

Permit Application (*Alternate Form APA-001*)

What Is the Recharge Application Type? *Natural Flow*

Source Name (From Point of Diversion) *Keith-Lincoln Canal from North Platte River*

Diversion Type (From Point of Diversion) *Headgate*

Diversion Structure Name (From Point of Diversion) *Keith-Lincoln Diversion Dam*

Maximum Capacity of Canal or Delivery Works (CFS) (From Point of Diversion) *100*

Quantity Desired for Recharge Appropriation (CFS) *80.56*

What is the Minimum Operational Rate of the Canal (CFS) *20*

What is the Earliest Diversion Date? *04/01/2024*

Will This Project Be Constructed under a Federal Program, Receive Federal Funding, or Have Federal Planning Assistance? *No*

Do You Intend to Divert Water into Recharge Facilities Other than Your Canal? *Yes*

How Many Recharge Facilities Will Be Utilized under This Application? *3*

Annual Operating Plan

General System Operations (*AOP*)

Yes

No

Do You Use This System to Irrigate?

Diversion Begin Date *05/01/2024*

Diversion End Date *09/15/2024*

Delivery to Irrigators Begin Date *06/01/2024*

Delivery to Irrigators End Date *09/15/2024*

Irrigation Narrative (optional) *In a normal year, the irrigation canal generally takes water to flush the main & laterals for about 2 weeks prior to needing irrigation water. Timing is dependent on precipitation. This generally occurs around the last week of April to the first week of May. The canal does have some non-traditional row crops such as alfalfa & grass that will take a small amount of irrigation water earlier. The bulk of the irrigation occurs for corn & soybean crops, and those usually take water from late June to the first week of July and run thru September 20th. After the last round of irrigation, the canal pulls all the check boards and runs water down the canal for 10-12 days to clean out all of the piled-up sand and mud to restore the bottom of the canal to a flat surface for the next year. Dry Year Operations: When it is time for irrigation canals to get ready to receive water for irrigation, a lot of things need to happen. In a “perfect world” it would take a mix of fire, mechanical, and chemical means to ready the many miles of irrigation canals and laterals. Since we don’t usually see “perfect world” scenarios.....canal readiness depends on several things outside of every ditch rider’s control. Fire – an important step when trying to prepare a canal. Fire is generally the first step because it can quickly remove much of the debris that has blown in, dropped in, or was left over from the previous season, and easily burn up any vegetation growth on the bottom of the canal. Using fire is the hardest step to see accomplished with any certainty. In a dry year, fire chiefs do not want to allow burn permits for fear of fire escaping canals and causing much larger problems. To burn all that needs to burn, requires many people and lots of man hours of preparation, before and on the days to burn. If fire is used properly, it can potentially make the mechanical and chemical steps non-existent and make the process much quicker. Ultimately removing debris from the bottom of the irrigation canals can be tricky in the timing of when this should and can be done. If fire can be utilized and the debris removed early on, then mechanical and chemical means are not necessary if water can be diverted to cover the bottom of the canal. Just enough water needs to be covering the bottom of the canal so that vegetation does not regrow and slow the water down. Using chemicals is spraying unwanted vegetation. This can be used alone, or in conjunction with fire and mechanical means. The goal of removing any unwanted vegetation can be done by chemical means. If one is trying to remove any built-up debris in the canals, chemical means is not the favored solo choice. It pairs well with fire and mechanical means when used as a secondary helper option. For example, if fire is used, and then too much time has passed after then burn that vegetation has grown enough that water will not drown it out, then this will slow the flow of the water down for the rest of the season and then chemical and mechanical means may be necessary. Chemical applications require certain weather conditions to have a high kill rate and can be expensive. Mechanical means can also be expensive. Physically having someone use a mechanical device such as a weed trimmer can be very time consuming. Using mechanical devices on densely vegetative banks and bottoms of canals takes a lot of time, and a lot of people. So many irrigation canals operate on a very tight budget and have even a smaller staff to operate their systems. Wet Year Operations: Dry year and wet year operations can be just the opposite of each other. In wet years fire, the primary option, is not available due to the weeds, debris being wet, and not burning due to some of the same problems. If it is too wet to burn, then you cannot remove the winter buildup of dried-up corn husks, sticks, branches, and anything else that blows into the canals over the winter. If it’s too wet, then the chemical option doesn’t usually work as intended and the ditch riders are left trying to mechanically remove the weeds and debris. This could mean trimming the weeds or using a backhoe and a dump truck to remove piles of debris. Equipment, fuel, and operators to run equipment all cost money, and ultimately the time to do mechanical removal is probably longer than both fire and chemical means.*

Irrigation Use Uploads (Optional)

No files uploaded.

Yes

No

Do You Use This System to Generate Hydropower?

Yes

No

Do You Use This System for Storage?

Narrative for All Non-excess Flow Activities That Would Affect the Ability to Divert Excess Flows (Optional)

Partners & Sponsors


Sponsor 1

Name of Entity Paying for Recharge at this Facility *Twin Platte Natural Resources District*

Per Acre-foot Cost Basis for Recharge at This Facility *Recharged*

Max Volume per Annum *9570*

Upload Sponsor Documents

 [5 yr MOA for Excess Flow Keith-Lincoln \(2018-2022\) - Signed - Contract #1013.pdf \[https://dssdnr.nebraska.gov/filedownload/117\]](https://dssdnr.nebraska.gov/filedownload/117)

Recharge Facilities (AOP)

Keith-Lincoln Canal

Location & Capacity

Name of Facility (If Only One Facility, This Is the Canal Name) *Keith-Lincoln Canal*

Type of Facility *Canal*

Delivery Point Coordinates

Latitude *41.18203* Longitude *-101.4831*

Operational Constraints: Enter Dates or Describe in the Narrative below When Can This Facility Can Be Operated?

Begin Date of Constraints (Optional): End Date of Constraints (Optional):

Narrative of Constraints: Describe Details (Example: Weather Is Too Cold, so Cannot Operate the Facility) *Does not operate under prolonged freezing conditions.*

Diversion Rate from Stream (CFS)

Amount needed to be diverted in order to deliver the amount specified in the next question below. The total of the diversion values entered for all project facilities should add up to the amount to be appropriated in the application section. *80.56*

Delivery Rate (CFS)

Amount to Be delivered into the project facility from the stream diversion. If your project consists of one canal, then the value for this question should be the same as the value for the previous question. For projects where a canal delivers water to a recharge site: (the stream diversion rate) minus (the project facility delivery rate) = canal loss. *80.56*

Anticipated Maximum Annual Diversion (AF)

The upper limit of water diverted from the stream for this project facility. *9570*

Maximum Operational Head (FT)

For reservoirs and wetlands, how deep will the water get? For canal sections, what is the maximum height of water (head) in the canal while diversions under this application are occurring? *4*

Maximum Water Surface Area (Acres)

For reservoirs and wetlands, what will be the maximum water surface area corresponding to the maximum head. For canals this would be the average canal width multiplied by the canal section length where recharge will occur. *72.4*

Are Engineering Drawings Available? *No*

Partners & Sponsors

- **Twin Platte Natural Resources District** *(contract uploaded)*

Instrumentation

Instrument 1 - Inflow

Name of Inflow Measurement Site *Canal Inflow Staff Gage*

Geographic Coordinates of Measurement Device

Latitude 41.18203

Longitude -101.4831

Recorder Type Bubble

Recording Increments 15 Minute

Live Data Feed available to NeDNR? Yes

Kennedy Pit

Location & Capacity

Name of Facility (If Only One Facility, This Is the Canal Name) Kennedy Pit

Type of Facility Recharge Cell

Delivery Point Coordinates

Latitude 41.1795

Longitude -101.1349

Operational Constraints: Enter Dates or Describe in the Narrative below When Can This Facility Can Be Operated?

Begin Date of Constraints (Optional):

End Date of Constraints (Optional):

Narrative of Constraints: Describe Details (Example: Weather Is Too Cold, so Cannot Operate the Facility) Does not operate under prolonged freezing conditions.

Diversion Rate from Stream (CFS)

Amount needed to be diverted in order to deliver the amount specified in the next question below. The total of the diversion values entered for all project facilities should add up to the amount to be appropriated in the application section. 15.44

Delivery Rate (CFS)

Amount to Be delivered into the project facility from the stream diversion. If your project consists of one canal, then the value for this question should be the same as the value for the previous question. For projects where a canal delivers water to a recharge site: (the stream diversion rate) minus (the project facility delivery rate) = canal loss. 15.44

Anticipated Maximum Annual Diversion (AF)

The upper limit of water diverted from the stream for this project facility. 468

Maximum Operational Head (FT)

For reservoirs and wetlands, how deep will the water get? For canal sections, what is the maximum height of water (head) in the canal while diversions under this application are occurring? 4

Maximum Water Surface Area (Acres)

For reservoirs and wetlands, what will be the maximum water surface area corresponding to the maximum head. For canals this would be the average canal width multiplied by the canal section length where recharge will occur. 0.4

Are Engineering Drawings Available? No

Partners & Sponsors

- **Twin Platte Natural Resources District** (contract uploaded)

Instrumentation

Instrument 1 - Inflow

Name of Inflow Measurement Site Kennedy Staff Gage

Geographic Coordinates of Measurement Device

Latitude 41.1795 **Longitude** -101.1349

Recorder Type Staff Gage

Recording Increments Weekly

Live Data Feed available to NeDNR? No

Binegar Recharge Pit

Location & Capacity

Name of Facility (If Only One Facility, This Is the Canal Name) Binegar Recharge Pit

Type of Facility Recharge Cell

Delivery Point Coordinates

Latitude 41.1639 **Longitude** -101.2577

Operational Constraints: Enter Dates or Describe in the Narrative below When Can This Facility Can Be Operated?

Begin Date of Constraints (Optional): **End Date of Constraints (Optional):**

Narrative of Constraints: Describe Details (Example: Weather Is Too Cold, so Cannot Operate the Facility) Does not operate under prolonged freezing conditions.

Diversion Rate from Stream (CFS)

Amount needed to be diverted in order to deliver the amount specified in the next question below. The total of the diversion values entered for all project facilities should add up to the amount to be appropriated in the application section. 1.7

Delivery Rate (CFS)

Amount to Be delivered into the project facility from the stream diversion. If your project consists of one canal, then the value for this question should be the same as the value for the previous question. For projects where a canal delivers water to a recharge site: (the stream diversion rate) minus (the project facility delivery rate) = canal loss. 1.7

Anticipated Maximum Annual Diversion (AF)

The upper limit of water diverted from the stream for this project facility. 102

Maximum Operational Head (FT)

For reservoirs and wetlands, how deep will the water get? For canal sections, what is the maximum height of water (head) in the canal while diversions under this application are occurring? 5

Maximum Water Surface Area (Acres)

For reservoirs and wetlands, what will be the maximum water surface area corresponding to the maximum head. For canals this would be the average canal width multiplied by the canal section length where recharge will occur. 0.283

Are Engineering Drawings Available? No

Partners & Sponsors

- Twin Platte Natural Resources District *(contract uploaded)*

Instrumentation

Instrument 1 - Inflow

Name of Inflow Measurement Site *Binegar Pit Staff Gage*

Geographic Coordinates of Measurement Device

Latitude *41.1639* **Longitude** *-100.2577*

Recorder Type *Staff Gage*

Recording Increments *Weekly*

Live Data Feed available to NeDNR? *No*

Partners & Sponsors


Sponsor 1

Name of Entity Paying for Recharge at this Facility *Twin Platte Natural Resources District*

Per Acre-foot Cost Basis for Recharge at This Facility *Recharged*

Max Volume per Annum *9570*

Upload Sponsor Documents

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