



Basin Updates and SUSTAIN

Upper Niobrara White NRD Water Issues Meeting
February 28, 2019

Carrie Wiese, IWM Coordinator
Margeaux Carter, IWM Specialist

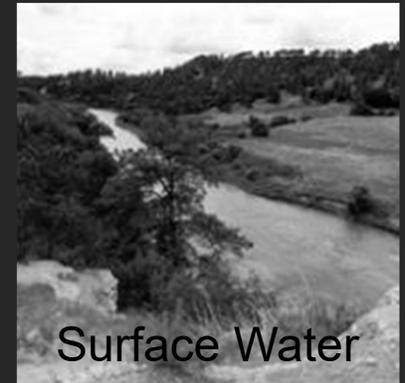




Providing the sound science and support for managing Nebraska's most precious resource



Water Planning and Integrated Management



Surface Water



Groundwater



Floodplain Management



Dam Safety





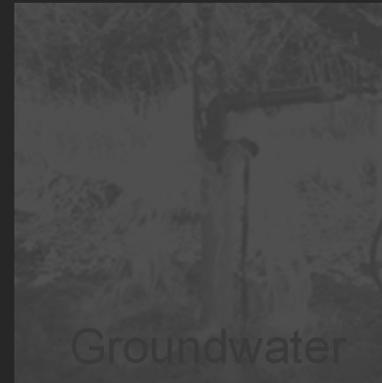
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Water Planning
and Integrated
Management



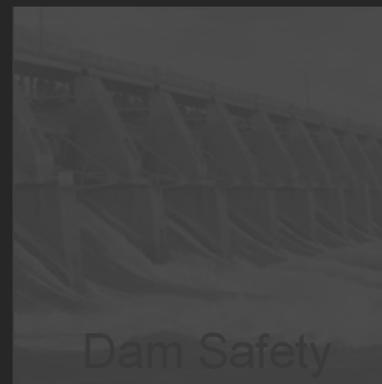
Surface Water



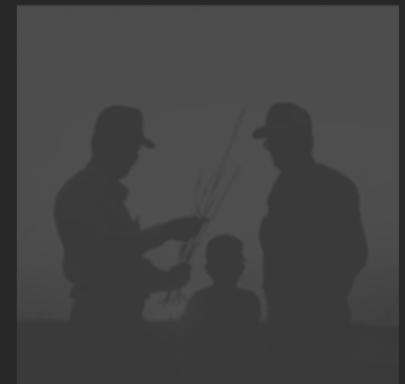
Groundwater



Floodplain
Management



Dam Safety



IMPLEMENTATION

Water Management
Projects

Strategic Planning Actions

PLANNING AND PUBLIC PARTICIPATION

Goals and Objectives
for Water Planning

Stakeholder Involvement

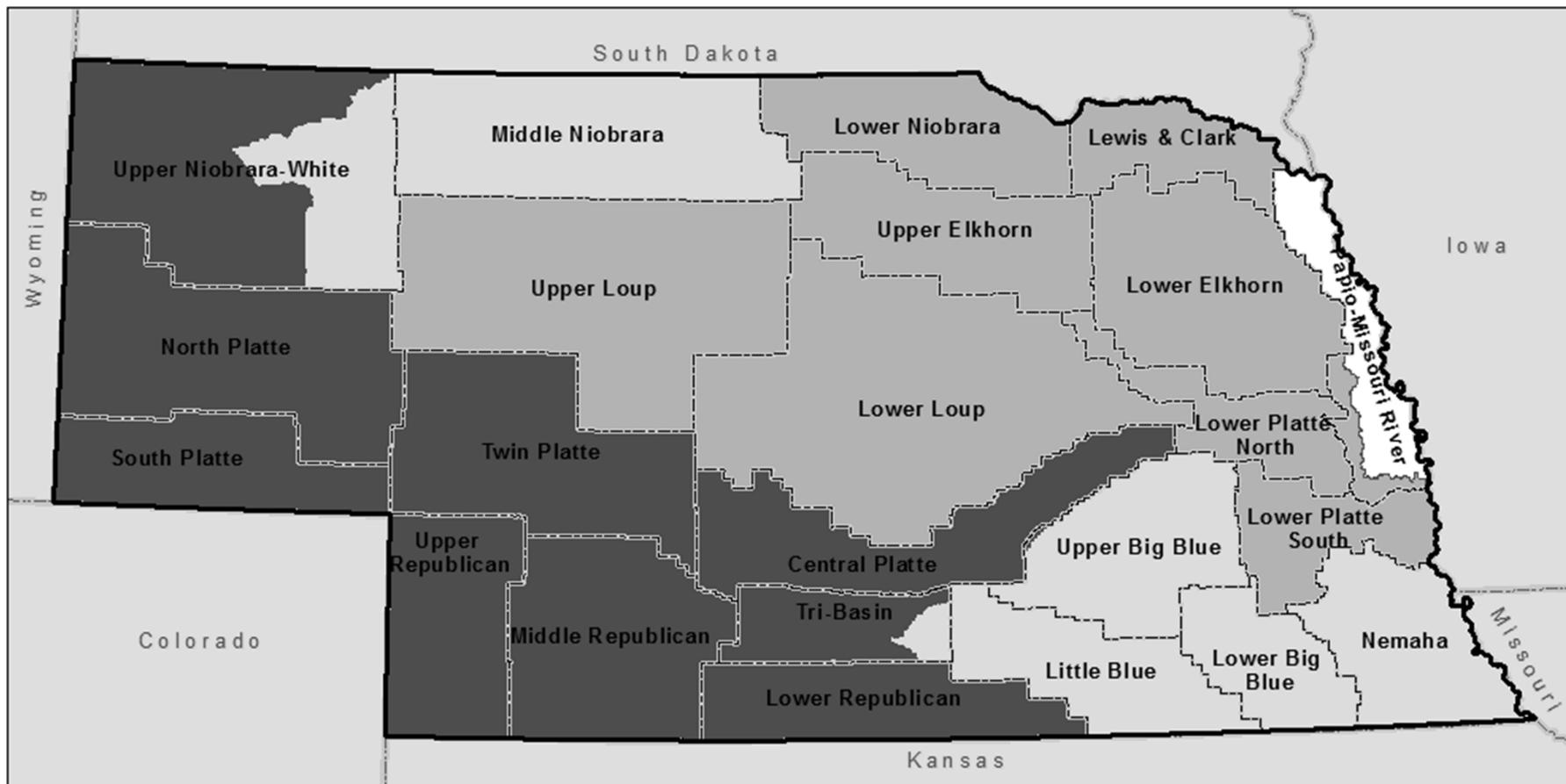
Water Availability and
Water Shortages

Water Supplies and Water Uses

SCIENCE

Hydrologic Models, Data, and Analyses

Status of Integrated Management Plans in Nebraska



- Required, Adopted
- Voluntary, In Development
- Voluntary, Adopted
- Natural Resources District

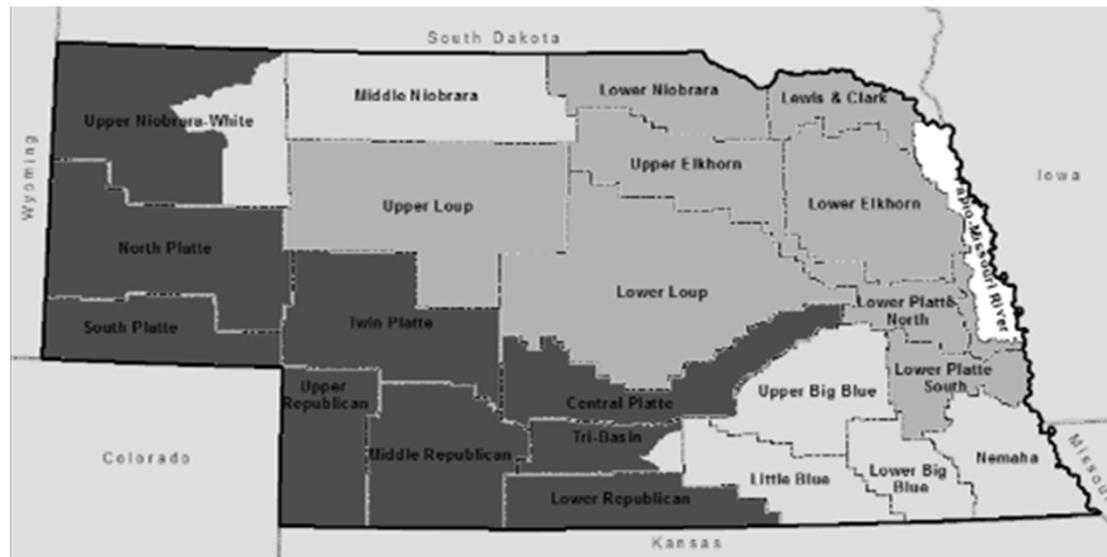


NEBRASKA

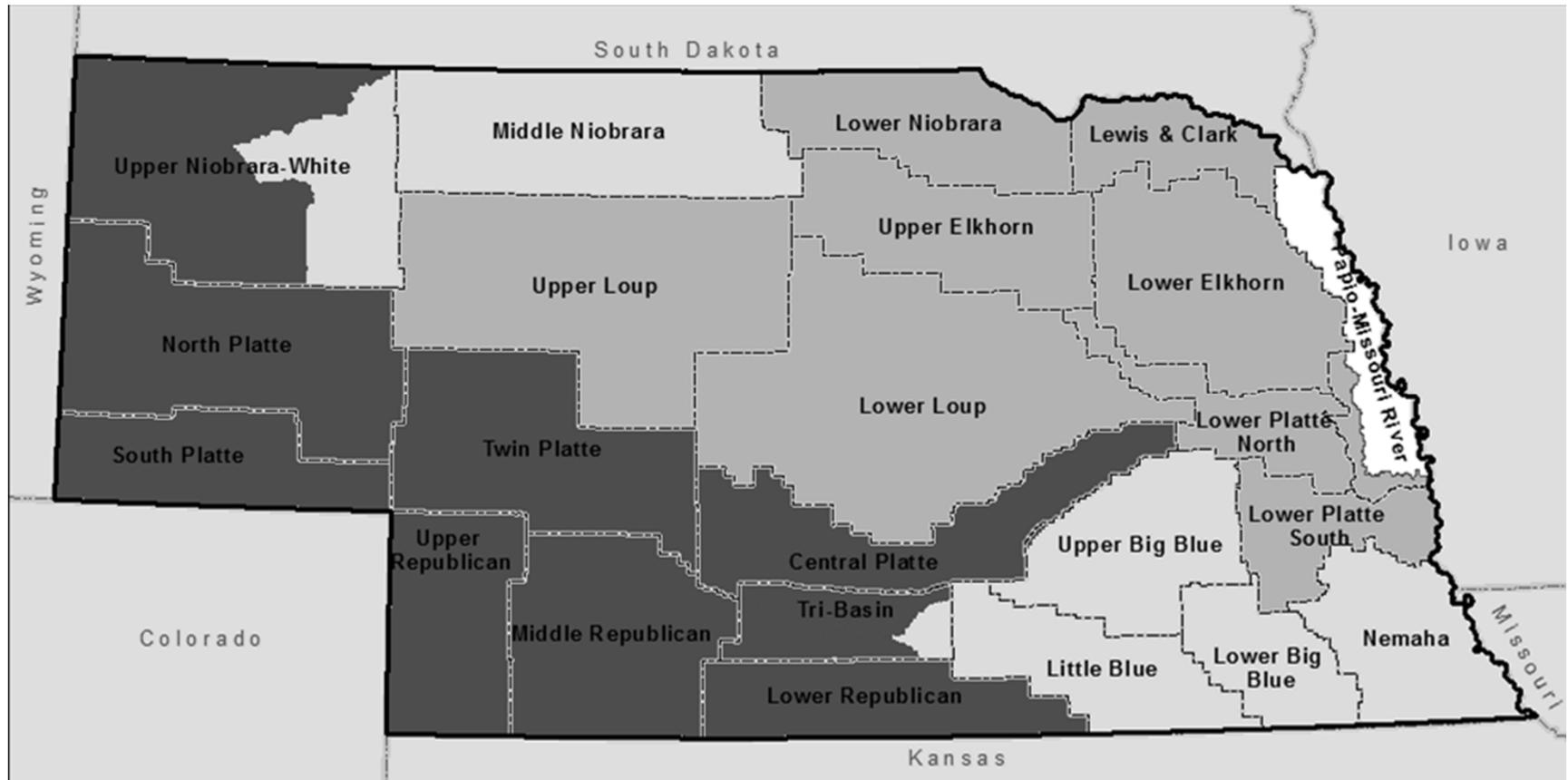
DEPT. OF NATURAL RESOURCES

Missouri Tributaries and Nemaha Basins

- Lewis and Clark NRD: preparing for joint report with NeDNR as part of first biennial review for IMP
- Nemaha NRD: collecting data to be used to inform IMP process



Blue River Basin



Blue River Basin

- NeDNR and Blue River Basin NRDs preparing for joint modeling effort to meet mutual needs
- Little Blue NRD: stakeholder process for IMP completed last fall; Board is reviewing draft of IMP, will discuss approval in March
- Tri-Basin NRD: stakeholder process for IMP completed last fall; IMP being written
- Lower Big Blue NRD: forming stakeholder committee for IMP, planning for first stakeholder meeting in April
- Upper Big Blue NRD: completed joint stakeholder process with NDEQ and NeDNR and drafted complementary goals and objectives for both water quality plan and IMP

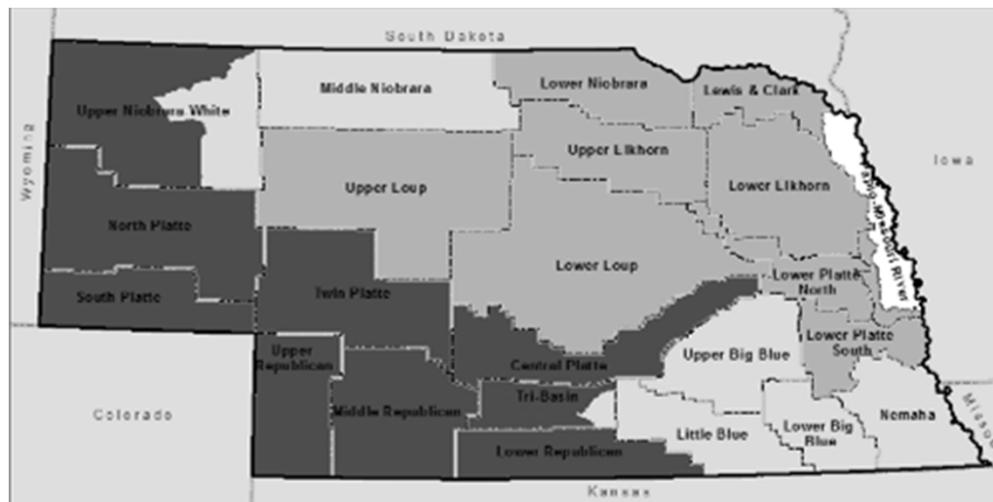
Lower Platte Basin

- Lower Platte South NRD: fifth annual review for voluntary IMP will occur in August
- Lower Platte North NRD: finished voluntary IMP in July 2018
- Papio-Missouri NRD: fourth annual review for voluntary IMP will occur later in the year



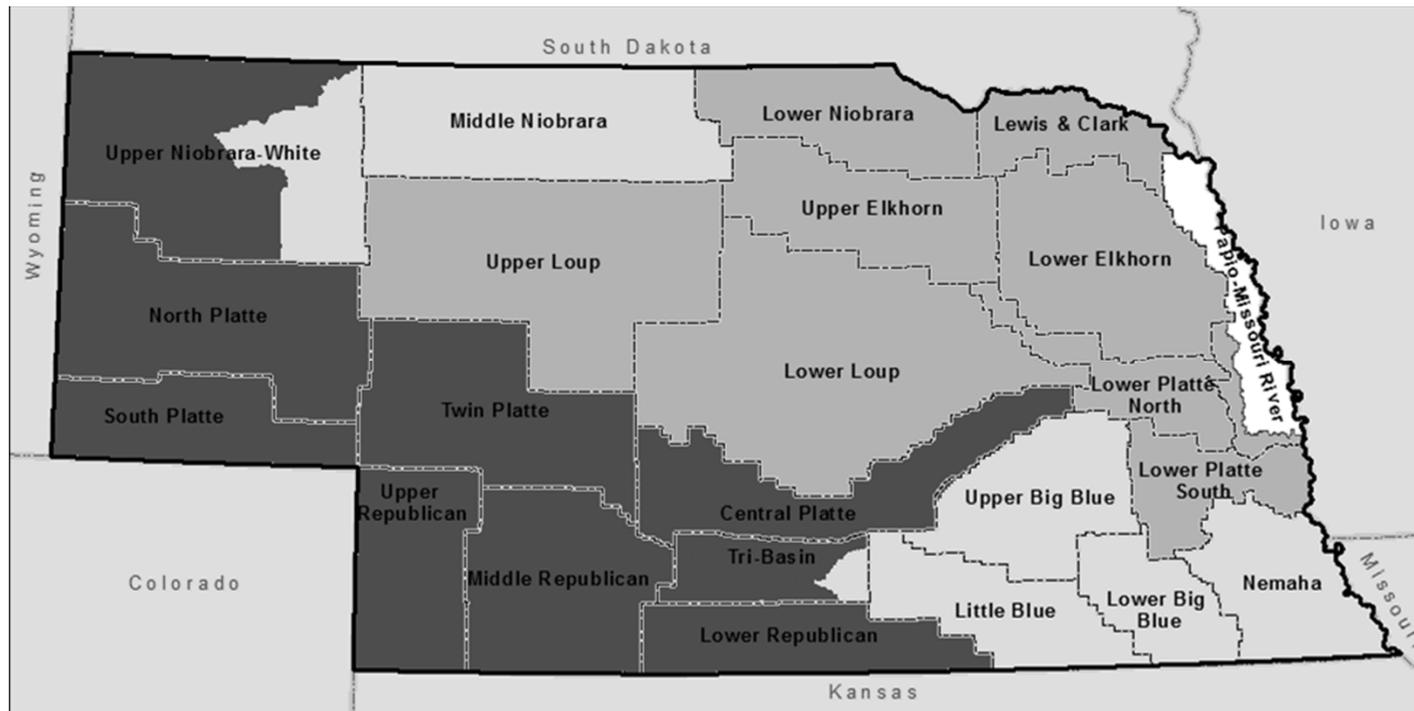
Elkhorn Basin

- Lower Elkhorn NRD: completed voluntary IMP fall of 2018; first annual report in conjunction with Lower Platte Basin-wide Plan report in March
 - NeDNR and NRD implementing pilot-scale study to incorporate AEM data into groundwater model (northern Wayne County)
- Upper Elkhorn NRD: completed voluntary IMP winter of 2018, effective February 1

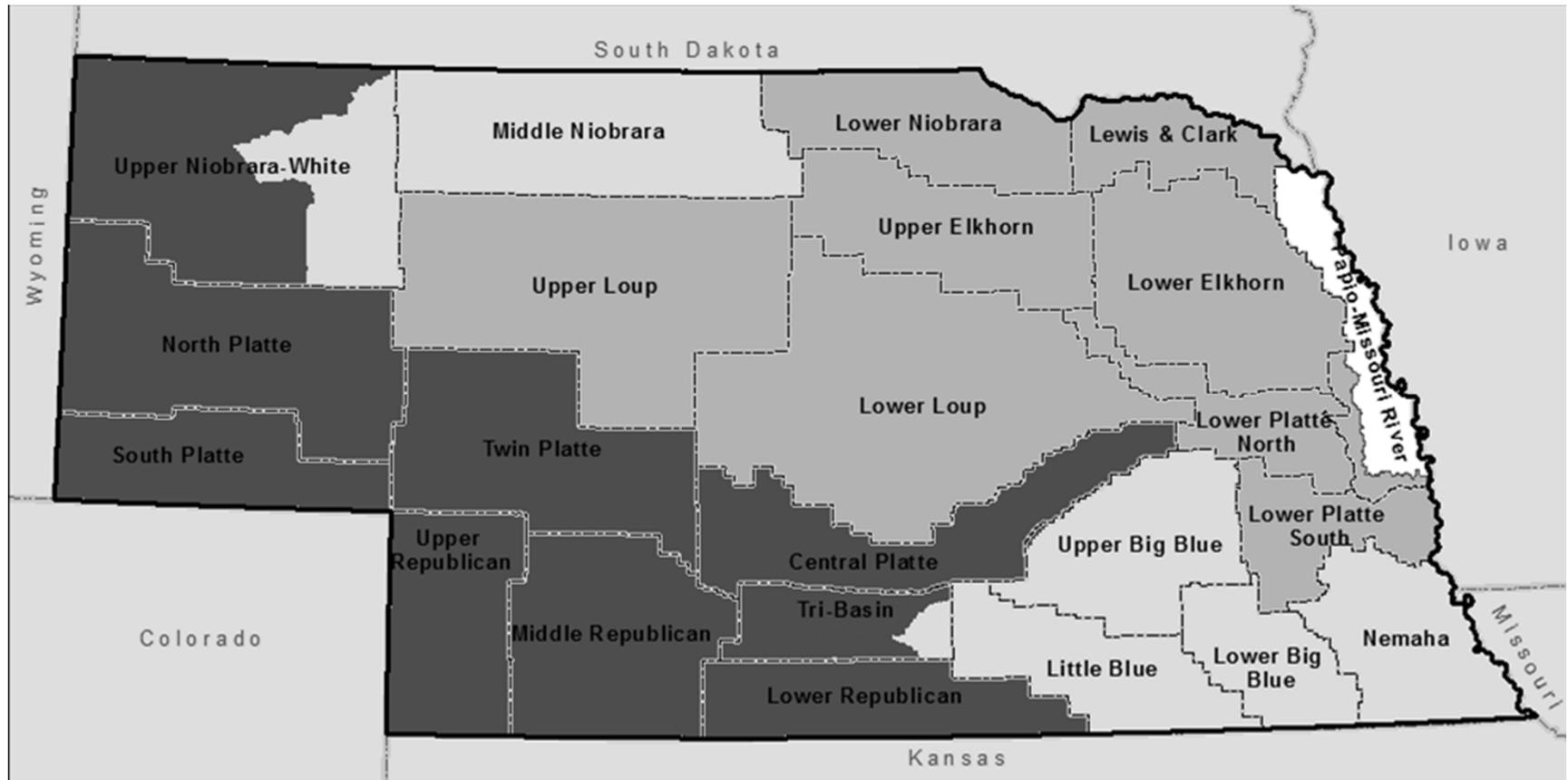


Loup Basin

- Upper and Lower Loup NRDs: Voluntary IMPs were completed in 2016; annual reports now being completed as part of Lower Platte Basin-wide Plan reporting process



Republican Basin

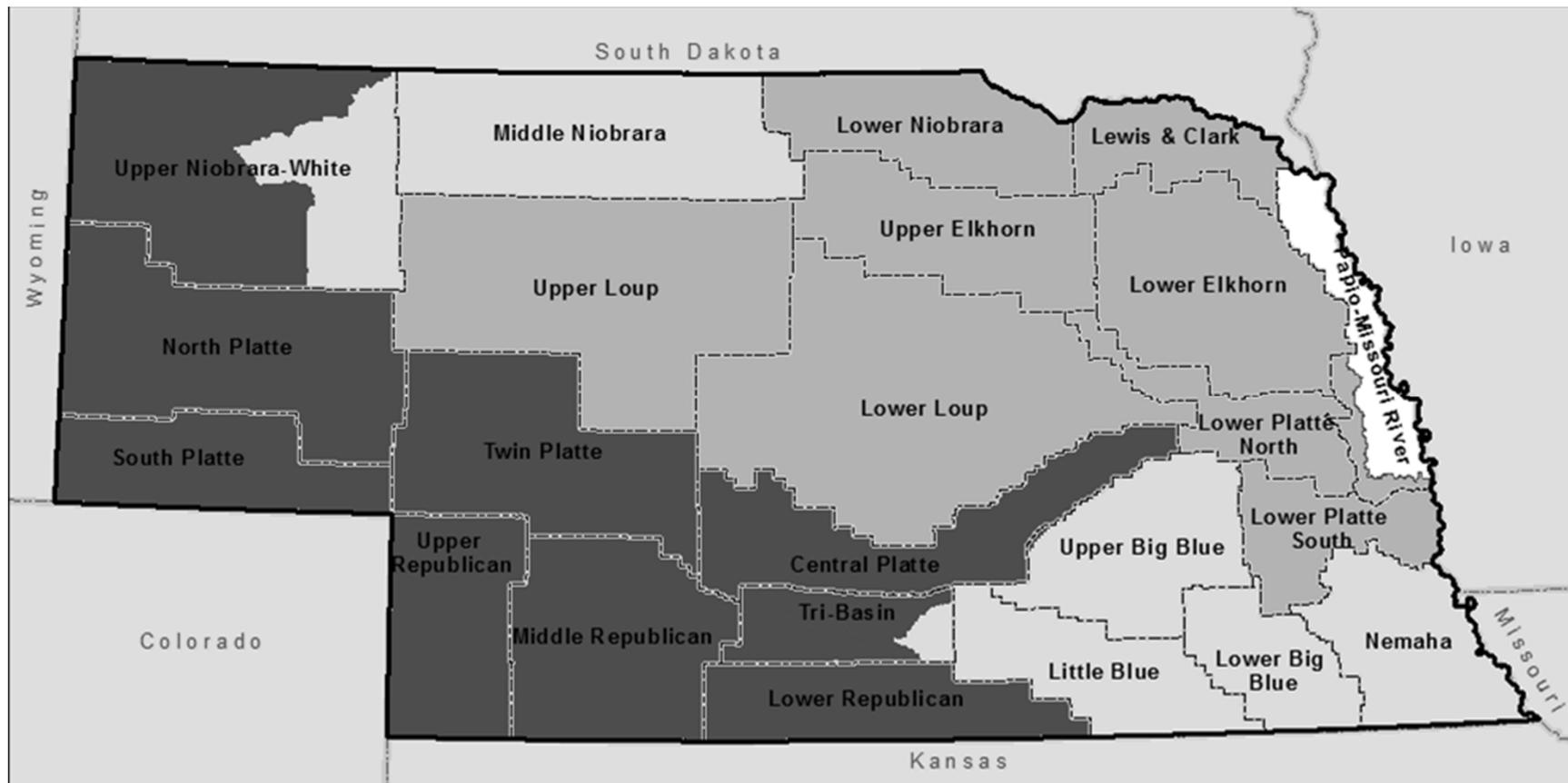


Republican Basin

- After a nearly five-year effort, Republican River Basin-wide Plan has been adopted by NeDNR and the Republican basin NRDs, takes effect March 1
 - Maintain compliance with compact and applicable state laws
 - Maximize Nebraska's efficient and beneficial consumptive use of its portion of the water
 - Increase certainty for long-range planning of water supplies
 - Increase collaborative efforts among water management entities and stakeholders
 - Positive public relations within and outside the basin
 - Pursue projects that benefit water supplies and uses along with benefits for fish, wildlife, recreation, and conveyance
- Updating individual IMPs will occur next
- NeDNR has determined 2019 is a Compact Call Year; earliest Nebraska may be required to provide water to Kansas this year would be October 1
 - May be SW administration, Kansas may call for water



Upper Platte Basin

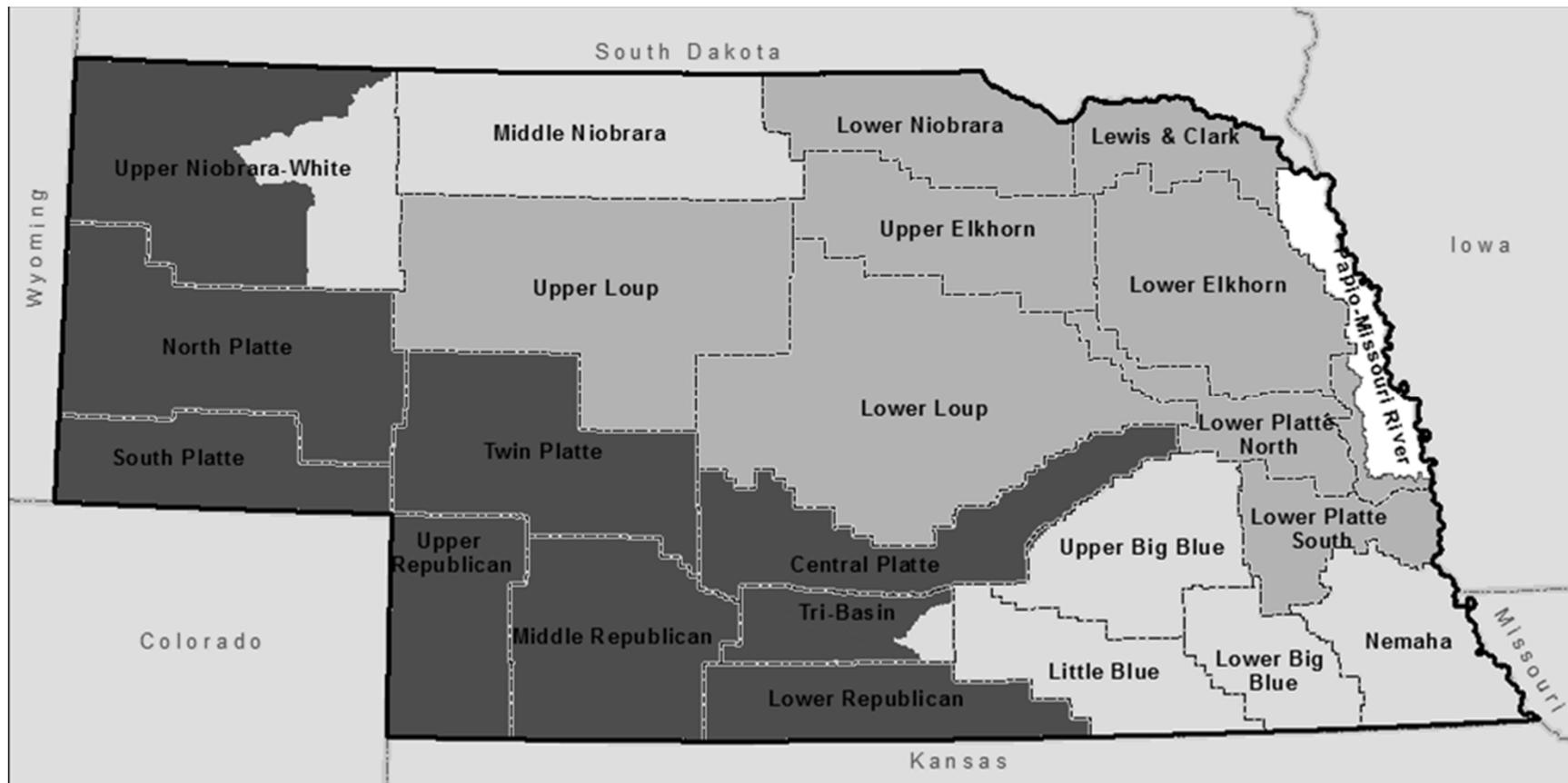


Upper Platte Basin

- Basin-wide Plan stakeholder process completed 2018; public hearing scheduled for July with adoption in September
 - Incrementally achieve and maintain a fully appropriated condition
 - Prevent or mitigate human-induced reductions in flow that would cause non-compliance with interstate compact or decree
 - Partner with municipalities and industries to maximize conservation and water use efficiency
 - Cooperatively identify and investigate disputes between GW and SW users and implement management solutions to address
 - Keep basin-wide plan current and keep stakeholders informed
- Individual IMPs currently being updated, with adoption also expected September; stakeholder meetings ongoing currently, to conclude next week



Niobrara Basin



Niobrara Basin

- NeDNR working with Olsson to complete new model of Niobrara basin downstream of Box Butte to confluence
 - Disagreement between CENEB and Upper Niobrara White models in overlap area
 - Desire for unified modeling approach for the basin
- NeDNR also working with basin NRDs to look at basin-wide management strategies, will inform development of voluntary IMPs for Upper Niobrara White and Middle Niobrara NRDs, possible updates to Lower Niobrara



SUSTAIN: A Water Management Tool

Sustainable

Use

Scenario

Tool for

Analysis and

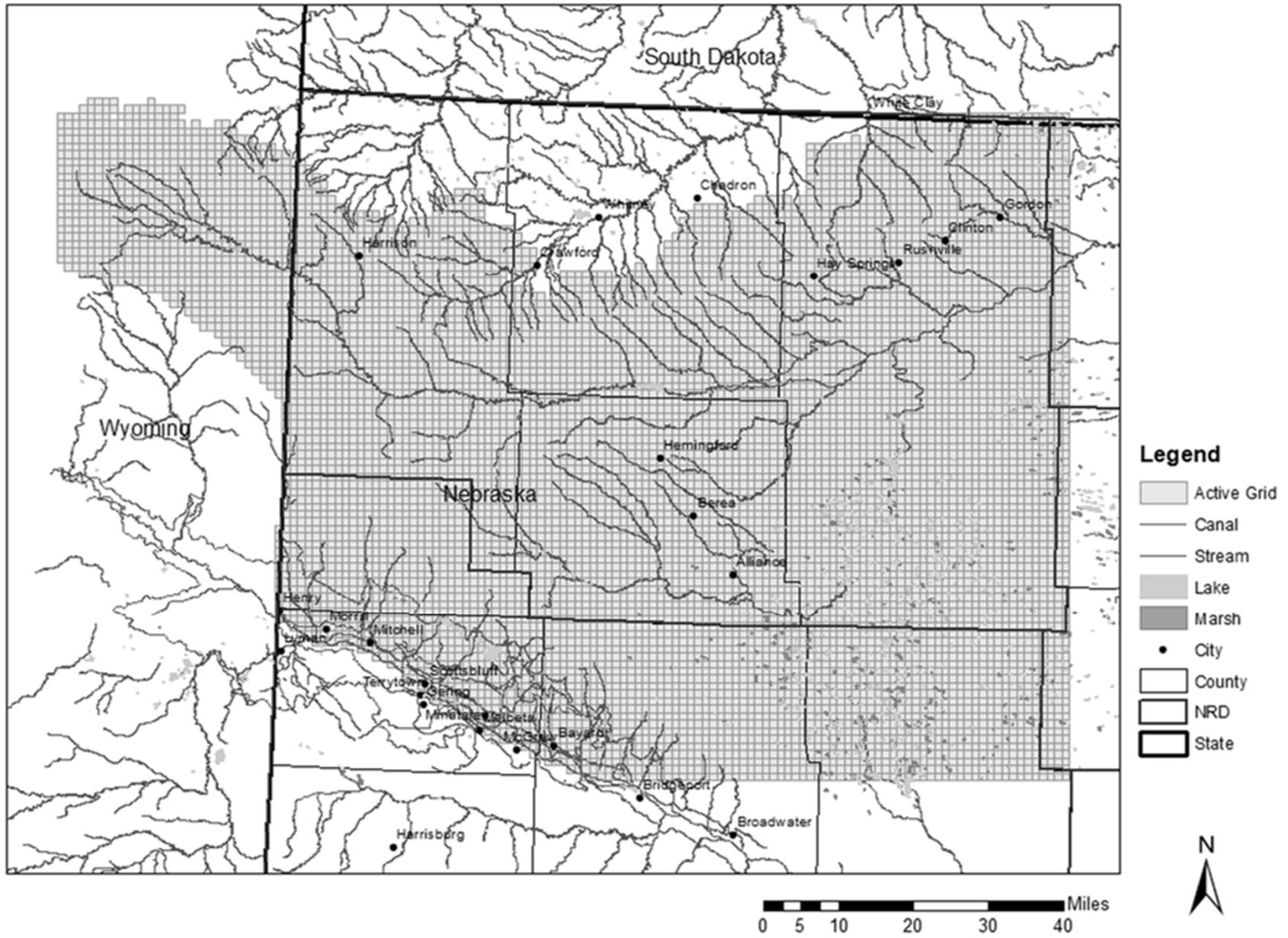
Informing

Nebraskans

Software tool developed by NeDNR for
NRDs and water managers



Upper Niobrara White Model Area



SUSTAIN: A Water Management Tool

- Improve access to
 - Regional historical water use data
 - NeDNR's hydrologic model outputs
- Increase transparency of NeDNR's
 - Hydrologic modeling process
 - Water management project evaluation methods
- Increase understanding of
 - Changing water use patterns
 - Impacts of water use on regional hydrologic systems



SUSTAIN: A Water Management Tool

A graphical user interface which allows NRDs to:

- Access NeDNR data
- View groundwater model inputs
- Evaluate water management scenarios
- Run NeDNR groundwater models
- Customize graphs
- Export data



SUSTAIN: A Water Management Tool

➤ Access water use data

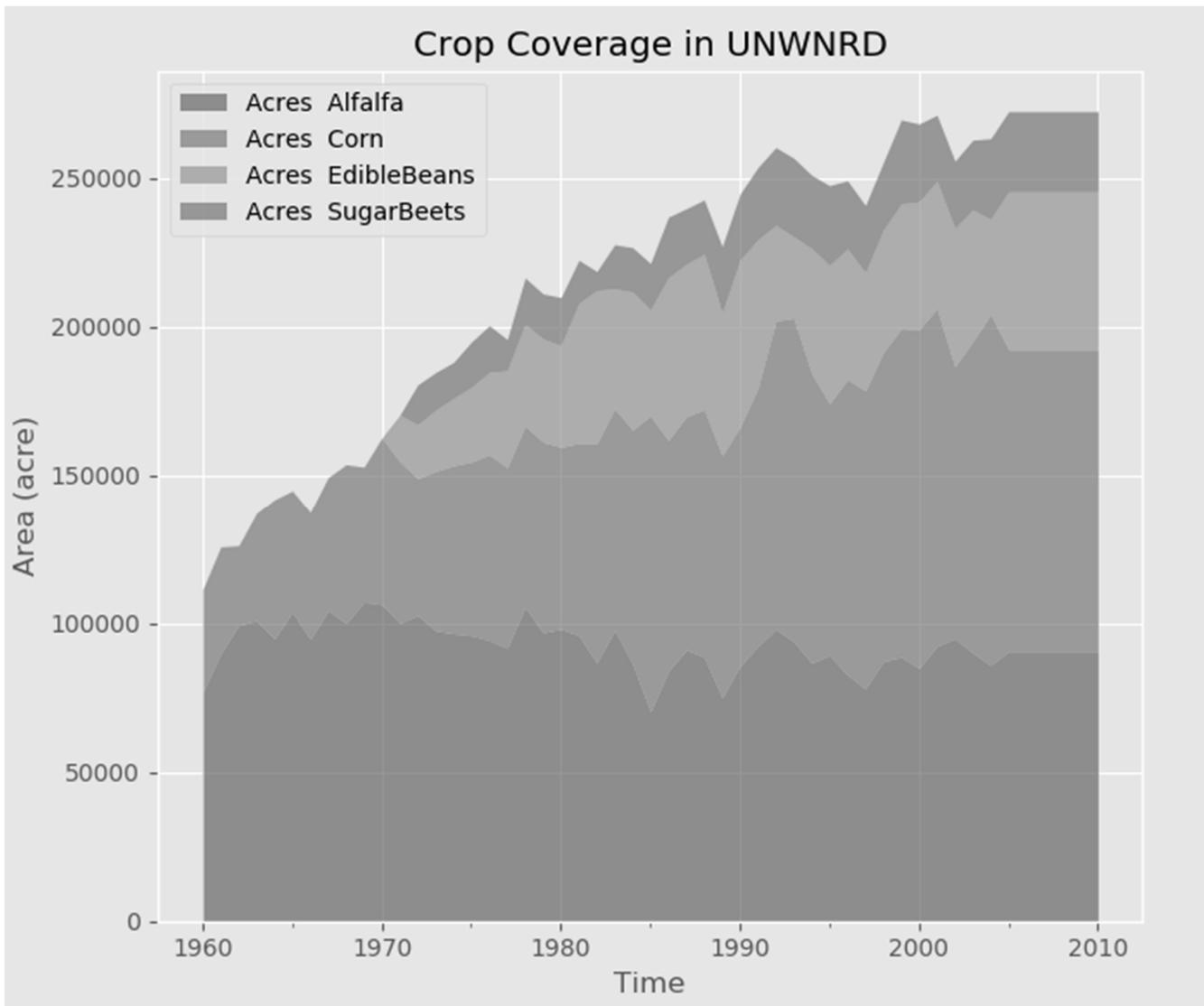
- model-wide data
 - beginning in 1960 for UNW
 - Including WUR meter data
- easily process and display data for education/outreach
- export data for more options

➤ Evaluate water management projects

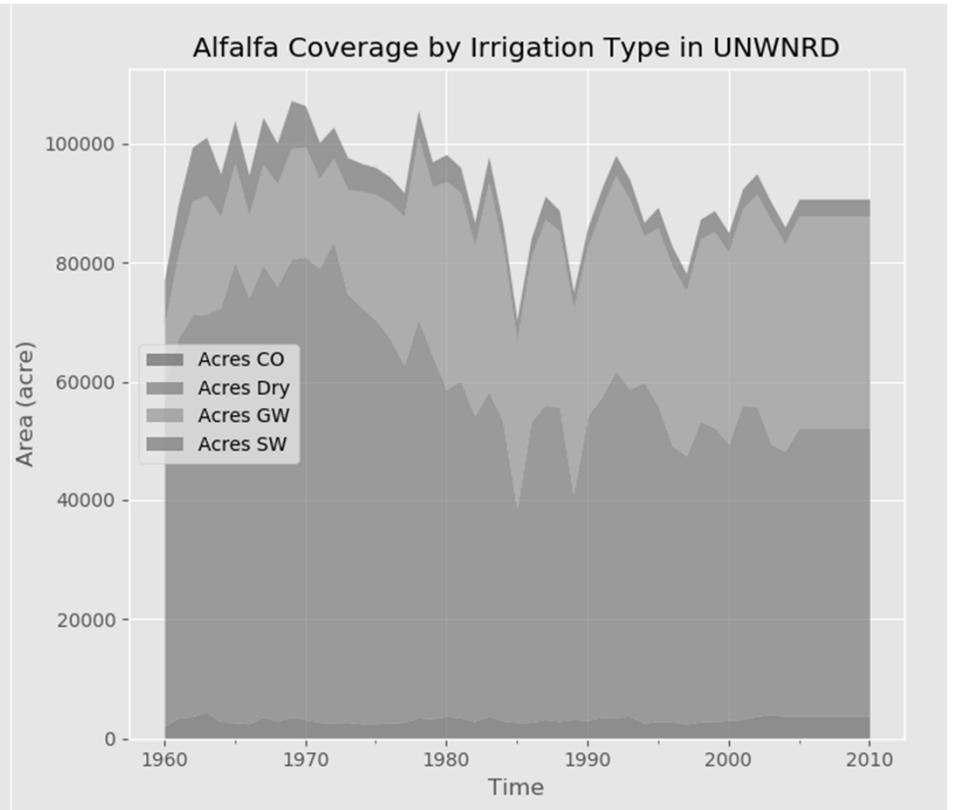
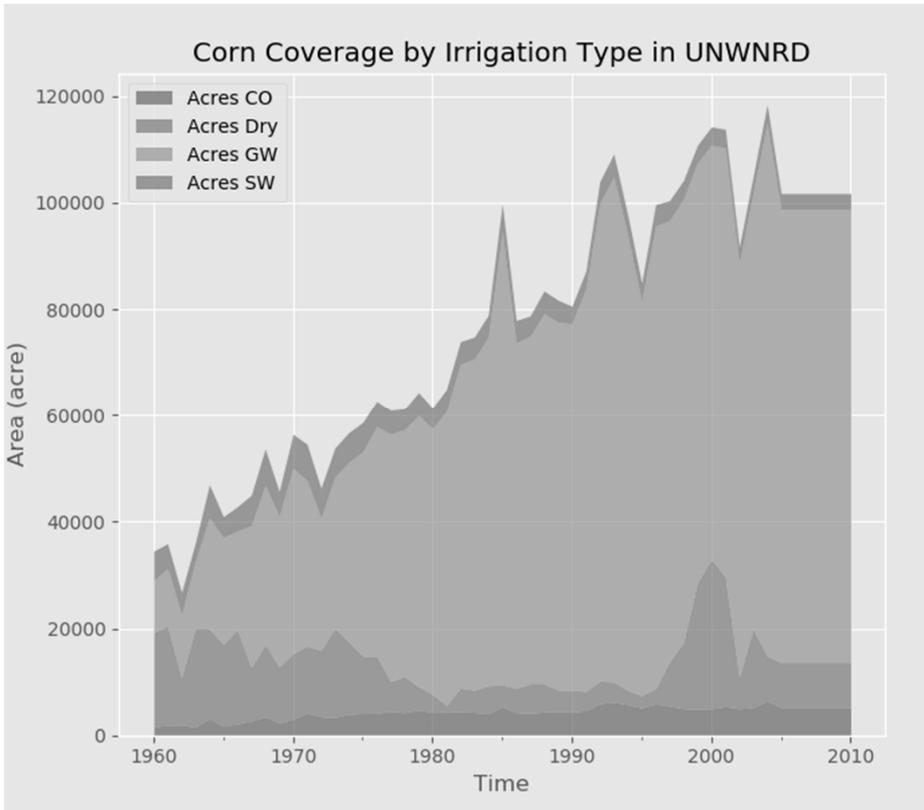
- Estimate likely to be similar NeDNR's official evaluation
- Good for tuning project proposal
- NeDNR support in development



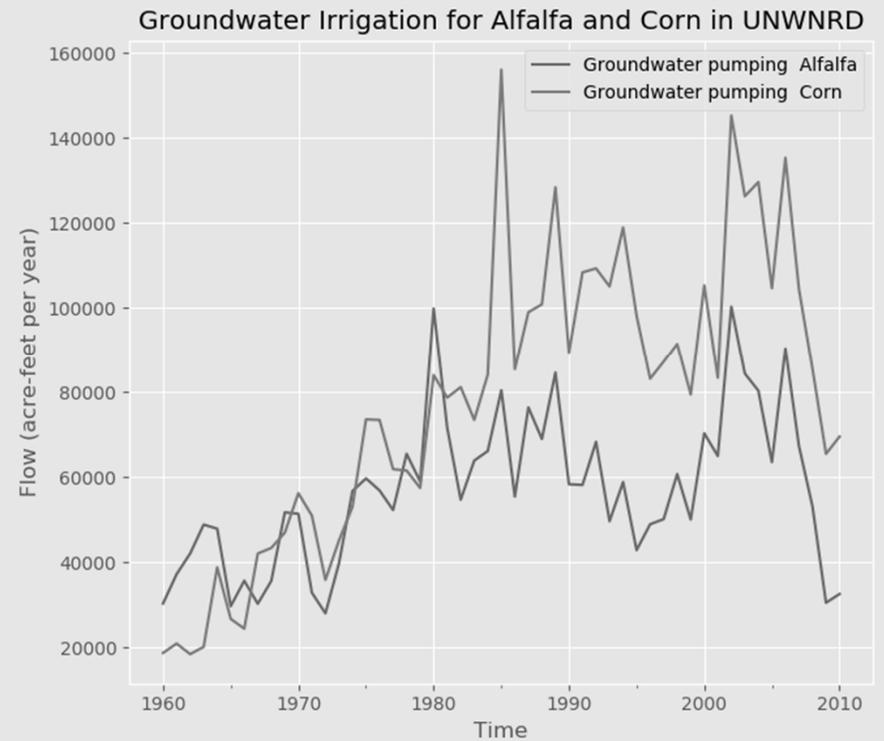
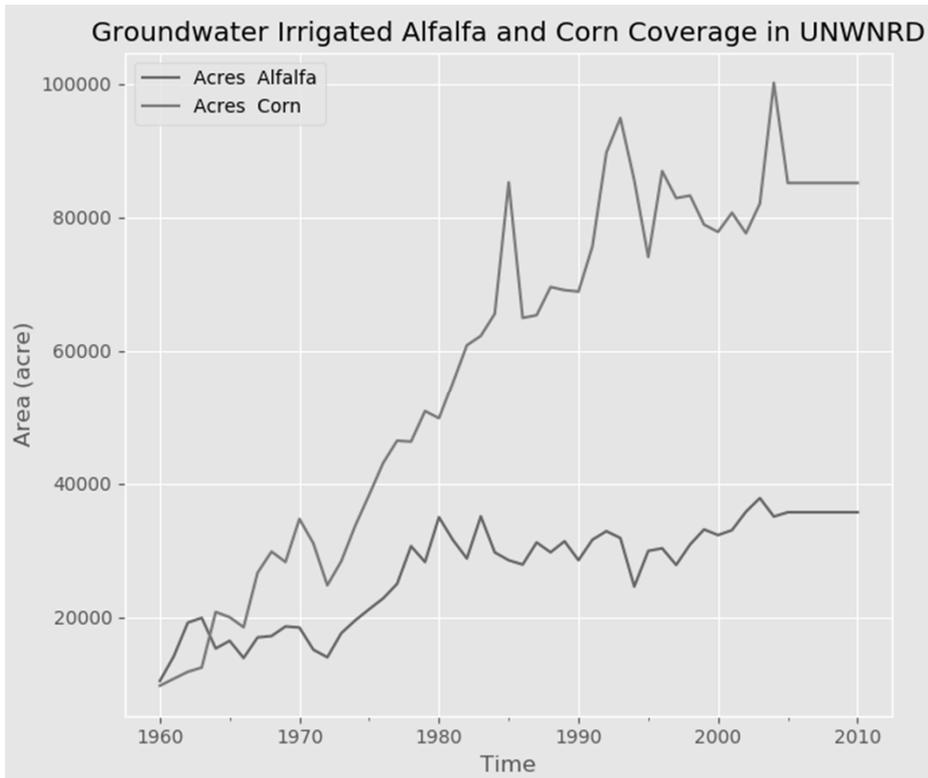
SUSTAIN in Use



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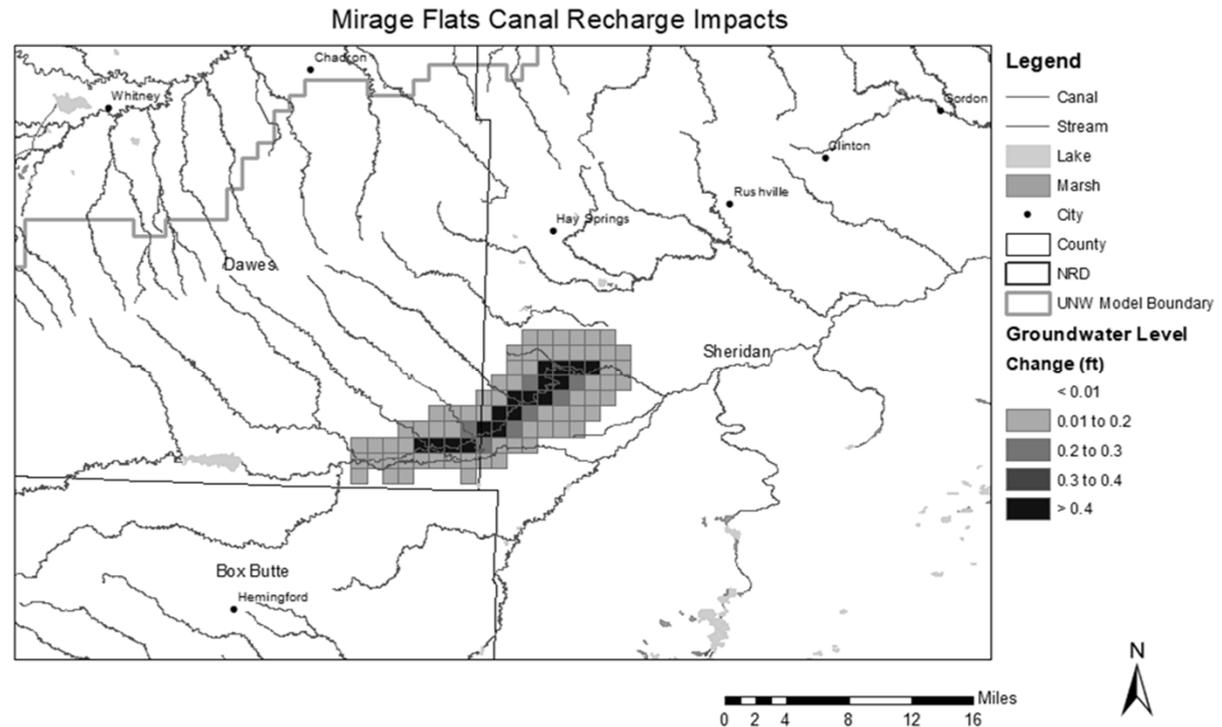
Groundwater Use on Irrigated Alfalfa and Corn in UNWNRD



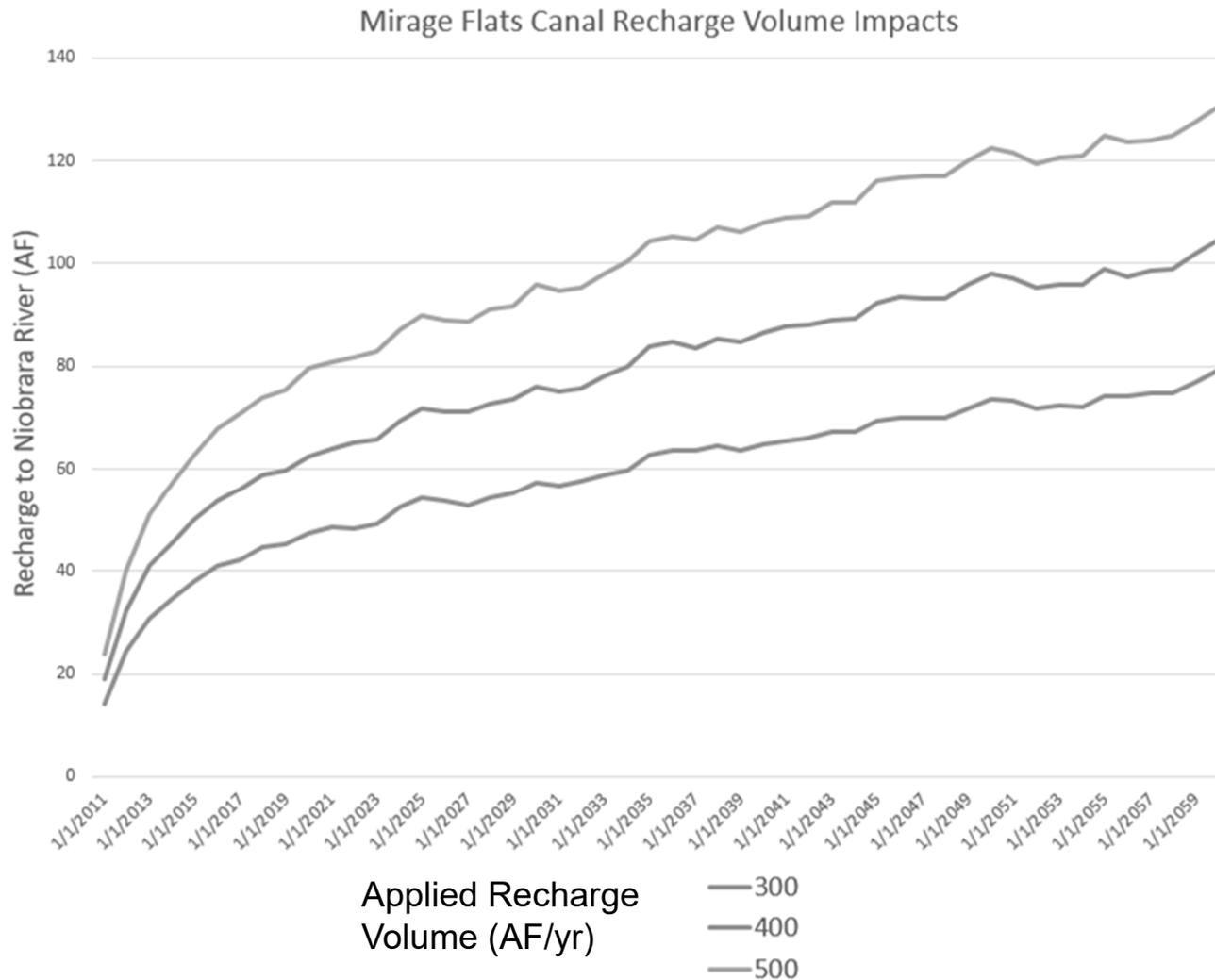
SUSTAIN in Use

Mirage Flats Canal Recharge Project Assessment

- 400 AF/yr
- April, May, September, October
- 50 year projection



SUSTAIN in Use



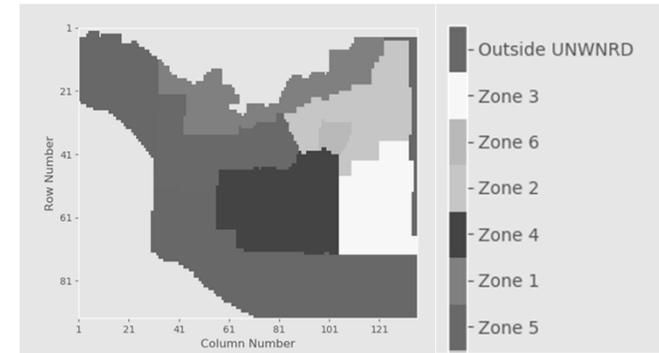
After 50 years

➤ 25% annual recharge reaches stream

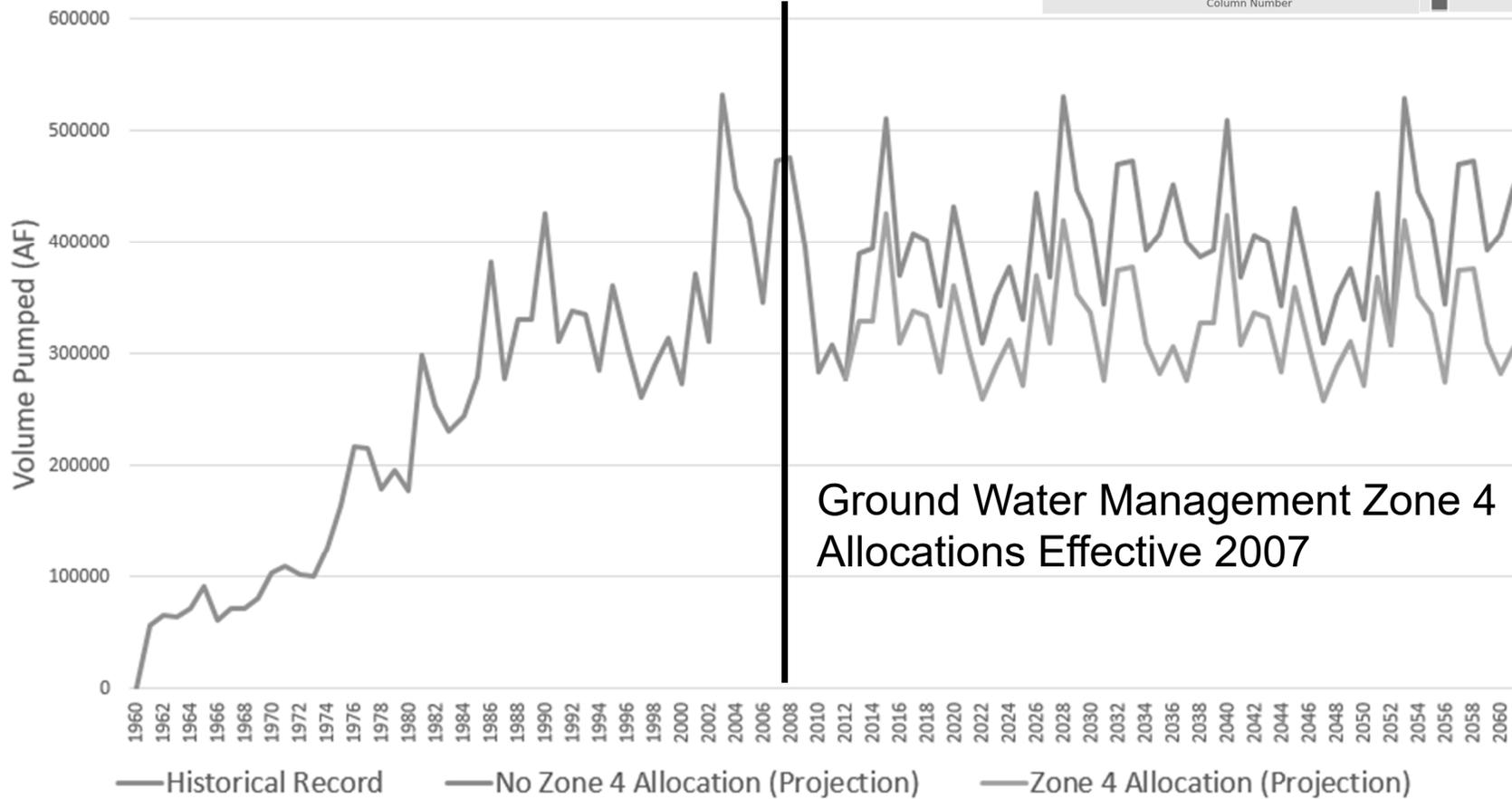
➤ 20% of cumulative recharge reaches stream



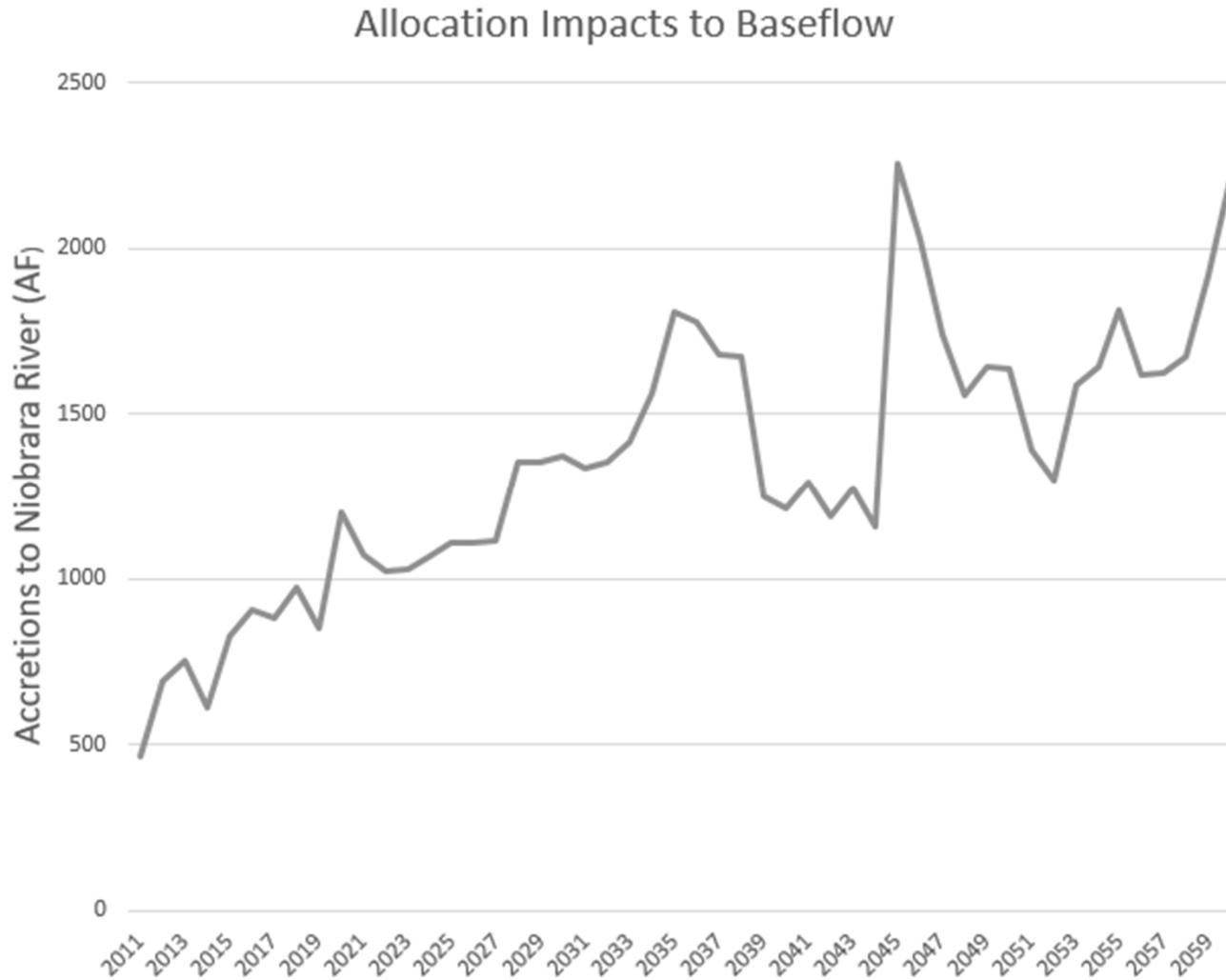
SUSTAIN in Use



Ground Water Use in UNWNRD

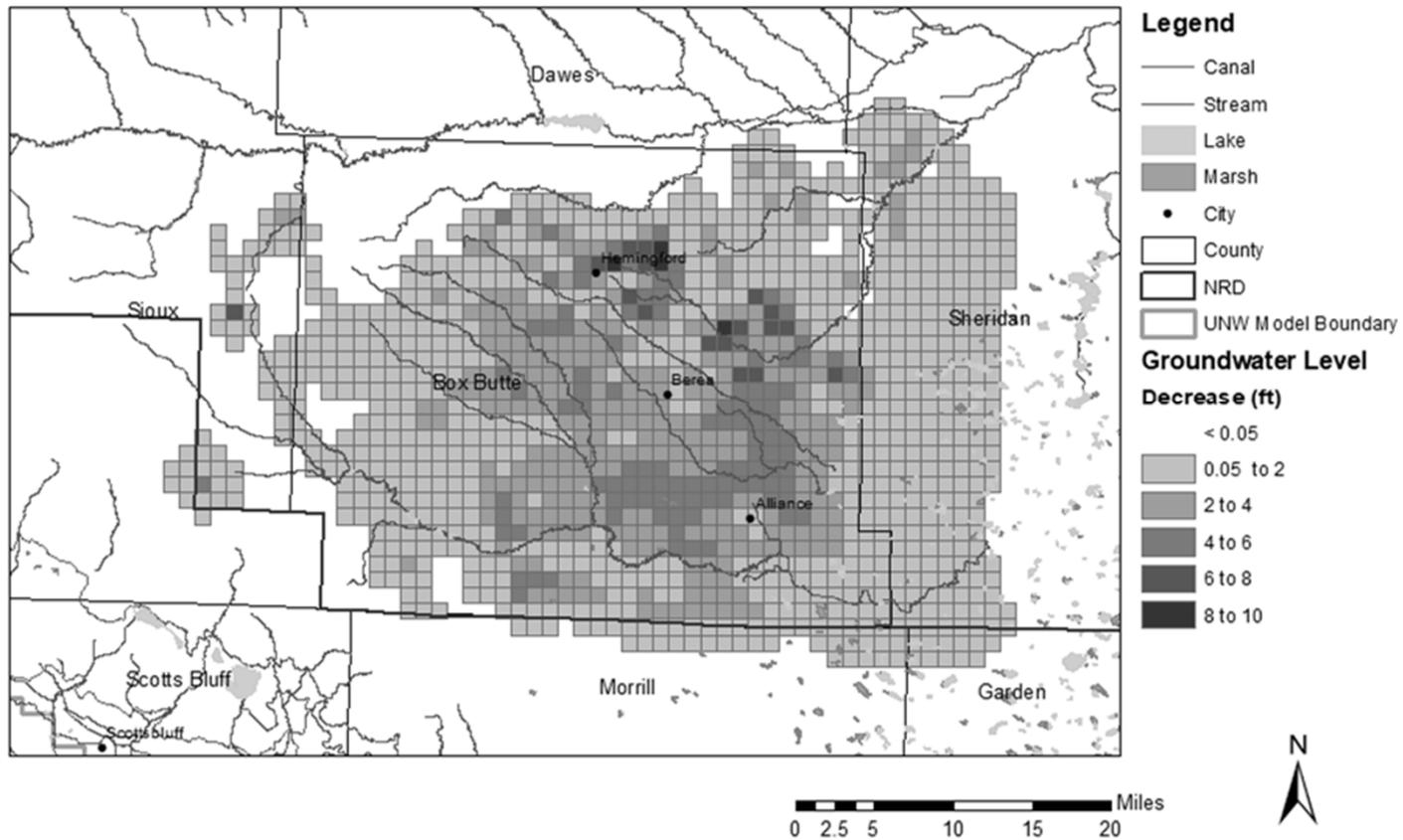


SUSTAIN in Use



SUSTAIN in Use

Decrease in Groundwater Level with No Allocations in Zone 4 through 2060



Questions?

- For questions on existing water rights, water shortages or administration, contact the Bridgeport Field Office
 - 308-262-1930
- For questions on new water rights, contact the Lincoln office
 - 402-471-2363





THANK YOU