

LOWER PLATTE SOUTH NRD INTEGRATED MANAGEMENT PLAN 2023 ANNUAL REPORT

David Potter, Asst. General Manager

Dick Ehrman, Water Resources Coordinator



LOWER PLATTE SOUTH
natural resources district

Tyler Martin, IWM Coordinator

Madeline Johnson, Environmental Specialist III

NEBRASKA

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

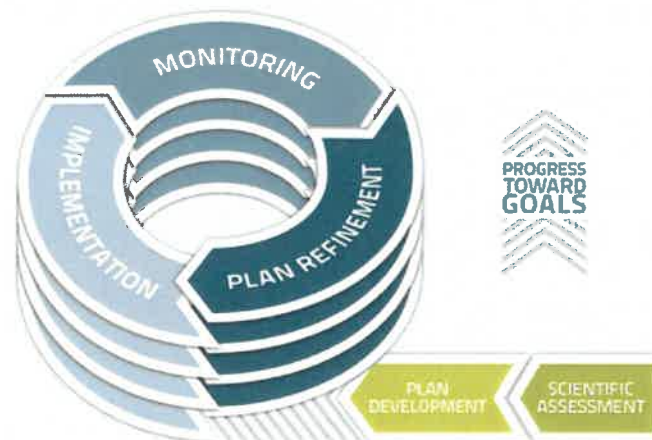
VOLUNTARY INTEGRATED MANAGEMENT PLAN

- LPSNRD and the NeDNR jointly adopted a voluntary IMP, effective May 15, 2014.
 - Consists of Goals, Objectives, and Actions.
 - Purpose of jointly managing groundwater and surface waters within LPSNRD is to sustain balance between water use and supplies long-term.
- *The IMP shall be reviewed annually by the District's Board of Directors and the Department to ensure that the plan continues to meet the needs of the District and Department and to identify Action steps for the next two years.*
 - Provide annual report on data collected
 - Report on new groundwater or surface water permits and uses
 - Review progress made toward achieving goals and objectives

WHY CONDUCT VOLUNTARY IMP REVIEWS?

Joint management of hydrologically connected (HC) groundwater and surface water:

- Identify new opportunities and challenges
- Increase understanding of HC areas (data, studies)
- Evaluate and convey progress towards goals and objectives
- Prioritize joint management actions for upcoming years



IMP GOALS

Water Inventory

Water Inventory includes the inflow, precipitation, and water storage available to the District along with the water use and outflows from the District.

Goal: Ensure the District has sufficient data to enable the achievement of a water supply that is in balance with current and future water demands in the District.

Water Supply Management

Water Supply Management is the management of water supply, both in and out of the District, through human efforts.

Goal: Ensure a sustainable water supply is available in the amounts and location of the demands through management actions to meet the District's short and long term needs.

Water Use Management

Water Use Management is the management of how water is used and consumed while meeting current and future demands.

Goal: Encourage all water users to minimize water use while optimizing benefits.

REPORT REVIEW

- Covers progress made towards voluntary IMP action items for both LPSNRD and the NeDNR in the calendar year 2023.
- LPSNRD and NeDNR are currently undergoing a review and update of the IMP.

SURFACE WATER AND GROUNDWATER MONITORING

NeDNR DATA COLLECTION & MONITORING

NeDNR Monitoring

- Surface water permitting activities
- NeDNR streamgage measurements
- Surface water pump site inspections
- Surface water irrigation use

NeDNR SURFACE WATER PERMITTING

NeDNR Surface Water Permitting Actions Within the IMP Area
Applications Approved

Surface Water Appropriations Approved in 2023 Within the IMP Area								
Appropriation Number	Date Approved	Source	Diversion or Reservoir Location	Sub-basin	Use	Grant (cfs)	Grant (af)	Acres
No new approved								

NeDNR SURFACE WATER PERMITTING

NeDNR 2023 Surface Water Permitting Actions Within the IMP Area Appropriations Cancelled or Expired

Surface Water Appropriations Expired, Cancelled-in-Part or Cancelled-in-Full in 2023 Within the IMP Area											
Appropriation Number	Cancel Date	Source	NeDNR Action	Location of Diversion or Reservoir	Use	Begin Acres	Cancelled			Estimated Date of Last Use	Basis for NeDNR Action
							Acres	Grant in cfs	Grant in af		
A-14126	2/1/2023	Antelope Creek	Cancelled in Full	S31 T10N- R07E	IR	0.44	0.44	0.01	1.3	2013	REL- 9850
A-8134	4/24/2023	Stevens Creek	Cancelled in Full	S24 T10N- R07E	IR	73.5	8.0	0.53	220.5	2001	REL- 9863 REL- 9864
A-6002	6/20/2023	Camp Creek	Cancelled in Full	S25 T11N- R08E	IR	11	11	0.08	33	1988	PDNU- 9966
A-10294	4/17/2023	Greenwood Creek	Cancelled in Full	S28 T12N- R09E	IR	61	61	0.84	183	Unknown	REL- 9931
A-7790B	4/25/2023	Four Mile Creek, West Branch	Cancelled in Full	S22 T12N- R13E	IR	20	20	0.15	60	Unknown	REL- 9970
A-9287B	5/22/2023	Dee Creek	Cancelled in Full	S07 T11N- R09E	IR	68.3	68.3	0.98	204.9	2011	PDNU- 9934

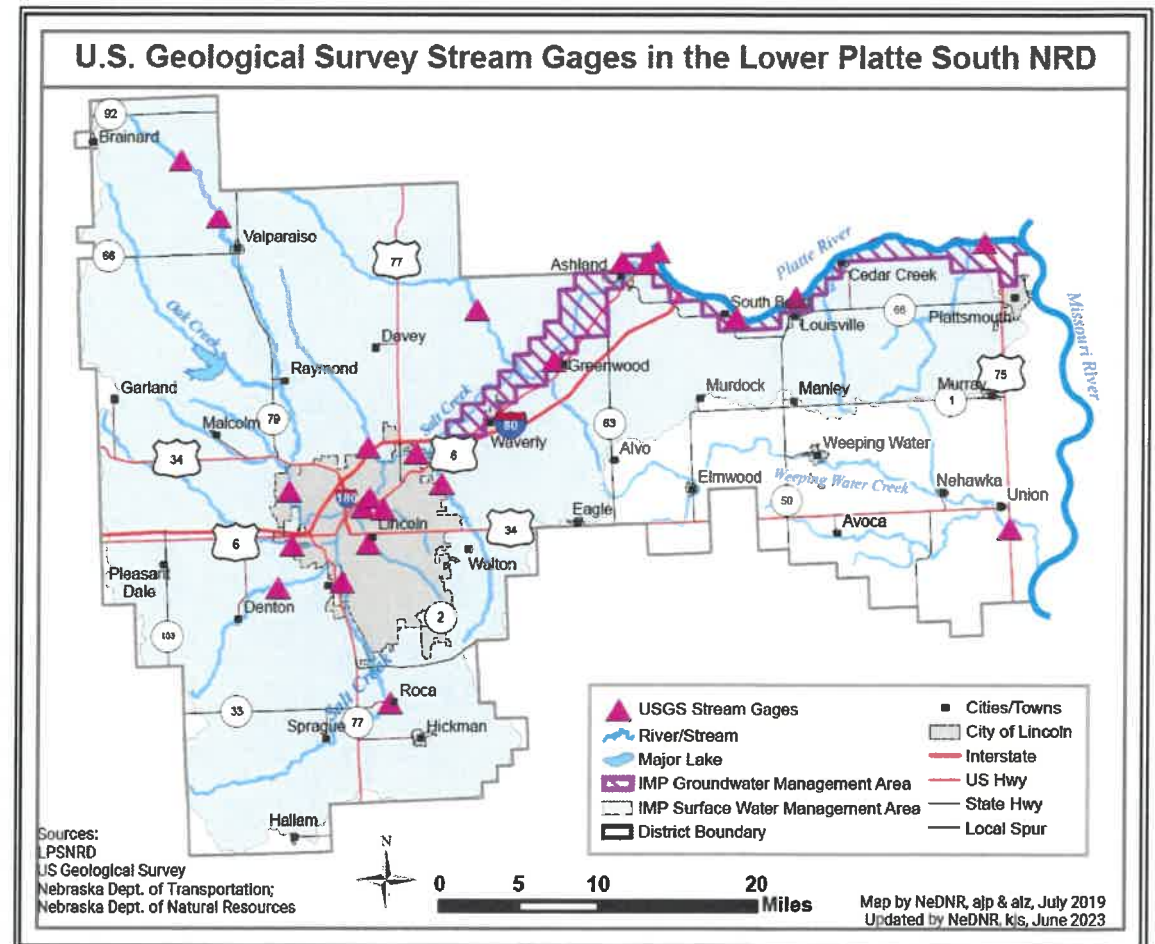
NE DNR SURFACE WATER PERMITTING

Surface Water Appropriations Expired, Cancelled-in-Part or Cancelled-in-Full in 2023 Within the IMP Area

Appropriation Number	Cancel Date	Source	NeDNR Action	Location of Diversion or Reservoir	Use	Begin Acres	Cancelled			Estimated Date of Last Use	Basis for NeDNR Action
							Acres	Grant in cfs	Grant in af		
A-18581	2/1/2023	Cedar Creek, Trib. To	Cancelled in Full	S09 T11N-R12E	IR	139	139	1.99	417	1997	BUC-9830
A-19828	3/23/2023	Salt Creek, Trib. To	Expired	S01 T8N-R6E	MF	N/A	N/A	N/A	10	2023	TEMP
A-19829	3/28/2023	Salt Creek	Expired	S01 T8N-R6E	MF	N/A	N/A	N/A	10	2023	TEMP
A-19841	4/21/2023	Branched Oak Lake	Expired	S32 T12N-R5E	MF	N/A	N/A	4.5	10	2023	TEMP
A-19832	4/25/2023	Oak Creek	Expired	S06 T11N-R6E	MF	N/A	N/A	2.2	9.6	2023	TEMP
A-19848	5/13/2023	Oak Creek	Expired	S06 T11N-R6E	MF	N/A	N/A	2.2	9.6	2023	TEMP
A-18587	12/18/2023	Middle Creek, North Branch, Trib. To	Cancelled in Full	SW S30 T11N-R05E	ST	N/A	N/A	67.87	N/A	Never Used	Never Built

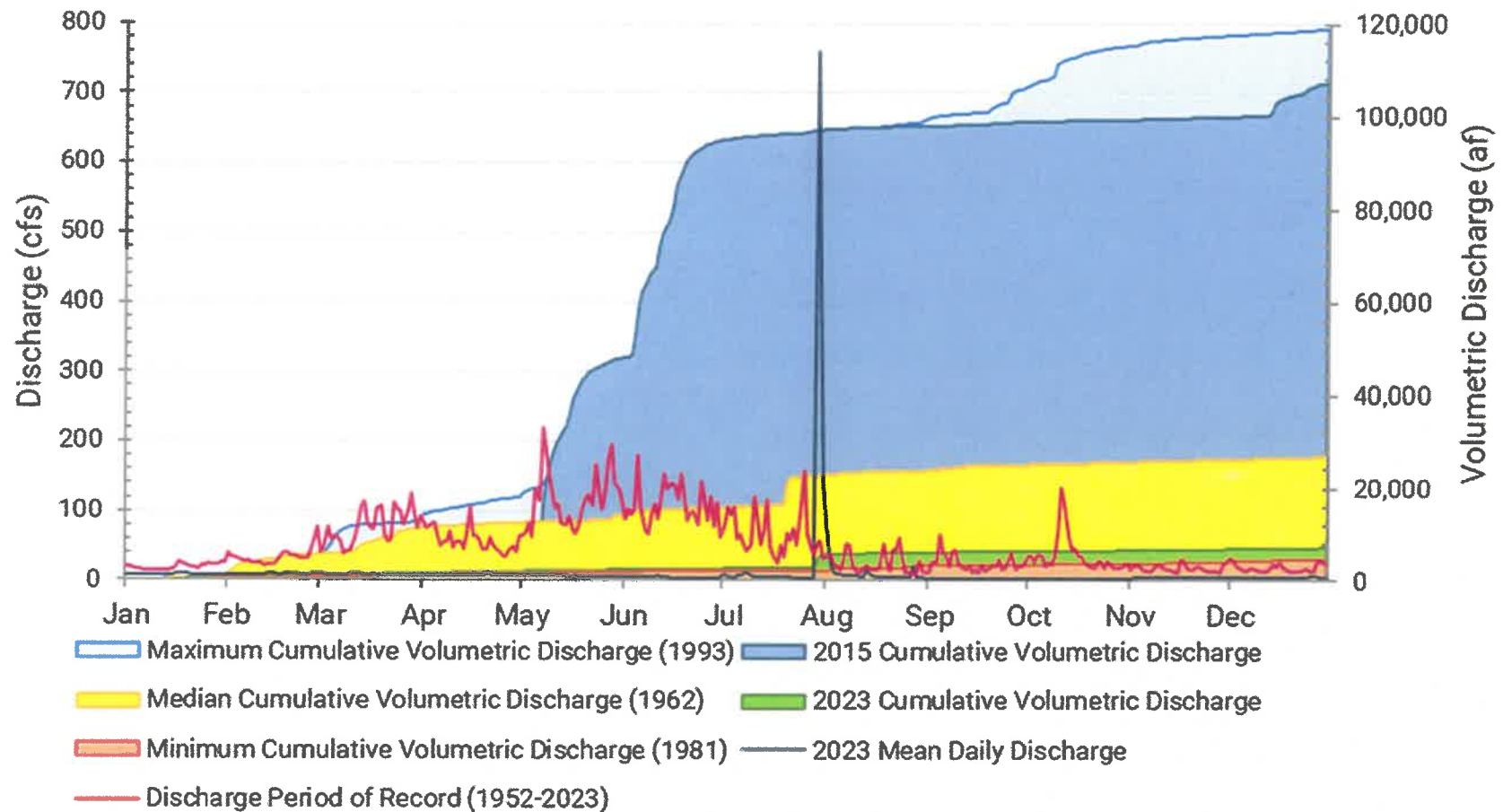
NeDNR SURFACE WATER MONITORING

- 21 USGS streamgages
- 1950s first installations
- 2016 last installation
- 16 receive partial LPSNRD funding



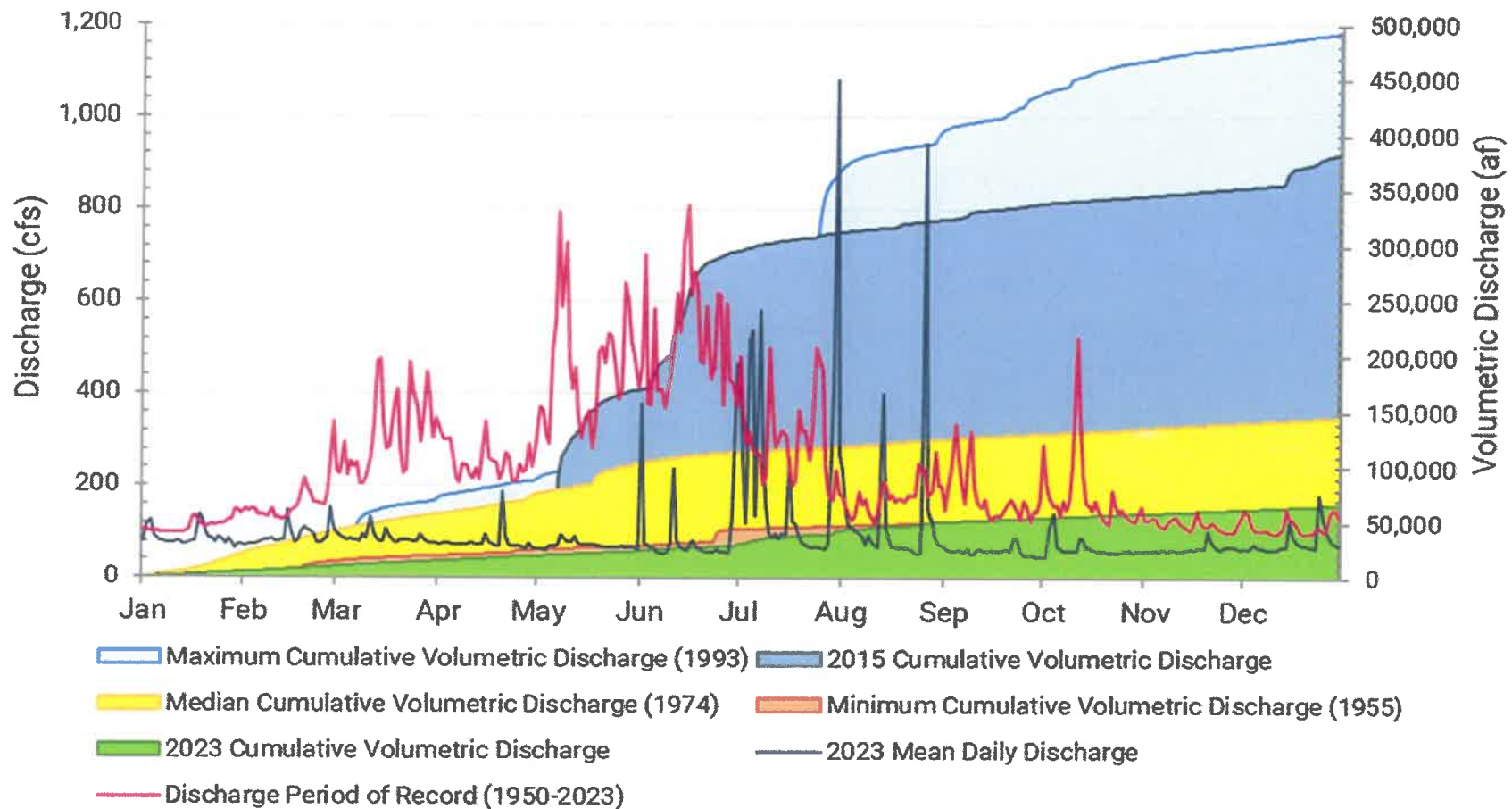
SURFACE WATER MONITORING

Salt Creek at Roca
USGS #06803000



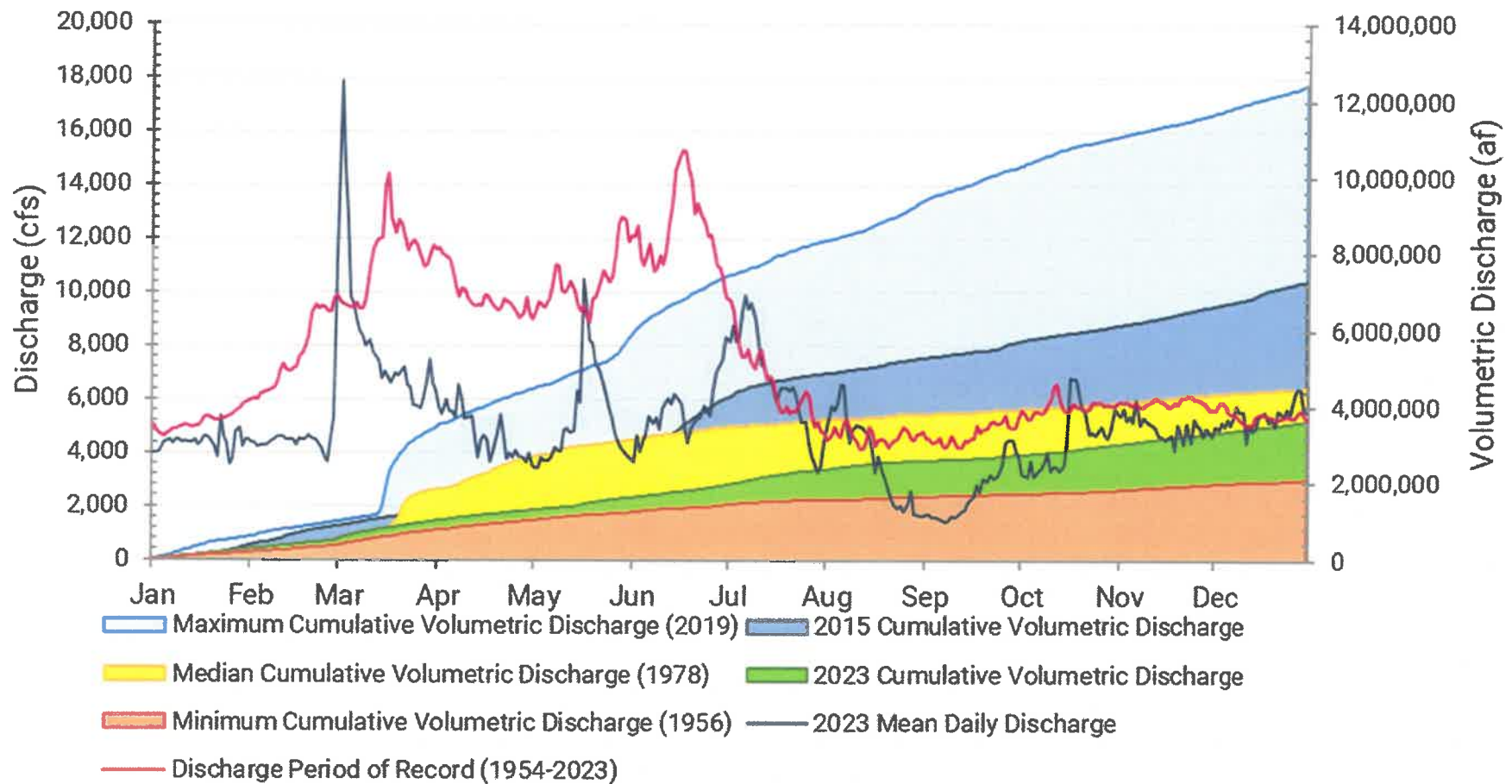
SURFACE WATER MONITORING

Salt Creek at 27th Street at Lincoln
USGS #06803500



SURFACE WATER MONITORING

Platte River at Louisville
USGS #06805500



NeDNR SURFACE WATER MONITORING

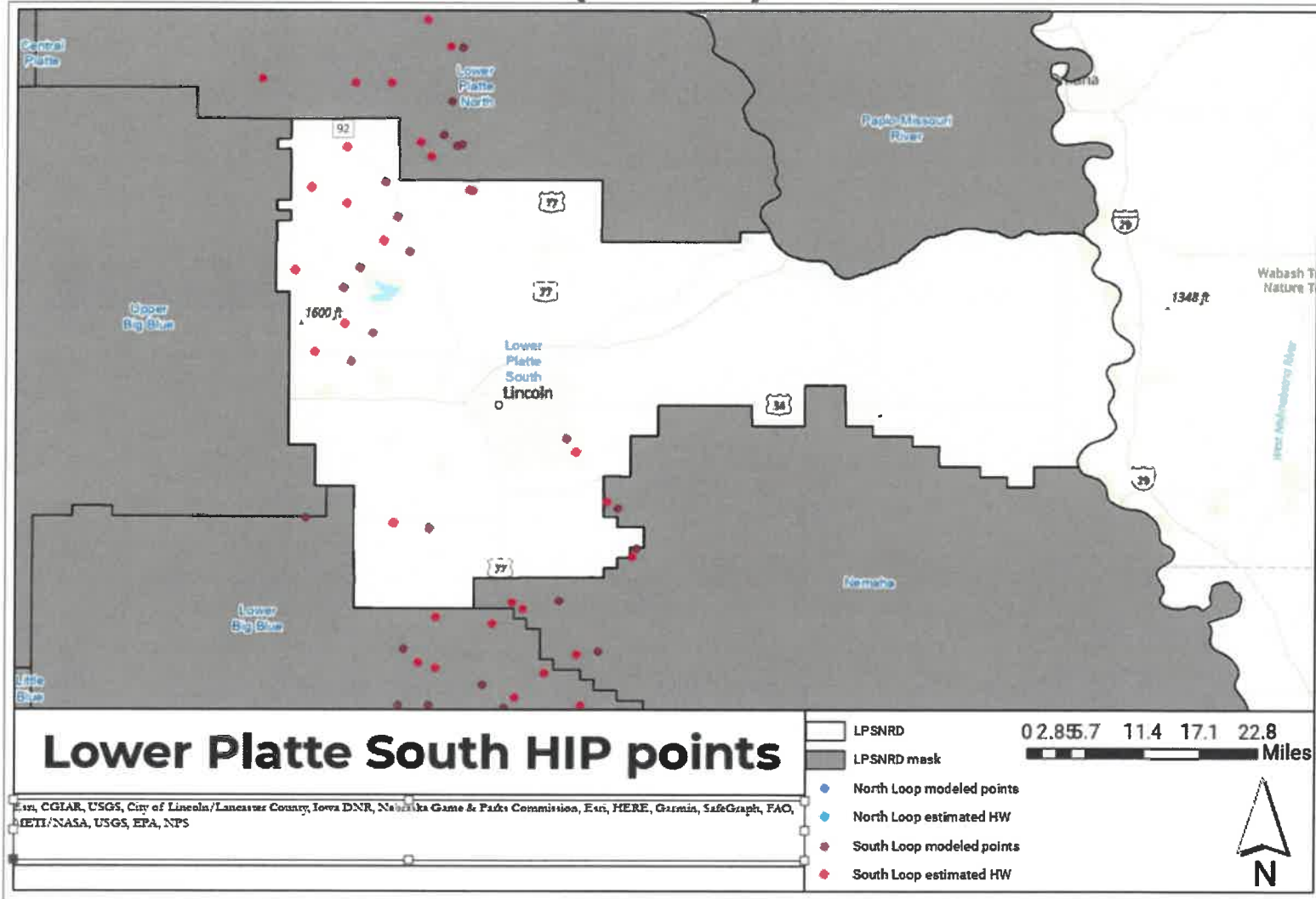
- Surface Water Pump Site Visits:
 - NeDNR Field Office staff inspected 175 of a possible 201 irrigation permit pump-sites (87%).
 - A total of 196 observations made*
 - 36 sites had been set up for surface water irrigation

* Field staff can visit sites more than once a year

NEDNR SURFACE WATER MONITORING

- Voluntary Surface Water Use Reporting
 - 62 reports out of 202 water rights 2023 (31%)
- Reporting includes information about
 - whether permit holder irrigated,
 - reasons for not irrigating (if applicable),
 - types of crops grown,
 - number of irrigated acres, and
 - use of groundwater or surface water.

NEW NEDNR DATA COLLECTION EFFORT: HYDROLOGIC INVESTIGATION PROJECT (HIP)



NEW NEDNR DATA COLLECTION EFFORT: HYDROLOGIC INVESTIGATION PROJECT (HIP)

- Designed to identify groundwater levels throughout Eastern Nebraska
- Assist in aligning and verifying actual conditions with the LPMT model
- Recent Efforts
 - Installation of streamgages to monitor wet/dry conditions
 - Identify perennial and intermittent streams to increase the accuracy of the sub-regional modeling effort

LPSNRD DATA COLLECTION & MONITORING

NRD Monitoring

- Irrigated acres expansion
- Groundwater level measurements
- Municipal water use
- Other
 - Studies and Planning
 - Education, Outreach, and Collaborations

LPSNRD GROUNDWATER PERMITTING ACTIVITY

- Well Permits and Construction in 2023
 - 9 well permits issued
 - 4 wells completed (not in HCA)



LPSNRD GROUNDWATER MONITORING & DATA COLLECTION

Average Well Level Change by Groundwater Reservoir	
GW Reservoir	Spring 2022 to Spring 2023 (ft)
Crete-Princeton-Adams	1.21
Dwight-Valparaiso	-4.41
Lower Salt Creek	-2.16
Missouri River Valley	-0.41
Platte River Valley	-0.07
Remaining Area	-2.03



LPSNRD GROUNDWATER MONITORING & DATA COLLECTION

- Hydrologically Connected Area (HCA) 385 wells
 - 43 wells over 50 gal/min. in 2023
 - 620 million gallons pumped in total
 - 32 irrigation wells account for 47% of total
 - 5 commercial wells account for 52% of total
 - 0 new irrigated acres approved in 2023
- Entire District
 - Flow meters on all wells pumping over 50 gal/min.
 - 371 wells pumping over 50 gal/min. in 2023
 - 5.5 billion gallons pumped total
 - 296 irrigation wells account for 67% of total

LPSNRD EDUCATION, OUTREACH, AND COLLABORATION

- Groundwater Management Planning review
- Best management practices Irrigation Certification Program
- Media, Social Media, Web
- Publications
- ENWRA, LPRBC, LPRC, LPRCA, USGS, NeDNR



JOINT ENDEAVORS AND ACTION PLANS

REGIONAL AND BASIN COLLABORATIONS

LPSNRD AND NEDNR

- **Lower Platte River Basin Consortium**

- Water supply resiliency, drought planning
- Ongoing drought monitoring and communication with the public
- Drought contingency plan adopted in 2019, Plan update in 2024

- **Lower Platte River Basin Coalition**

- Coordination and consistency across the Basin
- Basin-wide Plan approved October 2017
- Second increment adopted in 2022

NEW DEPLETIONS ACCOUNTING

LOWER PLATTE RIVER BASIN 2016-2023

NRD	PEAK SEASON 5-YR ALLOWABLE DEPLETION (AF)	2022 NRD Reported NET Depletion (AF)	NeDNR Reported Depletion (AF)	NRD Prior Years Peak Season CU Use (AF)	2022 NRD Peak Season CU (AF)	NRD Total Peak Season CU Use (AF)	NeDNR Total Peak Season CU (AF)	Total New Peak Season Depletion	Total New Peak Season CU	Remaining 5-YR Allowable Depletion (AF)	Percent of Remaining 5-YR Allowable Depletion
Upper Loup NRD	5393.46	39.5	0.0	959.6	134.2	1093.8	0.0	39.5	1093.8	5354.0	99.3%
Lower Loup NRD	11928.68	-11.7	26.9	2347.9	-69.6	2278.3	26.9	15.2	2305.2	11913.5	99.9%
Upper Elkhorn NRD	2927.25	0.3	0.0	686.1	1.1	687.2	0.0	0.3	687.2	2927.0	100.0%
Lower Elkhorn NRD	8356	305.9	-38.0	2826.6	605.5	3432.1	-38.0	267.9	3394.0	8088.1	96.8%
Papio-Missouri River NRD	1811.4	88.5	0.0	87.5	66.4	153.9	0.0	88.5	153.9	1722.9	95.1%
Lower Platte South NRD	2065.526	-0.9	0.0	26.6	-0.1	26.5	0.0	-0.9	26.5	2066.5	100.0%
Lower Platte North NRD	3790.808	205.4	14.0	1847.5	322.2	2169.7	14.0	219.4	2183.7	3571.4	94.2%
TOTALS	36,273	627	3	8,782	1,060	9,841	3	630	9,844	35,643	98%

CU = Consumptive Use AF = Acre Feet

JOINTLY IDENTIFIED ACTIONS FOR THE NEXT TWO YEARS

Joint LPSNRD/NeDNR Actions

- Continued participation in regional planning groups (LPRCA, ENWRA, Basin Coalition, and Drought Consortium)
- Seek additional opportunities to participate in joint public outreach and education events and publications.
- Review the need to update the IMP (consistent with Basin Plan)
- Evaluate the need for modifications to the LPSNRD streamgauge network
- LPSNRD/NeDNR quarterly coordination meetings moving forward
 - Update to Water Resources Subcommittee 2x/year

LPSNRD ACTIONS

- Continue to monitor groundwater level changes through its network of groundwater monitoring wells.
- Continue to meter and require annual pumping reports for groundwater wells that have capacity to pump over 50 gpm, as well as public supply wells, and assimilate the data into a comprehensive dataset.
- Continue to collect information on municipal, rural water, and non-municipal industrial water use, land use and population changes, and changes in climate.
- Develop recommendations for the development and management of geographic areas with limited aquifers.
- Conduct discussions with municipalities and rural water districts on coordinating services with regional systems and on water shortage action plans.



NEDNR ACTIONS

- Continue surface water monitoring activities including tracking surface water permit changes, pump site inspections and the voluntary surface water use reporting program.
- Continue technical analyses and development of tools (INSIGHT) for water management, expanding the network to eastern Nebraska as data become available.
- Continue development of the Lower Platte Missouri Tributaries models and convey progress and outcomes to LPSNRD.
- Development of the LPMT 3D (District) model
 - Covers LPSNRD, LPNNRD and PMRNRD

QUESTIONS?

THANK YOU.



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