



Colorado Water Conservation Board

Water Supply Reserve Fund - Statewide & Basin

Water Project Summary

Name of Applicant	Osborn Lateral Ditch Company		
Name of Water Project			
Basin Account Request Subtotal			\$4,536.00
Statewide Request Amount			\$27,217.00
Statewide Project Category		Aging Infrastructure	
Applicant Cash Match			\$2,268.00
Applicant In-Kind Match			\$2,268.00
Basin Requests			
Sources of Funding			

Grant Details

Statewide Project Category Justification

Develops plan to: 1) replace old and dilapidated measuring devices, and 2) reduced lateral losses leading to drought resilience. Benefits shareholders who are made up of private agriculture, public (State Trust), and municipal entities (HOAs). See Ex A.

Applicant & Grantee Information

Name of Grantee: Osborn Lateral Ditch Company
 Mailing Address: PO Box 119 Longmont CO 80502-0119
 FEIN: 840,496,426

Organization Contact: Ben Urban
 Position/Title: President Email: ben_urban@trimble.com
 Phone: 720-584-5346

Grant Management Contact: Ben Urban
 Position/Title: President Email: ben_urban@trimble.com
 Phone: 720-584-5346

Description of Grantee/Applicant

The Osborn Lateral Ditch Company serves farms off of the Highland Canal Irrigation system

Location of Water Project

Latitude 0.000000
 Longitude 0.000000
 Lat Long Flag
 Water Source
 Basins

Counties

Districts

Water Project Overview

Major Water Use Type

Type of Water Project

Scheduled Start Date - Design 4/30/2024

Scheduled Start Date - Construction 4/30/2024

Description

Measurable Results

0 New Storage Created (acre-feet)

0 New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive

0 Existing Storage Preserved or Enhanced (acre-feet)

0 New Storage Created (acre-feet)

0 Length of Stream Restored or Protected (linear feet)

0.00 Length of Pipe, Canal Built or Improved (linear feet)

\$0 Efficiency Savings (dollars/year)

0 Efficiency Savings (acre-feet/year)

0 Area of Restored or Preserved Habitat (acres)

0 Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement (acre-feet)

0 Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning

0 Number of Coloradans Impacted by Engagement Activity

Other

No additional measurable results provided



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Colorado Water Conservation Board	
Water Supply Reserve Fund	
<u>Exhibit A - Statement of Work</u>	
Date:	January 28, 2024
Water Activity Name:	Osborn Lateral Ditch Loss Mitigation Project
Grant Recipient:	Osborn Lateral Ditch Company
Funding Source:	Private and Water Supply Reserve Fund Grant
Water Activity Overview: (Please provide brief description of the proposed water activity (no more than 200 words). Include a description of the overall water activity and specifically what the WSRF funding will be used for. (PLEASE DEFINE ALL ACRONYMS).)	
<p>In normal and dry years, irrigators at the end of the Osborn Lateral (Figure 1) are not receiving deliveries of their full water right. A preliminary assessment of the ditch identified that more than 50% of the lateral’s length crosses soils that promote ditch seepage. High flow velocities in this area promotes soil loss. The preliminary assessment identified aging infrastructure and inconsistent farm headgate measurement (Figure 2) that promote poor delivery efficiency and irrigation water usage.</p> <p>The project involves:</p> <ul style="list-style-type: none"> • Establishing a baseline measurement of current headgate delivery measurement devices to ensure accurate and efficient water delivery to fields • Making engineering recommendation and providing conceptual designs on the best improvement to measuring devices along the lateral and associated infrastructure improvements to failing delivery mechanisms • Measuring lateral flows along the ditch to establish an accurate water balance to identify problematic seepage and erosional areas, and providing recommendations and conceptual designs to mitigate significant issues 	
Objectives: (List the objectives of the project. (PLEASE DEFINE ACRONYMS).)	
<p>Identify actions that result in:</p> <ul style="list-style-type: none"> • Improved water accounting to ensure accurate field deliveries and provide efficient irrigation (i.e., no excess water is wasted). • System seepage reduction • Elimination of head cutting and soil loss from the lateral • Recover approximately 1 cfs per day for the irrigation season (around 250 acre-feet per year) 	



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Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)
Task 1 – Establish Rating Curves for Highland and Supply Ditch Water Supplies
Description of Task:
<p>The two water supplies for the Osborn Lateral are the Highland Ditch (WDID 0500526) and the Supply Ditch (WDID 0500523). The measurement of flow from the Highland Ditch to the Osborn Lateral is completed by a non-standard, sharp crested weir, and the units used are non-standard inches. The measurement devices from the Supply Ditch to the Osborn Lateral are damaged beyond repair, but historically were also in non-standard inches (and different from the Highland Ditch measurement).</p> <p>The purpose of this task is to define a relationship between the Highland Ditch’s non-standard inch measurement, and a volumetric measurement in cubic feet per second (cfs). This “rating curve” is foundational in establishing a water balance approach to measuring ditch losses, and farm field deliveries along the lateral. There are locations along the ditch from the Supply Ditch outlet to the Osborn Lateral (i.e., Supply Diversion Ditch) conducive to establishing a rating curve.</p>
Method/Procedure:
<ul style="list-style-type: none"> • Install a standardized staff gauge with 0.1’ increments at the appropriate location upstream of the Highland Ditch diversion weir, and in the Supply Diversion Ditch • Measure flow in the Osborn Lateral directly below the Highland Ditch diversion weir and in the Supply diversion ditch utilizing a doppler/radar/sonar meter (or similar standard open-channel flow measuring device) • Record flow and corresponding staff gauge heights • Complete this procedure four times throughout the irrigation season trying to capture high, medium, and low-flow events • Establish rating curves for each irrigation supply, incorporating standard error analysis
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
<ul style="list-style-type: none"> • An accurate staff gauge at each diversion measurement point into the Osborn Lateral • Two rating curves and calculation sets relating staff gauge height to flow deliveries into the Osborn Lateral
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
<ul style="list-style-type: none"> • Rating curves and associated calculation sets presented in the final report to CWCB and mention in any monthly reporting



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Tasks	
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)	
<u>Task 2 - Establish Rating Curves for Individual Farm Headgate Weirs and Measurement Devices</u>	
Description of Task:	
<p>There are no consistent measurement devices (i.e., they are all different) measuring flow from the lateral to each farm field. Generally, they are some form of sharp crested weir and an attempt is made to measure farm field diversions to each field using non-standard inches. The purpose of this task, similar to Task 1, is to establish rating curves at each of the nine farm headgate delivery points along the lateral, and establish a volumetric delivery measurement that is consistent throughout all users on the lateral.</p>	
Method/Procedure:	
<ul style="list-style-type: none"> • Install a standardized staff gauge with 0.1' increments at the appropriate location upstream of each farm field diversion measuring device • Measure flow in the Osborn Lateral directly above and directly below each field diversion, and measure the field diversion flow utilizing a doppler/radar/sonar meter (or similar standard open-channel flow measuring device) • Record flow and corresponding staff gauge heights • Complete this procedure four times throughout the irrigation season • Analyze results with regard to standard error and develop rating curves for each farm field headgate delivery point 	
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)	
<ul style="list-style-type: none"> • An accurate staff gauge at each farm headgate • Individual rating curves and calculation sets relating staff gauge height to flow deliveries into the Osborn Lateral 	
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)	
<ul style="list-style-type: none"> • Rating curves and associated calculation sets presented in the final report to CWCB and mention in any monthly reporting 	



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Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)
<u>Task 3 - Shrink and Erosional Loss Estimates</u>
<p>Description of Task:</p> <p>Once a series of measurements are taken at the main diversions and individual farm headgates, there will be enough flow measurements to calculate losses throughout the Osborn Lateral system. This will result in a reasonable understanding of where the lateral loses the most water, which the ditch rider can then use to estimate the ditch loss depending on where in the system his orders originate, ensuring fair distribution to all shareholders.</p> <p>There will also be enough flow-measurement information to provide the basis for conceptual designs to reduce seepage losses, and evaluate the economical viability of the conceptual designs (Task 4).</p> <p>Inherent to flow measurements are the measurement of lateral velocities, which are directly related to the forces that erode the lateral. Combined with visual observations of the ditch, these measurements also inform conceptual designs to not only reduce seepage loss but to also improve upon erosional losses.</p>
<p>Method/Procedure:</p> <ul style="list-style-type: none"> • Use results from Tasks 1 and 2 to establish losses along the lateral throughout the irrigation season through a water balance (Figure 3) • Overlay the lateral's path over a soil conservation services soils map and evaluate the relationships of seepage potentials and lateral flow measurements (Figure 4) • Calculate erosional loss potential based on various velocity measurements
<p>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</p> <ul style="list-style-type: none"> • An understanding of system ditch losses, velocity profiles, and where they occur, delivered in a figure
<p>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</p> <ul style="list-style-type: none"> • Figure and discussion presented in the final report to CWCB and mention in any monthly reporting



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Tasks	
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)	
<u>Task 4 – Conceptual Design and Reporting</u>	
Description of Task:	
<p>This task has three objectives:</p> <ul style="list-style-type: none"> • Identify conceptual designs and estimate their approximate costs to slow ditch and erosional losses • Communicate to Osborn Lateral shareholders and management the relationship between historic “inch” measurements and volumetric delivery, and how to improve upon this in the future • Provide a basis to move lateral and farm headgate measurement improvements forward, supporting additional study and engineering design grants (if warranted), and mapping a path to construction and potential CWCB loan funding 	
Method/Procedure:	
<ul style="list-style-type: none"> • Develop conceptual engineering design drawings of solutions that reduce seepage and erosional losses. Example components may include: <ul style="list-style-type: none"> ○ Piping ○ Ditch lining with a bentonite amended soil ○ Riprap bank protection ○ Systematic drop structures to dissipate energy • Develop conceptual engineering design drawings based upon the farm-field headgate measurements showing improved measuring infrastructure and its common installation (e.g., long-throated flumes or standard sharp-crested weirs) • Summarize all data collected and engineering design drawings produced into a concise report 	
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)	
<ul style="list-style-type: none"> • Notebook of rating curves for all flow measuring points • Summary report documenting all flow measuring points, rating curves, calculations, conceptual design drawings, and recommendations for system improvements • Summary of billing, including in-kind funding 	
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)	
<ul style="list-style-type: none"> • Summary report documenting all flow measuring points, rating curves, calculations, conceptual design drawings, and recommendations for system improvements • Summary of billing, including in-kind funding 	



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Budget and Schedule

Exhibit B - Budget and Schedule: This Statement of Work shall be accompanied by a combined [Budget and Schedule](#) that reflects the Tasks identified in the Statement of Work and shall be submitted to CWCB in excel format. A separate excel formatted Budget is required for engineering costs to include rate and unit costs.

Task 1: \$7,495 – Approximately May 1, 2024 through July 15, 2024

Task 2: \$13,100 – Approximately May 1, 2024 through July 15, 2024

Task 3: \$4,227 – July 15, 2024 through July 31, 2024

Task 4: \$11,467 – July 31, 2024 through August 31, 2024

Reporting Requirements

Progress Reports: The grantee shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status of the tasks identified in the statement of work, including a description of any major issues that have occurred and any corrective action taken to address these issues. The CWCB may withhold reimbursement until satisfactory progress reports have been submitted.

Final Report: At completion of the project, the grantee shall provide the CWCB a Final Report on the grantee's letterhead that:

- Summarizes the project and how the project was completed.
- Describes any obstacles encountered, and how these obstacles were overcome.
- Confirms that all matching commitments have been fulfilled.
- Includes photographs, summaries of meetings and engineering reports/designs.

Payments

Payment will be made based on actual expenditures, must include invoices for all work completed and must be on grantee's letterhead. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

The CWCB will pay the last 10% of the entire water activity budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the water activity and purchase order or contract will be closed without any further payment. Any entity that fails to complete a satisfactory Final Report and submit to CWCB within 90 days of the expiration of a purchase order or contract may be denied consideration for future funding of any type from CWCB.

Performance Requirements

Performance measures for this contract shall include the following:

(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Grant Guidelines, the CWCB will pay out the last 10% of the budget when the final deliverable is completed to the satisfaction of CWCB staff. Once the final deliverable has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

(b) Accountability: Per the Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per the Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.

(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.

(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.



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FIGURES



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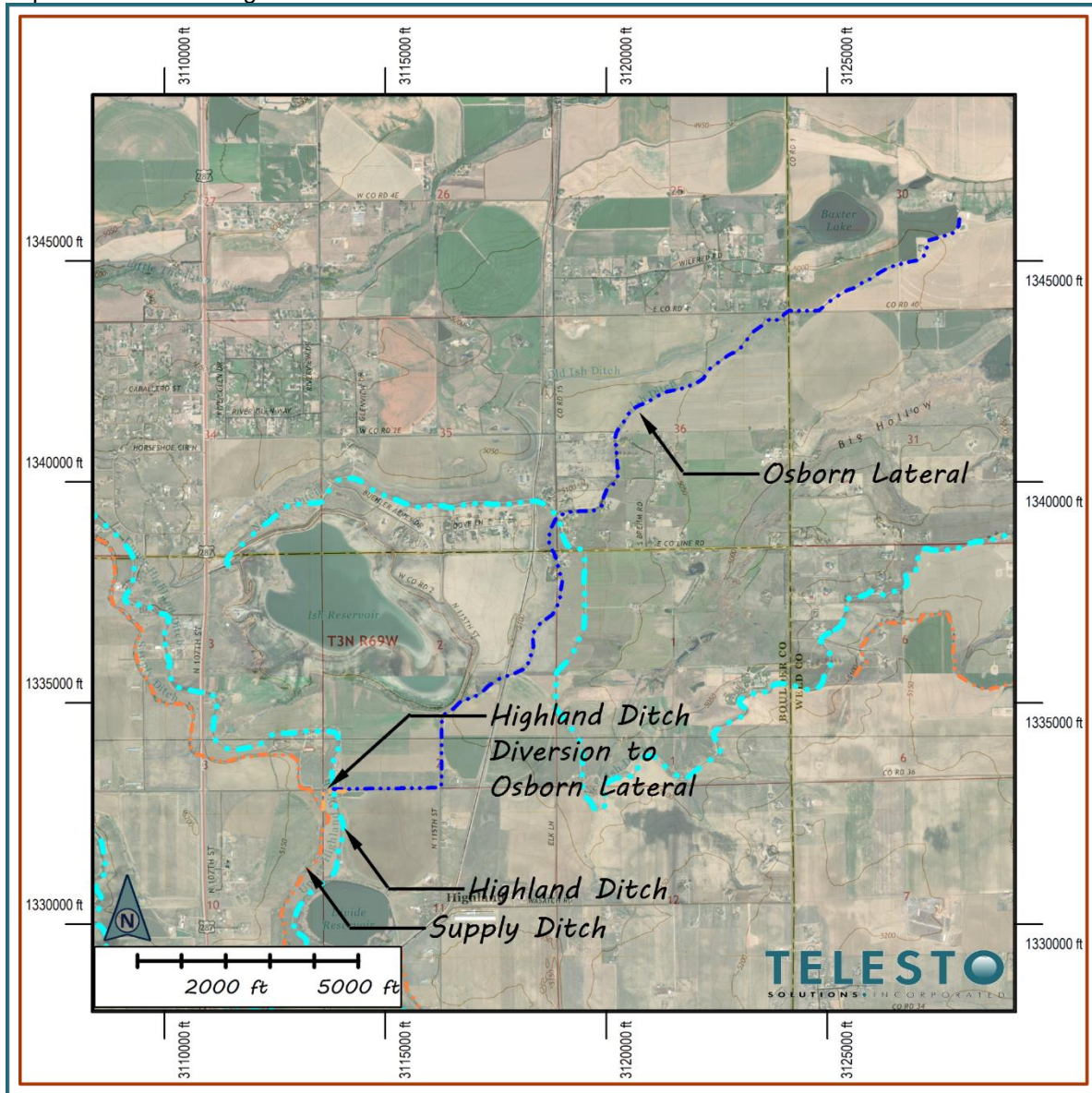


Figure 1 Osborn Lateral Location



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Figure 2 **Miscellaneous Photos**



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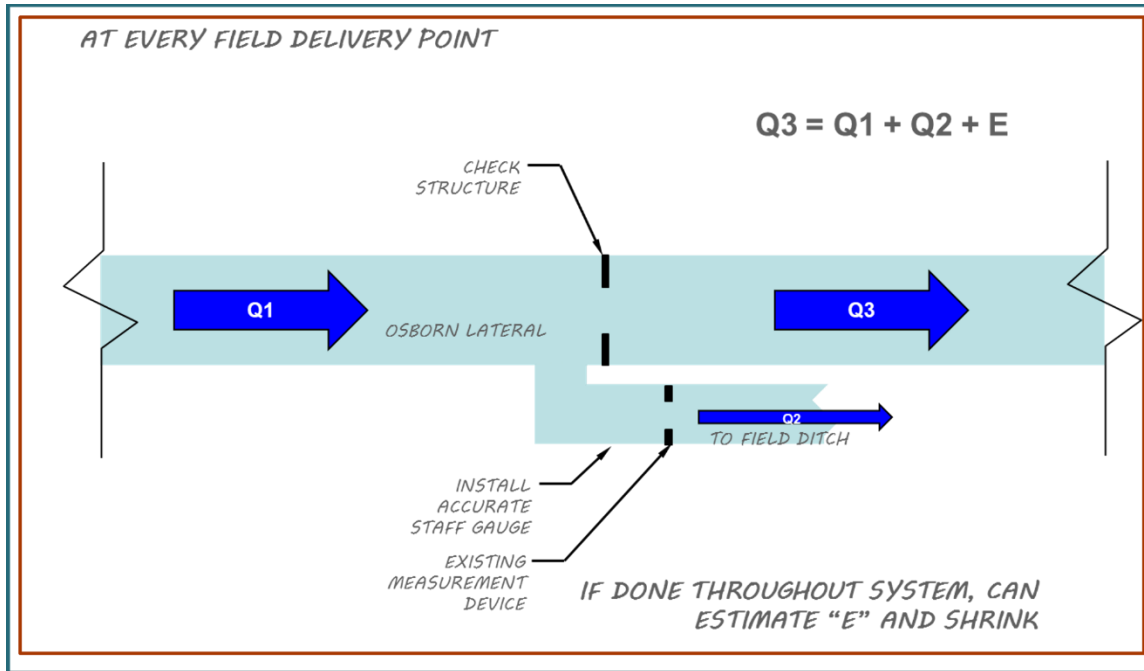


Figure 3 Water Balance at Field Headgate

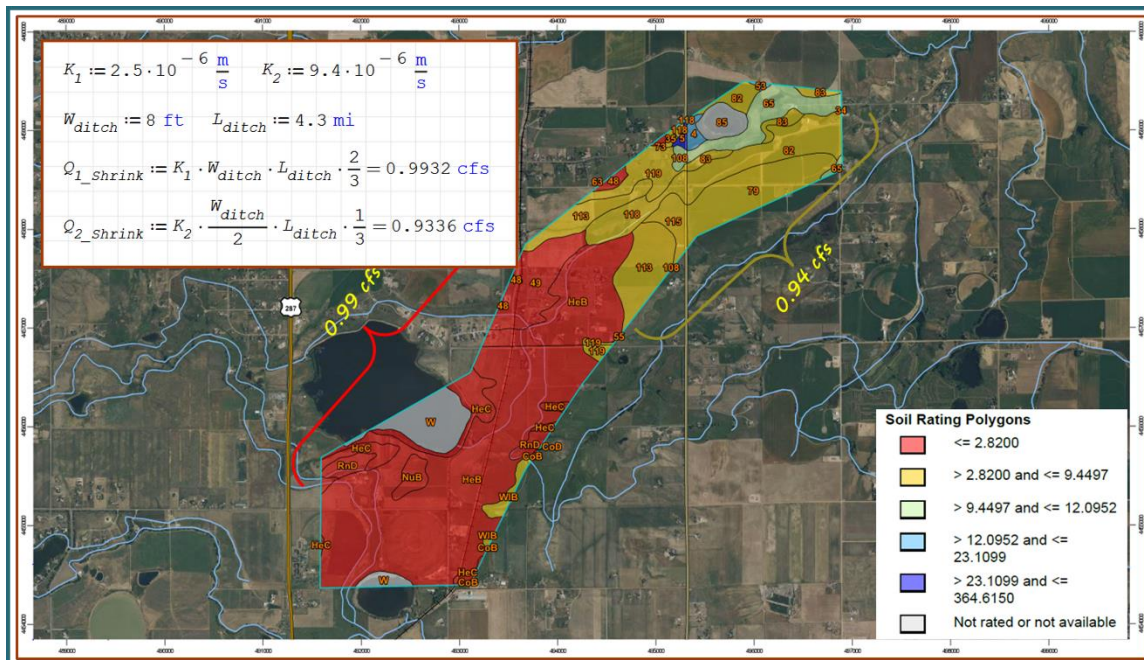


Figure 4 Example Evaluation of Seepage Loss Potential

