Project: Stakeholder Advisory Committee Meeting to Jointly Develop 2nd Increment Integrated Management Plan (IMP) with North Platte NRD (NPNRD) and Nebraska Department of Natural Resources (NeDNR)

Subject: Stakeholder Meeting #3

Date: Thursday, November 15, from 2:00 p.m. – 4:00 p.m.

Location: North Platte Natural Resources District office, 100547 Airport Road, Scottsbluff, Nebraska

1. Welcome

a. Open Meeting Act and Safety Issues

i. John Berge, Manager of North Platte NRD (NPNRD) opened the meeting at 2:00 p.m. MDT. The group did individual introductions

ii. Stephanie White, Facilitator with HDR, went over the agenda (Attachment A) open meetings act which was in the room and safety procedures. A notice of the meeting was published on the Department's website (Attachment B).

2. Administration

a. August Meeting recap, Beth Eckles, NeDNR. Minutes of the August Meeting are posted online.

i. Robust Review results were presented

ii. First increment regulatory actions taken by NPNRD

iii. Group identified topics on which to focus:

1. Economic viability

2. Drought planning.

iv. The August meeting was ended with instructions to the stakeholders to review conjunctive management slides and bring questions to this meeting.

b. Copies of presentations were handed out and are attached to these minutes (Attachment C).

c. Attendance sheet is attached to these minutes (Attachment D)

3. Pivot Conversion on Surface-Water Acres

a. A stakeholder brought to the meeting his thoughts and concerns regarding pivot conversion as it relates to reduced recharge. He was concerned about the senior right holders calling for water sooner in the irrigation season and affecting his economic viability.

i. Another stakeholder mentioned that he doesn't want restrictions on comingled water rights. He suggested working on conjunctive management focus by using water upstream recapturing it downstream and using rain and surface water recharge during wet years to recharge the aquifer. His third point was to go to the Legislature and have them redefine "Fully Appropriated."

ii. Response by a stakeholder was that discussion should be limited to the topics that can be included in an IMP. Other topics not within the purview of this group should be brought up at the appropriate time and occasion.

b. Stephanie reviewed and related the goals of the Upper Platte River Basin-Wide Plan to today's conversations. She provided points from Objective 1.3 which drives new portions of the IMP.

4. Drought Planning

a. John Berge discussed the existing NPNRD drought plan, how it came about and concepts within, and the way in which it came about. The NRD developed the drought plan after the drought of 2012, as a way to outreach, educate and manage impacts of drought. It has four strategies: (1) the education and outreach (2) drought monitoring, (3) understanding and identifying vulnerabilities and (4) implementation. He summarized the main points of the plan for the group.

i. In response to a stakeholder's question that the plan was missing drought's economic impacts, John stated that even though it is not explicit in the plan, it certainly is inferred. There are incentives to producers to try other crops where water quantity is an issue.

5. Total Depletions

a. Jennifer Schellpeper, NeDNR, presented a recap of the robust review results and the new total depletions modeled data. The total depletions model runs start in 1953 when groundwater pumping began and extrapolate out to 2063. New information included results from canal diversion for groundwater recharge. For participation in canal diversions for recharge, the NPNRD worked with all of the irrigation districts that were willing, and have recently begun to enter into longer-term contracts. There are approximately 13 irrigation districts working with NPRND.

i. Discussion occurred around using the canal diversion as a recharge tool. The NRD stated that all appropriations downstream must be met, in addition to target flows at Chapman, before "excess flow" water can be diverted. One factor discussed by a stakeholder is how full the storage reservoirs are early in the season gives the reservoir owners flexibility as far as taking all of their natural flow appropriation, which could result in negotiations with junior appropriators to use that water instead. We would be able to discuss accepting a higher risk, on a temporary basis, that the reservoir wouldn't fill, but we know we would also benefit from the return flows later on, resulting from the recharge projects. Some downstream NRDs have entered into agreements with partners such as CNPPID, NPPD and US Fish and Wildlife Service to store water in Lake McConaughy.

b. The presentation was interrupted to allow Jim Ostdiek to give his presentation, due to the current conversations.

6. Maintaining Integrity of Surface Water Rights

a. Jim Ostdiek, Nebraska Department of Natural Resources, Lincoln Field office, gave a presentation "Surface Water Administration in the State of Nebraska." He reviewed basics about having a surface water right and in times of shortage, the field offices conduct what is known as "water administration." Water administration is shutting off junior rights for the benefit of senior rights.

b. Jim addressed the stakeholder question regarding the accuracy of streamgage measurements. Gages read the water every 15 minutes with a calculation for the stream bottom changes over time. Jim said that they strive for 95% accuracy. When there is adequate surface water supplies for the appropriators, the field office staff manually verify the gages every two weeks, but as water gets shorter, they go out every week or every few days. The streamgage at Lewellen is a key site as that is the inflow to McConaughy, and the flow today is the natural flow coming out of the lake tomorrow. If a canal's natural flow is closed, it may have storage water rights. That water is being released from

a reservoir upstream and is diverted by the canal that has a storage-use appropriation. It may look like there is a lot of water in the river, but it's all designated for someone. We have an accounting program that does the daily accounting of at each site how much of the water is natural flow water, storage water, or the environmental account.

i. A discussion broke out regarding accuracy and measurement of water and the implications. Model accuracy is unknown, but calibrated to 1% accuracy. A well calibrated water model closes the water budget. The modelers preserve the mass balance of water, no matter the form, as in precipitation or streamflow, etc.

7. Total Depletions, part two

a. Jennifer continued, by saying the models not only look at the number of acres, but at the crops being grown, because that information changes the consumptive use amount. We also have municipal and industrial uses coming on line. After 2009, the amount of water used for irrigation from groundwater pumping is actual individual well meter data.

b. In regards to the comingled acres being accounted for in stream depletion calculations, The Platte Basin Coalition Committee has not agreed to take this on. NeDNR and the NRDs are working in phases on what we need to have for the integrated management plans. Assessing the impact of comingled acres (where groundwater and surface water are used on the same land) is a project that will be addressed in the future.

c. In regards to the reduction of industrial uses such as the reduction in sugar beet factories and packing plants, they represent about 1% of all water use so it is not discernable on the graph, but it is included in the data input into the model.

d. Jen provided the numbers from the model, comparing the total depletions to the robust review. The purpose of this review is to allow stakeholders to view lag of the total depletions beginning in 1954, rather than 1997, as shown in the robust review. The management actions are included in this total depletions presentation to show the positive impacts extrapolated into the future. This analysis was done so that the group might consider what becoming a fully appropriated condition might take.

e. The question posed to the group was where they want to go from here and what the goals should be in the IMP towards the Fully Appropriated status. Common themes were:

i. To try to do more for recharge versus putting more water in the river.

ii. Funding sources and limitations of funding were brought up.

iii. Maintaining progress and making more progress toward a Fully Appropriated status were recognized as goals but also as difficulties.

iv. Additional opinions were that drought management and canal recharge should be added to the IMP.

v. The board members voiced an opinion of wanting options in the IMP to take action when opportunity arises.

vi. A suggestion was introduced to working with CNPPID in regards to recharge and calls on water.

vii. Education and water-banking were suggested as items to include in the IMP.

8. Conservation Study

a. Thad Kuntz, Adaptive Resources, went through the slides on the Conservation Measures Study. In comparing flood irrigation versus pivot irrigation since the 1950s, pivot irrigation has increased. Flood irrigation has decreased from 100% of all acres being flood irrigated to 50% in 2013. Increased efficiency corresponded with less baseflow in streams. With higher efficiency the surface water appropriators are diverting less water. Stakeholders added that their peak irrigation demand is significantly reduced. Another stakeholder added that in 2003, after the drought of 2002, their canal losses were 15% higher. Lesser surface water diversions would mean water not diverted remains in the reservoirs. A point was made that the length of the irrigation season has gotten shorter, ending sooner, due to the type of crops grown. This also increases the volume of stored water because typically all the water left at the end of the season water is from storage. Some of these scenarios could affect the frequency at which excess flows are available for canal recharge projects.

9. Public Comment – None

10. Meeting was adjourned at 5:00 pm

11. Next Meeting: January 17, 2019

12. Attachments to Minutes:

Attachment A- Agenda
Attachment B- Affidavit of Publication of Notice of Meeting
Attachment C- Copies of all presentations
Attachment D- Attendance sheet

Agenda

Project:	2nd Increment Stakeholder Process for North Platte NRD Integrated Management Plan (IMP)
Subject:	Stakeholder Meeting #3
Date:	Thursday, November 15, 2018 from 2:00 p.m. – 4:00 p.m.
Location:	North Platte Natural Resources District Office 100547 Airport Road, Scottsbluff, NE

Agenda:

1. Welcome
2. Administration
    a. August meeting recap
3. Draft Basin-Wide Plan
    a. Goals Beyond 1997 Levels
    b. Drought Planning
    c. Maintaining Economic Viability
    d. Maintaining Integrity of Surface Water Rights
4. Surface Water Law (Provisions for Upstream Use)
5. Pivot Conversion on Surface-Water Acres
6. Public Comment

Next Meeting: January 17, 2019

When:
Thursday, November 15, 2018 - 2:00pm to 4:00pm

The North Platte Natural Resources District and the Nebraska Department of Natural Resources will hold a Stakeholders Advisory Committee meeting on November 16, 2018, beginning at 2:00 PM (Mountain Time) at the North Platte Natural Resources District office, 100547 Airport Road, Scottsbluff, Nebraska. The purpose of the meeting is to discuss and develop goals and objectives to support second increment of the jointly developed integrated management plan. The public is welcomed to attend this stakeholder meeting; there will be opportunity for public comment towards the end of the meeting.

Individuals with disabilities may request auxiliary aids and services necessary for participation by contacting Beth Eckles at the Nebraska Department of Natural Resources, telephone 402-471-0661 or by email at beth.eckles@nebraska.gov, before 5 pm Central Time, at least eight days prior to the meeting.

Where:
North Platte Natural Resources District office, 100547 Airport Road, Scottsbluff, Nebraska

NPNRD IMP

Meeting 3

NORTH PLATTE
Natural Resources District

NEBRASKA
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TODAY'S AGENDA

- Welcome
- Administration
  - August meeting recap
- Draft Basin-Wide Plan
  - Goals Beyond 1997 Levels
  - Maintaining Economic Viability
  - Maintaining Integrity of Surface Water Rights
  - Drought Planning
  - Total Depletions
- Surface Water Law (Provisions for Upstream Use)
- Pivot Conversion on Surface-Water Acres
- Conjunctive Management
- Public Comment

WELCOME

- Open meeting notice
- Safety & logistics
- Introductions

ADMINISTRATION

August meeting recap

August Meeting Recap

- Robust Review Results
  - Goals of the analysis
  - Maintain progress made
- First Increment Regulatory and Incentive Actions by NPNRD
- Prioritized topics of most importance
- Homework for the group

QUESTIONS / REFLECTIONS

DRAFT BASIN-WIDE PLAN

Goals Beyond 1997 Levels
Maintaining Economic Viability
Maintaining Integrity of Surface Water Rights
Drought Planning
Total Depletions

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Natural Resources District

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Basin-wide Plan Goals and Objectives (Draft)

Goals

1. Incrementally achieve and sustain a fully appropriated condition, while maintaining economic viability, social and environment health, safety, and welfare of the basin
2. Prevent or mitigate human-induced reductions in the flow of a river of stream that would cause non-compliance with an interstate compact or decree or other formal state contract or agreement
3. Partner with municipalities and industries to maximize conservation and water use efficiency
4. Work cooperatively to identify and investigate disputes between groundwater users and surface water appropriators and, if determined appropriate, implement management solutions to address such issues
5. Keep the Upper Platte River Basin-Wide Plan current and keep stakeholders informed

Goal 1: **Incrementally achieve and sustain a fully appropriated condition**, while maintaining **economic viability**, **social and environment health, safety, and welfare of the basin**

1.1 Maintain **previous increment mitigation** progress

1.2 **Offset impacts of streamflow depletion** to (A) surface water appropriations and (B) water wells constructed in aquifers dependent on recharge from streamflow **to the extent those depletions are due to water use initiated after July 1, 1997**

1.3 **Make progress toward a fully appropriated condition**

1.4 **Conduct technical analyses** to support and evaluate effectiveness of plan and adequacy in sustaining progress toward a fully appropriated level of water use

1.5 **Use available funds and actively pursue new funding opportunities** to cost effectively offset depletions, as well as to develop, maintain and update data and analytical tools needed to implement this plan

1.6 **Update and continue implementing IMPs** in each Platte River Basin NRD

Goal 1: **Incrementally achieve and sustain a fully appropriated condition**, while maintaining **economic viability**, **social and environment health, safety, and welfare of the basin**

1.3 **Make progress toward a fully appropriated condition**

- 1.3.1: Understand the **economic impacts of supply variability** on water users
- 1.3.2: Assess short- and long- term basin **water supply and demand**
- 1.3.3: **Explore and implement potential measures to mitigate impacts** (hydrologic and economic) of basin supply variability **due to human-made depletions** on surface water and groundwater users
- 1.3.4: Develop a basin **drought contingency plan** for management of supplies during times of shortage

Goal 1: **Incrementally achieve and sustain a fully appropriated condition**, while maintaining **economic viability**, **social and environment health, safety, and welfare of the basin**

1.3.4: Develop a **basin drought contingency plan** for management of supplies during times of shortage.

- 1.3.4.1: Develop a **basin drought monitoring protocol** for defining and determining drought conditions.
- 1.3.4.2: Identify potential basin-wide **mitigation and response actions to drought conditions and opportunities for cooperation** across the basin (that is, management of storage water).
- 1.3.4.3: Conduct a **drought simulation workshop with NeDNR, NRDs, and water users** to assist in developing and testing of protocols during a drought.
- 1.3.4.4: Identify **roles for administering and implementing** basin drought contingency plan.

Goal 2: **Prevent or mitigate human-induced reductions** in the flow of a river or stream **that would cause non-compliance** with an interstate compact or decree or other formal state contract or agreement

2.1 **Prevent human-induced streamflow depletions that would cause non-compliance** by Nebraska with the Nebraska New Depletion Plan included within the Platte River Recovery Implementation Program, for as long as the Program exists

Goal 3: **Partner with municipalities and industries to maximize conservation and water use efficiency**

3.1 Continue to **collect data on water use and existing conservation plans** of municipalities and industries within the basin

3.2 Invite municipalities and industries to the **annual meetings**

3.3 **Establish baseline water use levels** for each municipal and industrial user by **January 1, 2026**

Goal 4: Work cooperatively to **identify and investigate disputes between groundwater users and surface water appropriators** and, if determined appropriate, implement management solutions to address such issues

4.1 **Identify disputes** between groundwater users and surface water appropriators

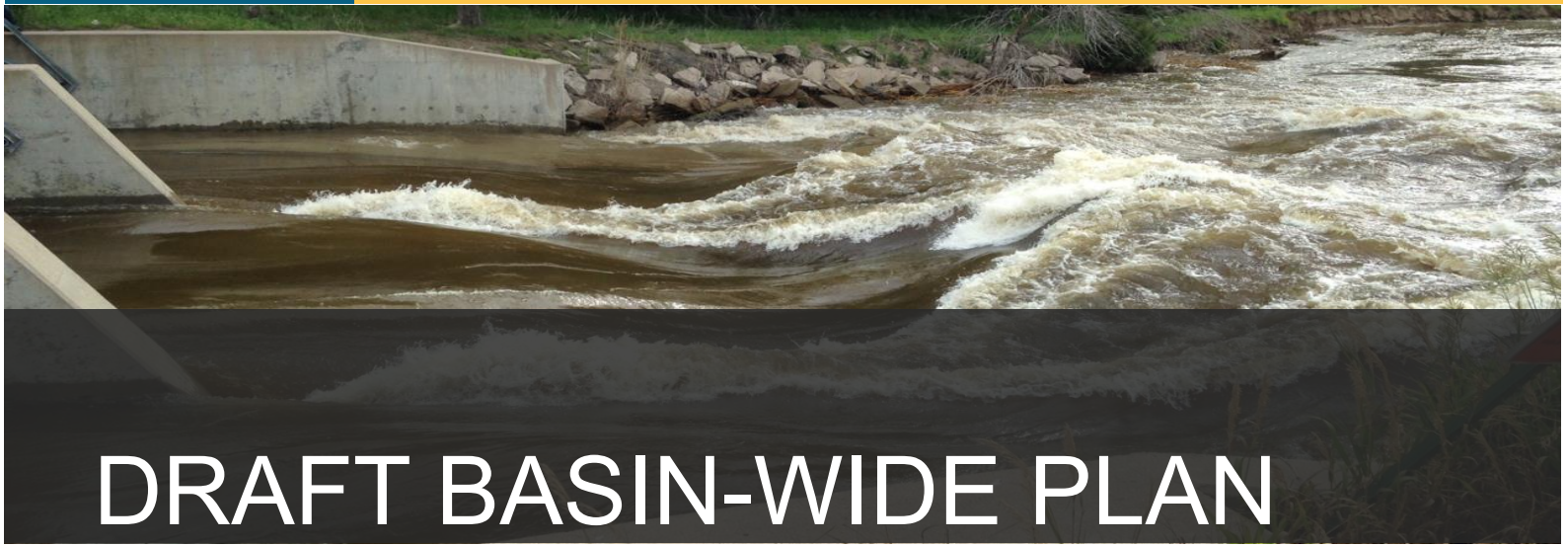
4.2 **Investigate and address issues** between groundwater users and surface water appropriators, based on investigation results

Goal 5: **Keep the Upper Platte River Basin-Wide Plan current and keep stakeholders informed**

5.1 **Meet at least annually** to review progress toward achieving the goals and objectives of this Upper Platte River Basin-Wide Plan and those portions of the individual NRD IMPs that implement this plan

5.2 **Improve information sharing** with interested stakeholders

5.3 **Conduct planning for subsequent increments** of the plan, as necessary



DRAFT BASIN-WIDE PLAN

Drought Planning

NORTH PLATTE
Natural Resources District

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Drought Planning in the North Platte NRD

- The Board of Directors of the North Platte NRD believes that planning and preparing for drought is important to the long-term well-being of the District as a whole.
- In addition, drought management will be a key expectation and component of second-increment integrated management plans at the District and basin levels.
- The North Platte NRD will focus on the following key areas in implementing drought-mitigation and drought-response strategies:
  - **Education**
  - **Drought Monitoring**
  - **Impacts and Vulnerabilities**
  - **Drought Strategy & Implementation**

Education

Educate the entire community on droughts and its effects, emergency management, and sustainable conservation practices.

- Include youth and adult audiences.
- Leverage existing partnerships and resources to communicate drought information.
- Provide information on District website.

Drought Monitoring

Monitor meteorologic, hydrologic, and other tools to assess current and projected conditions for the region

- Develop informational materials and recommendations to public and decision-makers based on information assessed.

Impacts and Vulnerabilities

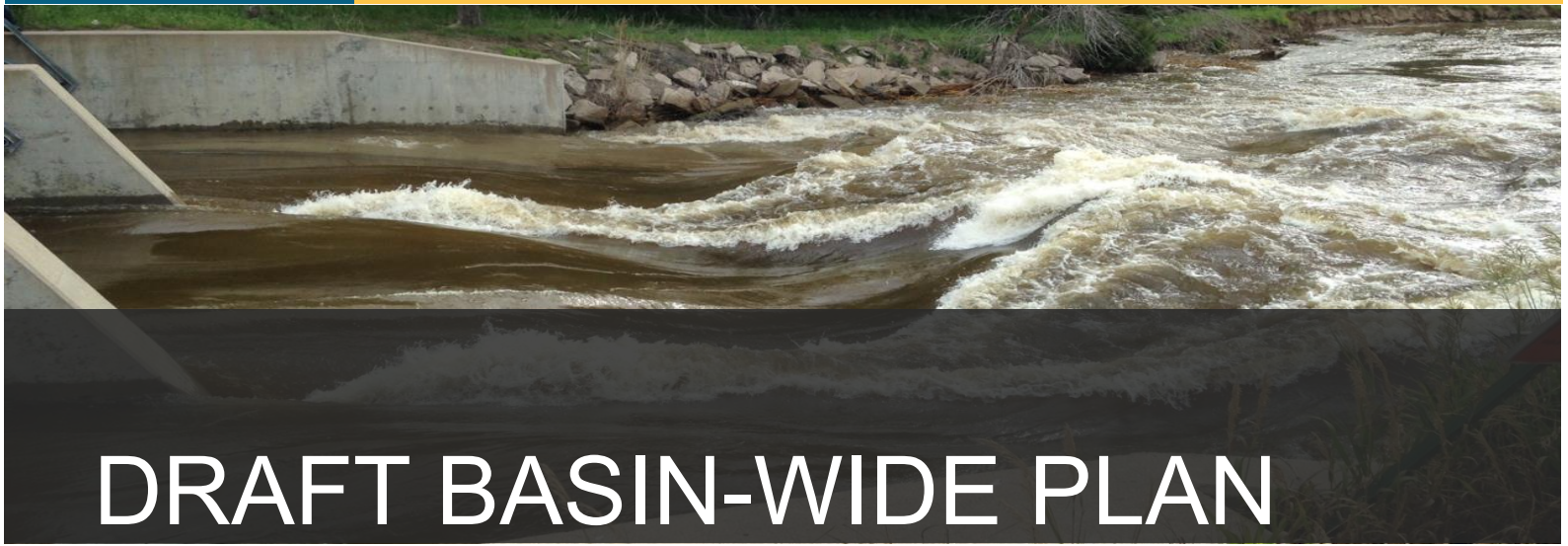
- Municipal water use
  - Encourage municipalities within the NPNRD to restructure water rates to incentivize conservation and to implement water use restrictions, with enforcement provisions, in times of drought.
- Preparedness
  - Engage in community emergency-preparedness activities to determine strengths and weaknesses of existing emergency-response plans.
- Water quality
  - Maintain or improve surface water and groundwater quality during drought.

Impacts and Vulnerabilities (continued)

- Water quantity
  - Identify strategies to address streamflow variability.
  - Consider further temporary reductions in water use during severe, multi-year droughts, keyed to the geography, magnitude, and timing of shortages in the local and regional hydrologic system (e.g., reduced groundwater levels).
- Vulnerability: Soil health and land cover
  - Educate NPNRD communities on maintaining and improving soil health during drought.
  - Implement and promote cost-share programs targeting soil-health measures that increase drought resilience.

Drought Strategy Implementation

- Establish and foster the local and regional partnerships needed to implement drought-management strategies.
- Seek out potential funding opportunities for drought-strategy implementation.
- Adapt management strategies to reflect lessons learned from drought situations as they occur



DRAFT BASIN-WIDE PLAN

Total Depletions

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ROBUST REVIEW – UPDATE & TOTAL DEPLETIONS

NPNRD Results

NPNRD IMP Stakeholder Meeting #3
November 15, 2018

NORTH PLATTE
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Robust Review Goals

- Complete monitoring activities outlined in the current IMP
- Assess progress on first increment goals and objectives
- Provide for more informed discussion of second increment objectives with the NPNRD IMP stakeholders

Robust Review Model Simulation Setup

WWUMM Area Assumptions

- Used historical calibrated version of the groundwater and watershed models (Run 028/LU004/NIR set 2 for GW only lands)
- Model is simulated from 1953 – 2063
- Irrigation pumping repeats 2009-2013 in the baseline simulation and 1997 acres and crop types in the “1997” simulation with 2009-2013 weather repeated into the future
- Municipal and Industrial baseline simulation estimates use through time to 2013 and “1997” simulation is held constant
- Surface water and commingled acres remain constant in the baseline and 1997 simulations to cancel out commingled effects

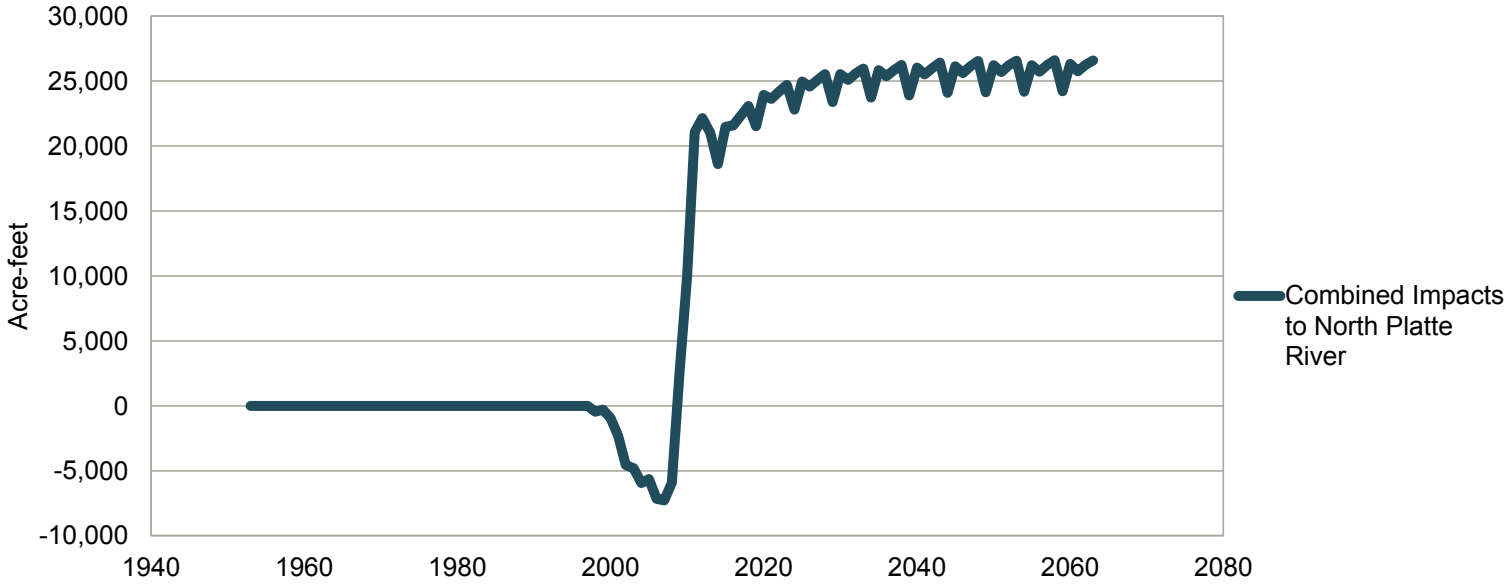
POST-1997 SUMMARY

It is the first step toward reaching a fully appropriated condition

- Positive values = increases to streamflow
- Negative values = decreases to streamflow

NPNRD Results

Total impact to NPNRD, from the Post-1997 **Changes** and Canal Recharge Event



NPNRD Summary

Post-1997 Estimates

NPNRD			
Year	**2019**	**2029**	**50-year**
Current IMP	-7,514		-8,000
Updated Estimate	21,500	23,400	26,600

- All values in acre-feet/year

- Positive values = increases to streamflow
- Negative values = decreases to streamflow

TOTAL DEPLETIONS

Indicates what more may need to done

NPNRD Inputs

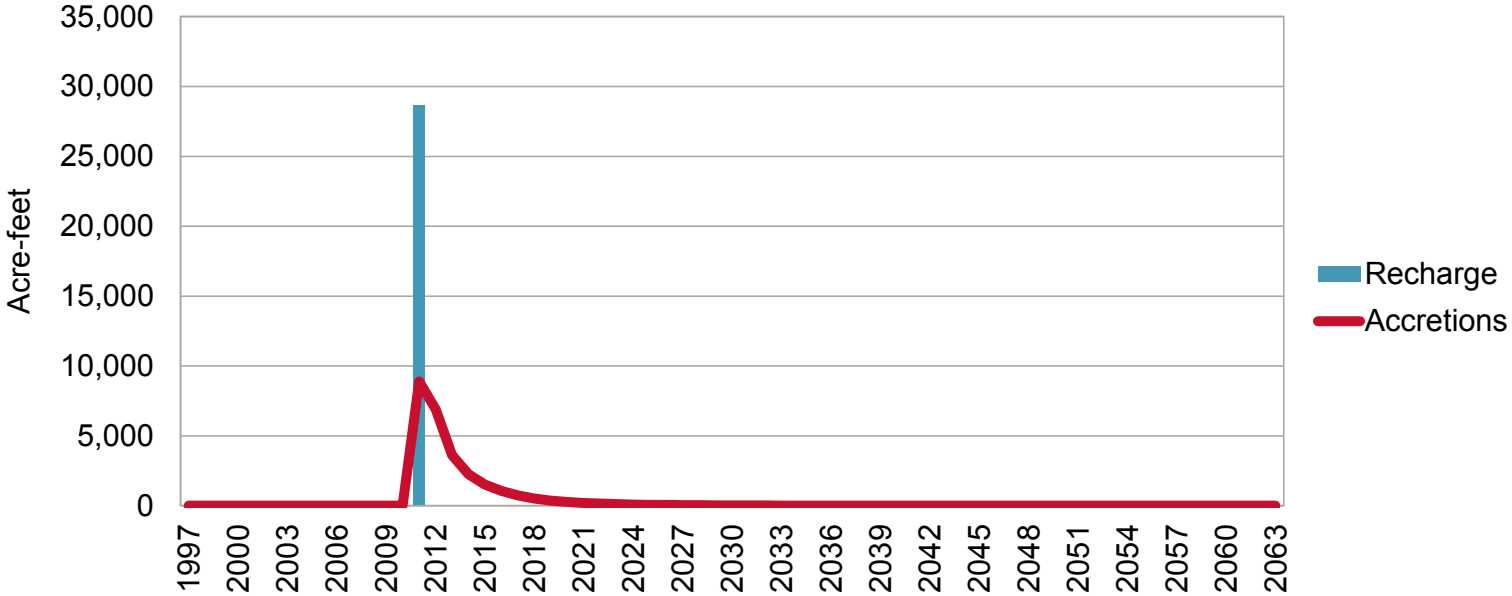
(Groundwater Recharge)

Excess Flows Diverted and Recharged into Canals in NPNRD

NPNRD	Acre-Feet of Excess Flow	
	Diversion	Recharge
2011	**61,260**	**28,739**

NPNRD

Recharge and accretions from excess flow projects



NPNRD Inputs for Total Depletions

(Change in acres)

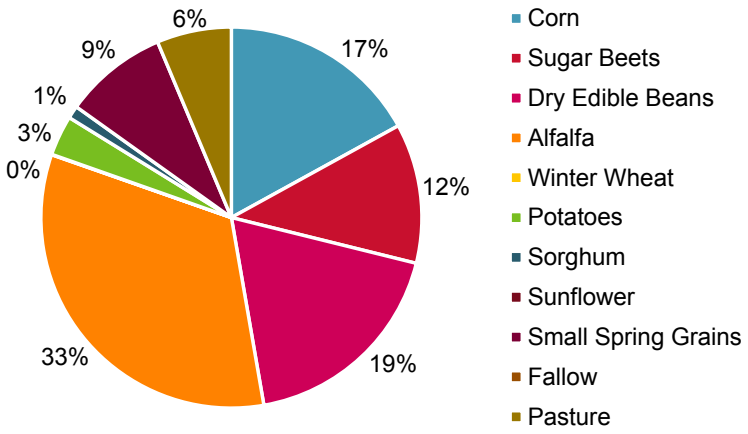
Change in groundwater-only irrigated acres 1953-2013

NPNRD	Total change (1953 to 2013)
District-Wide	**123,000 acres**

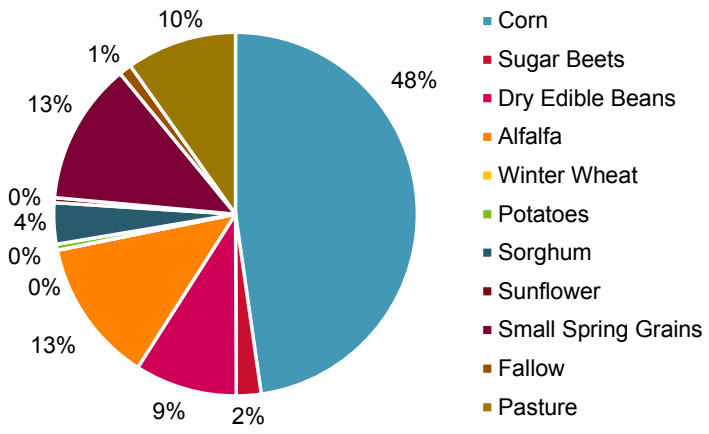
NPNRD Inputs
(Changes in crop type, district-wide)

Change in groundwater-only irrigated acre crop types 1953-2013

1953
8,000 GW-only irrigated acres



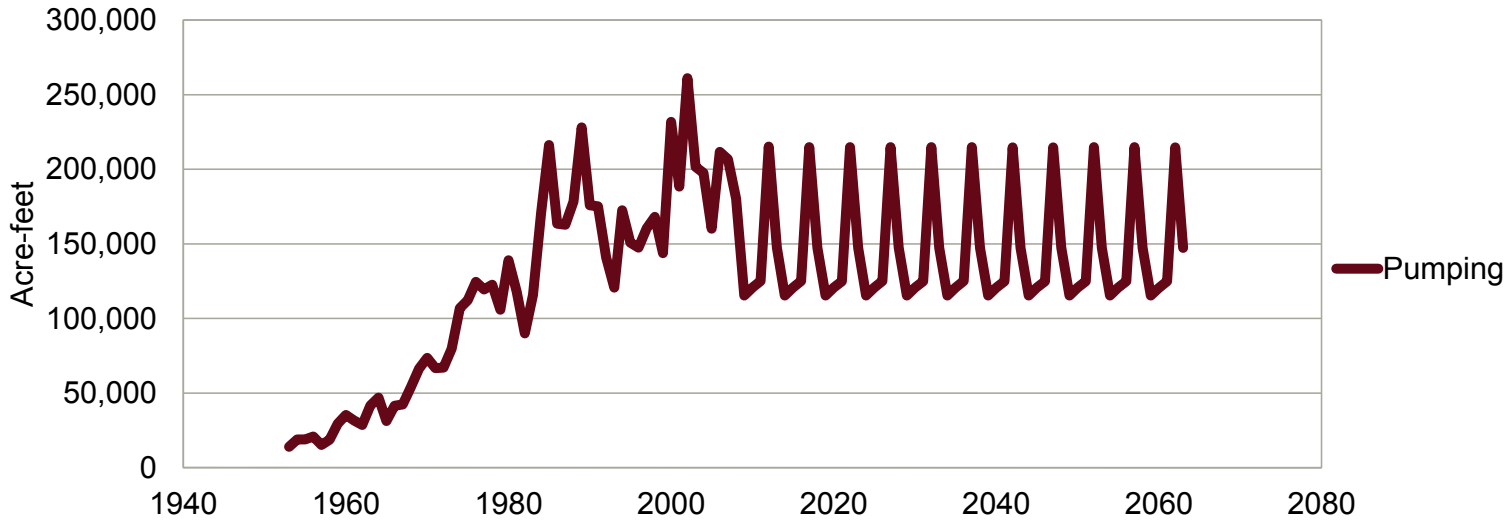
2013
131,100 GW-only irrigated acres



NPNRD Inputs

District-Wide

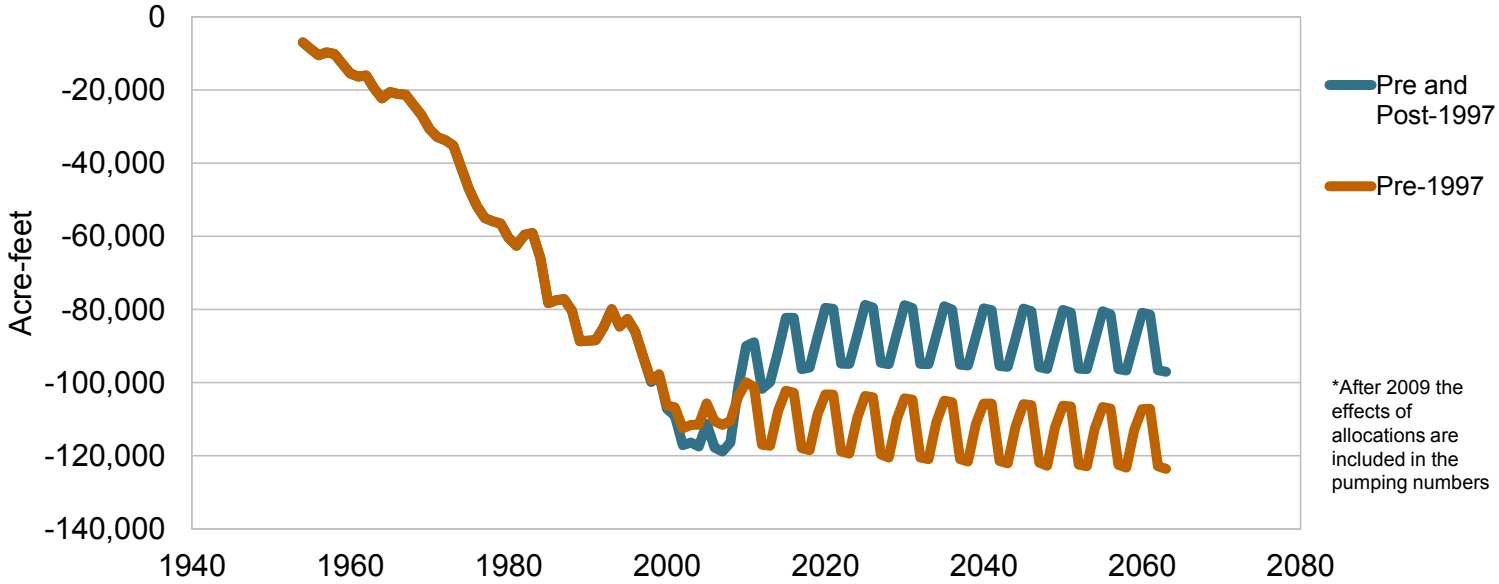
Groundwater-only irrigation pumping (123,000 acres) AND municipal/industrial uses



NPNRD

- Positive values = increases to streamflow
- Negative values = decreases to streamflow

Total impact to streamflow from pumping
Groundwater-only irrigated acres and municipal/industrial uses



Total Depletions

Indicates what more needs to be done

Post-1997

Is the first step toward reaching a fully appropriated condition

NEBRASKA

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301 Centennial Mall South, 4th Floor
PO Box 94676
Lincoln, NE 68509-4676
402-471-2366

SURFACE WATER LAW

Provisions for Upstream use

Jim Ostdiek
Lincoln Field Office Supervisor
Nebraska Department of Natural Resources

NORTH PLATTE
Natural Resources District

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Outline

- **Water Administration Division**

- Permitting

- Water Administration Process

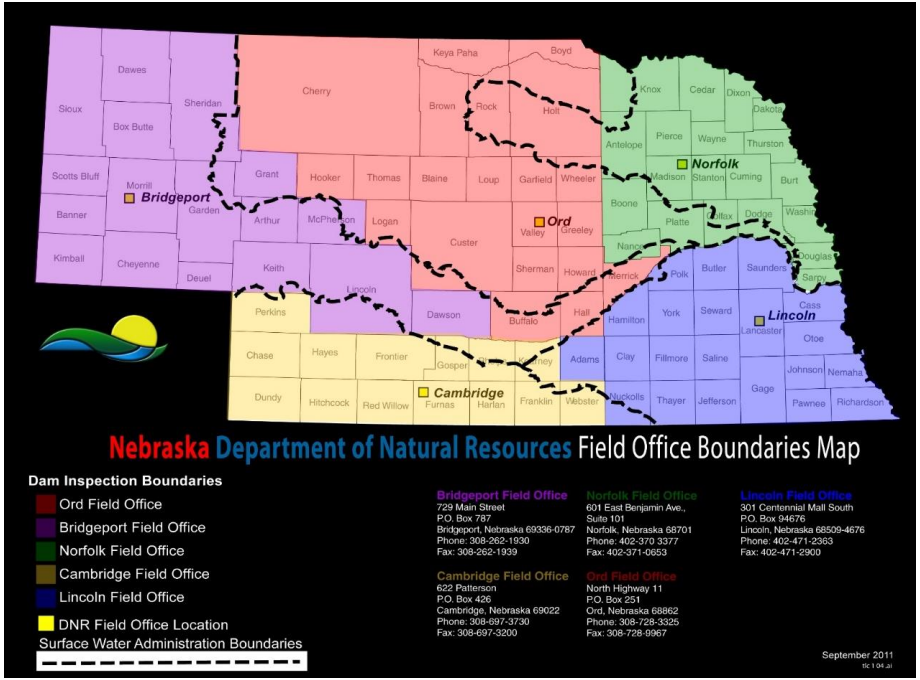
- Differences Between Groundwater And Surface Water

NeDNR Water Administration Division

The Water Administration Division enforces state statutes to ensure the orderly distribution of surface water in Nebraska, and collects data related to the Department's mission.

- Jeremy Gehle – Division Manager
- Twenty-eight full time staff members
- Five field offices, located in Bridgeport, Cambridge, Lincoln, Norfolk, and Ord.

NeDNR Water Administration Division



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NeDNR Water Administration Division

Responsibilities

Water Administration

- Compacts and Decrees
- Local Shortages
- Enforcement
- Adjudication

Data Collection

- Streamgaging
- Survey
- Dam Safety Inspections
- Water Use Reporting
- Monitoring – Pump Checks

Outline

- Water Administration Division

- Permitting

- Water Administration Process

- Differences Between Groundwater And Surface Water

Permitting

Surface Water

- The right to divert **unappropriated** waters of every natural stream for beneficial use shall never be denied except when such denial is demanded by the public interest.
  - Nebraska State Constitution Article XV-6
- Water for the purposes of irrigation in the State of Nebraska is hereby declared a natural want
  - NRS § 46-201
- Water …is… declared to be the property of the public…, subject to appropriation
  - NRS § 46-202
- As between appropriators, the one first in time is first in right
  - NRS § 46-203

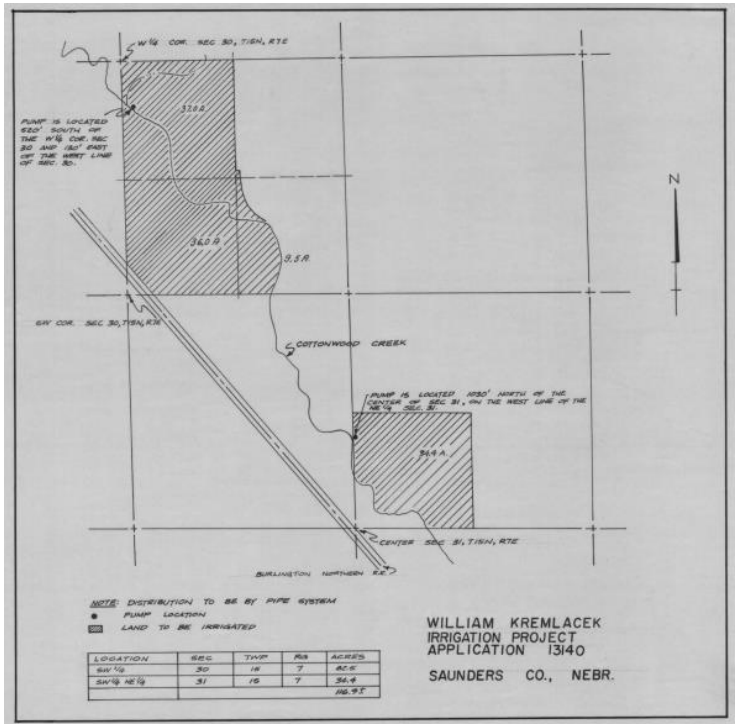
Permitting

Application to DNR Includes:

- Priority Date: First in Time – First in Right
- Type of Use: Irrigation, Storage, Municipal, Recharge, Etc.
- Location of Use
  - Map of Acres Irrigated
  - Point of Diversion – Downstream Order # Grant
  - Rate of Diversion based on 1 CFS (450 GPM) per 70 acres grant.

Permitting

Project Map



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Permitting

Application Approval

- Source
- Use
- Priority Date
- Location – Map
- Construction
- Beneficial use
- Measuring device
- Annual Reports

DEPARTMENT OF NATURAL RESOURCES

Application Approval

Water Division 1-D

This is to certify that application A-17977 for a permit to divert water has been examined.

Following consultation with the Nebraska Game and Parks Commission, the Department finds the project will not jeopardize endangered or threatened species. Application A-17977 is hereby APPROVED subject to the following limitations, conditions and notice:

1. The source of water is Lincoln Creek.
2. The water shall be used for irrigation purposes.
3. The priority date is April 23, 2001.
4. Map No. 15970 shows the lands proposed for irrigation under this permit.
5. Construction of the diversion works must begin by November 24, 2001. The Applicant must proceed diligently with the construction unless interrupted by some unavoidable and natural cause.
6. Construction of the project must be completed by April 24, 2002.
7. The amount of water shall be limited to one-seventieth (1/70) of a cubic foot per second for each acre of land irrigated by September 1, 2003.
8. A measuring device must be installed.
9. Annual reports may be required as provided by §§ 46-261 and 61-206, R.R.S., 1943, as amended.
10. Use of water under A-17977 may be denied in order of priority when water supplies do not meet the demands of downstream appropriators.

Outline

- Water Administration Division

- Permitting

- **Water Administration Process**

- Differences Between Groundwater And Surface Water

Water Administration Process

- Local Administration
  - *When Natural Flow Shortages Occur*
  - First in time = First in Right
- Enforcement
- Under Nebraska law, anyone who uses, or allows to be used, surface water for any purpose, without authority from the DNR shall, if convicted, be guilty of a Class II misdemeanor.
  - This includes, irrigating without an approved permit, violating a closing notice, not adhering to the conditions of the approved application.
- DNR can also “Lock” pumps and in certain circumstances cancel appropriations

Water Administration Process

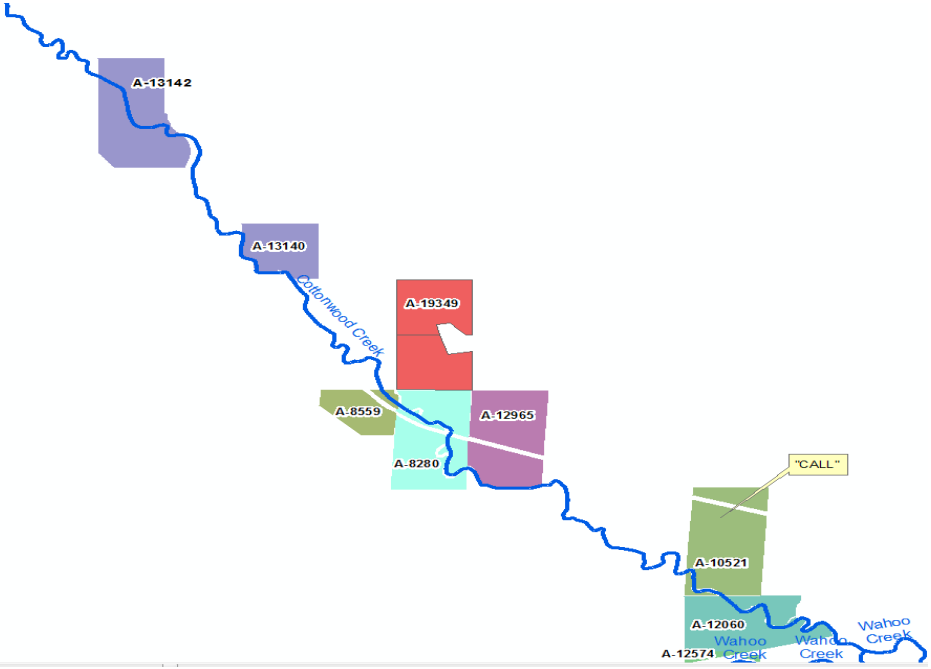
1. Appropriator runs short of Natural Flow

2. NeDNR Staff are sent to the site to make a streamflow measurement to verify shortage.
   - If sufficient water was measured at the point of the call, no action is taken. It is the duty of the appropriator to make use of the available supply
   - If there is NOT enough water at the point of the call, Field Office Personnel begin reconnaissance of the basin upstream of the point of call.

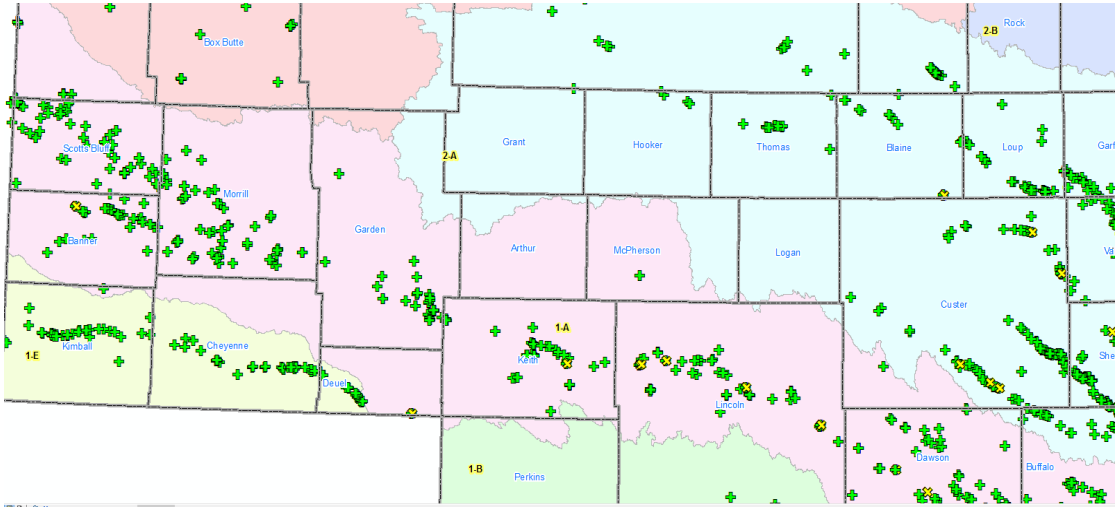
Water Administration Process

3. Take Action
   - Close all storage appropriations above the shortage
   - Begin closing junior appropriators upstream from the shortage in reverse order of priority to ensure the permitted grant is available to the senior appropriator
   - Check on the rate of diversion of senior appropriators and set pumping schedules/post canals if they are pumping at a rate greater than their grant.

Administration for a Call



Platte Basin Appropriations



Water Administration Process

4. Monitor
   - Monitor daily the shortage to ensure that no more than the permitted grant is allowed to pass.
   - Monitor diversions upstream and downstream from the shortage
   - Stream gages
   - Weather
   - As excess water becomes available, the next oldest appropriations are opened, and allowed to pump.
   - When and if natural flow is sufficient, then all junior appropriators and storage appropriations will be opened

Outline

- Water Administration Division

- Permitting

- Water Administration Process

- Differences Between Groundwater And Surface Water

Differences between Groundwater and Surface Water?

Groundwater - NRD

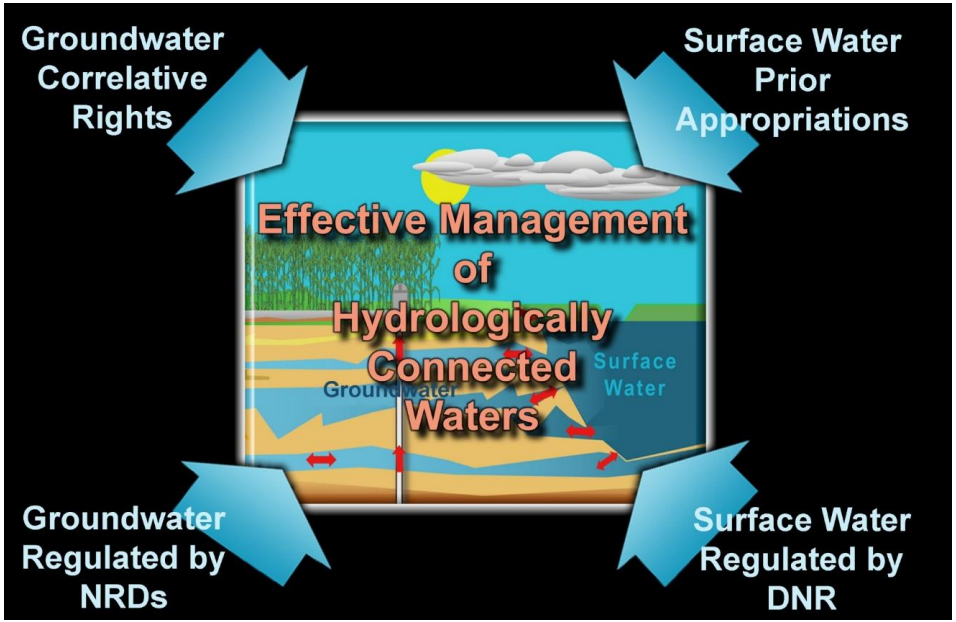
- Correlative Rights Doctrine - “Rule of Reasonable Use” - Share
- Supply dependent on aquifer storage capacity
- If supply is insufficient, all users can be put on an allocation
- Certified Acres

Surface Water - NeDNR

- Prior Appropriation Doctrine - “First-in-time, First-in-Right”
- Supply dependent upon snowpack, precipitation and Groundwater base flow
- If the supply is insufficient, junior appropriators are denied water.
- “Approved Map” – Sets limit on Acres, Location, and the “Grant”
- Adjudication procedures for cancelation – “Use it or Lose it”

Comparison of Water Management

	Groundwater	Surface Water
Management Doctrine	Correlative Rights (Rule of reasonable use)	Prior Appropriation (First in time, first in right)
Supply is dependent on	Aquifer storage capacity	Precipitation & base flow
What if there is low supply?	Allocations	Junior appropriators denied water
Irrigation area approval	NRD Certified Acres	Approved map and “Grant”
Cancellation of irrigation use	None	Adjudication procedures for 5 years of non-use: “Use it or lose it”


Groundwater Correlative Rights
Surface Water Prior Appropriations
Effective Management of Hydrologically Connected Waters
Groundwater
Surface Water
Groundwater Regulated by NRDs
Surface Water Regulated by DNR

PIVOT CONVERSIONS ON SURFACE-WATER ACRES

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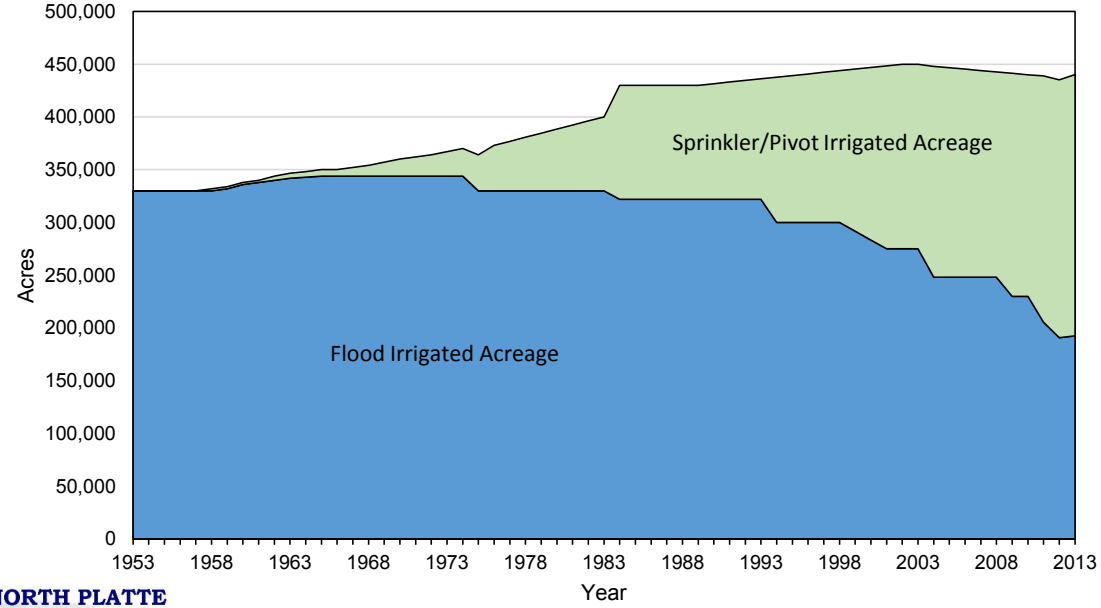
NPNRD Irrigated Acres Dataset

- The WWUM Modeling has created a detailed irrigated acreage assessment through 2013 for all water sources within NPNRD
  - Surface Water
  - Ground Water
  - Commingled
- Captured within this dataset is the irrigation method
  - Flood Irrigation and Center Pivot Sprinkler Irrigation
- Over time the flood irrigation technology has been replaced by center pivot sprinkler technology
- This change in technology effects the streamflow as the irrigation methods become more efficient which reduces diversions and irrigation inefficiency recharge

NPNRD Annual Flood Irrigated Acres vs Center Pivot Sprinkler Irrigated Acres – 1953 to 2013



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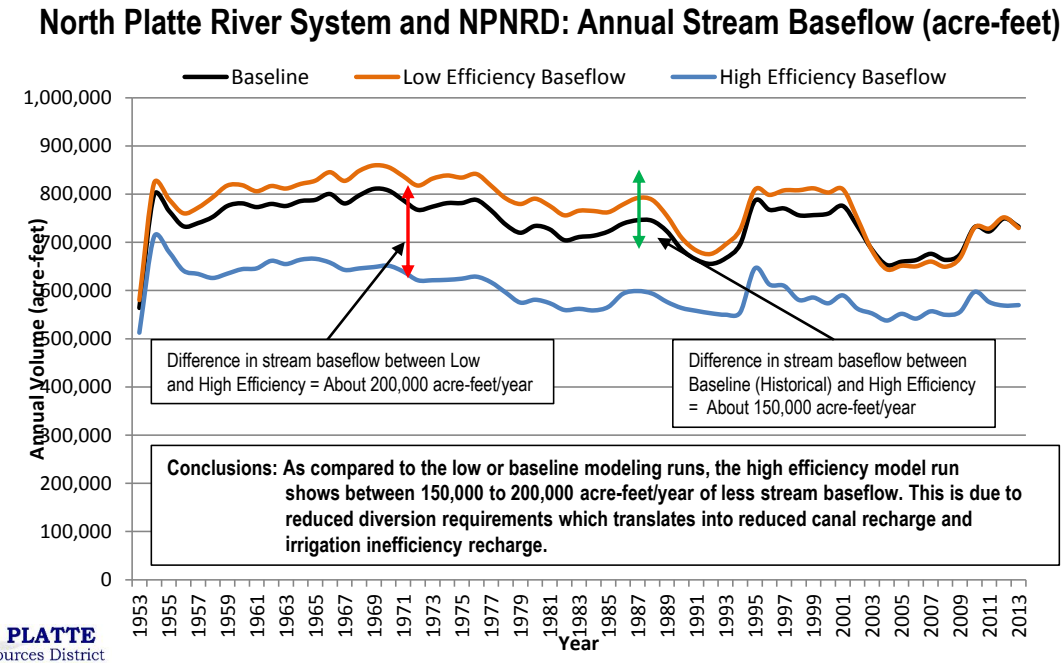
Conservation Measures Study

- Joint study between the 5 Upper Platte Basin NRDs and DNR
- Phase I Study - https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/upper-platte/publications/20140317_PlatteConsStudy_Flatwater_Final.pdf
  - Define and then narrow the list of conservation practices to those with the greatest potential impact on the water budget
    - This lead to 2 conservation measures for further study – irrigation efficiency and tillage practices
- Phase II Study
  - Estimate the effects of irrigation efficiency and tillage practices on stream baseflow
    - Historic Baseline
    - Flood or Low Efficiency Irrigation / 1950's tillage practices
    - Center Pivot Sprinkler or High Efficiency Irrigation / minimum or no-tillage practices

Conservation Measures Study

- Irrigation Efficiency Analysis
  - Three model runs were compared:
    - Baseline Model – No modifications, irrigation efficiencies reflect historic values and practices.
    - Low Irrigation Efficiency – All irrigated lands irrigation efficiencies were set at flood/gravity or low-efficiency center pivot sprinkler irrigation of 50% or 60% respectively.
    - High Irrigation Efficiency - All irrigated lands irrigation efficiencies were set at center pivot sprinkler efficiency of 95%.

Conservation Measures Study



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CONJUNCTIVE MANAGEMENT

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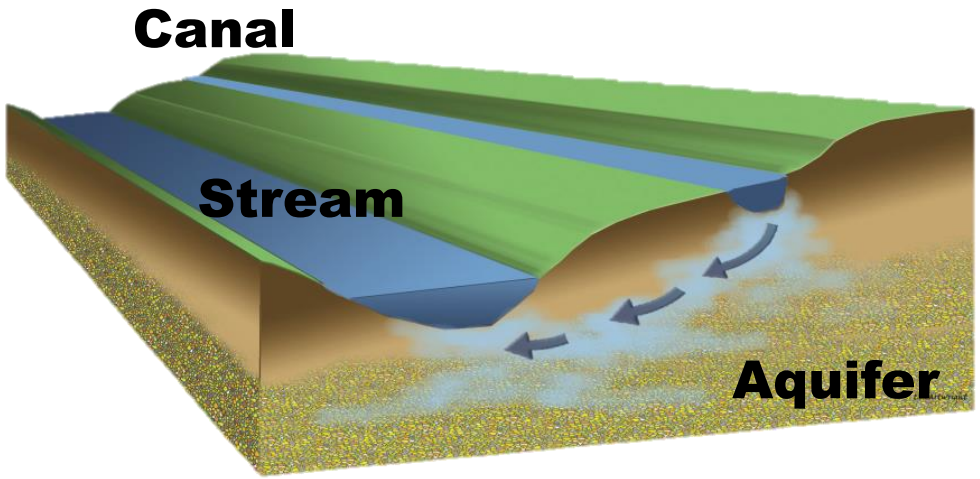
UNDERLYING CONCEPTS OF CONJUNCTIVE WATER MANAGEMENT

(CWM)

- Surface and groundwater resources are interconnected
- Decisions to improve the management of one cannot be made properly without considering the other



Conjunctive Water Management is an ***adaptive process*** that utilizes the ***connection*** between surface water and groundwater to ***maximize water use***, while ***minimizing impacts*** to streamflow and groundwater levels in an effort to increase the overall water supply of a region and improve the reliability of that supply.

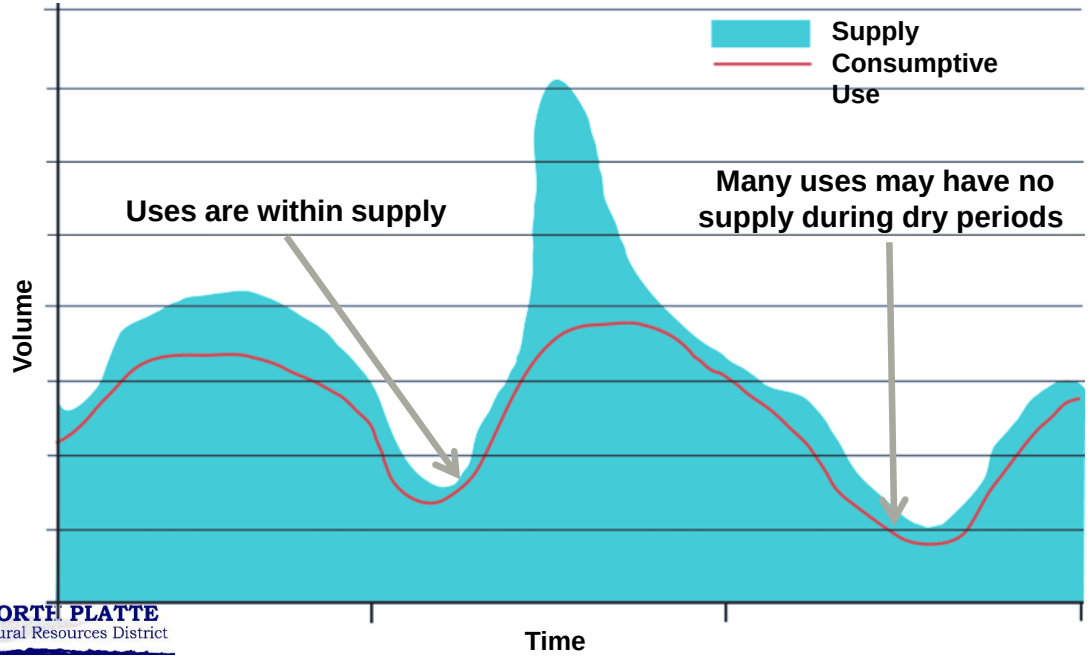
HOW IS CWM ACCOMPLISHED?

- Typically, by:
  - Using or storing additional surface water when it is plentiful
  - Relying more heavily on groundwater during dry periods

- Can change the timing and location of water for more efficient use

SCENARIO 1:

USING SURFACE WATER ONLY



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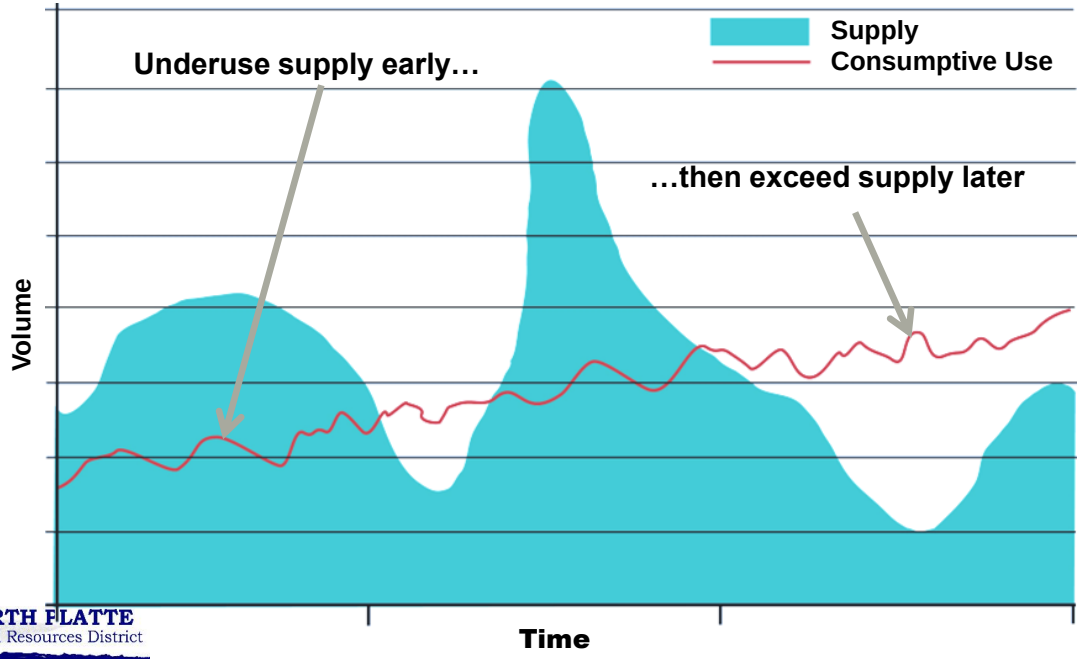
SCENARIO 2:

USING GROUNDWATER ONLY



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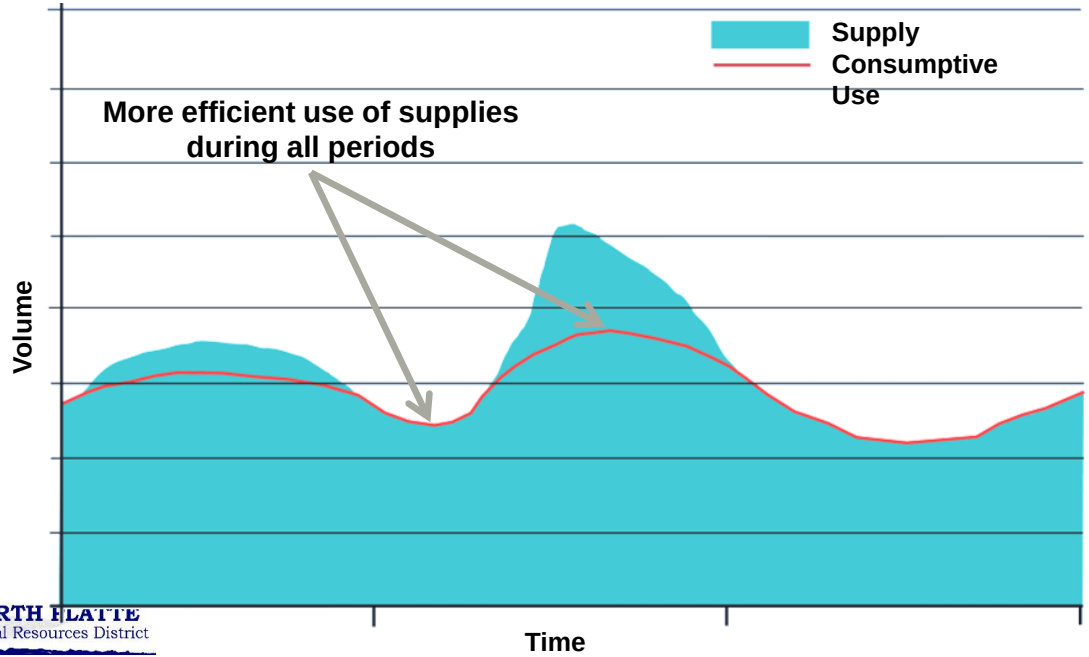
SCENARIO 3:

MANAGING SUPPLIES THROUGH CWM

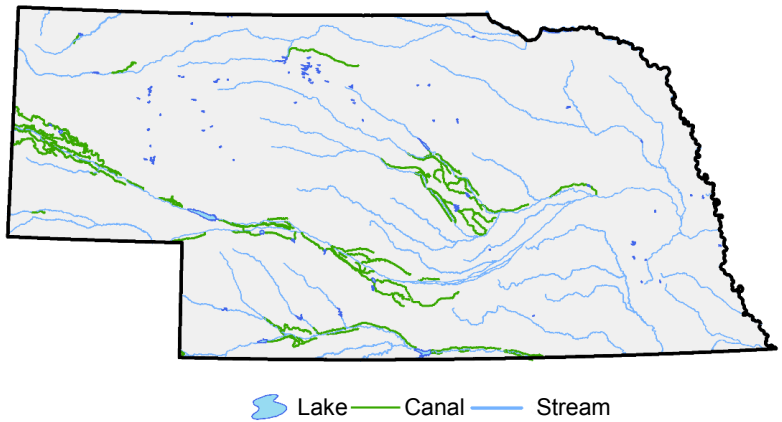


COMPONENTS OF CWM

- Surface water diversion and groundwater pumping
- Aquifer recharge
- Management of the timing of return flows
- Program for monitoring and evaluation

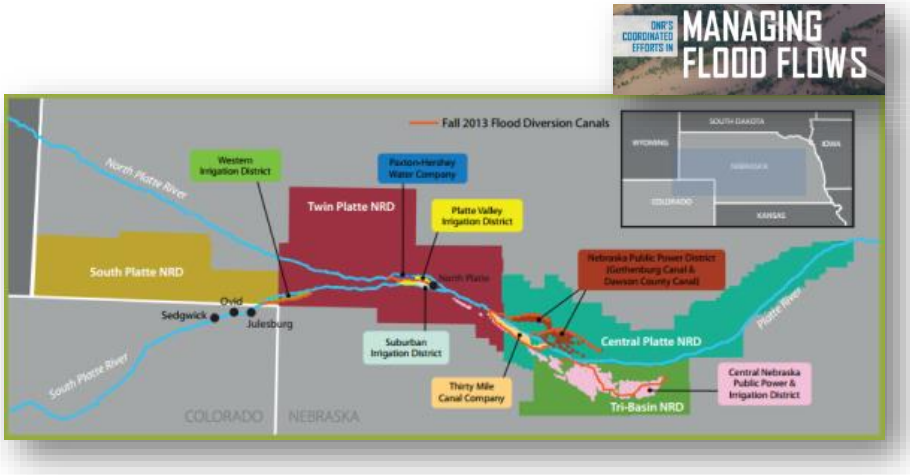
BENEFITS OF CWM

- Maximize available water supplies
- Leverage existing infrastructure
- Use existing planning framework
- Minimize the need for regulatory actions
- Customize to local opportunities or needs
- Maintain viability of existing uses



EXAMPLES OF CWM PROJECTS

- Augmentation projects
- Western canal conjunctive management study
- Water leasing arrangements
- CPNRD transfers and canal refurbishment
- Capturing excess flows using existing canal infrastructure (in partnership with irrigation districts)



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APPLYING CONJUNCTIVE MANAGEMENT

IN THE UPPER PLATTE RIVER BASIN

First Increment CWM Activities

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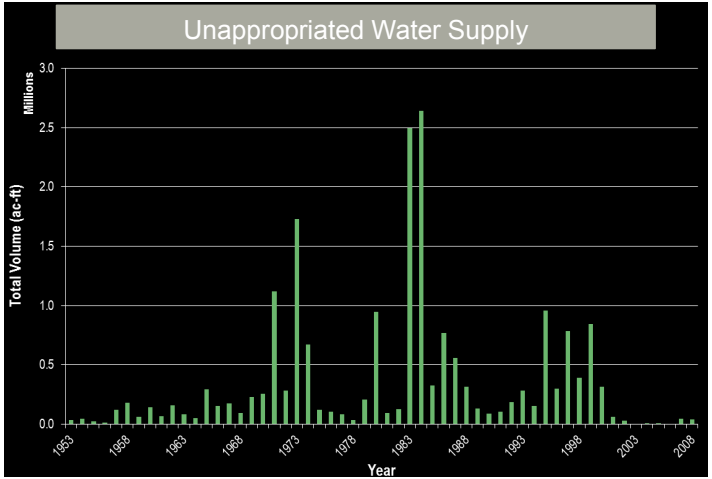
UPPER PLATTE RIVER WATER SUPPLIES

- Receives average of 1 million ac-ft from snowmelt in Wyoming each year (North Platte Decree)
- More variable inflows in South Platte from Colorado
- Water is generally fully allocated, particularly above Elm Creek (overappropriated)
- Streamflows required to be shared under Endangered Species Act (Federal)
- Unappropriated water does occur during some very wet years, during shorter intervals, and outside of the irrigation season



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2011 PILOT PROJECT

- High flows in spring prior to irrigation season
- NeDNR coordinated with NRDs, Irrigation Districts/Canal Companies to divert excesses
- Acquisition of permits
- Contracts
- Monitor

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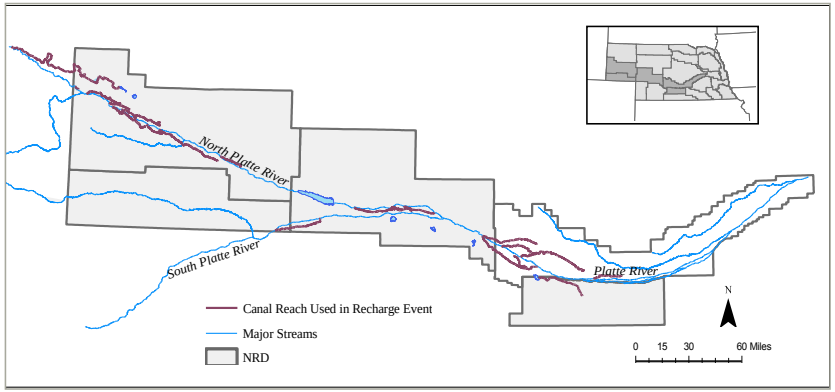
2011 PILOT PROJECT

- 23 Canals and 5 NRDs
  - **Diversion Total** **142,000 acre-ft.**
  - **Recharge Total** **64,000 acre-ft.**
  - **NPNRD Diversion Total** **61,260 acre-ft.**
  - **NPNRD Recharge Total** **28,739 acre-ft.**



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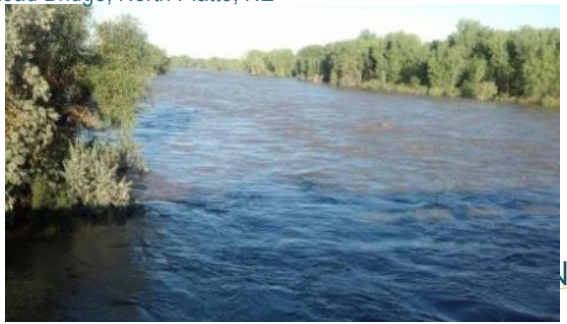
2013 FLOOD FLOWS

Friday, September 20, 2013

Saturday, September 21, 2013

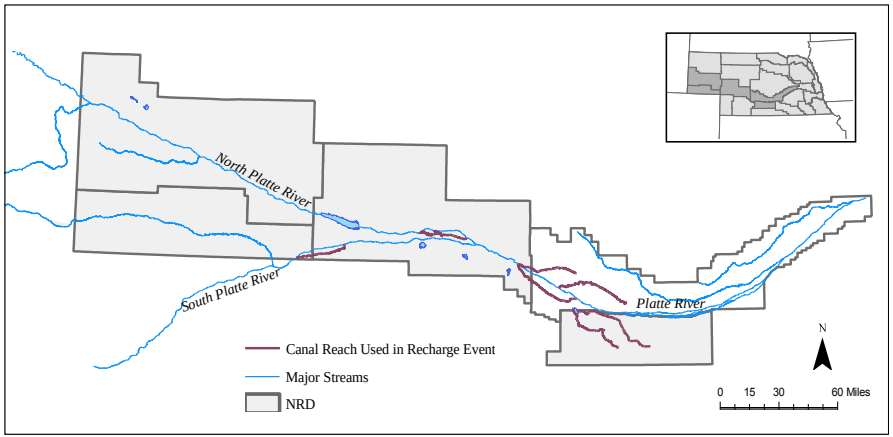
South Platte River Highway 83 Bridge, North Platte, NE

South Platte River Buffalo Bill Road Bridge, North Platte, NE



2013 FLOOD FLOWS

- 9 Canals and 4 NRDs
  - **Diversion Total** **44,000 ac-ft.**
  - **Recharge Total** **27,000 ac-ft.**



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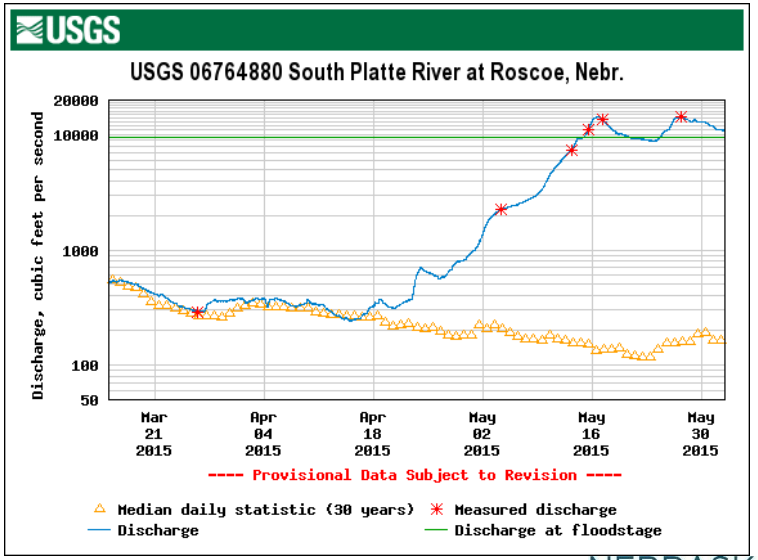
2015 FLOOD FLOWS

- Wet conditions during above average spring snowmelt
- Canals filled early
- Stored excess in lakes, reservoirs

30-Mile Canal Headworks,
June 2015



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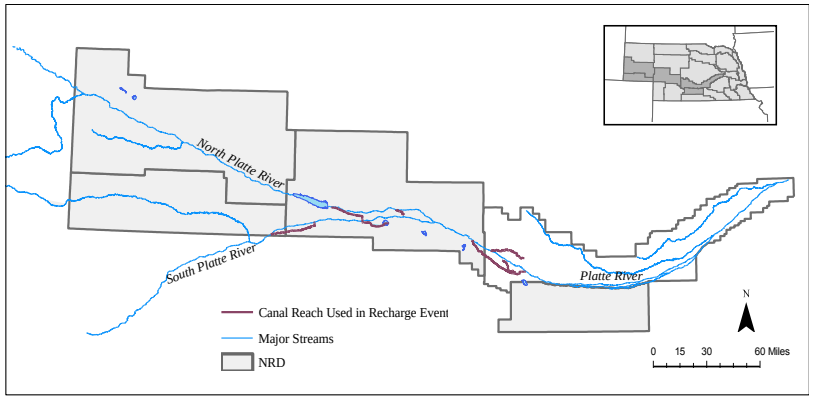
2015 FLOOD FLOWS

- 7 Canals and 4 NRDs
  - **Diversion Total** **17,700 ac-ft.**
  - **Recharge Estimate** **7,600 ac-ft.**



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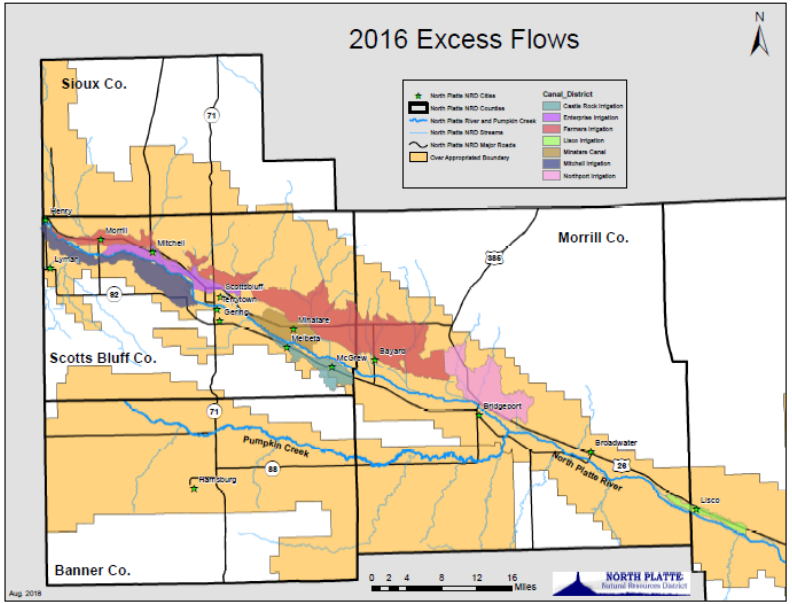
2016 FLOOD FLOWS

- 8 Irrigation Districts and Canal Companies
  - **NPNRD Diversion Total**

    30,369 ac-ft.
  - **NPNRD Recharge Estimate**

    13,812 ac-ft.



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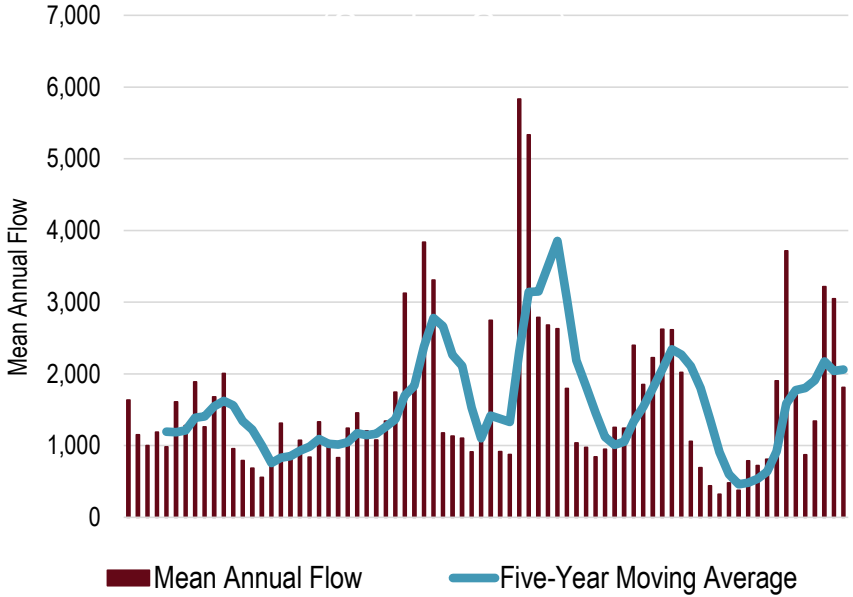
SUMMARY OF FLOOD FLOW DIVERSIONS

First Increment

- Over 200 Kaf of flood flows diverted since 2011
- Resulting recharge in excess of 100 Kaf
- Accretions will benefit Platte River flows for many years into the future
- Process in place for future successes
- Reduces the need for additional regulations
- Creates greater resiliency in future periods



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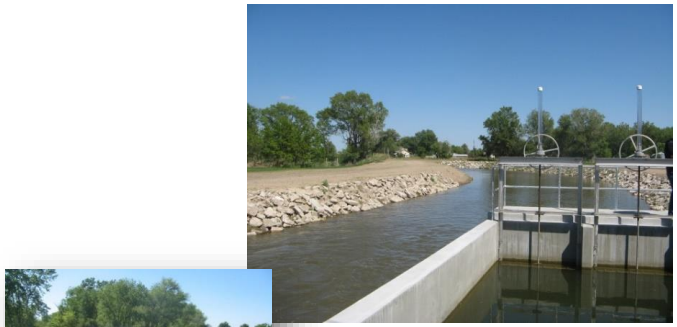
CWM FUTURE ACTIVITIES

- Expand implementation of CWM projects
- Enhance adaptation strategies based on management goals
- Support continued investment in maintaining and enhancing infrastructure
- Ensure that sound science and monitoring are available to support management decisions



Cozad Canal, Gothenberg, NE

CWM INFRASTRUCTURE EXAMPLES IN NPNRD

Schaneman Recharge Pits

- Have leased just over 100 acres on Enterprise Irrigation District
- Planning and will ultimately construct recharge pits to be used for surface water infiltration
- Project design has the capability of handling the entire diversion rate of the presently contracted acres, but will also allow for the construction of one or more recharge pits to allow for expansion

CWM INFRASTRUCTURE EXAMPLES IN NPNRD

Everett / Meyers Return

- Have leased four shares (320 acres) on Minatare Canal Company and have continued to divert water that would normally be delivered to those farms, but have built a direct return back to the river to gain consumptive use credit toward our goals and obligations under the IMP
- Designed with expansion in mind
- Project to date has returned back to the North Platte River 920 acre feet of water that would have otherwise been consumptively used by crops
- Annual operating cost of approximately $89,000.00 with 797 acre feet returned to the North Platte River in 2017
  - $112 per af

CWM INFRASTRUCTURE EXAMPLES IN NPNRD

Ducks Unlimited/NPNRD Recharge Project

- Actively searching for lands to temporarily lease the surface water appropriation from in order to divert that appropriation into man made recharge sites
- Those sites will not only benefit the recharging of the aquifer but will also provide needed habitat for migrating water flow
- Consumptive use credit from the temporary idling of crop acres to help NPNRD meet goals and obligations under the IMP

NEXT STEPS

Anything Additional?

- Is there anything else you think should be considered for incorporation into the IMP?

MEETING DATES

- January 17, 2019

PUBLIC COMMENT

Thank You

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Sign in Sheet

3rd Meeting – NPNRD IMP 2nd Increment Planning Process – November 15, 2018

NAME	ORGANIZATION REPRESENTED
Beth Eckles	NeDNR
Shea Winkler	NeDNR
Melissa Mosier	NEDNR
Barb Cross	NPNRD
John Berge	NPNRD
Dennis Miller	Farmer / Blue Creek Irr Dist.
Steve Smith	depends
Pat Heath	City of Gering
David Howell	Farmer
Jeff Shafer	NPPD
Mike Drain	CNPPID
Will Copple	farmer
Roger Ehrich	WPNRD
Michael Ann Relka	Western Sugar Cooperative
John Mason	Farm
Chuck Henkel	NRD
Lee Hoehn	Irrigator
Dave Fyler	Irrigation Dist & future generations
Bruce Rolls	PRBE
Dennis Strauch	Pathfinder Irrigation
Jen Schellpeper	Ne DNR
Kyle Ann Hopkins	NPNRD
Dave Wolf	NPNRD
Danielle Schafer	NPNRD

Sign in Sheet

3rd Meeting – NPNRD IMP 2nd Increment Planning Process – November 15, 2018

NAME	ORGANIZATION REPRESENTED
Thad Kuntz	NPNRD