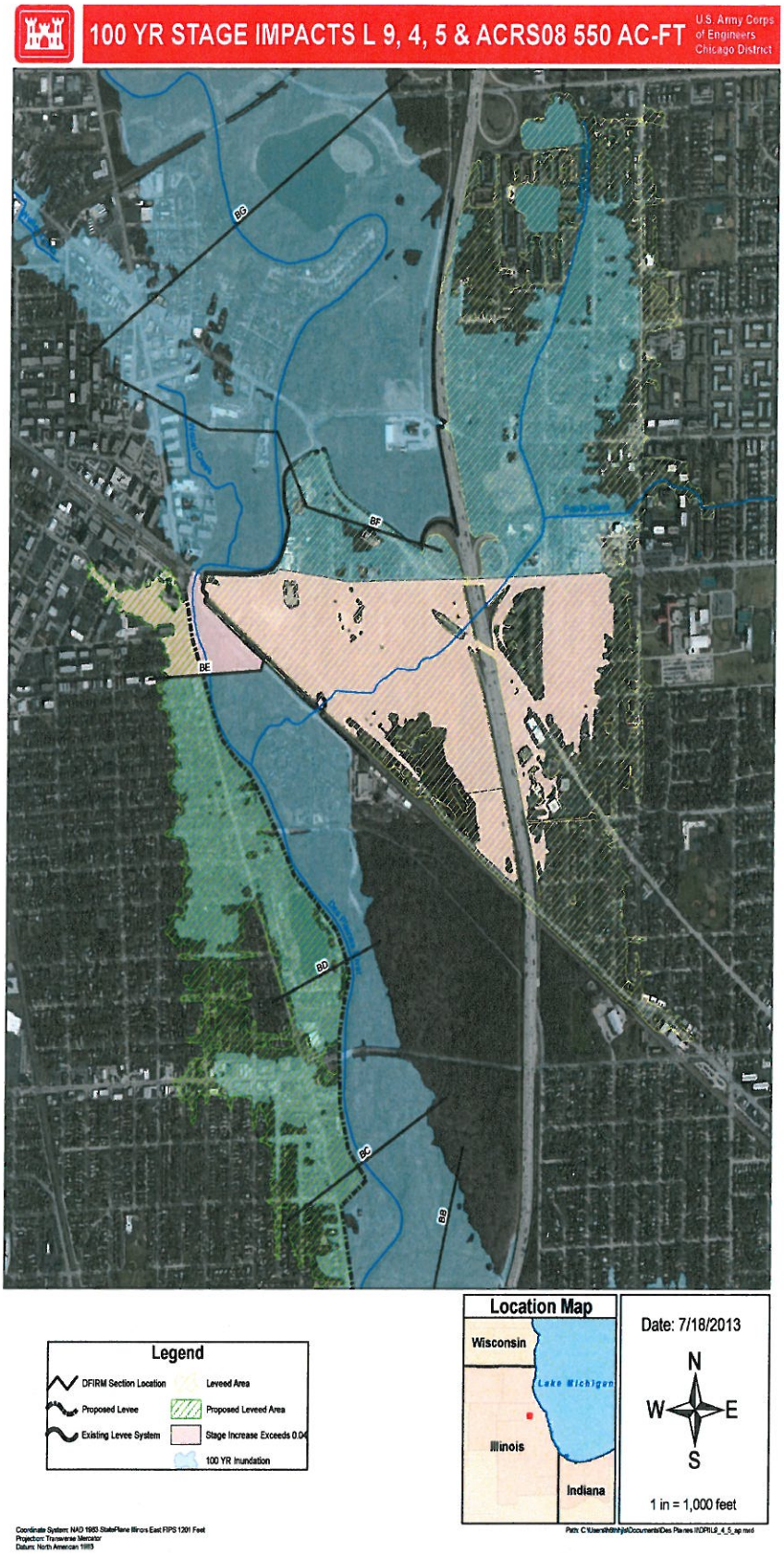


Figure 7 – Area (pink) requiring a flowage easement in Cook County Forest Preserve

7. Please contact Mr. Rick Ackerson of the Hydraulic and Environmental Engineering Section at extension 5511 if you have further questions.

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