

NeDNR Update: Water Planning 2020

Nebraska Game and Parks Commission
January 14, 2020

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Resources

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Providing the sound science and support for managing Nebraska's most precious resource



Water Planning and Integrated Management



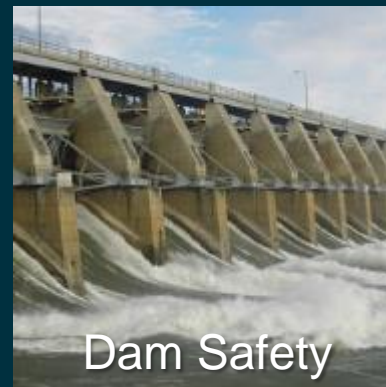
Surface Water



Groundwater



Floodplain Management



Dam Safety



Field Offices

NEBRASKA

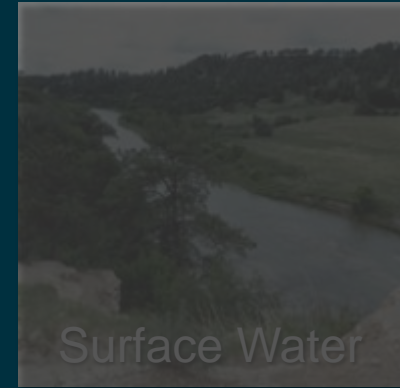
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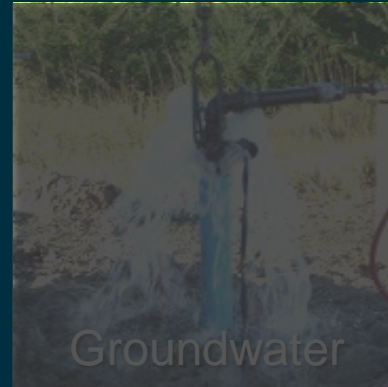
Providing the sound science and support for managing Nebraska's most precious resource



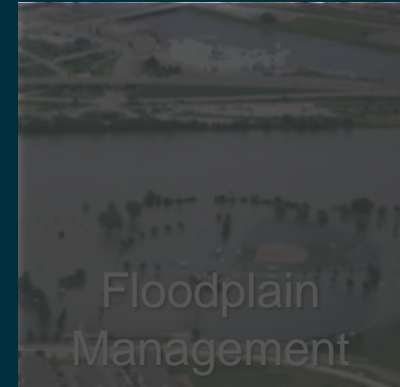
Water Planning
and Integrated
Management



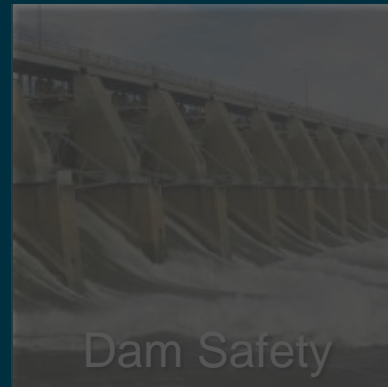
Surface Water



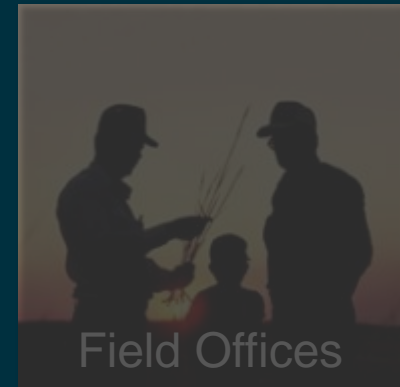
Groundwater



Floodplain
Management



Dam Safety



Field Offices

Overview

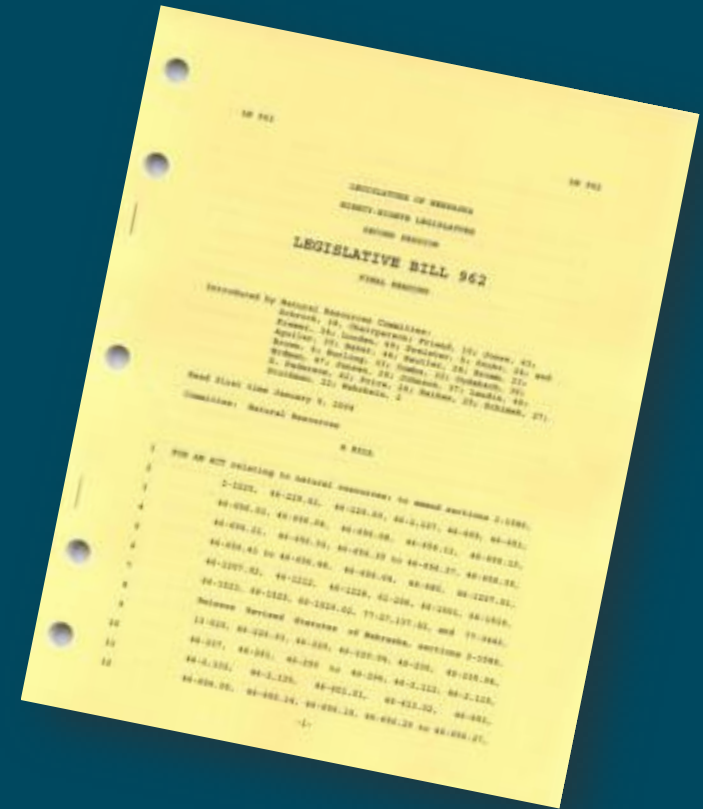
- Integrated Management Plan – What is it?
- Status of IMPs and BWPs
- Drought Planning
- Technical Updates
- Interstate Agreements



Integrated Management Plan – What is it?

Nebraska Integrated Water Law – LB962 in 2004

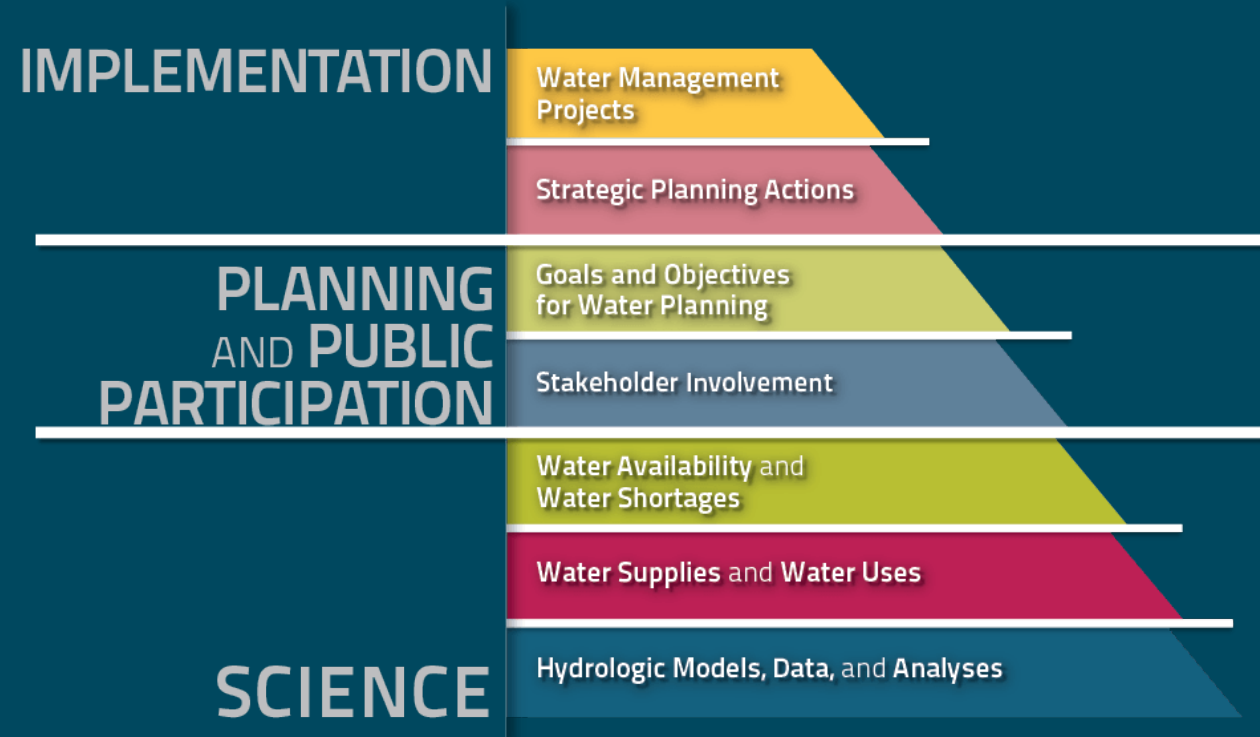
- Created over and fully appropriated areas, in portions of the Platte, Republican, and Niobrara Basins
- Set out IMP development and implementation processes
- Allows for future designations of fully appropriated



IMP Development Process

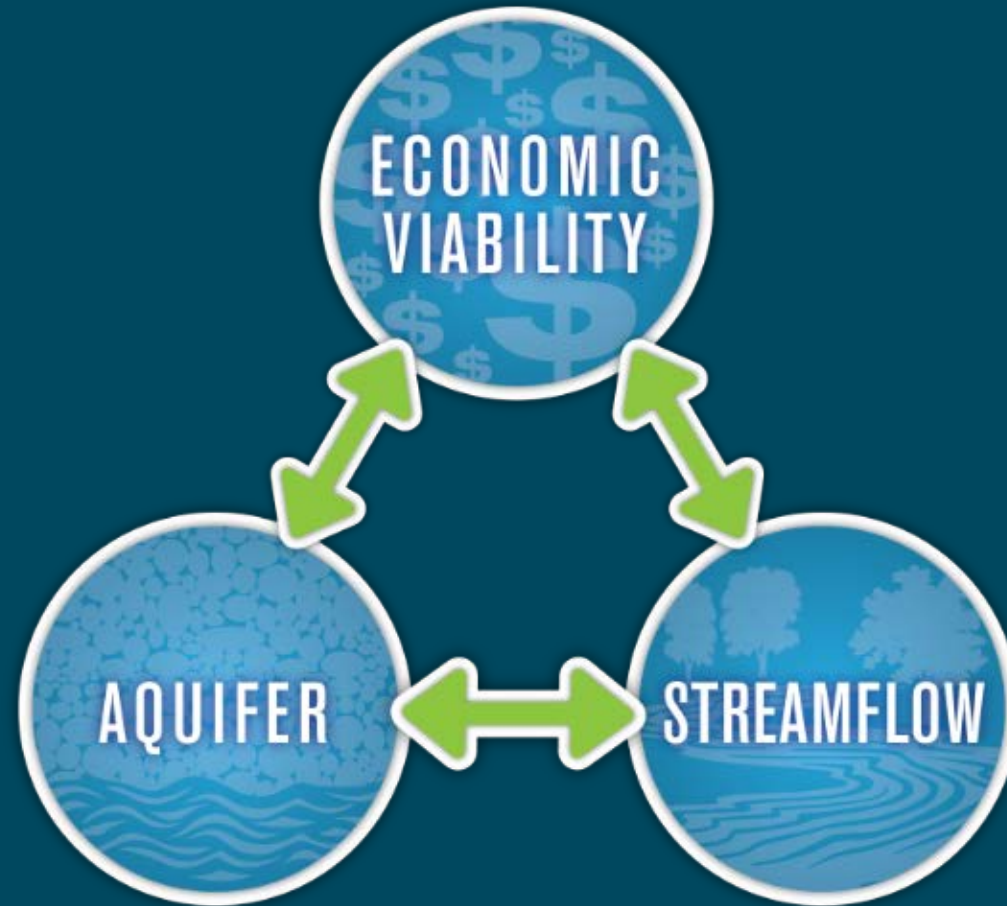
Integrated management planning is:

- Surface water and groundwater management
- Cooperatively developed With NRD and Stakeholders
- Suited to local conditions
- Proactive
- Protects existing users
- Adaptive management
- Based upon science



IMP Development Process

Core elements – balancing water use and supplies so that economic viability can be maintained



IMP Development Process - Stakeholders

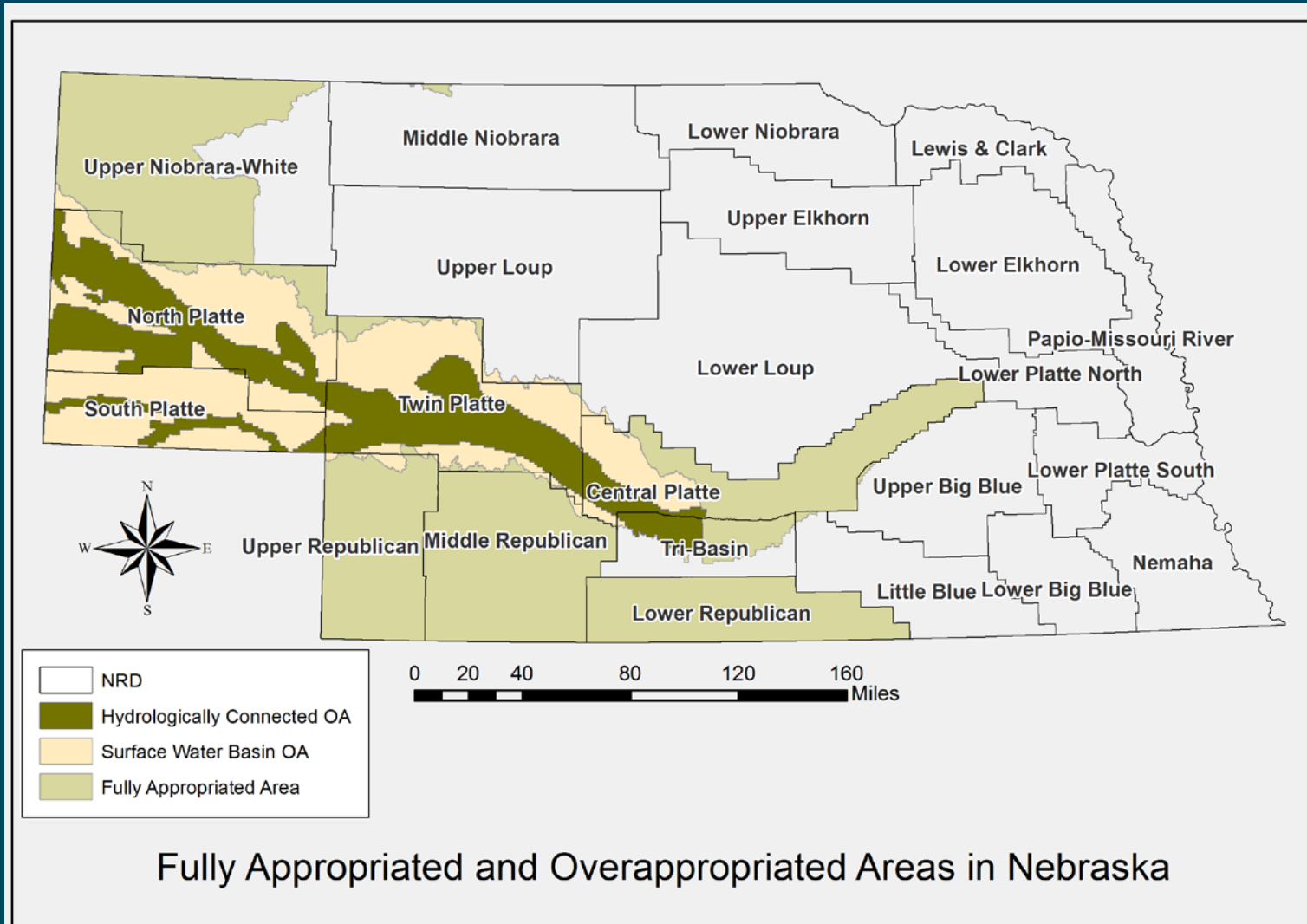
- Convey local water concerns and solutions
- Guide development of goals, objectives, and action items
- Attend meetings
- Community leaders





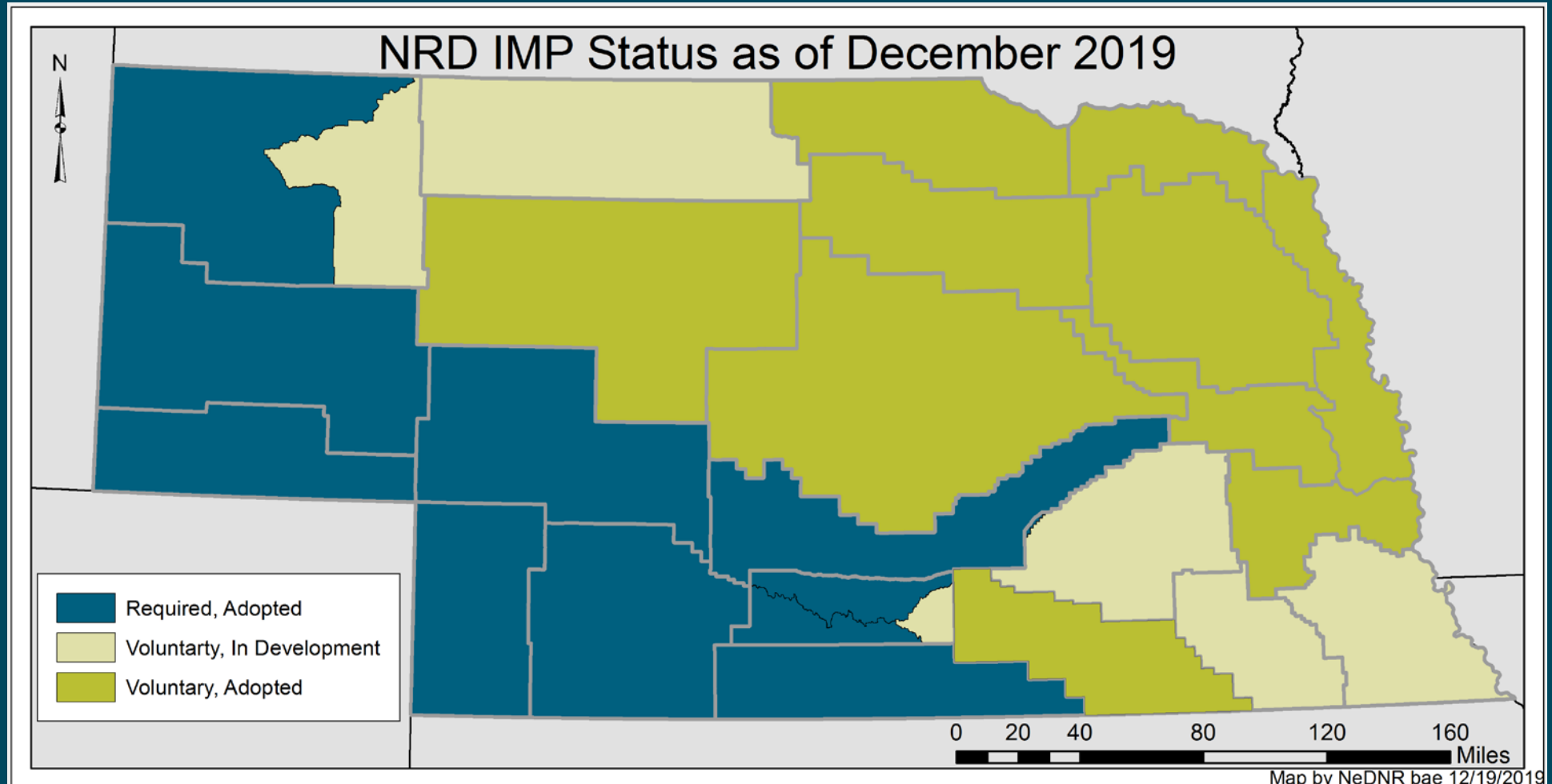
Status of Plans

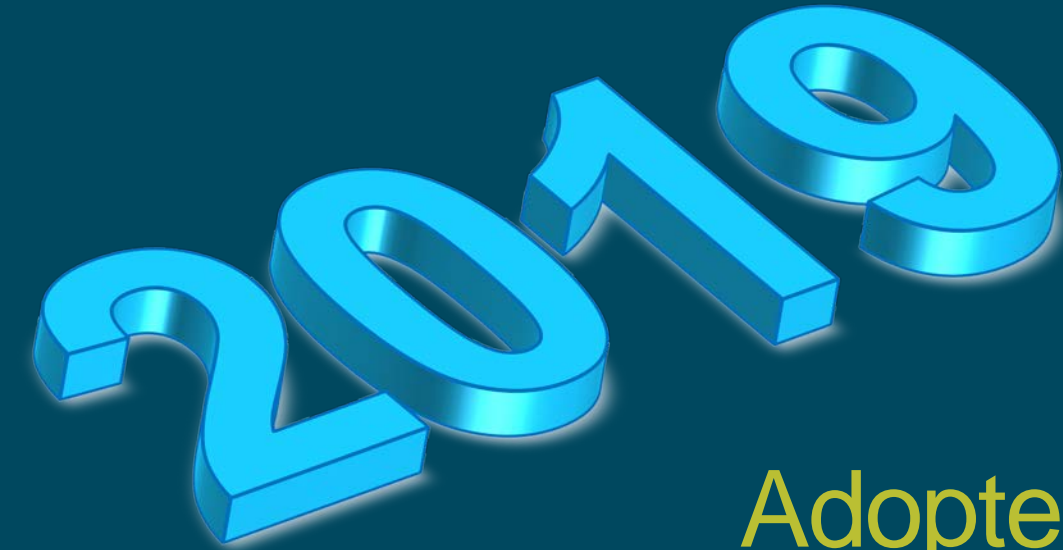
Fully and Overappropriated Areas in Nebraska



Current Status of Integrated Management Plans

- ✓ 10 Required
- ✓ 10 Voluntary
- ✓ 6 Voluntary In Process



A large, 3D, blue graphic of the year '2019' is positioned in the upper left corner of the slide. The numbers are rendered with a metallic, reflective texture and a slight shadow, giving them a three-dimensional appearance. The background behind the graphic is a dark blue gradient.

Adopted In 2019:

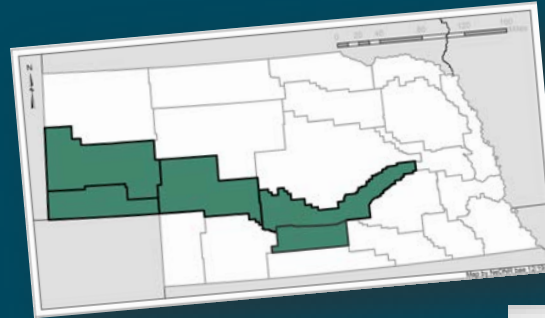
2 Basin-Wide Plans

7 IMPs

- 5 Second Increment
- 2 Voluntary

Upper Platte IMPs

- Effective Sept. 2019



INTEGRATED MANAGEMENT PLAN
Jointly Developed by the
Central Platte Natural Resources District
and the Nebraska Department of Natural Resources

CPNRD
CENTRAL PLATTE
NATURAL RESOURCES DISTRICT

215 Kaufman Avenue
Grand Island, NE 68803
308-385-6282
cpnrd.org

INTEGRATED MANAGEMENT PLAN
Jointly Developed by the
Twin Platte Natural Resources District
and the Nebraska Department of Natural Resources

TWIN PLATTE
NATURAL RESOURCES DISTRICT

INTEGRATED MANAGEMENT PLAN
Jointly Developed by the
Tri-Basin Natural Resources District
and the Nebraska Department of Natural Resources

Tri Basin
Natural Resources District

1723 Burlington St
Holdrege, NE 68949
Phone: (308)995-6688
www.tribasinnrd.org
Email: tribasin@tribasinnrd.org

INTEGRATED MANAGEMENT PLAN
Jointly Developed by the South Platte Natural Resources District
and the Nebraska Department of Natural Resources

SOUTH PLATTE
NATURAL RESOURCES DISTRICT

DEPT. OF NATURAL RESOURCES
308-471-2363
Phone: (402)471-2363
www.dnr.nebraska.gov

Integrated Management Plan
Jointly Developed by the North Platte Natural Resources District
and the Nebraska Department of Natural Resources

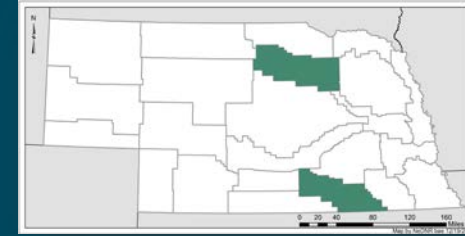
NORTH PLATTE
Natural Resources District

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Elkhorn & Little Blue NRD Voluntary IMPs



Effective August 15, 2019

Effective February 1, 2019

LITTLE BLUE NATURAL RESOURCES DISTRICT VOLUNTARY INTEGRATED MANAGEMENT PLAN



Cooperatively Developed by the Little Blue Natural Resources District and the Nebraska Department of Natural Resources
August 2019



100 E 6th Street
Davenport, NE 68335
Telephone: 402-364-2145
littlebluenrd.org



301 Centennial Mall South
4th Floor, P.O. Box 94676
Lincoln, NE 68509
Telephone: 402-471-2363
dnr.nebraska.gov



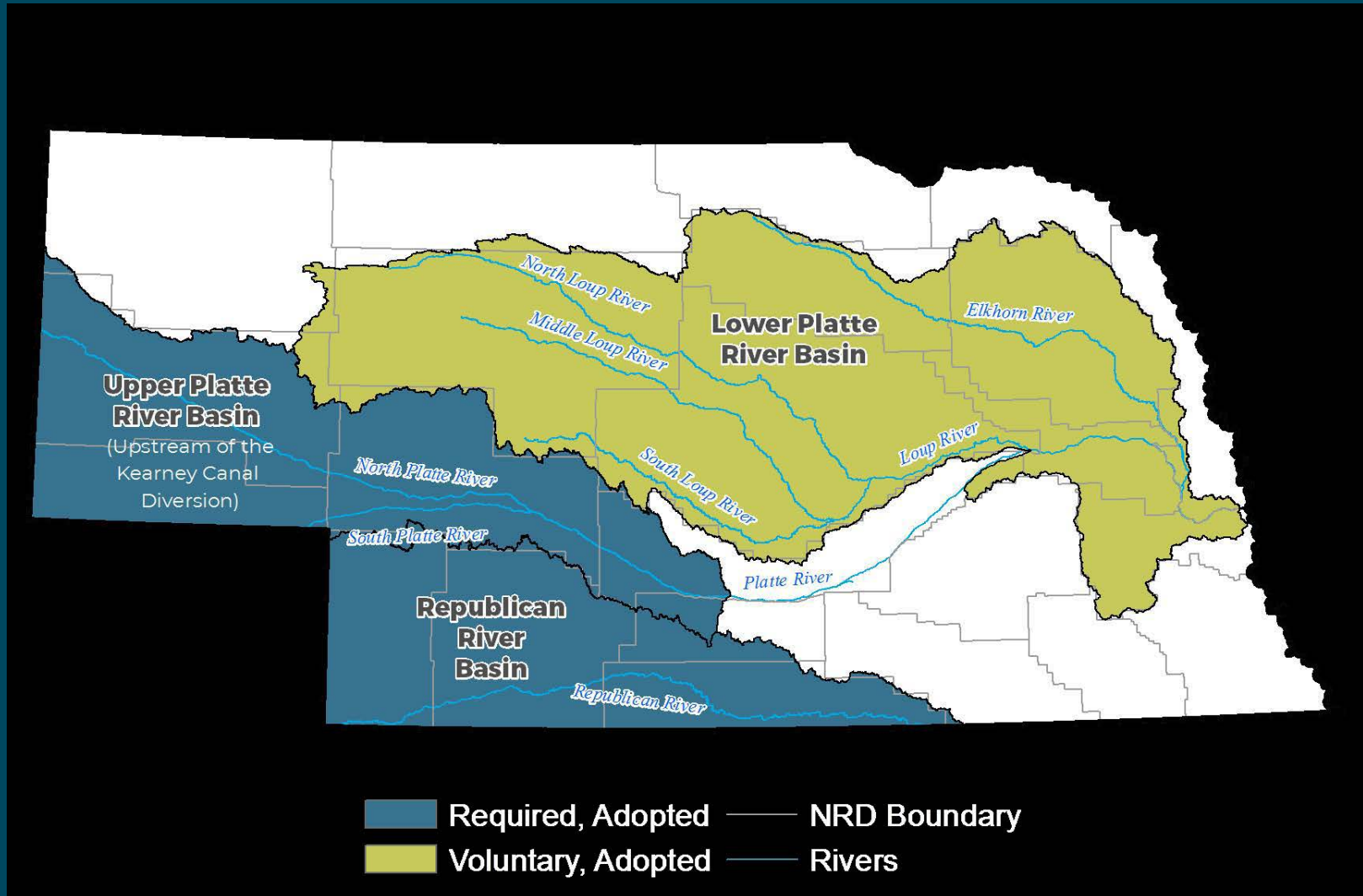
JOINTLY DEVELOPED BY

Upper Elkhorn
Natural Resources District

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Voluntary Integrated Management Plan
UPPER ELKHORN NATURAL RESOURCES DISTRICT
Effective Date: February 1, 2019

Basin-wide Plans



Upper Platte & Republican Basin-Wide Plans

Effective March 2019

Effective September 2019



Vision Statement: "Waters responsibly used and the Republican River Basin is economically vibrant"



Effective September 11 & 17, 2019

Basin-Wide Plan for Joint Integrated Water Resources Management of Overappropriated Portions of the Platte River Basin, Nebraska
SECOND INCREMENT (2019-2029)

CPNR
CENTRAL PLATTE
NATURAL RESOURCES DISTRICT

North Platte
NATURAL RESOURCES DISTRICT

SOUTH PLATTE
NATURAL RESOURCES DISTRICT

Tri-Basin
Federal Resources District

TWIN PLATTE
NATURAL RESOURCES DISTRICT

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IMP Development Process – Implementation

Plan Completion Means
IMPLEMENTATION

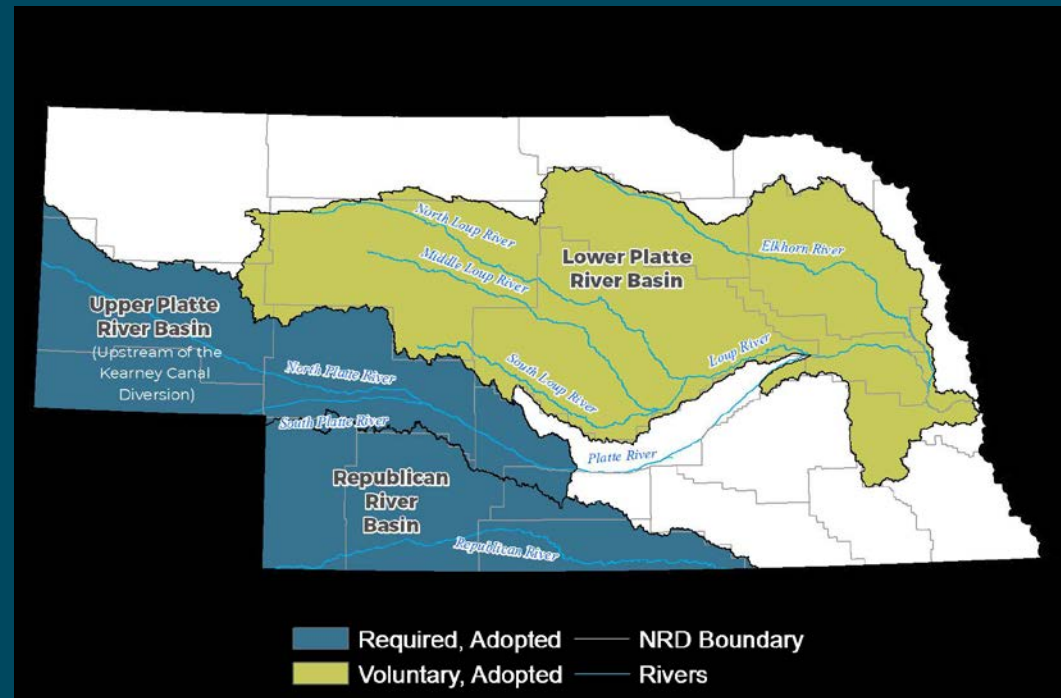


- Action Items
- Monitoring Program
 - Tracking action items in context of achieving goals & objectives
- Evaluation
 - Are action items achieving desired goals?
 - Are water supply and demand changing?
 - Have goals changed?
- Adaptive Management



Drought planning

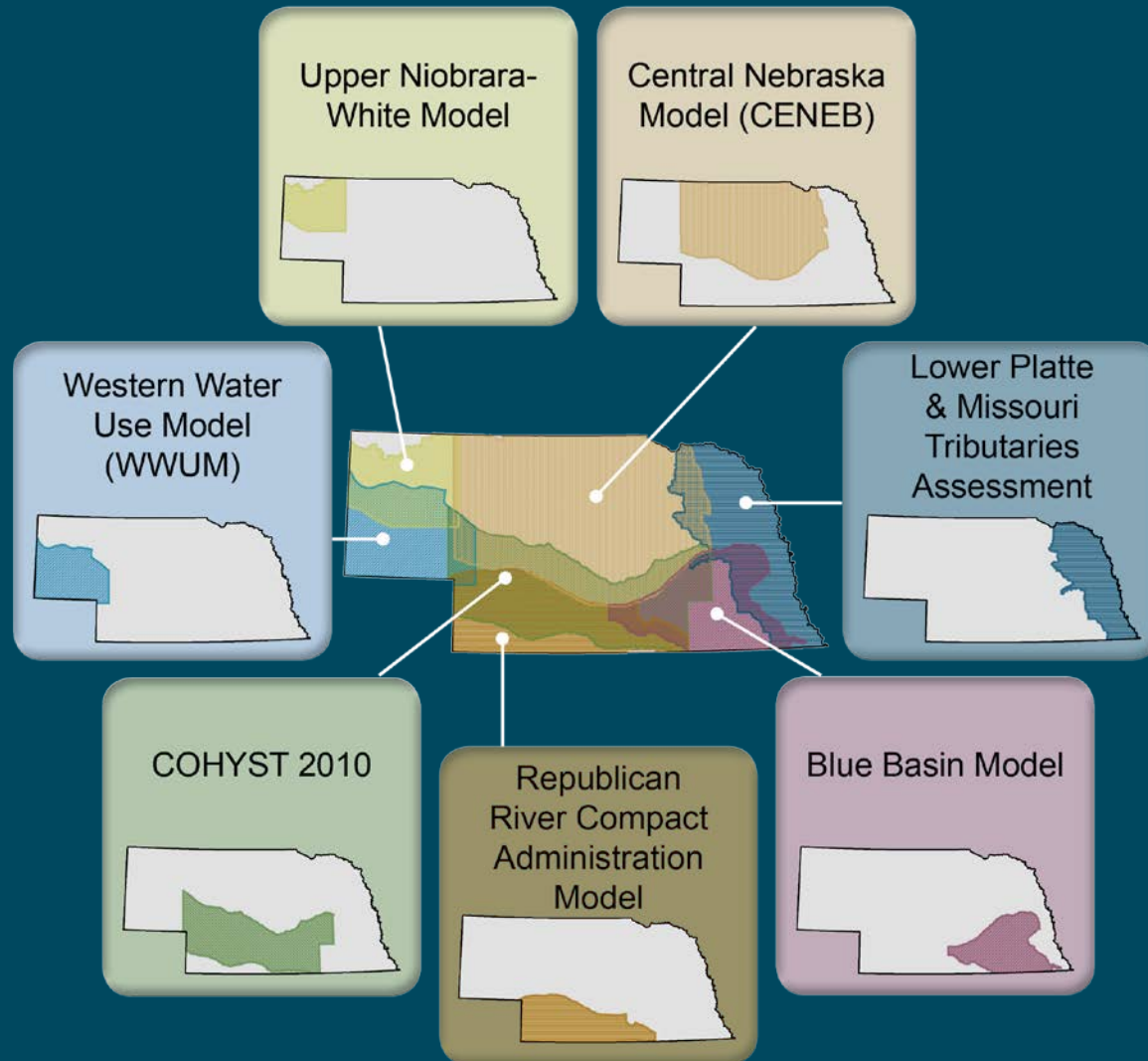
- Upper Platte BWP
- Republican BWP
- Lower Platte Drought Contingency Plan





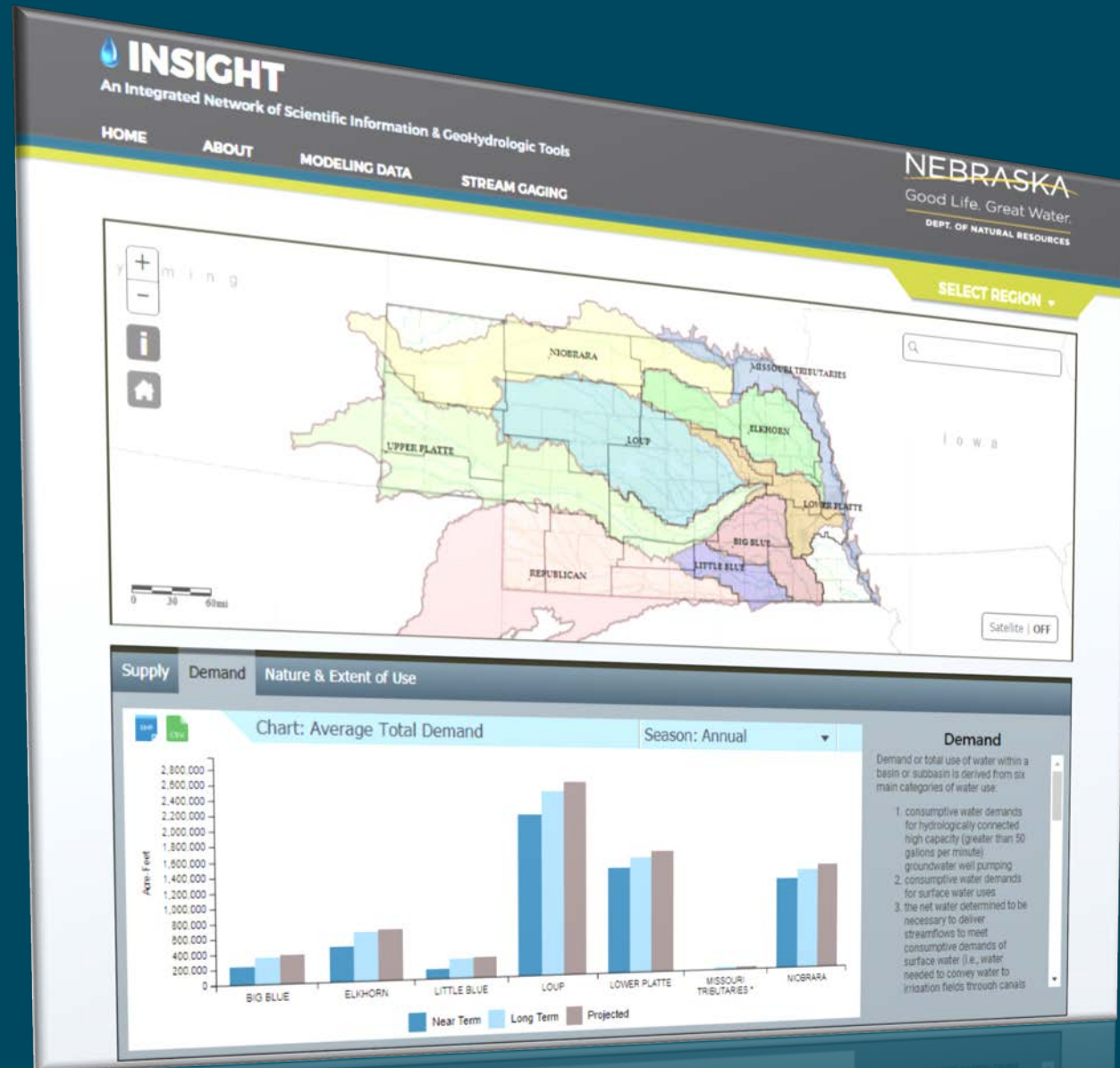
Technical Updates

Modeling Projects

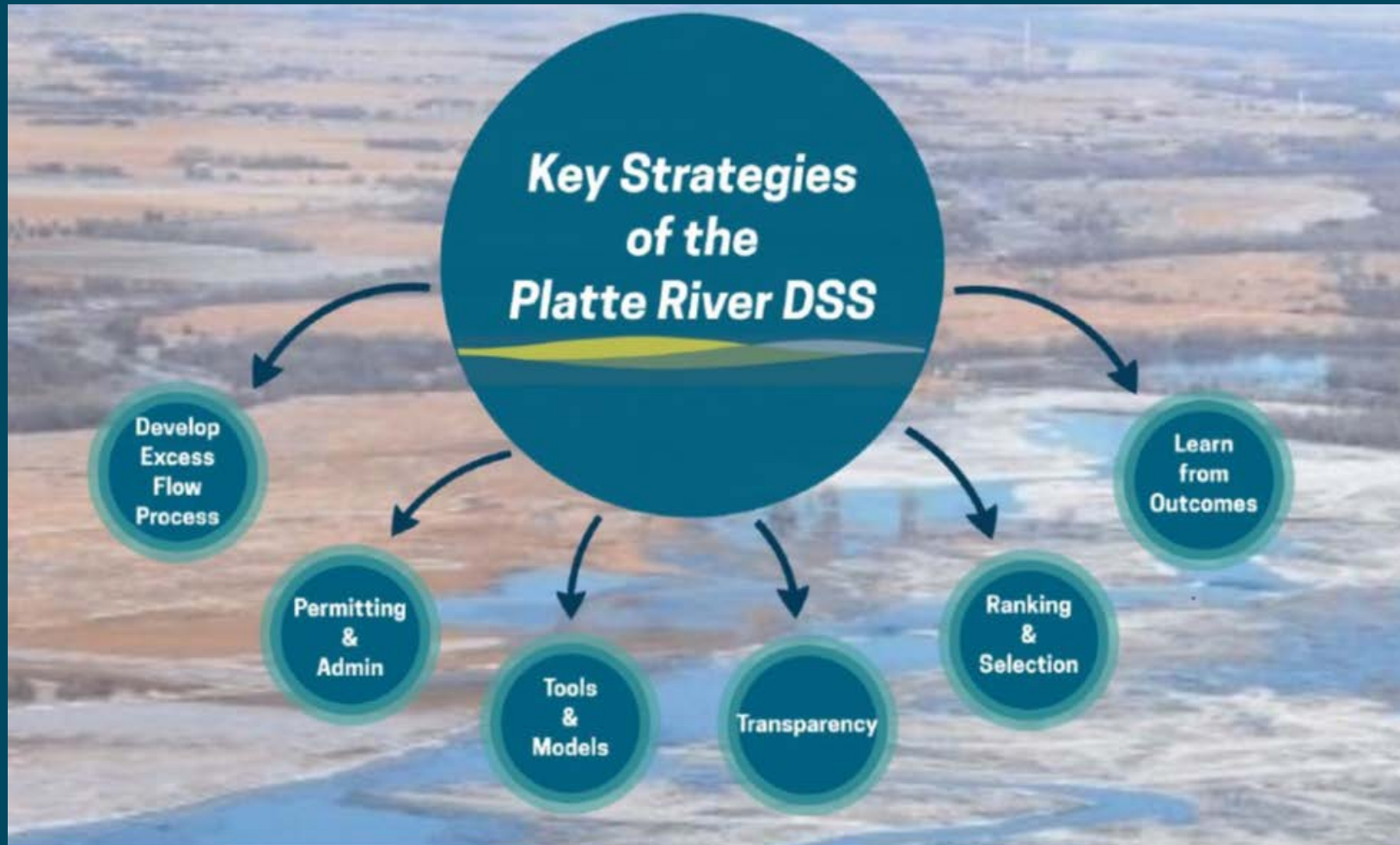


INSIGHT

- Republican Data
- Upper Platte Data



Decision Support System



Interactive Web Applications

1. Interactions between groundwater and surface water

Turn On Tutorial Mode

Water Table

Legend

- Water Table
- Original Water Level
- Stream Depth Indicator

Use the slider bar to adjust the water table elevation.

This simulation shows basic surface water and groundwater interactions. When the water table is above the top of the stream, the aquifer replenishes the stream as baseflow (i.e., gaining stream), when the water table is below the top of stream, the water flows out of the stream to the aquifer (i.e., losing stream). When they are at equilibrium, there is flow between the aquifer and the stream, but no net loss or gain to the stream.

Well Location: Far Near

PUMP ON

Turn On Tutorial Mode

Gaining Stream

Legend

- Water Table
- Original Water Level
- Stream Depth Indicator

Move the slider bar to adjust the well location and flip the switch to turn the pump on.

A gaining stream is one where water flows from the aquifer towards the stream. Wells pump water from the aquifer, which means that pumping can intercept water that would have otherwise flowed to the stream. Pumping also lowers the local water table, and if a well is located near a stream, pumping is expected to reduce the flow of water from the aquifer to the stream. In some cases, the pumping may turn a gaining stream into a losing stream by reversing the direction of groundwater flow (see the next simulation). While the effects of groundwater pumping appear immediate in this simulation, they may take years to appear in reality. The farther a well is from a stream, the longer it typically takes for groundwater pumping to affect the stream. The timing also depends on the aquifer soil texture.

Groundwater Level

Stream Level

without pumping

with pumping

without pumping

with pumping

2. Effects of groundwater pumping on streamflow

New Website: Upper Platte Joint Planning

➤ <http://upjointplanning.nebraska.gov/>

- Upper Platte River Basin-Wide Plan
- Robust Review
- Conservation Measures Studies
- Total Depletions Report
- Upper Platte River Basin INSIGHT Analysis

Year	Basin Water Supply	SW Demand	Groundwater Demand	Depletion Demand	Res Excep	Net SW Loss	Near Term Demand	Long Term Demand	Balance - Near Term Demand	Balance - Long Term Demand
1990	775,161	23,890	36,821	213,376	4,820	83,482	645,881	688,481	883,740	488,240
1991	745,785	25,175	39,267	200,590	3,554	93,024	658,762	703,700	933,000	483,700
1992	686,815	25,071	43,292	183,292	2,413	44,562	644,244	776,078	883,863	483,863
1993	610,017	26,861	52,311	158,511	2,763	63,801	608,807	828,807	892,798	482,798
1994	541,369	33,077	67,363	140,503	3,320	84,863	517,229	731,229	817,229	481,229
1995	483,923	36,463	82,349	124,495	2,468	102,361	456,244	678,244	756,244	481,244
1996	441,678	39,304	98,473	109,578	1,911	127,141	401,569	605,789	681,569	481,569
1997	408,736	42,131	115,562	95,110	1,344	152,784	351,561	548,281	621,561	481,561
1998	386,179	45,005	133,695	82,265	865	179,527	309,579	499,879	580,489	481,489
1999	369,435	47,948	152,819	70,519	404	207,924	269,641	648,241	559,241	481,241
2000	357,823	50,944	172,913	59,524	1,310	237,907	231,611	807,907	518,241	481,241
2001	351,668	53,991	193,967	49,524	1,650	268,951	192,668	977,951	477,241	481,241
2002	350,419	57,038	215,021	40,524	2,000	300,000	153,668	1,147,951	436,241	481,241
2003	349,170	60,085	236,075	32,524	2,350	331,049	114,668	1,317,951	395,241	481,241
2004	347,921	63,132	257,129	24,524	2,700	362,093	75,668	1,487,951	354,241	481,241
2005	346,672	66,179	278,183	16,524	3,050	393,137	36,668	1,657,951	313,241	481,241
2006	345,423	69,226	299,237	8,524	3,400	424,181	1,668	1,827,951	272,241	481,241
2007	344,174	72,273	320,291	0,524	3,750	455,225	1,668	1,997,951	231,241	481,241
2008	342,925	75,320	341,345	-8,524	4,100	486,269	1,668	2,167,951	190,241	481,241
2009	341,676	78,367	362,399	-16,524	4,450	517,313	1,668	2,337,951	149,241	481,241
2010	340,427	81,414	383,453	-24,524	4,800	548,357	1,668	2,507,951	108,241	481,241
2011	339,178	84,461	404,507	-32,524	5,150	579,401	1,668	2,677,951	67,241	481,241
2012	337,929	87,508	425,561	-40,524	5,500	610,445	1,668	2,847,951	26,241	481,241
2013	336,680	90,555	446,615	-48,524	5,850	641,489	1,668	3,017,951	15,241	481,241
2014	335,431	93,602	467,669	-56,524	6,200	672,533	1,668	3,187,951	4,241	481,241
2015	334,182	96,649	488,723	-64,524	6,550	703,577	1,668	3,357,951	-37,241	481,241

Legend:
QWOP - Groundwater Depletion
SW-C - Surface Water Consumption
Res Excep - Resource Exception
SW-Demand - Surface Water Demand
SW-CU - Groundwater Consumption
Net SW Loss - Net Surface Water Loss
H2O - Municipal Demand
H2O-C - Municipal Consumption
Non-PFH - Non-potable Use
PFH - Potable Use

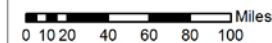
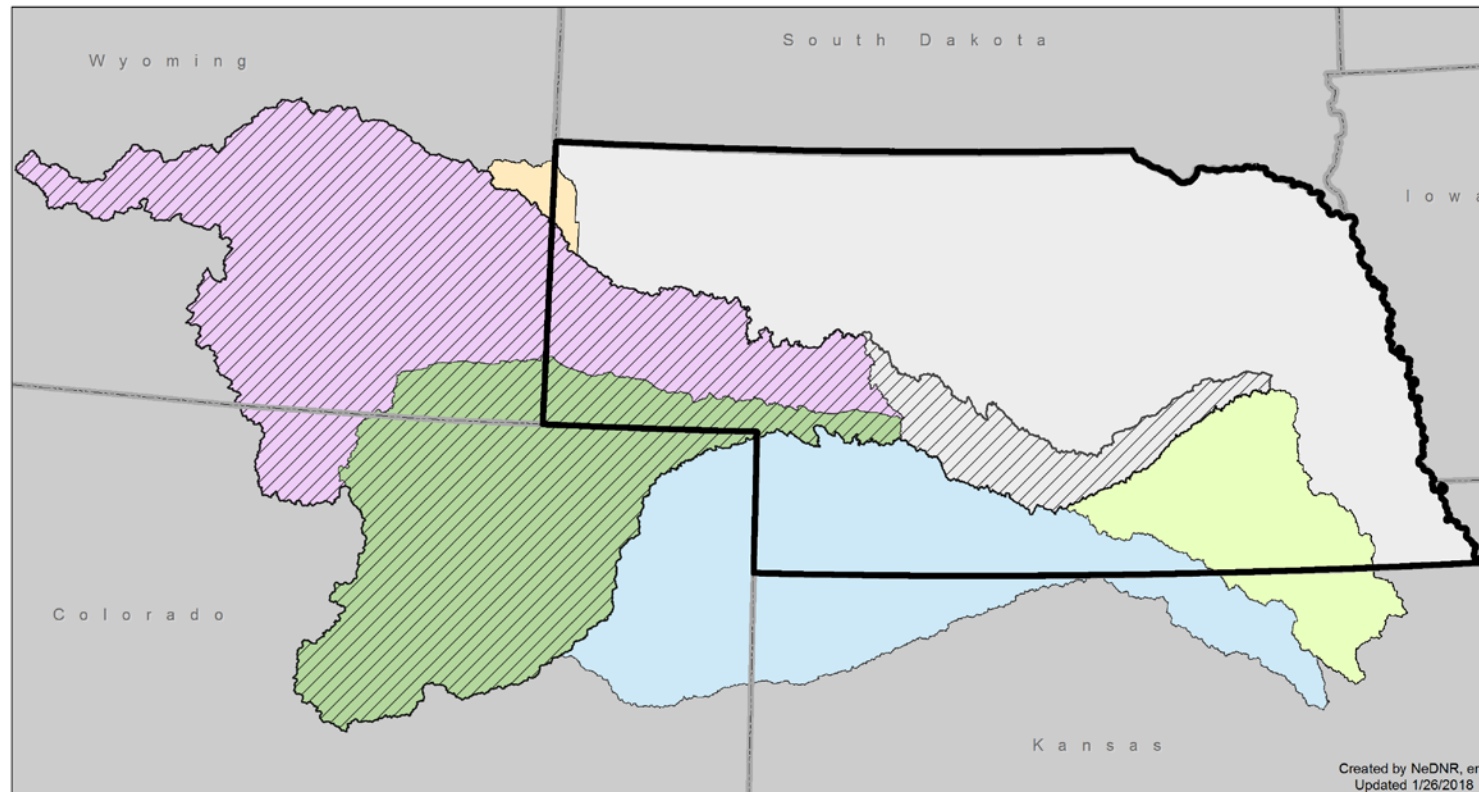


Interstate Agreements

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Interstate Compact, Decree, and Agreement Areas





Summary & Discussion

- Integrated Management Plan – What is it?
- Status of IMPs and BWPs
- Drought Planning
- Technical Updates
- Interstate Agreements

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THANK YOU

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