

**UPPER MISSISSIPPI RIVER PHASE IV  
FLOOD RISK MANAGEMENT  
EXISTING CONDITIONS HYDRAULIC MODEL  
DOCUMENTATION REPORT**

**APPENDICES**

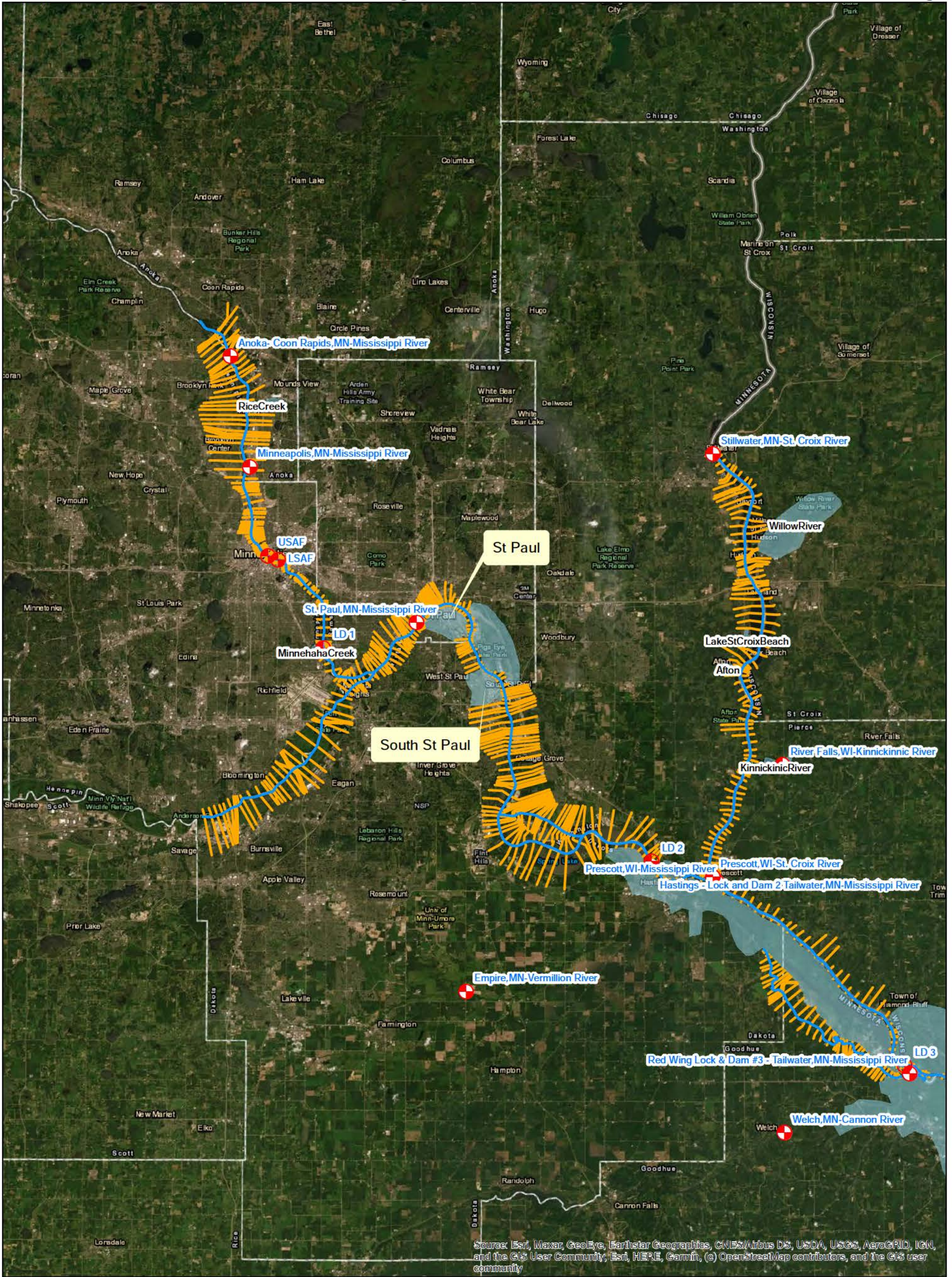


**US Army Corps  
of Engineers®**

**APPENDIX A-1**

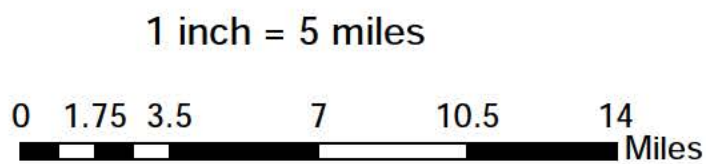
**MODEL EXTENT MAP**

# Upper Mississippi River Hydraulic Model Phase IV Geometry



**Legend**

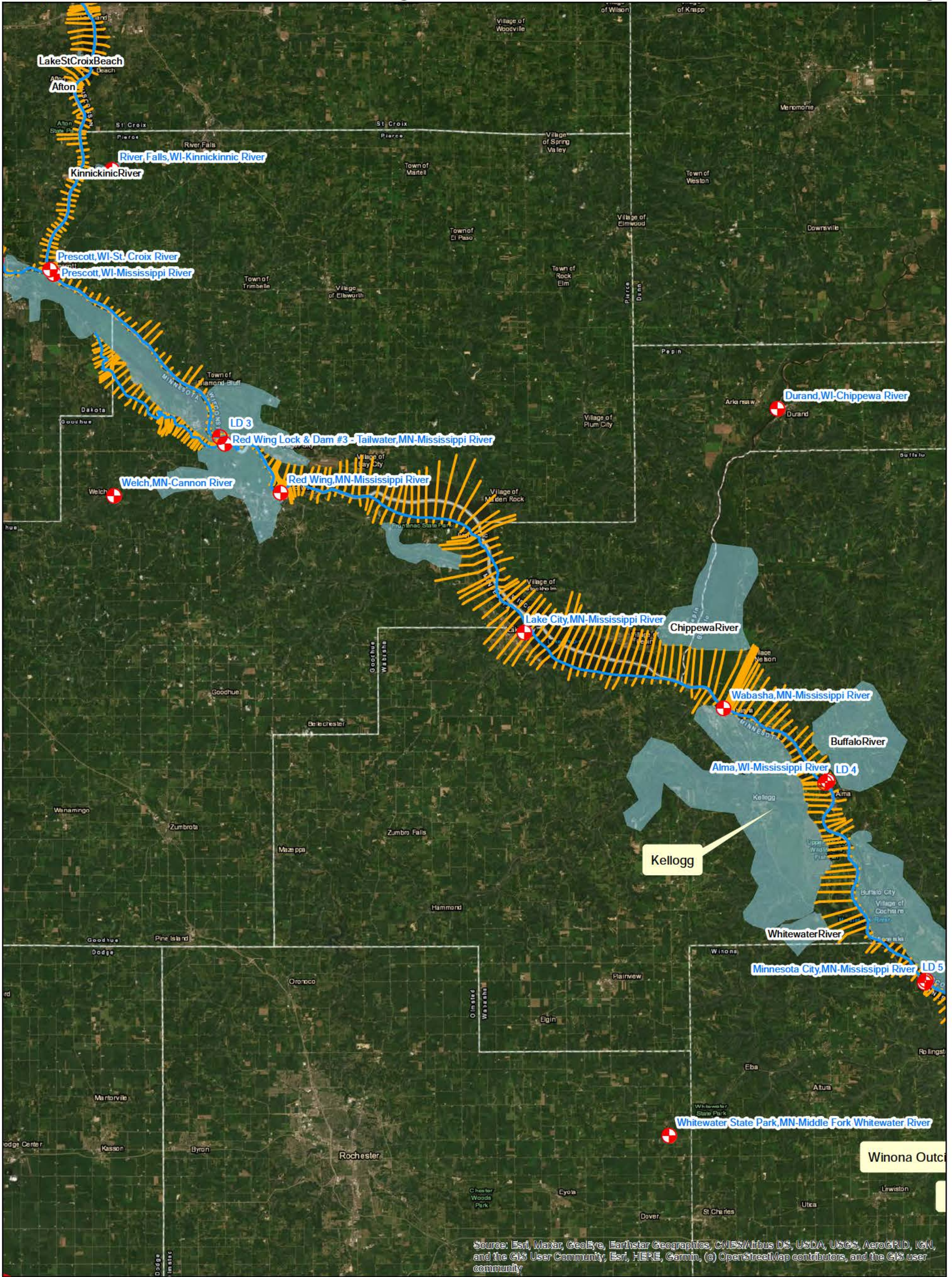
- HEC-RAS Centerlines
- HEC-RAS Cross Sections
- Stream Gages
- HEC-RAS Storage/2D Areas
- USACE Districts



Date: 7/7/2020

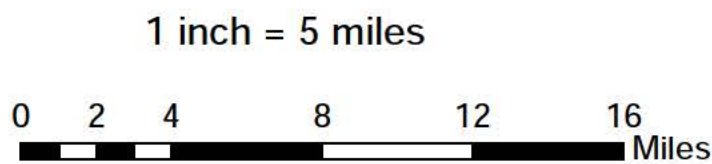


# Upper Mississippi River Hydraulic Model Phase IV Geometry



**Legend**

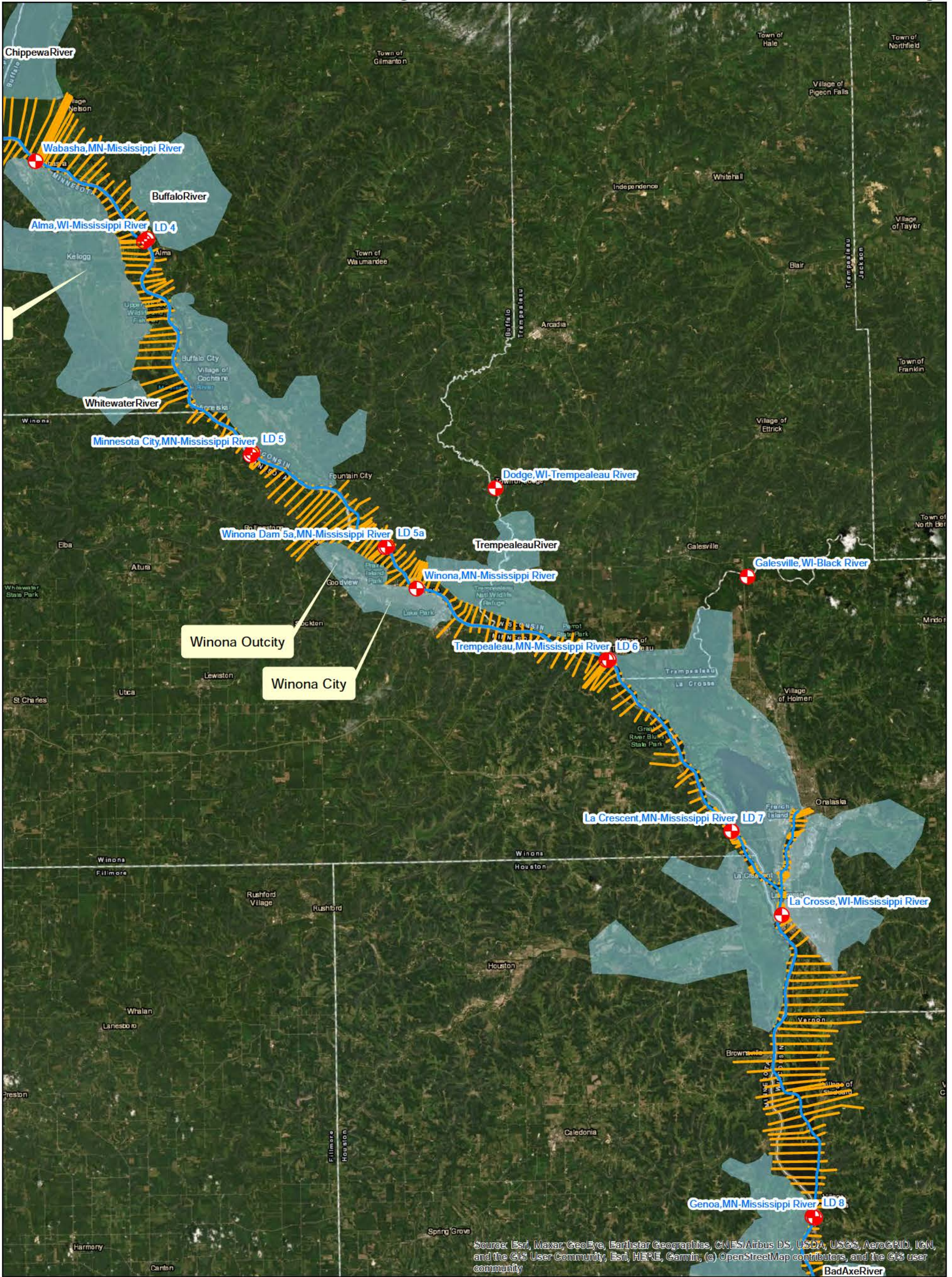
- HEC-RAS Centerlines
- HEC-RAS Cross Sections
- Stream Gages
- HEC-RAS Storage/2D Areas
- USACE Districts



Date: 7/7/2020



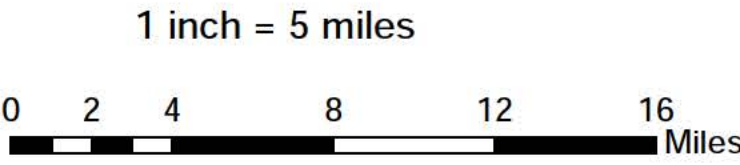
# Upper Mississippi River Hydraulic Model Phase IV Geometry



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

**Legend**

- HEC-RAS Centerlines
- HEC-RAS Cross Sections
- Stream Gages
- HEC-RAS Storage/2D Areas
- USACE Districts

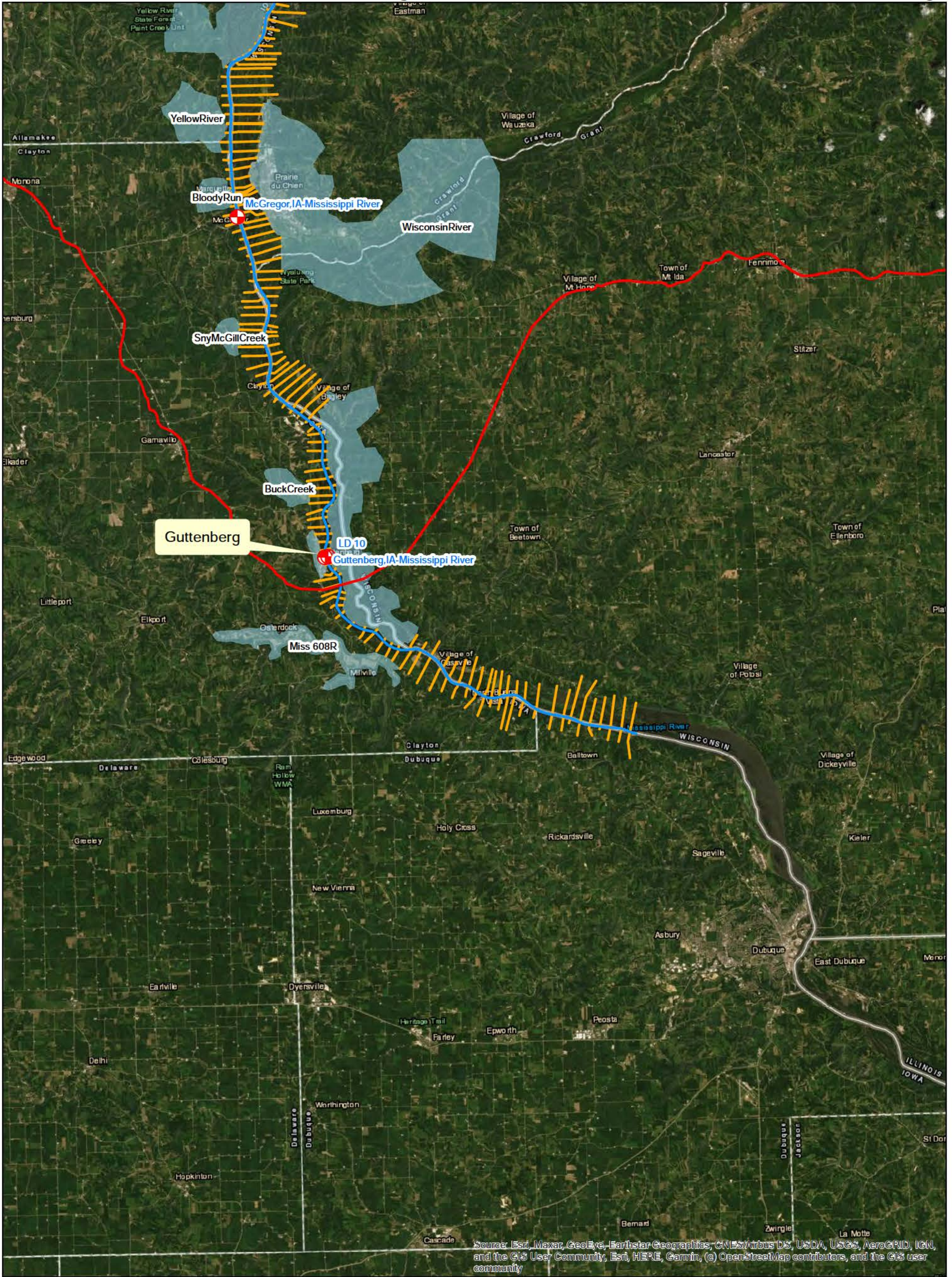


Date: 7/7/2020





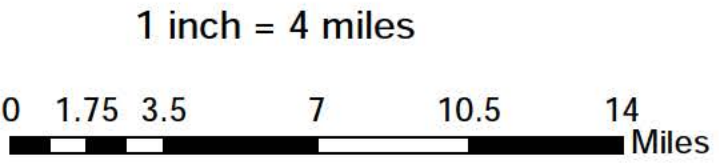
# Upper Mississippi River Hydraulic Model Phase IV Geometry



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

**Legend**

HEC-RAS Centerlines		Stream Gages
HEC-RAS Cross Sections		HEC-RAS Storage/2D Areas
		USACE Districts



Date: 7/7/2020

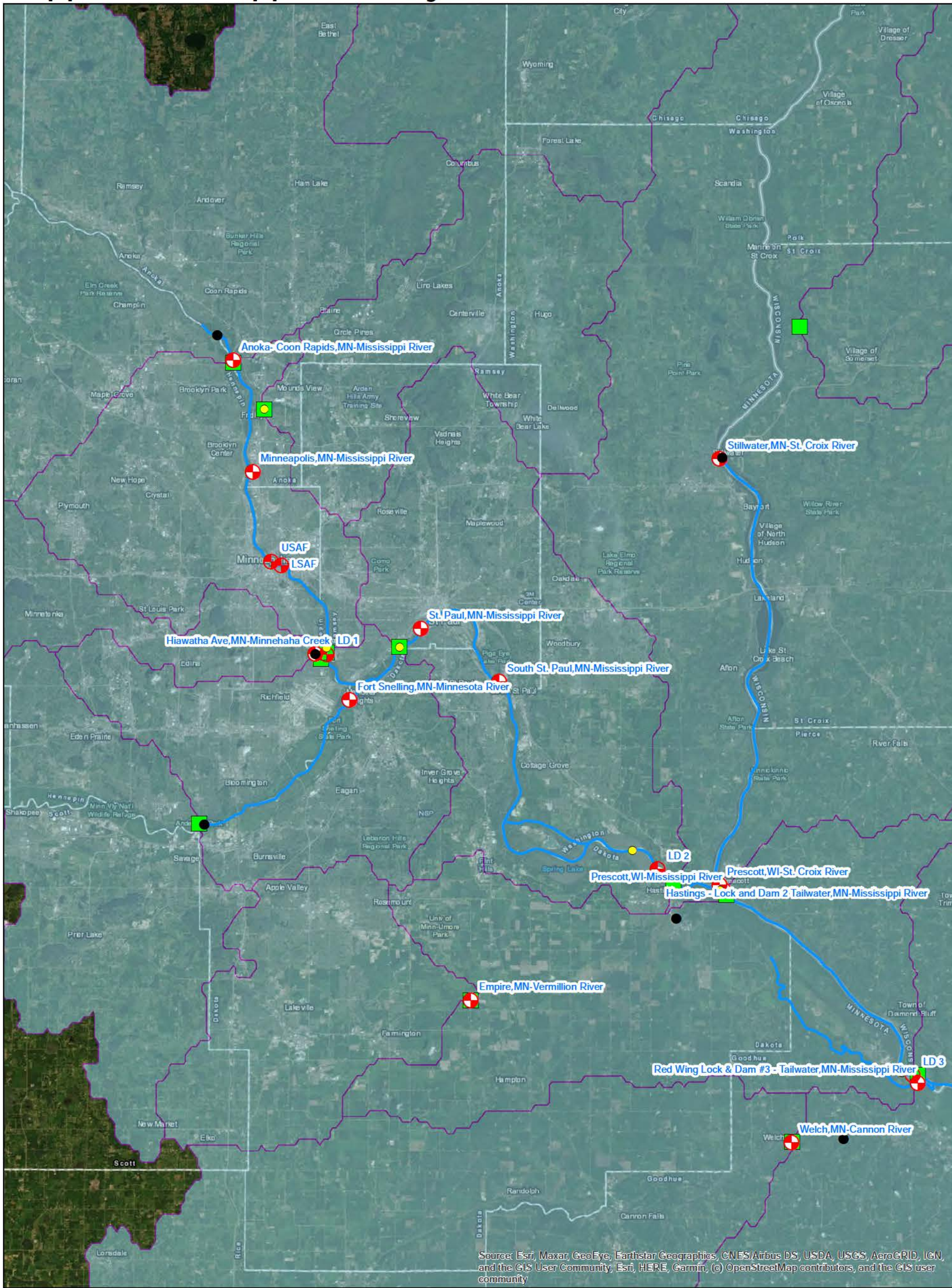


**APPENDIX A-2**

**MODEL MAP WITH INFLOW LOCATIONS**



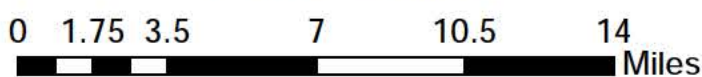
# Upper Mississippi River Hydraulic Model Phase IV Inflows



## Legend

- USACE Districts
- NCRFC Basin Outlets
- Gaged\_Inflow\_Pts
- HEC-RAS Centerlines
- Ungaged\_Inflow\_Pts
- Ungaged Inflow Basins
- Stream Gages

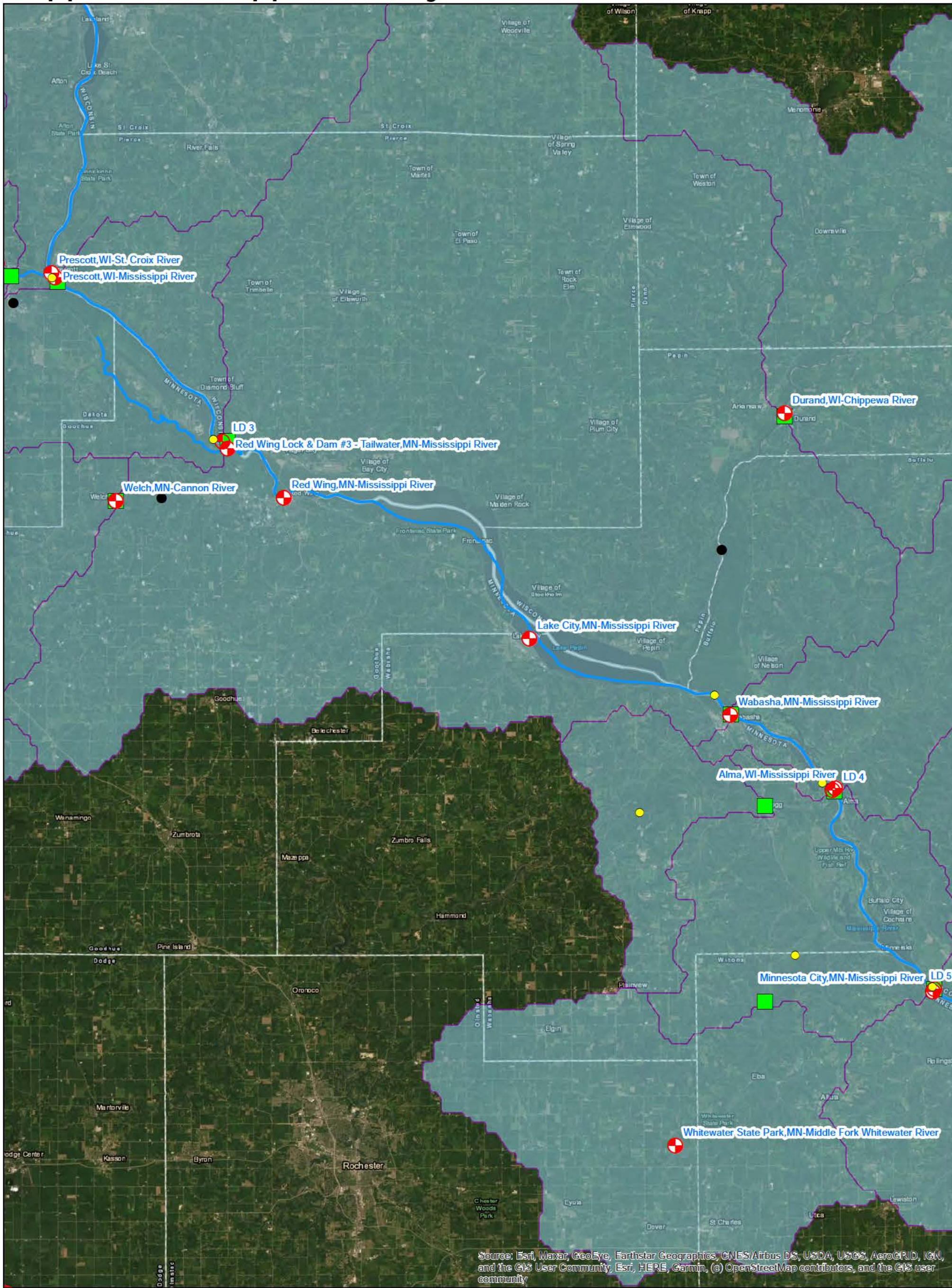
1 inch = 5 miles



Date: 7/8/2020



# Upper Mississippi River Hydraulic Model Phase IV Inflows



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

## Legend

- USACE Districts
- NCRFC Basin Outlets
- Gaged\_Inflow\_Pts
- HEC-RAS Centerlines
- Ungaged\_Inflow\_Pts
- Ungaged Inflow Basins
- Stream Gages

1 inch = 5 miles

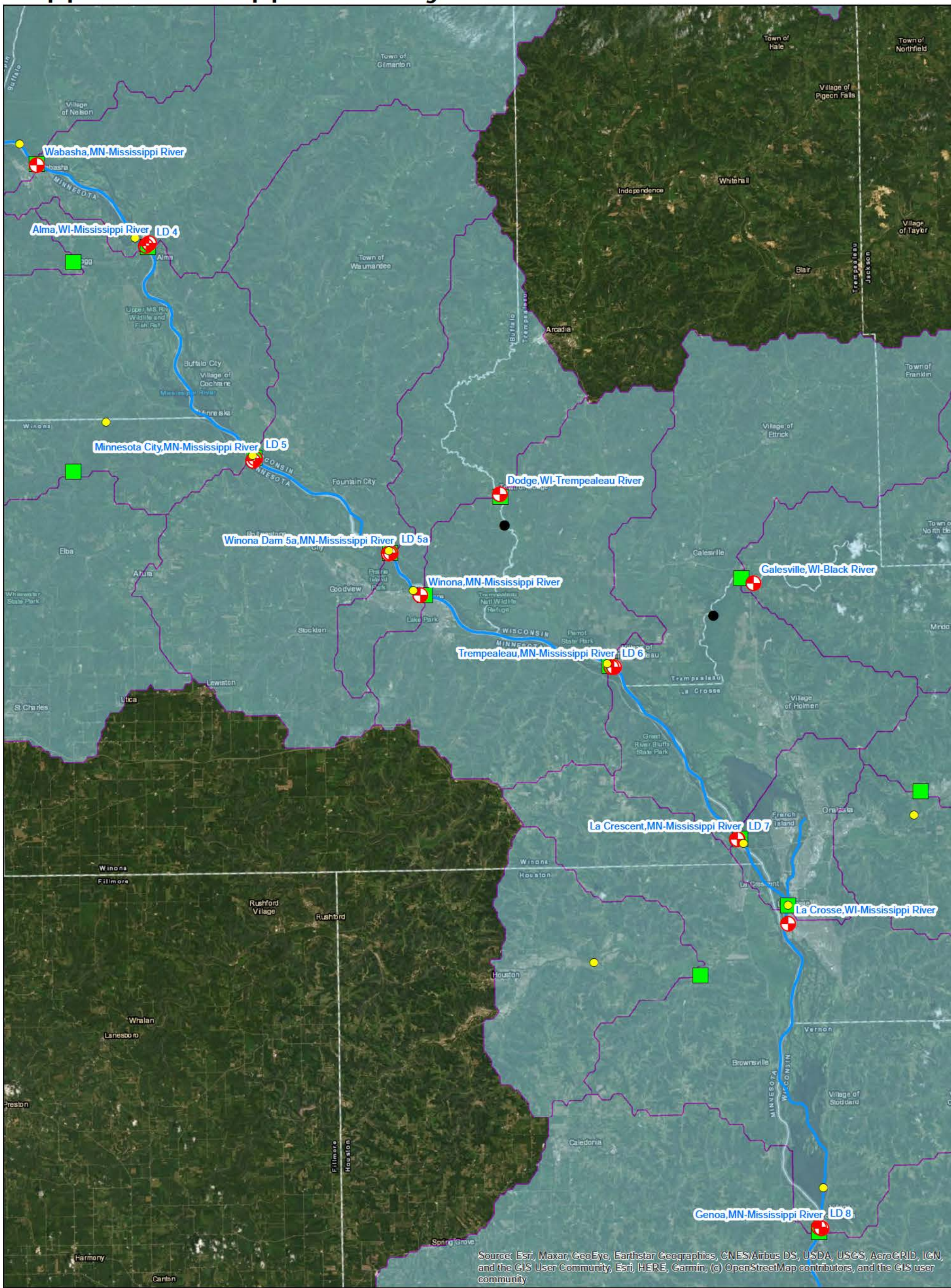
0 2 4 8 12 16 Miles



Date: 7/8/2020



# Upper Mississippi River Hydraulic Model Phase IV Inflows

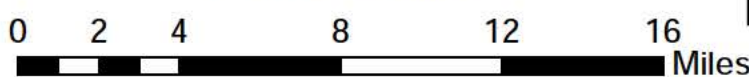


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

## Legend

- USACE Districts
- NCRFC Basin Outlets
- Gaged\_Inflow\_Pts
- HEC-RAS Centerlines
- Ungaged\_Inflow\_Pts
- Ungaged Inflow Basins
- Stream Gages

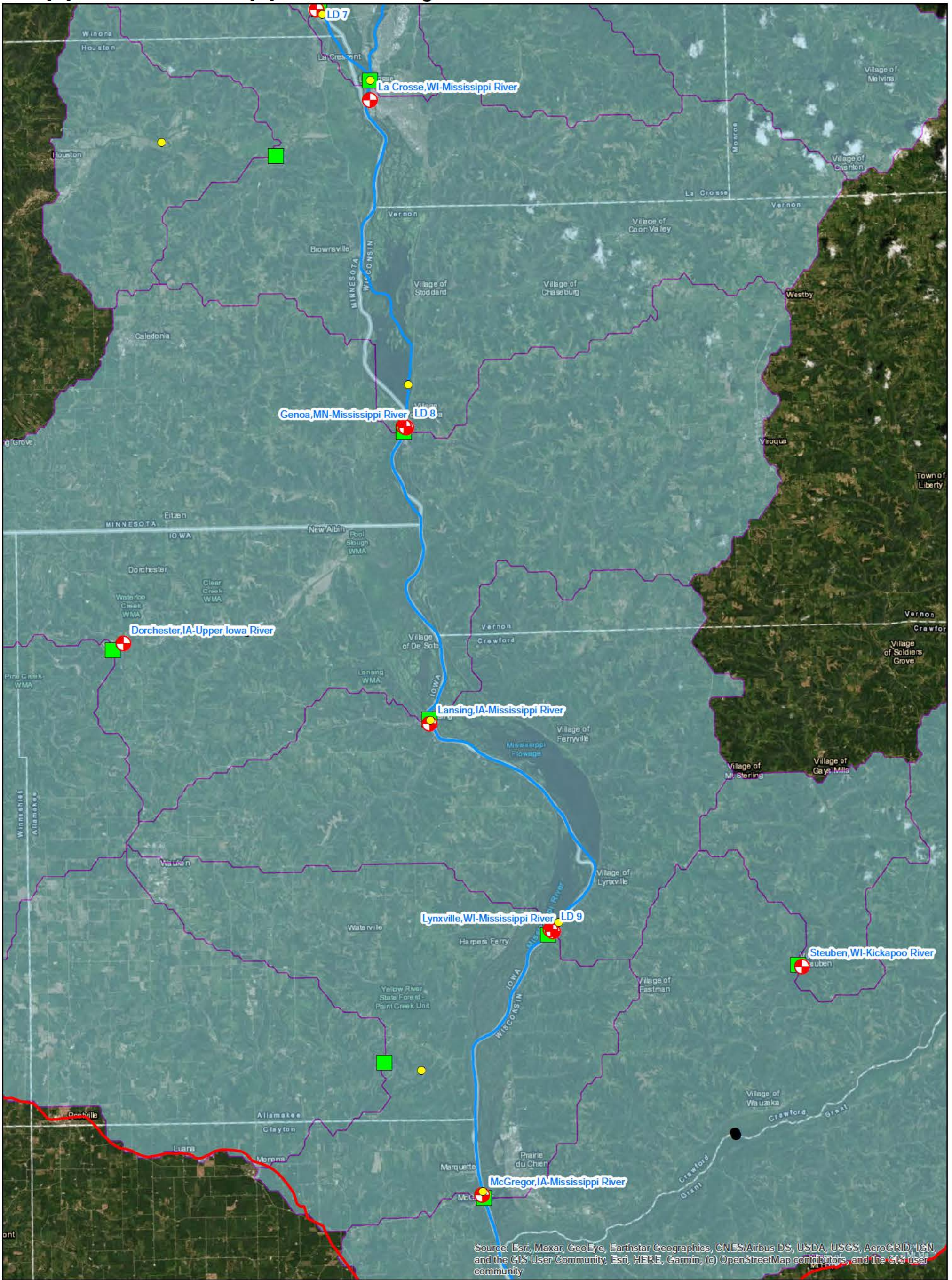
1 inch = 5 miles



Date: 7/8/2020



# Upper Mississippi River Hydraulic Model Phase IV Inflows

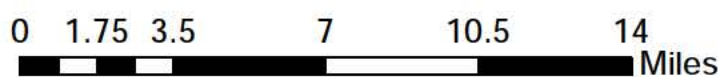


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

## Legend

- USACE Districts
- NCRFC Basin Outlets
- Gaged\_Inflow\_Pts
- HEC-RAS Centerlines
- Ungaged\_Inflow\_Pts
- Ungaged Inflow Basins
- + Stream Gages

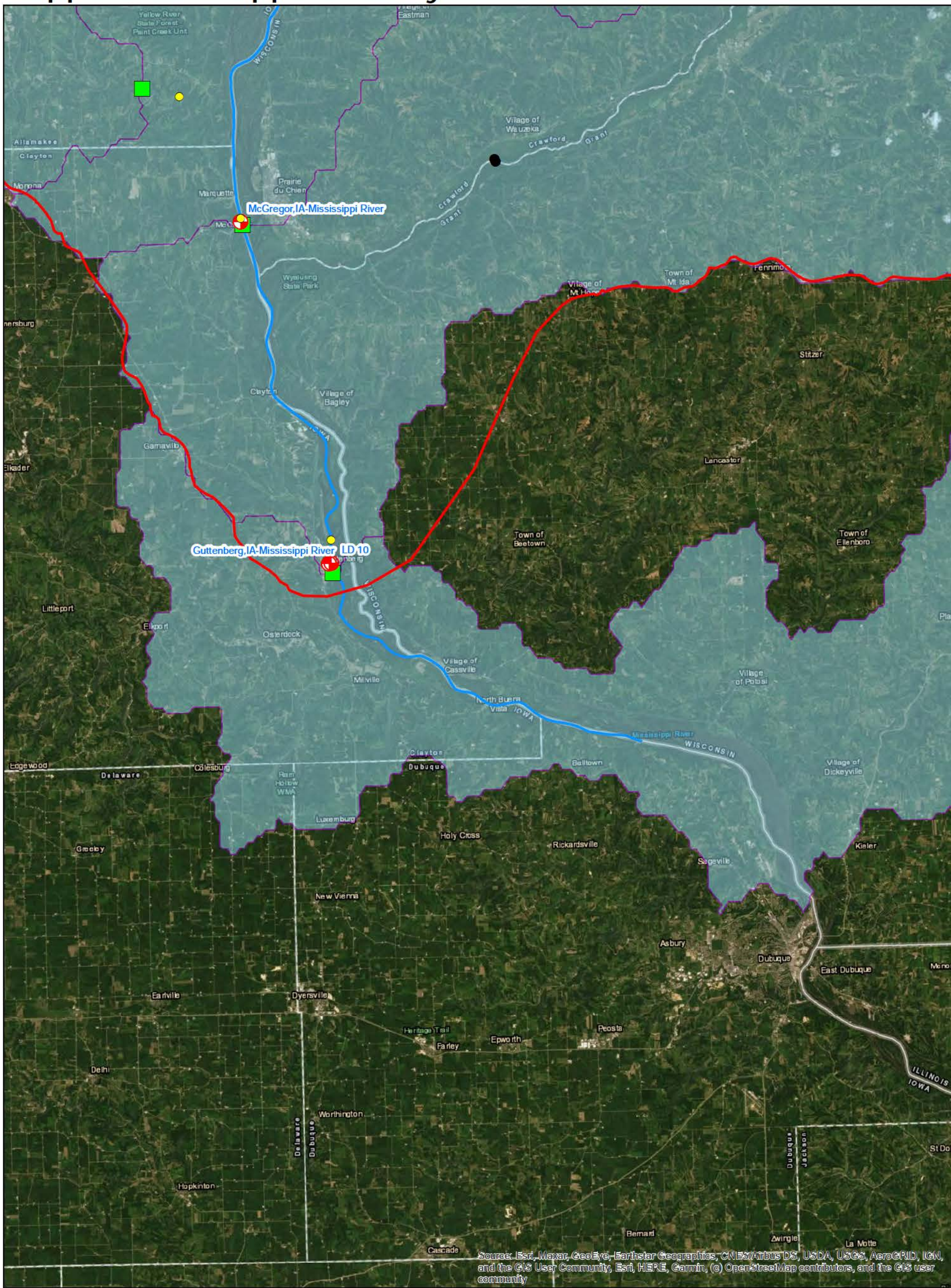
1 inch = 4 miles



Date: 7/8/2020



# Upper Mississippi River Hydraulic Model Phase IV Inflows

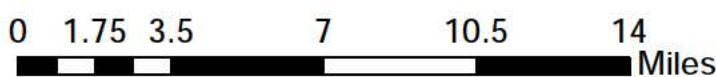


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

## Legend

- USACE Districts
- NCRFC Basin Outlets
- Gaged\_Inflow\_Pts
- HEC-RAS Centerlines
- Ungaged\_Inflow\_Pts
- Ungaged Inflow Basins
- Stream Gages

1 inch = 4 miles



Date: 7/8/2020



## **APPENDIX B**

### **VERTICAL DATUM CONVERSIONS**

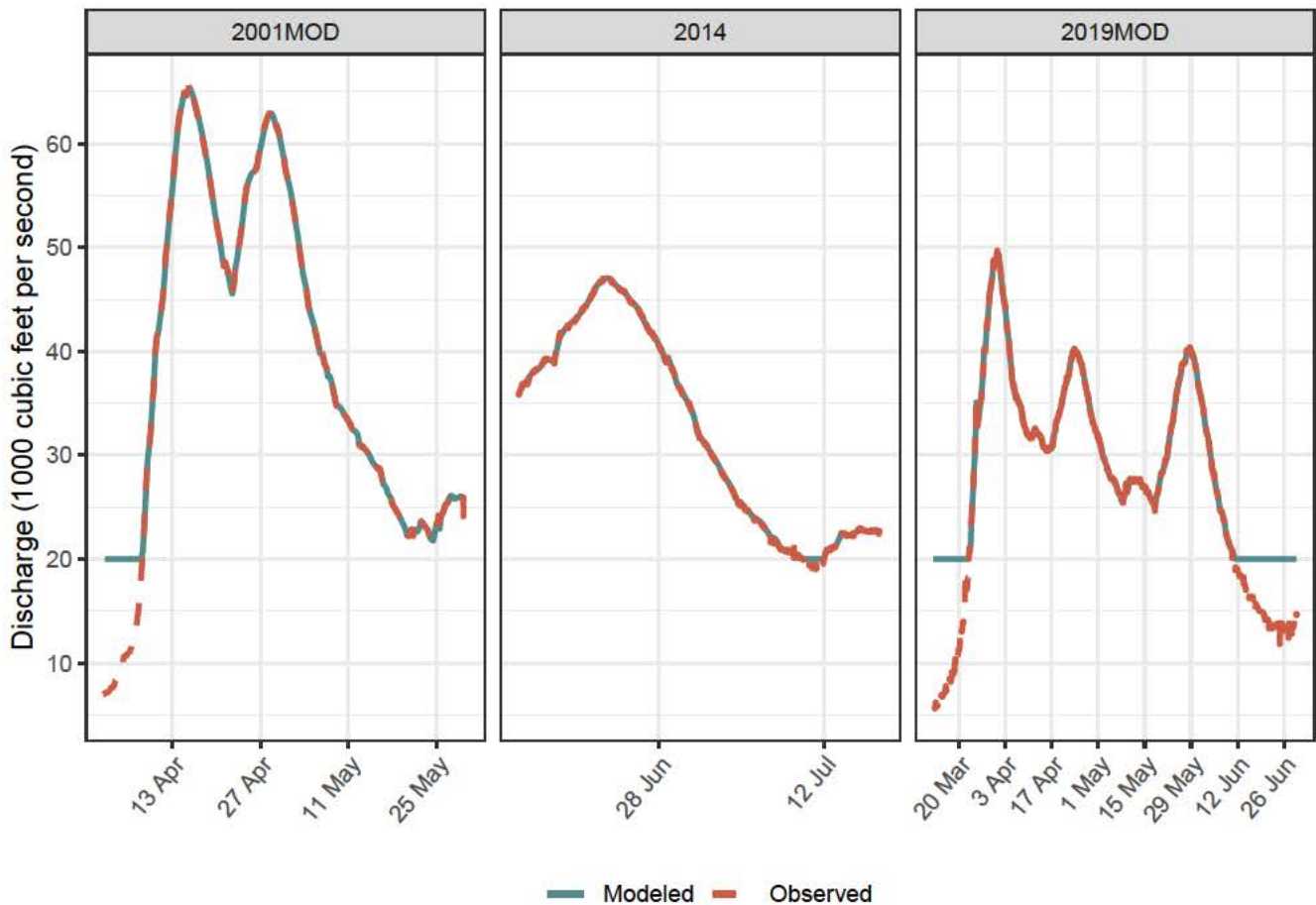
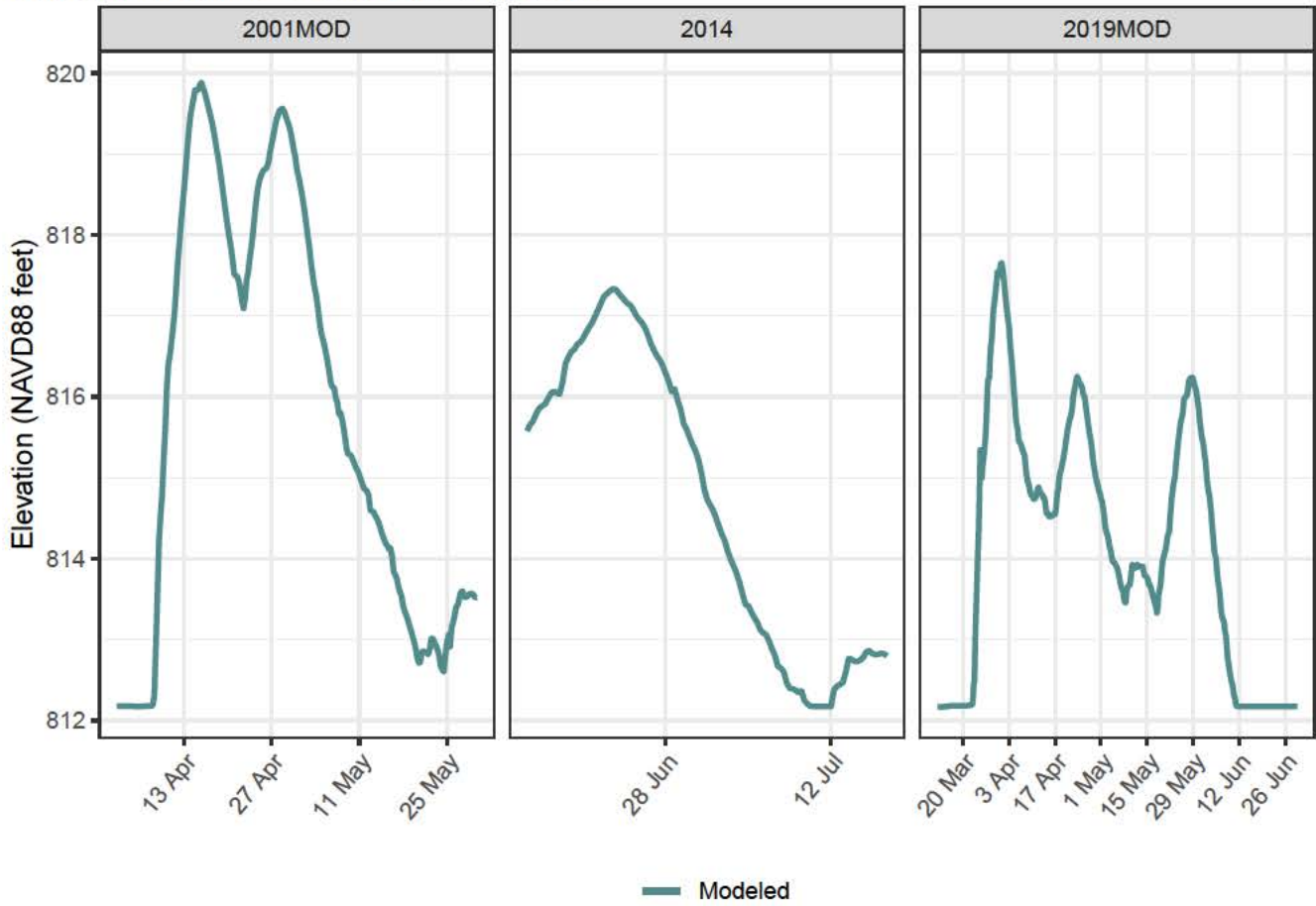
River	Reach	Cross Section	Location	Datum	Elevation	NAVD88 Adjustment	NAVD88	
Mississippi	DSCoonRapidsDam	854.2	USAF HW	MSL 1912	700	-0.28	699.725	
		853.56	LSAF HW	MSL 1912	700	-0.41	699.59	
		853.32	LSAF TW	MSL 1912	700	-0.41	699.59	
		847.63	LD1 HW	MSL 1912	700	-0.30	699.699	
		847.51	LD1 TW	MSL 1912	700	-0.30	699.699	
	DSMinnesota	839.25	St. Paul, MN	NAVD88	683.77			683.77
		833.63	South St.Paul	MSL 1912	600	-0.37		599.63
	BelowGreyCloud	815.43	LD2HW	MSL 1912	600	-0.37		599.63
		814.98	LD2TW	MSL 1912	600	-0.37		599.63
		813.69	Hastings, MN	NAVD88	667.88			667.88
	BelowStCroix	811.27	Prescott, WI	NAVD88	649.67			649.67
		797.08	LD3HW	MSL 1912	600	-0.41		599.595
		796.75	LD3TW	MSL 1912	600	-0.41		599.595
	Below Vermillion	790.93	Red Wing, MN	NAVD88	664.73			664.73
		772.6	Lake City/LKCM5	MSL 1912	600	-0.41		599.59
		760.52	Wabasha, MN	MSL 1912	660	-0.42		650
		753.12	LD4HW	MSL 1912	600	-0.41		599.59
		752.6	LD4TW	MSL 1912	600	-0.41		599.59
		749.83	Alma/AMAW3	MSL 1912	600	-0.43		599.57
		738.3	LD5HW	MSL 1912	600	-0.43		599.57
		737.92	LD5TW	MSL 1912	600	-0.43		599.57
		728.63	LD5aHW	MSL 1912	600	-0.42		599.58
		728.27	LD5aTW	MSL 1912	600	-0.42		599.58
		725.68	Winona, MN	NGVD29	639.64	-0.05		639.59
		714.53	LD6HW	MSL 1912	600	-0.47		599.53
		714.03	LD6TW	MSL 1912	600	-0.47		599.53
		706.83	Dakota	MSL 1912	600	-0.51		599.49
		702.66	LD7HW	MSL 1912	600	-0.51		599.49
	702.28	LD7TW	MSL 1912	600	-0.51		599.49	
	LaCrossToLD10	697.98	LaCrosse	MSL 1912	626.32	-0.54		625.778
		689	Brownsville, MN/BRWM5	MSL 1912	600	-0.68		599.32
		679.38	LD8HW	MSL 1912	600	-0.68		599.32
		679.03	LD8TW	MSL 1912	600	-0.68		599.32
		663.18	Lansing/LNSI4	MSL 1912	612.26	-0.69		611.57
648.03		LD9HW	MSL 1912	600	-0.69		599.31	
647.67		LD9TW	MSL 1912	600	-0.69		599.31	
633.28		McGregor, IA	NGVD29	604.84	-0.15		604.69	
624.72		Clayton, IA	NAVD88	599.4			599.4	
615.27		LD10HW	MSL 1912	600	-0.54		599.462	
615.04	LD10TW	MSL 1912	600	-0.54		599.462		

## **APPENDIX C-1**

### **MODEL CALIBRATION HYDROGRAPHS**

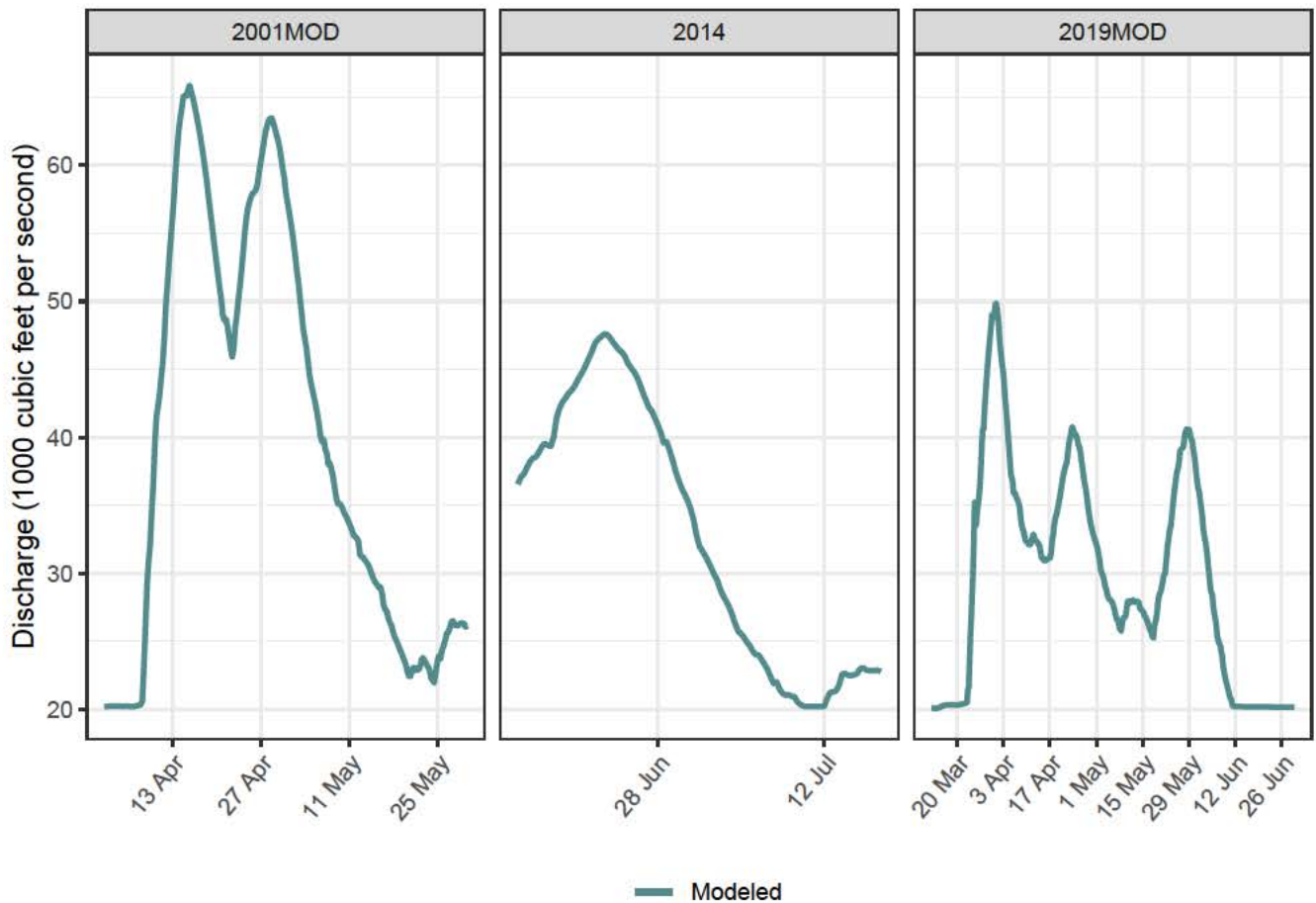
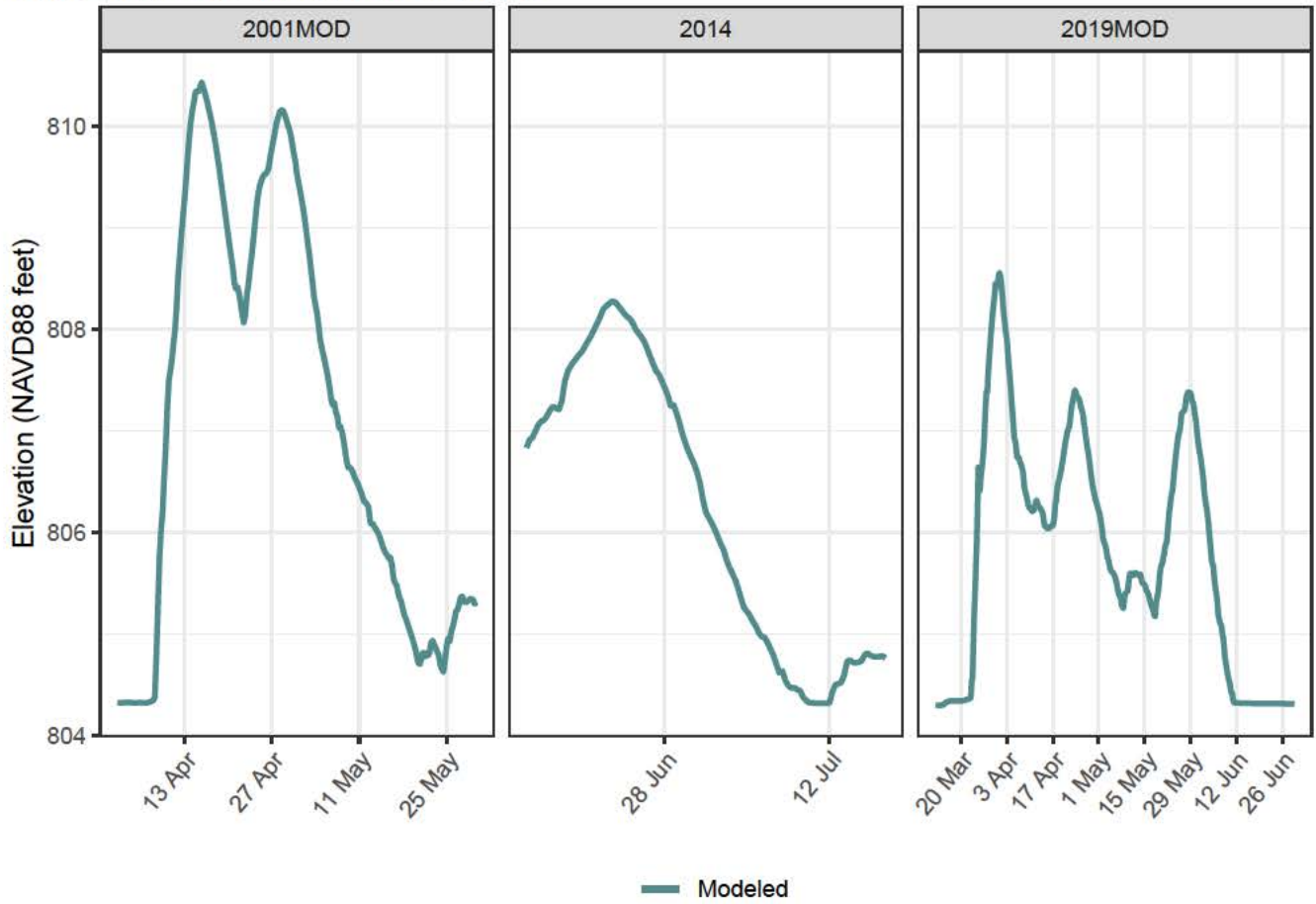


Mississippi River, DSCoonRapidsDam Reach, River Mile 864.83  
 Gage HWY 610 IN BROOKLYN PARK, MN



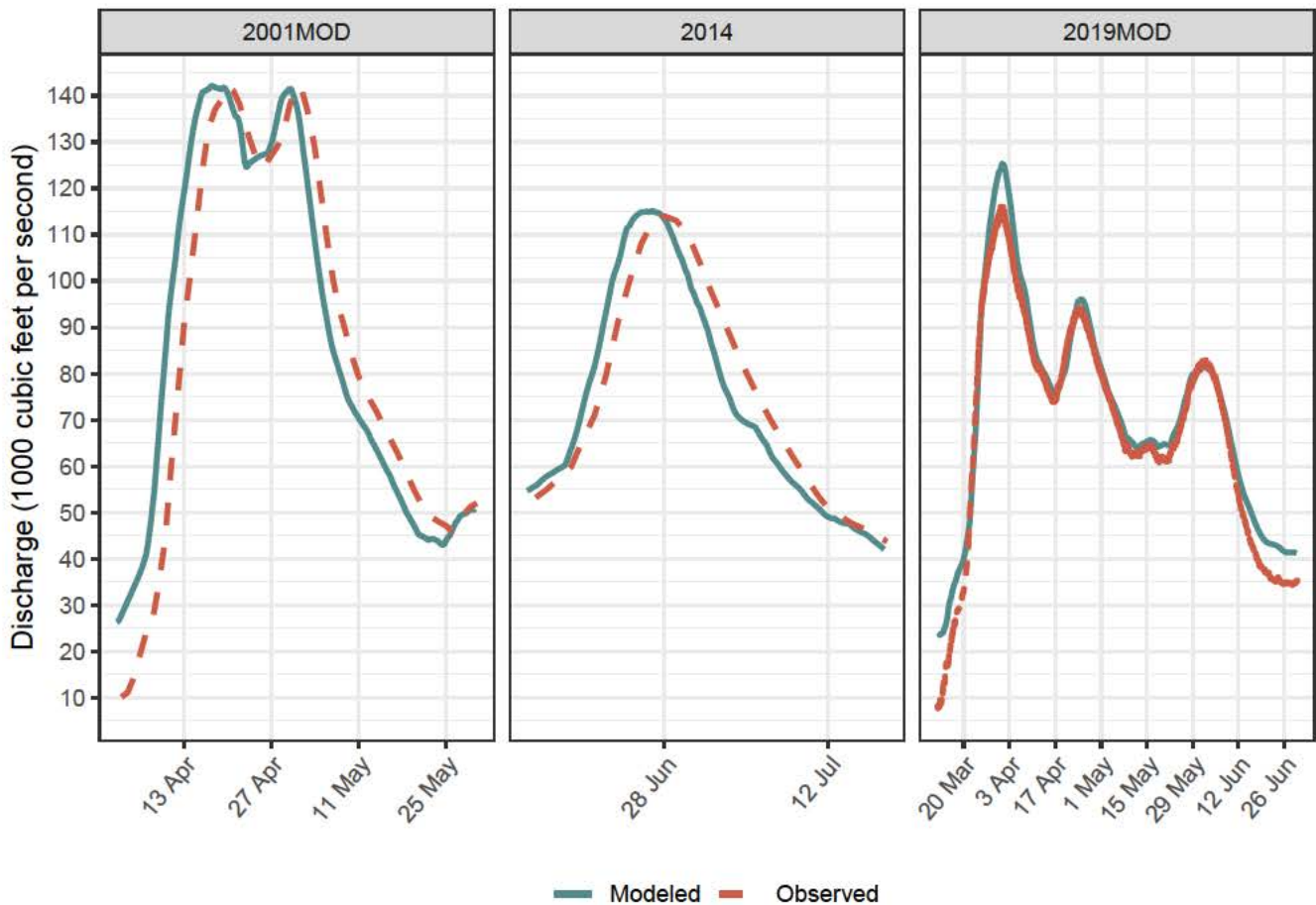
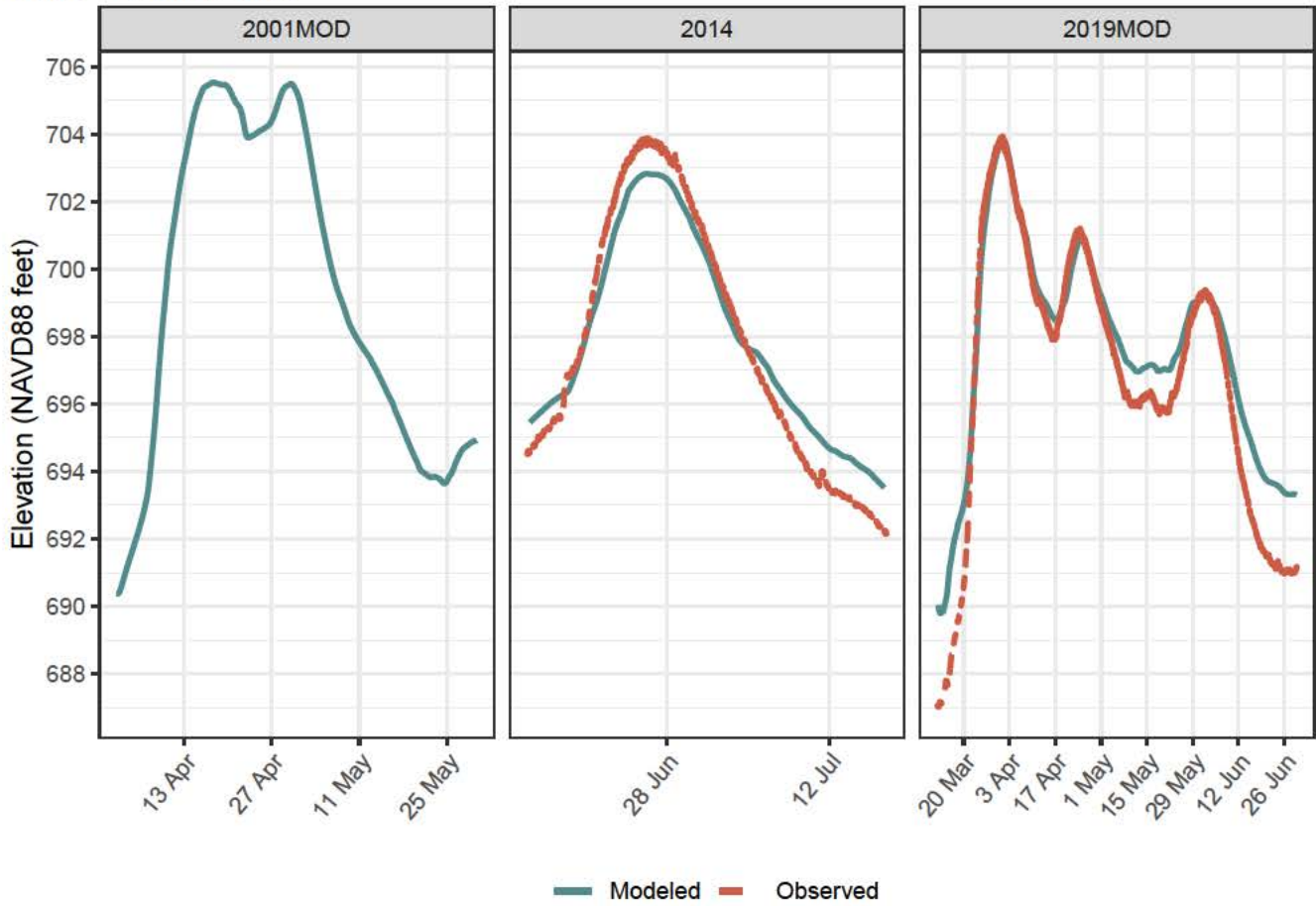
Mississippi River, DSCoonRapidsDam Reach, River Mile 858.56

Gage 37TH AVE. NE IN FRIDLEY, MN



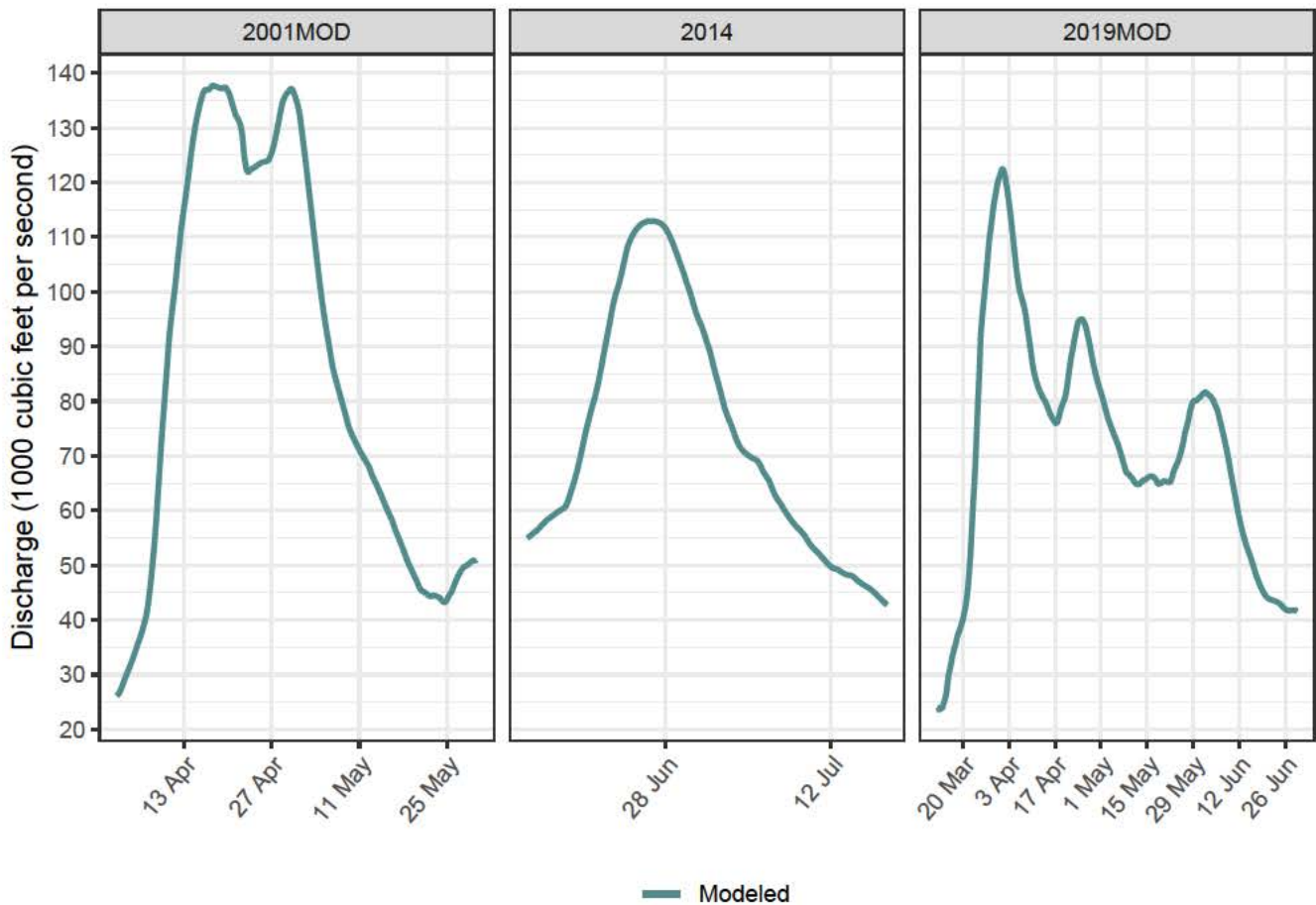
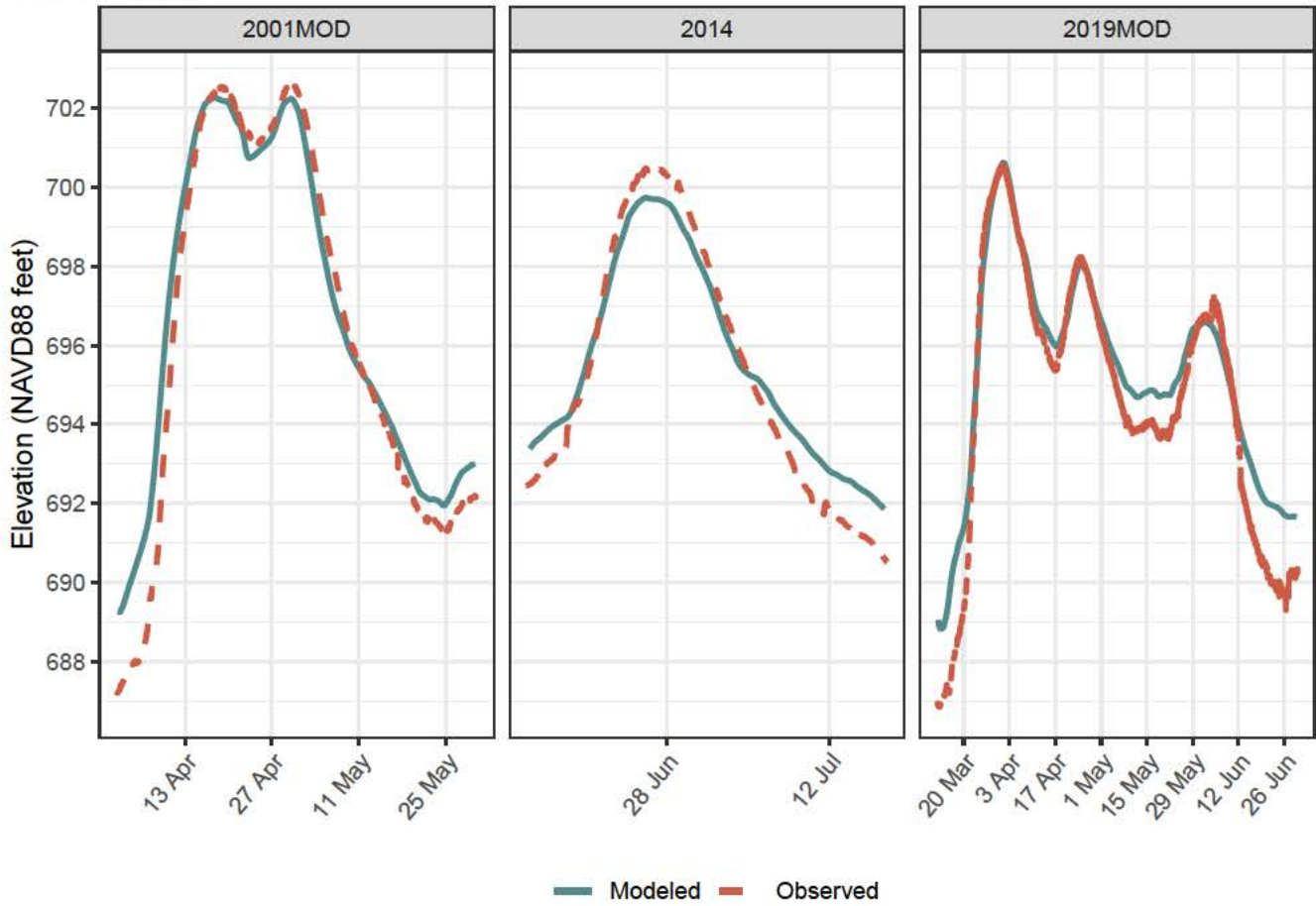
Mississippi River, DSMinnesota Reach, River Mile 839.25

Gage ST. PAUL, MN



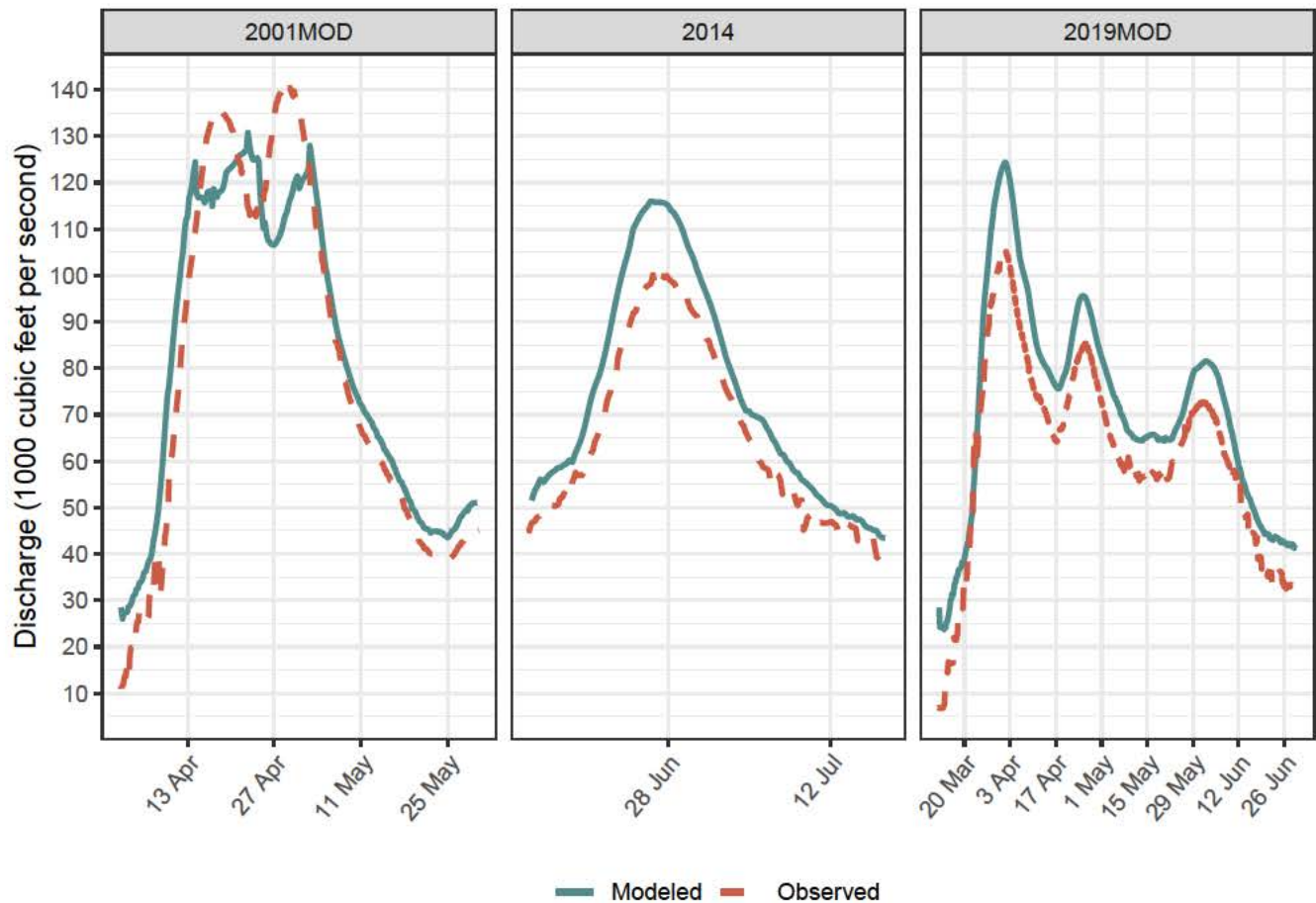
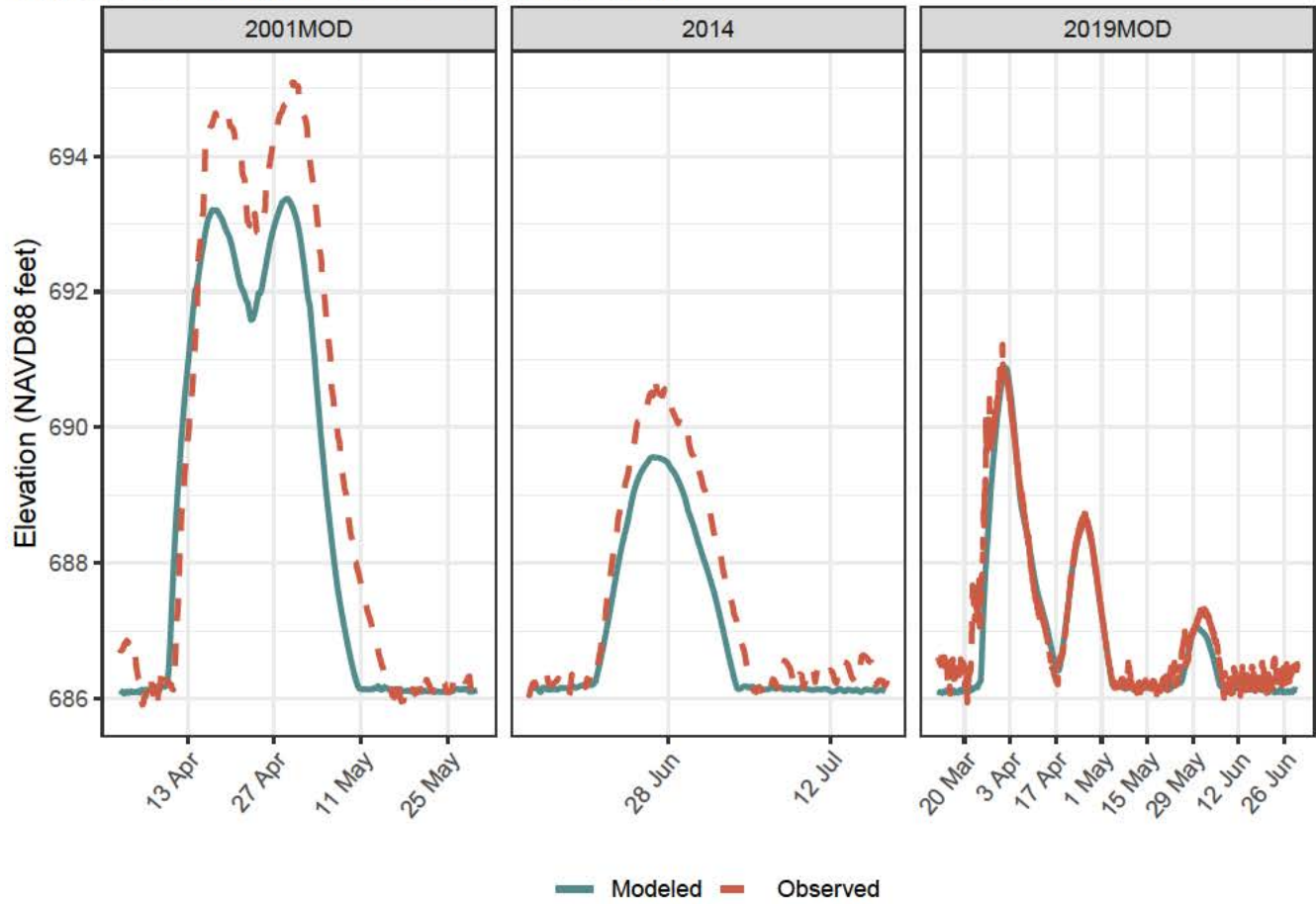
Mississippi River, DSMinnesota Reach, River Mile 833.63

Gage SSPM5



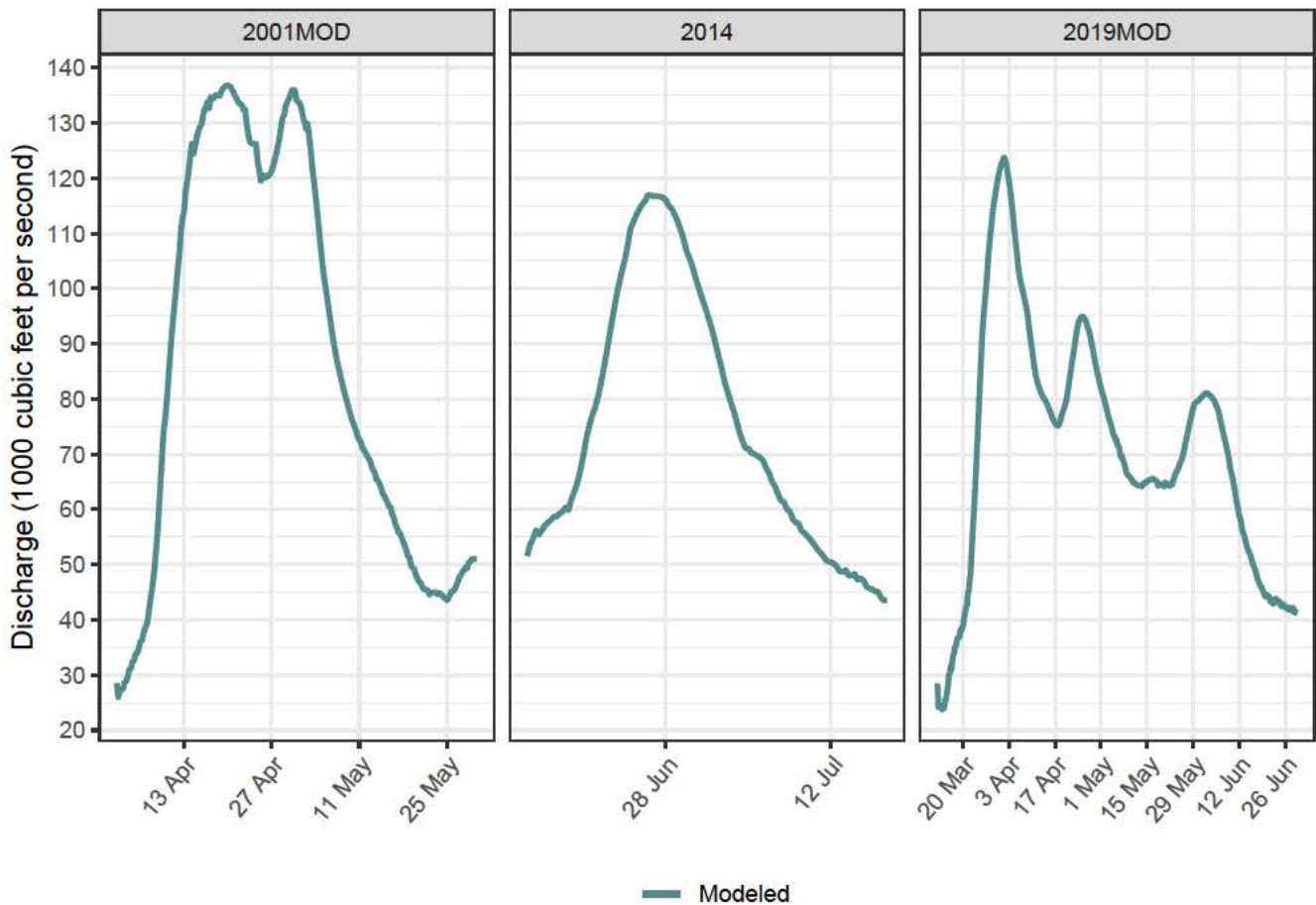
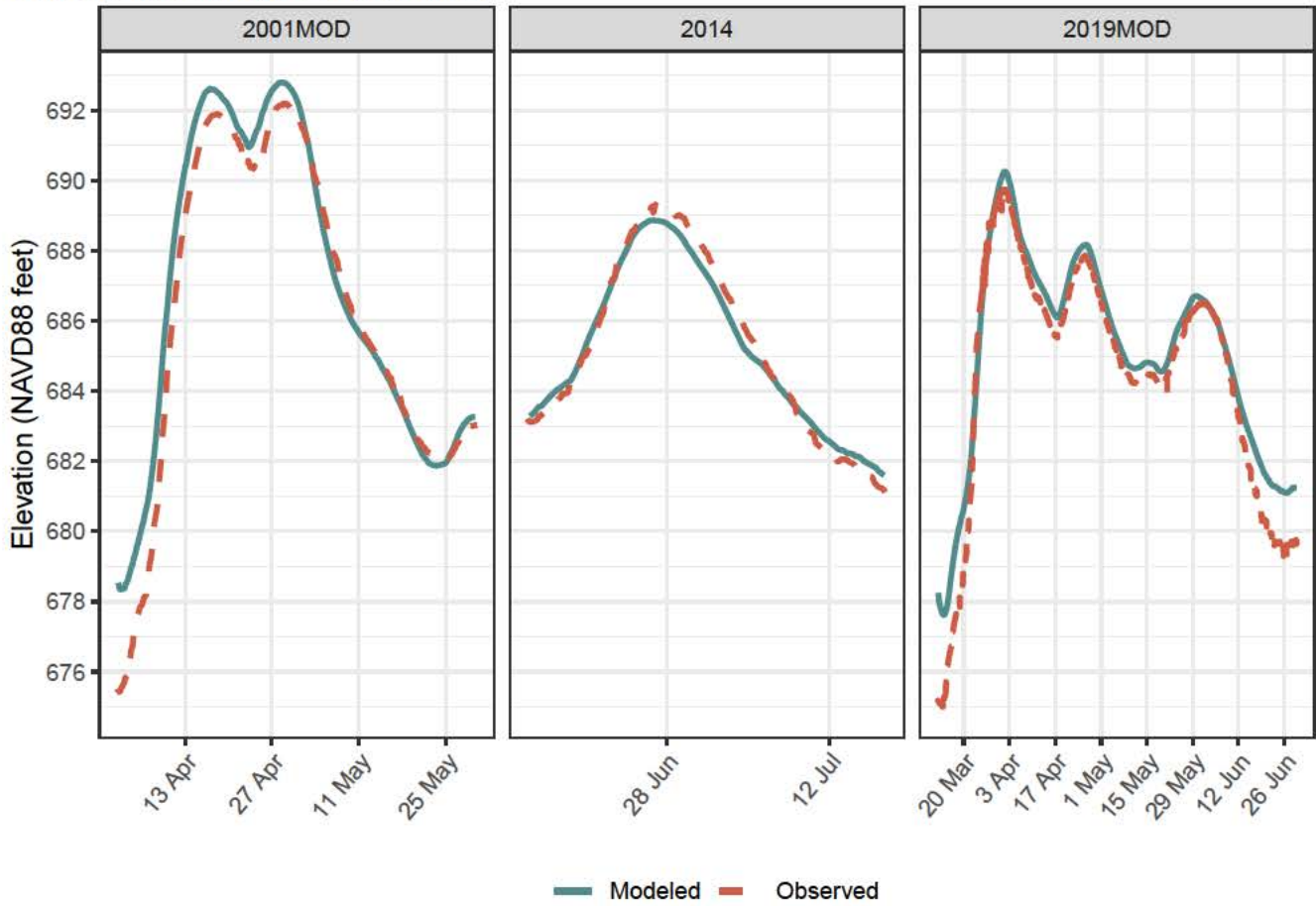
Mississippi River, Below GreyCloud Reach, River Mile 815.43

Gage LOCKDAM\_02 + 2D Connection\_LD2HW

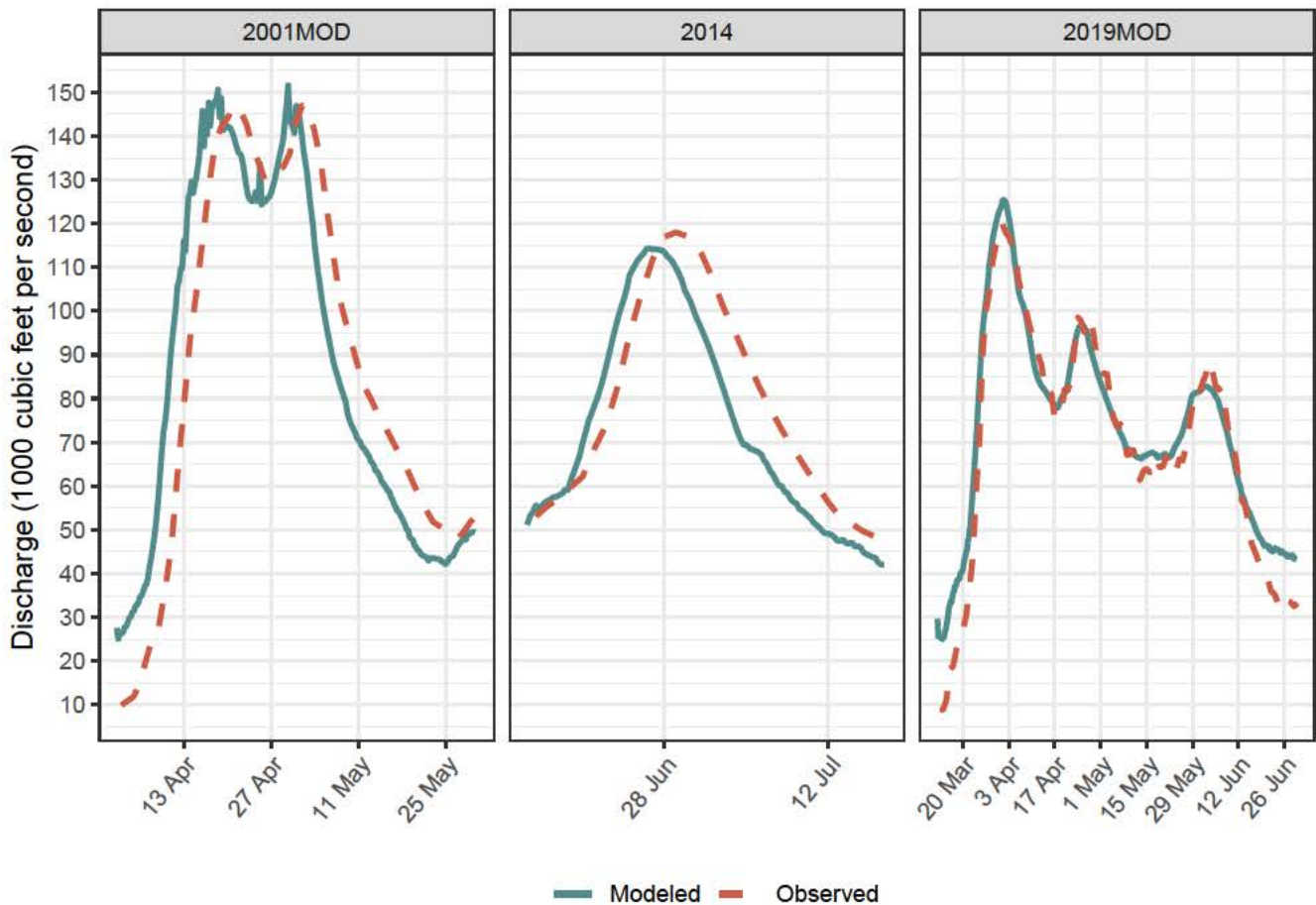
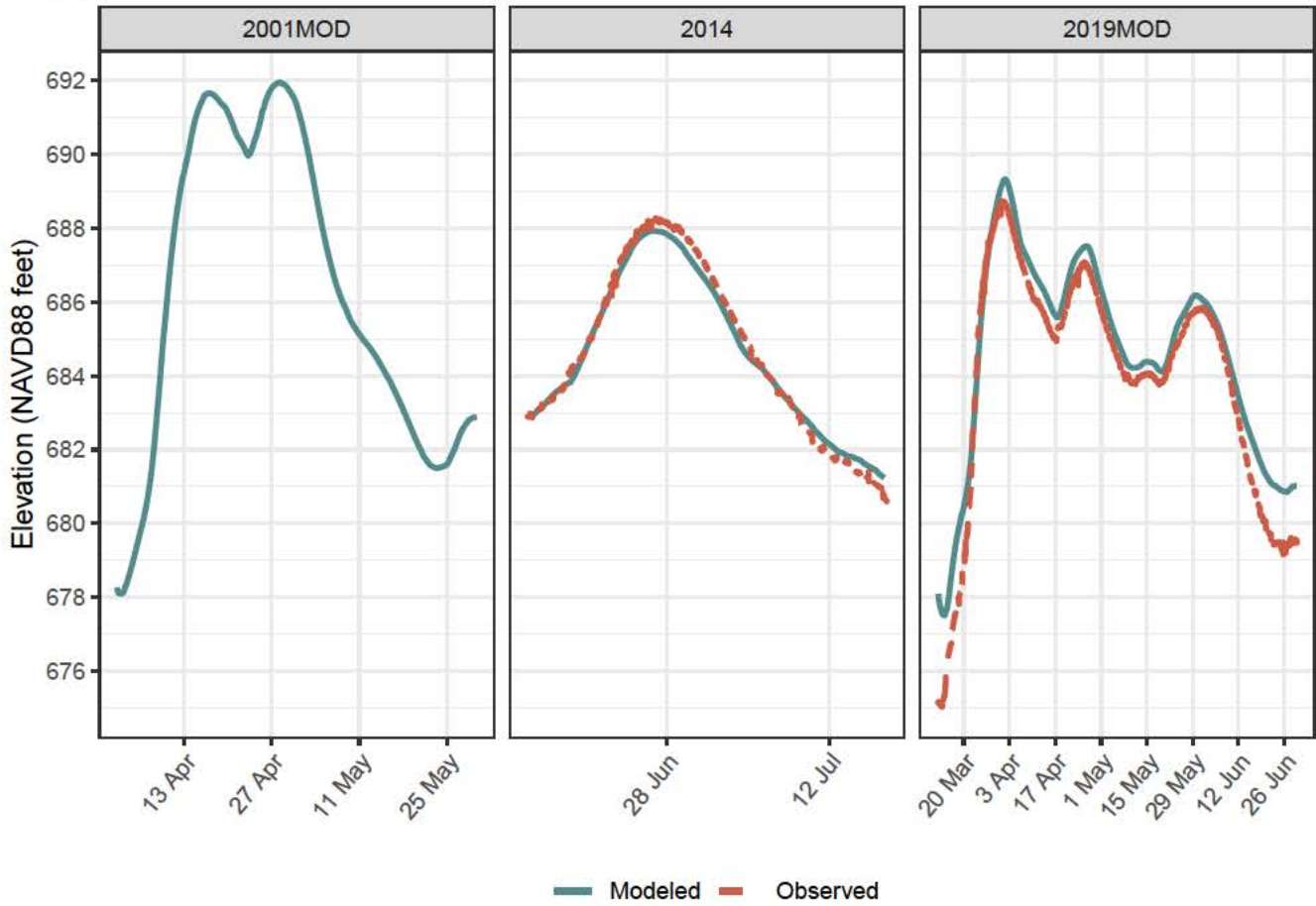


Mississippi River, Below GreyCloud Reach, River Mile 814.98

Gage LOCKDAM\_02-TAILWATER

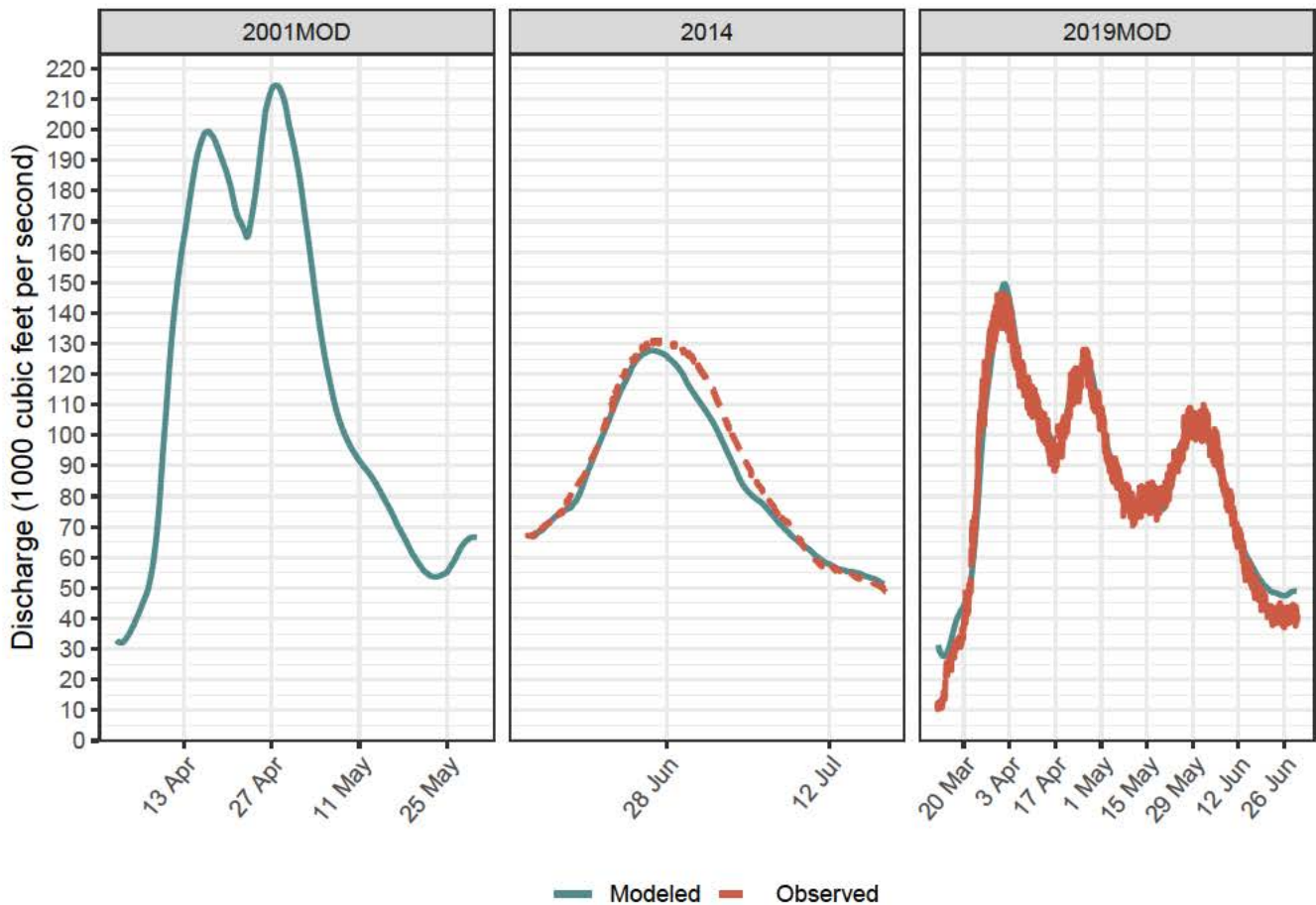
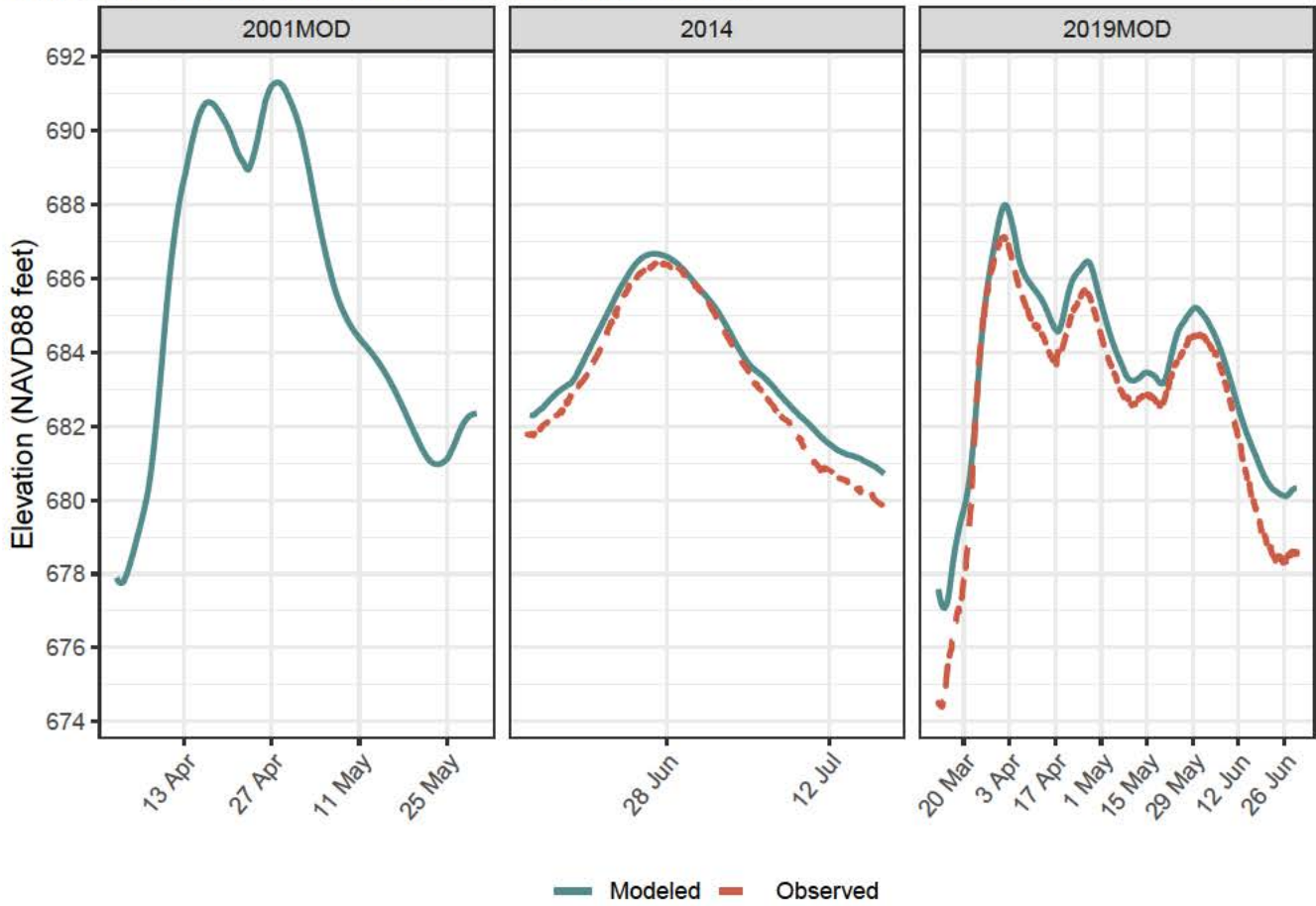


Mississippi River, Below GreyCloud Reach, River Mile 813.69  
Gage HASTINGS, MN + 2D Connection\_HASTINGS2



Mississippi River, BelowStCroix Reach, River Mile 811.27

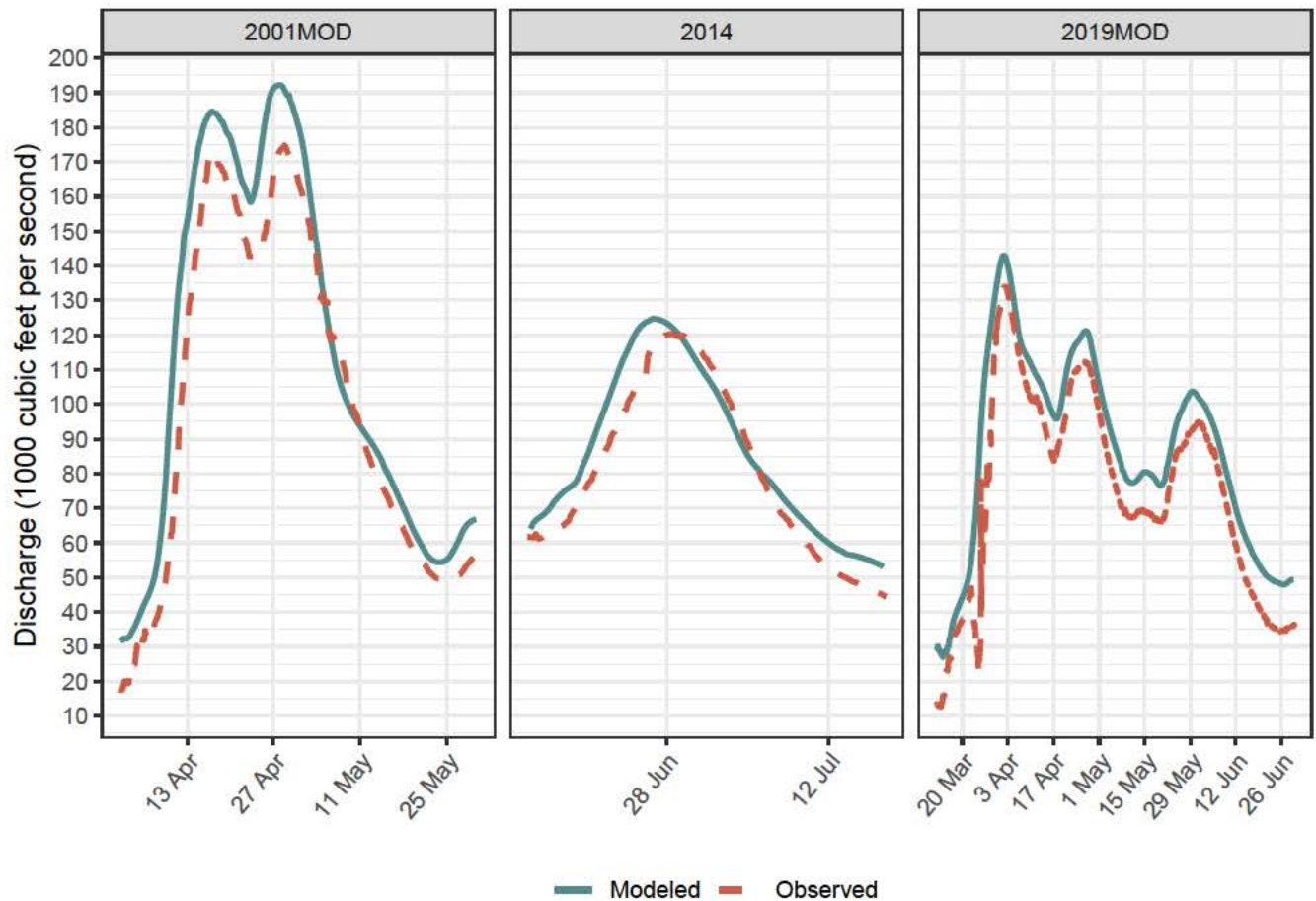
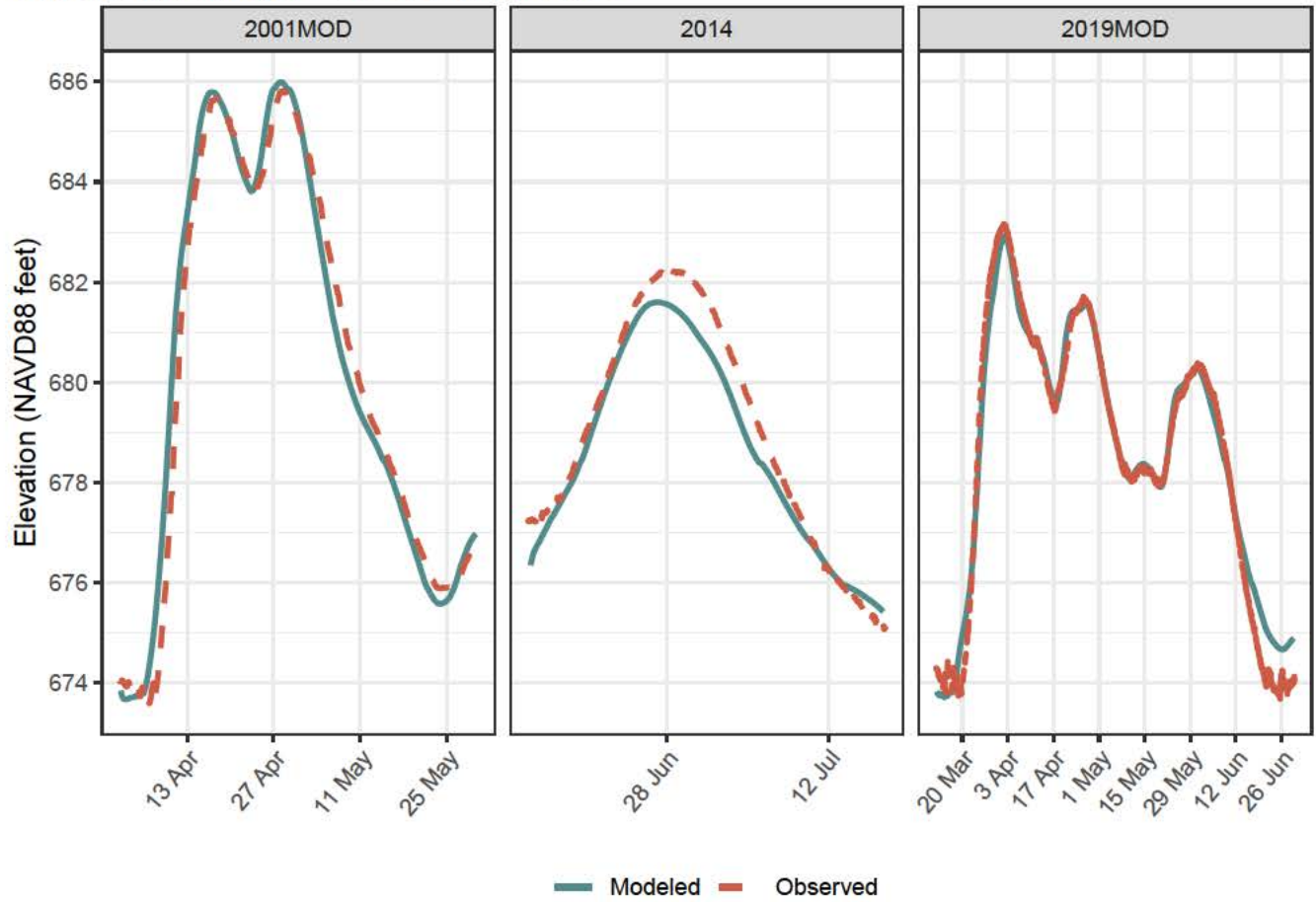
Gage PRESCOTT, WI + 2D Connection\_PRESCOTT



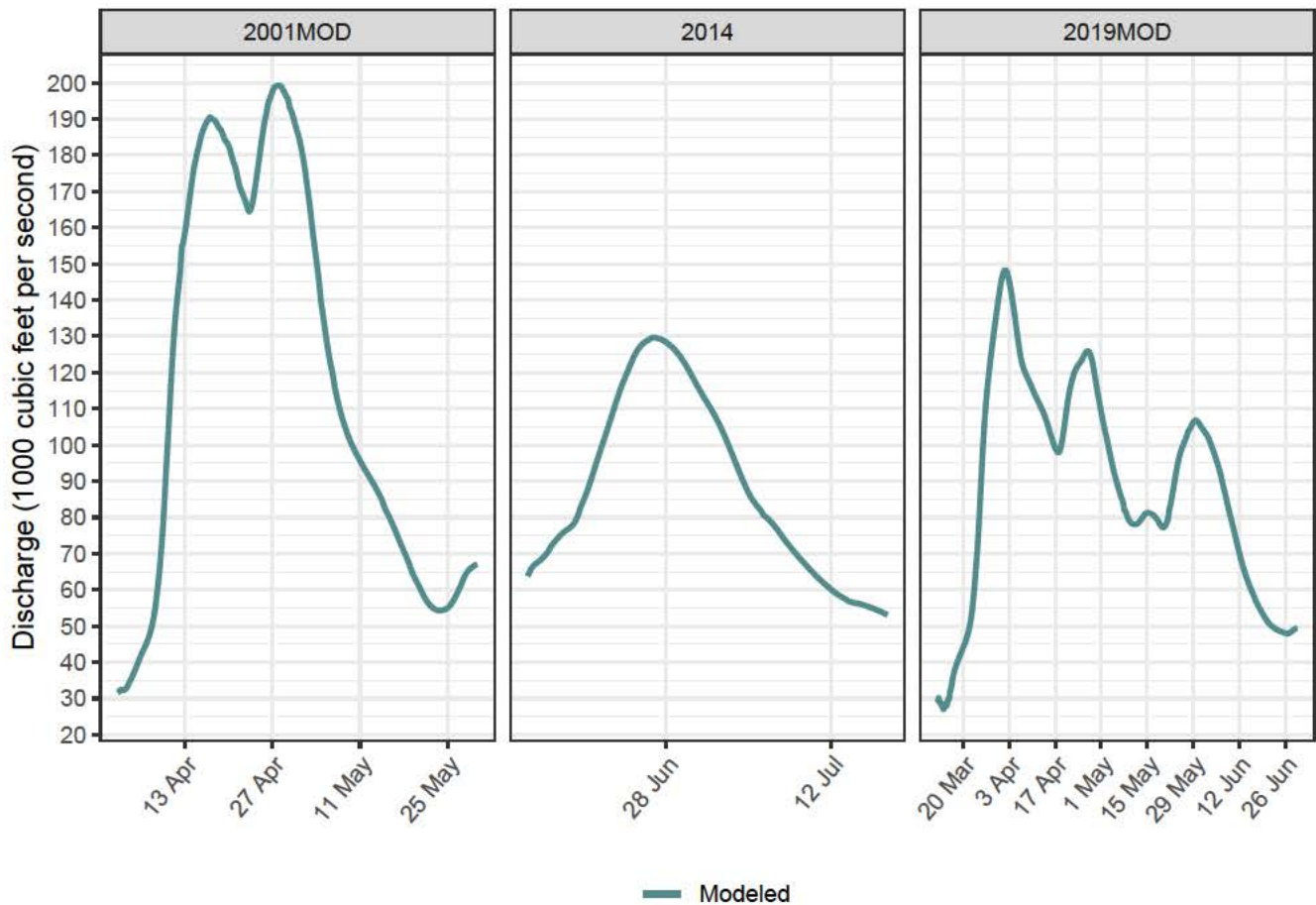
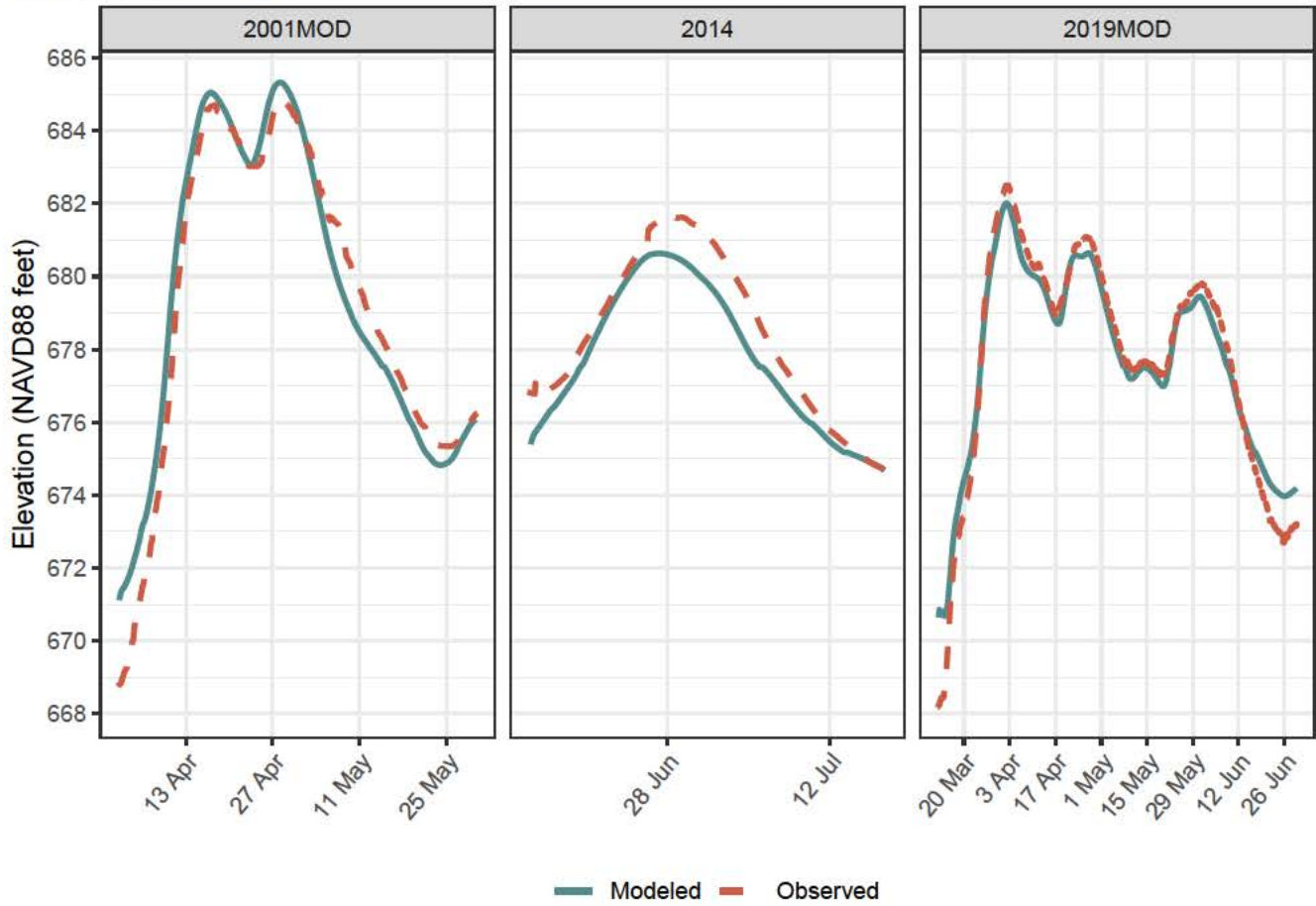


Mississippi River, BelowStCroix Reach, River Mile 797.08

Gage LOCKDAM\_03 + 2D Connection\_LD3

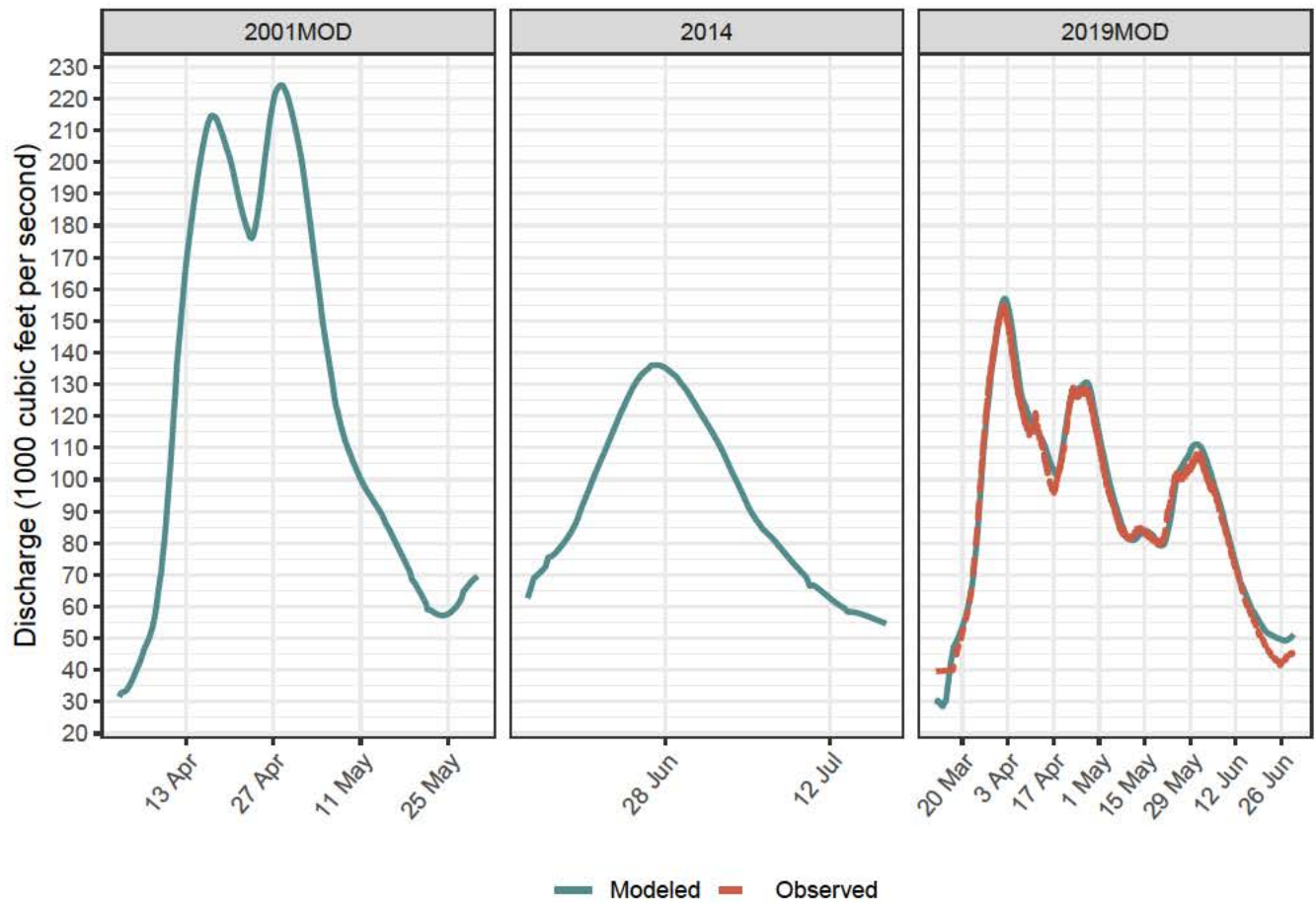
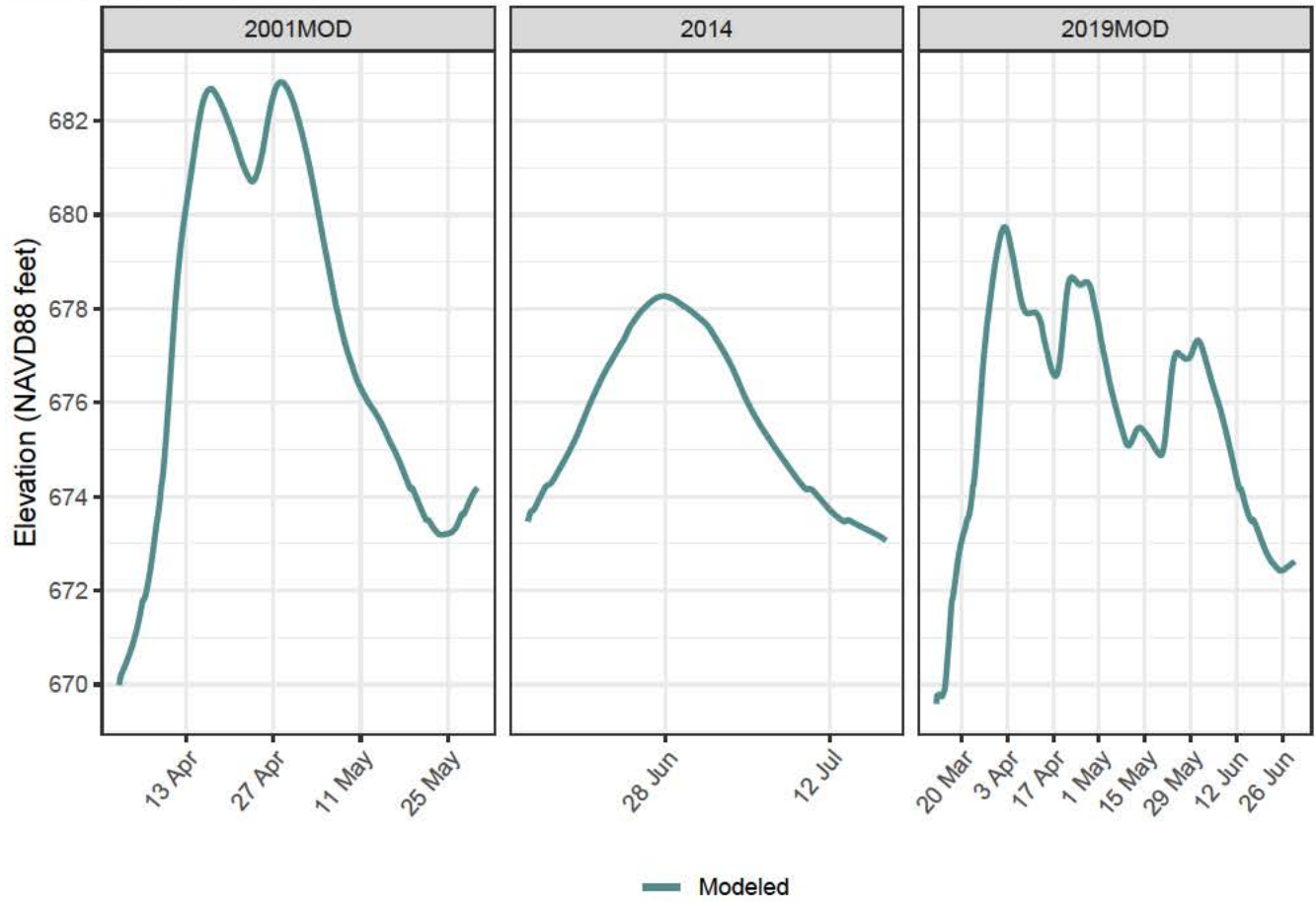


Mississippi River, BelowStCroix Reach, River Mile 796.75  
 Gage LOCKDAM\_03-TAILWATER + 2D Connection\_LD3



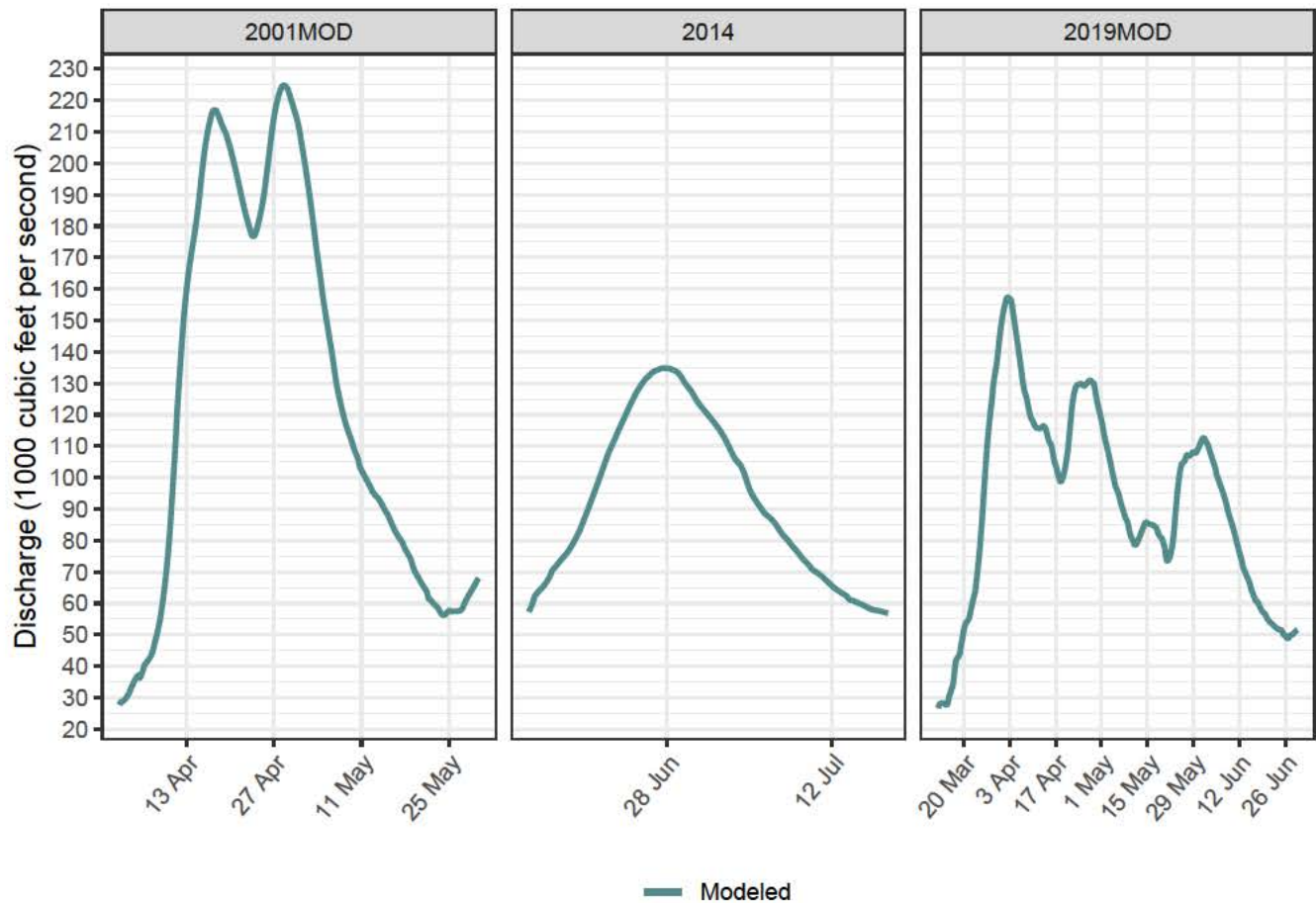
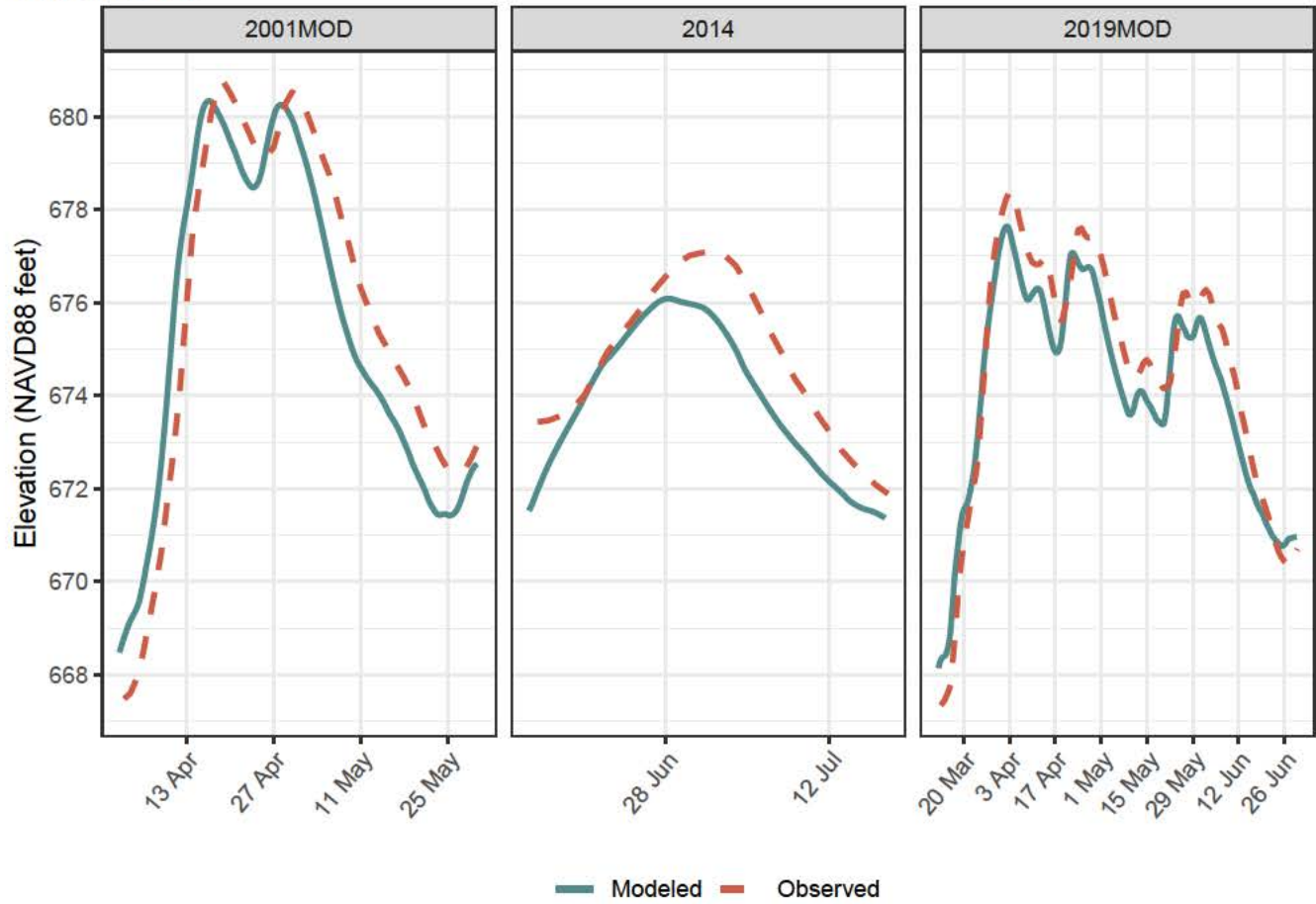
Mississippi River, BelowVermillion Reach, River Mile 790.93

Gage RED WING, MN



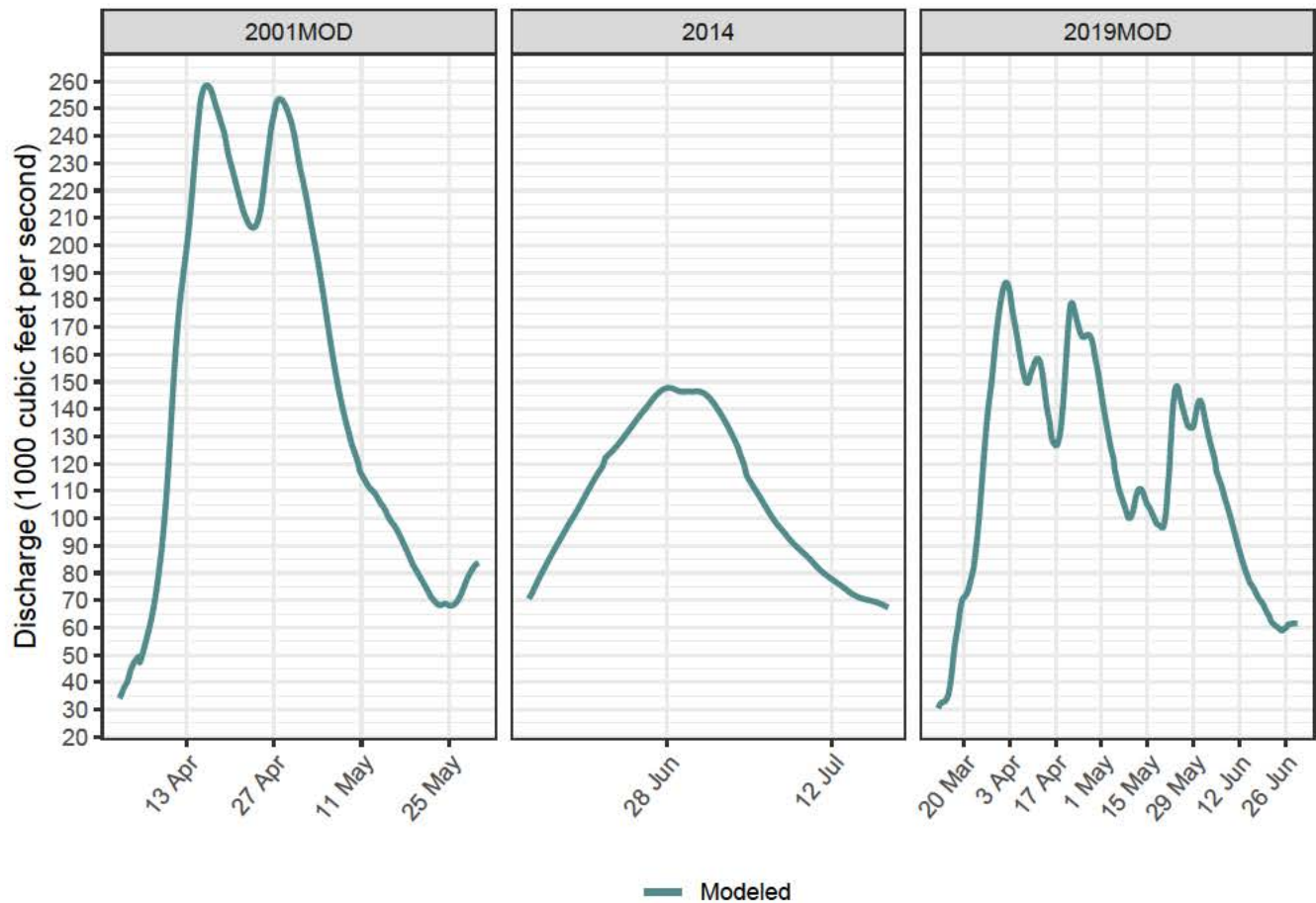
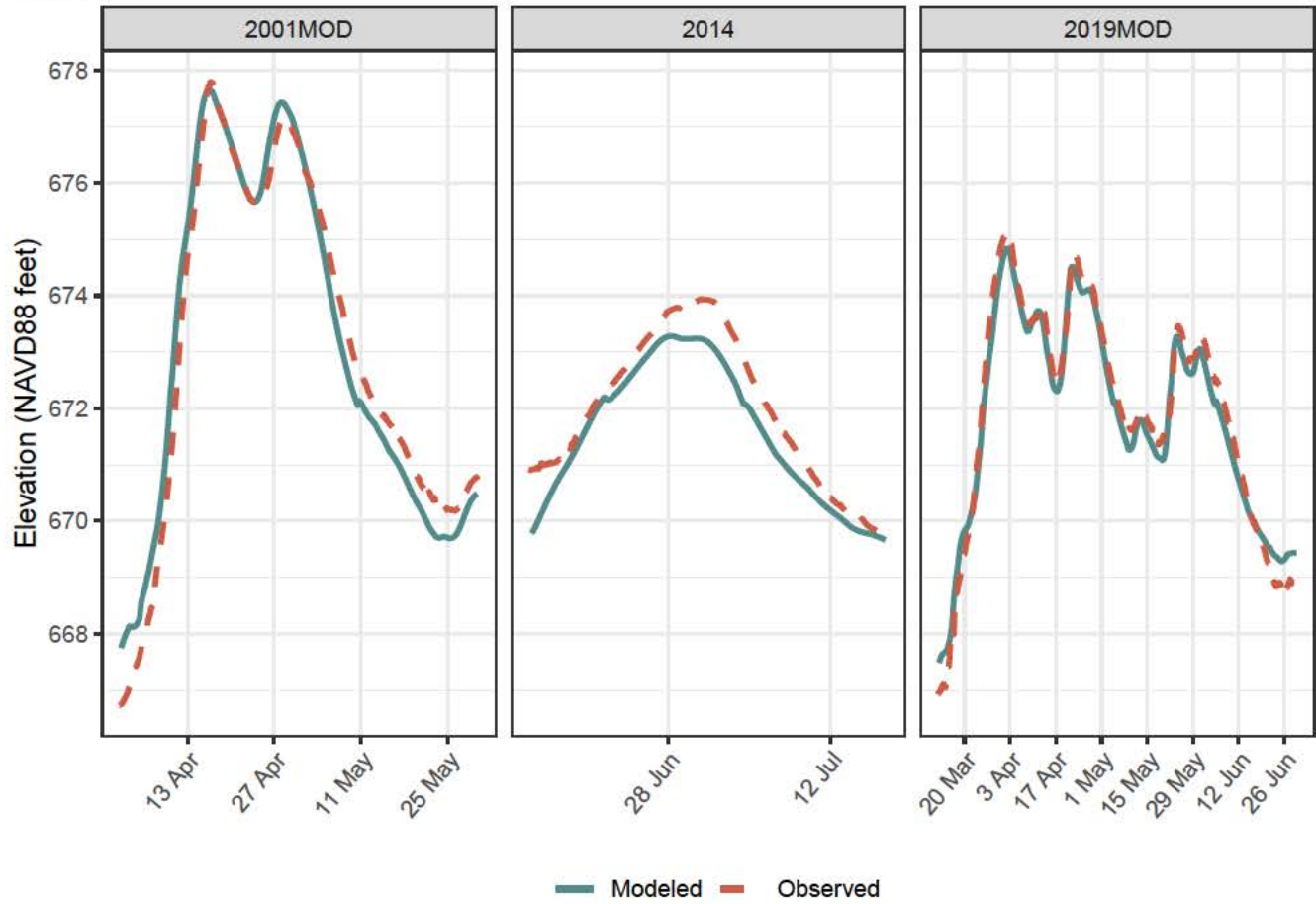
Mississippi River, BelowVermillion Reach, River Mile 772.6

Gage LKCM5



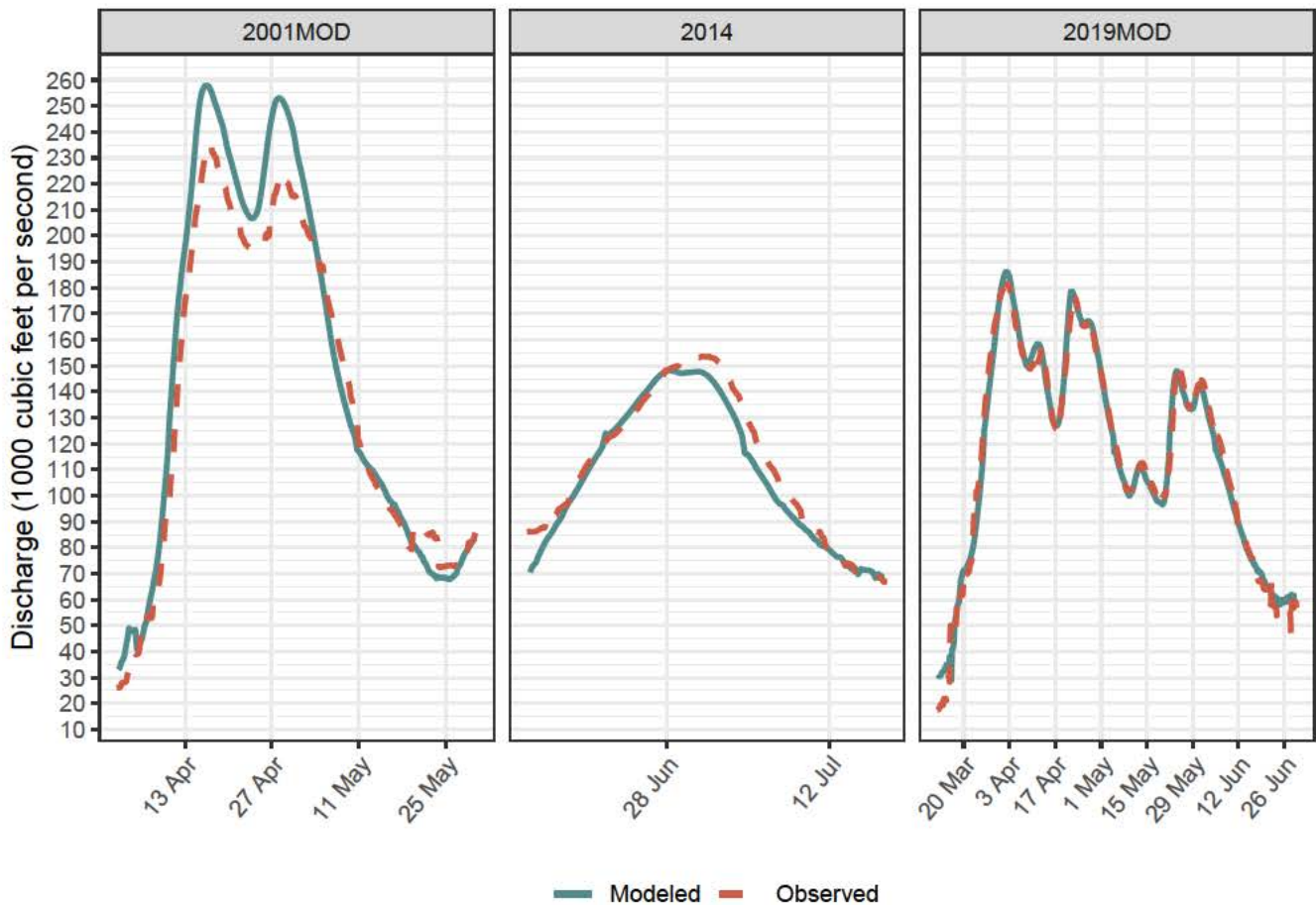
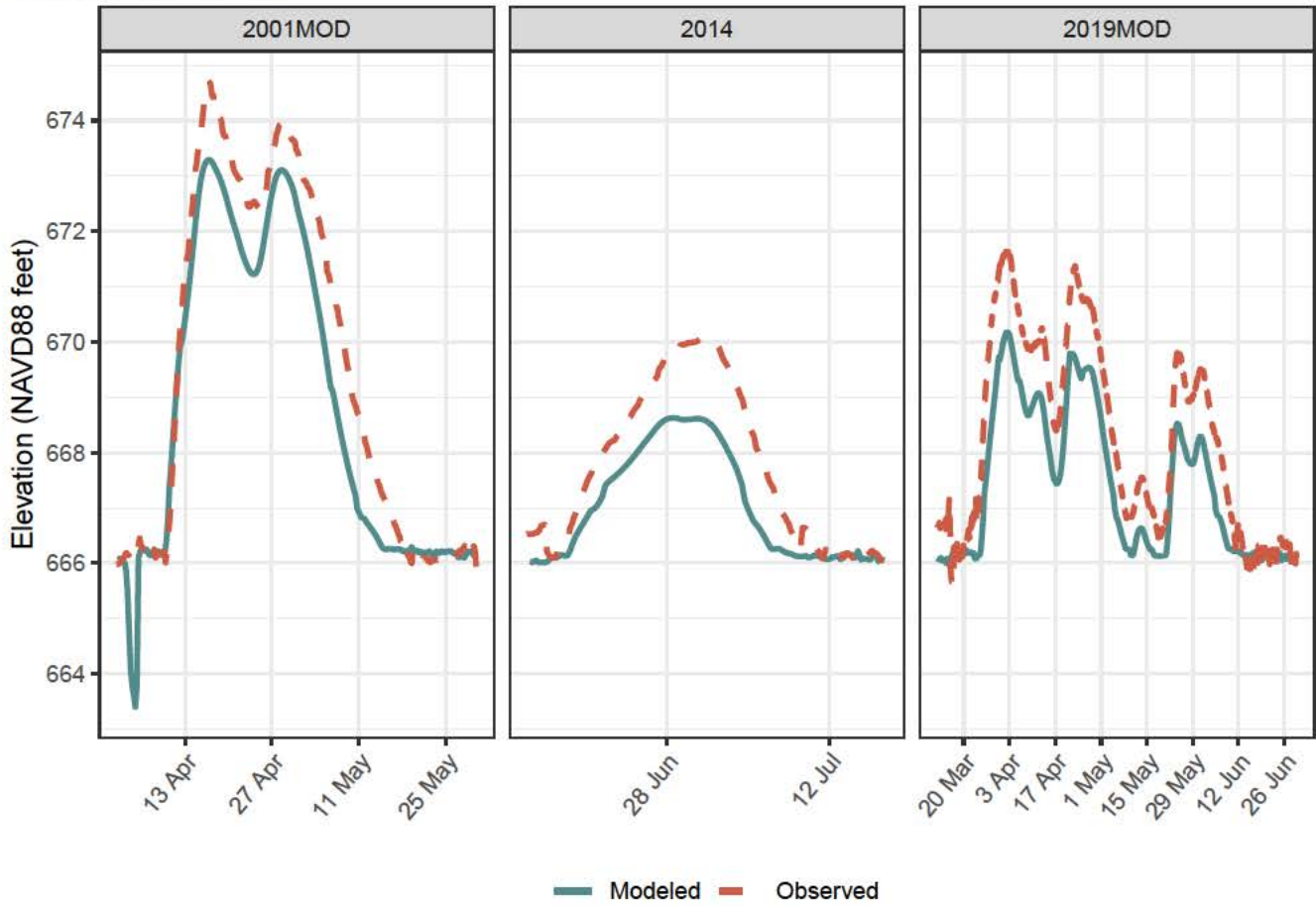
Mississippi River, BelowVermillion Reach, River Mile 760.52

Gage WABM5



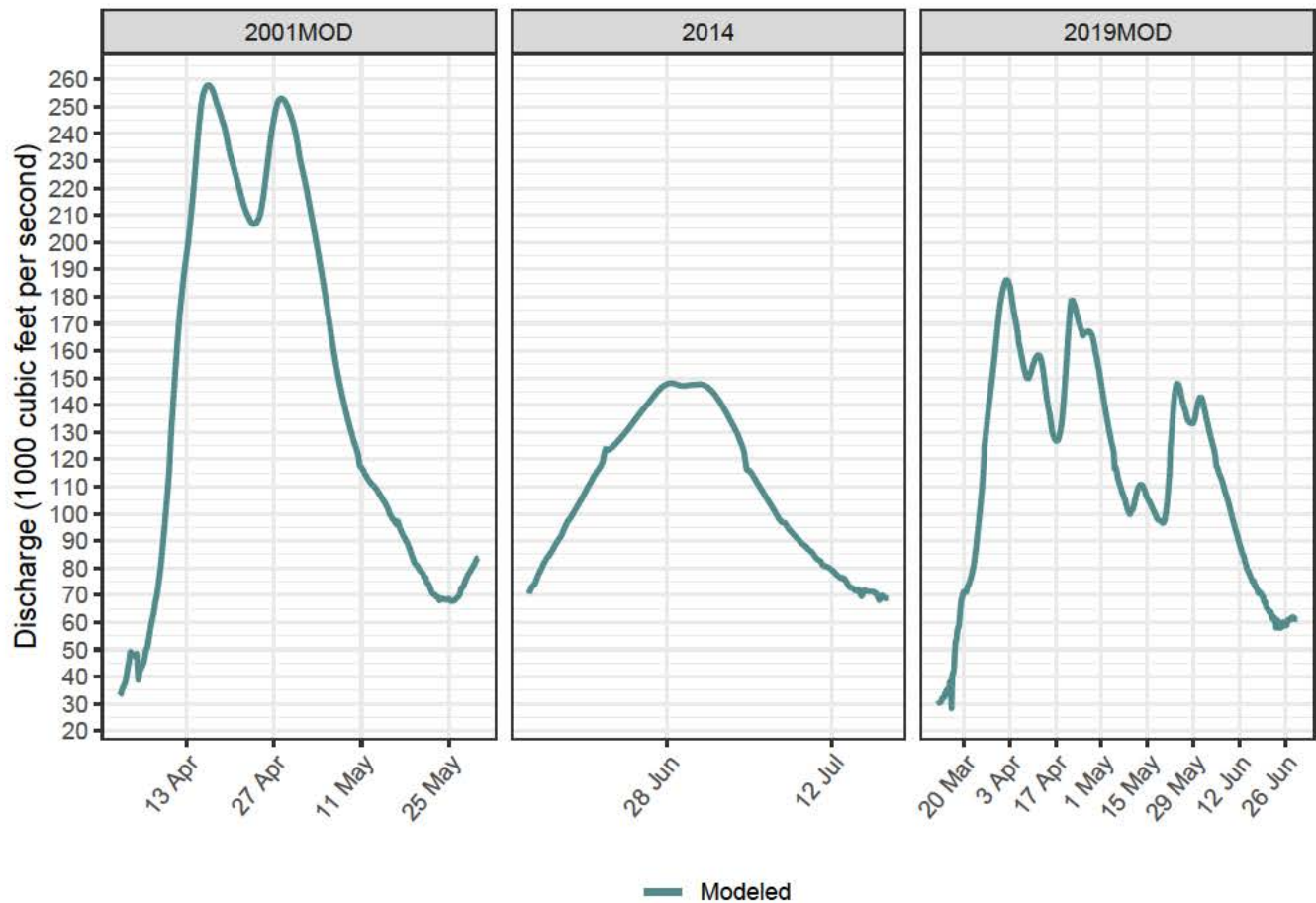
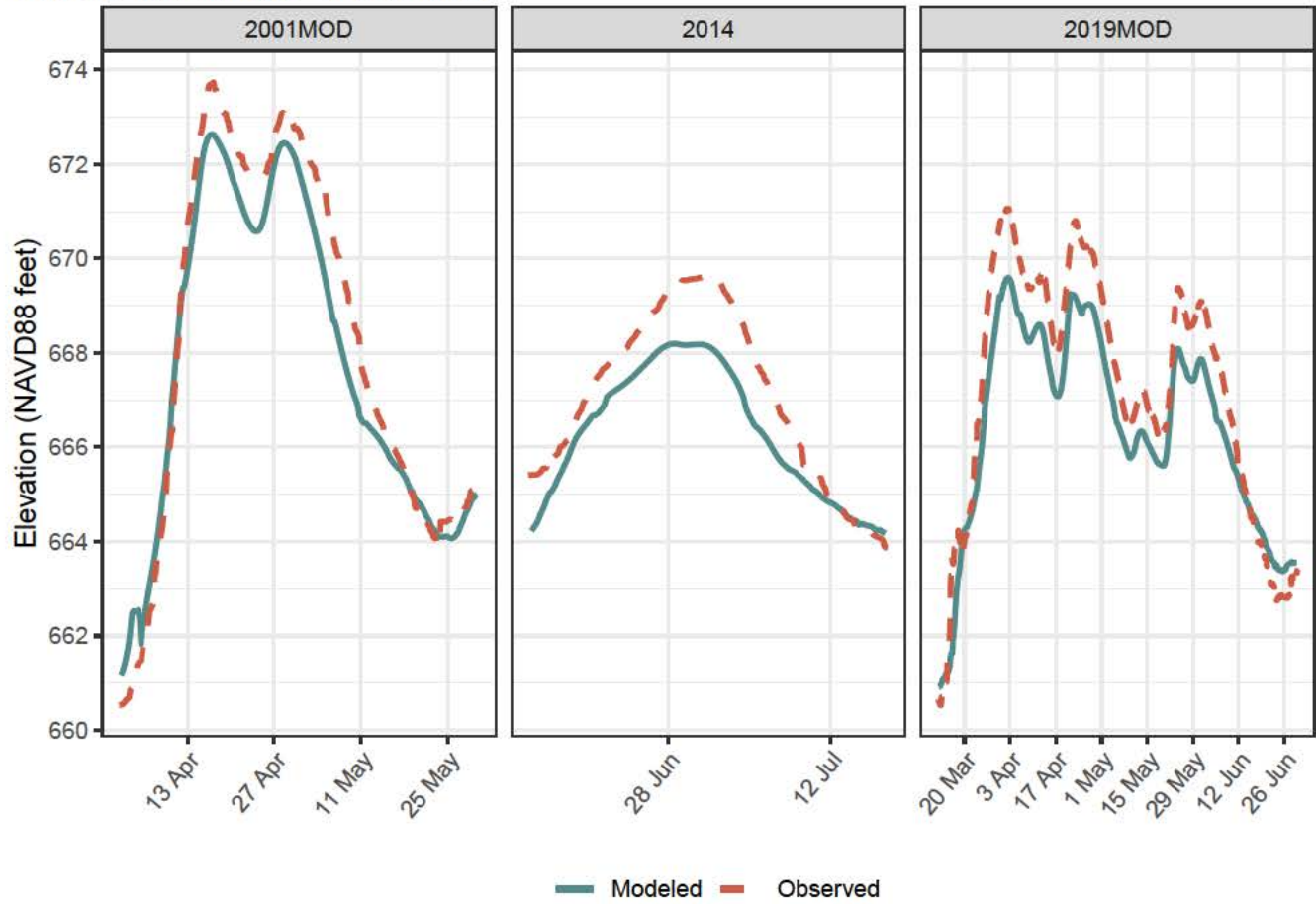
Mississippi River, BelowVermillion Reach, River Mile 753.12

Gage LOCKDAM\_04



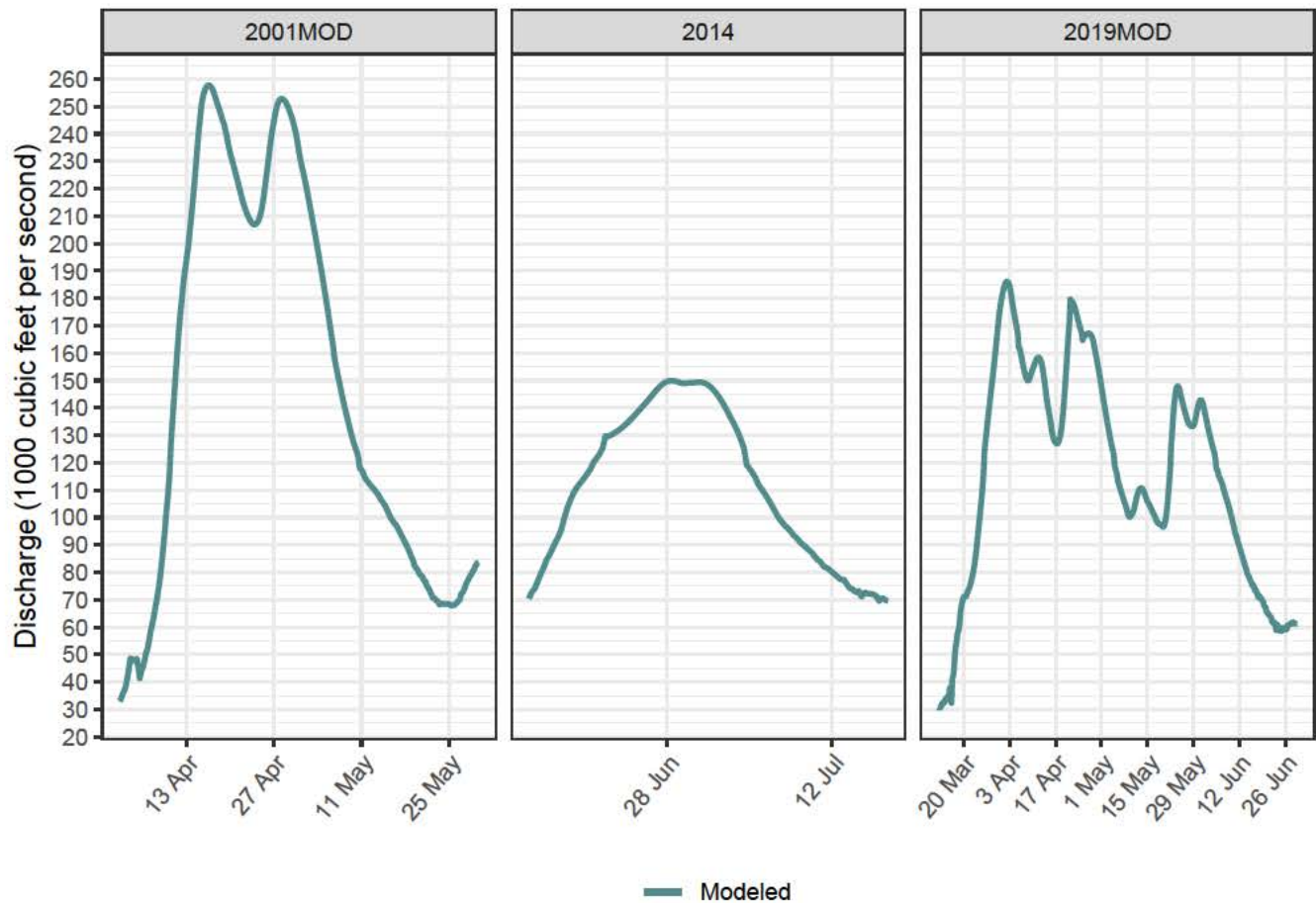
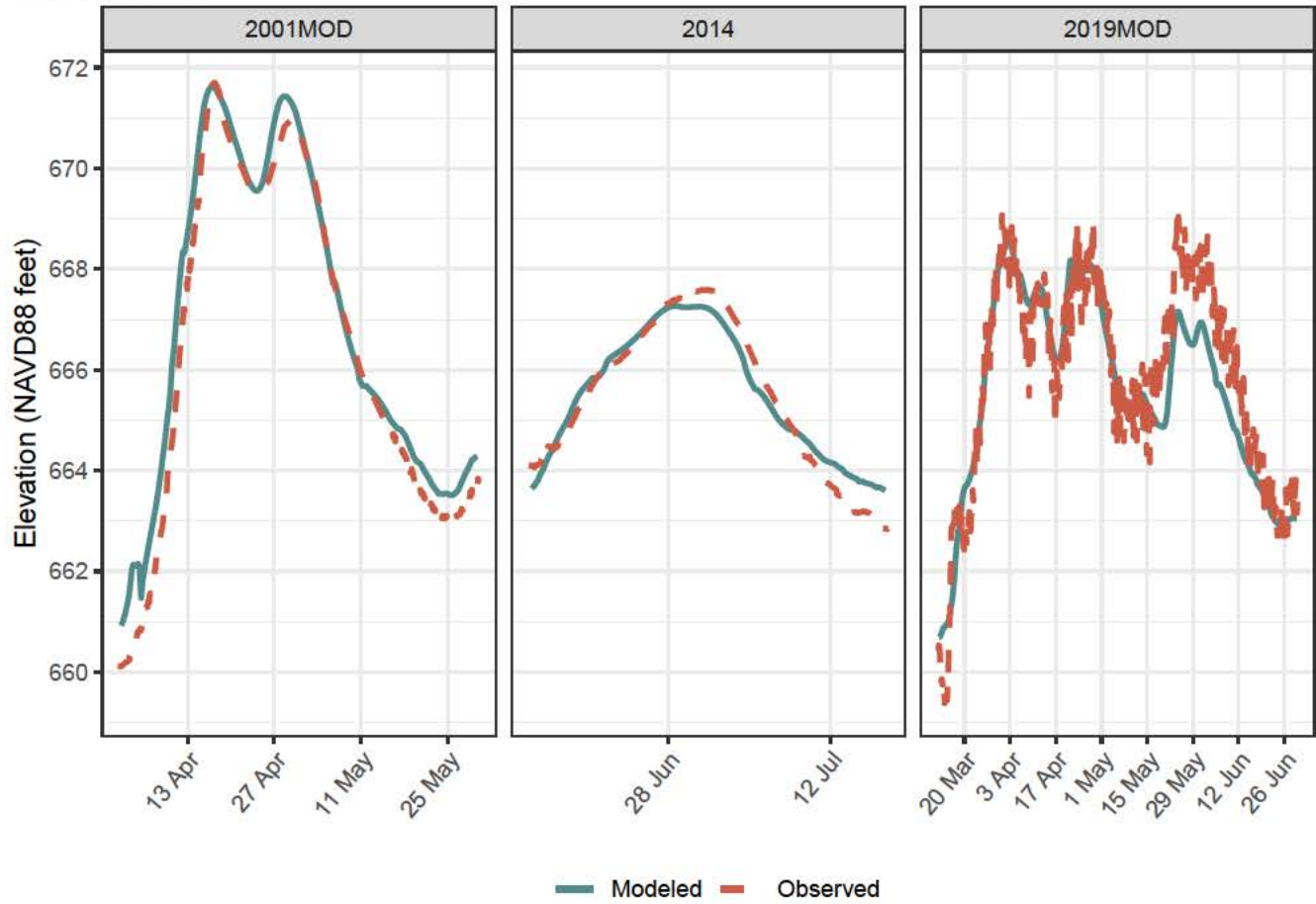
Mississippi River, BelowVermillion Reach, River Mile 752.6

Gage LOCKDAM\_04-TAILWATER



Mississippi River, BelowVermillion Reach, River Mile 749.83

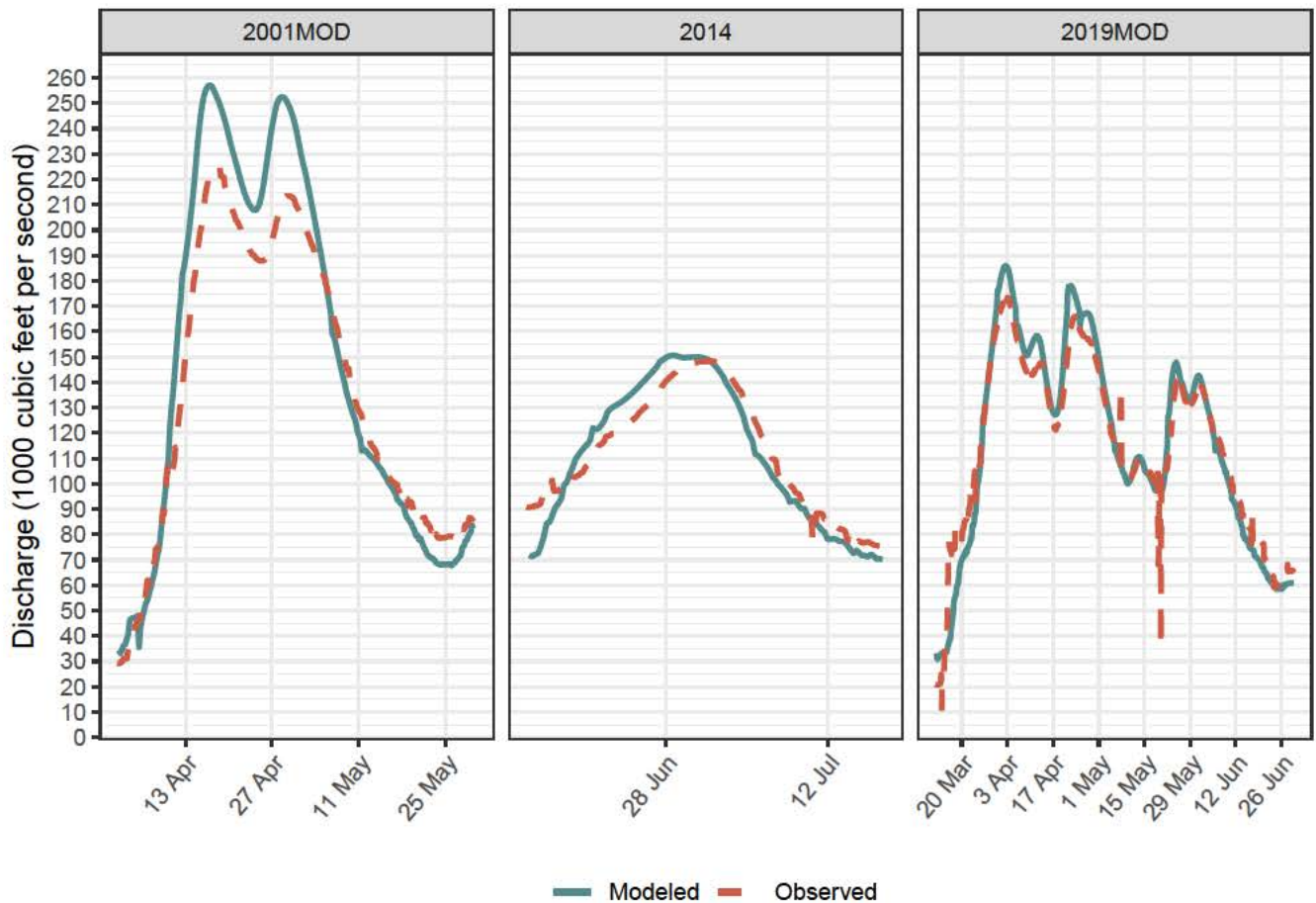
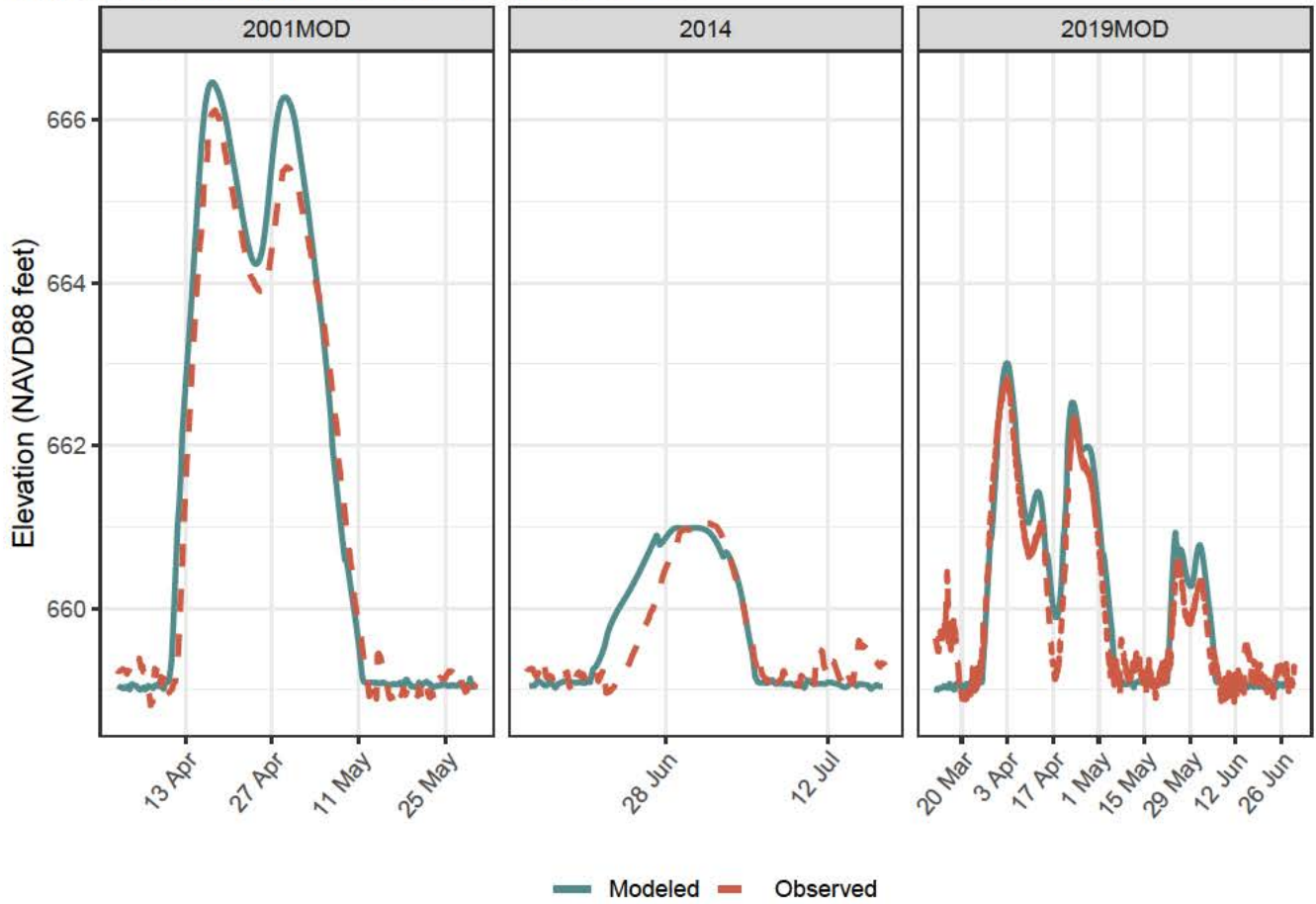
Gage AMAW3



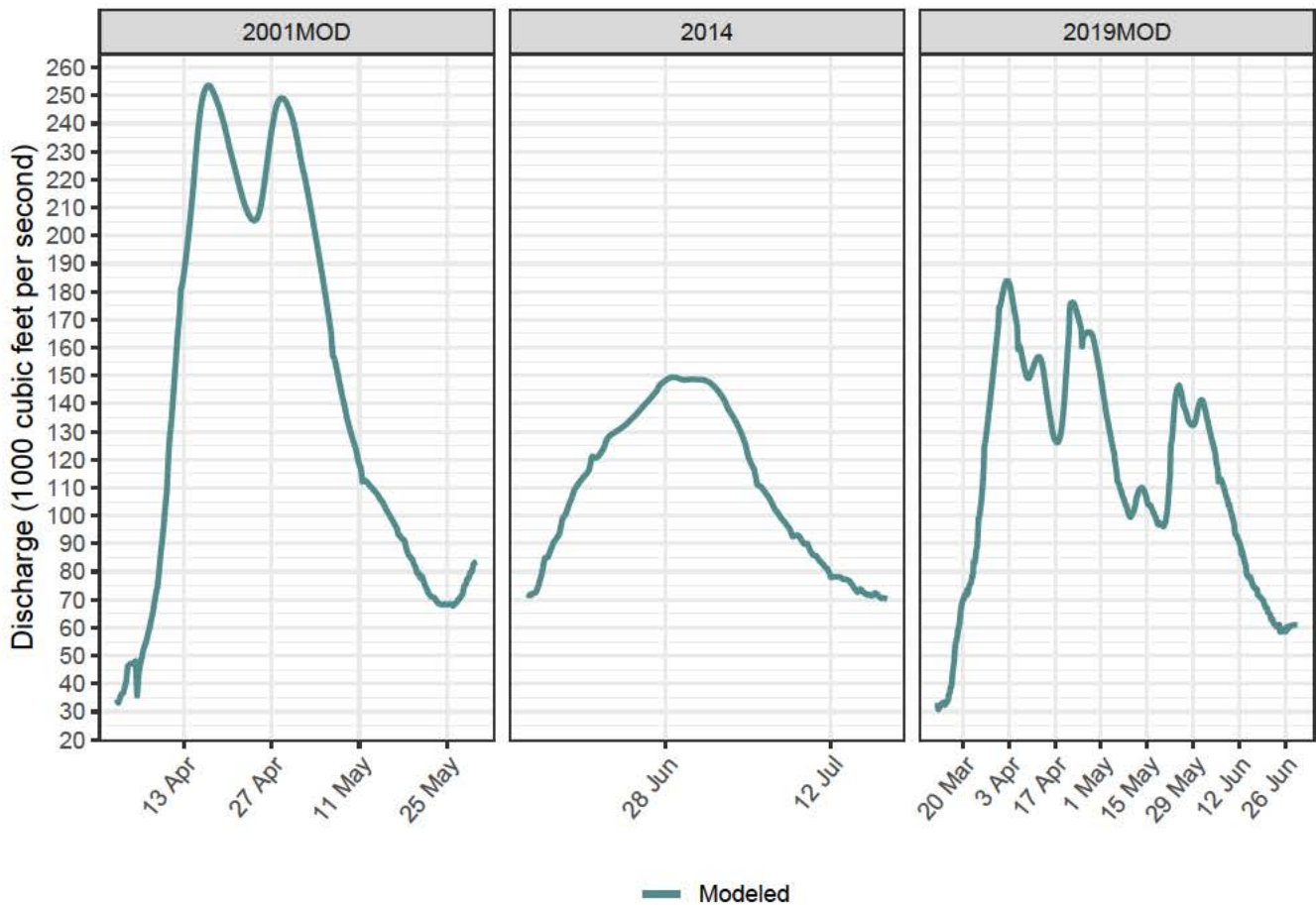
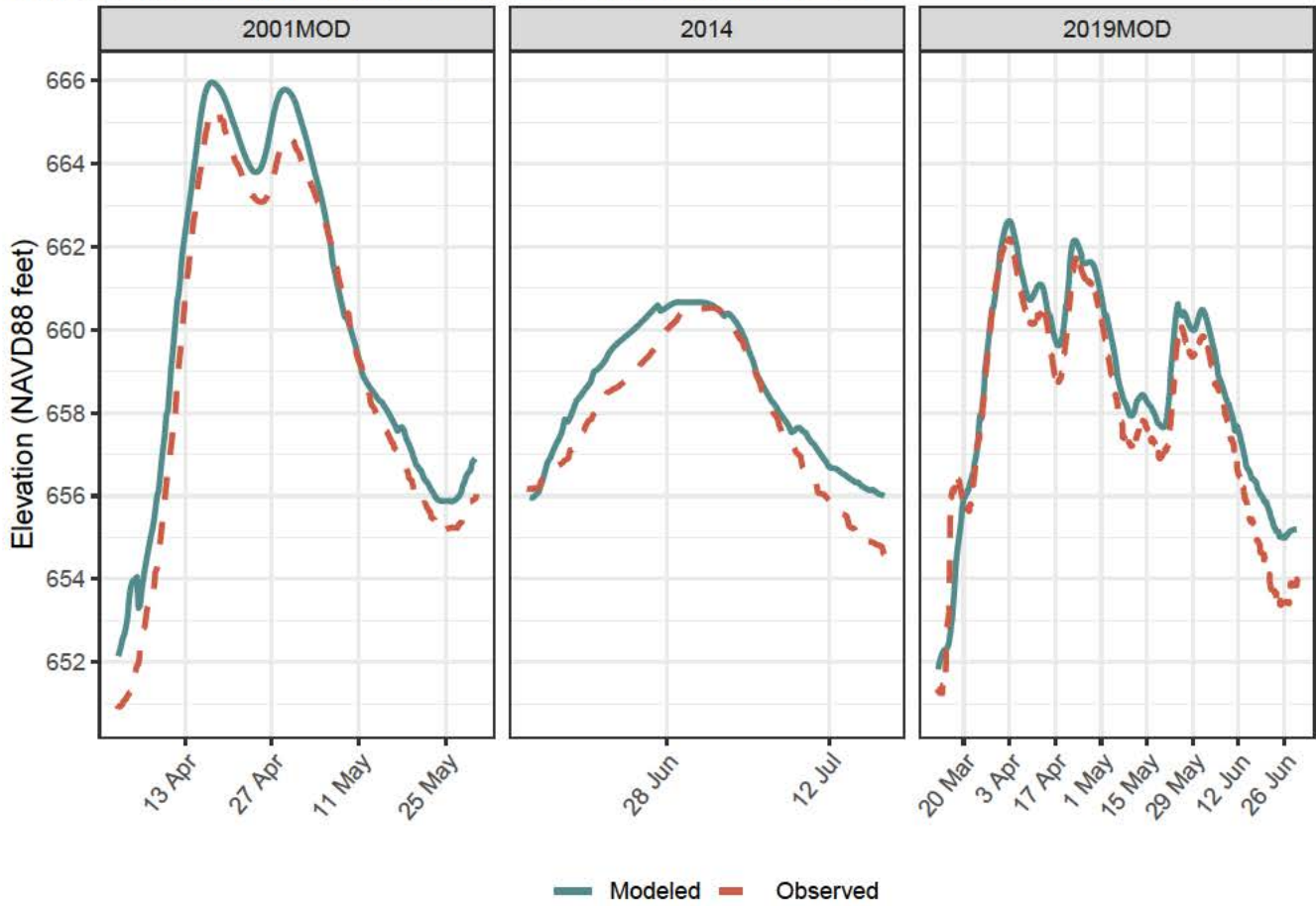


Mississippi River, BelowVermillion Reach, River Mile 738.3

Gage LOCKDAM\_05 + 2D Connection\_LD5-US

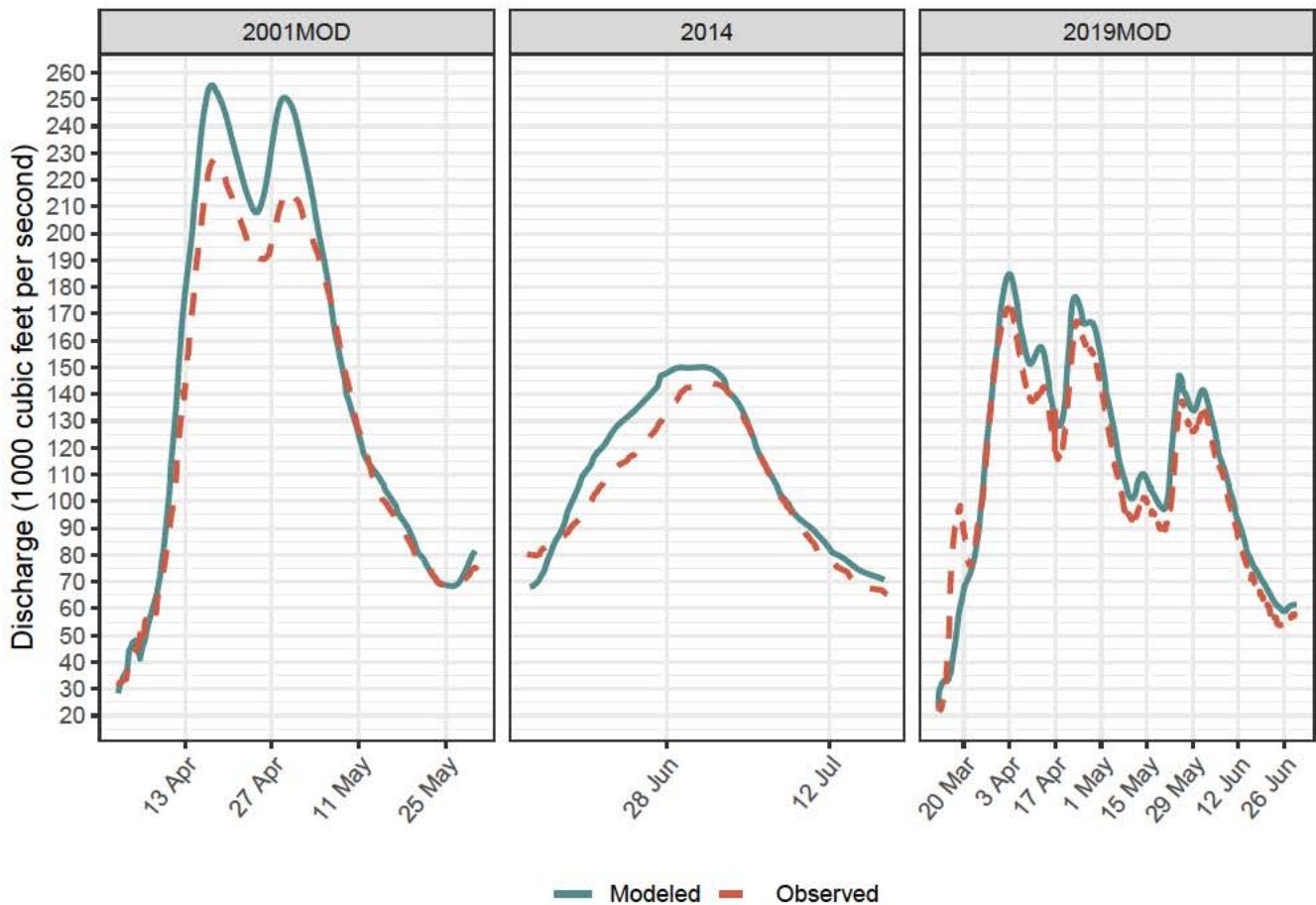
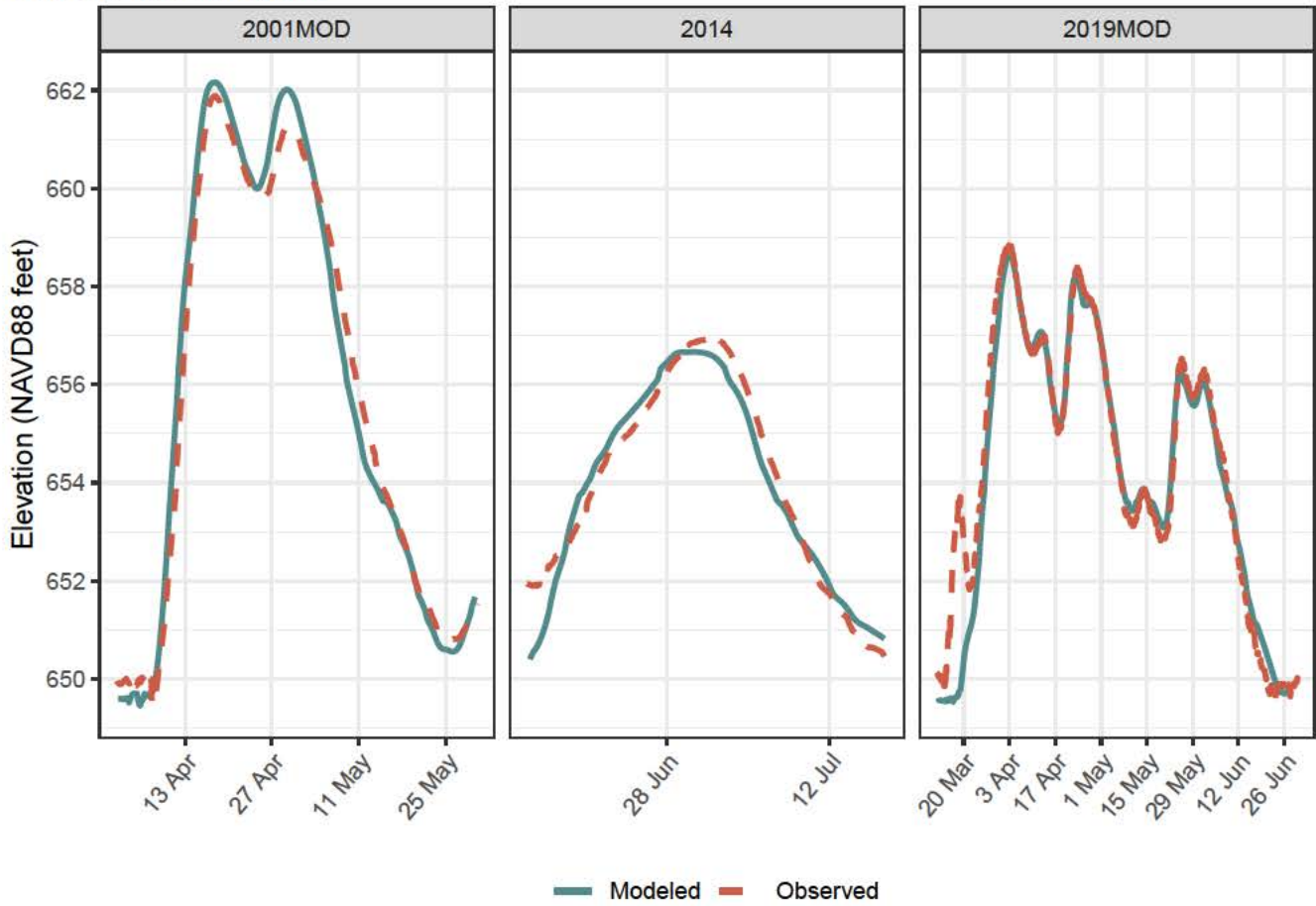


Mississippi River, BelowVermillion Reach, River Mile 737.92  
 Gage LOCKDAM\_05-TAILWATER + 2D Connection\_LD5-US



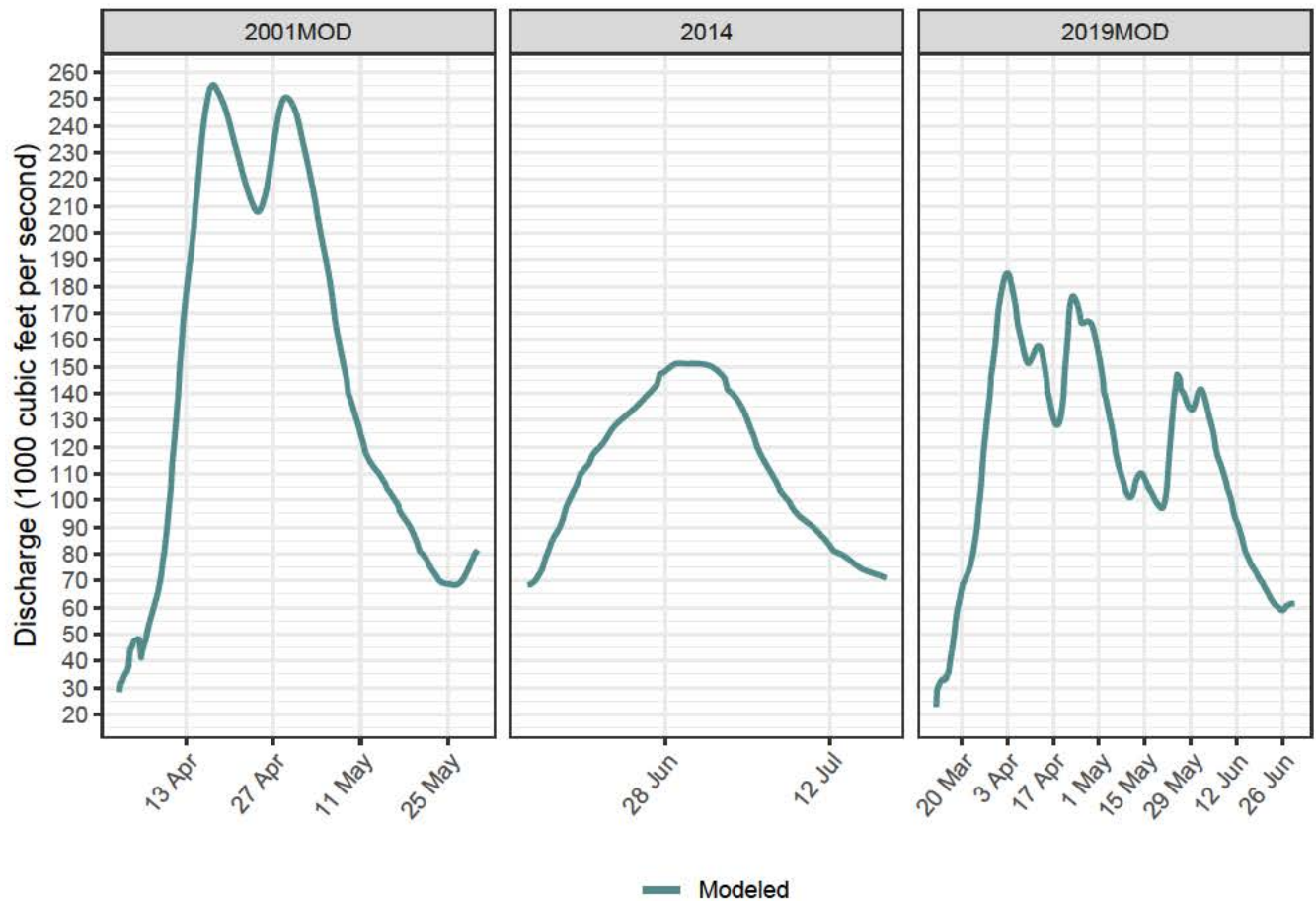
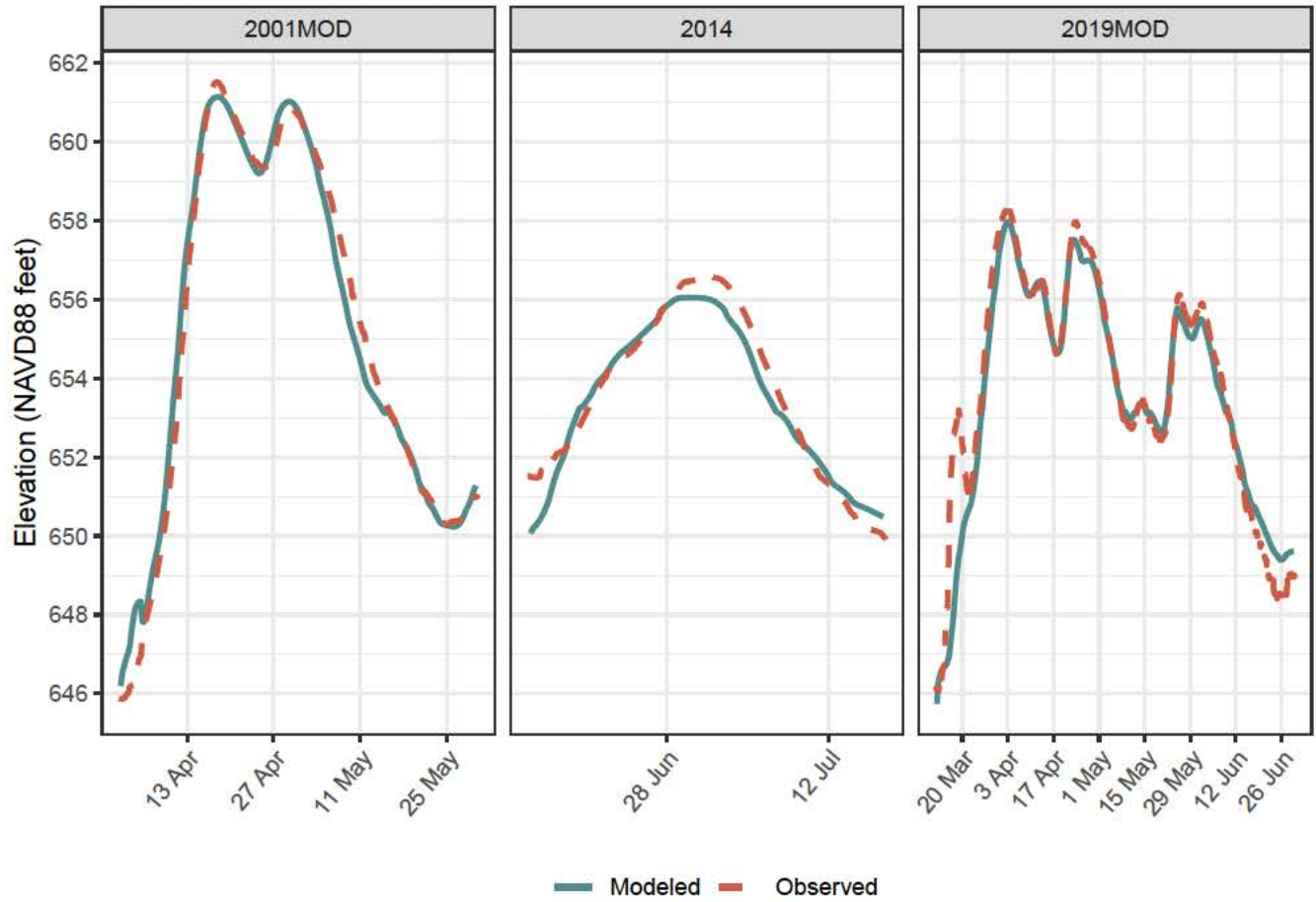
Mississippi River, BelowVermillion Reach, River Mile 728.63

Gage LOCKDAM\_05A



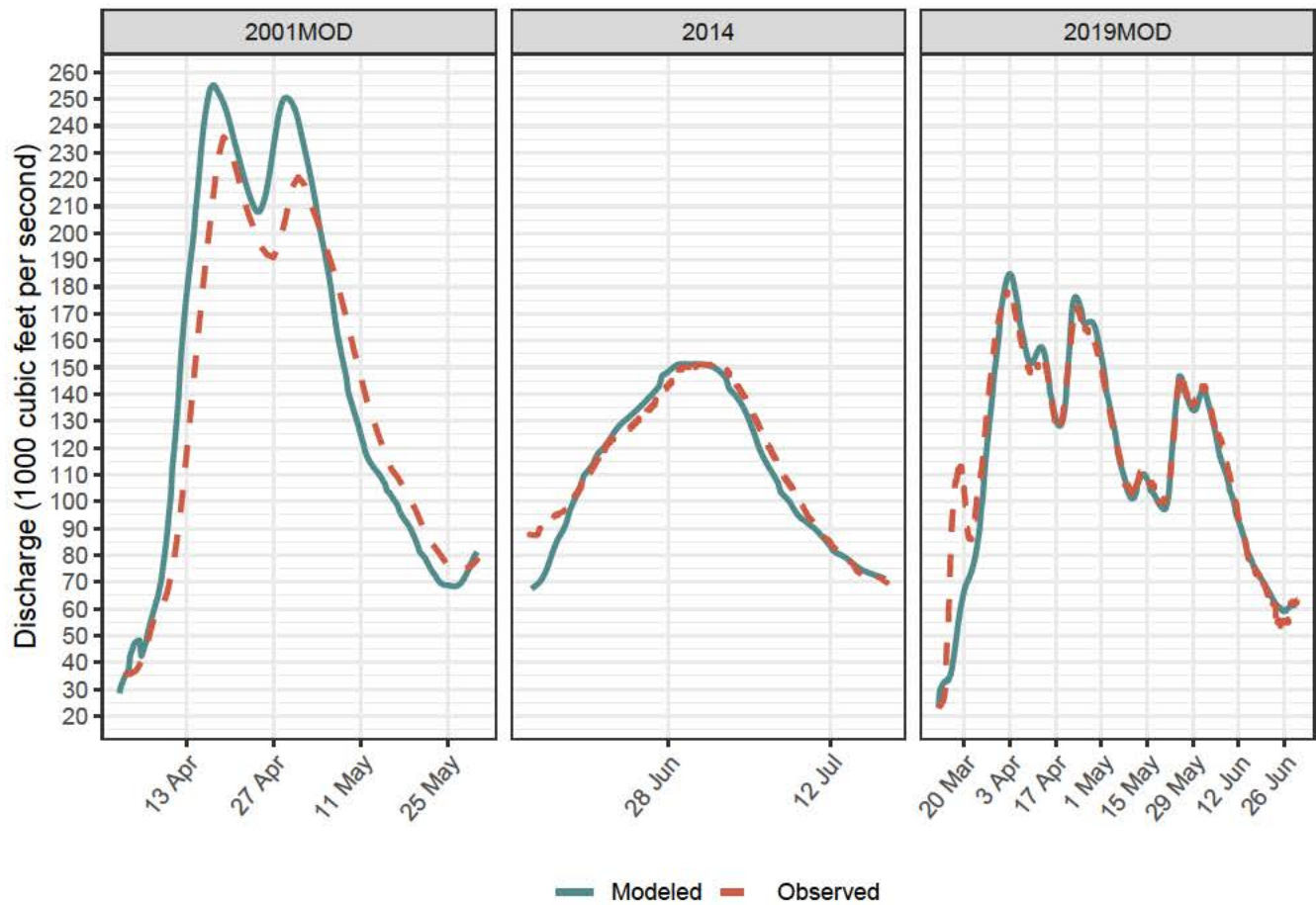
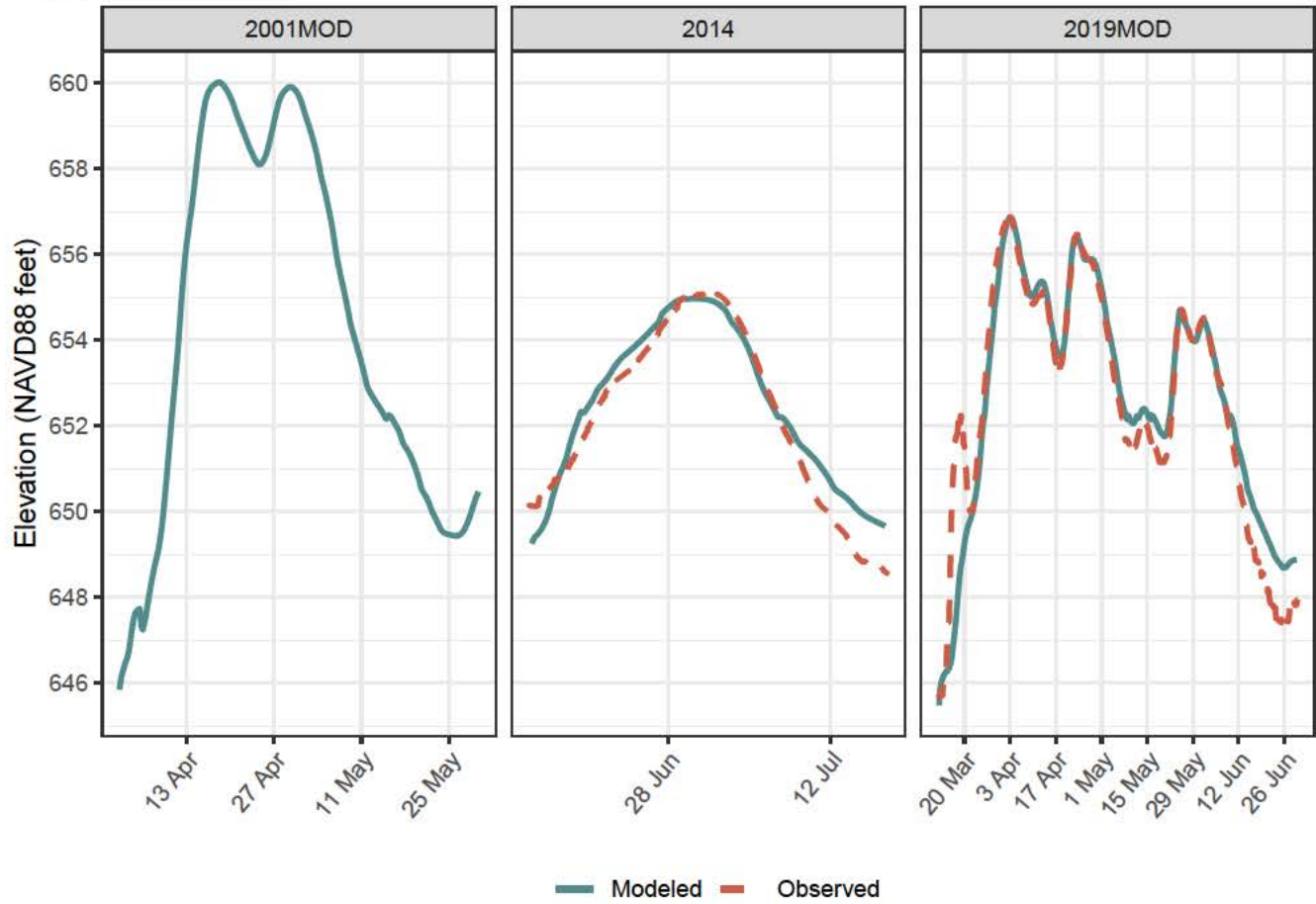
Mississippi River, BelowVermillion Reach, River Mile 728.27

Gage LOCKDAM\_05A-TAILWATER



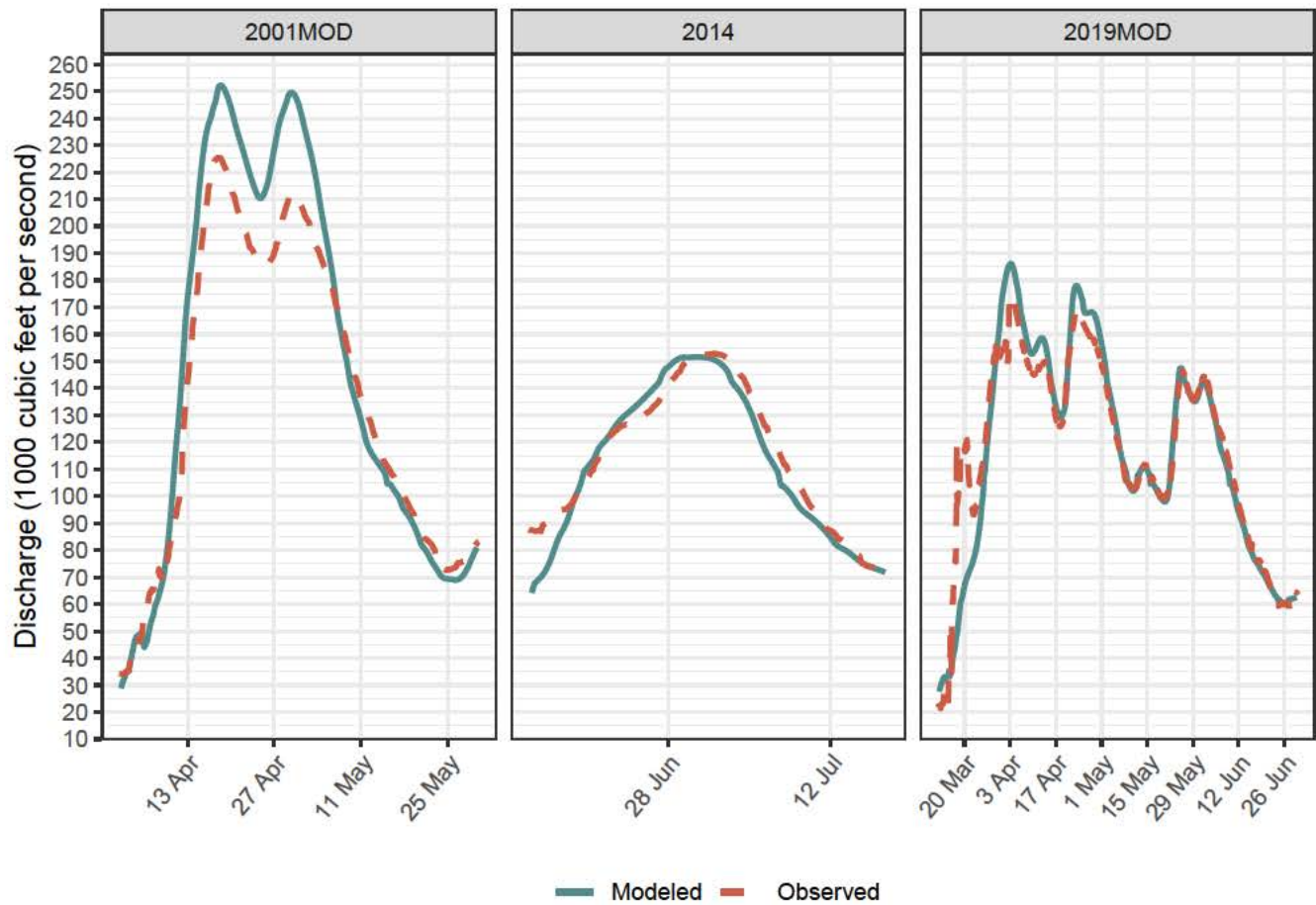
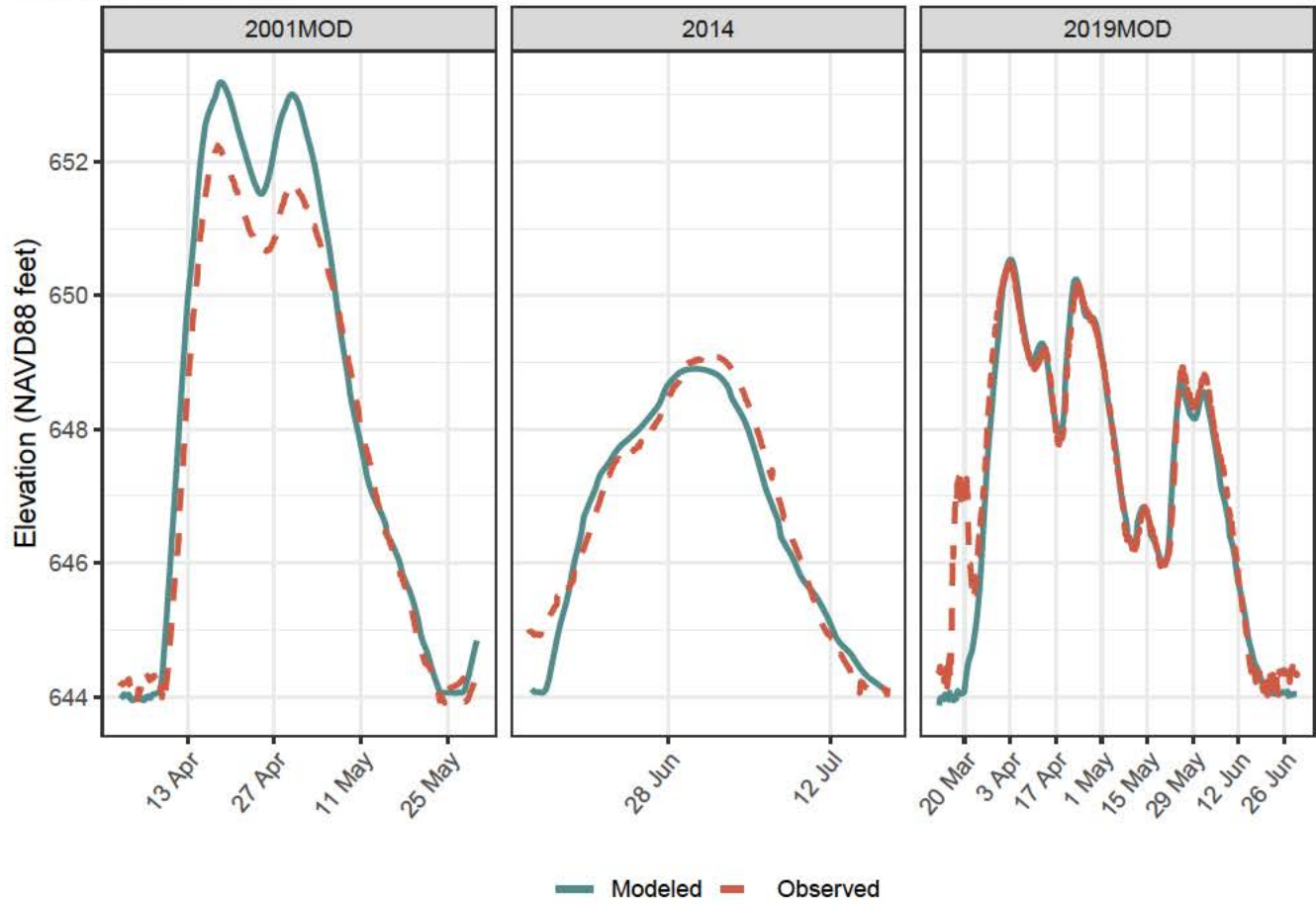
Mississippi River, BelowVermillion Reach, River Mile 725.68

Gage WINONA, MN



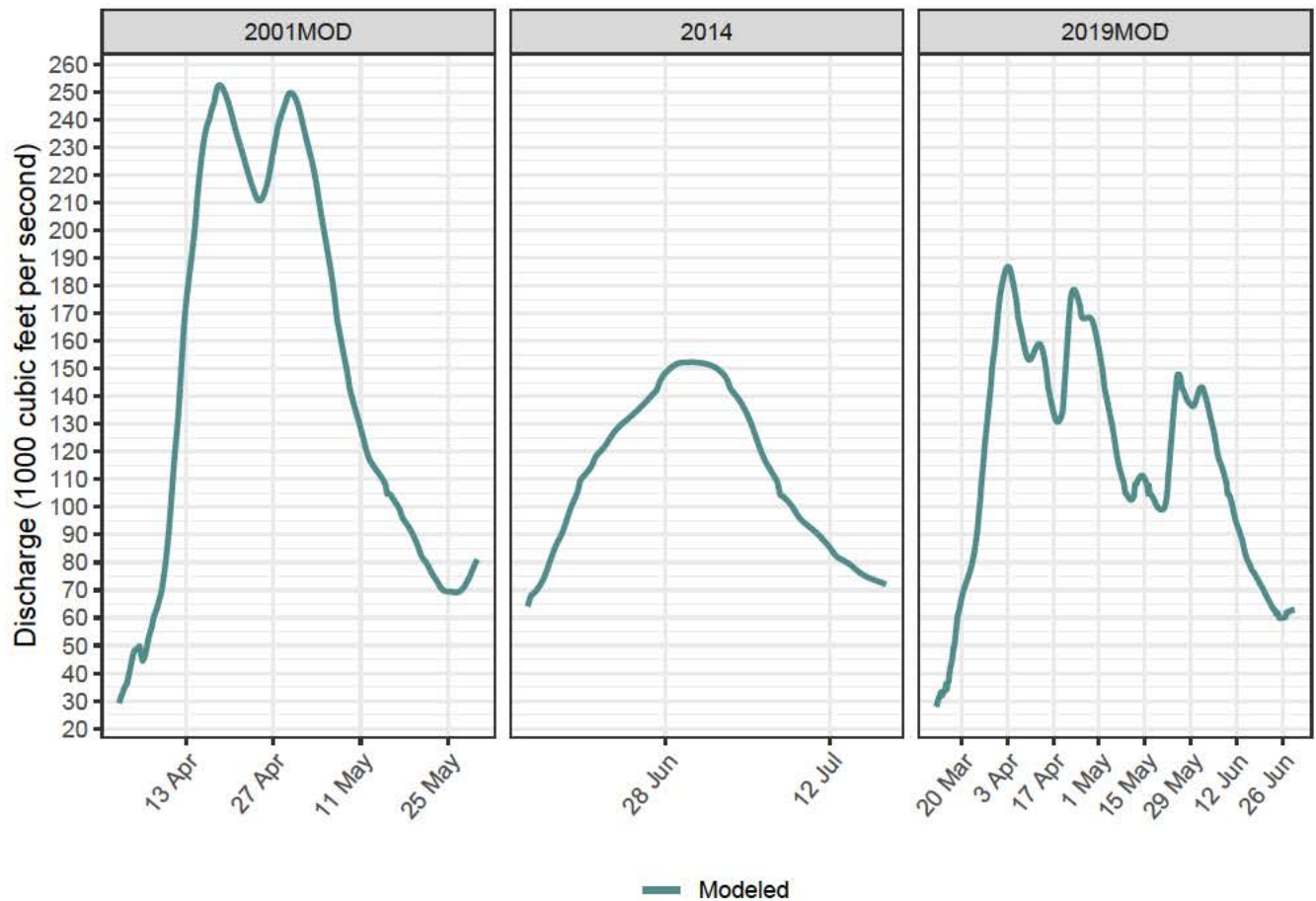
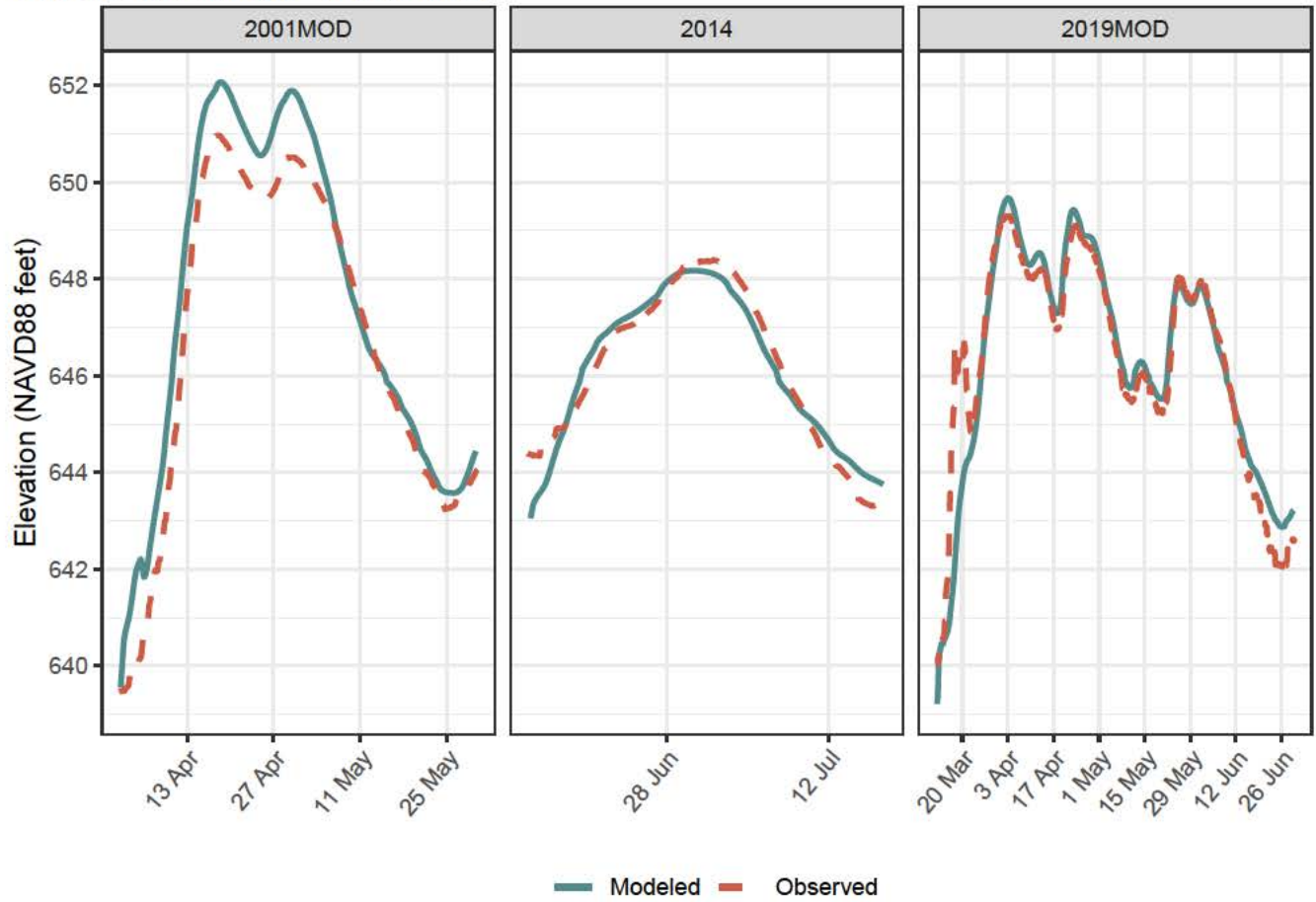
Mississippi River, BelowVermillion Reach, River Mile 714.53

Gage LOCKDAM\_06

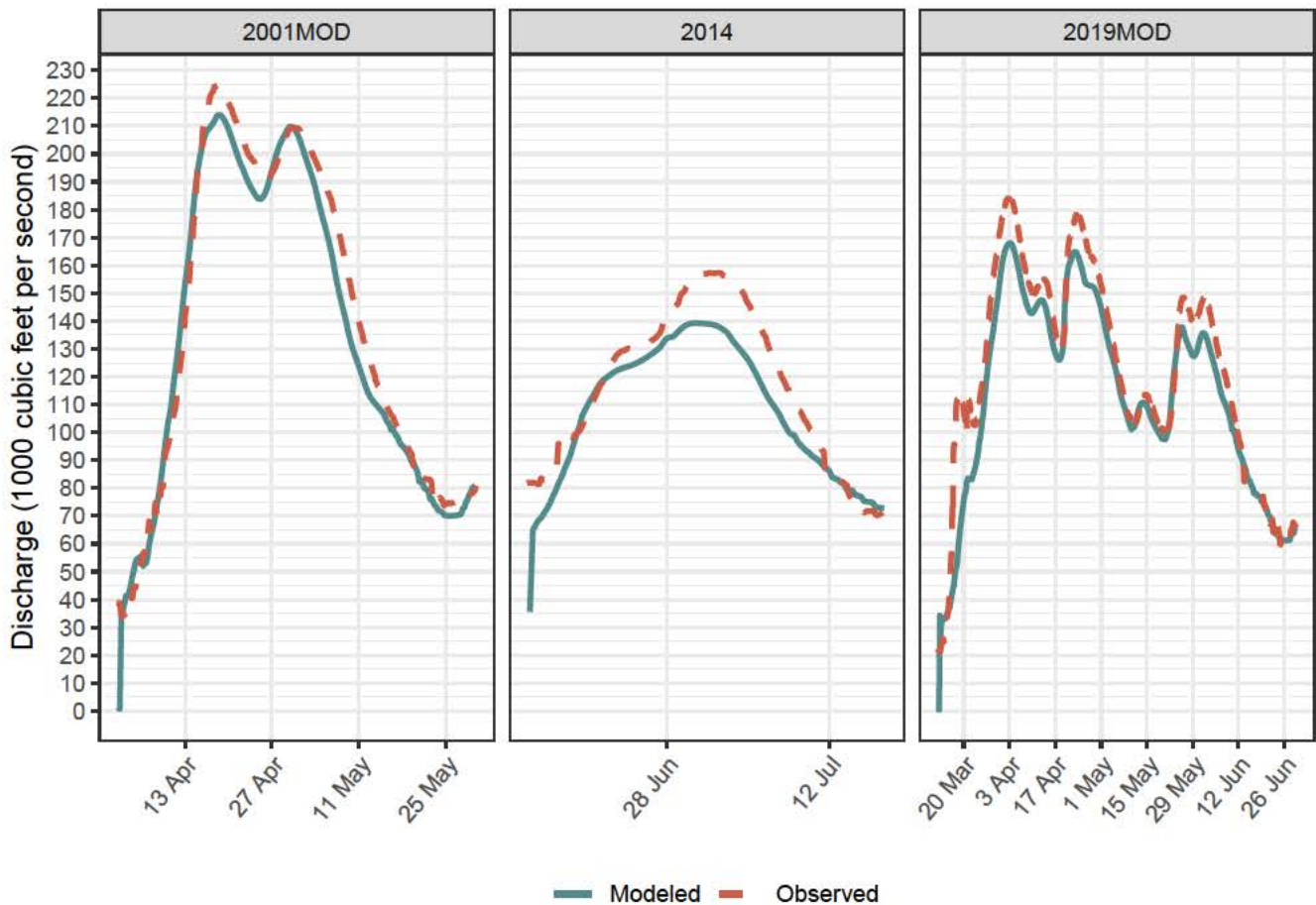
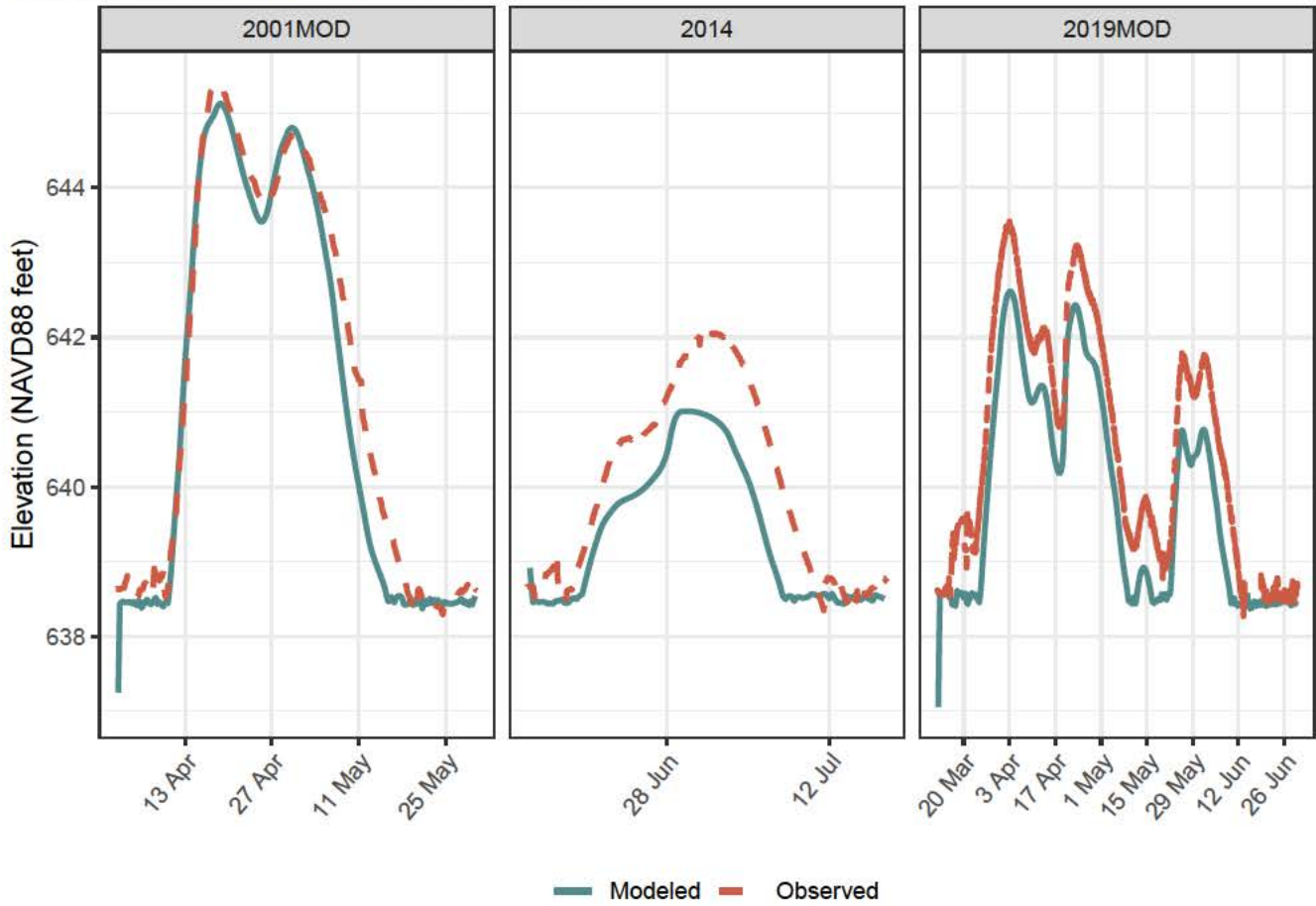


# Mississippi River, BelowVermillion Reach, River Mile 714.03

## Gage LOCKDAM\_06-TAILWATER

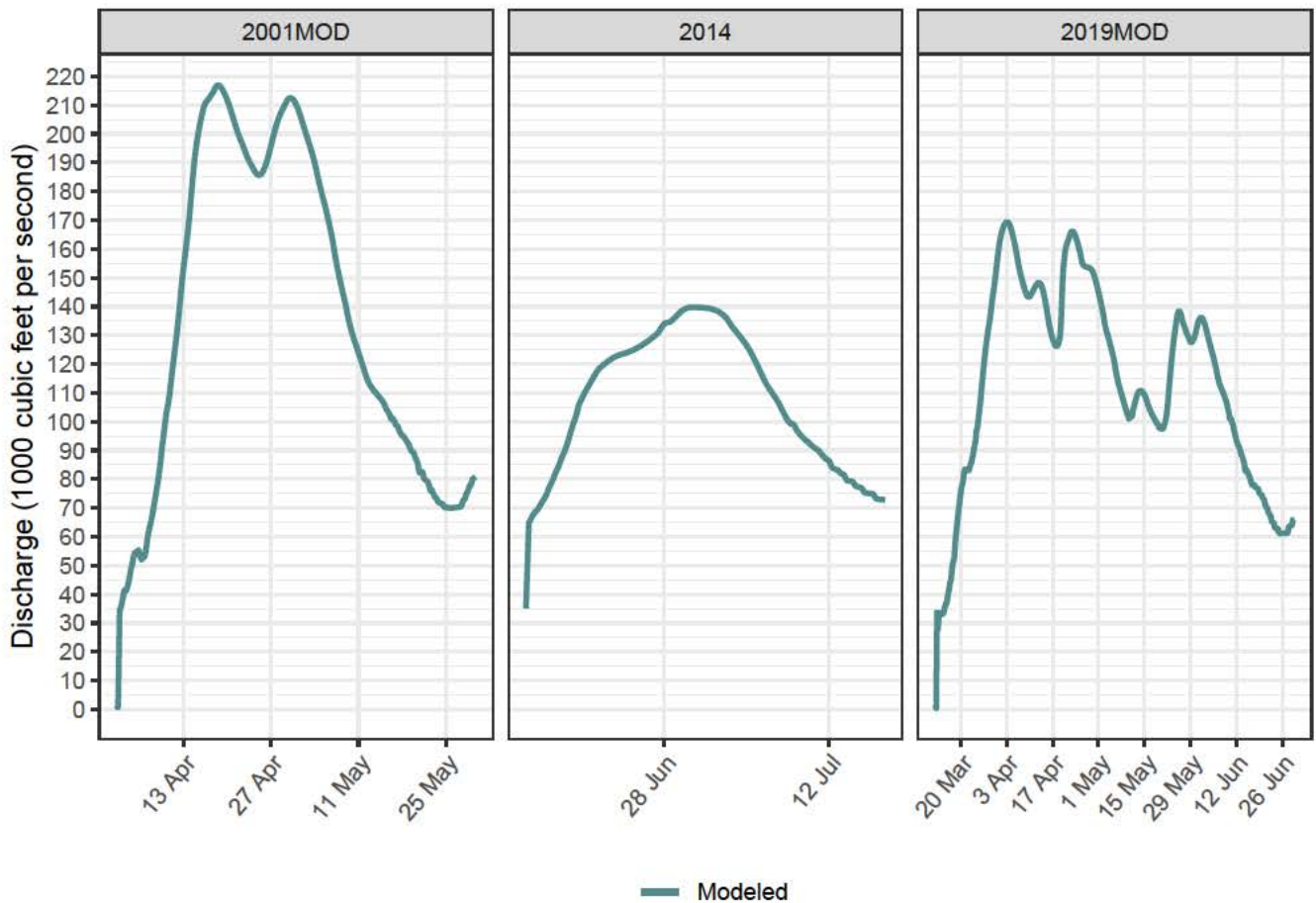
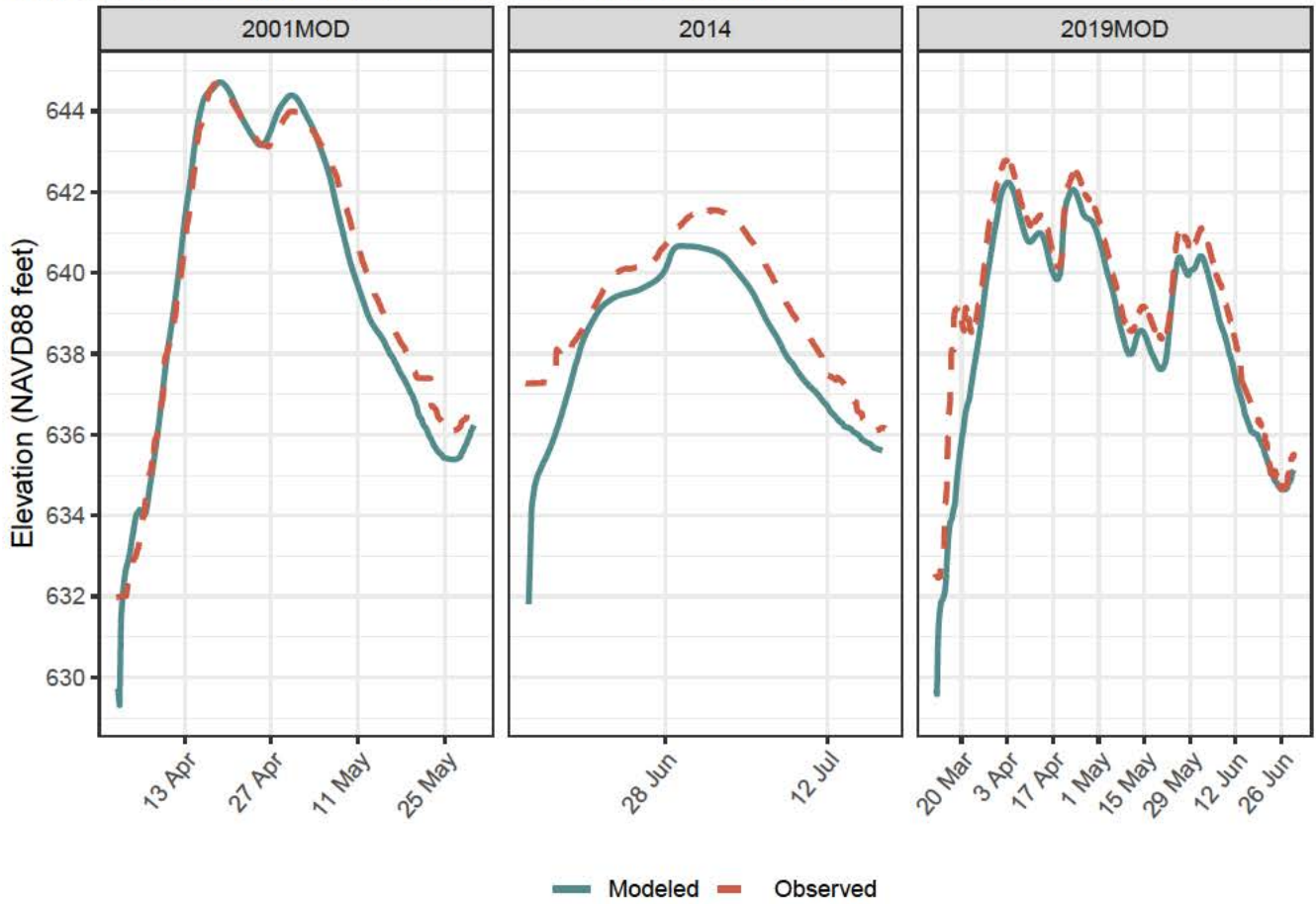


Mississippi River, BelowVermillion Reach, River Mile 702.55  
 Gage LOCKDAM\_07 + 2D Connection\_LD7-1



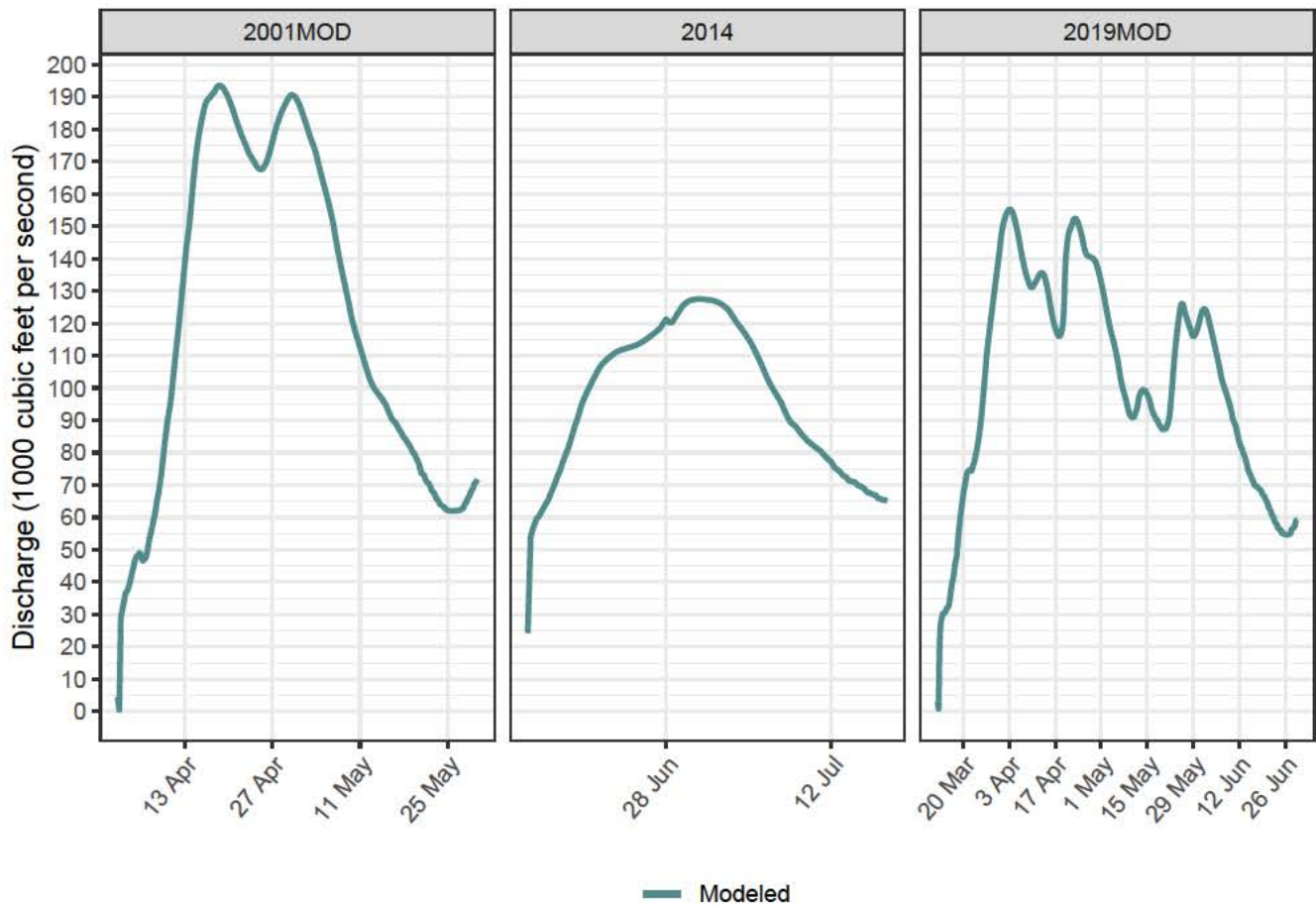
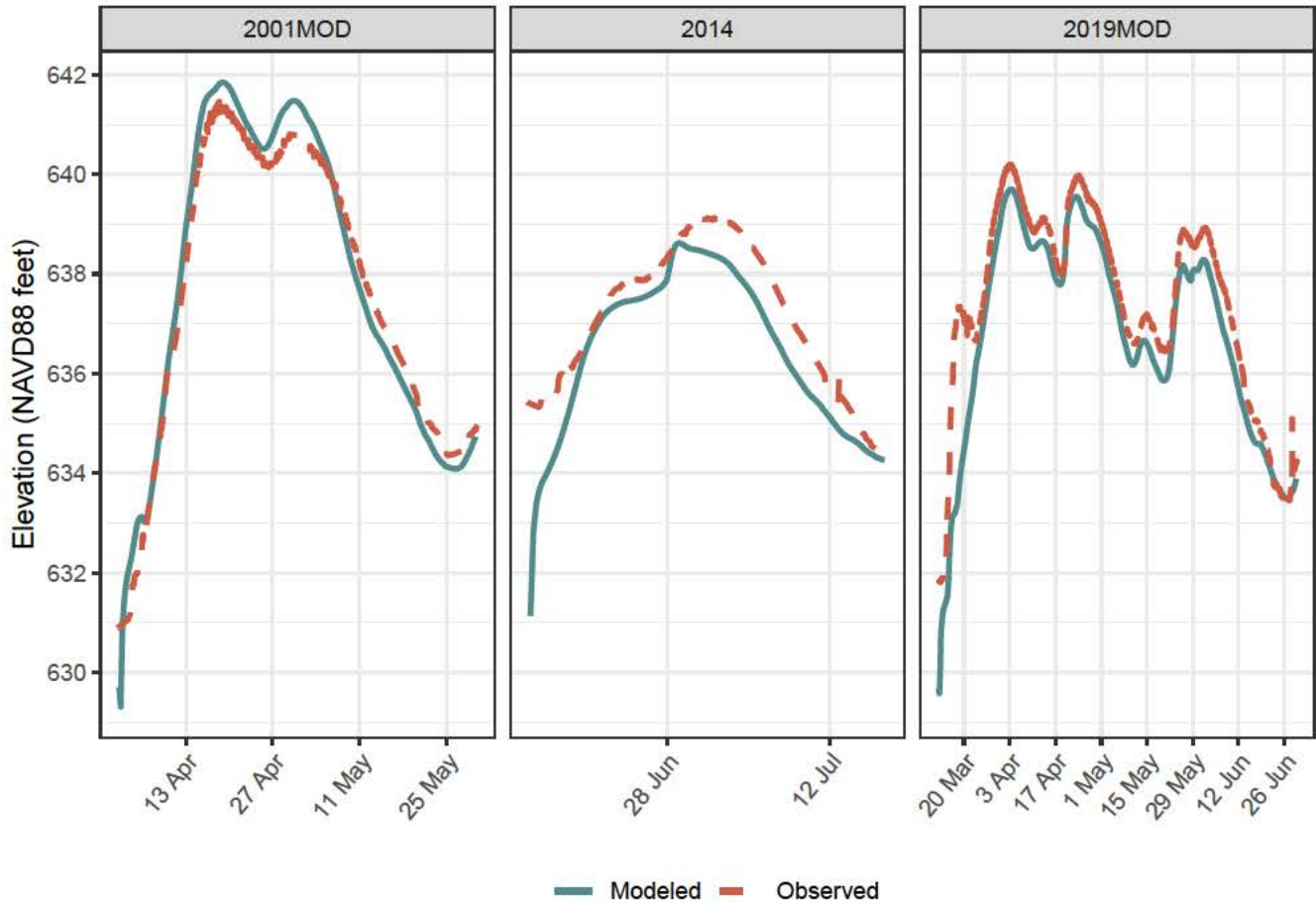


Mississippi River, BelowVermillion Reach, River Mile 702.28  
 Gage LOCKDAM\_07-TAILWATER + 2D Connection\_LD7-1



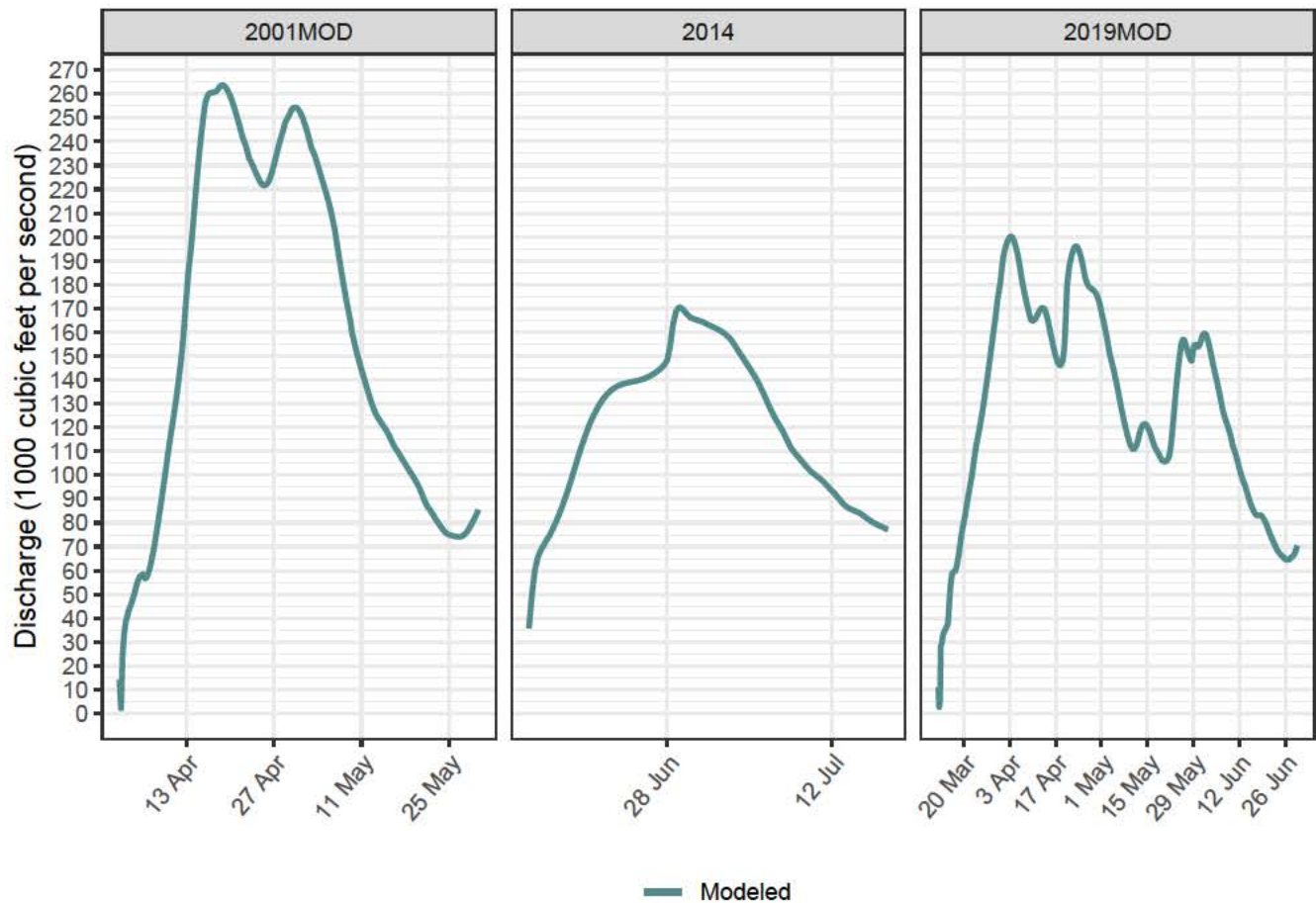
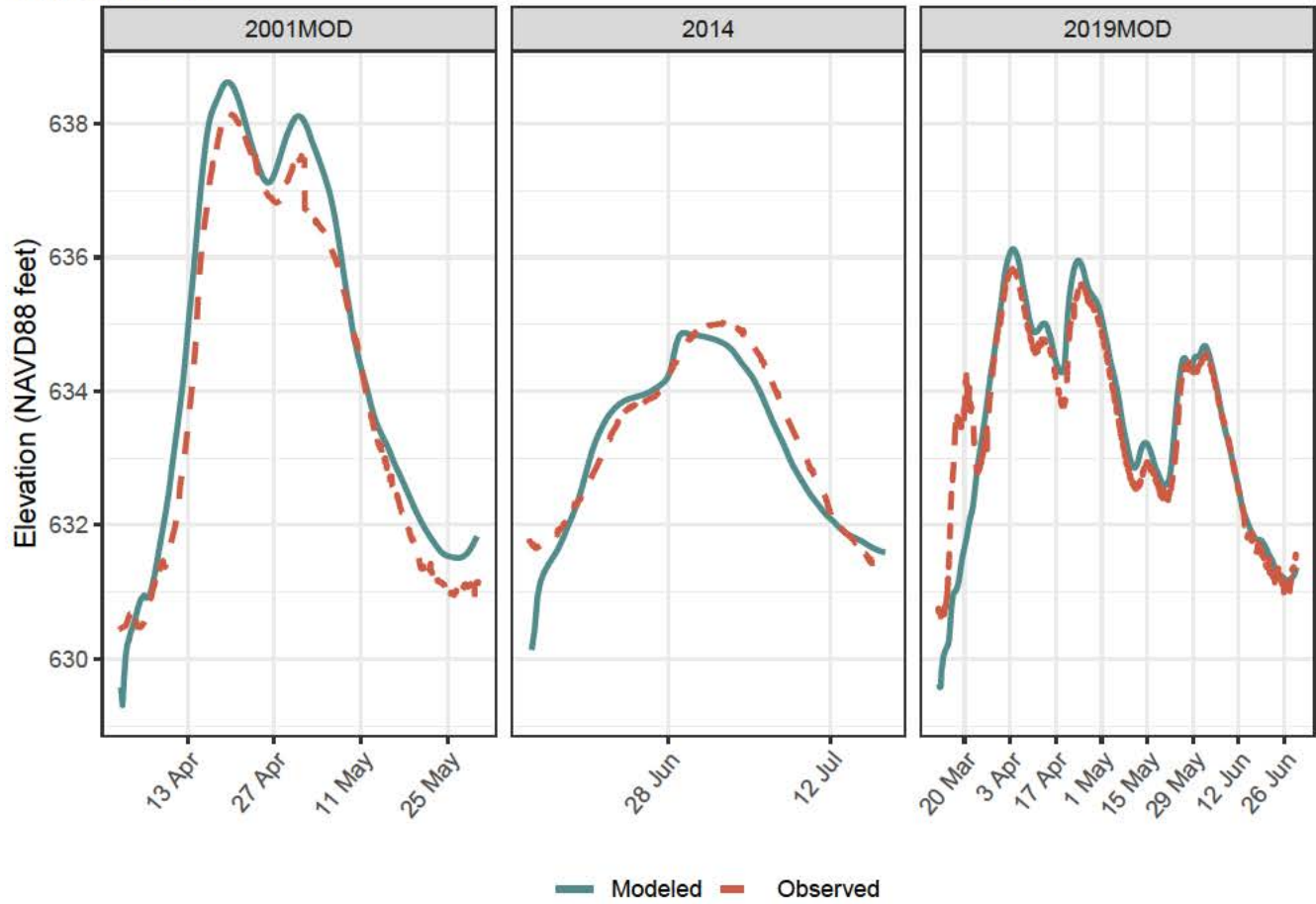
Mississippi River, LaCrossToLD10 Reach, River Mile 697.98

Gage LACW3 + 2D Connection\_LD7-4



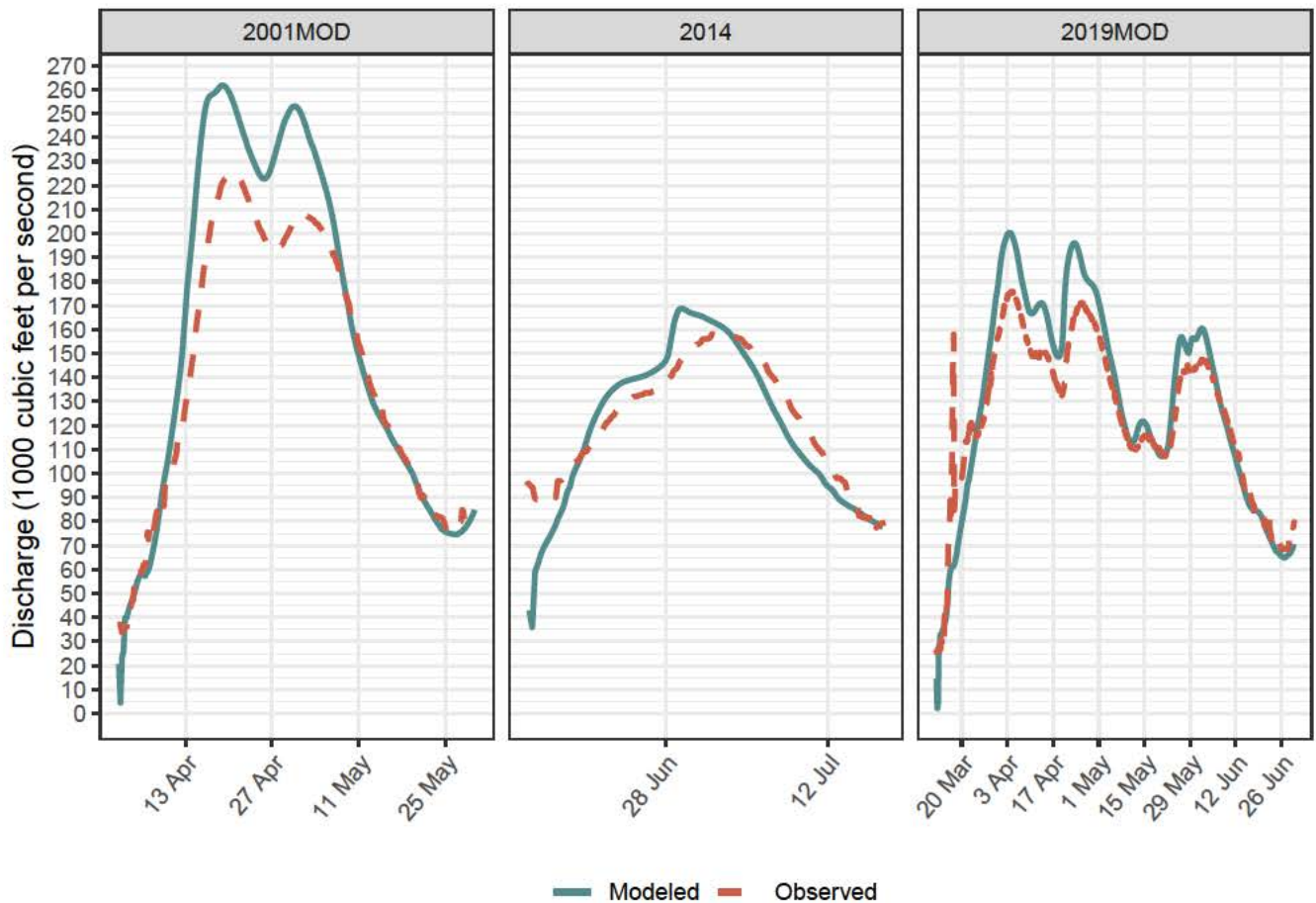
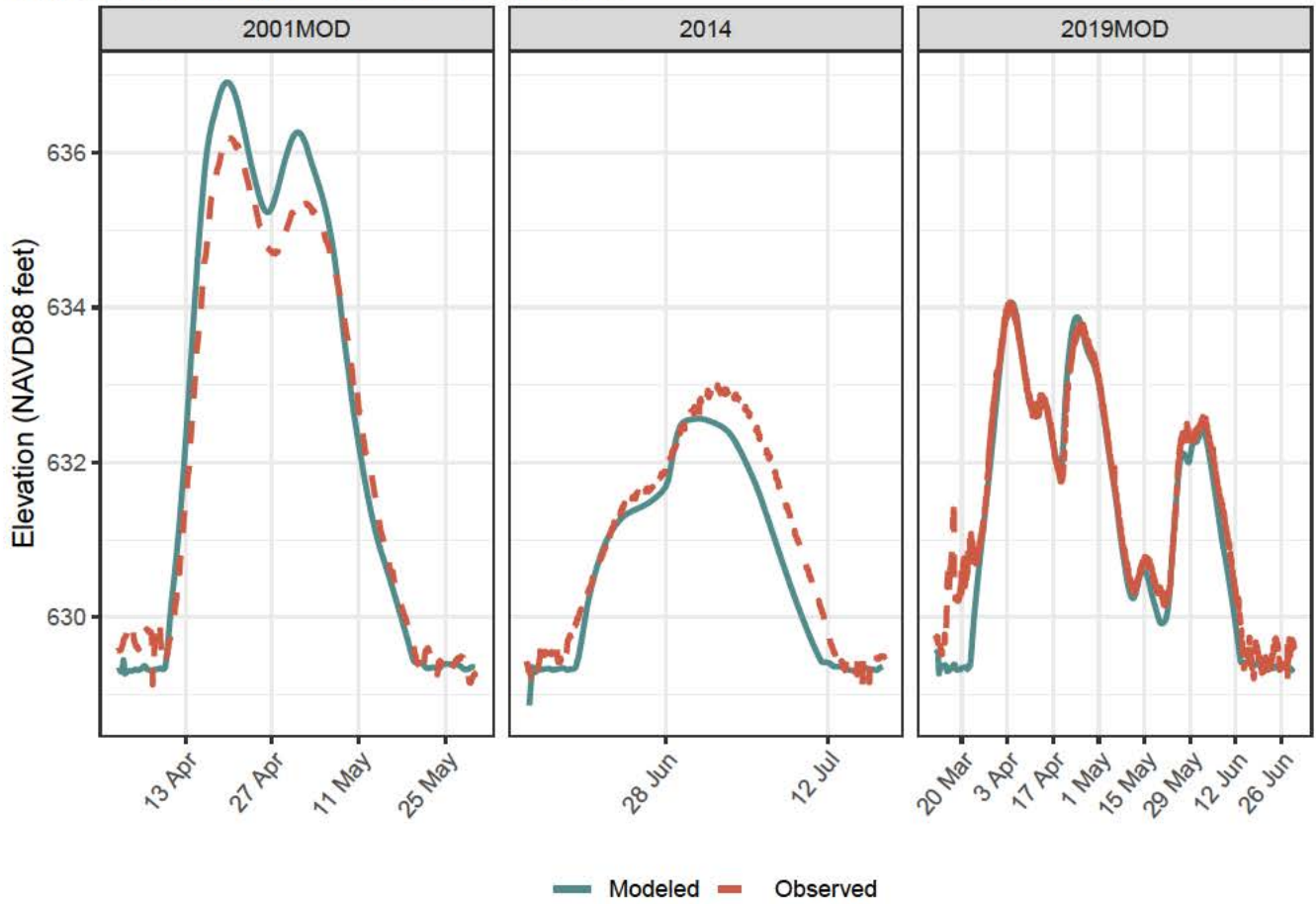
Mississippi River, LaCrossToLD10 Reach, River Mile 689

Gage BRWM5



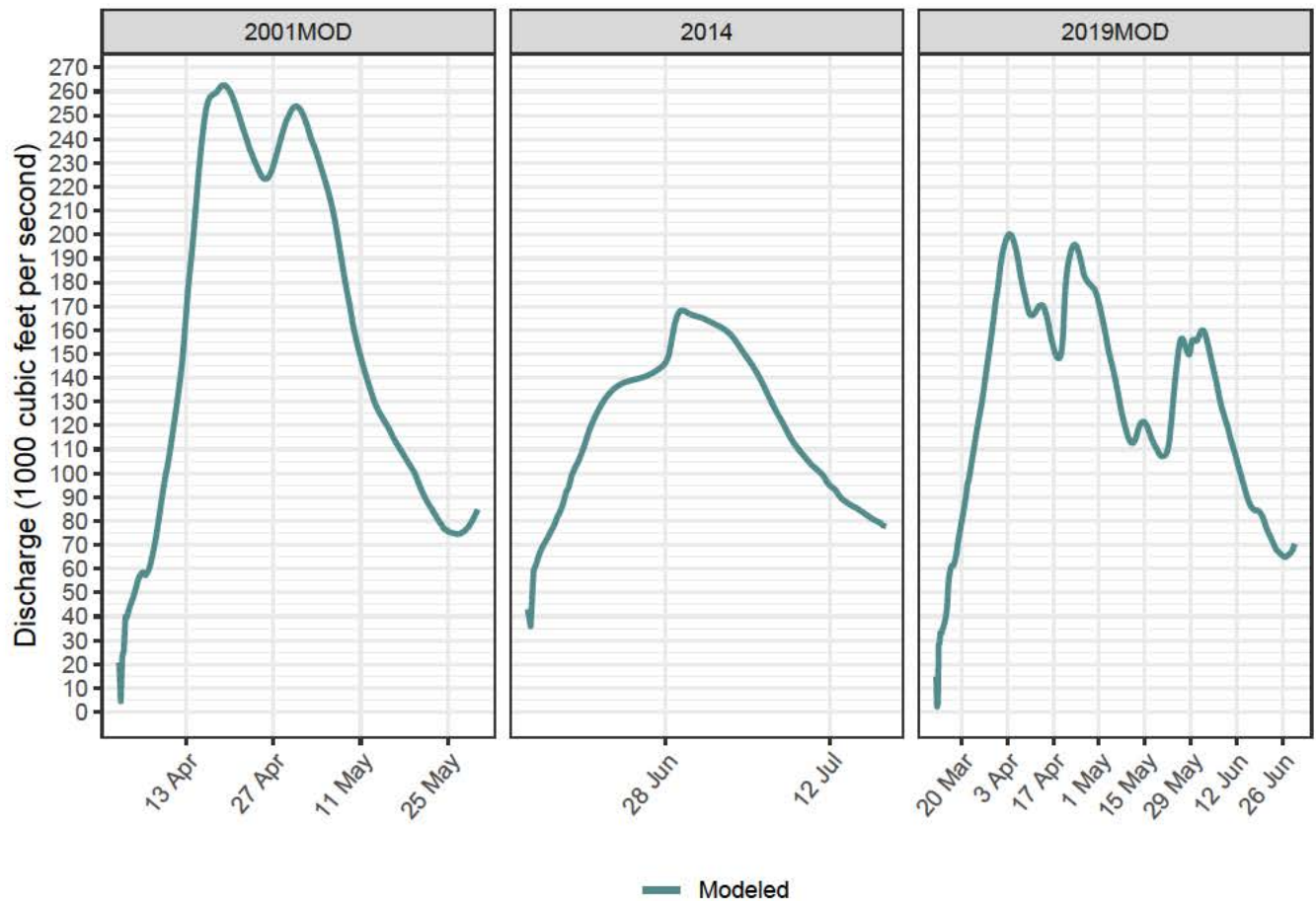
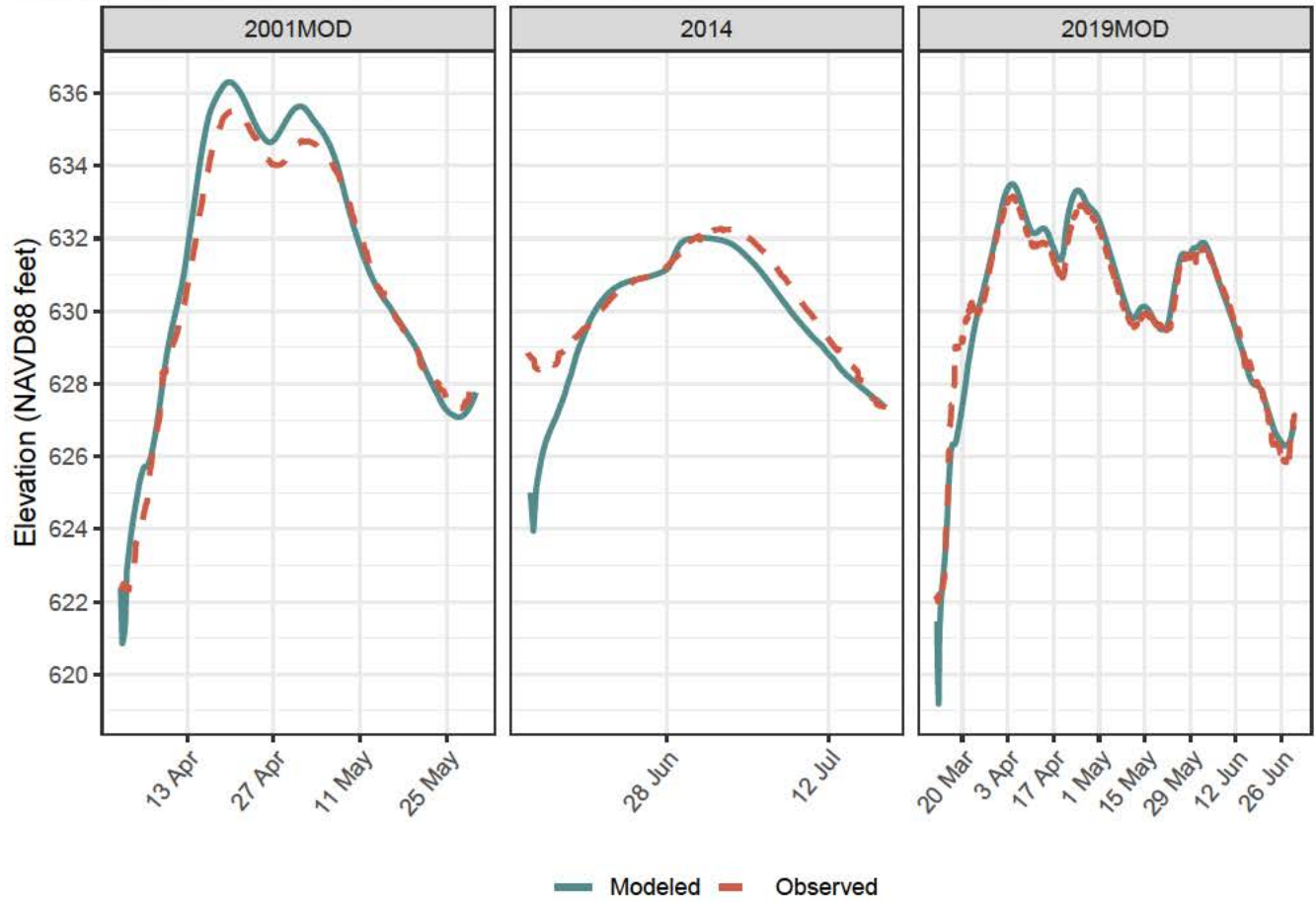
Mississippi River, LaCrossToLD10 Reach, River Mile 679.38

Gage LOCKDAM\_08 + 2D Connection\_LD8



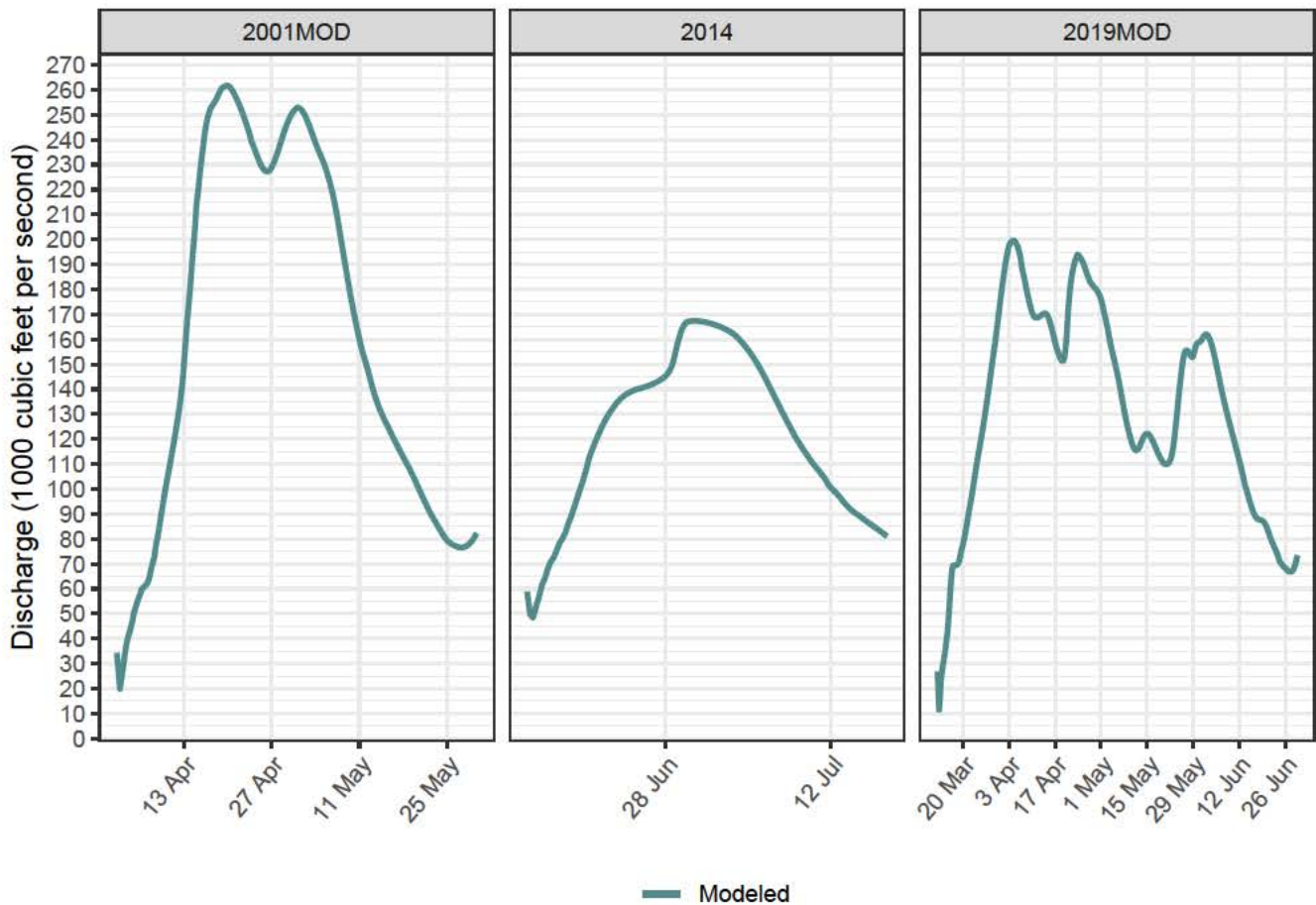
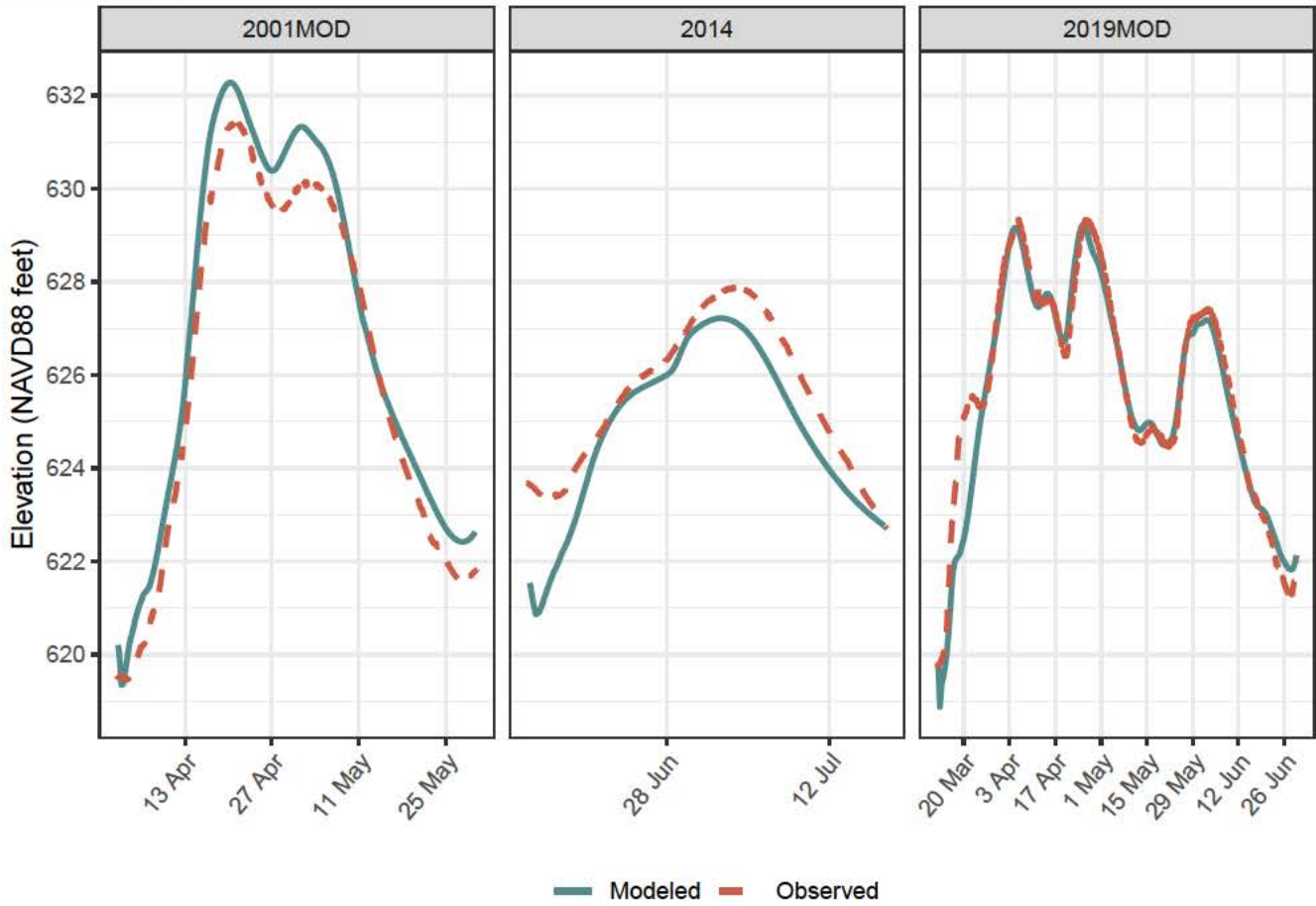
Mississippi River, LaCrossToLD10 Reach, River Mile 679.03

Gage LOCKDAM\_08-TAILWATER + 2D Connection\_LD8



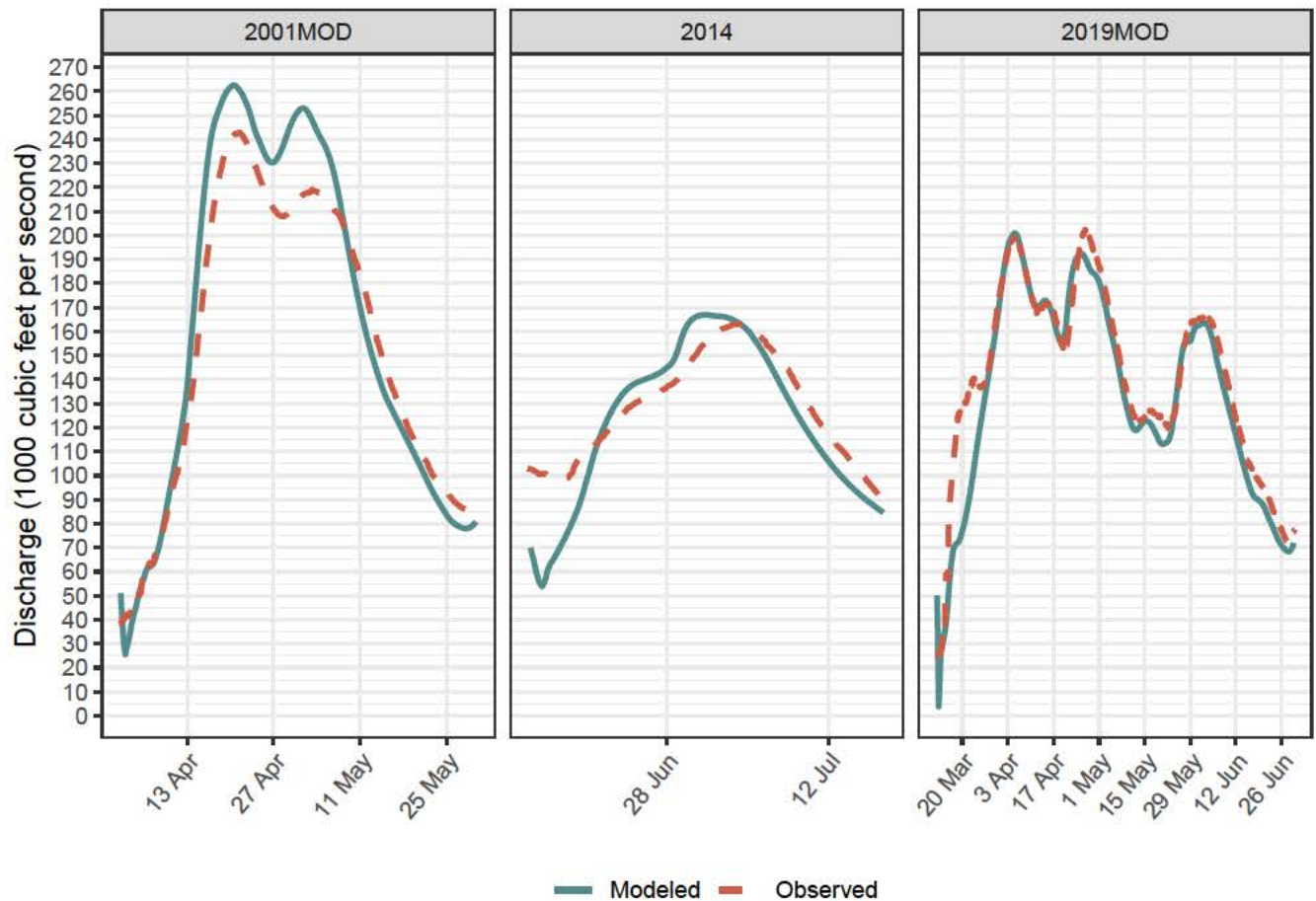
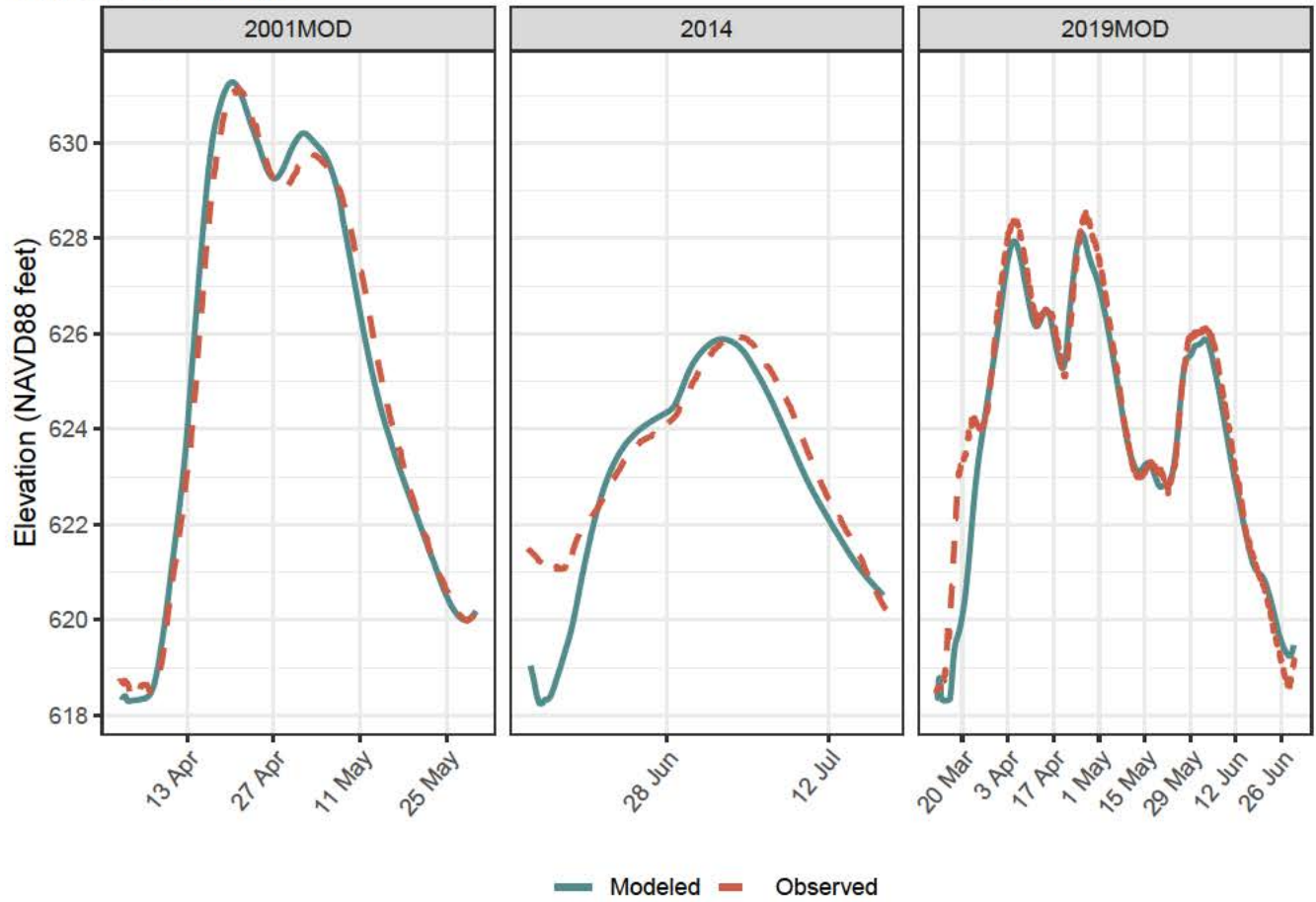
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Gage LNSI4



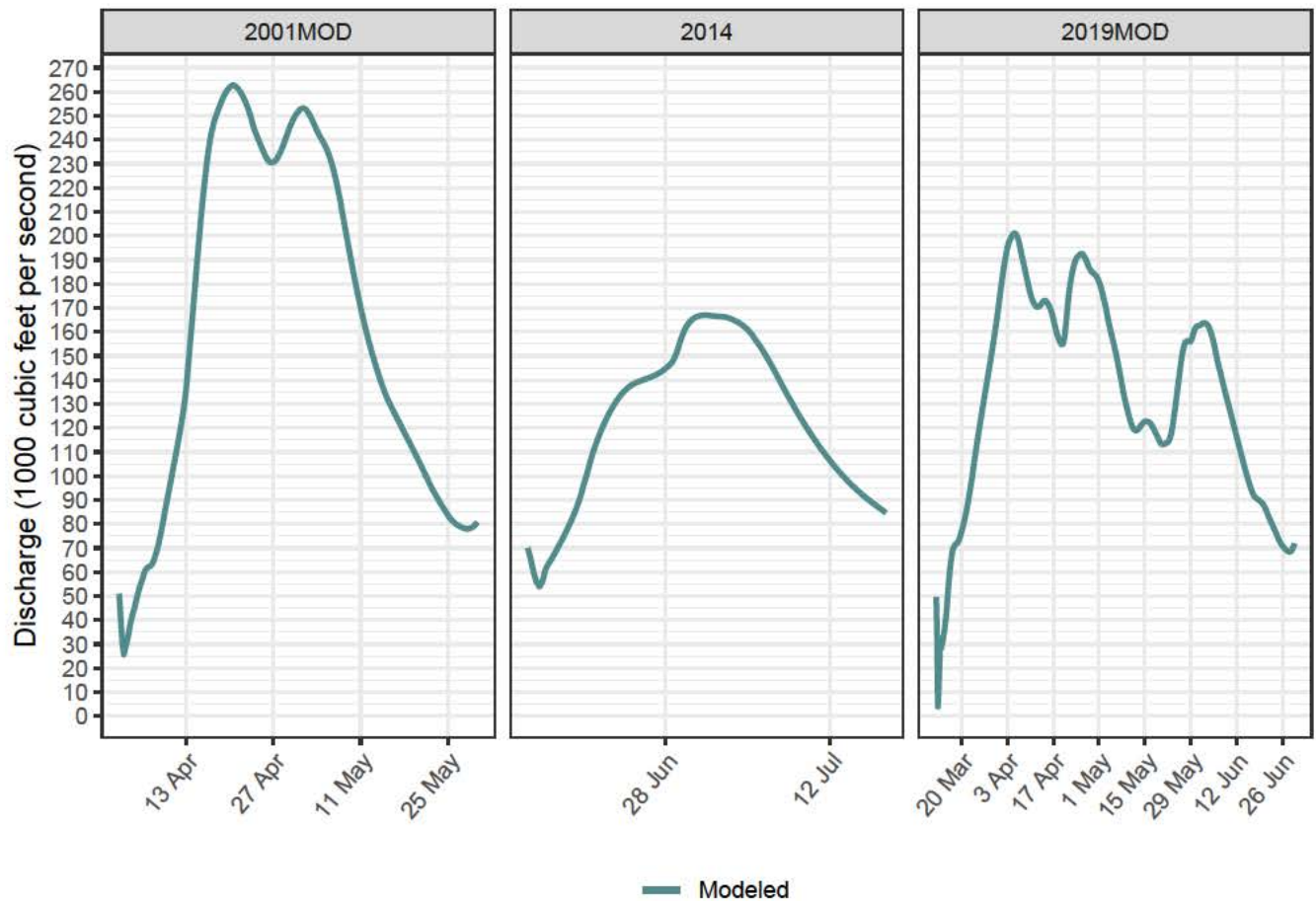
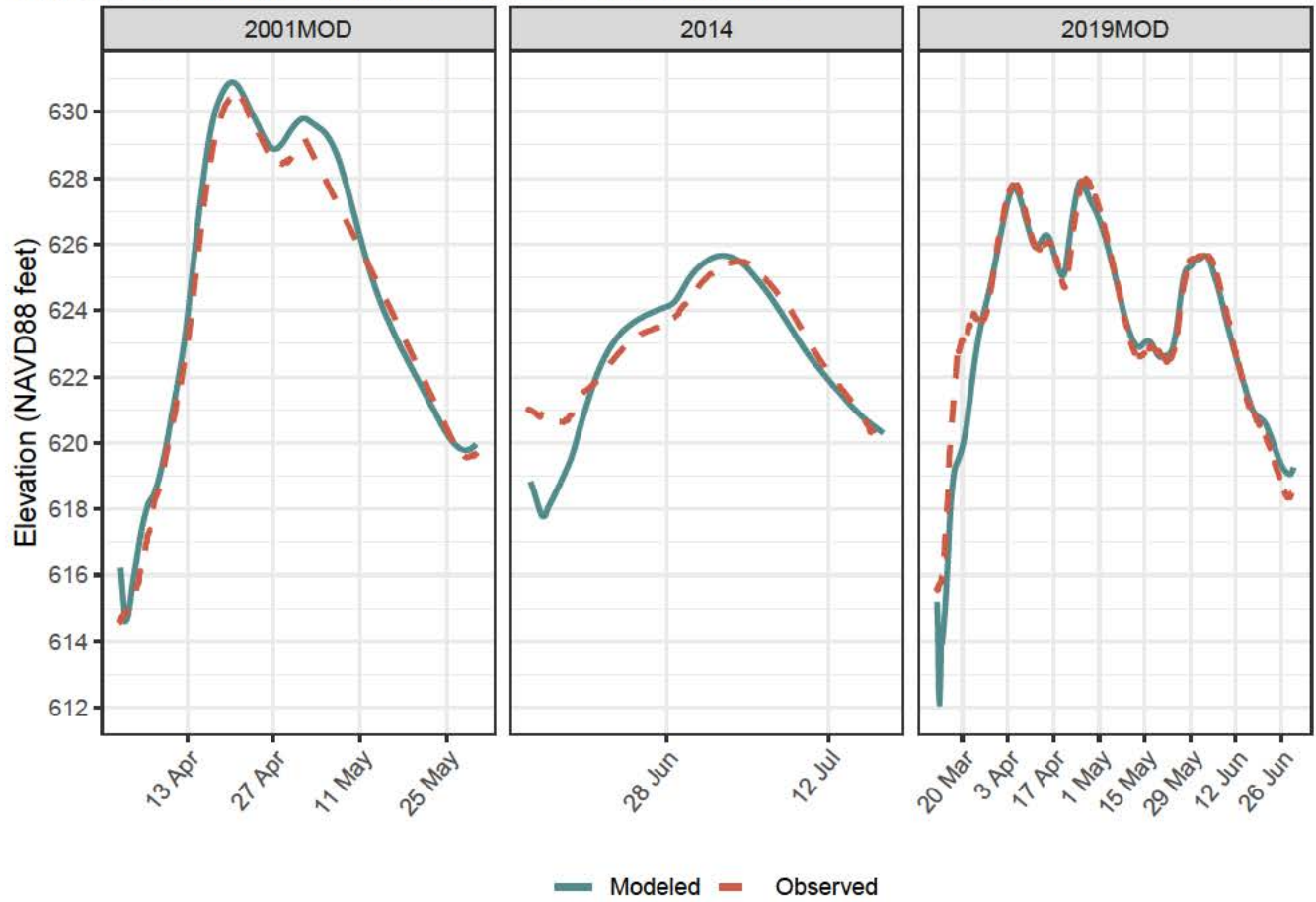
Mississippi River, LaCrossToLD10 Reach, River Mile 648.03

Gage LOCKDAM\_09



Mississippi River, LaCrossToLD10 Reach, River Mile 647.67

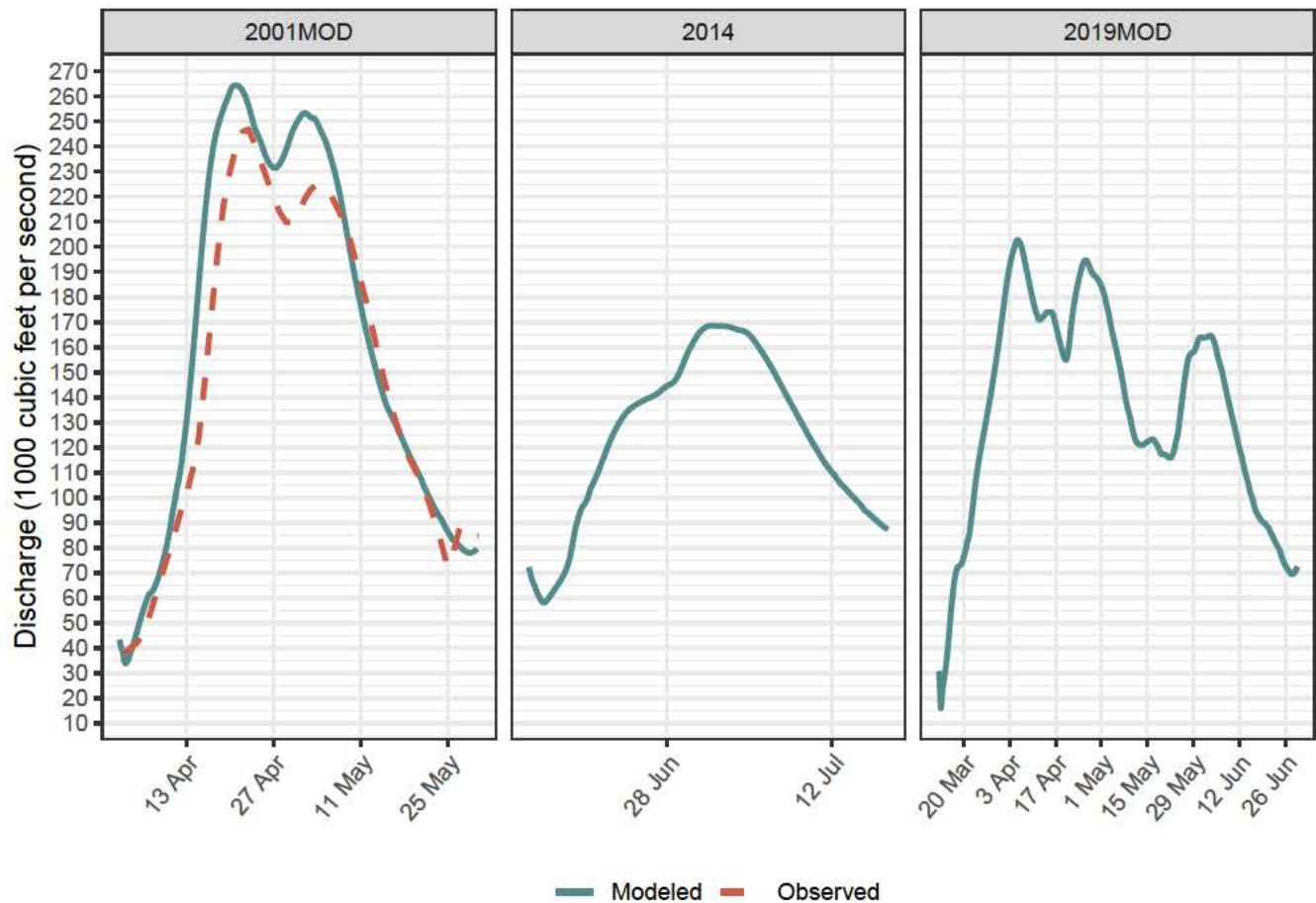
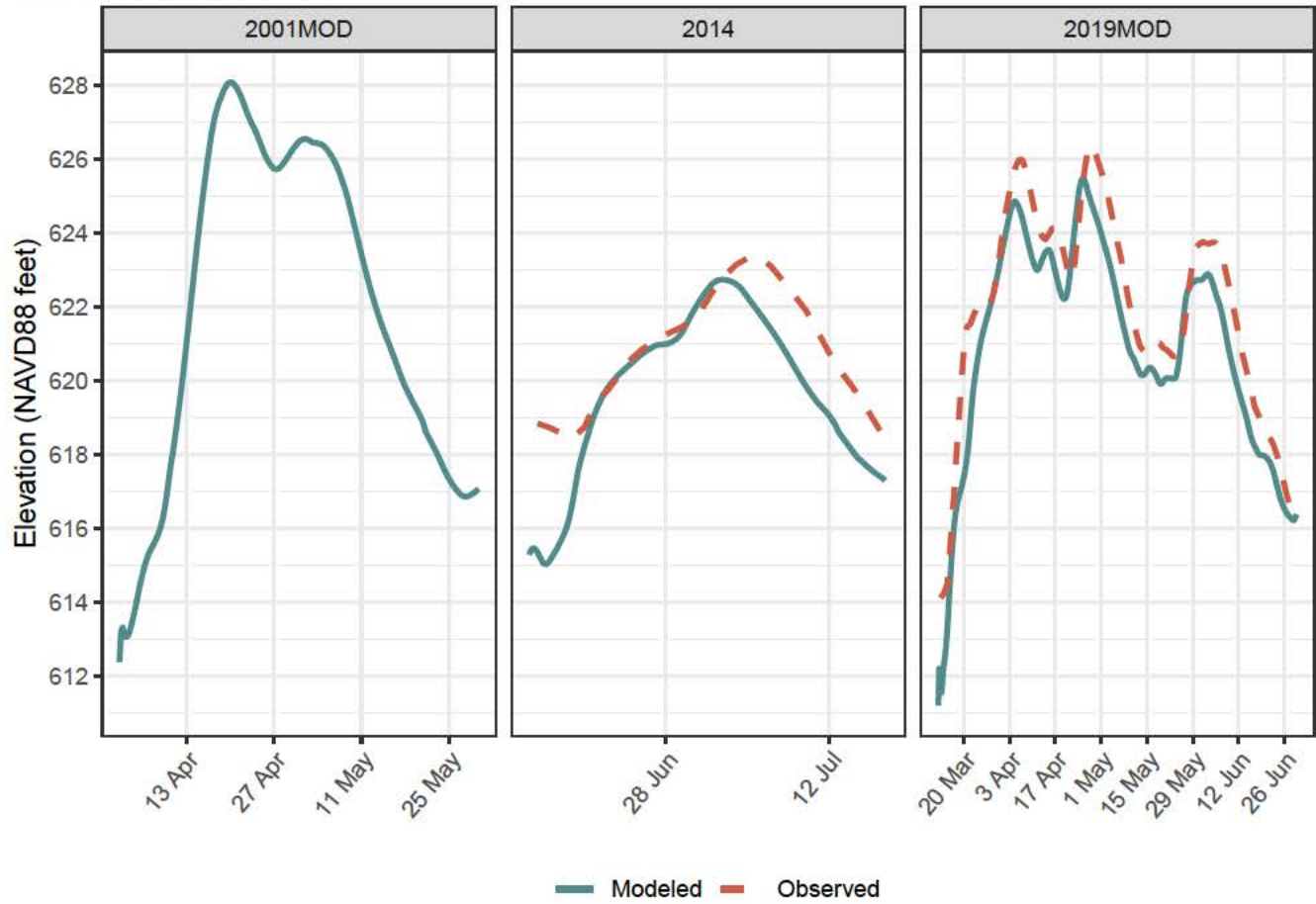
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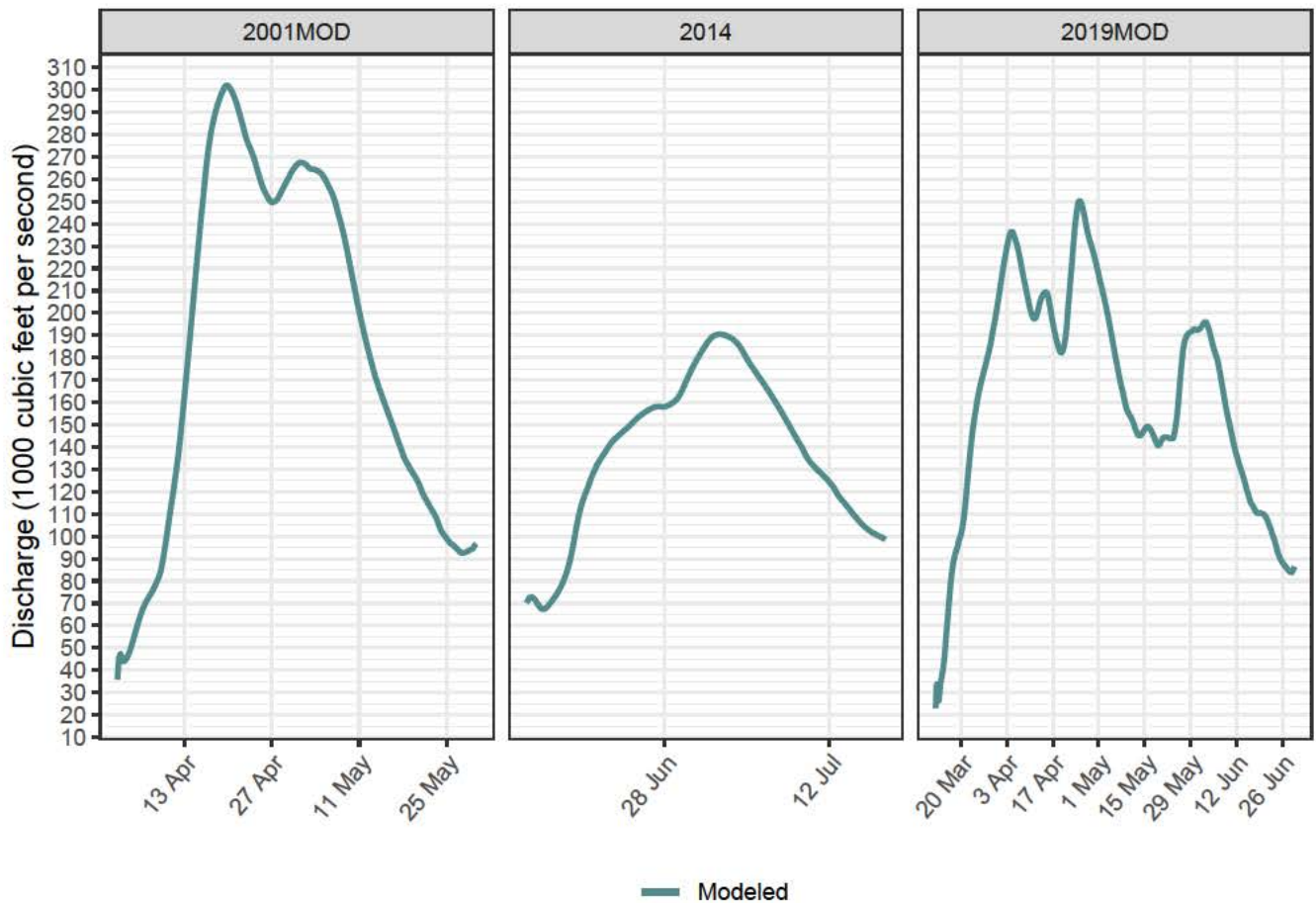
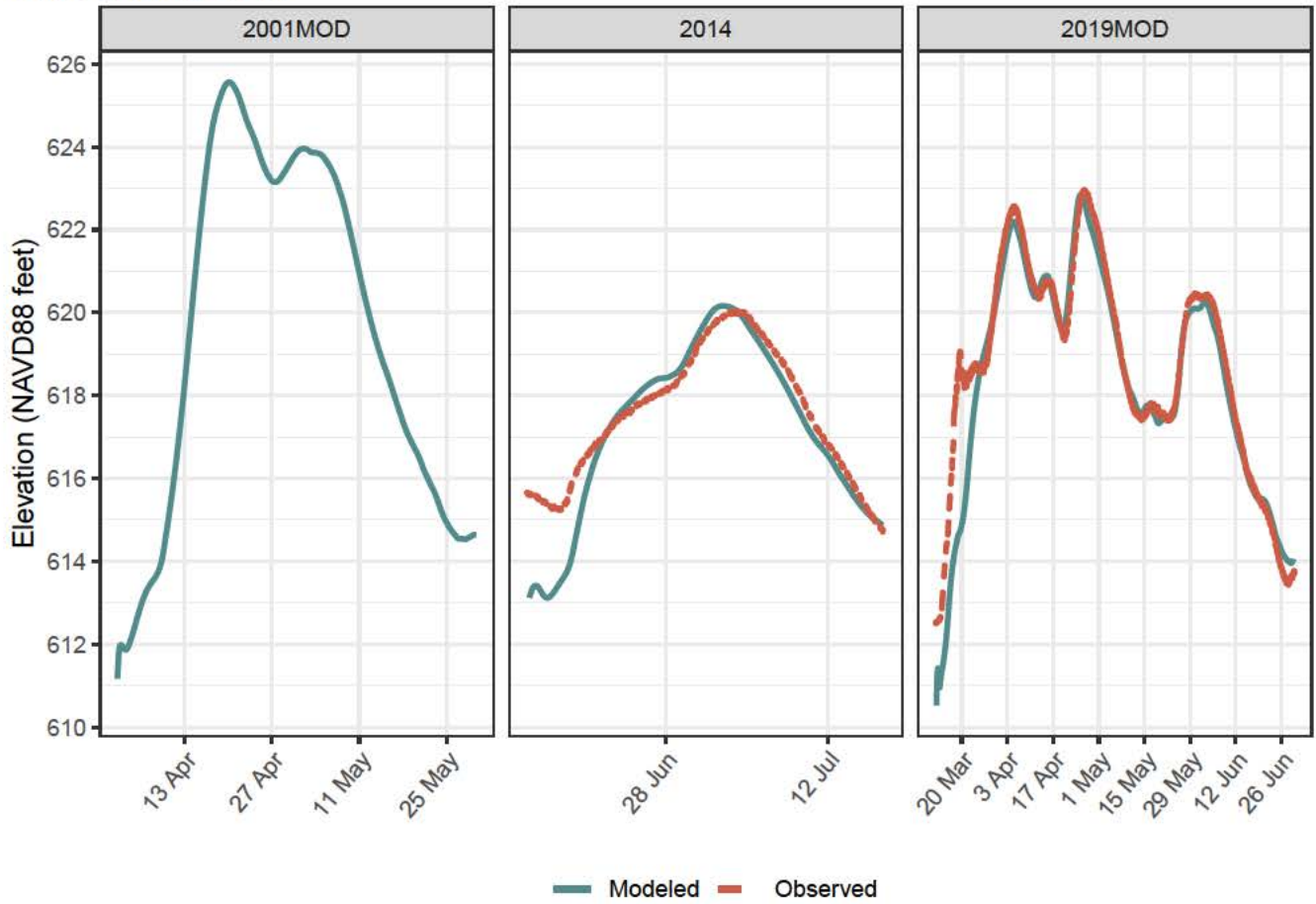
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Gage MCGREGOR, IA

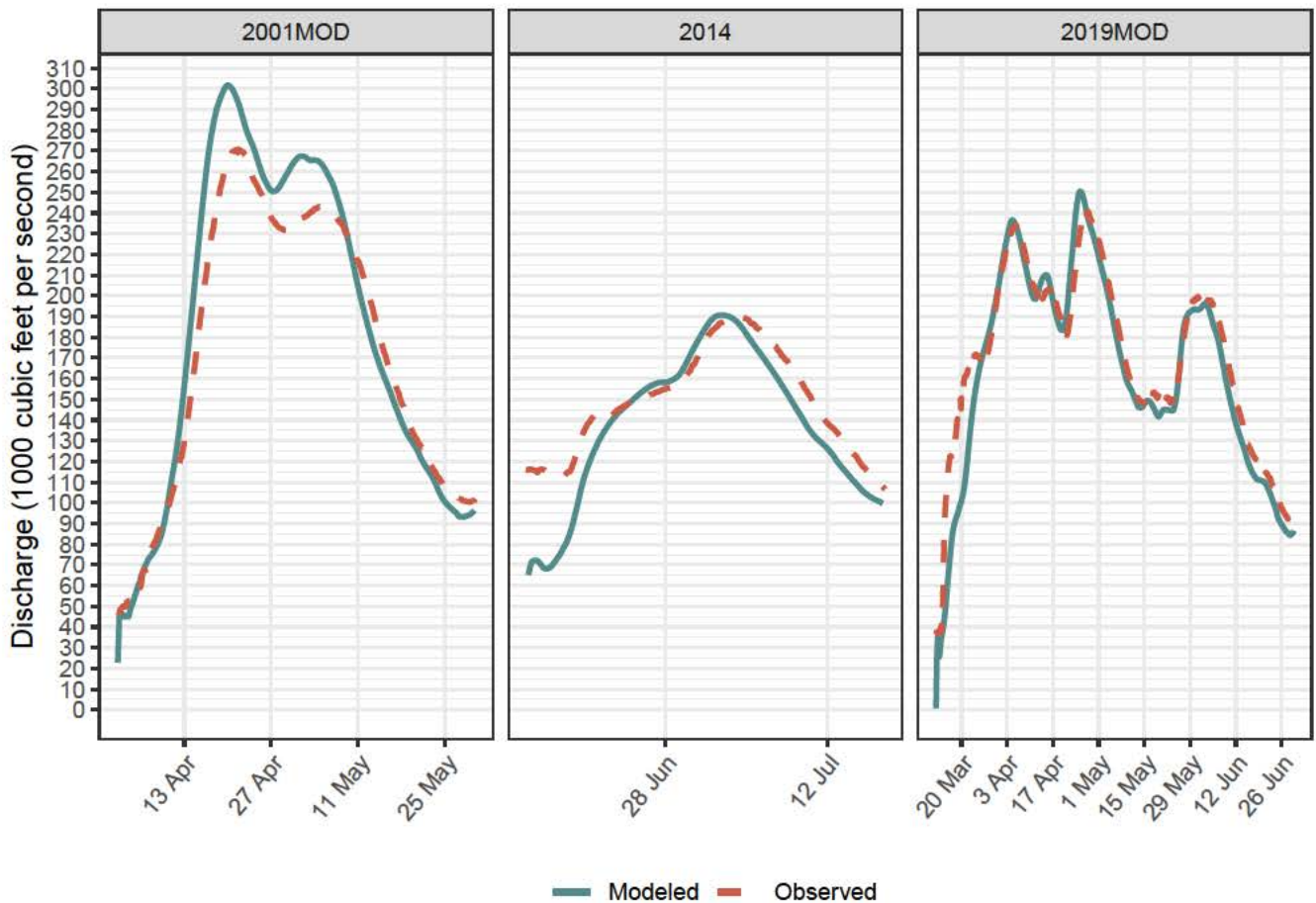
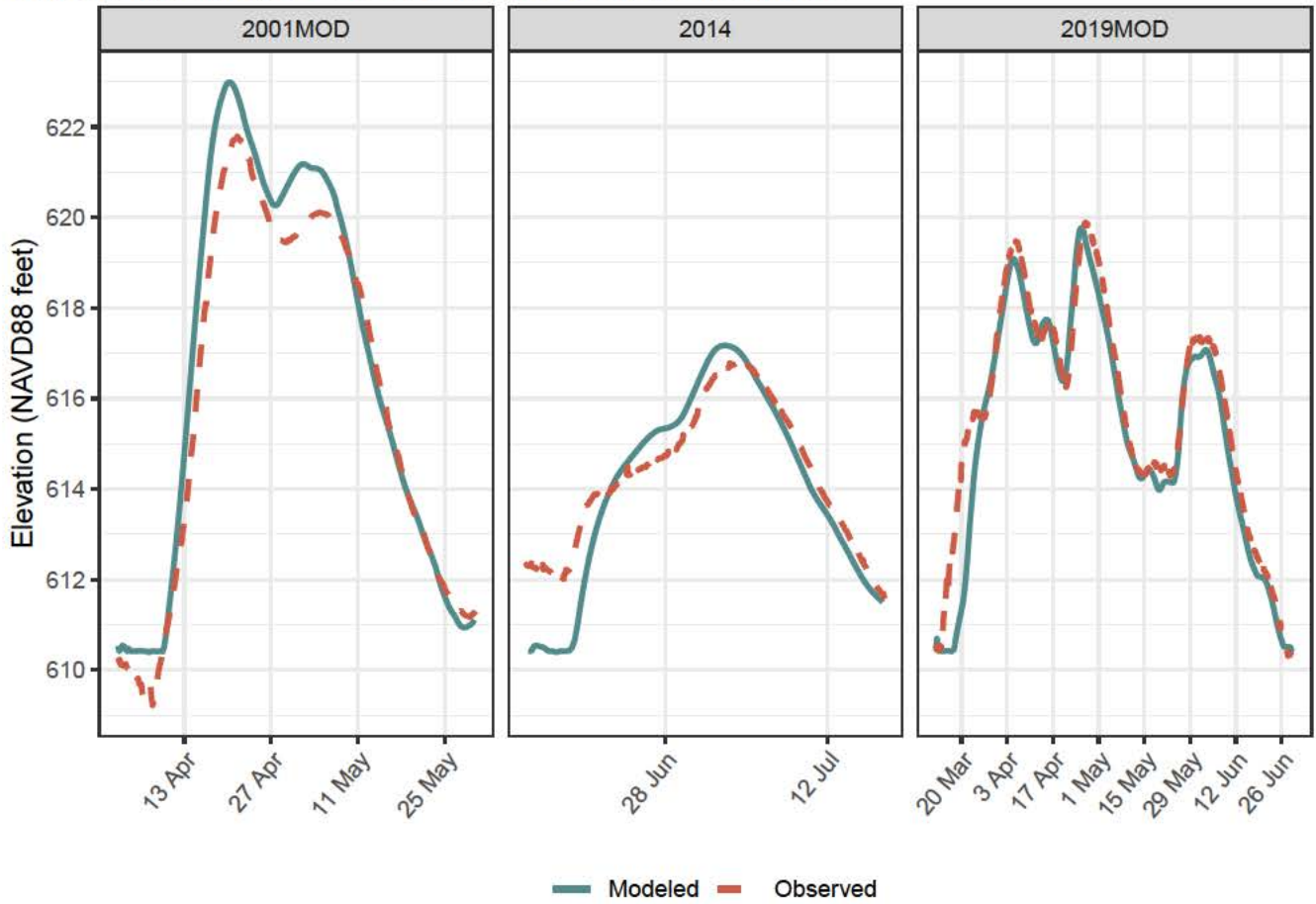


Mississippi River, LaCrossToLD10 Reach, River Mile 624.72

Gage CLAYTON, IA

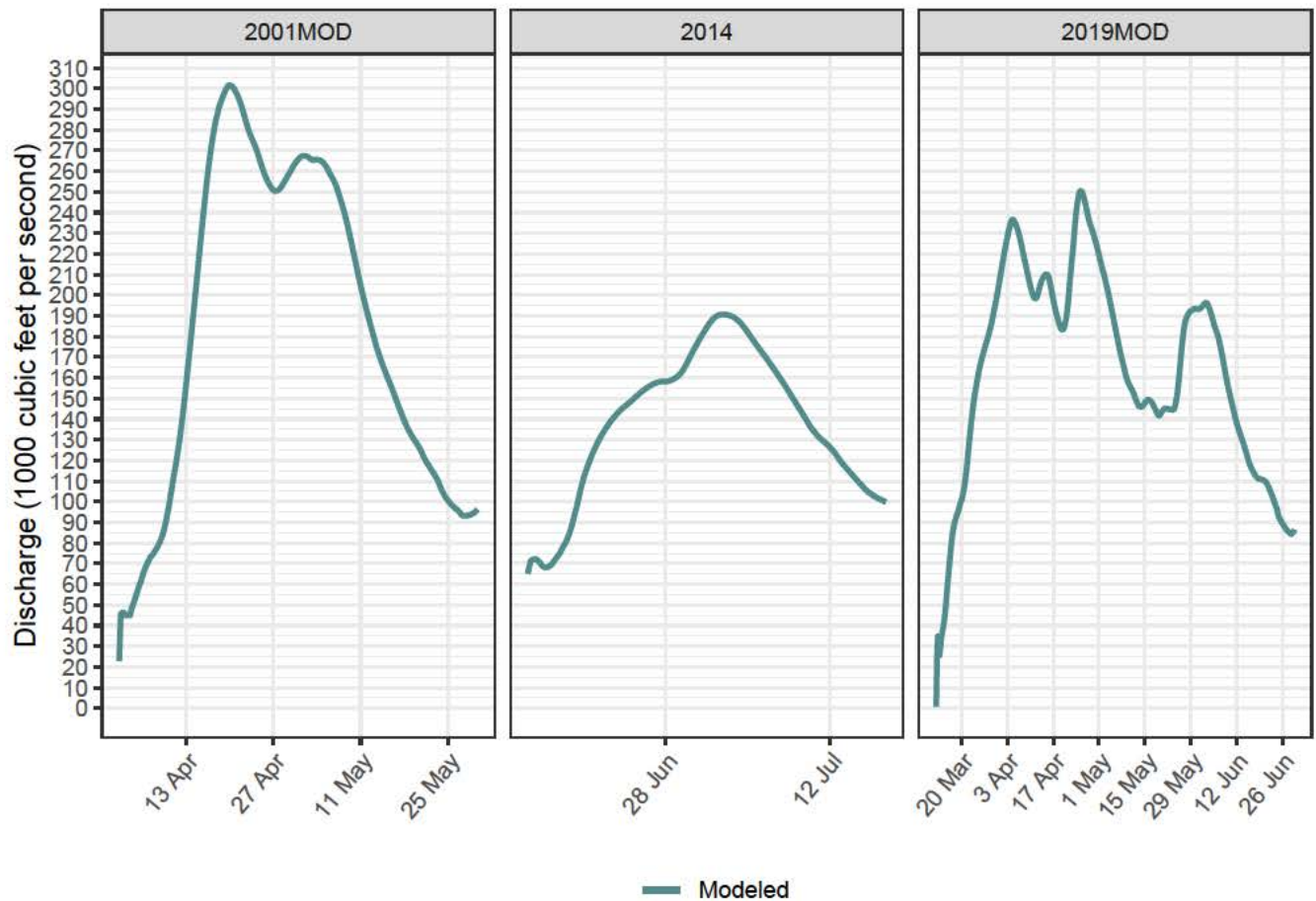
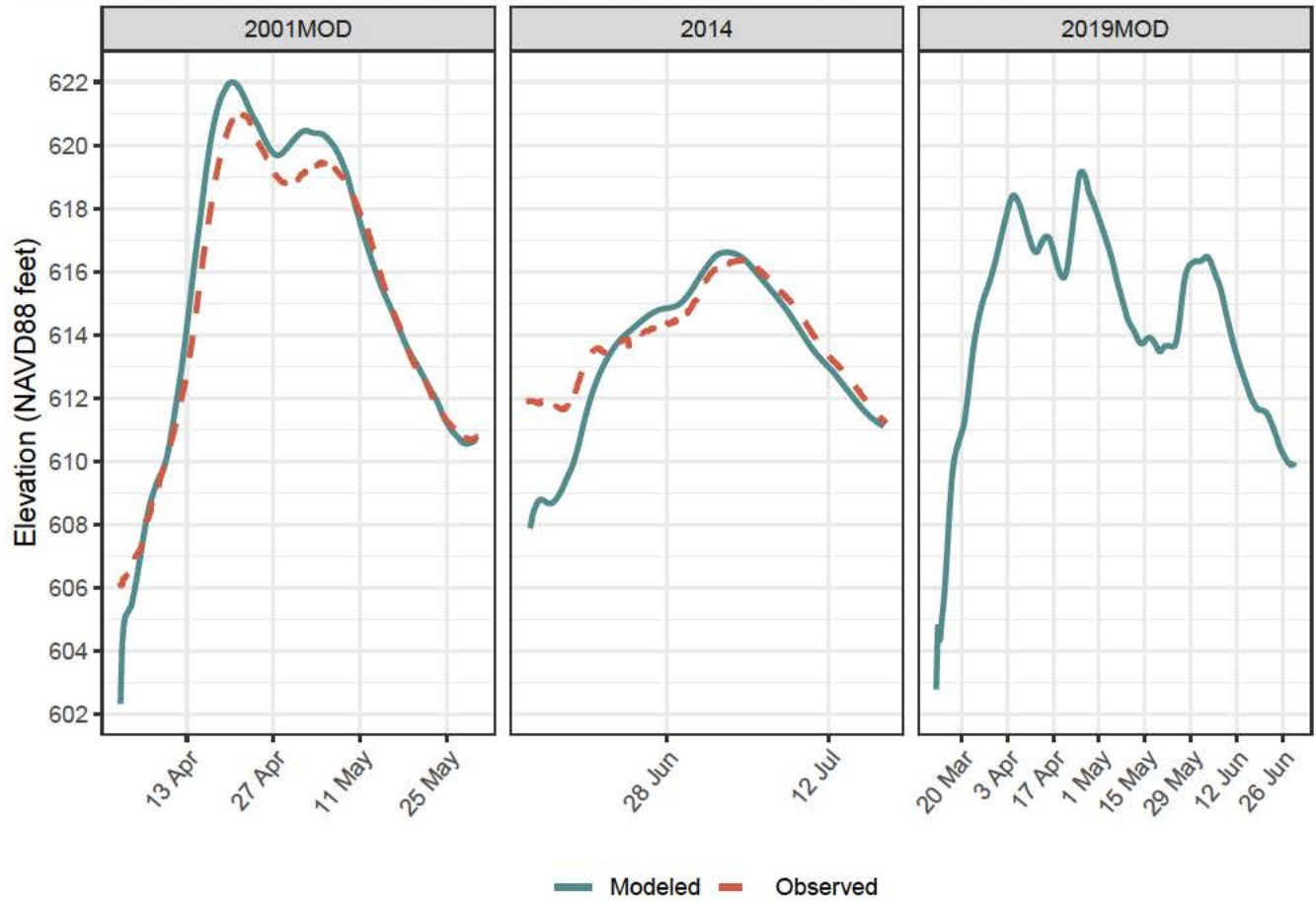


Mississippi River, LaCrossToLD10 Reach, River Mile 615.27  
 Gage LOCKDAM\_10 + 2D Connection\_GUTEMBANKMENT



Mississippi River, LaCrossToLD10 Reach, River Mile 615.04

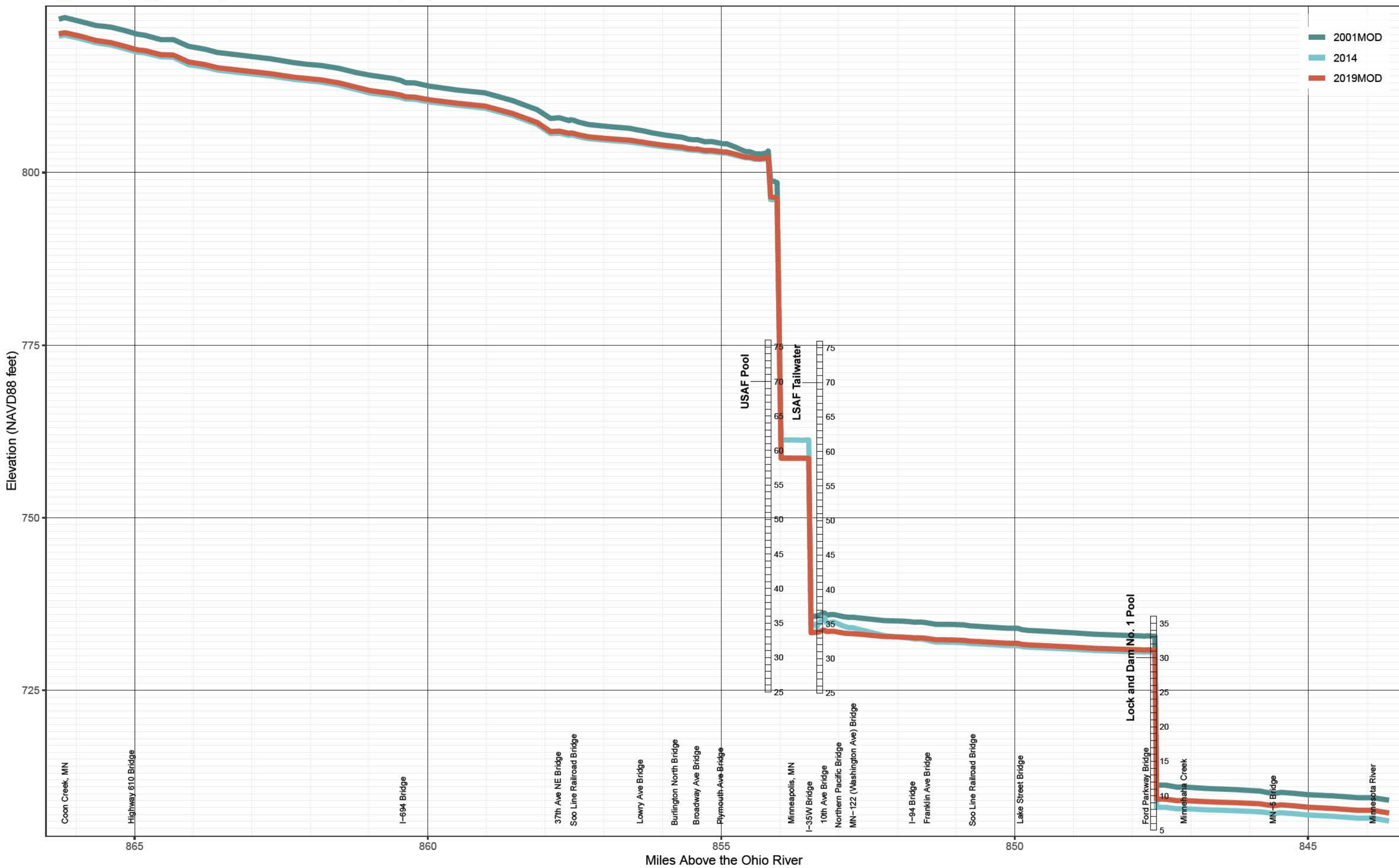
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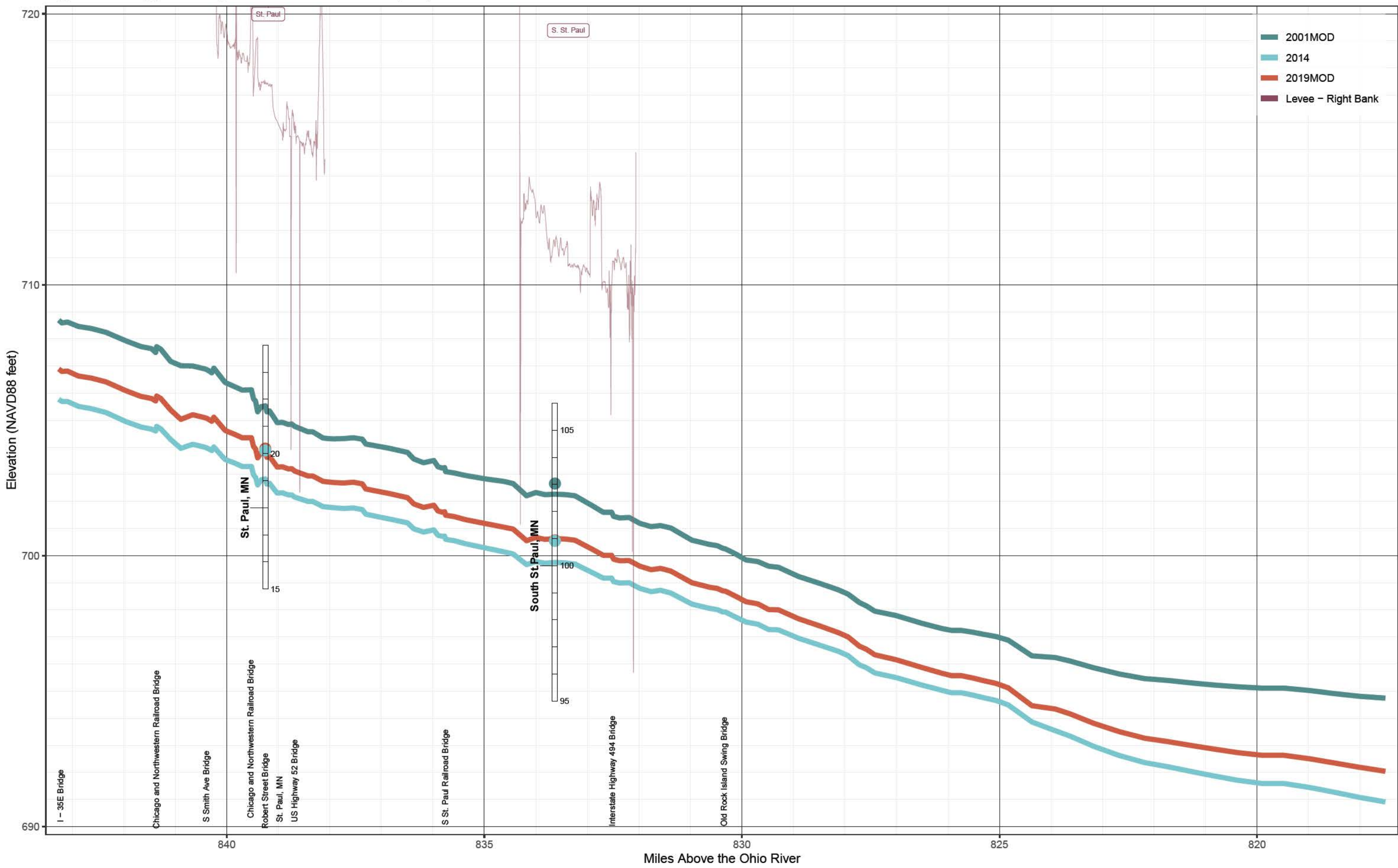
## **APPENDIX C-2**

### **MODEL CALIBRATION PROFILE PLOTS**

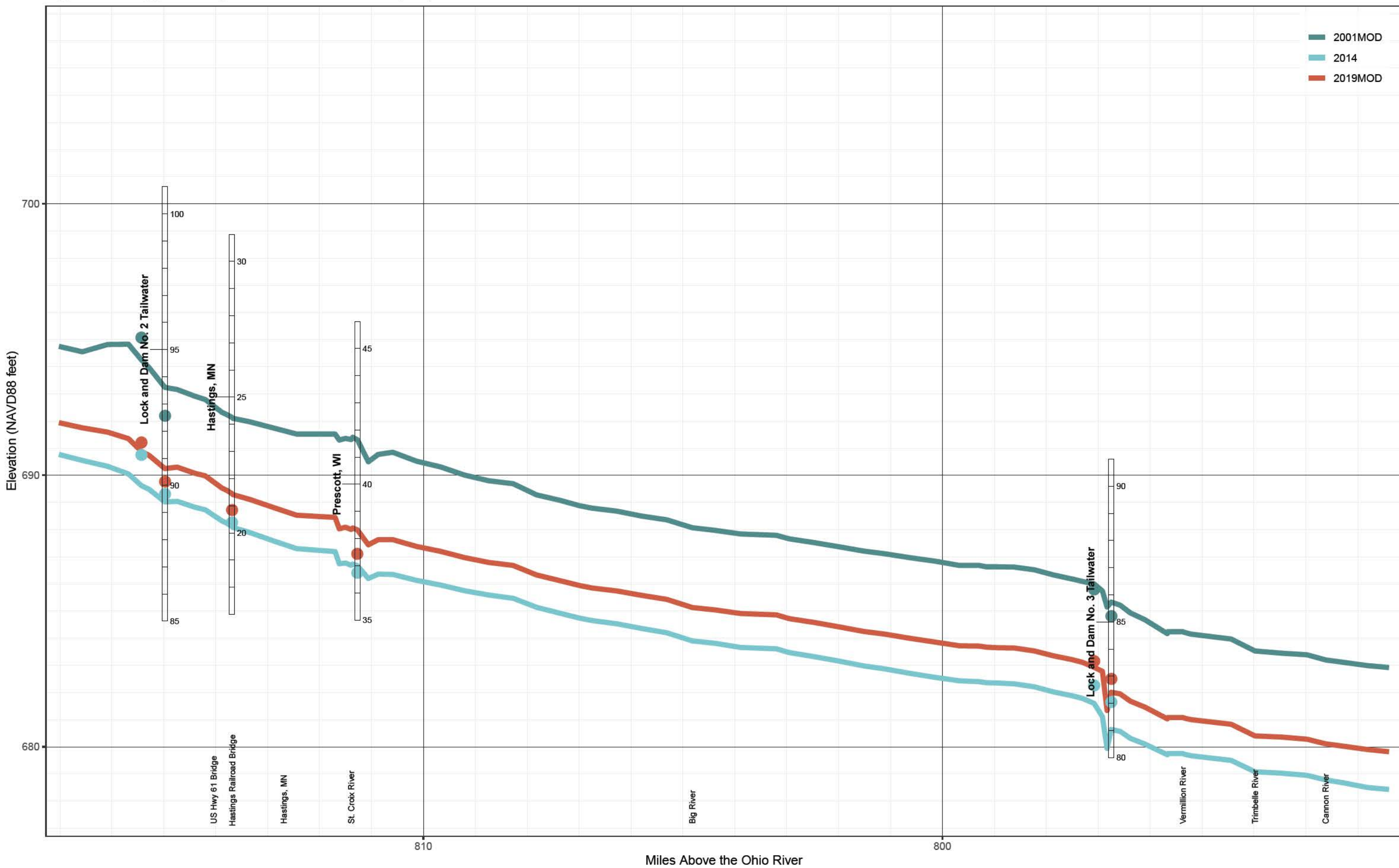
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10

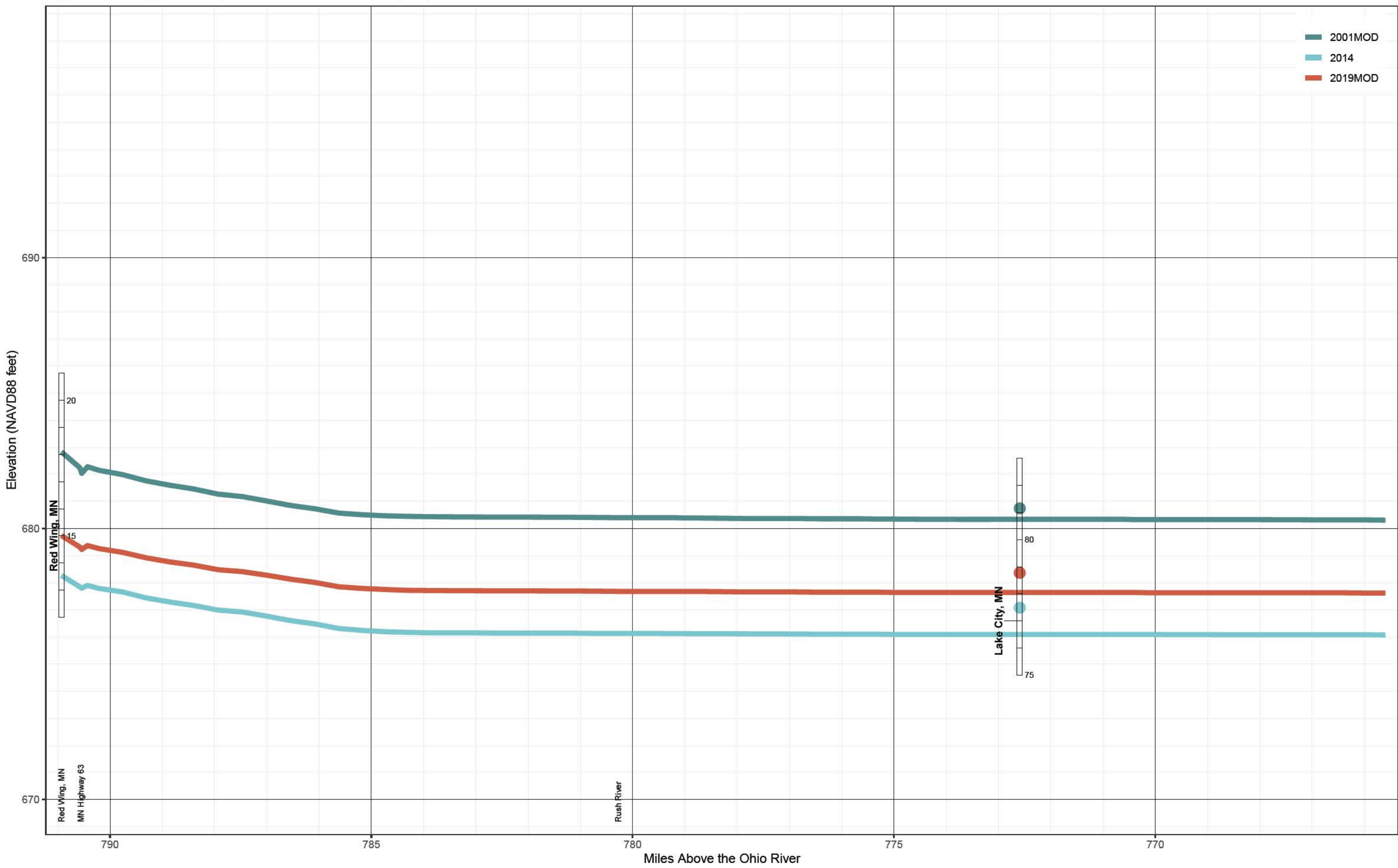


Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10

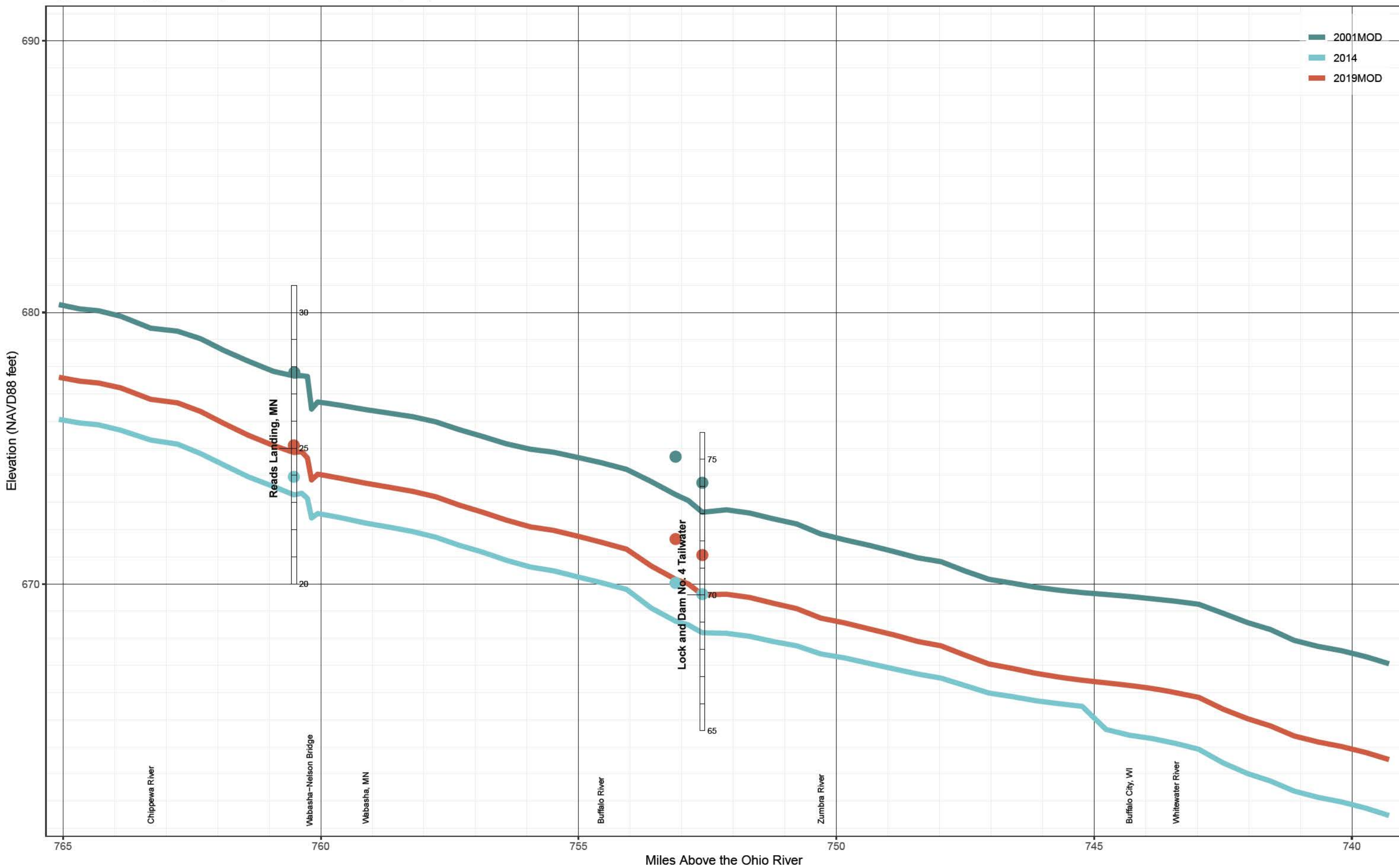




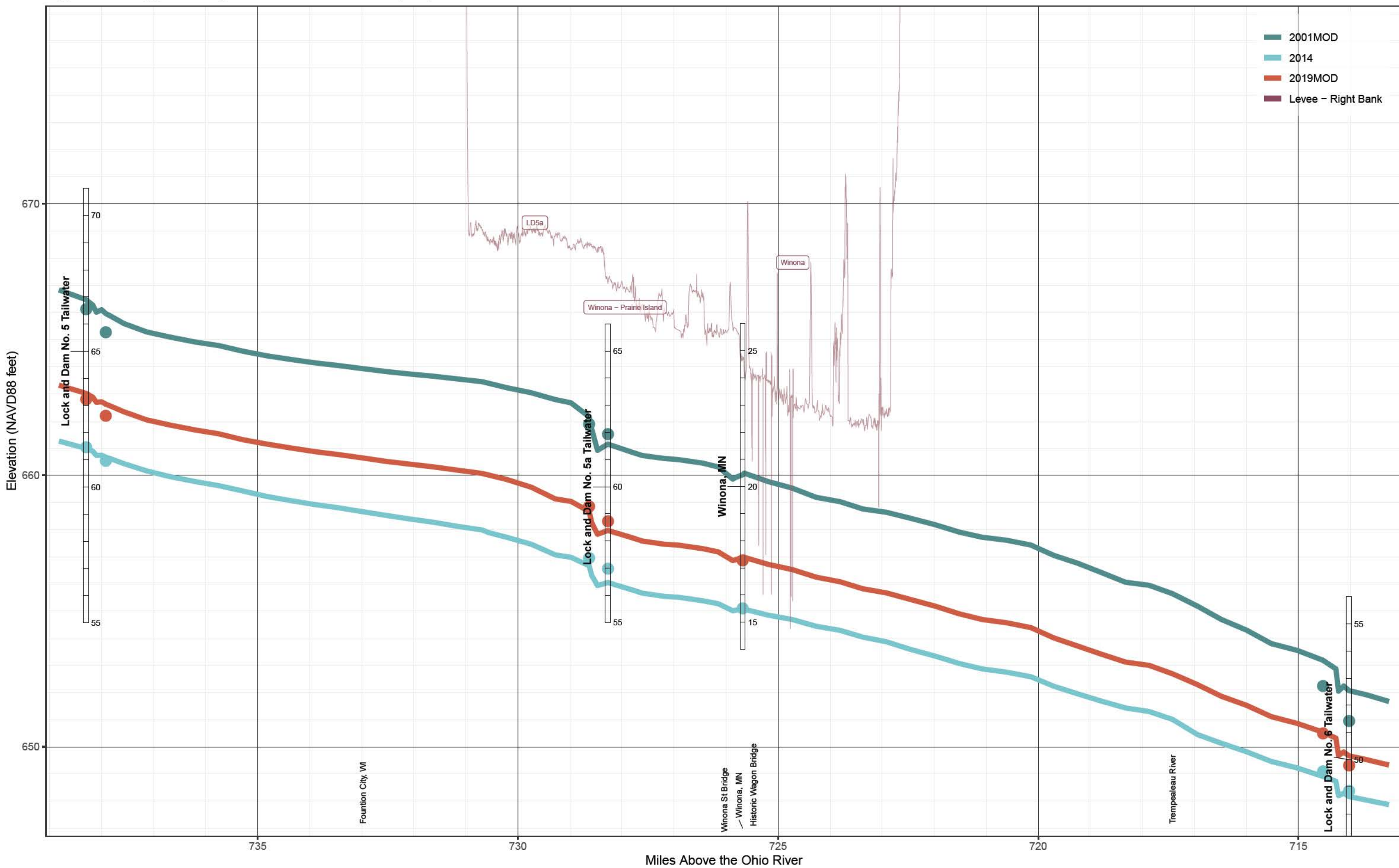
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



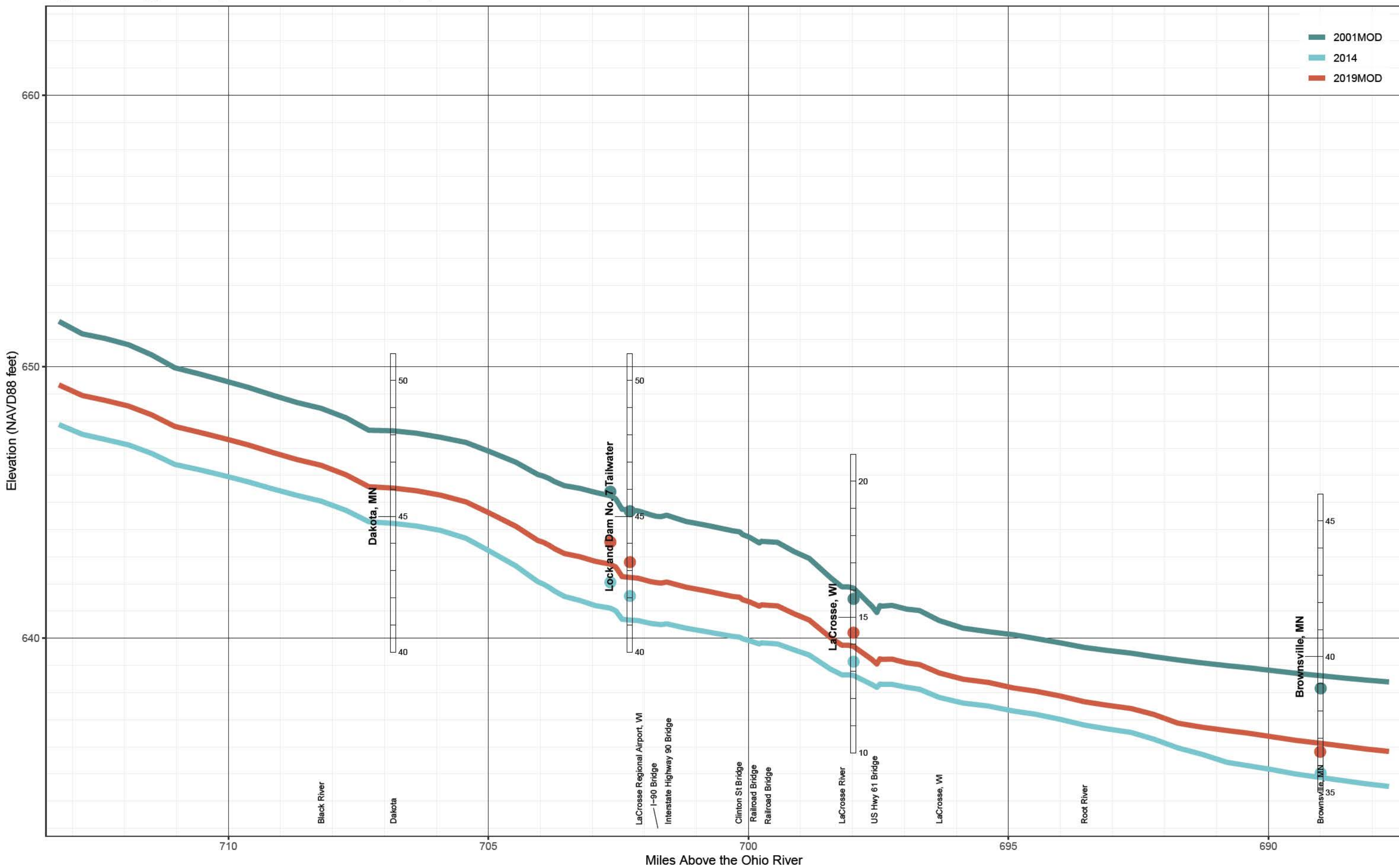
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



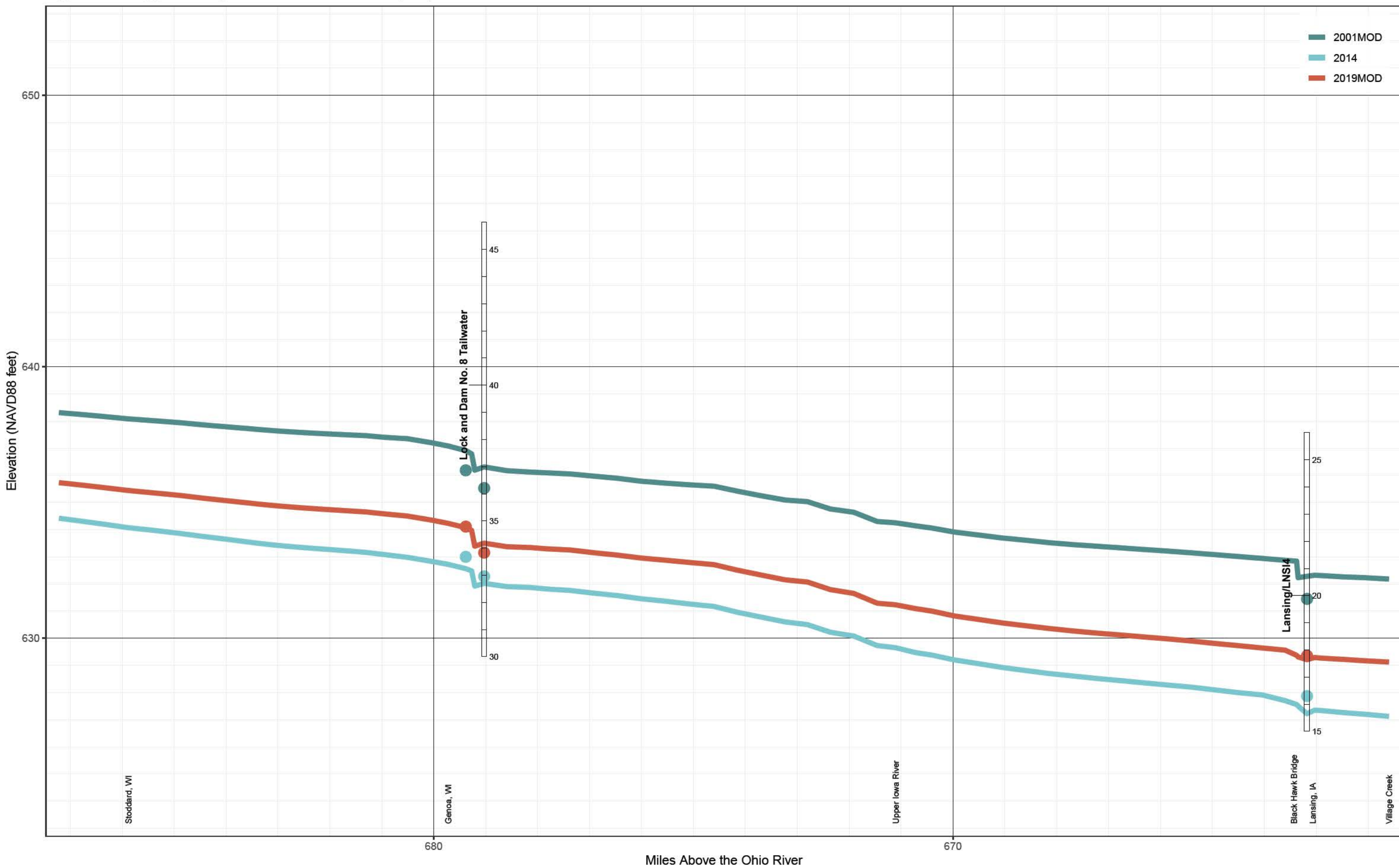
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



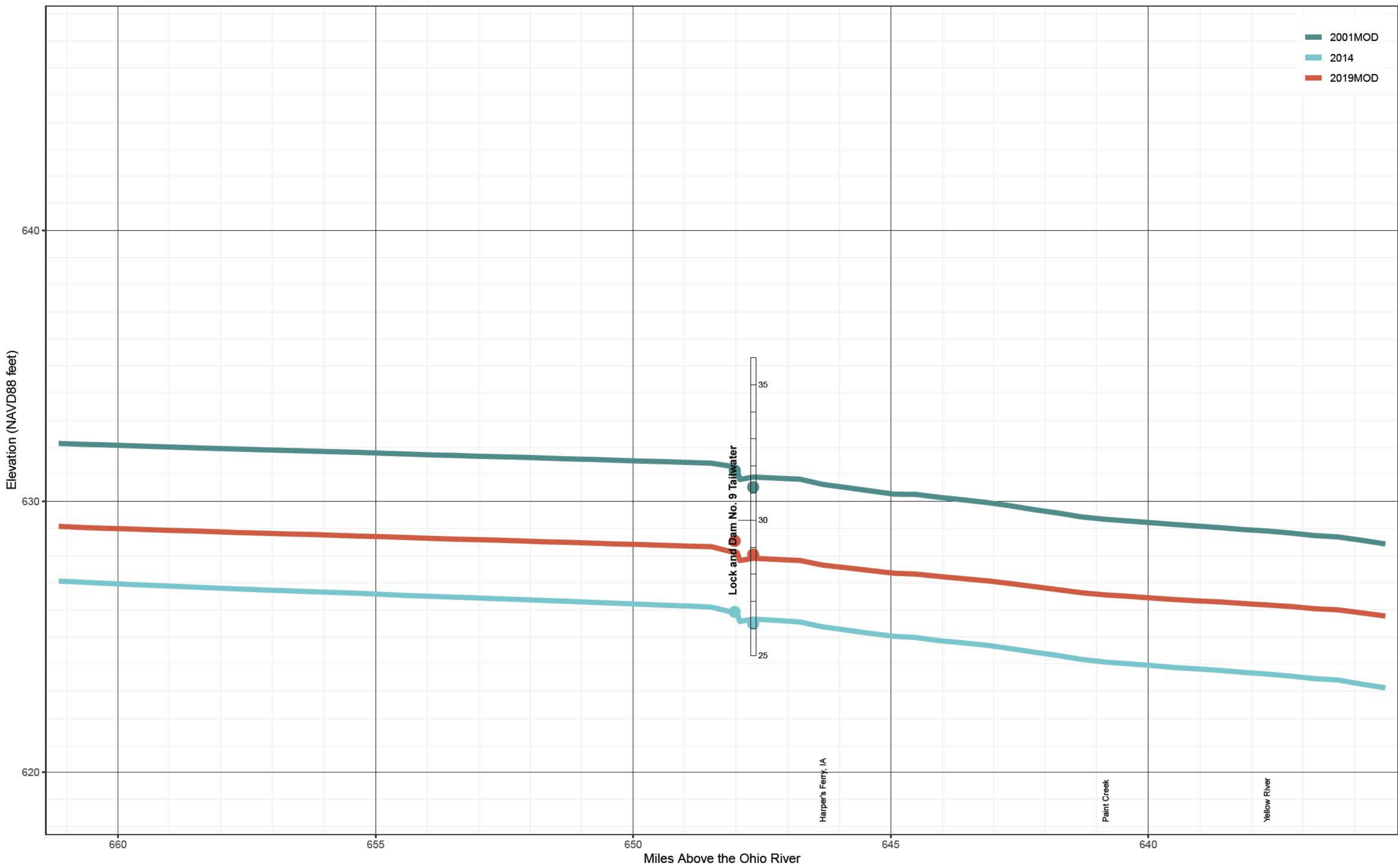
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



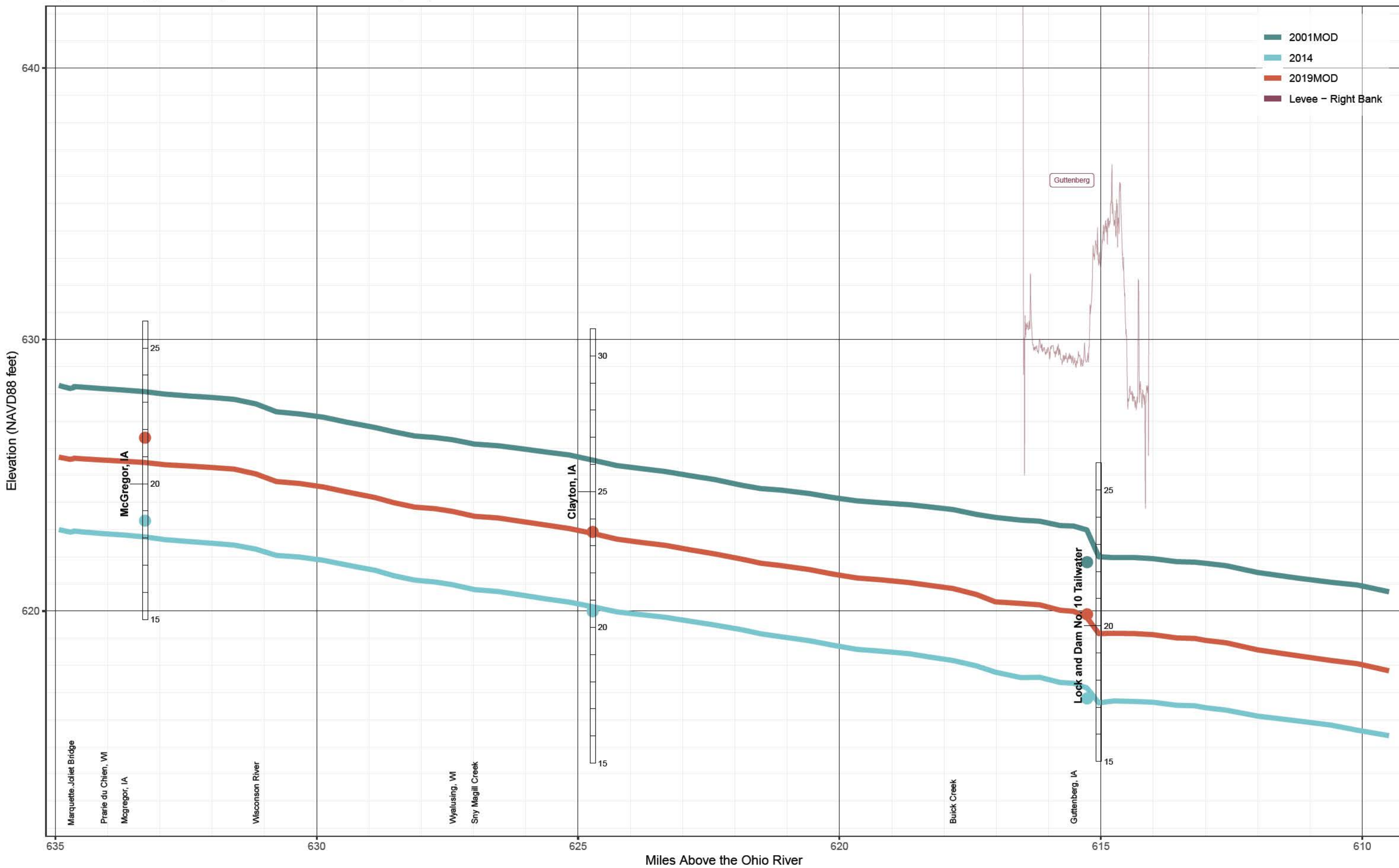
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



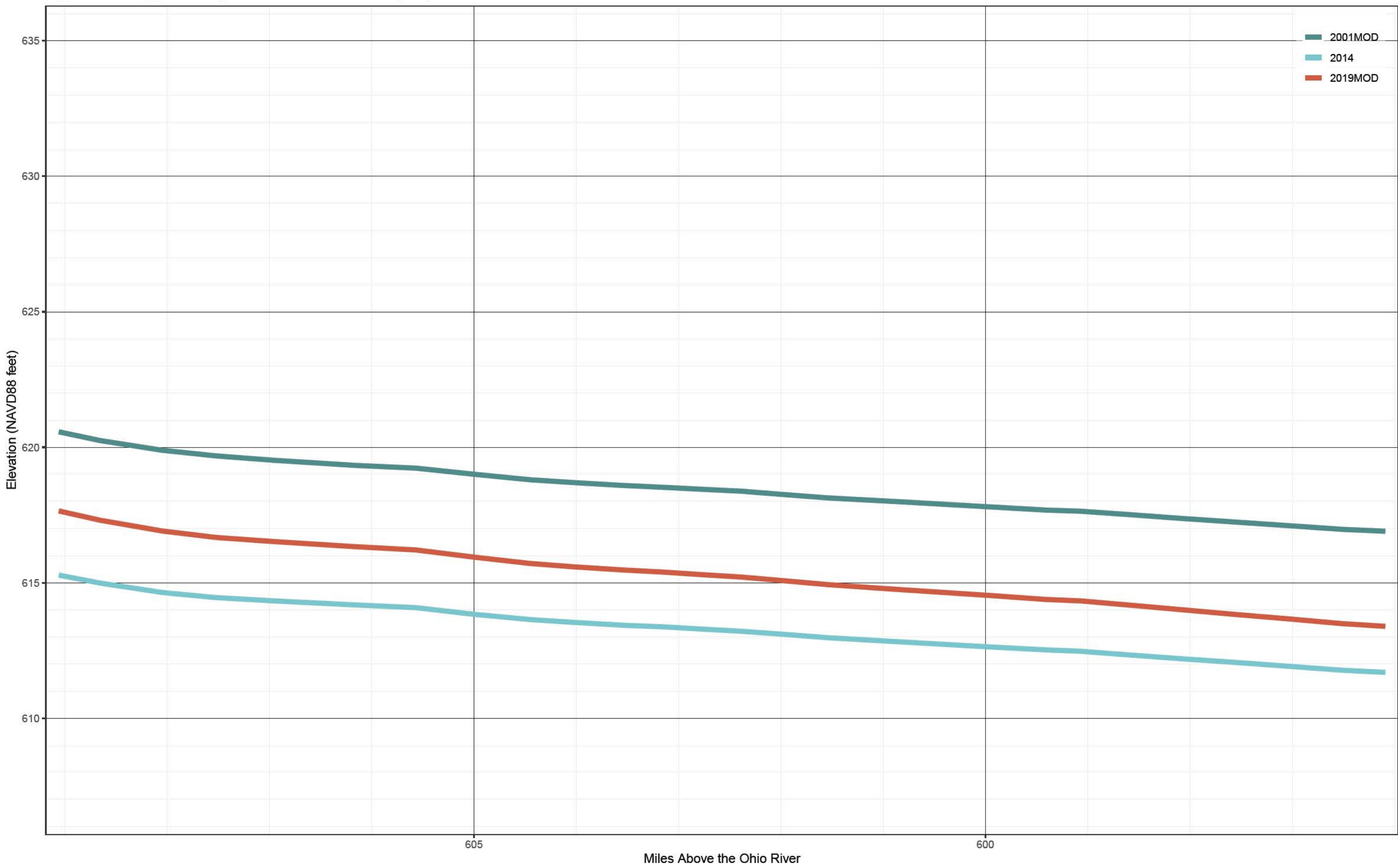
Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



# Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10



Upper Mississippi River Hydraulic Model – Coon Rapids, MN to Lock and Dam No. 10





**APPENDIX C-3**

**SUMMARY OF GAGE DATA (MAXIMUM ELEVATIONS)  
AND HIGH WATER MARKS**

River Mile	Gage	Gage Datum	Gage Zero	2001			2014			2019		
				Elevation	Elevation (NAVD88)	Peak Date	Elevation	Elevation (NAVD88)	Peak Date	Elevation	Elevation (NAVD88)	Peak Date
839.25	St. Paul, MN	NAVD88	683.77	-	-	-	703.88	703.88	6/27/2014	703.96	703.96	3/31/2019
833.63	South St.Paul, MN	NAVD88	599.63	702.66	702.66	4/29/2001	700.56	700.56	6/26/2014	700.57	700.57	3/31/2019
815.43	Lock and Dam No. 2 Pool	NAVD88	599.63	695.09	695.09	4/29/2001	690.76	690.76	6/27/2014	691.22	691.22	3/31/2019
814.98	Lock and Dam No. 2 Tailwater	NAVD88	599.63	692.2	692.2	4/28/2001	689.32	689.32	6/27/2014	689.78	689.78	3/31/2019
813.69	Hastings, MN	NAVD88	667.88	-	-	-	688.27	688.27	6/28/2014	688.73	688.73	3/31/2019
811.27	Prescott, WI	NAVD88	649.67	-	-	-	686.41	686.41	6/27/2014	687.12	687.12	4/1/2019
797.08	Lock and Dam No. 3 Pool	NAVD88	599.6	685.81	685.81	4/28/2001	682.26	682.26	6/28/2014	683.17	683.17	4/1/2019
796.75	Lock and Dam No. 3 Tailwater	NAVD88	599.6	684.83	684.83	4/28/2001	681.65	681.65	6/28/2014	682.5	682.5	4/1/2019
772.6	Lake City, MN	NAVD88	599.59	680.74	680.74	4/18/2001	677.09	677.09	7/1/2014	678.37	678.37	4/2/2019
760.52	Reads Landing, MN	NAVD88	650	677.79	677.79	4/16/2001	673.94	673.94	6/30/2014	675.11	675.11	4/2/2019
753.12	Lock and Dam No. 4 Pool	NAVD88	599.59	674.69	674.69	4/17/2001	670.05	670.05	7/1/2014	671.65	671.65	4/2/2019
752.6	Lock and Dam No. 4 Tailwater	NAVD88	599.59	673.74	673.74	4/17/2001	669.62	669.62	7/1/2014	671.06	671.06	4/2/2019
749.83	Alma, MN	NAVD88	599.57	671.71	671.71	4/17/2001	667.59	667.59	6/30/2014	669.13	669.13	4/24/2019
738.3	Lock and Dam No. 5 Pool	NAVD88	599.57	666.12	666.12	4/17/2001	661.05	661.05	7/1/2014	662.82	662.82	4/2/2019
737.92	Lock and Dam No. 5 Tailwater	NAVD88	599.57	665.27	665.27	4/17/2001	660.53	660.53	7/1/2014	662.19	662.19	4/2/2019
728.63	Lock and Dam No. 5a Pool	NAVD88	599.58	661.9	661.9	4/17/2001	656.95	656.95	7/2/2014	658.86	658.86	4/3/2019
728.27	Lock and Dam No. 5a Tailwater	NAVD88	599.58	661.52	661.52	4/17/2001	656.57	656.57	7/2/2014	658.32	658.32	4/3/2019
725.68	Winona, MN	NAVD88	639.59	-	-	-	655.1	655.1	7/1/2014	656.88	656.88	4/2/2019
714.53	Lock and Dam No. 6 Pool	NAVD88	599.53	652.25	652.25	4/17/2001	649.11	649.11	7/2/2014	650.49	650.49	4/3/2019
714.03	Lock and Dam No. 6 Tailwater	NAVD88	599.53	650.96	650.96	4/17/2001	648.39	648.39	7/2/2014	649.33	649.33	4/3/2019
702.66	Lock and Dam No. 7 Pool	NAVD88	599.49	645.41	645.41	4/18/2001	642.06	642.06	7/1/2014	643.55	643.55	4/2/2019
702.28	Lock and Dam No. 7 Tailwater	NAVD88	599.49	644.69	644.69	4/18/2001	641.56	641.56	7/1/2014	642.8	642.8	4/2/2019
697.98	LaCrosse, WI	NAVD88	625.78	641.46	641.46	4/18/2001	639.13	639.13	7/1/2014	640.2	640.2	4/3/2019
689	Brownsville, MN	NAVD88	599.32	638.16	638.16	4/19/2001	635.04	635.04	7/1/2014	635.83	635.83	4/3/2019
679.38	Lock and Dam No. 8 Pool	NAVD88	599.32	636.19	636.19	4/20/2001	633	633	7/2/2014	634.11	634.11	4/3/2019
679.03	Lock and Dam No. 8 Tailwater	NAVD88	599.32	635.53	635.53	4/20/2001	632.28	632.28	7/2/2014	633.16	633.16	4/4/2019
663.18	Lansing/LNSI4	NAVD88	611.57	631.45	631.45	4/21/2001	627.88	627.88	7/3/2014	629.35	629.35	4/26/2019
648.03	Lock and Dam No.9 Pool	NAVD88	599.31	631.15	631.15	4/21/2001	625.93	625.93	7/4/2014	628.54	628.54	4/26/2019
647.67	Lock and Dam No. 9 Tailwater	NAVD88	599.31	630.54	630.54	4/20/2001	625.49	625.49	7/4/2014	628.05	628.05	4/26/2019
633.28	McGregor, IA	NAVD88	604.69	-	-	-	623.34	623.34	7/5/2014	626.39	626.39	4/27/2019
624.72	Clayton, IA	NAVD88	599.4	-	-	-	620	620	7/5/2014	622.92	622.92	4/27/2019
615.27	Lock and Dam No. 10 Pool	NAVD88	599.46	621.8	621.8	4/21/2001	616.79	616.79	7/4/2014	619.89	619.89	4/27/2019

**APPENDIX D-1**

**HIGH WATER DATA CORRESPONDENCE**



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT  
CLOCK TOWER BUILDING - PO BOX 2004  
ROCK ISLAND, ILLINOIS 61204-2004

January 9, 2020

Programs and Project  
Management Division

TO: Partners Adjacent to the Upper Mississippi River from Anoka, MN, to Keokuk, IA

Dear Sir or Madam:

The U.S. Army Corps of Engineers, Rock Island District (District), in partnership with state and Federal agencies, initiated a new hydraulic model for the main-stem Upper Mississippi River from Anoka, MN, to Keokuk, IA. The numerical hydraulic model will be calibrated using observed flow and stage data at gauge locations. In order to assist with the calibration process, we are seeking high water mark (HWM) information.

HWM elevation information is a valuable part of the modeling effort. To assure that the best available information is used in developing the hydraulic model, the District requests that you provide high quality and well-documented HWM elevation information for the following flood events: April/May 2001, June/July 2014, and March/April/May/June 2019.

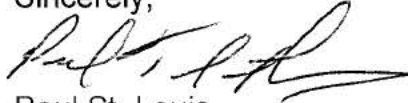
The District defines high quality and well-documented HWMs as having been collected and documented by a professional land surveyor (P.L.S.) or under the supervision of a P.L.S. The HWM data should contain the event dates, horizontal coordinates, vertical and horizontal elevation datum, and nature of data acquisition, i.e. field measurement during event, water's edge, debris line, etc. We are requesting the data in text file format and, if available, any supporting photographs.

Due to the study's timeline, we are asking for a response to this request by March 15, 2020; otherwise, we will assume that you do not have HWM information to be used for model calibration purposes.

I have sent a copy of this letter to the Upper Mississippi River Basin Association, the Upper Mississippi, Illinois, and Missouri Rivers Association, and the Iowa, Illinois, Wisconsin, and Minnesota counties bordering the Mississippi River.

Please email HWM information to [REDACTED] If you need additional time or have any questions, you may reach me via my email address or at [REDACTED]

Sincerely,

A handwritten signature in black ink, appearing to read "Paul St. Louis", with a long horizontal flourish extending to the right.

Paul St. Louis  
Program Manager