TBNRD Stakeholder Meeting #3 Minutes

Project:	2nd Increment Stakeholder Process for Tri-Basin NRD Integrated Management Plan (IMP)
Subject:	Stakeholder Meeting #3
Date:	Tuesday, March 19, 2019 from 1:00 p.m. – 3:00 p.m.
Location:	Tri-Basin NRD Office, 1723 Burlington St, Holdrege, NE 68949

I. Welcome

a. John Thorburn, Tri-Basin NRD (TBNRD) general manager, opened the meeting at 1:01 p.m. CT. He asked the stakeholders to introduce themselves. The attendance sheet is included (Attachment E). He referred to the draft integrated management plan (IMP) in front of the stakeholders (see Attachment C).

b. Melissa Mosier, NeDNR introduced Jessie Strom, NeDNR, who has been working on the draft IMP along with the staff of NeDNR. She stated that questions are welcome and stakeholder discussion at the end of this meeting. She noted the meeting was noticed in (Attachment D) and there is a copy of the open meetings act on the wall. She gave a recap of the December meeting which included conjunctive management, drought planning, Robust Review results, and Stakeholder feedback. She discussed the next steps after this meeting, which includes feedback and changes to be made from this feedback. There will be a vote at June the board meeting and a vote at public hearing in June. The public hearing is set for July 16, 2019. Then the TBNRD board meeting voting on final IMP in August.

II. Tri-Basin NRD Platte Basin IMP – 2nd Increment Draft Review

a. Jessie Strom, NeDNR, discussed that some material has not changed since the first increment IMP and she will point out any new parts. This is a draft form – some things need work, grammar, typos, spelling. NeDNR will be going through in more detail before it is finalized.

The first four chapters are background information, statutory authorities, vision section, funding, science and methods, first increment accomplishments, goals & objectives, and action items.

The effective date will be inserted later. The authority section references statutes that give authority to implement this plan.

Chapter 3 includes what led to first IMP and how we got to where we are today with the second increment process.

Chapter 4 includes map and management boundaries. The vision statement includes the overall intent for plan and there is a section on funding sources and priorities.

Chapter 7 includes the science and methods. 7.1 discusses the COHYST model and COHYST 2010 and the WWUM model. 7.2 includes principles and science, methods, and data used going forward. The next section lists the nine basin-wide tenants found in the plan. 7.3 includes a list of info considered in developing this IMP. This includes the Orders designating overappropriated and fully appropriated areas, the first IMP, the TBNRD groundwater management plan, rules and regulations, models, statutes, and rules of NeDNR, and analyses from the first increment.

Chapter 8 includes first increment accomplishments, studies conducted, assessing available surface water and groundwater, conservation, conjunctive management study, sandpits and small reservoirs impacts, TBNRD analysis of augmentation wells. Chapter 8.2 includes a summary of management actions in first IMP. 8.3 assessment of first IMP, Robust Review summary, a map of two different reaches.

John: Also, depletions to tributaries that feed into the Platte – not just direct impacts.

b. **Jessie**: This section includes charts from Robust Review. She noted they are confusing in this draft (p. 18 – 19) NeDNR is working to revise them.

Stakeholder: The first Robust Review was through 2013? And the first increment goes through 2019, so Tri-Basin's didn't include their recharge efforts? Will there be a final first increment Robust Review?

Jessie: There will be another Robust Review in 2023. The reason we stopped this Robust Review in 2013 was because we had to get started to have time to complete it. We recognize there are management actions, such as recharge, since 2013, that will impact

these 2013 numbers – part of the reason why we are including variability and reassessing in 2023.

Stakeholder: So the 2023 wouldn't cover the first increment?

Jessie: It should include up to 2021, but definitely the first increment.

Stakeholder: In the Robust Review and COHYST, are we able to determine what actions gave most or least amount of results?

Jessie: We haven't included that in here, but we have discussed that. We have the data.

John: We do have an idea of the impacts of our recharge projects, and the benefits build over time because that water takes time to get back to the river. What made the greatest difference was the analysis of crop mix corn/soybean rotation.

Jessie: That is part of the change from 1997 to present. We did our baseline historical run (actual changes including crop type). We did the other run where we held 1997 levels constant – that is included here along with recharge projects.

John: We do have positive balance and expect it to continue. Most significant is that cropping pattern and if there would be economic incentive to go back to continuous corn or some new crop comes out – that could change this balance.

Stakeholder: Question about looking at all alternatives to see what is most beneficial in the future.

John: The high flow diversions, is basin-wide, a more cost effective option, but availability is uncertain. Augmentation wells are cost competitive – the more we use them, the cheaper the water gets.

Jessie: That is part of plan – to continue to look for opportunities & management actions. The next Robust Review will be able to assess this.

c. **Jessie**: Chapter 8.4 talks about work done toward assessing fully appropriated. Depletions impacts of groundwater for all time versus impacts since 1997 – total depletions analysis. INSIGHT analysis looks at the balance between supply and demand. This graphic will be updated and rewritten to make more clear. Discussed the red and green slider graphic – each mark adds in different demands.

Stakeholder: How does hydropower have that much demand?

Jessie: We're talking about a non-consumptive demand and that water can be used downstream, but looking at basin as a whole.

Stakeholder: Where do we account for if it's a gaining river or a losing river?

Jessie: That is accounted for in the supply side. We look at what the stream gauge tells us and add back in groundwater pumping. There will be a report on that as well.

d. **Jessie**: Chapter 8.5 is about basin-wide coordination with the NRDs (the Platte Basin Coalition) and NeDNR.

Chapter 9 includes goals and objectives and is consistent with the BWP.

Goal 1: To reach and maintain a FA condition.

- Objective 1.1: offset all post-97 depletions (TBNRD has already done that)
- Objective 1.2: to maintain the progress accomplished in the first increment. Discussed tables for short term and long term goals.
- Objective 1.3: to make progress toward a FA condition
- Objective 1.4: to review the implementation of the IMP
- Objective 1.5: if FA is reached, to maintain that through the IMP

Goal 2: Interstate compliance with Platte River Recovery Implementation Program and the Nebraska New Depletion Plan

Goal 3: Maintaining consistency and information on updating and sharing information with stakeholders throughout process

Chapter 10 includes our action items – voluntary/non-regulatory, information and education programs. 10.2 is about incentive programs. Chapter 10.3 is about the water conservation incentive program. 10.4 includes information about conjunctive management, canal recharge projects, procedures, making sure water is going to where it will be best used. 10.5 is about the drought plan required by the basin-wide plan.

John: Noted this is a new requirement in this plan – from the basin-wide planning group.

e. **Jessie**: 10.6 includes the controls in the plan. Regulatory actions and groundwater regulations – same as first IMP. Noted there might be changes to municipal and industrial accounting based on a statute change in 2026. Chapter 10.6.2 includes triggers. Figure on p. 37 outlines the timeline. 10.6.2.1 includes additional controls that could be put in place. 10.6.3 includes surface water controls.

10.7 is about monitoring. This includes annual tracking requirements for TBNRD and NeDNR. Flow meter data is added here. 10.7.3 includes information on evaluations for annual review (not full model runs). The Robust Review in 2023 and 2027 are outlined here in letter 'b' on p. 47. 10.7.3.2 includes the assessment of FA. 10.7.3.4 is about evaluating the need for a subsequent increment.

10.8 is about different studies to be conducted in this increment. Priority studies from BWP or statute. 10.8.2 is about potential studies.

10.9 is about review of and modifications to the IMP. If the BWP is updated, we will need to change the IMP to be consistent. 10.9.3 includes the process to develop next increment if necessary.

III. Stakeholder discussion

- **Stakeholder:** Question on any economic studies completed.
  - **Jessie**: Have not done any yet, like how the first increment plan affected things economically, but we do plan to look at that, especially in regard to drought.
  - **John**: We know cost the cost of what we've done in the past ten years, but not how that is multiplied through the economy. By law we are supposed to work toward a FA condition, but not at the expense of the environment or economy.
- **Stakeholder**: Noted it would be helpful to define FA and OA.
  - **John**: With FA, you have a balance between uses and supplies. With OA, you have more uses than supplies on an average in the hydrologically connected groundwater and surface water areas. Noted it is different in an average year versus a drought year.
  - **Jessie**: Referred to Figure 6 on the PowerPoint and noted there is confusion with this figure.
- **Stakeholder**: Hydropower doesn't spin 24/7 365 days a year. Don't expect this level to be met all the time.
  - **Jessie:** Yes, we have heard that and it is noted.
- **John**: Tri-Basin is in good situation. We need to maintain, but we won't have a lot of new demands.
- **Jessie**: Asked if everyone is able to vote on moving forward. Thumbs up means: approve of the plan, thumbs sideways means: need more information, but okay with concepts, thumbs down means: do not approve of the plan
  - Thumbs up: 5
  - Thumbs sideways: 0
  - Thumbs down: 0

IV. Next Steps

- NeDNR will go back and work on clarifying questions, editorial edits, get it to the board to review, vote June 11, hearing July 16, welcome to come. Move forward for final adoption.
- Appendices not included today, but will be in final plan. Will be available before.
- No big issues with board.
- **Stakeholder**: CNPPID wishes they would have access to BWP, INSIGHT analysis, and Robust Review.
    - **Jessie**: They will all be available prior to meetings and as soon as possible. All of the data has been presented, the details of the technical analyses will be in those reports.
- **Jessie:** Thanked stakeholders for coming.

V. **Public comment:** No public comment.

VI. **Meeting adjourned:** 2:03 p.m. CT.

VII. **Attachments:**

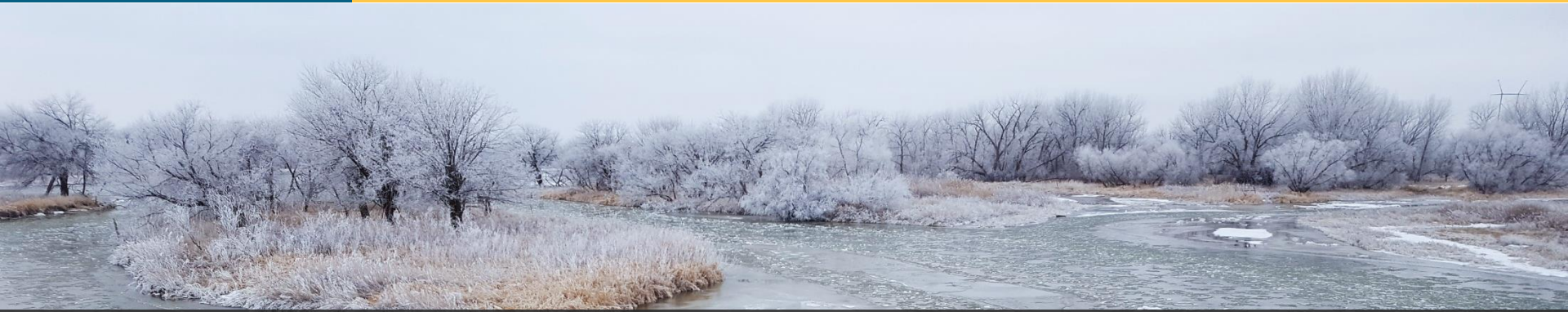
- **Attachment A – Agenda**
- **Attachment B – Copies of all presentations**
- **Attachment C – Draft IMP**
- **Attachment D – Affidavit of Publication of Notice of Meeting**
- **Attachment E – Copy of attendance sheet**

Agenda

Project:	2nd Increment Stakeholder Process for Tri-Basin NRD Integrated Management Plan (IMP)
Subject:	Stakeholder Meeting #3
Date:	Thursday, March 14, 2019 at 1:00 p.m.
Location:	Tri-Basin NRD Office, 1723 Burlington St, Holdrege, NE 68949

Topics:

1. Welcome
2. Tri-Basin NRD Platte Basin IMP – 2nd Increment Draft Review
3. Stakeholder discussion
4. Next Steps
5. Public comment



TBNRD IMP

Meeting 3

March 19, 2019

TODAY'S AGENDA

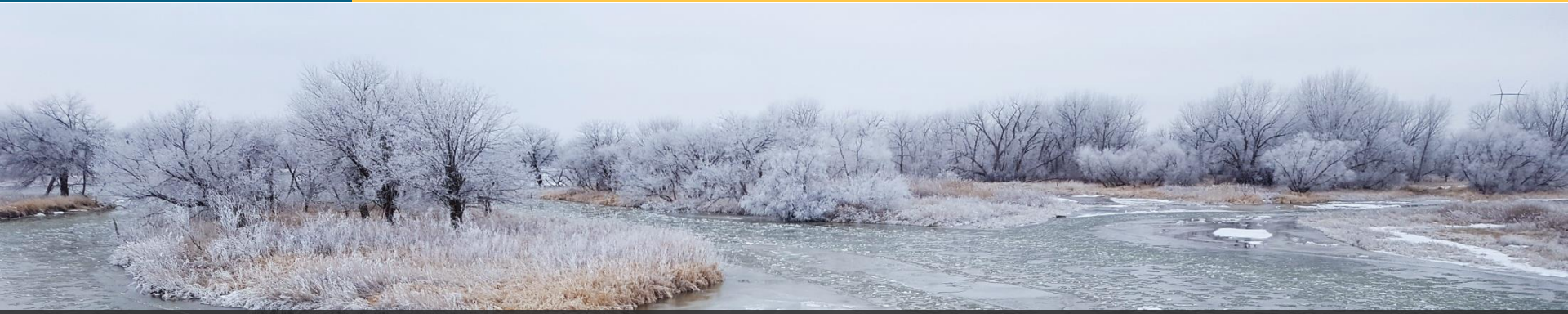
1. Welcome
2. Tri-Basin NRD Platte Basin IMP - 2nd Increment Draft Review
3. Stakeholder Discussion & Voting
4. Next Steps
5. Public Comment

WELCOME

- Open meeting notice
- December 2018 meeting recap
  - Review of draft Upper Platte Basin-Wide Plan
  - Conjunctive management
  - Drought planning
  - Robust Review results
  - Stakeholder feedback

Timeline

- June 11, 2019 – TBNRD board votes on draft for public hearing
- July 16, 2019 – Public hearing
- ???? ??, 2019 – TBNRD votes on final IMP



REVIEW OF DRAFT IMP

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Integrated Management Plan (Draft)

1. EFFECTIVE DATE
2. AUTHORITY
3. BACKGROUND
4. MAPS AND MANAGEMENT AREA BOUNDARIES

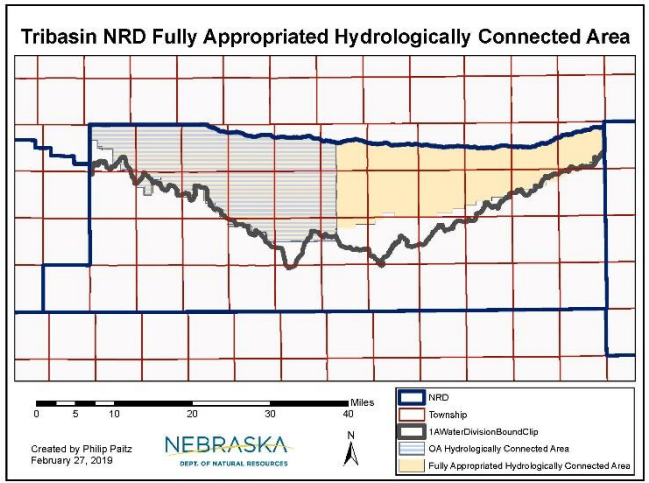


Figure 1: Political and hydrologic boundaries of TBNRD.

(Page 6 in Plan)

Integrated Management Plan (Draft)

5. VISION

The vision (overall goal) of this IMP for Tri-Basin NRD is to “work cooperatively with District residents and others to promote good stewardship of land and water resources.”

Tri-Basin NRD’s mission is to “manage, conserve and protect the District’s land and water resources.” This mission will be accomplished by protecting the quality and quantity of surface water and groundwater, reducing soil erosion and flooding, promoting agricultural best management practices, forestry and wildlife habitat preservation. These tasks can only be accomplished by working cooperatively with local residents and agencies of local, state and federal government

Integrated Management Plan (Draft)

6. FUNDING
7. SCIENCE AND METHODS
   - 7.1 First Increment
   - 7.2 Ongoing Increments
   - 7.3 Information Considered in Developing this IMP

Integrated Management Plan (Draft)

8. FIRST INCREMENT ACCOMPLISHMENTS
   - 8.1 Studies Conducted in the First Increment
   - 8.2 Summary of Management Actions in the First Increment
   - 8.3 Assessment of First Increment (Robust Review)

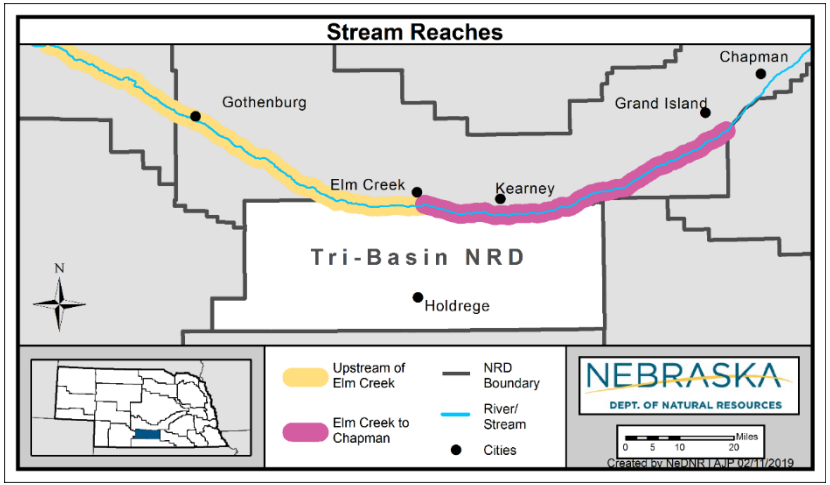


Figure 2: Stream reaches for Robust Review analysis

(Page 17 in Plan)

Integrated Management Plan (Draft)

8. FIRST INCREMENT ACCOMPLISHMENTS

8.3 Assessment of First Increment (Robust Review)

(Page 18 in Plan)

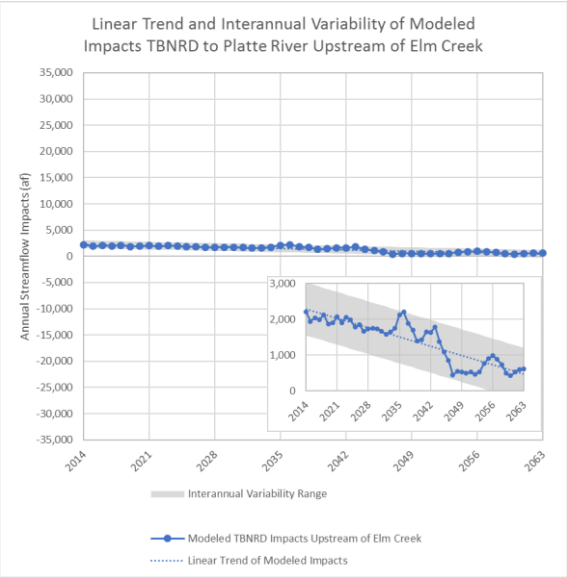


Figure 3. Modeled TBNRD post-1997 impacts to the Platte River upstream of Elm Creek, the linear trend line of the modeled impacts from 2014-2063, and the inter-annual variability range of modeled impacts across the trend.

(Page 19 in Plan)

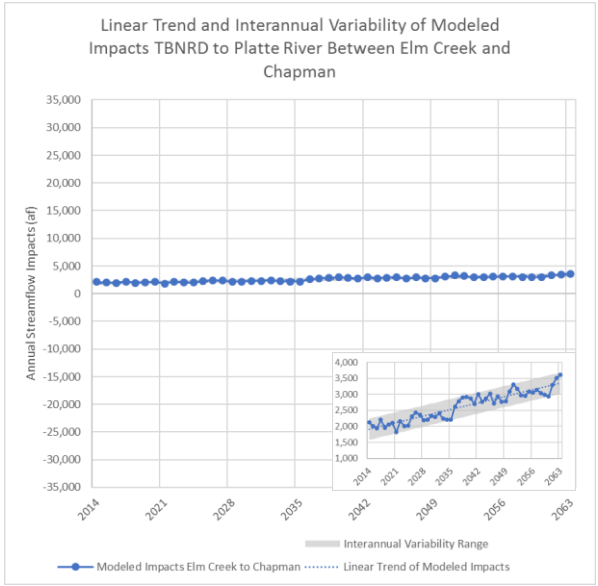


Figure 4. Modeled TBNRD post-1997 impacts to the Platte River between Elm Creek and Chapman, the linear trend line of the modeled impacts from 2014-2063, and the inter-annual variability range of modeled impacts across the trend.

Integrated Management Plan (Draft)

8. FIRST INCREMENT ACCOMPLISHMENTS

8.4 Assessment of Fully Appropriated Condition

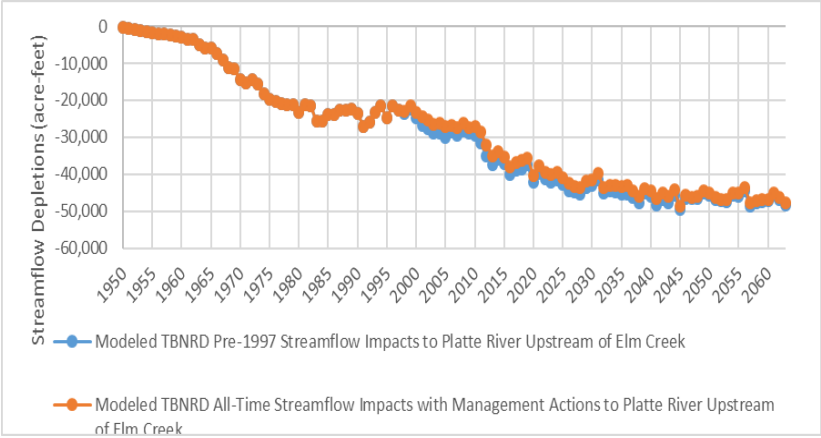


Figure 5. Modeled TBNRD post-1997 impacts to the Platte River upstream of Elm Creek

(Page 20 in Plan)

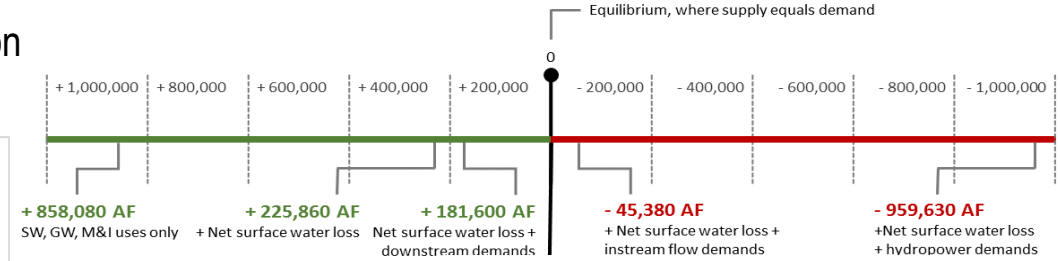


Figure 6. Average balance of water supplies in the basin compared to the various levels of demands.

(Page 21 in Plan)

8.5 Basin-Wide Coordination in the First Increment (Platte Basin Coalition)

Integrated Management Plan (Draft)

9. Goal 1: Reach and Maintain a Fully Appropriated Condition

1.1 Within this increment of this IMP, implement measures to address impacts of streamflow depletions to surface water appropriations and water wells constructed in aquifers dependent upon recharge from streamflow to the extent those depletions are due to water use initiated after July 1, 1997.

1.2 Maintain previous increment mitigation progress

Tri-Basin NRD Short Term Targets		
Year	Upstream of Elm Creek	Elm Creek to Chapman
2019	2,100	2,100
2020	2,100	2,100
2021	2,000	2,100
2022	2,000	2,100
2023	2,000	2,200
2024	1,900	2,200
2025	1,900	2,200
2026	1,800	2,300
2027	1,800	2,300
2028	1,800	2,300
2029	1,700	2,400

Table 1: Modeled depletions to the Platte River from the 2019 Robust Review analysis for TBNRD upstream of Elm Creek and Elm Creek to Chapman.

(Page 24 in Plan)

Tri-Basin NRD Long Term (2059-2063 average) Targets		
	Upstream of Elm Creek	Elm Creek to Chapman
Tri-Basin NRD	500	3,300

Table 2: Long term modeled depletions to the Platte River from the 2019 Robust Review analysis for TBNRD upstream of Elm Creek and Elm Creek to Chapman.

(Page 25 in Plan)

Integrated Management Plan (Draft)

9. Goal 1: Reach and Maintain a Fully Appropriated Condition

   1.3 Make progress toward a fully appropriated condition.

   1.4 Review the implementation of this IMP to ensure that the IMP provisions are adequate to sustain progress toward and/or maintain a fully appropriated condition.

   1.5 Once a fully appropriated condition is achieved, maintain such condition through the implementation of the IMP.

Integrated Management Plan (Draft)

9. Goal 2: Interstate Compliance

2.1 To ensure that no act or omission of the TBNRD would cause noncompliance by Nebraska with the NNDP included within PRRIP, for as long as PRRIP exists.

2.2 Ensure that the groundwater and surface water controls adopted in the individual NRD IMPs are sufficient to ensure that the state will remain in compliance with the NNDP.

2.3 Collectively, as defined in the NNDP, offset the new depletions caused by new uses within the Platte River Basin NRDs.

2.4 Ensure that for post-1997 new or expanded uses, including irrigation, municipal, industrial, rural domestic and other new water related activities are assessed and offset for compliance with the NNDP. This assessment will be part of the Robust Review, explained in Section 10.7.3.

2.5 The Department and TBNRD will insure that implementation of the IMP will not interfere with successful implementation of the joint IMP for the Republican Basin portion of TBNRD by reducing potential “imported water” gains to the Republican Basin.

Integrated Management Plan (Draft)

9. Goal 3: Consistency and Updates
   - 3.1 Amend this IMP as needed to remain consistent with the Basin-Wide Plan.
   - 3.2 Participate in basin-wide planning activities.
   - 3.3 Improve information sharing with interested parties.
   - 3.4 Conduct planning for subsequent increments of the plan, as necessary.
   - 3.5 If appropriate and necessary, follow the dispute resolution process in the Basin-Wide Plan.

Integrated Management Plan (Draft)

10. ACTION ITEMS
    - 10.1 Information and Education Programs
    - 10.2 Incentive Programs
    - 10.3 Water Banking
    - 10.4 Conjunctive Management
    - 10.5 Drought Plan

Integrated Management Plan (Draft)

10. ACTION ITEMS

10.6 Regulatory Action Items (Controls)

10.6.1 Ground Water Regulatory Action Items

10.6.2 Triggers

10.6.3 Surface Water Regulatory Actions (Controls)

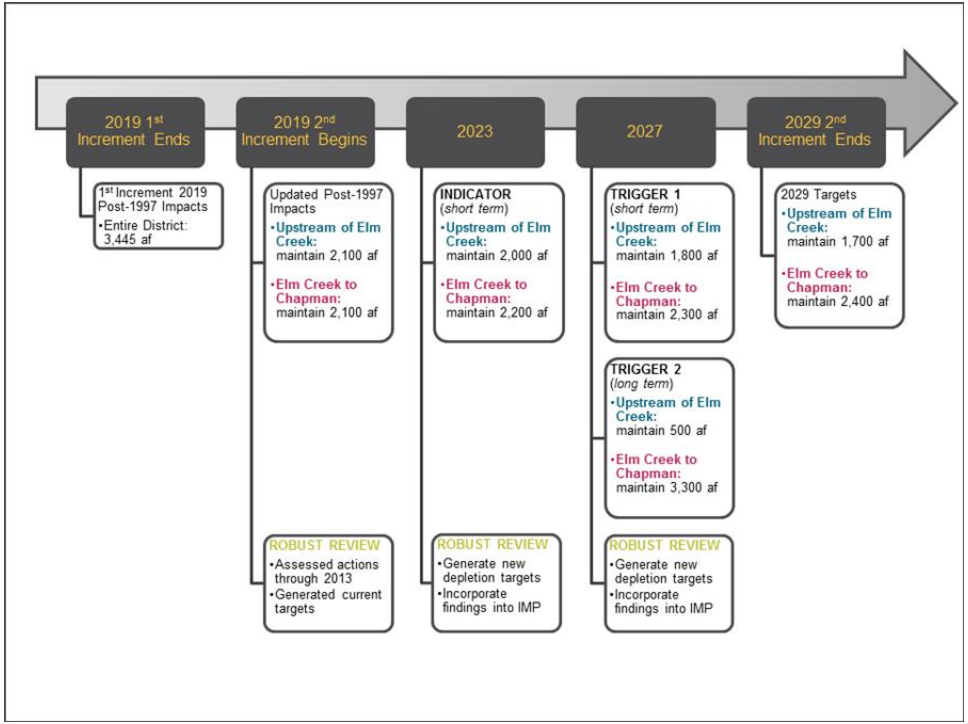
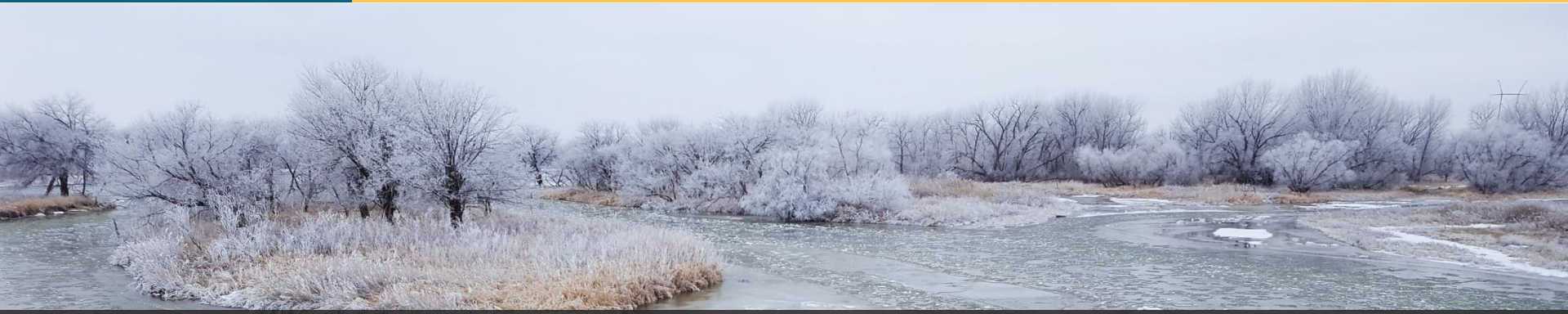


Figure 7: Timeline showing Indicator, Trigger 1, and Trigger 2 for the two stream reaches in TBNRD for the current increment. (page 37)

Integrated Management Plan (Draft)

10. ACTION ITEMS (continued)
    - 10.7 Monitoring
        - 10.7.1 Data and Tracking of Water Use Activities
        - 10.7.2 Reporting
        - 10.7.3 Evaluation: Measuring the Success of Meeting the Goals and Objectives of this IMP
    - 10.8 Current Increment Studies
    - 10.9 Review of and Modifications to the IMP



VOTING

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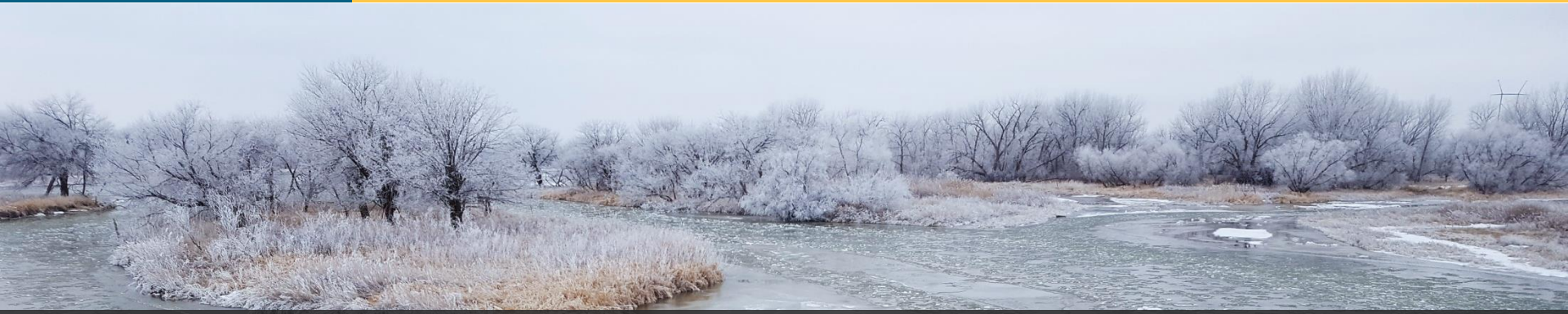

NEXT STEPS

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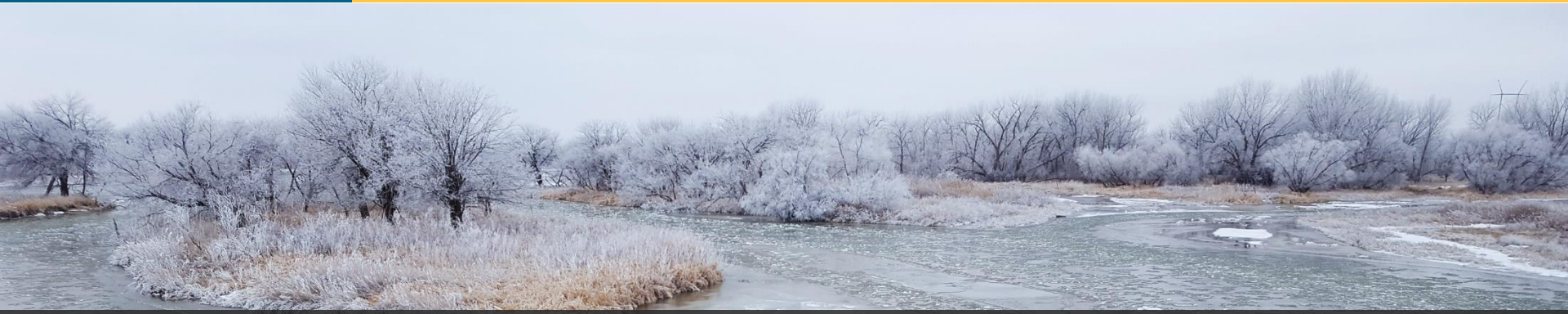
Timeline

- June 11, 2019 – TBNRD board votes on draft for public hearing
- July 16, 2019 – Public hearing
- ???? ??, 2019 – TBNRD votes on final IMP



PUBLIC COMMENT

Thank you

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

Tri Basin Natural Resources District

NEBRASKA
Good Life. Great Water.
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INTEGRATED MANAGEMENT PLAN
Cooperatively Developed by the
Tri-Basin Platte Natural Resources District and the
Nebraska Department of Natural Resources

1: EFFECTIVE DATE

The current increment joint Integrated Management Plan for the Upper Platte Basin within Tri-Basin Natural Resources District was adopted by the Tri-Basin Natural Resources District on August 13, 2019, and by the Nebraska Department of Natural Resources on August XX, 2019. The Integrated Management Plan became effective on September XX, 2019.

2: AUTHORITY

This Platte Basin integrated management plan (IMP) was cooperatively prepared by the Board of Directors of Tri-Basin Natural Resources District (Tri-Basin NRD, TBNRD or the District) and the Nebraska Department of Natural Resources (NeDNR or the Department) in accordance with *Neb. Rev. Stat.* §§ 46-715 through 46-720. The Platte Basin west of Highway 183 in Tri-Basin NRD was declared overappropriated by NeDNR on September 15, 2004. The Platte Basin east of Highway 183 was declared fully appropriated by NeDNR on April 21, 2006.

3: BACKGROUND

Tri-Basin Natural Resources District is responsible for protecting the soil and water resources of Gosper, Phelps, and Kearney counties. Euro-American settlement of the Platte Basin in the district dates back to the establishment of Fort Kearney in 1848. Groundwater irrigation commenced in the early 1920's in the Platte Valley. The development of turbine water pumps in the 1930s enabled deeper wells to be drilled, so that the table lands south of the valley could be irrigated as well. More than 100,000 acres of cropland within the Platte Basin portion of Tri-Basin Natural Resources District are irrigated with water diverted from the Platte River and distributed through the canals of the Central Nebraska Public Power and Irrigation District (CNPPID), which were constructed beginning in 1935. Surface irrigation water and the canals that distribute it enhance recharge of groundwater supplies within the district. In addition to helping sustain groundwater supplies, incidental recharge from canal seepage and canal water irrigation, has increased streamflows in Platte and Republican tributary streams. Groundwater levels saturated soil and sub-soil in parts of northern Phelps and Kearney counties, requiring CNPPID and the District to construct drainage ditches (Improvement Project Areas or IPAs) in an attempt to stabilize groundwater levels below the crop root zone. The District has designated portions of the Platte Basin as a "High Groundwater Management

Area" pursuant to District rule 8.6 for purposes of stabilizing the groundwater table at levels that minimize harm to agricultural land. Widespread conversion of irrigation delivery systems from gated pipe and open ditch to center pivots in the 1990s and early 2000s increased irrigation efficiency and reduced irrigation runoff and seepage.

Water disputes in the Platte River Basin date back to early Nebraska history. Tri-Basin NRD has been involved in Platte Basin water issues since it was established in 1972. Most recently, Tri-Basin NRD directors and staff have actively participated in committee meetings of the Platte River Recovery Implementation Program (PRRIP)[1]. This program initiates and manages certain land and water resources to provide defined benefits for four species in Nebraska that are listed as threatened or endangered by the federal and state governments. It is intended to provide Endangered Species Act (ESA) compliance for water users in the Platte River Basin upstream of Columbus, Nebraska.

This IMP represents the second increment of the integrated water planning process and therefore supersedes the first increment joint Integrated Management Plan for the Platte Basin within Tri-Basin Natural Resources District. The first increment plan became effective on September 15, 2009, and remained effective until the adoption of this current increment plan.

4: MAP AND MANAGEMENT AREA BOUNDARIES

Tri-Basin Natural Resources District encompasses portions of the Republican, Platte and Little Blue River Basins (see Figure 1). Each of the three counties in the District also contain numerous non-tributary wetlands, known as "Rainwater Basins". Their watersheds range in size from a couple hundred acres up to the 28,000 acre Sacramento Creek basin. The District also contains a large area spanning portions of all three basins that is characterized by groundwater levels that are higher than historic "pre-development" groundwater elevations.

The Tri-Basin NRD board of Directors declared the Republican Basin and the Platte Basin west of US Highway 183 as both a Phase one groundwater quantity management area and as an integrated water management area, effective September 15, 2004. The Platte Basin east of US Highway 183 and some adjacent sections within the Little Blue river basin were declared as a Phase one groundwater quantity management area and an integrated water management area, effective June 15, 2006. Additional maps of Tri-Basin NRD, its management areas and river basins are located in Appendix XX.

[1] More information regarding PRRIP can be found at https://dnr.nebraska.gov/water-planning/platte-river-recovery-implementation-program.

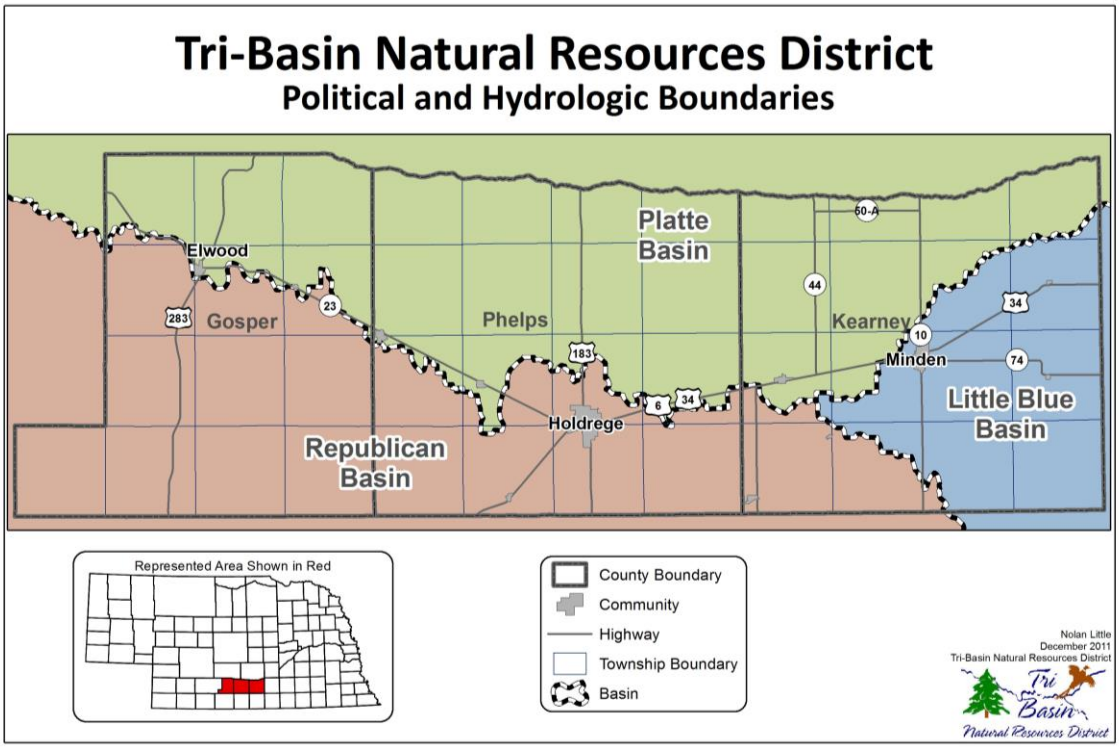

Figure 1. Political and hydrologic boundaries of Tri-Basin Naturel Resources District

5: VISION

The vision (overall goal) of this IMP for Tri-Basin NRD is to "work cooperatively with District residents and others to promote good stewardship of land and water resources."

Tri-Basin NRD's mission is to "manage, conserve and protect the District's land and water resources." This mission will be accomplished by protecting the quality and quantity of surface water and groundwater, reducing soil erosion and flooding, promoting agricultural best management practices, forestry and wildlife habitat preservation. These tasks can only be accomplished by working cooperatively with local residents and agencies of local, state and federal government

6: FUNDING

Funding for regulatory and non-regulatory activities described in this plan will derive from several sources. The Department receives funds appropriated by the Nebraska Unicameral for water resources management and administration. The primary funding source for natural resources districts is property taxes. Both entities also seek out and utilize grants from various federal, state, local and

private entities. The Nebraska Environmental Trust has also been a generous supporter of water management activities in the Platte Basin.

Tri-Basin NRD also intends to utilize qualified projects described in *Neb. Rev. Stat*. § 2-3226.04 to provide river-flow enhancement to achieve the goals and objectives of the District and to achieve the goals and objectives of the State under the Platte River Recovery Implementation Program and the requirements of the Ground Water Management and Protection Act. The District may pay for such projects by issuing river-flow enhancement bonds, which will be repaid using one or more of the revenue sources (property tax levies or an occupation tax) authorized by *Neb. Rev. Stat*. § 2-3226.01 et seq., funds granted to the District by the State or Federal government, or the levy authority authorized by *Neb. Rev. Stat.* § 2-3225.

Funding priorities identified in this plan include:

- Reductions in consumptive water use
- Enhancements to water supplies
- Maintenance of existing projects or implementation proposed projects to meet goals of this plan
- Data acquisition and maintenance, and model improvements for plan implementation

The ability of the Department and TBNRD to implement the goals, objectives, and action items for this IMP, including their ability to meet the implementation timeline and intermediate deadlines set forth herein, may be limited by the availability of resources, including (but not limited to) funding or staff resources.

If limited resources prohibit completion or initiation of a specific management action, or if they delay the ability of NeDNR or TBNRD to complete a task by an established deadline, such limitations and delays will be discussed by NeDNR and the District. If such a delay results in the need for revisions to this IMP, the necessary revisions will be made following the procedures set forth in Chapter 10.9.

7: SCIENCE AND METHODS

NeDNR and the Central Platte NRD, North Platte NRD, South Platte NRD, Tri-Basin NRD and Twin Platte NRD (Upper Platte Basin NRDs) will utilize the best readily available science, data, and methods when implementing and reviewing the Upper Platte Basin second increment IMPs. This maintains consistency with state statute and the first increment processes and methodologies. Consistency in the science, data, and methods used to evaluate water management actions across the basin

is paramount to provide a common basis for comparison of the effectiveness of various water management actions, regardless of location. Statutes and prudent scientific practices call for clear and transparent procedures to track depletions and accretions. The Department and Tri-Basin NRD, working in cooperation with the other four Upper Platte Basin NRDs, will jointly develop and agree to all of the data, science, and methods utilized for the implementation, review, and evaluation of this IMP. The Department and NRDs may revise the methodologies upon review of any new information, data, and science. The action items in Chapter 10 reference actions outlined within this chapter that are instrumental to the implementation and review of the IMP. This chapter briefly overviews the first increment data, science, and methods with a comparison of how these aspects pertain to the current increment of the Nebraska New Depletion Plan (NNDP)[2] included within PRRIP.

7.1 Best Science, Methods, Data, and Tools Used in the First Increment

The first increment and associated implementation of the Nebraska New Depletion plan utilized the Cooperative Hydrology Study (COHYST) model[3] as the best available tool to determine both groundwater depletions and set mitigation targets for each NRD. The analysis used to determine the targets for the first increment is described in the 2008 COHYST report[4]. This analysis set the basis for the procedures for the Upper Platte NRDs and NeDNR to perform consistent, ongoing analysis throughout the first increment. Consistency in evaluation is crucial in order to compare the results from the analysis used to determine targets with the results of the analysis to determine how particular management actions meet those targets.

The NRDs and the NeDNR developed an annual protocol to evaluate IMP progress[5]. This protocol used tools developed from the COHYST model to assess the changes in consumptive water use and resulting streamflow changes from annual permit activity. The annual protocol methods are consistent with the 2008 IMP targets to

[2] More information about the NNDP can be found at https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/upper-platte/platte-river-recovery-implementation-program/ne-new-depletion-plan.pdf.

[3] More information on the COHYST 2010 Model can be found at https://cohyst.nebraska.gov

[4] Luckey, R. R. (2008). Estimated Stream Baseflow Depletion by Natural Resources District in the Nebraska Platte Basin due to Gained and Lost Groundwater Irrigated Land after July 1, 1997. Aurora, CO: High Plains Hydrology, LLC. Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

[5] The protocol document, Basin-Wide Technical Committee Guidance Document – Procedures for Annual Accounting Review and Robust Review to Assist Integrated Management Planning and Facilitate Reporting to the Platte River Recovery Implementation Program, can be found at https://dnr.nebraska.gov/water-planning/other-upper-platte-river-documents

provide a valid comparison. The annual process was utilized each year and results of those analyses can be found on the NeDNR website[6].

Evaluation of the initial COHYST model led to identification of two major opportunities for refinement. First, the massive expanse of the COHYST model area is now modelled as two separate areas, the Western Water Use Management Modeling (WWUMM) area and the COHYST 2010 area, due to distinct and significant differences in geology, climate, land use, and water management that require a difference in the approach to modelling in the two areas. Lake McConaughy was chosen as the point of division for the two model areas. Second, splitting the COHYST model area required a reconstruction and recalibration of the groundwater model. This fundamental reorganization and rebuilding of the models means that neither model is consistent with the original 2008 COHYST report modeling analysis and results. Therefore, these models do not offer a direct comparison with the targets as described within the first increment IMP. Modifications to the original 2008 COHYST report analysis are necessary to redefine the targets for a true comparison.

7.1.1 COHYST 2010

The COHYST 2010 Model includes a portion of the Platte River Basin, extending westward from Chapman to the upstream end of Lake McConaughy. This model is used for the Central Platte NRD (CPNRD), Twin Platte NRD (TPNRD), and TBNRD. The goal of COHYST 2010 is to support water management to maintain the region's extensive irrigation economy and protect river habitats used by endangered species. This goal is accomplished through reasonable and replicable model analysis to determine depletions and accretions that result from various water management actions.

The revised model improves the parties' overall understanding of basin hydrology. The first increment robust review utilized this updated understanding and science for all aspects of the analysis. Application of these tools and understanding resulted in refined estimates of post-1997 depletions that are typically greater than the original estimates included in the first increment plan. The robust review also provided estimates of the first increment offsets achieved by each of the NRDs. A description of the Robust Review can be found in Section 8.3 of this IMP.

7.2 Best Available Science, Methods, Data, and Tools Used in Ongoing Increments

There are several basin-wide tenets regarding best available science, data, and methods that the NRD and the Department will follow while implementing this IMP:

[6] Annual reports for the Upper Platte River Basin can be found at https://dnr.nebraska.gov/water-planning/upper-platte-basin-wide-meetings-and-annual-reports

1) Maintain, improve, or acquire data and modeling tools, such as COHYST 2010 and other programs or projects needed to implement and assess the progress of this IMP.
2) Use the models or data and tools derived from the COHYST 2010 and WWUM models to analyze potential management actions, conduct an annual review of progress of the IMP, perform the next robust review, and carry out any relevant studies identified in this IMP or the Basin-wide Plan (BWP) uniformly across the basin. The concept 'uniformly across the basin' in this IMP means using consistency in analysis, and is not intended to dictate that same methods be used throughout the basin. Rather, the intention is to indicate methodologies must be scientifically-based and proven as conceptually consistent equivalents through either the scientific literature or independent evaluation of NeDNR and the NRDs.
3) Maintain and expand model applications through collaboration of model user groups.
4) Substantial changes to the model, for example changes to the hydrologic properties or refinements of model grids, will be agreed to by the Department and NRDs before using those changes to evaluate the IMP and management actions.
5) All Basin-Wide Plan or Integrated Management Plan compliance-based analysis must utilize conceptually consistent methods such that stream depletion estimates or calculations performed in one area of the basin are comparable to stream depletion estimates or calculations in another area of the basin.
6) Any analysis that evaluates progress towards achieving IMP targets will be consistent with the original analysis or tools used to develop the targets. If necessary, new tools will be used to re-evaluate targets as well as progress toward those targets; in either case, they will be conceptually consistent comparison.
7) Continue to evaluate and refine stream depletion and accretion analysis methods by gathering and evaluating data for potential incorporation into these analyses upon agreement by NeDNR and NRDs. As new tools, information, and understanding are applied, it is anticipated that the values for depletions or accretions from the Robust Review (shown in Chapter 9 Goal 1) may change.
8) As updates to data, models, analysis tools, or hydrologic understanding occur, NeDNR, and the NRDs will share these advances with the public. Methods, tools, and data used will be made available to the stakeholders and the public, as described in the Basin-Wide Plan. The process for incorporating new information and results into this plan document and/or supporting appendices will include a public hearing at the annual meeting.

9) The depletions estimates will be reviewed periodically using agreed upon modeling tools as the models, supporting data, information, and the understanding of the Basin's hydrology continue to evolve.

7.3 Information Considered in Developing this IMP

Information used in the preparation of this IMP and to be used in the subsequent implementation of this IMP can be found in the list below. These materials can be obtained by contacting TBNRD or NeDNR.

- The Order of Final Determination of River Basins, Subbasins, or Reaches as Fully Appropriated, and Describing Hydrologically Connected Geographic Area in the Matter of the Portion of the Platte River Basin Upstream of the Loup River Confluence, the North Platte River Basin, and the South Platte River Basin within the South Platte Natural Resources District, the Twin Platte Natural Resources District, and the Central Platte Natural Resources District
- The Order Designating Overappropriated River Basins, Subbasins, or Reaches, and Describing Hydrologically Connected Geographic Area in the Matter of the Platte River Basin upstream of the Kearney Canal Diversion, the North Platte River Basin, and the South Platte River Basin
- The TBNRD First Increment IMP
- The TBNRD *Ground Water Management Plan*
- The TBNRD *Ground Water Management Plan Rules and Regulations*
- COHYST, COHYST 2010, and WWUM Models
- The Nebraska New Depletion Plan
- Applicable Nebraska Revised Statutes
- The items listed in *Department of Natural Resources Rules for Process and Procedures, Title 454, Neb. Admin. Code*
- *Department of Natural Resources Rules for Groundwater, Title 456, Neb. Admin. Code*
- *Department of Natural Resources Rules for Surface Water, Title 457, Neb. Admin. Code*
- The Robust Review analysis
- The Upper Platte INSIGHT analysis
- The Upper Platte First Increment Basin-Wide Plan
- The Upper Platte Second Increment Basin-Wide Plan
- Information developed by and data collected for the Platte River Recovery Implementation Program
- Additional data on file with TBNRD and NeDNR

8: FIRST INCREMENT ACCOMPLISHMENTS

8.1 Studies Conducted in the First Increment

The Upper Platte Basin NRDs and NeDNR conducted several studies in the first increment, which were specifically identified by the IMPs. Large amounts of information and data were collected and used in these studies and other analyses. The purpose was to help evaluate the potential effectiveness of various strategies in achieving the goals and objectives of that IMP and to help gage progress during the first increment.

8.1.1 Assessing Available Water

A) Surface Water

A study of unappropriated surface water, and its availability in time and location, was conducted during the first increment; see reports by HDR and The Flatwater Group, Inc. (2010[7], 2013[8]). A list of existing surface water appropriations within the basin was compiled as part of the study of unappropriated surface water (HDR and The Flatwater Group, Inc. 2010). It was determined that there are times when unappropriated surface water is available in the basin for relocation or retiming projects. Specifically, the Department determined that between 1954 and 2008 there were excess flows available in some years. Most excess flow events occurred in May and June, and some events were in excess of 30,000 af. A planning tool was developed to estimate amount, duration, and frequency of excess flow by reach.

B) Groundwater

To assist in assessing available groundwater, Tri-Basin NRD certified all groundwater irrigated acres and other uses of groundwater. This information continues to be maintained in a database of certified acres, which tracks transfers, corrections, adjustments, retirements and other changes in consumptive use related to certified acres.

[7] HDR and The Flatwater Group, Inc. (2010). *Evaluation of Historic Platte River Streamflow in Excess of State Protected Flows and Target Flows*. Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

[8] HDR and The Flatwater Group, Inc. (2013). *Evaluation of Historic Platte River Streamflow in Excess of State Protected Flows and Target Flows, Technical Memorandum*. Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

8.1.2 Conservation Study Phases I and II

The Flatwater Group, Inc. completed Phase I of a conservation study in 2013 and provided the results in a Final Technical Memorandum[9]. The purpose of the Phase I study was to assess which conservation measures[10] the Platte Basin Coalition (PBC or Coalition) should consider implementing, as well as to assess potential methods for developing basin-wide estimates of impacts to streamflow due to conservation measures in the fully and overappropriated areas of the basin.

Phase I provided a matrix which assessed the magnitude of impact to streamflow for each conservation measure at different levels of intensity, as well as the required resources and cost to implement each method. The matrix also provided information on the effect to overland runoff, recharge, and net effect on evapotranspiration (ET) for each conservation measure at varying levels of intensity. Conservation measures assessed included structural (e.g., terraces, dams, canals, etc.) and non-structural (e.g., tillage, irrigation management and efficiency, crop rotation, soil monitoring, buffers, etc.) measures.

Phase II, which is a technical assessment of impacts from changes in tillage practices and irrigation efficiencies, is in progress.

8.1.3 Conjunctive Management Study

Briefly, conjunctive management is defined as "the coordinated and planned use and management of both surface water and groundwater resources to maximize the availability and reliability of water supplies in a region to meet various water needs." Successful conjunctive management projects generally include three components, 1) diversion of surface water, 2) recharge facilities, and 3) use of the water. Project impacts (e.g., water yield, water quality, economics, the environment, etc.) and alternatives must be considered, as well as legal constraints. A monitoring plan should also be developed to assess project performance. All of these components were then used in a case study to evaluate several hypothetical projects on the Western Canal, a 20-mile canal that diverts South Platte River flows downstream of the Julesburg gage through farmland toward Ogallala, NE.

In 2011, HDR and The Flatwater Group, Inc. published the Conjunctive Management Study [11]. The objectives of this study were to identify general

[9] The Flatwater Group, Inc. (2013). Final Technical Memorandum of Conservation Study. Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

[10] The Final Technical Memorandum defines conservation measures as "practices designed to control or prevent soil erosion, enhance the beneficial use of precipitation and irrigation water, or reduce non-beneficial water consumption."

[11] HDR and The Flatwater Group, Inc. (2011). *Conceptual Design of a Conjunctive Management Project*.

elements, potential approaches, and constraints necessary for planning and evaluation of conjunctive management projects.

8.1.4 Inventory of Sandpits and Small Reservoirs

As part of Nebraska's commitment to PRRIP, the Department has been charged with estimating the cumulative impacts of new or expanded, unregulated surface water activities. Therefore, in 2013, the Department conducted an inventory and analysis of sandpits and reservoirs with capacity below 15 acre-feet throughout Upper Platte River Basin[12]. This analysis used multi-temporal aerial imagery from 2005 and 2010, and implemented remote sensing techniques to delineate and compare the number, size, and distribution of these water bodies. Baseline data generated from 2005 imagery were compared to 2010 imagery in order to identify changes in the overall surface areas of these unregulated water bodies within the basin. Once these new or expanded water bodies were identified, the Natural Resources Conservation Service (NRCS) evapotranspiration (ET) calculator was used to estimate the resulting change in consumptive use due to ET.

The inventory component of the study was extremely labor intensive and required approximately 2,500 labor hours to identify, measure, and categorize over 13,000 remotely sensed features. After comparing data from both years, the study found 94 new or expanded sandpits and 9 new reservoirs. New and expanded sand pits represented a cumulative increase in open water surface area of 728 acres and new reservoirs were responsible for a cumulative increase of 19 acres for a total of 747 new acres of unregulated surface water throughout the basin from 2005 to 2010.

Once the change in open water acreage attributed to unregulated surface water was determined, the NRCS calculator was used to estimate the resulting change in consumptive use due to ET. The results of the NRCS analysis found a pronounced decrease in consumptive use due to ET during the growing season with a modest increase in consumptive use during the non-growing season. Additionally, the NRCS analysis identified a very slight increase in consumptive use due to new reservoirs, which was consistently distributed across all months. Ultimately, the NRCS analysis estimated that the increase in unregulated surface water acreage from 2005 to 2010 resulted in a net decrease in consumptive use of 678 acre-feet per year throughout the basin. The results of this study were presented to PRRIP's Water Advisory Committee on May 6, 2014.

Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

[12] Zoller, A. (2014). 2005 – 2010 Consumptive Use of Small Man-made Water Bodies in the Platte Surface Water Basin Above Columbus [PowerPoint Presentation]. Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

8.1.4 Augmentation Well Study

Tri-Basin NRD initiated Phase I of the North Dry Creek Augmentation Project in 2011 to supplement flow in the Platte River by pumping wells in the High Plains Aquifer and discharging the water into North Dry Creek Ditch, which is a tributary to the Platte River. In 2014, an evaluation of the augmentation project was conducted by HDR and a subsequent Augmentation Report[13] was published estimating the net effects on the Platte River, and potential Phase II expansion of the project.

An analytical stream depletion model and the draft COHYST 2010 groundwater model were used to estimate project performance for a 26-year period. The models showed stream depletion from the pumping of the augmentation well largely mimicked the pumping pattern and showed a long-term stream depletion factor of approximately 45%. The COHYST 2010 model results were expected to be more realistic in that it considers all potential surface and groundwater interactions and considers actual flows and operational conditions.

To review the 2011 – 2013 augmentation well operation, data on groundwater levels and pumpage of the augmentation and nearby wells were collected, in addition to stream flow at the North Dry Creek gaging station.

A sensitivity analysis was performed for the distance between the augmentation well and both the North Dry Creek and the Platte River. Results showed a decrease in stream depletion factor from approximately 42% to 15% as the well was moved from 0.25 miles to 4.0 miles from North Dry Creek, and a decrease from approximately 90% to 49% from the Platte River. The Platte River was twice as sensitive to stream depletion as the North Dry Creek.

A sensitivity analysis was also performed for two different operating schedules: 1) pumping for eight weeks continuously and 2) pumping for two weeks on and two weeks off, for 16 weeks. Results showed that the pumping schedules were nearly identical, so the interrupted schedule was no more advantageous than the continuous schedule.

Phase II of this project is identical to Phase I, with the same key goal to offset depletive effects in the Platte River from post-1997 development in Tri-Basin NRD. The location of the Phase II well is approximately four miles upstream of the Phase I well on North Dry Creek. The Augmentation Report also analyzed

[13] HDR. (2014). *Tri-Basin Natural Resources District and Nebraska Department of Natural Resources Augmentation Well Evaluation Report*. Retrieved from https://dnr.nebraska.gov/water-planning/upper-platte-river-publications

the stream depletion for the Phase II augmentation well and found similar results, with overall lower depletions and an estimated stream depletion of 40%. Recommendations were included for future augmentation well siting.

Conclusions from the Augmentation Report include 1) a strong degree of interconnection between surface and groundwater during no or low flow conditions in North Dry Creek and therefore wells should not be operated when there is no flow in the creek. 2) Stream depletion estimates of the Phase I well was 45%, and was 40% for the Phase II well. 3) The Platte River was twice as sensitive to depletion as North Dry Creek mainly due to higher aquifer transmissivity and streambed conductance. 4) Varying the well operation schedules has little to no long-term benefit. Finally, 5) locating wells further from the stream greatly reduces the long-term depletive effects of the augmentation project.

8.2 Summary of Management Actions

These actions include a moratorium on construction of new wells to serve newly developed irrigated cropland and a moratorium on development of additional irrigated acres. NeDNR and TBNRD have cooperated to construct wells to augment streamflows in North Dry Creek (a Platte tributary), participate in the United States Department of Agriculture (USDA) Conservation Reserve Enhancement Program (CREP) and contract with CNPPID to divert excess flows from the Platte into CNPPID's Elwood Reservoir, canal systems, and federally-owned Rainwater Basin wetlands to provide groundwater recharge and offset depletions to streamflow resulting from groundwater pumping.

The Department continued the formal moratorium on all new surface water appropriations for the Platte River Basin including the TBNRD.

The first increment IMP also called for several administrative actions regarding groundwater management. These actions were carried out by the TBNRD:

1) The Moratorium on new uses of groundwater was maintained with variances offered to allow new uses in situations where landowners can offset all depletions associated with those uses.
2) Rules regulating physical transfers of groundwater and relocation of certified irrigated acres are enforced by the TBNRD. The NRD's rules allow relocation of groundwater uses when such transfers result in no new net depletions to the Platte or its tributaries.

8.3 Assessment of First Increment (Robust Review)

As required by statute, NeDNR and the Platte Basin NRDs conducted a Robust Review of the progress made toward achieving the goals and objectives following the process outlined in the first increment IMP. This study was an update of the assessment described in the 2008 COHYST report (Section 7.1), which established

the first increment targets. The evaluation used data and information from the annual reports and updates developed in support of BWP and Nebraska New Depletion Plan implementation.

This evaluation provides summarized estimates of the streamflow impacts resulting from gained and lost irrigated land, controls (allocations and transfers), expansion and contraction of municipal and industrial uses, managed recharge, stream augmentation, and permitted uses that occurred through 2013. The report is a synthesis of all of these efforts and provides summarized updates of new targets that will be used to guide current increment planning goals and objectives.

The Upper Platte Basin Robust Review outlines the methods, limitations, and results of the most recent Robust Review and represents the best available science to support current increment planning. Figures 3 and 4 below illustrate the results for the TBNRD for the period of 2019-2029 (current increment). Positive values for streamflow impacts indicate accretions and negative values indicate depletions.

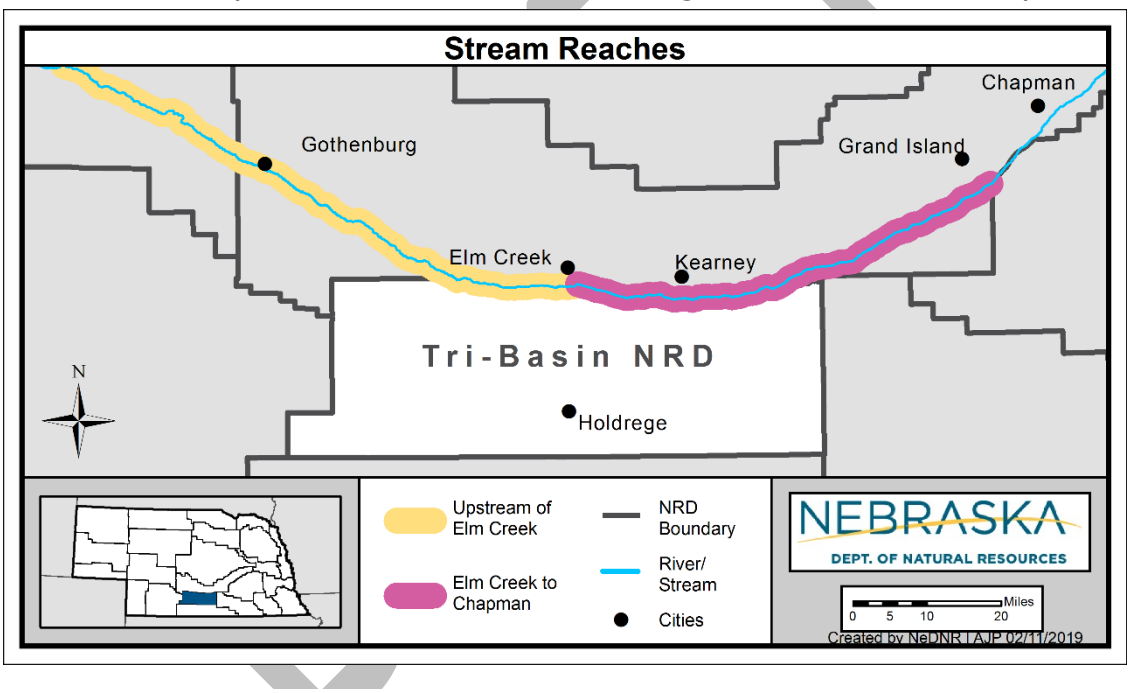

Figure 2. Stream reaches analyzed in the Robust Review

Figure 3 displays the modeled post-1997 impacts of TBNRD to the Platte River upstream of Elm Creek, as shown in Figure 2 (including groundwater-only irrigation, municipal and industrial development, groundwater irrigated acres retirements, and recharge projects on the Platte River contracted by TBNRD). The impacts of changes, activities, and actions taken through 2013 are reflected in the data. A linear trend line has been added to the modeled impacts from 2014-2063, and the inter-annual variability range of modeled impacts across the trend shown by the grey band. An inset in Figure 3 shows the same data at a smaller scale. Positive values for streamflow impacts indicate accretions and negative values depletions.

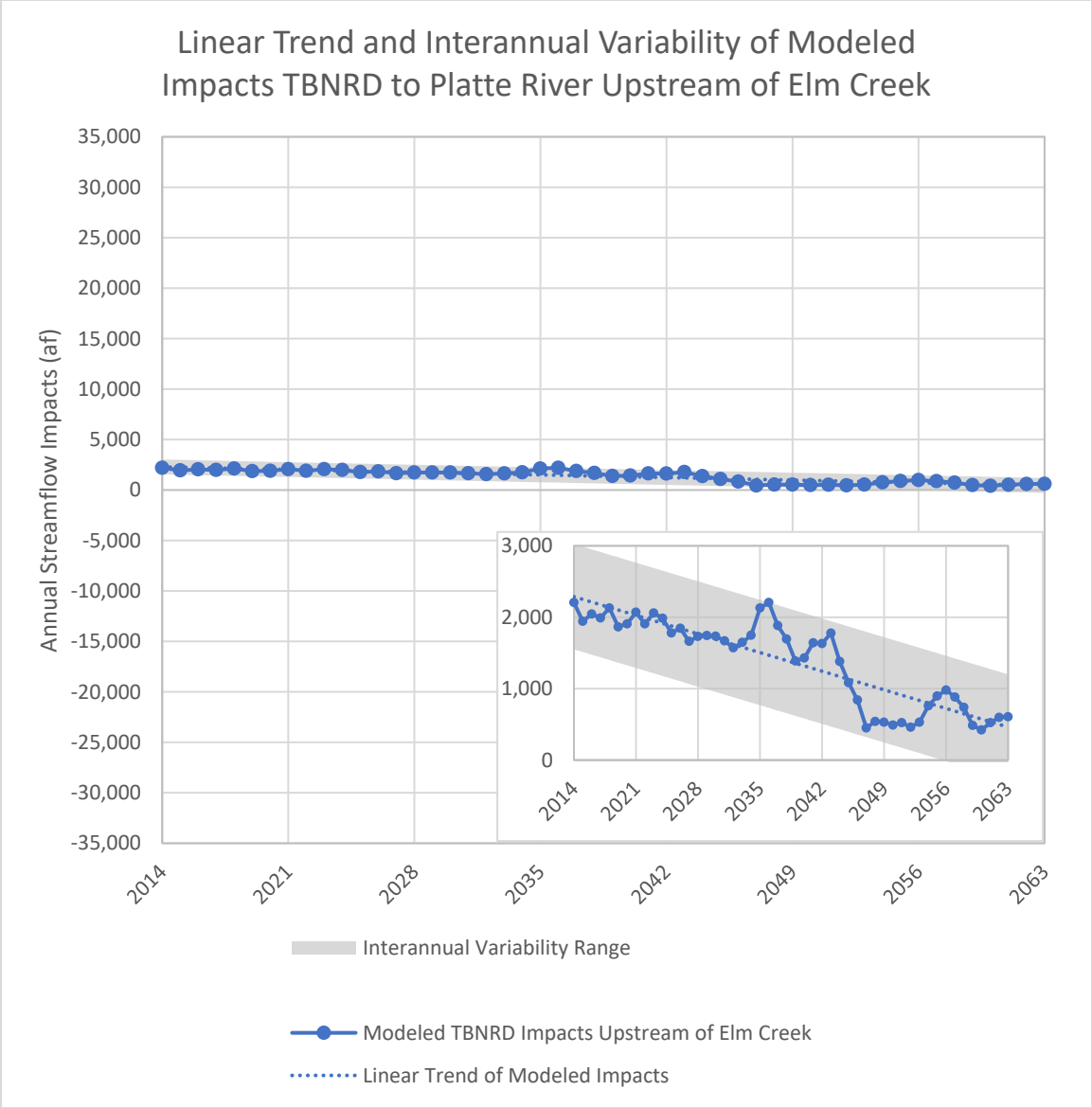

Figure 3. Modeled TBNRD post-1997 impacts to the Platte River upstream of Elm Creek, the linear trend line of the modeled impacts from 2014-2063, and the inter-annual variability range of modeled impacts across the trend.

Figure 4 displays the modeled post-1997 impacts of TBNRD to the Platte River between Elm Creek and Chapman, as shown in Figure 2 (including groundwater-only irrigation, municipal and industrial development, groundwater irrigated acres retirements, recharge projects on the Platte River contracted by TBNRD, and streamflow augmentation). The impacts of changes, activities, and actions taken through 2013 are reflected in the data. A linear trend line has been added to the modeled impacts from 2014-2063, and the inter-annual variability range of modeled impacts across the trend shown by the grey band. An inset in Figure 4 shows the same data at a smaller scale. Positive values for streamflow impacts indicate accretions and negative values depletions.

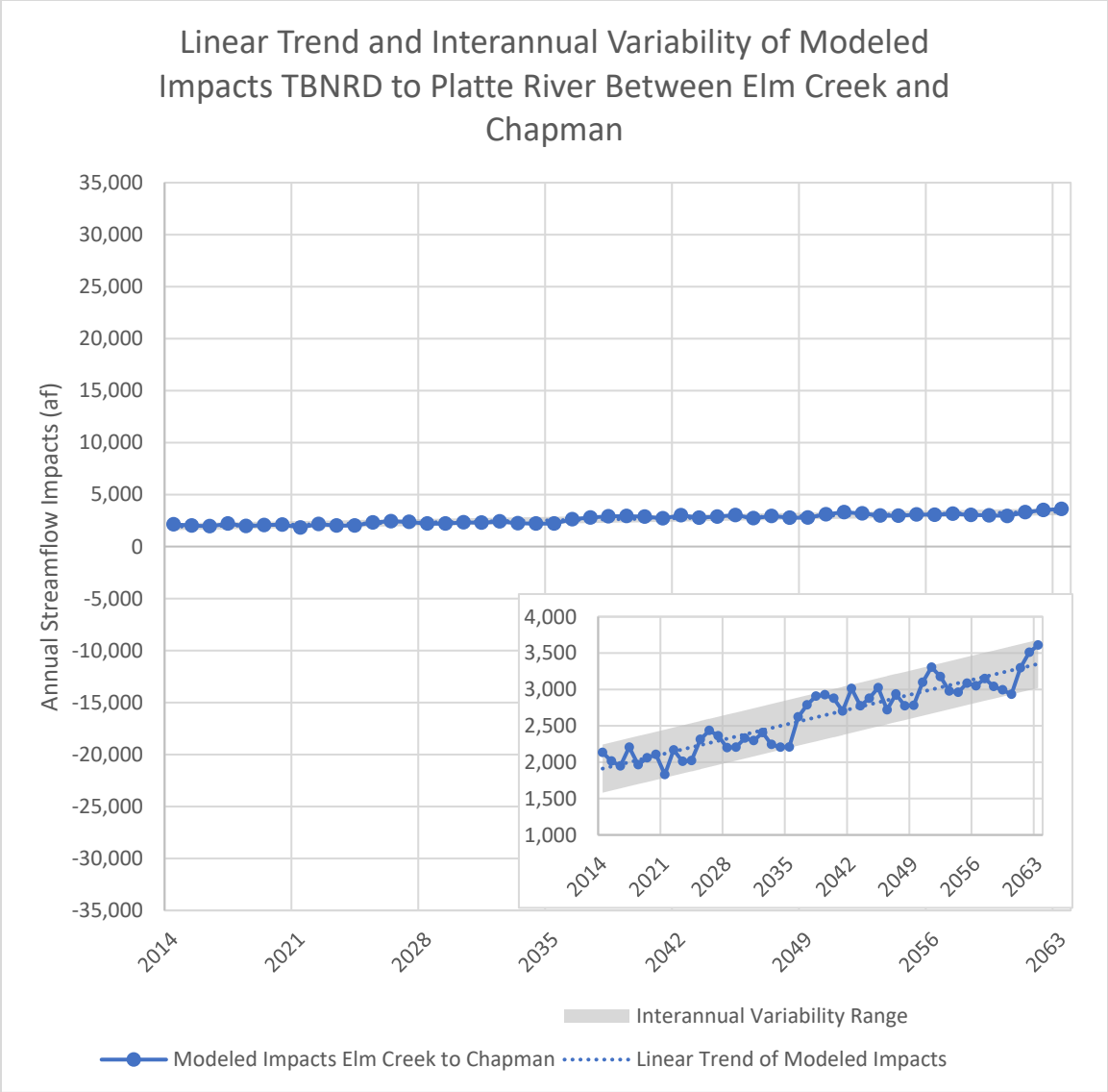

Figure 3. Modeled TBNRD post-1997 impacts to the Platte River between Elm Creek and Chapman, the linear trend line of the modeled impacts from 2014-2063, and the inter-annual variability range of modeled impacts across the trend.

The charts show the range of uncertainty around the trend line of the modeled data. Potential future offsets are impacted by the variability in climate, therefore a trendline is shown to smooth out the potential future effects of climate variability. Values are the result of the most recent robust review conducted by NeDNR. Details on the analysis are in the Upper Platte Basin Robust Review.

It is recognized that while they were not analyzed during this robust review, several excess flow diversions for recharge occurred after 2013 during the first increment which would also provide accretions to the stream. Other actions, such as retirements and land use changes after 2013, provided additional accretions but were not part of this Robust Review analysis.

8.4 Assessment of Fully Appropriated

There are several potential approaches to assessing the difference between the current level of development in the Upper Platte Basin and a fully appropriated condition. Identifying this difference is critical in making progress toward a fully appropriated condition in the basin.

8.4.1 Total Depletions

This evaluation provides summarized estimates of the streamflow impacts resulting from development of groundwater-only irrigated lands from 1950 to 2013 within each NRD. An evaluation of the streamflow impacts resulting from gained and lost irrigated land, controls (allocations and transfers), municipal and industrial expansion and contraction, managed recharge, stream augmentation, and permitted uses initiated or expanded on or after July 1, 1997, within each NRD are provided in the Upper Platte Basin Robust Review Report.

The projections of future stream baseflow effects will be reviewed and updated through the course of the second increment, with future evaluations guiding any necessary refinements and modifications to the planning goals, objectives, actions, and controls.

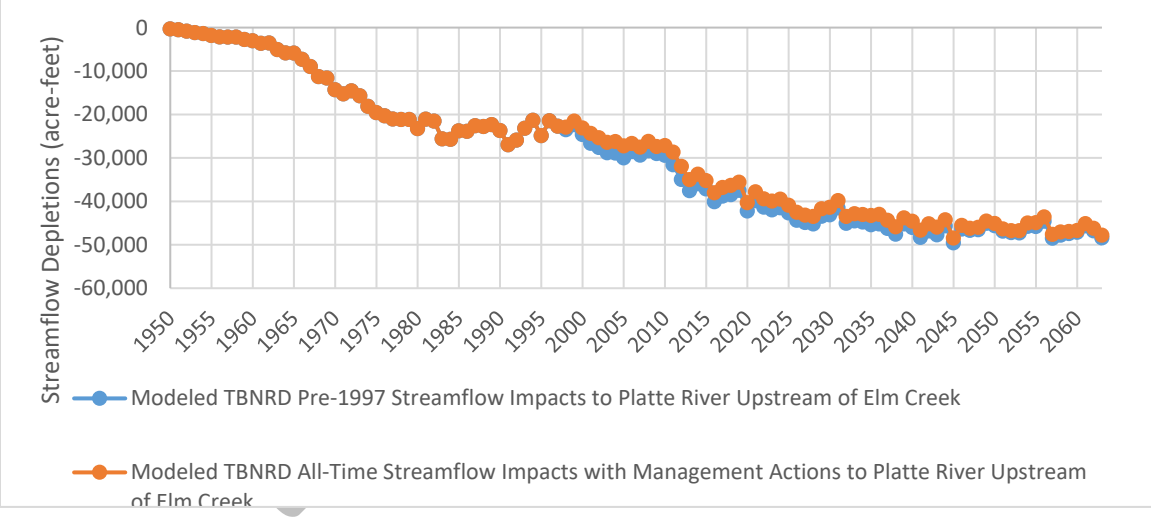

Figure 4. Modeled TBNRD post-1997 impacts to the Platte River upstream of Elm Creek

8.4.2 INSIGHT

The INSIGHT methodology is an approach to assessing the balance between water supplies and water demands within a basin. INSIGHT consolidates data from several sources, including NeDNR, the United States Geological Survey (USGS), the United States Bureau of Reclamation (USBR), and local NRDs.

Those hydrologic data are used to conduct an analysis of the following items at the basin and subbasin level:

A) Groundwater and surface water supplies available for use

B) Current demands on these supplies

C) Long-term impacts on these water supplies due to on-going uses

D) Projected long-term impacts on these water supplies resulting from hypothetical five percent growth in total use

E) Balance between water supplies and demands.

If a basin's near-term demand and/or the long-term demand of hydrologically connected groundwater and surface water exceeds the basin water supplies, then supplies may not be sufficient to sustain demands over the long term. The figure below shows the average balance of water supplies in the basin compared to the various levels of demands for the entire Upper Platte Basin. When all demands in the basin are considered, the demands outweigh the supplies by approximately 960,000 acre-feet. This means that there may be years when the supplies are not adequate to meet all the demands

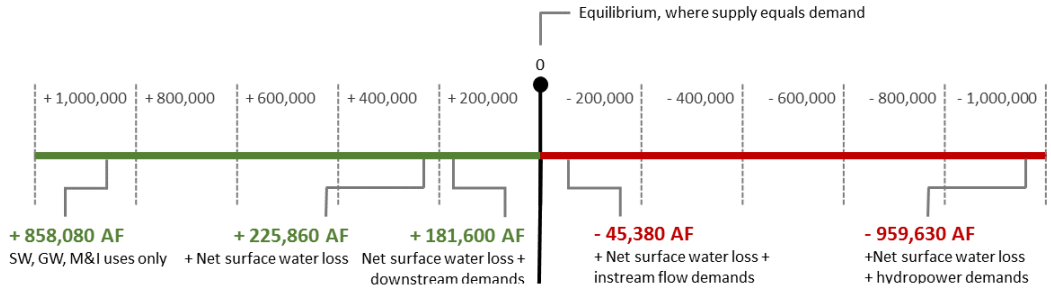

Figure 5. Average balance of water supplies in the basin compared to the various levels of demands.

8.5 Basin-wide Coordination in the First Increment (Platte Basin Coalition)

The first increment IMP called for the development of a list of criteria to evaluate the potential to use available surface water and groundwater supplies in management projects to meet the goals and objectives of the IMP. In order to create a unified approach across the basin the Department and the NRDs established an interlocal cooperative agreement (ILCA).

8.5.1 Interlocal Cooperative Agreement

The Platte Basin NRDs and the Department have established an interlocal cooperative agreement called the Platte Basin Coalition, which can provide

funding for incentive programs and water supply management projects aimed at reducing or offsetting consumptive use within the overappropriated portion of the Platte River Basin.

8.5.1.1 Protocols

The NRDs and NeDNR have developed, through the Coalition, a protocol that will be followed to evaluate potential projects including the retirement of water uses and the implementation of other offset projects. This protocol will be used to evaluate potential projects to assess the appropriate amount of funding that will be allocated toward that project from the Coalition. Projects with a greater or quicker impact on the stream are given preference over those that do not have as much an impact. Project costs, benefits, permitting and regulatory constraints are also considered.

8.5.1.2 Funding

The ILCA is partially financed by the Water Resources Cash Fund (WRCF). This fund receives monies from both the general fund and the Nebraska Environmental Trust (NET). Under statute, the WRCF may be used for the reduction of consumptive uses or the enhancement of streamflows or groundwater recharge. These funds may be used in overappropriated or fully appropriated areas for projects to study, develop, and implement management actions taken to reduce consumptive uses of water or to enhance streamflows or groundwater recharge. Funding of projects through the PBC is shared between the NRDs and the Department, with local NRD funds matching NET funds. Expenditures are approved by all members of the Coalition.

Additional sources of funding are sought by the Department and the NRDs, through federal program such as CREP, the Environmental Quality Incentives Program (EQIP), etc. Other outside sources of funding will continue to be sought to increase the leveraging ability of the local dollars spent on projects.

8.5.1.3 Technical Work

The Five Upper Platte NRDs and NeDNR have a technical working group that examines technical issues and statutory aspects of the BWP and IMPs. NRD managers and NeDNR will agree to technical analyses prior to beginning any work, and the PBC will approve any reimbursed expenditures for technical work.

The technical working group evaluates all aspects of analysis, including the conceptual design, data evaluation, analysis, and evaluation of the results. It is then the responsibility of the technical group to explain these analyses

to administrators for incorporation into this plan or evaluation of progress made toward meeting plan goals.

During the next increment, the technical group will evaluate various aspects of data and models that may include the effects of conservation measures on depletion results, more efficient methods to track changes in location and amount of irrigated lands and water consumption associated with them. The technical group will follow the basin-wide tenets outlined in Section 7.2 while carrying out any work necessary for the implementation of this IMP.

9: GOALS AND OBJECTIVES

The Department and the five Upper Platte Basin NRDs conducted a Robust Review as part of the actions required in the first increment. This analysis provided each NRD with information they need to assess their progress in meeting the goals and objectives of their individual IMPs as well as overall progress in the Upper Platte Basin. The outcome of the Robust Review showed that Tri-Basin NRD met their IMP targets as defined in the first increment. The Robust Review also indicated that a second increment is needed to ensure that Tri-Basin NRD will continue to meet IMP and BWP goals and objectives. The Robust Review results have provided IMP targets for this second increment.

Actions to support the successful implementation of the Goals and Objectives in this Chapter can be found in Chapter 10 of this IMP.

Goal 1 Reach and Maintain a Fully Appropriated Condition

To incrementally achieve and sustain a fully appropriated condition while maintaining economic viability, social and environmental health, safety, and welfare of the basin.

Since this goal was part of the previous increment IMP, Tri-Basin NRD has already taken several actions to achieve it. A summary of these actions can be found in Section 8.2 of this IMP

Objective 1.1: Within the current increment of this IMP, implement measures to address impacts of streamflow depletions to surface water appropriations and water wells constructed in aquifers dependent upon recharge from streamflow to the extent those depletions are due to water use initiated after July 1, 1997.

The results of the Robust Review indicate that TBNRD has fully offset impacts to streamflows resulting from Post-1997 water uses. During the next increment, Tri-Basin NRD will need to

maintain the progress they made in the first increment. This is falls under Objective 1.2.

Objective 1.2: Maintain previous increment mitigation progress. A summary of offset actions taken during the first increment can be found in Chapter 8.2 of this plan. Many successful programs and projects were implemented. These offset actions were analyzed as part of the Robust Review to determine their impacts on streamflows and meeting post-1997 targets.

It is recognized that some actions undertaken in the first increment are temporary projects, which may come to an end during the current increment.

A) NeDNR and the NRD will keep policies, projects, and practices in place, as appropriate, which provide offsets or supply equivalent offsets so that the current level of depletions is not exceeded.

B) Targets

1) Short term planning targets

Tri-Basin NRD Short Term Targets		
Year	Upstream of Elm Creek	Elm Creek to Chapman
2019	2,100	2,100
2020	2,100	2,100
2021	2,000	2,100
2022	2,000	2,100
2023	2,000	2,200
2024	1,900	2,200
2025	1,900	2,200
2026	1,800	2,300
2027	1,800	2,300
2028	1,800	2,300
2029	1,700	2,400

Table 1. The Table above shows the best estimate of accretions to the Platte during the next increment of the IMP. The methods used to develop the post-1997 targets for the TBNRD are described in the Robust Review Document and in Chapter 8. A graph of the complete Robust Review Results can also be found in Chapter 8. Triggers for the implementation of regulatory controls based upon these targets can be found in the Action Items Chapter 10.

2) Long-term planning targets
Within the current ten (10) year increment, maintain current levels of accretions to the Platte and seek

opportunities to further reduce impacts to Platte streamflows for the period 2059-2063. The average accretions for that time-period are 500 acre-feet to the Platte Upstream of Elm Creek and 3,300 acre-feet for the Platte from Elm Creek to Chapman. This rate is the current best estimate and is subject to change based upon new data and information.

Tri-Basin NRD Long Term (2059-2063 average) Targets		
	Upstream of Elm Creek	Elm Creek to Chapman
Tri-Basin NRD	500	3,300

Table 2. The table above shows the best estimated accretions to the Platte during the next increment of the IMP. The methods used to develop these post-1997 targets for TBNRD are described in the Robust Review Document and in Chapter 8.

Objective 1.3: Make progress toward a fully appropriated condition. Impacts of streamflow depletions to surface water appropriations and water wells constructed in aquifers dependent upon recharge from streamflow to the extent those depletions are due to water use initiated prior to July 1, 1997, may be addressed prior to a subsequent increment with the intent of achieving a fully appropriated condition.

During the first increment, two analyses were performed to estimate the balance of water supplies and demands within the Upper Platte Basin. This included an estimate of all groundwater depletions to streamflow (Total Depletions) and the INSIGHT analysis. Both are described in Chapter 8.

A) Complete a total depletions analysis and develop an estimate for a fully appropriated condition

Objective 1.4: Review the implementation of this IMP annually to ensure that the IMP provisions are adequate to sustain progress toward and/or maintain a fully appropriated condition.

Objective 1.5: Once a fully appropriated condition is achieved, maintain such condition through implementation of the IMP.

Goal 2 Interstate Compliance

To ensure that no act or omission of the TBNRD or NeDNR would cause noncompliance by Nebraska with any interstate decree, compact, or other formal state contract or agreement.

Objective 2.1: Ensure that no act or omission of the TBNRD or NeDNR would cause noncompliance by Nebraska with the NNDP included within PRRIP, for as long as PRRIP exists.

Objective 2.2: Ensure that the groundwater and surface water controls adopted in the individual NRD IMPs are sufficient to ensure that the state will remain in compliance with the NNDP.

Objective 2.3: Collectively, as defined in the NNDP, offset the new depletions caused by new uses within the Platte River Basin NRDs.

Objective 2.4: Ensure that post-1997 new or expanded uses, including irrigation, municipal, industrial, rural domestic and other new water related activities are assessed and offset for compliance with the NNDP. This assessment will be part of the Robust Review, explained in Chapter 10.7 of this plan.

Objective 2.5: The Department and TBNRD will insure that implementation of the IMP will not interfere with successful implementation of the joint IMP for the Republican Basin portion of TBNRD by reducing potential "imported water" gains to the Republican Basin.

Goal 3 Consistency and Updates

To keep the IMP current, maintain consistency with the Basin-Wide Plan, and keep water users informed.

Objective 3.1: Amend this IMP as needed to remain consistent with the Basin-Wide Plan.

Objective 3.2: Participate in basin-wide planning activities

Objective 3.3: Improve information sharing with interested parties.

Objective 3.4: Conduct planning for subsequent increments of the plan, as necessary.

Objective 3.5: If appropriate and necessary, follow the dispute resolution process in the Basin-Wide Plan.

10: ACTION ITEMS

Chapter 10 contains the action items that will be carried out to accomplish the goals and objectives of the IMP. These actions range from ongoing non-regulatory actions such as information and education efforts, to maintenance of current regulatory actions, and the potential for future increased controls if certain triggers

cannot be achieved through the other actions taken by the NRDs or DNR. As described within this Chapter, more details on the statutes or rules followed by the NRDs or DNR can be found at the offices of each respective agency. For purposes of transparency/simplicity, the full length of those documents are not repeated herein, so the reader is directed to each agency to read the full details on how any particular action item may be carried out.

10.1 Information and Education Programs

Tri-Basin Natural Resources District and the Department will provide educational materials to the public and/or carry out educational activities that may include, but not be limited to, the following:

- The fully appropriated determination
- The overappropriated designation
- The Integrated Management Plan
- The Nebraska New Depletion Plan
- The Platte River Recovery and Implementation Program
- Hydrologically connected groundwater and surface water
- Invasive species management
- Conversion of irrigated acres to dryland agriculture or wildlife habitat
- Limited irrigation cropping systems
- Soil residue and tillage management
- Alternative crops
- Water use measurement techniques
- Eco-tourism, crop diversification, changes in land use, to support diversity in revenue streams of water users within the basin, as a means of maintaining economic viability
- Educational programs to support the implementation of Incentive Programs
- Funding sources for programs that enhance water supply

These educational materials and/or activities may include, but not be limited to, joint public meetings, pamphlets, and website information.

10.2 Incentive Programs

The Department and TBNRD intend to establish, implement, and continue financial or other incentive programs to reduce consumptive use of water within the TBNRD to meet the goals and objectives of this IMP.

1) Incentive programs include any program authorized by state law and/or federal programs such as the CREP, or EQIP.

2) Other State or NRD Programs

   The TBNRD and the Department may investigate opportunities to reduce the consumptive use of water in order to enhance water supply. The TBNRD and the Department may develop an incentive-based program if such an opportunity exists.

   A) All projects and programs will:

      i. Use the best science readily available. This will follow the basin-wide tenets outlined in Section 7.2. These will be consistently evaluated according to the protocol developed by the PBC. Benefits will be assessed using the agreed upon methods and tools.

      ii. Enhance groundwater quantity, groundwater quality, and recognize the value of return flows.

      iii. Remain in compliance with any state or federal laws, contracts, interstate compacts, or decrees that govern the water use of the irrigation districts

   B) The general process will be:

      i. For existing surface water appropriations, contact the appropriators to determine willingness to cooperate, lease and/or sell those appropriations. If willing, develop and execute contract(s) with appropriator(s).

         a. Work with CNPPID, not just individual landowners served by the irrigation district, when potential projects affect the operation of the irrigation district.

         b. Retired surface water rights are still viable rights under statute. While typically a surface water right which has not been used for more than five years may be cancelled due to nonuse, under *Neb. Rev. Stat*. § 46-229.04, if the appropriation is not being used because it is part of an acreage reserve program, or other state or federal program, there is sufficient cause for nonuse and the right is still valid. If the land is no longer under a program, this applies for up to 15 years as long as there are not more than five consecutive years of nonuse while the land is not under a program.

      ii. For existing groundwater uses, contact landowners to determine willingness to cooperate with proposed projects. If willing, develop and execute contracts with such landowners.

      iii. Submit the required permit applications.

      iv. Implement the approved projects.

3) Other identified potential programs

   At this time, the specific other programs that have been identified are:

   A) Potential purchase or lease of surface water irrigation district appropriations in order to transfer those appropriations to intentional recharge appropriations

   B) Exploration of water supply opportunities on the South Platte River

10.3 Water Conservation Incentive Program

The TBNRD is developing a "Water Conservation Incentive Program" (WCIP). The District will purchase or otherwise acquire water use credits from certified groundwater irrigated acres or other groundwater uses or surface water use appropriations. The TBNRD will retire these credits to:

- Offset of new or expanded consumptive uses
- Save water to meet statutory requirements or interstate agreement obligations
- Save water to meet future incremental targets toward achieving a fully appropriated condition
- Sell credits to water users who can then use them to offset new consumptive uses of groundwater within the TBNRD.

  A) TBNRD and NeDNR will follow the basin-wide tenets from Section 7.2 when estimating accretions and depletions resulting from operations of the WCIP.

  B) TBNRD will obtain and maintain easements, lease agreements or other agreements on all property from which surface water or groundwater uses have been temporarily or permanently retired.

  C) TBNRD shall annually report all WCIP deposits, withdrawals, and other activities related to the program.

  D) TBNRD shall follow the appropriate state statute and Department rules and regulations relevant to operation of the WCIP.

10.4 Conjunctive Management

Conjunctive management projects[14] allow for the optimum use of hydrologically connected surface water and groundwater supplies, so that the variability seen in surface water supplies can be compensated for over time, allowing water users to store water during periods of surplus and, in a managed fashion, withdraw that

[14] See Section 8.1.3: Conjunctive Management Study for more information and a definition of "conjunctive management."

stored water in times of shortage, overall increasing the available supply through time. Conjunctive management projects can also create benefits such as, mitigating groundwater level declines and offsetting depletions. The Department and the NRD will identify conjunctive management opportunities and implement such projects with the purpose of meeting the goals and objectives of this IMP. Conjunctive Management may include, but is not limited to:

1) Surface water diversions that provide groundwater recharge during either the irrigation or non-irrigation season
2) Infrastructure development (e.g. dams or canals) that may include groundwater recharge, and recovery projects when appropriate
3) Temporary transfer of surface water appropriations within the NRD to streamflow augmentation, instream flow appropriation, or instream use[15]
4) Development of other groundwater projects for the purpose of providing net accretions to the river
5) Facilitation of contractual agreements between water users
6) Reduction of consumptive use by permanent or temporary retirement of irrigated land

The NRDs and NeDNR will mutually develop procedures to determine when and where projects can be carried out (for example determining and communicating when and where excess flows are available), procedures for carrying out projects (permitting, contracting, and payment procedures), tracking projects and maintaining data records, sharing data, cooperating with other entities wishing to utilize excess flows, and methods for determining benefits from projects (annually for IMP/BWP/PRRIP reporting and for Robust Review purposes). Techniques which can be actively managed and returned to the stream do have benefits over those that are passive (timing and volume of return is uncontrolled, unmanaged, unknown). Conjunctive management projects can be passively or actively managed. Actively managed projects, such as storage of excess water, can be returned to the stream at a specific time in controlled volumes, passively managed, such as recharge of groundwater through excess flow diversions, return to the stream gradually over time and the rate and volume depends on the underlying aquifer material and proximity to the stream.

[15] *Neb. Rev. Stat.* § 46-290(5) in part states that "For any transfer or change approved [to augment flow in a specific stream reach for any instream use determined by the Department to be a beneficial use,] the Department shall be provided with a report at least every five years […] to indicate whether the beneficial instream use for which the flow is maintained or augmented continues to exist". Title 457 of the Department Rules for Surface Water Chapter 9 Section 002.01 states "For purposes of 46-290(5) R.R.S. 1943, as amended, beneficial use for instream uses shall include: a. Water Quality Maintenance b. Water necessary for compliance with compacts, decrees or other state contracts."

The ability to capture and use excess flows is dependent on advanced notice of the availability of excess flows. NeDNR will develop a protocol for assessing, predicting, and communicating 1) the potential of excess flows to basin water users, and 2) notice of actual availability of excess flows. TBNRD and NeDNR will work collaboratively to record the excess flows diverted, the excess flows diverted into recharge sites, and the amount of water returning to the river at canal return flow structures. Additionally, TBNRD and NeDNR will collaboratively review and analyze the data from the excess flow diversions to determine the amount of recharge that occurred during the event within the canal and recharge pits. Data on canal recharge and conjunctive management projects will be shared as part of the annual reporting process, described in Section 10.7.2. The recharge will be analyzed in future Robust Review or other analyses.

In order to optimize the implementation of various conjunctive management projects where diversions of excess streamflow will occur, operational plans for each project should be developed. These operational plans should include enhanced monitoring and flow of information and data to effectively manage and utilize any available water. These operational plans will provide the Department with objective criteria by which various projects may be prioritized in order to most effectively utilize available excess flows. The public interest will be best served when the most effective projects are selected for diversion during excess flow periods. In addition, such plans and operational attributes will be useful in establishing good cause and passing public interest tests when petitions and applications are filed with the Department.

10.5 Drought Plan

The basin drought contingency plan will serve as a guide for plans developed by individual NRDs. District-level mitigation measures and response actions corresponding to the drought conditions will be identified and implemented at the individual NRD level. Elements of the NRD drought plan include:

- Drought vulnerabilities
- Drought monitoring protocols (basin plan)
- Drought triggers (individual NRD plans)
- Drought mitigation actions (individual NRD plans – potentially basin-wide activities)
- Drought response actions (individual NRD plans – potentially basin-wide activities)
- Drought plan administration (individual NRD plans and basin plan)

The basin-wide drought plan is expected to be completed within the first three to five years of the increment. It is anticipated that the NRD drought plan will be

completed after the basin-wide drought plan, as the basin-wide drought plan is to provide guidance for the NRD drought plan.

10.6 Controls for the Current Increment

10.6.1 Groundwater Regulatory Actions

The District will consider the timing, location and estimated amount of streamflow depletion for all actions within its scope of authority in order to prevent adverse impacts on existing groundwater and surface water users. Actions that will be reviewed include, but are not limited to: moratorium variances, certified acre modifications, certified acre and groundwater transfers, high volume consumptive groundwater use permits, municipal and industrial permits, and other variances to rules, regulations and policies of the district. Evaluation criteria for a control or other action include, but are not limited to:

- Impacts to existing groundwater or surface water users
- Increases in depletions to the Platte River and perennial tributaries
- Increases in consumptive water use
- The amount, location and timing of any changes in depletions or accretions to the river
- Any adverse effects on the state's ability to comply with PRRIP and the Republican River Compact
- Consistency with the purpose of the IMP
- Protection of the public interest and public welfare

The District will periodically review the controls being implemented to carry out the goals and objectives of this IMP. Any changes to the controls must not be in conflict with the goals and objectives of this IMP. The District may adjust or modify the controls or include additional controls as deemed necessary and appropriate by the Board of Directors to achieve the goals and meet the objectives outlined in this IMP. However, if the Board decides to remove any controls listed below, the District and the Department must agree to appropriately amend this IMP in such a way that their removal does not interfere with IMP implementation prior to removal of these controls. Changes to these controls may be made as a result of progress being made toward achieving the goals of this IMP, according to *Neb. Rev. Stat.* § 46-715(5)(d)(i).

The District and the Department will coordinate with the other Platte Basin NRDs (Central Platte NRD, Twin Platte NRD, South Platte NRD and North Platte NRD) to develop a common method of calculation, following the basic tenets outlined in Section 7.2, that will be applied when calculation of depletions or accretions to the stream are necessary to implement groundwater controls.

Any actions taken by TBNRD will be documented and shared with the Department pursuant to Chapter 10.7. TBNRD will work with well owners to update water well registrations to reflect newly permitted or additional uses.

The District will continue to implement controls to:

- Limit increases in irrigated land within the management area or otherwise limit increases in consumptive use of water for any purpose
- Require approval of transfer permits and place appropriate conditions on such transfers
- Close the management area to issuance of additional groundwater permits unless the permit is conditioned to conform to the purposes for which the management area was designated
- Adopt specific controls for unique categories of groundwater uses
- Impose limitations on the operation of water wells constructed before the designation of a management area and those drilled afterward to the extent necessary.

The following mechanisms may be used by the District in order to implement the above controls.

A) Moratorium

TBNRD has implemented a moratorium on the issuance of new water well construction permits and on new or expanded groundwater uses. TBNRD may grant variances from the moratorium if applicants agree to implement adequate measures to offset impacts of water consumption by any new or expanded use, or if there will be no increase in consumptive use due to the or expanded uses.

B) Certification of Irrigation Uses

All groundwater irrigation uses have been certified by TBNRD. TBNRD may grant modifications to certified acres for purposes of improving the accuracy of those records.

C) High Volume Groundwater Consumption Permits

Permit will be required for large commercial or industrial water users, with the exception of municipalities, who desires to modify or expand their consumptive use of water.

D) Variances

TBNRD may grant a variance for good cause shown for any of the controls in this IMP or within the NRDs rules and regulation.

E) Mandatory Education

The NRD already has a water quality education requirement. In addition, the NRD will also seek to implement a water quantity education component with the intent of informing producers about current best management practices for reducing consumptive use of crops and increasing water use efficiency.

F) Mandatory Data Collection

The NRD will continue to require water use data reporting for certain permitted water uses, the intent of which will be to inform the Robust Review analysis and triggers.

G) Transfers

The purpose of a transfer permit is to allow for the consumptive use of groundwater to be changed in either location or purpose. TBNRD may permit, regulate, or take action on groundwater transfers identified below. A transfer permit issued by TBNRD shall be required before any transfer takes place.

- Physical transfer of groundwater off of the overlying land
- Transfer of the type of use or addition of use
- Transfer of certified irrigated acres
- Physical transfer of groundwater and transfer of certified irrigated acres between the TBNRD and an adjoining NRD
- Municipal transfer permit
- Industrial transfer permit
- Transfers out of state.

The following types of groundwater transfer permits require coordination and communication between the Department and TBNRD prior to issuance of such permits.

- **Municipal Transfer Permits –** Transfers without a municipal and rural domestic transfer permit from the Department will require a transfer permit from the TBNRD.
- **Industrial Transfer Permits –** Transfers without an industrial transfer permit from the Department will require a transfer permit from the TBNRD.
- **Transfer Out of State –** The Department will consult with the TBNRD when considering applications filed to transfer groundwater out of state, pursuant to *Neb. Rev. Stat.* § 46-613.01. The District will take action to approve or deny transfer requests based on the

same criteria that the Department uses prior to issuing comparable transfer permits for in-state purposes; and water well construction permits shall not be issued for out-of-state uses unless and until the board of the TBNRD has granted variances to the moratorium on the issuance of water well construction permits and has approved associated transfer permits.

H) Municipal and Industrial Accounting Required for the Calculations of Baselines and the Determination of Allocations

As described within Objective 2.4 of this plan, for purposes of compliance with the NNDP, TBNRD will be responsible for offsetting all increases in consumptive use that result in streamflow depletions due to changes in municipal consumptive use after 1997, unless some portion of the increase is greater than an allocation of the municipality that was set in accordance with *Neb. Rev. Stat.* § 46-740, then the NRD may require the municipality to provide offsets for that portion.

Tri-Basin NRD has enacted baseline accounting calculations for industrial uses to be consistent with *Neb. Rev. Stat.* § 46-740. On January 1, 2026, the TBNRD will establish baselines and allocations for municipal and industrial users and will require that offsets be provided for any increases in consumptive use of water above the annual allocation that result in a decrease in streamflow shall be offset by the municipality or industry.

10.6.2 Triggers

In order to determine whether additional groundwater regulatory actions are needed, the modeled annual stream accretion amounts shown in Table 1 under Objective 1.2 will be compared to the stream accretions resulting from the ongoing and future actions taken by TBNRD as well as any new depletions resulting from new uses or increased depletions from existing uses. Based on the information shown in Table 1, the estimated stream accretions from existing management actions, projects, and programs have been provided in amounts necessary to obtain a net sum of accretions and depletions greater than zero in the next increment (accretions are represented as a positive number and depletions are negative). As long as the annual net sum of accretions resulting from actions taken by TBNRD and the Department, in comparison to post-1997 annual depletions, is greater than or equal to the values show in Table 1, additional regulatory actions will not be required. Annual progress will be measured using a checkbook style accounting of new accretions and depletions as compared to the values in the Table 1.

The Department and TBNRD recognize the potential for implementation of voluntary programs, incentive measures, and other projects to provide stream accretions that will help maintain a net sum of post-1997 depletions and

accretions greater than or equal to the values shown in Table 1 in the next increment. The Department and TBNRD also recognize that the current Robust Review results have limitations, which will be addressed throughout the plan increment and that, as Robust Review results are updated to address those limitations, the target values described within the plan sections below may need to be updated. Regular progress in offsetting depletions due to post-1997 uses and toward offsetting impacts of pre-1997 uses will be determined by the following indicator and triggers.

A) To determine whether an accretion to the river equal to or exceeding the values in Table 1 has been sustained and to determine progress toward meeting the goals and objectives of this IMP, the Department and the District will jointly perform new Robust Review analyses in 2023 and 2027 to evaluate the overall impacts to streamflow and assess the indicator triggers below. The New Robust Review analyses may lead the parties to revise some values found in Table 1 under Objective 1.2. The parties may also find it necessary to change target values of the indicator and triggers.

   1. Indicator: If, by the end of 2023, an accretion to the river equal to or exceeding the values in Table 1 throughout the ten-year increment has not been sustained, the Department and the TBNRD will jointly determine whether any additional regulatory actions will need to be put in place by the beginning of the 2025 irrigation season.
   2. Trigger 1: If by the end of 2027, the most recent Robust Review indicates that accretions to the river have not continued to equal to or exceed the annual values shown in Table 1 that year and every year throughout the ten-year increment, the Department and TBNRD will jointly determine the steps needed to ensure that the agreed upon regulatory actions will be in place by the beginning of the 2028 irrigation season.
   3. Trigger 2: By the end of 2027, measures will be in place to achieve an accretion to the river equal to or exceeding the 50-year long-term planning target shown in Table 2. If this trigger has not been met, the Department and TBNRD will jointly determine the steps needed to to ensure that the agreed upon regulatory actions will be in place by the beginning of the 2028 irrigation season.

Section 10.7 describes how progress toward achieving the indicator and triggers will be measured.

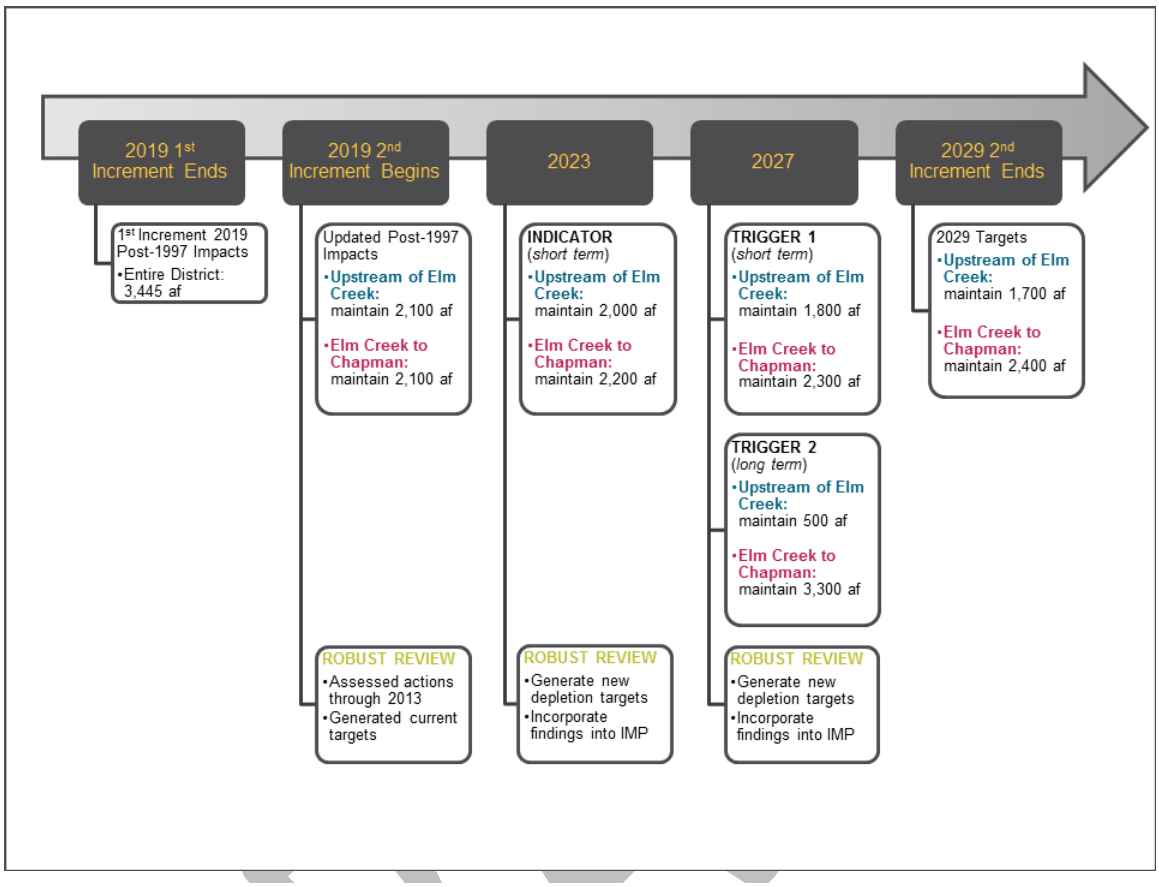

Figure 6. Planned mitigation measure milestones and Robust Review updates during the current increment

10.6.2.1 Groundwater Controls in Response to Triggers

The Department and TBNRD have identified the following groundwater controls as potential regulatory actions that may be implemented in response to triggers:

Prior to implementation of any of the groundwater controls listed below, TBNRD and the Department will agree to the method of implementation and the methods used to measure the success of the control(s) in reaching the goals and objectives of Chapter 9 of this IMP.

In order to reach these goals and objectives, a limit on the amount of consumptive use on certified irrigated acres within the boundaries of the NRD may be implemented. The methods by which a limit on the amount of

consumptive use would be implemented include, but are not limited to, the following:

A) Alternative Crop Mixes (*Neb. Rev. Stat.* § 46-739(b))

Alternative crop mix means planting a mix of crops over a specified period of years on certified irrigated acres within the overappropriated area. The total amount of consumptive crop water use allowed within the overappropriated portion of the Platte Basin within Tri-Basin NRD for purposes of meeting the goals and objectives of this IMP will be determined by the TBNRD after consultation with the Department.

B) Reduction of Certified Irrigated Acres

A reduction of certified irrigated acres means a set percentage reduction in certified irrigated acres within the overappropriated area. The amount of any acreage reduction imposed within the overappropriated portion of the Platte Basin within Tri-Basin NRD for purposes of meeting the goals and objectives of this IMP will be determined by TBNRD after consultation with the Department.

C) Allocation

An allocation means a uniform allotment of withdrawals of groundwater to be distributed among certified irrigated acres during a specified period. The amount of any allocation imposed within the overappropriated portion of the Platte Basin within Tri-Basin NRD for the purposes of meeting the goals and objectives of this IMP will be determined by TBNRD after consultation with the Department.

10.6.3 Surface Water Regulatory Actions (Controls)

10.6.3.1 Summary of Surface Water Controls

The following surface water controls as authorized by *Neb. Rev. Stat*. § 46-716 will be implemented and/or continued by the Department:

A) The Department will continue the moratorium on new surface water appropriations in the portion of the Platte River Basin within the boundaries of the TBNRD, unless a variance is granted by the Department according to its rules.

B) The Department will continue to require measuring devices for new appropriations and to close any non-metered diversions during times of shortage regardless of priority.

C) Transfers of surface water appropriations will be in accordance with statutes and Department rules.

D) The Department shall continue to administer surface water appropriations according to the provisions of the permit, statute, Department rules and regulations, and any applicable interstate compact decree or agreement.

E) The Department shall continue to monitor the use of surface water to prevent unauthorized uses.

F) For conjunctive management projects as described in Section 10.4, the Department may, via the permit approval process, require additional monitoring, measurements, and reporting of diversions, returns, seepage, and/or evaporation.

G) Except as provided in (1) below, the Department will not require surface water appropriators to apply or use conservation measures.

1. If, the Department requires surface water appropriators to apply or use conservation measures, in accordance with *Neb. Rev. Stat*. § 46-716(2), surface water appropriators will be allowed a reasonable amount of time, not to exceed one hundred eighty (180) days unless extended by the Department, to identify conservation measures to be applied or used and to develop a schedule for such application and use.

H) Except as provided in (1) and (2) below, the Department will not require any other reasonable restrictions on surface water use.

1. If, at some point in the future, the Department requires other reasonable restrictions on surface water use, such restrictions must be consistent with the intent of *Neb. Rev. Stat*. § 46-715 and the requirements of *Neb. Rev. Stat.* § 46-231.

2. If, at some point in the future, the Department requires other reasonable restrictions on surface water use, in accordance with *Neb. Rev. Stat.* § 46-716(2), surface water appropriators will be allowed a reasonable amount of time, not to exceed one hundred eighty (180) days, unless extended by the Department, to comment on the proposed restrictions.

10.6.3.2 Summary of Variance, Application, and Transfer Process Considerations

The goals and objectives of this plan must be considered when vetting petitions and applications for diversion of excess flows for plan purposes. In addition to showing good cause in support of the goals and objectives, the effectiveness of each project must be considered. Operational plans that show effective use of water along with measuring and monitoring will be required for such applications. In assessing the public interest and whether a project should receive an appropriation, the Department must consider reasonable conditions that may be imposed upon prospective

appropriations to ensure that the best use is made of available water. The public interest will be best served when the most effective projects are selected for diversion during excess flow periods. Appropriations that are issued for the purpose of achieving these goals and objectives will be administered using additional criteria beyond simply assessing when the application was filed. Project administration will include ranking projects according their anticipated to performance and benefits.

A) Variance Process for new surface water appropriations

1. *Department Rules for Surface Water, Title 457,* provides a process through which a person may request permission to file an application for a new surface water right in a moratorium area.
2. Prior to filing an application in a moratorium area, a person must first petition the Department requesting "leave" (permission) to file an application in a moratorium area. These petitions are called "variances," or "variance petitions."
3. Because the Platte River Basin is currently undergoing integrated management for the purposes of reducing depletions to streamflow, any new consumptive use or retiming of stream base flow, must be examined for its potential effects on extant surface and groundwater users and upon all matters of significant public interest and concern. This includes assessing both positive and negative impacts on the State's ability to comply with interstate agreements, programs, decrees and compacts, including PRRIP. Thus, any proposed project must be scrutinized to prevent conflict with (a) the goals and actions necessary to implement the IMPs adopted by the Platte River Basin NRDs and the Department and (b) the water needs of projects that will be implemented under PRRIP. Applications for potential beneficial uses that are not clearly non-consumptive will be presumed to be at least partially consumptive.
4. Therefore, an analysis of the effects of a proposed new diversion on existing uses and responsibilities is required in order to determine whether good cause exists to grant a variance to apply for a new use.
5. As part of the process for granting a variance the Department shall review the information provided with the petition and shall make a determination as to whether it is sufficient to indicate good cause for allowing further consideration of the application.[16]
6. *Nebraska Revised Statute* § 46-706 defines "good cause shown" as, "a reasonable justification for granting a variance for a consumptive

[16] NAC Title 457, Chapter 23

use of water that would otherwise be prohibited by rule or regulation and which the granting agency, district, or organization reasonably and in good faith believes will provide an economic, environmental, social, or public health and safety benefit that is equal to or greater than the benefit resulting from the rule or regulation from which a variance is sought;"

7. If the Department grants the variance petition, the petitioner may then file the application for the project. The decision to grant the petition shall not bind the Director to approve any application to which it relates, or in any way be used as evidence of prejudice for the Director's future decisions concerning the specific approval requirements of such an application. The Department will specify the conditions under which an application may be filed in order to protect the public interest.

B) Application Review Process

1. The Department's application review process is driven by Nebraska statutes, including but not limited to *Neb. Rev. Stat*. §§ 46-233 to 46-235. The following is not an exhaustive list of all factors used to reach a decision on approval or denial of an application.
2. There must be unappropriated water available in the source of supply and requirements of a variance petition approval must be met.
3. The proposed use must be determined to be beneficial.
4. An appropriation must not be detrimental to the public welfare.
5. Denial of the application is not demanded by the public interest.
6. If the application will be approved, the Department will impose conditions to protect other appropriators and the public interest.

C) Transfer Review Process

1. Pursuant to Chapter 46 transfer statutes, the Director shall review an application for a transfer proposing a change in the location of use; type of appropriation; and or purpose of use, including but not limited to the following:
    a. The proposed use of water after the transfer or change will be a beneficial use of water
    b. A request to transfer the location of use is within the same river basin

c. The change will not diminish the supply of water available or otherwise adversely affect any other water appropriator

d. The quantity of water that is transferred for diversion or other use at the new location may be the historic consumptive use

e. The appropriation is not subject to termination or cancellation

f. If the transfer is to be permanent the preference category may not change

g. If the transfer is to be temporary, it will be for no less than one year

h. The transfer or change will not be inconsistent with any applicable state or federal law and will not jeopardize the state's compliance with any applicable interstate water compact or decree or cause difficulty in fulfilling the provisions of any other formal state contract or agreement

i. The transfer will be in the public interest

    i. Consistent with *Neb. Rev. Stat*. § 46-294, the director's considerations relative to the public interest shall include, but not be limited to, (1) the economic, social, and environmental impacts of the proposed transfer or change and (2) whether and under what conditions other sources of water are available for the uses to be made of the appropriation after the proposed transfer or change.

    ii. Transfers subject to *Department Rules for Surface Water, Title 457, Neb. Admin. Code*, Chapter 9, § 002, are required to be determined to be in the public interest, "… the Director shall determine whether the benefits of the proposed transfer outweigh any adverse impacts that might occur giving consideration to the economic, social and environmental impacts and whether and under what conditions other sources of water are available for the uses to be made of the appropriation after the proposed transfer or change."

    iii. The director may impose any reasonable conditions deemed necessary to protect the public interest.

10.7 Monitoring

The objective of the monitoring and studies section of this IMP is to gather and evaluate data, information, and methodologies that could be used by Tri-Basin NRD and NeDNR to:

- Increase understanding of surface water and hydrologically connected groundwater supplies
- Test the validity of the conclusions and information upon which the IMP is based
- Assist decision makers in properly managing the water resources within the District to ensure that the overappropriated and fully appropriated areas within the District boundaries reach and/or maintain a fully appropriated condition.

Tri-Basin NRD and NeDNR will utilize data from a variety of sources to monitor and measure the progress made by the district and its constituents toward achieving the goals and objectives of this plan.

Various methods will be employed to monitor the implementation and progress of this IMP. Sections 10.7.1 and 10.7.2 describe the tracking and reporting of water use activities within the District by TBNRD and the Department. Section 10.7.3 describes the analyses that will evaluate the progress that has been made toward: addressing streamflow depletions due to new uses begun subsequent to July 1, 1997 (Section 10.7.3.1); reaching a fully appropriated condition in the Overappropriated Platte Basin west of US Highway 183 (Section 10.7.3.2); sustaining a fully appropriated condition in the Platte Basin east of US Highway 183 (Section 10.7.3.3); and evaluating whether a subsequent increment is necessary to meet the goals and objectives of this IMP (Section 10.7.3.4). Statute describes both an annual review (*Neb. Rev. Stat*. § 46-715(5)(d)(ii)) and a second more robust review of new and expanded uses and associated mitigation actions (*Neb. Rev. Stat.* § 46-715(5)(d)(iii)), covered in Section 10.7.3.1.

10.7.1 Data and Tracking of Water Use Activities

Data from the five NRDs will be reported in a consistent format across the basin and from year to year to simplify the process of compiling data for the annual review and the Robust Review. A database will be developed to house this data. This database will facilitate the updating of model datasets.

Occasionally, actions for which permits are issued may not actually be implemented. For example, a well permit may be issued but the well not actually drilled. Because of this, in order to maintain accurate records of actual land use, annual permit and land use data should be updated within the database at the end of the next calendar year to reflect which proposed actions actually occurred. This includes Department sharing information on any surface water permits cancelled in the calendar year (including temporary permits that expired one year after they are issued). This will help in creating yearly land use datasets when it is time to conduct the Robust Review. Ideally, permit data should provide a snapshot of changes in land use for that year. This will improve the accuracy of annual land use datasets for the models which will be used for the Robust Review.

A) NRD Tracking

Tri-Basin NRD works closely with county assessors and CNPPID to track the location and number of irrigated acres in the district. Comparison of NRD certified irrigated acres to assessed irrigated acres provides Tri-Basin NRD with a measure of the district's conformance to its objective of preventing development of additional irrigated land uses, unless those new uses are offset by retirement of an equivalent amount of existing water uses. Tri-Basin NRD will continue to gather data on crops planted and harvested tillage systems and other soil and water conservation practices. The District will be responsible for maintaining up-to-date records of and ensuring compliance with rules regulating the following activities within the District:

1. Certification of groundwater uses and any changes to these certifications
2. Approved transfers of groundwater and certified irrigated land, including all of the information included in the application and approval of the transfer
3. Groundwater pumping (flow meter) data that is reported to or gathered by the NRD
4. Any water well construction permits issued
5. Any other permits issued by the District
6. Any conditions associated with any permits that are issued
7. Information gathered through the municipal and non-municipal industrial accounting process
8. Any variances issued including the specifics and the reasoning behind approval of the variance
9. Groundwater level data collected from dedicated observation wells and irrigation wells
10. Information on the Conservation Incentive Program and any other district-sanctioned water banking activities
11. Offsets provided for depletions resulting from increased consumptive use related to the above listed items
    a. This includes reporting on offsets and mitigation activities for addressing post-1997 depletions and for the purpose of sustaining previous increment progress and reaching a fully appropriated condition. Such activities to be reported include canal diversions for the purpose of groundwater recharge, operation of stream augmentation projects, and irrigated acre retirements.

12. Summaries of available water conservation plans of municipalities and industries within the basin including strategies that could be applied to other municipalities in the basin (at annual meeting).

Tri-Basin NRD will continue to monitor the location of the headwaters of Platte tributaries that originate within this district. The locations of these headwaters are identified every spring using GPS locators. A significant movement of any of these headwaters upstream or downstream could indicate changes in local groundwater levels.

B) Department Tracking

The Department will be responsible for annually tracking the following activities within the District:

1. Any surface water permits issued
2. Any dam safety permits issued
3. Any groundwater permits issued
4. Associated offsets for any new permits issued.
5. Any retirements of irrigated acres or other activities by the Department for the purpose of returning to a fully appropriated condition

As new data show a need for further analysis and to the extent that District meter data or other methods of estimation are not available to determine the consumptive use of water due to livestock, human water use, sandpits and reservoirs less than fifteen (15) acre-feet, the Department will be responsible for tracking and reporting on the following activities within the District in the current increment:

1. National Agricultural Statistics Service livestock data
2. US Census Bureau population data
3. Inventory of sandpits
4. Inventory of reservoirs of less than fifteen (15) acre-feet
5. Offsets provided for depletions resulting from increased consumptive use related to the above listed items.

10.7.2 Reporting

A) An annual review of the progress toward achieving the goals and objectives of the ten (10) year increment will include annual reporting by the Department and the TBNRD of the information being tracked as described above.

B) Data will be analyzed to assess the collective amount, timing, and locations of both the depletions to streamflows resulting from new or expanded uses

and of all mitigation actions. This will involve a simple analysis of impacts to streamflows resulting from permitted changes, which will not require model runs. These analyses will be done using the agreed upon methods and tools. Methods and tools used will be available to the stakeholders and the public. This information will be shared between the TBNRD and the Department, presented at the basin-wide annual meeting. The data collected will then be trimmed to the relevant Platte River Recovery Implementation Program area, analyzed, and used for required annual and periodic reporting necessary for Nebraska's compliance with the Nebraska New Depletion Plan.

C) The reports from the TBNRD and the Department should include information on the location, amount, and timing of the depletions caused by each permitted new or expanded water use, as well as the associated offset and the location, amount and timing of the offset's accretions to the river. The depletions and/or the accretions should be reported for each year throughout the ten (10) year increment.

D) These reports should be made available at least four (4) weeks prior to each basin-wide annual meeting. The format of the reports will be standardized as agreed to by the Department and the Upper Platte Basin NRDs.

E) The reported information will be used as appropriate in the evaluation process as described below.

F) Data from the Department and TBNRD annual reports will be used to prepare reports to the Governance Committee of the PRRIP on status and activities related to the NNDP. The Department will generate these reports and will coordinate with the TBNRD to ensure the accuracy of data within any final report.

10.7.3 Evaluation: Measuring the Success of Meeting the Goals and Objectives of this IMP.

10.7.3.1

Measuring the success of this IMP in addressing streamflow depletions due to new uses begun subsequent to July 1, 1997 (Goal 1 from Chapter 9).

A) Annual Reporting and Review

In order to meet the requirements of *Neb. Rev. Stat.* § 46-715(5)(d)(ii), data contained in annual reports submitted by Tri-Basin NRD and the Department will be reviewed and analyzed to assess progress made toward achieving the goals and objectives of the Overappropriated Area and Nebraska New Depletion Plan portion of this IMP for the first ten (10) year increment. The analysis will include a forecasting of the

balance of the depletions and offsets from the current year through the year 2048.

B) Robust Review

In addition to the annual review, a more robust review of progress made toward achieving the goals and objectives of Chapter 9 of this IMP during the next ten (10) year increment will be carried out periodically. This review will meet the requirements of reporting for the NNDP as well as *Neb. Rev. Stat.* § 46-715(5)(d)(iii) to determine whether the measures adopted in this IMP are sufficient to offset depletions due to post-July 1, 1997 water uses and to sustain progress toward a fully appropriated level of water use (Robust Review). A robust review will be conducted in 2023 and 2027. The purpose of these robust reviews will be to address the indicator and triggers outlined in Section 10.6.2 of this IMP, which helps measure progress toward reaching the targets from Chapter 9. The previous Robust Review will also serve as guidance for conducting the next one. The general method for conducting the Robust Review will be as follows:

1. The groundwater models used for this process will be calibrated to streamflows/baseflows and groundwater levels in the area with the ability to assess the impacts on a monthly basis. The groundwater models will be updated periodically to simulate the management practices that have been implemented to date. The evaluation period of these models will be 50 years into the future.
2. The following groundwater model runs will be conducted to measure progress toward reaching Objective 1.2:
    a. The 1997 Development Level Run. A model run that simulates holding the number of irrigated acres and crop type mix in 1997 constant through the current date and the fifty-year projection period. It will assume the full crop irrigation requirement for the crop type mix. The run will be conducted using climate data through the current date and will include a fifty-year projection using an agreed to climate pattern.
    b. The Historical Run. A model run that simulates, to the extent possible with available data, annual changes in the number and location of irrigated acres, excess flow recharge events, retirements, allocation effects, augmentation projects, and other water management regulations or projects throughout the evaluation period starting in 1997 through the current date and the fifty-year projection period. The fifty-year projection period will repeat an agreed to land use, regulation, or project dataset. The model will use available flow meter data or, in the absence of flow meter data, assume the full crop irrigation requirement

was met at all times. The run will be conducted using climate data through the current date and will include a fifty-year projection using an agreed to climate pattern.

c. Difference between the 1997 Development Level Run and the Historical Run. The output from each model run will be compared to determine the difference in the baseflow that has resulted from post-1997 development.

d. Surface Water Accretions and Other Uses not Covered by the Models. If surface water acres are retired to offset streamflow depletions due to new uses begun subsequent to July 1, 1997, accretions resulting from those retirements will be determined using agreed upon methodologies. This would include conjunctive management activities that are not otherwise captured in the models.

e. Evaluation Results. For Objective 1.2 to be considered achieved, the results of combining the difference between the 1997 Development Level Run and the Historical Run with the addition of surface water accretions and other uses not covered by the models must be greater than or equal to zero.

$$(Q_h - Q_d) + (S_a) = D_{net}$$

Where:
Q_h =Simulated streamflow/baseflow from the Historical Run
Q_d =Simulated streamflow/baseflow from the 1997 Development Level Run
S_a =Other Surface Water Accretions
D_{net}=Net Depletions
***Note: In equation above, streamflow/baseflow is positive

3. An additional groundwater model run will be conducted to measure total depletions. This will be the Pre-Development Run. The Pre-Development Run will compare the Historical Model Run with a simulation of no groundwater development to determine the total depletions associated with all groundwater only land use development. The run will be conducted using climate data through the current date and will include a fifty-year projection using the Historical Run's agreed-to climate pattern.

a. Total Depletions Evaluation.

$$(Q_h - Q_p) = D_t$$

Where:

Q_h =Simulated streamflow/baseflow from the Historical Run
Q_p =Simulated streamflow/baseflow from the 1997 Development Level Run
D_t =Total Depletions
***Note: In equation above, streamflow/baseflow is positive

4. If integrated models are used to assess impacts to the total streamflow, the methods to be used will be developed jointly by NeDNR and the NRDs to properly design and constrain those analyses so that the results can be used to assess progress toward the goals and objectives of the plan.
5. Municipal, Industrial, Domestic and Livestock use will be evaluated as part of the Robust Review
    a. Data will continue to be collected on the water use of municipalities and industries within the basin.
        i. Gather information on total pumping, consumptive use, and timing of any return flows and collect data on water use efficiency and conservation methods being employed.

10.7.3.2 Measure the success of reaching a fully appropriated condition

A technical analysis to evaluate effectiveness of this plan and its adequacy in sustaining progress toward a fully appropriated level of water use must be conducted. Because a fully appropriated condition is not currently quantified, the Department and the TBNRD will work on outlining the process that will measure progress toward reaching the fully appropriated condition, once that condition has been quantified. The Department and TBNRD will continue to refine the methodology used to determine the difference between the current and fully appropriated levels of development for the Platte Basin within Tri-Basin NRD.

The evaluation of the difference between current and fully appropriated levels of development is tied to Statute and the current rules of the NeDNR for declaring a basin fully appropriated. Statute requires that this evaluation will:

A) Take into account cyclical supply, including drought
B) Identify the portion of the overall difference that is due to conservation measures
C) Identify the portion of the overall difference that is due to water use initiated prior to July 1, 1997

D) Identify the portion of the overall difference that is due to water use initiated or expanded on or after July 1, 1997

The current NeDNR rules for determining fully appropriated status includes evaluation of the most junior appropriator's access to water, adjustments for lag effect of groundwater depletions and accretions on water supplies, and consideration of instream flows, among other guidance for conducting the analysis. The rules also provide flexibility for NeDNR to "….utilize a standard of interference appropriate for the use, taking into account the purpose for which the appropriation was granted…."[17] for uses which are not defined in the rule. These include storage and hydropower appropriations, which are significant appropriators in the Upper Platte River Basin.

NeDNR and the NRDs have and will continue to work with impacted water users on the process for determining the difference between the current and fully appropriated condition of the basin. The assessment of total depletions is one approach to assist in quantifying a fully appropriated condition. The INSIGHT analysis of Platte Basin water supplies and demands is another possible approach to help identify a fully appropriated condition.

10.7.3.3 Measure the success of maintaining a fully appropriated condition.

A) Current Fully Appropriated Area: Monitor and analyze uses in the fully appropriated area to determine the change in stream depletions due to such uses.

B) Current Overappropriated Area: Because a fully appropriated condition is not currently determined, the Department and the TBNRD will work on outlining the process that will measure the success of maintaining a fully appropriated condition once that condition has been determined.

10.7.3.4 Evaluating the Need for a Subsequent Increment

A) The Department and TBNRD will carry out studies and the technical analyses as specified in *Neb. Rev. Stat*. § 46-715(5)(d)(iii) to determine whether or not a subsequent ten (10) year increment is necessary. This will include a process to test the validity of the conclusions and information upon which this IMP is based, as required by *Neb. Rev. Stat*. § 46-715(2)(e).

[17] Title 457, Chapter 24, Section 001.01B of the Nebraska Administrative Code, dated June 27, 2008.

B) Within the next ten (10) year increment, the Department and TBNRD will continue to refine the estimation methodology used to calculate the difference between the current and fully appropriated levels of development in accordance with *Neb. Rev. Stat.* § 46-715(5)(c). Fully appropriated levels of development will be determined through the following process:

1. Determine the changes in recharge from surface water diversions and the impacts of those changes on streamflow using readily available data.
2. Determine the changes in groundwater irrigation, municipal, industrial, domestic, livestock and other uses and the streamflow depletions caused by those changes using readily available data.
3. Determine the effects of conservation measures on streamflows.
4. Determine the timing and location of the net changes in streamflow.
5. Determine when streamflow changes impact existing users, taking into account the effects of cyclical supply (e.g. drought).
6. If significant changes in either the timing or location of streamflow have impacted existing users, TBNRD and the Department will work collaboratively with affected parties to determine subsequent ten (10) year increment goals. These goals will include consideration of the socioeconomic benefits derived from the various uses impacted by such changes in streamflow.
7. The Department and TBNRD will review other data and methodologies relevant to the process.

C) The process described above will focus on uses initiated prior to July 1, 1997, and their impacts on hydrologically connected streamflows. All uses initiated subsequent to July 1, 1997, will be evaluated using the process described in Section 10.7.3.1.B.

10.8 Studies to be Completed in the Current Increment

10.8.1 Current Increment Priority studies

The Basin-Wide Plan calls for several studies and collection of information within the basin. Those studies and information are also critical to the successful implementation of this IMP. The studies include:

A) Collect data on commingled acres to identify, quantify, and determine the proportion of water sources and used on acres irrigated with both surface water and groundwater. Gather data that describes both why and when irrigators use surface water or groundwater.

B) Conduct a study that identifies water users that are affected by cyclical variations in water supplies. This hydrologic element analysis will be conducted by NeDNR and the NRDs by evaluating data such as stream gage and diversion records, and well hydrograph data. Focused surveys of, as well as meetings with basin water users can be used to build on stakeholder input gathered throughout the planning process. Once water users who are hydrologically affected by water supply variability are identified, economic impacts can be estimated.

C) NeDNR and the NRD will collaborate with impacted water users and other entities to gather relevant economic data. Potential partners include economists and other subject matter experts familiar with the economic drivers of the basin who can help identify data needs and formulate tools and methodologies for assessing economic impacts. The tools and methodologies will be used to not only evaluate impacts of supply variability, but also evaluate human-made depletion impacts, management actions, regulatory actions, and potential projects or other activities considered during implementation that may affect water availability.

D) Study economic impacts of drought, which will be a component of the drought plan

E) Study potential for developing markets and transfer protocols for surface water and groundwater supplies.

F) Study options for storage water (both surface water reservoirs and aquifer storage; and existing and potential new storage) to provide flexibility to water users and to increase resiliency of water supplies.

10.8.2 Current Increment Potential Studies

The following topics for potential studies have been identified by the Department and Tri-Basin NRD:

A) Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various crop rotations

B) Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various methods of riparian vegetation management

C) Potential for irrigation scheduling as a tool to reduce water use

D) Conducting an update of previous surveys of the type and location of irrigation systems throughout the District

E) Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of various tillage practices

F) Potential for reducing consumptive water use and evaluation of streamflow depletion impacts of other agricultural and land management best management practices

G) Potential for reducing consumptive water use and evaluation of streamflow depletion impacts resulting from various means of enhancing conjunctive water resources management

In regard to Item B described above, the Tri-Basin NRD works with other agencies and private landowners to reduce the density and coverage of infestations of noxious weeds and invasive plants in riparian areas within the district. The Tri-Basin NRD also works with landowners, agencies and others to implement sustainable, long-term riparian land management plans that have as their goal returning these lands to their native condition. Progress made toward meeting this objective will be measured in terms of acres of riparian land treated using herbicides and other methods to reduce invasive plant infestations and upon which sustainable, long-term management plans are being implemented that will improve the condition of riparian ecosystems. NeDNR and the NRD will work to determine whether any water saved as a result of these activities can provide a water use credit to offset depletions to streamflows resulting from groundwater pumping.

10.9 Review of and Modifications to the IMP

10.9.1 IMP Revisions

During implementation of the IMPs, NeDNR and the NRDs will monitor IMP actions consistent with the analyses and methods contained in the basin-wide plan and amend the IMP if activities are determined by the parties to not be capable of meeting IMP goals. If NeDNR and a Platte River Basin NRD determine that management actions have not provided the offsets required to meet the goals of the Upper Platte River Basin-Wide Plan, they will agree to increase offset activities to the extent possible and revise the individual district IMP if necessary. These revisions may include additional controls, if needed, to meet goals of the plan.

A) TBNRD and the Department will jointly determine whether amendments to this IMP are needed. Any proposed modifications will be discussed at the annual basin-wide meeting. Situations that may prompt revision or modification of this IMP are described below.

1. TBNRD and the Department may amend this IMP after an annual review of progress made toward achieving the goals and objectives of Chapter 9 of this IMP
2. If published results of COHYST 2010 or other model(s) or tool(s) developed as part of the monitoring effort indicate annual depletion

values different than those in Table 1, the Department and the TBNRD will determine how this IMP may need to be revised.

3. DNR and any Platte Basin NRD may amend an IMP as more data and information become available, as provided in *Neb. Rev. Stat.* § 46-715(5)(d)(ii).

As new depletion information is developed and considered, the values presented in Tables 1 and 2 may be updated and the basin-wide plan revised via a public hearing at the annual basin meeting.

B) If the Basin-Wide Plan is revised and results in the need for this IMP to be revised to be consistent with the Basin-Wide Plan, this IMP will be revised accordingly, in accordance with *Neb. Rev. Stat.* § 46-715(5)(d).

C) The above items will be discussed during annual basin-wide meetings and NeDNR and the five upper Platte Basin NRDs will decide if plan modifications are needed. An advisory or stakeholder group may be convened, if the affected NRD(s) and NeDNR determine that the proposed changes warrant formation of such a group. If the Platte River Basin NRD(s) and NeDNR agree on revisions to an IMP after the annual meeting, then a hearing will be held to solicit formal comment. The IMPs for each of the five Platte Basin NRDs shall be provided to all other NRDs in the overappropriated basin for comment before revisions are approved.

10.9.2 Basin-Wide Plan Disputes

A) If a dispute is presented at the annual meeting utilizing the process described in the Basin Wide Plan, the Upper Platte Basin NRDs and the Department will determine whether dispute has potential hydrologic impact. If it is determined that the dispute does have hydrologic impact, then the Platte Basin NRDs and the Department will determine whether the dispute pertains to all Upper Platte Basin NRDs or just to individual NRD(s).

B) If the dispute pertains to all Upper Platte Basin NRDs, an investigation will be conducted by the Upper Platte Basin NRDs and the Department to determine what management actions will address the dispute(s) in the Basin-Wide Plan and/or the IMPs. If the management action pertains to this IMP, it will be revised accordingly.

C) If the dispute is not a basin-wide issue, but pertains only to TBNRD, then the Department and TBNRD, working with affected water user(s), shall seek to develop appropriate management solutions to address the issue(s).

D) Disputes related to the implementation of individual IMPs will also be discussed.

10.9.3 Additional Ten (10) Year Increment

After reviewing the results of technical analyses described in Section 10.7.3, TBNRD and the Department will evaluate the need for a subsequent IMP planning increment. This review will include determining whether post-July 1, 1997 depletions have been offset and whether satisfactory progress has been made toward achieving or sustaining a fully appropriated condition.

If the Department and TBNRD determine that a subsequent ten (10) year increment is needed to meet the goals and objectives of this IMP, then pursuant to *Neb. Rev. Stat.* § 46-715(5)(d)(iv), the goals and objectives for the subsequent ten (10) year increment will be developed using the consultative and collaborative process described in *Neb. Rev. Stat*. § 46-715(5)(b). The subsequent ten (10) year increment shall be completed, adopted and take effect not more than ten (10) years after adoption of this IMP.

NeDNR and the individual NRDs will engage stakeholders in a collaborative process in the development of goals and objectives for subsequent increments of the individual IMPs. The need for subsequent increments will be determined through the Robust Review process completed at the end of the current increment and described in Chapter 10.7. Should a subsequent increment be necessary, the planning process will be initiated by NeDNR and each NRD, developing a public participation plan that outlines the stakeholder engagement process for revising and updating TBNRD's IMP, including identification of participants, definition of roles, decision making protocols, planning processes, and timelines. This public participation plan will serve as a reference guide for participants as well as the general public throughout the planning process. This effort is analogous to the basin-wide collaborative process described in the basin-wide plan, but focused on collaboration with stakeholders within the individual NRD. The public participation plan developed for the second increment Basin-Wide Plan is included in Appendix PPP of the Basin-Wide Plan for reference.

Proof of Publication

STATE OF NEBRASKA)
) ss
PHELPS COUNTY)

A copy of the foregoing notice as per clipping attached was published weekly in the regular and entire issue of the Holdrege Daily Citizen. A legal newspaper published under the Statutes of the State of Nebraska. Published Mon-Fri in Holdrege, Phelps County, Nebraska, and not in any supplement thereof 1 consecutive weeks. The date(s) appointed as follows:

1. Friday, March 8, 2019
2.
3.
4.
5.

NOTICE OF STAKEHOLDER MEETING MEETING RELATED TO THE TRI-BASIN NATURAL RESOURCES DISTRICT AND THE NEBRASKA DEPARTMENT OF NATURAL RESOURCES INTEGRATED MANAGEMENT PLAN

The Department of Natural Resources (Department) and Tri-Basin Natural Resources District (TBNRD), are preparing an update to the Integrated Management Plan (IMP) for TBNRD.

Notice is hereby provided that a public meeting of the IMP Stakeholder Advisory Committee has been RESCHEDULED to Thursday, March 14, 2019, at the Tri-Basin NRD office, 1723 Burlington St., Holdrege NE. An agenda for the meeting will be available for public inspection during normal business hours at the offices of the TBNRD and the Department, and at the following website: www.dnr.nebraska.gov. Please refer to the websites and phone numbers listed below for further information.

This stakeholder meeting will begin at 1:00 pm CT. A public comment period will be provided.

The current IMP for the TBNRD was developed following the determination in 2004 by the Department that the entire District was fully appropriated and a portion of the District was over appropriated. TBNRD s initial first increment IMP was adopted in 2009 and is effective through fall of 2019, at which time a second increment IMP must be drafted and ready for adoption. According to Nebraska Revised Statute /46-715, the IMP will be developed in consultation and collaboration with District stakeholders and include: clear goals and objectives with a purpose of sustaining a balance between water uses and supplies; a map of the area subject to the IMP; at least one groundwater control and one surface water control; and a monitoring plan.

Individuals with disabilities may request auxiliary aids and services necessary for participation by contacting the Department by Monday, March 12, 5:00 pm CT, at (402) 471-2363 or by email at beth.eckles@nebraska.gov.

TBNRD: http://www.tribasinnrd.org or phone (308) 995-6688
Department: http://www.dnr.nebraska.gov or phone (402) 471-2363

3-8-1 Fri.

MAR 2019

Bonnie C. Ruybalid
Notary Public

GENERAL NOTARY - State of Nebraska
BONNIE C. RUYBALID
My Comm. Exp. May 17, 2022

(SEAL)

My Commission Expires 5-17-22

Pritner's Fee $ 27.98

TRI-BASIN NRD – PLATTE IMP STAKEHOLDER MEETING #3

Meeting Date: March 7, 2019

Place/Room: TBNRD Office, Holdrege, NE

Name:	Representing:	E-Mail:
Melissa M Mosier	NeDNR	Melissa.Mosier@Nebraska.gov
Russell Edeal	TRI Basin farmer	redeal@atejet.net
Andy Pedley	NENRD	andy.pedley@nebraska.gov
Marie Trample	CNPPID	mtrample@cnppid.com
Dave Nickl	Landowner	
Isabella Peterson	NeDNR	isabella.peterson@nebraska.gov
Jessie Strom	NeDNR	jessie.strom@nebraska.gov
Blake Reynolds	Tri Basin Farmer	reynolds_blake@yahoo.com
Vernon Nelson	Farmer	vernonjamesnelson@Yahoo
Tom NUIT	PHelps Commissioner	TLNUIT@MSN.com
Kari Burgert	NeDNR	Kari.burgert@nebraska.gov
Sarah Nevison	NeDNR	sarah.nevison@nebraska.gov