FINAL DRAFT

Lower Elkhorn Natural Resources District Voluntary Integrated Management Plan

LOWER ELKHORN Natural Resources District

NEBRASKA Good Life. Great Water.

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1.0 AUTHORITY AND EFFECTIVE DATE

This voluntary Integrated Management Plan (IMP) was prepared for and adopted by the Board of Directors of the Lower Elkhorn Natural Resources District (District) and the Nebraska Department of Natural Resources (Department). This plan was developed in consultation with the District Stakeholder Advisory Committee and in accordance with the Nebraska Ground Water Management and Protection Act (Act). The Act assigns the responsibilities and the authority to the Department and the District for management of groundwater and hydrologically connected waters in accordance with *Neb. Rev. Stat*. §§ 46-702, 46-703, 46-707, 46-712, 46-715, 46-716, 46-717, 46-718, 46-720, and 46-739.

This IMP was adopted by the District on _____, 2018 and by the Department on ____, 2018. The IMP became effective on _____, 2018.

2.0 INTRODUCTION

The District's citizens depend on abundant water resources for domestic use, agricultural production, and industrial purposes, all of which contribute to economic viability. Water resources are also important for wildlife habitat and recreational uses such as fishing, hunting, boating, and swimming.

In early 2012, the District Board took action to initiate development of a joint voluntary IMP with the Department to provide a needed framework for wise, long-term management of finite water resources. The letters associated with the initiation of the voluntary IMP process are included as Appendix A. The overarching purpose of this voluntary IMP is to achieve and sustain a long-term balance between District water uses and water supplies. This will be achieved through coordinated management of hydrologically connected groundwater (by the District) and surface water (by the Department). The voluntary IMP is considered a proactive approach to protecting available water supplies to better ensure that the resource will be available for future generations.

3.0 BACKGROUND

3.1 FULLY APPROPRIATED BASINS EVALUATION

On January 9, 2004, the Nebraska Legislature passed LB 962, which requires the Department to annually evaluate the long-term water balance of hydrologically connected river basins and subbasins. The Department's report, entitled "Annual Evaluation of Availability of Hydrologically Connected Water Supplies", conveys the results of this evaluation. Through this Fully Appropriated Basins (FAB) evaluation, a river basin or subbasin is considered "fully appropriated" when current uses of hydrologically connected water supplies will, in the reasonably foreseeable future, cause:

- The surface water supply to be insufficient to sustain, over the long-term, the beneficial or useful purposes for which existing natural-flow or storage appropriations were granted

and the beneficial or useful purposes for which, at the time of approval, any existing instream appropriation was granted;
- The streamflow to be insufficient to sustain, over the long-term, the beneficial uses from wells constructed in aquifers dependent on recharge from the river or stream involved; or,
- Reduction in the flow of a river or stream sufficient to cause noncompliance by Nebraska with an interstate compact or decree, other formal state contract or agreement, or applicable state or federal laws.

The Department identifies "hydrologically connected areas" as a part of the annual FAB evaluation. These are areas where groundwater is affected by streamflow or where streamflow is affected by groundwater are termed "hydrologically connected". By Department rule, this area is defined as the "10/50 area". A groundwater well that is constructed in the 10/50 area would deplete river flow by at least 10 percent of the water pumped over a 50-year period. It is important to note that this may be in terms of both direct depletion to the stream, by causing the stream to lose water to the local groundwater system, and also in terms of indirect depletion to the stream, by intercepting groundwater that would otherwise be contributed to streamflow.

3.2 INTEGRATED MANAGEMENT PLANS

Relation to FAB Evaluation
If the Department has designated or determined a river basin or subbasin to be fully appropriated, the affected NRD(s) must develop an IMP with the Department. This is a joint plan to manage quantities of hydrologically connected groundwater and surface water. The overarching purpose of the IMP is to manage the river basin or subbasin to achieve and sustain a long-term balance between water uses and water supplies. *Nebraska Revised Statutes* §§ 46-715 to 46-717 and portions of 46-718 describe the process by which the IMP is developed and implemented.

Mandatory Components of an IMP
Nebraska Revised Statute § 46-715(2) specifies five mandatory components that are included in each IMP. Together, these components enable effective implementation of the IMP in order to fulfill the purpose of maintaining and achieving a balance between hydrologically connected groundwater and surface water. These components are listed below and include a reference to the associated section in this voluntary IMP:

- Clear goals and objectives with a purpose of sustaining a balance between uses and supplies so that economic viability, social and environmental health, safety, and welfare of the basin/subbasin is achieved and maintained (Section 6),
- A map clearly delineating the geographic extent of the IMP (Section 5),
- One or more groundwater and one or more surface water control(s) that are consistent to reach the goals and objectives of the IMP; these controls must be authorized by statute (*Neb. Rev. Stat.* §§ 46-739 and 46-716) (Section 7), and

- A plan to gather and evaluate data, information, and methodologies to implement the IMP, increase understanding of the surface water and hydrologically connected groundwater system, and test the validity of information and conclusions upon which the IMP is based (Section 8).

Nebraska Revised Statute § 46-715(3) outlines additional required IMP components that provide a process for economic development opportunities and economic sustainability. The IMP is to include clear and transparent procedures to track depletions and gains to streamflows resulting from new, retired, or other changes to uses in the river basin or subbasin. *Nebraska Revised Statutes* §§ 46-715(3)(a) through 46-715(3)(g) outline specifics regarding these procedures. In general, the procedures must be scientifically sound and must provide a process for making water available for offsets for new water uses[1]. In this way, the river basin or subbasin economic development may continue, so long as the existing surface water and groundwater users are not adversely affected by the new uses. The method agreed upon in the Lower Platte Basin Water Management Plan (described below in Section 3.4) and that will be implemented through this IMP is the Department's Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT) system.

Nebraska Revised Statute § 46-715(4) describes the purpose of groundwater control(s) and surface water control(s) that are to be included in each IMP. In general, the controls should be consistent with the goals and objectives of the plan, protect existing groundwater and surface water users in hydrologically connected areas, and be sufficient to ensure the state will remain in compliance with any applicable interstate water compact or other formal contract or agreement[2]. The allowable surface water controls are listed in *Neb. Rev. Stat.* § 46-716, and the allowable groundwater controls are listed in *Neb. Rev. Stat.* § 46-739. The groundwater and surface water controls for this voluntary IMP are described in Section 7.

Stakeholder Process

Nebraska Revised Statute § 46-717(2) outlines the stakeholder process that is an integral part of IMP development. It states the specific stakeholder interests that the District and the Department will consult during the preparation of the IMP. These interest groups are:

- Irrigation districts,
- Reclamation districts,

[1] It should be noted that in a voluntary IMP area, water supplies are greater than demands over the long-term (i.e. the area is not fully appropriated or overappropriated). As such, methods are not included in this voluntary IMP to identify water supplies to be used as offsets or for mitigation purposes due to new uses.

[2] At the time of this writing, the NRD was not subject to any interstate compact or decree, or any other formal contract or agreement pertaining to surface water or groundwater use or supplies, so the IMP does not address any interstate affairs.

- Public power and irrigation districts,
- Mutual irrigation companies,
- Canal companies, and
- Municipalities.

Other water users and stakeholders that are deemed appropriate by the District or Department may be consulted during IMP development. The District and Department are also required to solicit public comments and opinons through public meetings and other means. The stakeholder process for this voluntary IMP is described in further detail in Section 4.

3.3 VOLUNTARY INTEGRATED MANAGEMENT PLANS

Nebraska Revised Statute § 46-715(1b) describes the framework for voluntary integrated management planning. This portion of legislation was enacted in 2010, via LB 764, and authorized NRDs to voluntarily develop an IMP with the Department to jointly manage groundwater and surface water uses and supplies in areas that have not been designated as fully appropriated. The voluntary IMP process is an opportunity for NRDs and the Department to work together to proactively manage growth of water uses while protecting existing uses.

To initiate the process, the District notifies the Department of its intention to develop an integrated management plan. The IMP is then developed in the same way as a mandated IMP, using the same statutory framework. If the Department determines that a basin/subbasin has become fully appropriated after the development of a voluntary IMP, the affected NRD(s) and the Department may amend the IMP to fulfill mandated IMP requirements.

3.4 LOWER PLATTE BASIN WATER MANAGEMENT PLAN

In April 2013, the Department and the seven NRDs that make up the Lower Platte River Basin (Basin) formed the Lower Platte River Basin Coalition (Coalition). The Coalition members are:

- Upper Loup NRD,
- Lower Loup NRD,
- Upper Elkhorn NRD,
- Lower Elkhorn NRD,
- Lower Platte North NRD,
- Lower Platte South NRD,
- Papio-Missouri River NRD, and
- Nebraska Department of Natural Resources.

The Coalition's mission is to coordinate efforts to protect the long-term balance of the Basin's water uses and water supplies. The first action of the Coalition was to voluntarily develop a Lower Platte Basin Water Management Plan (Basin Plan).

For Basin Plan development, a technical committee, management committee, and board were formed, and a team of consultants was hired to conduct analyses and coordinate meetings. Over the course of four years, eleven technical committee meetings, eleven management committee meetings, three board meetings, and three workshops were held. Several large-scale technical analyses were conducted and the results were used to inform the discussion throughout the development process. Through these activities, a framework for coordinated management of water uses and supplies was established; the policies and practices therein will be implemented through individual IMPs.

The agreed upon Basin Plan was adopted by all parties as of Janury 10, 2018. The Basin Plan operates on a five-year increment schedule, with the first increment beginning July 1, 2016, and ending December 31, 2021. The Basin Plan may be accessed on the District's or the Department's websites.

The Basin Plan also specifies allowable depletions to the flows of the Platte River as measured at Louisville, Nebraska. This is described in greater detail in Section 7.0, *Controls*.

4.0 PUBLIC PARTICIPATION

The IMP process relies on collaboration between the NRDs and the Department, in consultation with a diverse stakeholder goup. As a part of voluntary IMP development, the District and the Department convened a group of stakeholders that represented a wide array of water interests, including:

- Agriculture,
- Industry,
- Public water supply,
- Environment,
- Recreation,
- County and city officials, and
- Technical advisors.

A full list of participants can be found in Appendix B. The stakeholders' input was invaluable to the development of the IMP, and their volunteered time and energy were greatly appreciated by both the District and the Department.

The Stakeholder Advisory Committee (SAC) met five times throughout 2014 and 2015, and worked together to identify issues in the Basin and to develop goals, objectives, and action items of the IMP. The SAC also helped to prioritize the action items, thus providing a robust set of recommendations for the District's and Department's consideration. The District and the Department carefully evaluated and considered all recommendations, including the feasibility of each action item, over a series of monthly meetings. The final goals, objectives, and action items are a carefully constructed mosaic of stakeholder ideas and Department and District knowledge and create a path forward for effective, long-term management of groundwater and surface water.

Figure 1: Stakeholder Advisory Committee priorizing action items

As a part of the process, the District conducted a water balance study to develop and evaluate data and information pertaining to water supplies and water uses in the District. The information provided in the water balance study was presented to the SAC throughout the IMP development process. The full report, entitled "Lower Elkhorn Natural Resources District Water Balance Study", dated October 2015, is available upon request from the District.

The District and Department jointly held a public meeting to discuss and answer public questions about the IMP on August 9, 2018. A public hearing was held August 23, 2018. At the public hearing, the District and the Department took testimony on the draft voluntary IMP and, following this, considered the testimony and ultimately made the decision to jointly adopt the voluntary IMP with minor/no changes based on the testimony.

5.0 DESCRIPTION OF THE INTEGRATED MANAGEMENT PLAN AREA

5.1 GEOGRAPHIC EXTENT OF THE INTEGRATED MANAGEMENT PLAN

Per *Nebraska Revised Statutes* § 46-715(2), the geographic area of the District's IMP includes all water users within the boundary of the District (Figure 2). The District has designated a groundwater control area that covers the hydrogically connected groundwater and surface water area; this is the area where groundwater controls described in Section 7 and implemented by the District as part of this IMP apply. The surface water control area is the extent of the Lower Elkhorn Basin that is within the District boundary; this is the area where surface water controls described in Section 7 and implemented by the Department as part of this IMP apply. Figure 2 shows the geographic extent of the IMP area, and the groundwater and surface water control areas. The District and Department recognize that, as increased understanding of hydrologically connected areas becomes available through new data, models, and analyses, the defined control areas may change. Any changes to the voluntary IMP control areas require agreement between the District and Department, in addition to a statutorily defined public notice period and public hearing (see Section 10).

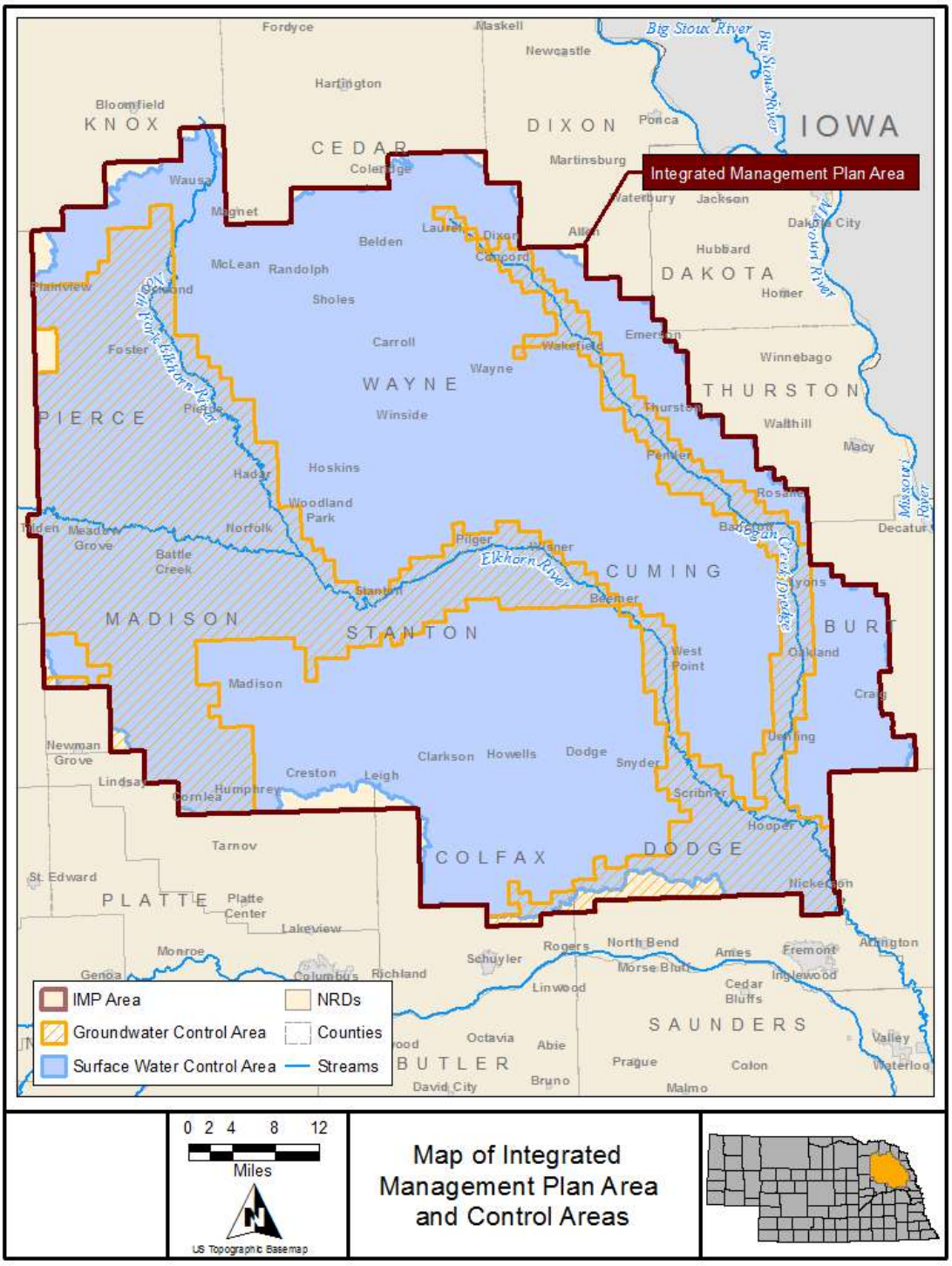

Figure 2: Geographic Area of the IMP and associated groundwater and surface water controls.

5.2 LAND USE

The District area covers approximately 2,591,300 acres. The distribution of land use and land cover in this area is shown in Figure 3. The land cover is largely agricultural (76%) and pasture/grasslands area (20%), with small areas of forests, open water, wetlands, and urbanized areas (all less than 2%). The most prominent crop types are corn (52%) and soybeans (44%). The agricultural land is primarily divided between dryland farming (67%) and irrigated farming (33%).

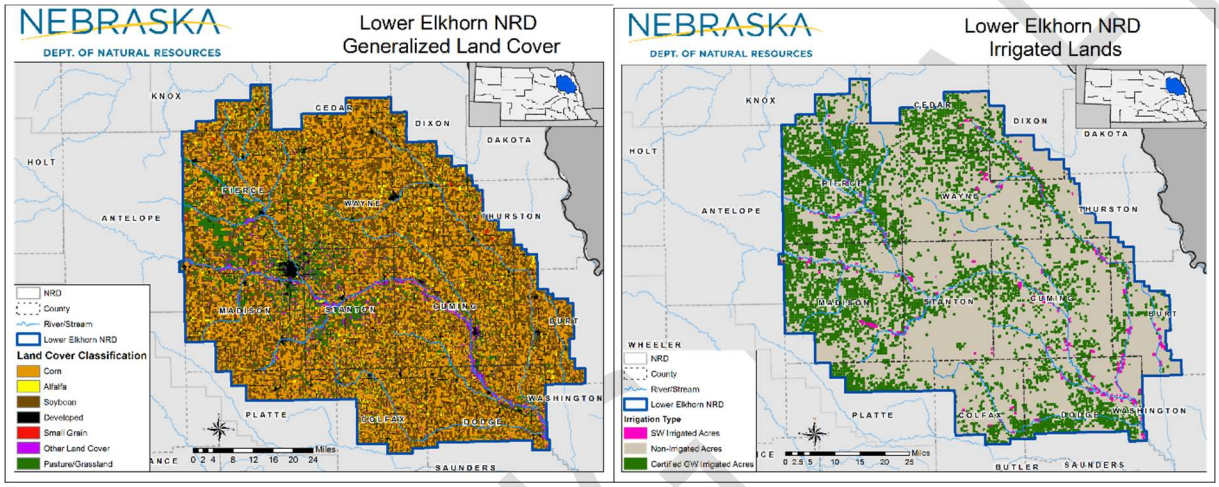

Figure 3: Land use in the District.

5.3 SURFACE WATER

Local Hydrology

The District covers the lower reach of the Elkhorn River, the land area of which makes up roughly 60 percent the Elkhorn River Basin. The boundaries of the District roughly follow the northern, eastern, and southern drainage area boundary of the Elkhorn River watershed. Lower Elkhorn tributaries include the North Fork Elkhorn River, Logan Creek, and Maple Creek, all of which are contained in the District.

Direct precipitation is a significant source of water supply to streamflow in the District. The District receives approximately 27 inches of precipitation per year on average (based on 1950 through 2013 records). The amount of average annual precipitation varies across the District and generally increases from west to east. Certain rivers and streams in the District, including the Elkhorn River, are also fed by groundwater that intersects the stream bed.

Surface Water Permits

The Department has authority over the permitting, inspection, and adjudication of Nebraska's surface water appropriations, with uses ranging from domestic to agriculture and even power generation. Within the District, there are a variety of active surface water permits that include

agricultural, industrial, storage, and other uses. Table 1 summarizes the active surface water appropriations by type and water amount, as of July 22, 2016. Each surface water permit has an approved location where the water may be stored or withdrawn; this location is termed the "point of diversion". A map of the District's surface water points of diversion is shown in Figure 4.

Table 1: Surface water permits in the District as of June 8, 2018 (Numbers in parentheses should not be counted in totals).

ACTIVE SURFACE WATER PERMITS IN THE DISTRICT				
Purpose of Permit	**Number of Permits**	**Acres approved for irrigation**	**Grant in cfs**	**Acre-feet of water**
(IR) Diversion from naturally flowing source for irrigation	356	30,082	370	NA
(SI) Diversion from a reservoir for irrigation of land that also is approved to receive water from naturally flowing source	3	(407)	NA	(4)
(SO) Diversion only from a reservoir for irrigation	6	373	NA	(152)
Total Irrigation Permits	**365**	**30,455**	**370**	**0**
(DO) Domestic use	4	NA	0	NA
(ST) Storage of water in reservoir[3]	7	NA	NA	8,836
(ST) Storage of water in reservoir	43	NA	NA	3,134
Total Storage Permits	**50**	**NA**	**NA**	**11,970**
Totals	**419**	**30,455**	**370**	**12,126**

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[3] Storage appropriations held by the District

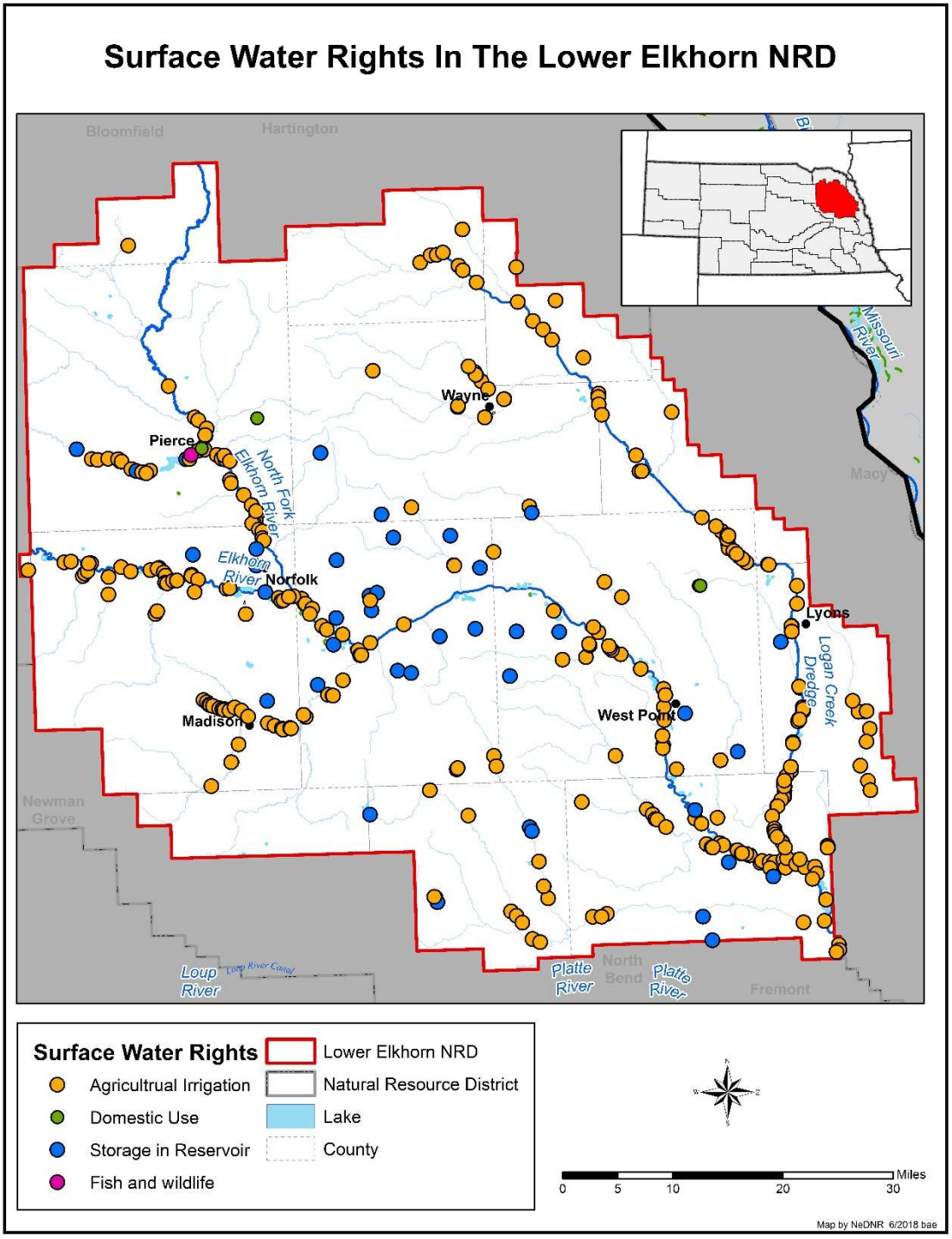

Figure 4: Surface water permits in the District.

5.4 GROUNDWATER

The two main types of aquifers in the District include aquifers in the unconsolidated units that overlie the bedrock (alluvial aquifers) and bedrock aquifers. Alluvial aquifers consist of paleovalley aquifers occurring in ancient, buried stream valleys; alluvial aquifers, created by modern streams; and aquifers of other origins. It is often very difficult to differentiate among the alluvial aquifer types through the interpretation of bore logs. Additionally, when using bore logs alone, it can be difficult to differentiate between alluvial sand deposits and the semi-consolidated sand and gravels of the Ogallala Group (a bedrock aquifer described below). For this reason, the alluvial aquifers and sands and gravels of the Ogallala Group are collectively referred to as undifferentiated sand and gravel aquifer. Bedrock aquifers are water bearing, consolidated to semi-consolidated rock formations. The three principal bedrock aquifers which underlie the District include the Ogallala, Niobrara, and Dakota aquifers.

- **Undifferentiated Sand and Gravel Aquifer:** Most of the registered wells in the District are completed in the undifferentiated sand and gravel aquifers with multiple origins. These aquifers are distributed across the District, but can be discontinuous and have inconsistent thickness. Productivity of these wells can vary significantly depending on the local thickness and continuity of the sand and gravel deposits. Most irrigation, domestic, and public supply wells are constructed in these aquifers. As mentioned above, it may be difficult to differentiate between alluvial sediments of different origins and sand and gravels of the Ogallala Aquifer. This process may be made easier through the use of geophysical techniques.
- **Ogallala Aquifer:** The Ogallala Aquifer is located mostly in the west part of District, covering the majority of Pierce and Madison counties. It consists of sand, sandstone, silt, and gravel. This aquifer group is part of a larger aquifer known as the High Plains Aquifer.
- **Niobrara Aquifer:** The Niobrara Aquifer is located in the central part of District. The aquifer consists of weathered and fractured limestone deposits. Wells completed in this aquifer tend to be scattered across the central region of the District. This represents a secondary aquifer.
- **Dakota Aquifer:** The Dakota Aquifer underlies the alluvial aquifers described above. Wells drilled in this aquifer are located mostly in the southeastern part of the District, including portions of Cuming, Dodge, and Burt Counties. As with the other bedrock aquifers, throughout most of the District, the undifferentiated sand and gravel is more shallow than the Dakota Bedrock Aquifer. As a result, it is more economical to drill wells into the more shallow aquifers. This is also a secondary aquifer.

A map of the District's registered groundwater wells is shown in Figure 5.

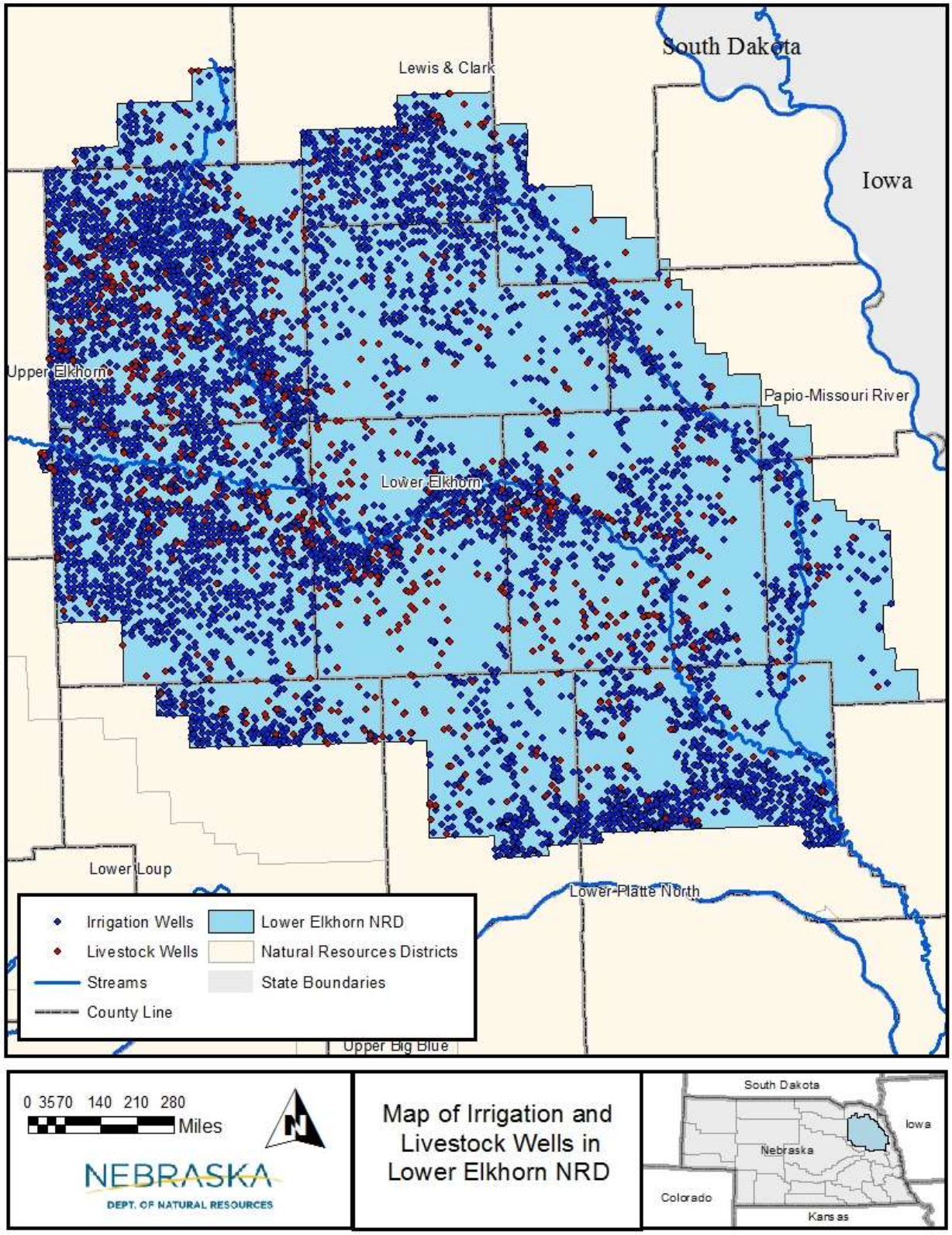

Figure 5: Registered groundwater wells in the District.

6.0 GOALS, OBJECTIVES, AND ACTION ITEMS

The District and Department, in consulation with the SAC, developed goals, objectives, and action items for this IMP. As an initial step in the process, the following definitions were discussed and agreed upon:

- **Goals:** general statements of what will be accomplished.
- **Objectives:** incremental steps within a goal and, ideally, have measurable results.
- **Actions items:** the specific tasks that the District and the Department will undertake.

Throughout the goals and objectives, the term "water supply" refers to both surface water and groundwater which is available for use within the District. While this is primarily a water quantity plan, due to authorities, it is recognized that water quality affects water supply, and is thus inherent to water supply.

The goals are presented as a table; that is, one table for each goal to describe the associated objectives and action items for that goal. The responsible party is listed in the column next to the action item. It should be noted that the amount of responsibility for each action items denoted as "Department and District" may vary between action items; for example, with one or the other entity taking more of a lead or the bulk of work. The exact make-up of responsibilities will be discussed and decided on as a part of the annual review.

6.1 GOAL 1

Goal 1 and its objectives and action items are shown in Table 2. The purpose of this goal is to continually improve our understanding of the local and regional water resources system, using the best available science and data as a guiding principle. The District and Department will collect and analyze information including water use, landuse, surface water flow, groundwater elevation, hydrogeologic data, and other information relevant to water resources management to enhance our understanding of water supply and use in the District and region.

Objective 1.1 describes ongoing data acquisition and organization and information relevant to integrated water management from a variety of sources. This includes data related to water supply, water use, all of the factors that influence the overall groundwater and surface water system, as well as data resulting from estimations of parameters that are difficult to measure. One aspect of implementing this objective is tracking both groundwater and surface water uses consistently between the District and the Department, as well as across the Basin. To accomplish this, the District will establish a water accounting and tracking system. The District and the Department will agree on the best available tools to use for calculating the amount of accretions to the stream due to acquired groundwater or surface water uses. The calculations used to

determine the accretions will consider the impact to streamflows through at least a fifty (50) year period, and will be consistent with the methods agreed to in the Basin Plan for estimated streamflow impacts. These calculations will also establish the timing and location of streamflow changes.

The District will contact the Department prior to acquiring or transferring a surface water appropriation for the District's own purposes or transfer to another user. The Department will conduct a field investigation of the surface water appropriation and notify the District of the results of that investigation within 90 days. The District will work collaboratively with the Department in performing the analysis to evaluate the volume of water resulting from the cancellation of the surface water appropriation. The District will follow the appropriate statutes and rules and regulations of the Department for approval or cancellation if the surface water appropriation is to be transferred to another use. For lands where water rights are transferred, the existing groundwater certified acre(s) will be de-certified or surface water appropriation(s) will be canceled.

The District will annually report all water accounting activities according to specifications described in Section 8.1 of this IMP. When carrying out any water accounting activity, the District will follow the procedures for any groundwater regulatory action (e.g., transfers, certifications, or municipal and non-municipal industrial accounting) applicable to such activity. When carrying out any surface water related water accounting activity, the District will follow the appropriate state statute and Department rules and regulations.

Objective 1.2 describes various analytical techniques that will be used to interpret the data gathered under Objective 1.1 to improve our understanding of the factors that influence the region's water resources. These analyses include projections of future water use and the effect of existing and new demands on existing uses. Where data is not available, estimations of parameters that are not easily measured are performed.

Objectives 1.3 and 1.4 are included for consistency with the Basin Plan.

Table 2: Goal 1, including objectives and action items.

Goal 1: Gain a Better Understanding of Water Resources		
Objective	**Action Item**	**Assigned To**
1.1 Maintain a comprehensive inventory of data and information relevant to integrated water management	1.1.1 Continually add new data to comprehensive database of water supply, use, and outflow data and information. Uses will be updated annually, while supplies will be updated every 5 years with the first update coincident with the end of the first planning increment for the Basin Plan	District and Department

consistent with the Basin Plan data formats	1.1.2 Identify gaps in data and information and, wherever possible, acquire or develop the data and information to fill these gaps	District and Department
	1.1.3 Periodically review data inventory for adequacy to support emerging science and data; update as needed	District and Department
	1.1.4 Develop and incorporate supplemental information to the INSIGHT database as it becomes available, including unmeasured uses such as riparian ET, unmetered municipal and industrial use, livestock use, and environmental remediation	Department
	1.1.5 Investigate and prioritize installation of new stream gage locations to align with District boundaries	Department
1.2 Improve our understanding of the surface water and hydrologically connected groundwater system through data and information analyses	1.2.1 Examine data to detect changes, trends, or problems	District and Department
	1.2.2 Cooperate with other entities to plan and develop hydrologic analyses and modeling tools	District and Department
	1.2.3 Evaluate potential impacts to existing uses under scenarios such as changes to demands, changes to landuse, and implementation of alternative management practices	District and Department
	1.2.4 Estimate parameters that are not easily measured: non-metered water use, groundwater inflow and outflow, evapotranspiration under different landuses, and groundwater recharge	District and Department
	1.2.5 Evaluate the effect of vegetative growth on streamflow	District
	1.2.6 Monitor and project current and future water use (agricultural, municipal, industrial, and domestic) and landuse changes, and report these at the annual Basin meeting	District and Department
	1.2.7 Evaluate the potential for expanded use of secondary aquifers or new supply due to new or improved technology and project the impact of this expanded use on water supply	District and Department
	1.2.8 Estimate the impact of conservation practices on water supply and use	District and Department
	1.2.9 Use the best available scientific data and methods to estimate the extent of tile drainage systems in the District, estimate the impact of tile drainage, and project the effect of more tile drainage systems on water supply	District and Department

	1.2.10 Evaluate agricultural policy and commodity price as it affects landuse and water use	District
1.3 For consistency with the Basin Plan, evaluate potential effects of coordination, innovation, and technology on the water inventory	1.3.1 Review scientific studies that quantify consumptive water use reduction that result from applying water-saving conservation practices	District and Department
	1.3.2 Project water uses, using both current depletive levels and ultimate full consumptive use of current uses	District and Department
1.4 For consistency with the Basin Plan, evaluate variations in water inventory due to climate cycles	1.4.1 Work with state and federal agencies to develop a baseline climate scenario as well as set of projected climate scenarios	District and Department
	1.4.2 Utilize available tools to test and evaluate resiliency of water inventory under baseline and projected climate scenarios	District and Department

6.2 GOAL 2

Goal 2 and its objectives and action items are shown in Table 3. Goal 2 is designed to develop and implement water management policies that will protect existing surface water and groundwater uses in the District and Basin.

Objective 2.1 addresses conjunctive water use activities to better ensure water is in the right place at the right time. Conjunctive management is undertaken to manage the overall water supply to a region and improve the reliability of that supply. As such, the District and Department will study, design, and implement conjunctive management and water management projects to mitigate these delivery and timing issues. These projects typically manage water supply through the capture and use of excess surface water flow. In many cases, these projects have multiple benefits, including streamflow augmentation, groundwater recharge, flood control, irrigation, wildlife habitat, and recreation.

Objective 2.2 describes additional management actions to minimize impacts of future development on existing uses. Many factors affect the availability of water. The District and Department will identify the factors that can be managed and will study, evaluate, and implement strategies to manage these factors.

Objective 2.3 is included for consistency with the Basin Plan.

Table 3: Goal 2, including objectives and action items.

Goal 2: Sustain a balance between current and future water uses and supplies through water management strategies and projects		
Objective	**Action Item**	**Assigned To**
2.1 Improve water availability through conjunctive water management	2.1.1 Identify potential conjunctive water management project opportunities and implement them where feasible	District and Department
	2.1.2 Evaluate potential of using existing infrastructure for water management and conjunctive management projects	District and Department
2.2 Develop and implement additional management strategies to minimize impacts of future development on existing uses	2.2.1 Develop strategies to evaluate and approve or deny applications for new, large groundwater or surface water uses, based on the potential impact of the new use on existing uses	District and Department
	2.2.2 Manage expanded uses and new development so that existing users are not adversely affected	District and Department
	2.2.3 Review studies, research, and literature related to conservation and management innovations and technologies and develop management strategies to encourage adoption of these techniques	District and Department
	2.2.4 Evaluate expanding regional and rural water systems to provide potable water across the District	District
	2.2.5 Explore the potential benefits or limitations of a prior appropriation system for new groundwater uses, similar to what is currently used for surface water appropriations	District
2.3 For consistency with the Basin Plan, continue to collaborate with state and local governments to identify opportunities to agument water supplies in the Lower Platte River Basin	2.3.1 Continue to investigate and pursue conjunctive management opportunities and potential partners to augment streamflows during times of shortage, with the intent of implementing at least one conjunctive management project in the Elkhorn River Basin	District and Department

6.3 GOAL 3

Goal 3 and its objectives and action items are shown in Table 4. Goal 3 is designed to help the public understand water conservation, integrated water management concepts, and the nature and occurrence of water resources. Conflicts and misunderstandings can often be avoided

through education. Educational programs include best management practice demonstrations, public meetings and forums, outdoor classrooms, children's activities, water festivals, and envirothons. Improving the public's understanding of integrated water planning and management will help provide a solid foundation for public acceptance of water management projects and water conservation.

Objective 3.1 describes the joint efforts the District and Department will take to improve public understanding of integrated water management. Objective 3.2 describes the activities that the District will engage in to promote best management practices across a variety of uses. Objective 3.3 describes incentive programs and coordination activities that the District will participate in to support best management practices.

Table 4: Goal 3, including objectives and action items.

Goal 3: Improve the pubic's understanding and participation in integrated water management		
Objective	**Action Item**	**Assigned To**
3.1 Develop education materials to enhance understanding of integrated water management	3.1.1 Conduct at least one joint District/Department outreach event per IMP review period	District and Department
	3.1.2 Create and distribute public outreach materials to explain local and regional integrated management concepts and planning	District and Department
3.2 Use public education to enhance understanding of water conservation and best management practices	3.2.1 Collaborate with colleges, schools, and other entities to develop classroom water supply and water conservation curricula	District and Department
	3.2.2 Cooperate with UNL Extension, private industries, and others to demonstrate water conservation methods through educational activities	District
	3.2.3 Collaborate with cities, counties, and public water suppliers to encourage expanded water education and the use of conservation practices	District
	3.2.4 Work with cities, counties, industries, and agricultural producers to use best management practices to manage stormwater	District
	3.2.5 Provide education programs on water reuse technologies such as rainwater harvesting, and reuse of agricultural irrigation water, storm water, and treated wastewater, as well as water conservation measures and general awareness of water supplies	District
3.3 Increase the adoption of conservation and best management practices	3.3.1 Coordinate with cities, counties, and other entities to improve integrated water management and local and regional comprehensive plans	Disctrict

through coordination and incentives	3.3.2 Implement cost-share programs that support the use of best management practices for both urban and rural areas	District

6.4 GOAL 4

Goal 4 and its objectives and action items are shown in Table 5. Goal 4 is designed to endorse a regional approach to integrated water planning and ensure consistency with the Basin Plan. It is also designed to encourgage broad participation with project implementation for efficient and effective management of the integrated water resources of this large and hydrologically complex area. The Lower Platte Basin covers a large, politically and hydrologically complex area of central and eastern Nebraska. It includes all of the surface water drainage of the Loup and Elkhorn Rivers, as well as the Platte River and its tributaries downstream of the confluence of the Loup River. Several large surface water appropriations for instream flow and municipal water supplies are located in the lower reach of the Basin. Through collaboration with other partners in the Basin, the most effective, optimized, and prioritized projects for regional water management will be identified.

Objective 4.1 describes the Coalition planning activites. The Department and seven Natural Resources Districts, including the Lower Elkhorn, established the Coalition to perform basin-wide water management planning. The intent of this effort is to provide a framework for basin-wide compatibility of integrated management planning and implementation activities. Objective 4.2 describes coordination efforts with the Coalition and others for water management project development and water banking activities. Objective 4.3 describes activities related to protection of instream flows. Instream flow rights are utilized to protect public water supply, wildlife, and recreational uses.

Objective 4.4 is included for consistency with the Basin Plan.

Table 5: Goal 4, including objectives and action items.

Goal 4: Support planning and management in the Basin and ensure consistency with the Basin Plan		
Objective	Action Item	Assigned To
4.1. Collaborate with the Lower Platte River Basin Coalition (Coalition) for basin-wide water resources planning	4.1.1 Work with the Coalition to develop, improve, and update basin-wide plans	District and Department
	4.1.2 Participate in Technical, Management, Board and other Coalition committee meetings, as appropriate	District and Department

4.2. Coordinate with the Coalition and others to identify and implement water management projects and activities for basin-wide water management	4.2.1 Coordinate with the Coalition and others to review existing and conduct new water management project studies	District and Department
	4.2.2 Coordinate with the Coalition to identify and procure federal and/or state funding opportunities that exist to further basin-wide planning activities	District and Department
	4.2.3 Coordinate with the Coalition and others to implement feasible water management projects	District and Department
	4.2.4 Coordinate with the Coalition and others to develop transfer, variance, water banking, and other systems of water management that are compatible between the District and basin-wide plans	District and Department
4.3 Review and assess instream flow needs; provide report at the annual Basin meeting	4.3.1 Work with the appropriate agencies to identify streamflow necessary to protect and maintain public water supply, fish and wildlife, and public recreation	District and Department
	4.3.2 Identify potential benefits and limitations if an instream flow permit was acquired for select locations	District
	4.3.3 For consistency with the Basin Plan, assess USGS and the Department gage flows, as well as the Department's administrative records and actions to identify change of use or location of existing appropriations and priority calls within the Basin	Department
4.4 For consistency with the Basin Plan, evaluate, understand, and develop policies to address impacts on streamflows of uses outside of management control	4.4.1 Inventory and review existing studies/reports on uses outside management control (conservation measures, riparian uses, etc.) and determine impacts on water inventory	District and Department

7.0 CONTROLS

This chapter describes the controls that the District and the Department have chosen to adopt as a part of this voluntary IMP. These controls were selected from the allowed controls listed in *Neb. Rev. Stat.* §§ 46-739 and 46-716 for groundwater and surface water controls, respectively. Per *Neb. Rev. Stat.* § 46-715(4), the controls are consistent with the goals and objectives of the IMP and will protect groundwater and surface water users in hydrologically connected areas.

Limits on New Uses

The Coalition agreed to specific limits on the development of new water uses within the hydrologically connected area of each NRD as specified in the Basin Plan, initially discussed in Section 3.0 (Background). The limits on development of new water uses are in terms of allowable "stream depletions." This corresponds to the impact that new surface water and groundwater uses are expected to have on the the Platte River and its tributaries during the peak water period of June to August over a period of fifty years.

The allowable stream depletions were based on analyses that evaluated historic excess flows in the Basin; these excess flows were further subdivided into subbasins. Limits for individual NRDs were agreed upon through discussions between the NRDs in each respective Lower Platte River subbasin. The Department and each respective NRD then determined the division of groundwater and surface water depletions that would be carried out through the individual IMP controls.

The allowable stream depletions correspond to a five-year increment that began July 1, 2016, and ends December 31, 2021 (i.e. First Increment). All surface water and groundwater development initiated after July 1, 2016, will be included in the accounting of new uses. An agreed upon methodology will be used by the NRDs and the Department to convert new irrigated acres into estimated stream depletion. The controls for limits on new uses are listed below.

7.1 GROUNDWATER CONTROLS

The groundwater control area is shown in Figure 2. The area where the groundwater controls described below apply is the hydrologically connected groundwater and surface water area. The District and Department recognize that as increased understanding of hydrologically connected areas becomes available through new data, models, and analyses, the defined control areas may change.

The District will implement two groundwater controls as a part of this voluntary IMP. The administrative and procedural implementation of the controls are described in the District's Rules and Regulations, which can be acquired by contacting the District. The District groundwater controls follow:

1. **Establish a limit on the expansion of groundwater irrigation**. The District will limit new groundwater uses to 50 percent of the annually available stream depletion over the Basin Plan's first five-year increment which concludes on December 31, 2021[4].
2. **Required metering of high capacity wells (over 50 gallons per minute).** The flow meters must be installed according to the manufacturer's specifications. Additionally, flow

[4] Depletions that are not utilized by the District or the Department will be redistributed annually and shared equally between the District and the Department (see Appendix C for an example).

meters must measure in units of gallons per minute and must have a totalizer to measure units of acre-inches.

7.2 SURFACE WATER CONTROLS

The surface water control area is shown in Figure 2. The area where surface water controls described below apply is the extent of the Lower Elkhorn Basin that is within the District boundaries. The Department will implement two surface water controls as a part of this voluntary IMP. The Deparment's surface water controls follow:

1. **Establish a limit on the expansion of surface water irrigation**.
    a. **Basin-Wide Plan Development Limits:** The Department will limit new surface water uses to 50 percent of the annually available stream depletion over the Basin Plan's first five-year increment which concludes on December 31, 2021[4].
    b. **Moratorium Areas:** Additionally, in areas where the District has established a moratorium on new groundwater uses, the Department will coordinate with the District regarding the purpose of those areas and will determine when a moratorium on new surface water uses would assist in achieving a mutually beneficial water quantity goal.
    c. **Evaluation System:** For the approval of new surface water rights, the Department will continue to implement existing evaluation criteria to determine whether or not a permit will be issued.
2. **Establish methods of measuring surface water use**
    a. Require a measuring device.
        i. On new surface water permits for irrigation, industrial, or commercial uses pumping more than 50 gallons per minute.
        ii. On existing and new surface water permits and where the use is commingled with groundwater use and the District has established a rule or regulation on groundwater quantity where measuring the quantity of surface water will assist in achieving a mutually beneficial water quantity goal.
    b. **Establish a voluntary reporting program for other existing surface water uses in the District.** The Department will implement a voluntary reporting program for unmetered surface water irrigation diversions that pump more than 50 gallons per minute. The reports will include information about the quantity of water pumped, the acres irrigated, and the type of irrigation system (gravity, pivot, etc.) used. The Department will continue to evaluate the necessity for mandatory installation of water flow meters on all surface water pumps for irrigation, industrial, and municipal uses.

8.0 MONITORING AND REPORTING PLAN

Per *Nebraska Revised Statutes* § 46-715(2)(e), the purpose of the monitoring plan is to gather and evaluate data, information, and methodologies that could be used to implement and evaluate the effectiveness of the IMP, as well as increase understanding of the hydrologically connected groundwater system. As such, the District and the Department have agreed to complete and report on the actions listed below.

8.1 TRACKING AND REPORTING WATER USES

To the extent feasible, the District will be responsible for collecting, tracking, evaluating, and reporting on the number, location, amount, and timing of the following water use activities:

(a) Groundwater level measurements,
(b) Certification of groundwater uses and any changes to these certifications,
(c) Municipal, commercial, and industrial annual water uses,
(d) Irrigation water use data aquired mandatorily or voluntarily by the District, such as metered high capacity well flow data,
(e) Streamgage measurements on District-maintained gages,
(f) Water well construction permits issued,
(g) The number of well permits denied,
(h) Variances granted by the District and/or the Department that allow an action contrary to an existing rule or regulation, including the purpose, location, and length of time for which the variance is applicable, and the reasoning behind approval of the variance,
(i) Transfer permits granted by the District and/or the Department allowing the point of withdrawal, location of use, type of use, addition of a type of use, or location of certified irrigated acres to be altered, including all information provided with the application and used in the approval of the transfer,
(j) For consistency with the Basin Plan and in keeping with *Nebraska Revised Statutes* §46-715(3) which requires the IMP to include procedures to track depletions and gains to streamflows resulting from new, retired, or other changes to uses:
    i. Geographic location of new water wells permitted,
    ii. Depletion calculated (and method of calculation) for each new water well permitted,
    iii. Estimated total consumptive use of each new water well permitted,
    iv. Retirements of agricultural, municipal, or industrial groundwater consumptive uses,
    v. Information on any mitigation or new projects that have occurred, including geographic location, description of type and operations of the project, source water of the project, and calculated benefits associated with the project (if the project is groundwater augmentation,

the report should include calculated accretions as well as the method/models used to estimated accretion values),

vi. Streamflow accretion activities,
vii. Water banking activities,
viii. District regulations/management activities (designated groundwater management areas, use restrictions, etc.),
ix. New depletions accounting report, and
x. New data collected or model/study results (conservation measures, riparian ET, etc.).

The Department will be responsible for collecting, tracking, evaluating, and reporting the following activities:

(a) Irrigation surface water use,
(b) Municipal and industrial surface water use,
(c) New surface water appropriations granted (natural flow, storage, groundwater recharge, etc.),
(d) New groundwater permits issued,
(e) Streamgage measurements from Department-maintained gages,
(f) Transfers/cancellations of surface water appropriations,
(g) Surface water administrative actions taken,
(h) New depletions accounting report, and
(i) New data collected or model/study results (conservation measures, riparian ET, etc.).

Annual Basin meetings between the Department and Coalition NRDs will occur in April, at which time the Department and Coalition NRDs will jointly review and evaluate the data gathered for accuracy, identify data anomalies and probable causes for them, and flag data and information that may require closer inspection and review. For consistency with the Basin Plan, the District and Department will submit documentation for the annual plan review meeting, which requires Technical Committee review, to the Technical Commmittee in advance of the annual meeting date, and to the Management Commmittee in advance, according to the Basin Plan. In addition, the District and the Department will utilize the Department's Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT) system to compare annual water use data to historically reported water use data and information, and perform analyses to determine the impacts of new water uses on existing water users within the District.

8.2 INCREASE UNDERSTANDING OF HYDROLOGICALLY CONNECTED SURFACE AND GROUNDWATER

Objective 1.2 provides a framework for District and Department work regarding determination of hydrologically connected area(s) of the District. At the time of this writing, the Department is

developing a groundwater model for eastern Nebraska which includes the District's IMP area. The model will be calibrated with sufficient spatial and temporal variability to assess the depletions and gains to baseflow annually, and define areas of hydrologic connectivity.

Once developed, the Department will periodically update the model as new data and information become available. The Department will convey model progress and related determination of the hydrologically connected areas to the District as progress is made and data becomes available. Progress on these ongoing studies will also be reported on at the biennial review.

9.0 INCENTIVE PROGRAMS

The District and the Department will explore grant programs to supplement the annual budgeting process for funding of cost-share incentives for encouraging voluntary installation of flow meters on surface water irrigation systems. Educational training, programs, and brochures are expected to be promoted with cost sharing and grant funding sources.

The District and the Department will also evaluate other cost-share incentive programs that promote water conservation practices, and will implement where feasible. Incentive programs may include any program authorized by state law or federal programs. Water users or landowners may be required to enter into and perform such agreements or covenants concerning the use of land or water as are necessary to produce the benefits for which the incentive program is established. Furthermore, the District and the Department will explore grant opportunities, as described in the next section, to supplement the annual budgeting process for funding action items.

10.0 FUNDING OPTIONS

This section provides information on a variety of funding options that may be used by the District and/or Department to secure additional funds to implement action items of this voluntary IMP. Sources of funding that could be utilized for voluntary IMP implementation include:

- The NRCS,
- Nebraska Department of Environmental Quality (NDEQ),
- Nebraska Environmental Trust (NET),
- NE Game and Parks Commission (NGPC),
- Bereau of Reclamation (BOR),
- The Natural Resources Commission, and
- Others.

Synopses of the general criteria and applicability of several funding resources are provided below. It should be noted that information presented here is subject to change as funding sources may change their terms and criteria, or as new funding sources become available.

10.1 FEDERAL FUNDING OPTIONS

Natural Resource Conservation Service (NRCS)

- **Environmental Quality Incentives Program (EQIP).** Through EQIP, technical assistance, cost share, and incentive payments are available to agricultural producers to implement conservation practices that improve water quality, enhance grazing lands, and/or increase water conservation.
- **Conservation Security Program (CSP).** The CSP is available in selected watersheds across the nation. The program is designed to reward farmers and ranchers who are implementing conservation on working lands and encourage them to do more.
- **Wildlife Habitat Incentives Program (WHIP).** Through WHIP, technical and financial assistance is provided to landowners and others to develop and improve wildlife habitat on private lands.
- **Wetlands Reserve Program (WRP).** Eligible landowners may receive technical and financial assistance through the WRP to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands.
- **Grassland Reserve Program (GRP).** This program emphasizes support for grazing operations, plant and animal biodiversity, and grassland and land containing shrubs and forbs under the greatest threat of conservation.
- **Farm and Ranch Lands Protection Program (FRPP).** The program is designed to help farmers and ranchers keep their land in agriculture. It provides matching funds to state, tribal or local governments, and non-governmental organizations with existing farm and ranch land protection programs to purchase conservation easements.
- **Resource Conservation and Development (RC&D).** Nebraska's RC&D areas assist communities by promoting conservation, development, and use of natural resources; improving the general level of economic activity; and enhancing the environmental standard of living for residents of those communities.

Bereau of Reclamation (BOR)

- **WaterSMART Program.** The WaterSMART program is focused on improving water conservation and helping water and resource managers make wise decisions about water use. This is achieved through administration of grants, scientific studies, technical assistance, and scientific expertise.

10.2 STATE FUNDING OPTIONS

The Nebraska Environmental Trust (NET). The Nebraska Environmental Trust was established in 1992 to conserve, enhance, and restore the natural environments of Nebraska. The Trust

especially seeks projects that bring public and private partners together collaboratively to implement high-quality, cost-effective projects.

Nebraska Department of Environmental Quality (NDEQ)

- **Nonpoint Source Water Quality Grants (Section 319).** Under Section 319 of the federal Clean Water Act, the federal government awards funds to the Nebraska Department of Environmental Quality to provide financial assistance for the prevention and abatement of nonpoint source water pollution. This funding is passed through to units of government, educational institutions, and non-profit organizations for projects that facilitate implementation of the state Nonpoint Source Management Plan.

Nebraska Game and Parks Commission (NGPC)

- **Nebraska Wildlife Conservation Fund.** The purpose of this fund acts to conserve nongame species, and species determined to be endangered or threatened, for human enjoyment, for scientific purposes, and to ensure their continued existence as a part of our natural world.

Nebraska Department of Natural Resources (NeDNR)

- **Water Well Decommissioning Fund.** The objective of the Water Well Decommissioning Fund is to encourage proper decommissioning of illegal water wells in the state. This is accomplished through providing financial incentives in the form of cost-share assistance.
- **Nebraska Soil and Water Conservation Fund.** This fund provides state financial assistance to Nebraska landowners for installation of approved soil and water conservation measures that improve water quality, conserve water, and help control erosion and sedimentation.
- **Small Watersheds Flood Control Fund.** The purpose of this fund is to assist local sponsors with the acquisition of land rights for flood control projects. Local sponsors use the fund to acquire easements or fee title to tracts that are needed to implement a project.
- **Natural Resources Water Quality Fund.** This fund was created to provide state funds to Natural Resources Districts for their water quality programs.
- **Water Sustainability Fund.** LB 1098 was signed into law during the 2014 Legislative Session. This bill created the Water Sustainability Fund which is used to address multiple water management and quality issues across the state of Nebraska. This fund acts to improve water quality and usage, supply water management goals, evaluate flood control, and comply with existing interstate agreements and compacts. NRDs are eligible to apply to the Water Sustainability Fund if they have developed or are in development of an IMP.

10.3 LOCAL FUNDING OPTIONS

It is the intent of the District to utilize qualified projects described in *Nebraska Revised Statutes* § 2-3226.04 to provide river-flow enhancement in order to achieve the goals and objectives of the

District, and to achieve the goals and objectives of the Department under the Ground Water Management and Protection Act. The District may fund projects through:

- **Levy Authority (*Neb. Rev. Stat.* § 2-3225(1)(c)).** This statutory authority allows the District to levy an additional property tax of up to three cents per $100 of taxable value, through fiscal year 2016-2017, for purposes of administering and implementing groundwater management activities and integrated management activities under the Nebraska Ground Water Management and Protection Act.
- **Occupation Tax (*Neb. Rev. Stat.* § 2-3226.05).** This statutory authority allows the District to levy an occupation tax upon the activity of irrigation of agricultural lands on an annual basis. This tax is not to exceed ten dollars per irrigated acre. Statute requires a public meeting for the provision of public comments to be held if the District board moves to implement an occupation tax for a qualifying project.

11.0 REVIEW PROCESS AND MODIFICATIONS TO THE IMP

The District and the Department will hold an annual review in conjunction with the Basin Plan review to evaluate progress on implementation of the IMP. The SAC will be invited to participate in the review. The first annual revew will be performed by March 1, 2019, and will be performed every year thereafter.

Action items undertaken by the District and the Department will be reviewed to determine if these items are fulfilling the goals and objectives of the IMP. The District and the Department will jointly determine if amendments to the IMP are necessary. Amendments to the IMP will require an agreement by both parties, and may require reconvening of the SAC. If amendments to the IMP are necessary, the District and the Department will hold a joint hearing and issue the pertinent orders to formally adopt the revised IMP.

12.0 INFORMATION CONSIDERED IN PREPARING THIS IMP

The following were sources of information used in the preparation of this IMP:

- Data on groundwater supplies and groundwater uses within and bordering the District,
- Data on recharge rates within the District and adjoining NRDs,
- Records on climate and precipitation trends within the District and adjoining NRDs,
- Records on landuse within the District and adjoining NRDs,
- Stakeholder Involvement Plan for the District, 2014,
- Rules and Regulations for groundwater management within the District,
- The Lower Elkhorn Natural Resources District Water Balance Study, 2015,
- The Department's surface water administrative records,
- The Department's rules for surface water,

- U.S. Geologic Survey and the Department's streamgage records,
- The Department's groundwater and conjunctive use models, and
- Additional data acquired by either the Department or the District and additional data on file with the District and Department.

13.0 GLOSSARY OF TERMS

Aquifer—A geological formation or structure of permeable rock or unconsolidated materials that stores and/or transmits water, such as to wells and springs. Alluvial aquifers are comprised of unconsolidated materials, such as sand and gravel, while Bedrock aquifers are comprised of rock.

Appropriation—A permit granted by the Department to use surface water for a beneficial use in a specific amount, purpose, and location. It is based on first-in-time, first-in-right.

Conjunctive management—The coordinated and combined process that utilizes the connection between surface water and groundwater to maximize water use, while minimizing impacts to streamflow and groundwater levels in an effort to increase the overall water supply of a region and improve the reliability of that supply.

Groundwater—Water which occurs in, or moves, seeps, filters, or percolates through, ground under the surface of the land, and shall include groundwater which becomes commingled with waters from surface sources.

Groundwater management plan—The District's plan that identifies the water quantity and quality characteristics, supplies, uses, data collection methods, management objectives, and management areas of groundwater supplies within the District.

Hydrologically connected—An area where groundwater and surface water are interconnected and withdrawals from one can affect the other. To determine if an area is hydrologically connected (as defined in Department Rules), one calculates if a well pumped for 50 years will deplete the river or a base flow tributary by at least 10 percent of the amount pumped in the 50 year period (the 10/50 area, from Title 457 Nebraska Administrative Code Ch. 24 001.02). Describes a geographic area designated by the Department where the existing amount of groundwater and surface water each has significant influence on the other, and where appropriate regulations exist.

INSIGHT—Developed and maintained by the Department, INSIGHT stands for an Integrated Network of Scientific Information and GeoHydrologic Tools. The purpose of INSIGHT is to provide an annual snapshot of water conditions across the state. Hydrologic data are consolidated from several different sources, including the Department, U.S. Geological Survey, U.S. Bureau of Reclamation, and local NRDs, and are presented in charts for the following categories: water supplies, water demands, nature and extent of use, and water balance. These data are presented in a consistent format and become more local as the user drills down from the statewide level to the basin-wide and subbasin levels using the database interface.

Lower Plattte River Basin Coalition (Coalition)—The Coalition members include the Upper Loup NRD, Lower Loup NRD, Upper Elkhorn NRD, Lower Elkhorn NRD, Lower Platte North NRD, Lower Platte South NRD, Papio-Missouri River NRD, and the Department. The purpose of the

Coalition is to coordinate efforts to protect the long-term balance of the Basin's water uses and water supplies. The first action of the Coalition was to voluntarily develop a Lower Platte Basin Water Management Plan.

River basin—The land area that is drained by a river and its tributaries.

Stakeholder Advisory Committee (SAC)— Representatives from various interest groups and professional fields who provide consultation on aspects of the Integrated Management Plan.

Surface water—Water that is on the Earth's surface, such as a stream, river, lake, or reservoir unless such water body has been designated in rule or statute as something else (for example, a waste storage lagoon or sand pit lake).

Water use—The legally accepted use of a groundwater well or surface water appropriation.

Watershed—The area of land where all of the water that drains under or off of it goes to the same outlet.

APPENDIX A
Letters Initiating the IMP Process

LOWER ELKHORN NATURAL RESOURCES DISTRICT

Lifelong Learning Center • 601 East Benjamin Avenue • P.O. Box 1204

(402) 371-7313 FAX: (402) 371-0653 www.lenrd.org NORFOLK, NE 68702-1204

May 8, 2012

Brian Dunnigan, Director
Nebraska Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, Nebraska 68509-4676

Dear Mr. Dunnigan,

The Lower Elkhorn Natural Resources District ("District") Board of Directors approved a motion to work with the Nebraska Department of Natural Resources ("Department") to develop an Integrated Management Plan ("IMP") for the District and to cooperate with the Department and the other natural resources districts within the Lower Platte River Basin to develop a basin-wide IMP.

On behalf of my Board of Directors, I respectfully request your support to develop an IMP jointly with the Lower Elkhorn Natural Resources District.

I look forward to working with you and your staff in this process.

Sincerely,

Stan Staab
General Manager

RECEIVED
MAY 09 2012
DEPARTMENT OF NATURAL RESOURCES

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

Dave Heineman
Governor

IN REPLY TO:

May 16, 2012

Rod Zessin, Chair
Lower Elkhorn Natural Resources District
601 E. Benjamin Avenue, Suite 101
PO Box 1204
Norfolk, NE 68702

Dear Mr. Zessin,

The Department is pleased to receive the Lower Elkhorn Natural Resources District's May 8, 2012, letter stating the District's intent to develop a voluntary integrated management plan (IMP), pursuant to *Neb. Rev. Stat.* § 46-715(1) (b). Department staff will be contacting your District to discuss details and the next steps in the integrated management planning process. The Department looks forward to developing the IMP with the District, in addition to furthering the effective working relationship between the District and the Department.

Sincerely,

Brian P. Dunnigan, P.E.
Director

/Admin-members/Dunnigan/2012

301 Centennial Mall South, 4th Floor • P.O. Box 94676 • Lincoln, Nebraska 68509-4676 • Phone (402) 471-2363 • Telefax (402) 471-2900

APPENDIX B
Stakeholder Advisory Committee

Lower Elkhorn Natural Resources District Voluntary Integrated Management Plan Stakeholder Advisory Committee*

First Name	Last Name	Affiliation
Lalene	Bates	Stanton County
Kurt	Bogner	Nucor Steel
Jane	Daberkow	Domestic Well User – Madison Area
Ron	Dierking	Logan East RWS
Chuck	Folken	Agricultural Producer
Roger	Gustafson	Lower Elkhorn Natural Resources District
Larry	Haase	Domestic Well User – Wayne Area
Chuck	Hamernik	City of Clarkson
Duane	Hovorka	Environmental/Recreational - NE Wildlife Federation
Larry	Howard	UNL – Extension
Lowell	Johnson	City of Wayne
Jan	Jorgensen	Other
Dave	Kathol	Domestic Well User
Steve	Keck	Agriculture – Plainview Area
Bill	Kranz	UNL – Agricultural Research
Bob	Moseman	Agricultural Producer
Tom	Nathan	Agricultural Producer
Mike	Salmon	Salmon Well Co.
Dean	Stueckrath	Agricultural Producer
Robin	Sutherland	National Resources Conservation Service
Shane	Weidner	City of Norfolk
Tom	Welstead	Nebraska Game and Parks Commission
Rick	Wilson	United States Geological Survey

* This list only includes those attendees present at one or more meetings.

APPENDIX C
Calculation of 50/50 Groundwater/Surface Water Split – Limits on Development

1. Limits on New Development (from the Lower Platte Basin Water Management Plan).

TABLE 4.2. FIRST 5-YEAR INCREMENT ALLOWABLE NEW DEVELOPMENT (DEPLETIONS) BY NRD			
		First 5-year Increment Allowable New Development (Depletions) – Peak Season [1]	
NRD	Sub-Basin	% Sub-Basin	AF
Upper Loup NRD	Loup River	32%	2,768
Lower Loup NRD	Loup River	68%	5,883
Upper Elkhorn NRD	Elkhorn River	25%	1,504
Lower Elkhorn NRD	Elkhorn River	75%	4,514
Papio-Missouri River NRD	Lower Platte River	21%	869
Lower Platte South NRD	Lower Platte River	24%	993
Lower Platte North NRD	Lower Platte River	55%	2,276

[1]The allowable new depletion is for all new uses. Apportionment between new surface water and groundwater uses will be made according to each NRD Integrated Management Plan

2. Groundwater and Surface Water Development in 2016 and 2017 in the District and New Allocations through 2021.

Starting total allocation (both NeDNR and LENRD) = 4514 AF)		
	NeDNR Portion	NRD Portion
Allocations	**2257 AF**	**2257 AF**
Permits issued 2016-2017	117 AF*	223 AF*
	TOTAL = 340 AF	
New allocations through 2021 = 50% of (total allocation – total used) = .5 x (4514 AF – 340 AF = 4174 AF)	**2087 AF**	**2087 AF**

*Methods for calculating acre-feet of depletion are outlined in the Lower Platte Basin Water Management Plan.