Members of the ND Outdoor Heritage Fund Advisory Board:

The Minot Retriever Club has proudly served retriever enthusiasts for over 50 years; The Minot Retriever Club is excited to again apply for the opportunity for funding through the North Dakota Heritage Fund.

The Minot Retriever Club has owned and operated 40 acres of custom dug technical ponds specifically designed for training retrievers since 1957. We are submitting our proposal for assistance to construct two holding structures to reestablish and maintain the water levels that previously existed before the removal of Burlington Dam #1 that took place in October 2014. Our proposal, along with the support from the North Dakota Outdoor Heritage Fund Advisory Board, will allow us to continue as a non-profit serving the needs of retriever enthusiasts as well as provide educational and conservation opportunities for the Minot Delta Waterfowl organization of retriever club property.

The attached proposal will satisfy the following Outdoor Heritage Fund Directives:

- **Directive A**: Provide Access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen.

Directive A will be satisfied by providing access to hunters to better train their hunting dogs. Although this does not directly impact provide fish or wildlife habitat through this proposal, we are providing access and opportunity for those hunters that want to spend time improving and testing the ability of their hunting dogs. This in turn will promote conservation through game recovery and promote ethical hunting and increase enjoyment of hunting by being able to take to the field with a well-trained hunting companion.

- **Directive C**: Develop, enhance, conserve, and restore wildlife and fish habitat on private and public lands.

Directive C will be satisfied by restoring two ponds, the restored ponds and upland grasslands provide habitat for breeding and migrating waterfowl, pheasants, white tail deer, numerous species of shorebirds,
wading birds and marsh birds and resident furbearers such as muskrats, mink and raccoons, as well as numerous turtles and frogs. The retriever club has also entered into a relationship with the Minot Delta Waterfowl organization. The Delta club will have access to our grounds to hold youth events as well as placing nesting boxes on the club grounds.

- **Directive D:** Conserve natural areas for recreation through the establishment and development of parks and other recreation areas.

Conserving this area for the recreation of hunters and their hunting dogs will satisfy directive D. This proposal will provide opportunities for people to train their retrievers in an area that is completely unique to any other area in the state of North Dakota. It is hoped that by providing this area it will continue the heritage of hunting with a well-trained retriever and provide a place for future generations to train their dogs.

We would like to extend our gratitude to the North Dakota Outdoor Heritage Fund Advisory Board for the opportunity to submit our proposal. In the attached proposal, we will further explain our mission and future goals.

Sincerely,

George Malaktaris
Member - Minot Retriever Club

Eric Noll, Capt, USAF O.D.
Member - Minot Retriever Club

Shannon Doken
Member - Minot Retriever Club

Lance Werchau
MRC Vice President

Ed Sehn
MRC President

Richard Srejma
MRC Secretary/Treasurer

Dr. Richard Crisera
Member - Minot Retriever Club

Mike Taddy Capt, USAF
Member - Minot Retriever Club
Outdoor Heritage Fund Grant Application

The purpose of the North Dakota Outdoor Heritage Fund is to provide funding to state agencies, tribal governments, political subdivisions, and nonprofit organizations, with higher priority given to projects that enhance conservation practices in this state by:

**Directive A.** Providing access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

**Directive B.** Improving, maintaining and restoring water quality, soil conditions, plant diversity, animal systems and by supporting other practices of stewardship to enhance farming and ranching;

**Directive C.** Developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands; and

**Directive D.** Conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

**Exemptions**

Outdoor Heritage Fund grants may not be used to finance the following:

A. Litigation;
B. Lobbying activities;
C. Any activity that would interfere, disrupt, or prevent activities associated with surface coal mining operations; sand, gravel, or scoria extraction activities; oil and gas operations; or other energy facility or infrastructure development;
D. The acquisition of land or to encumber any land for a term longer than twenty years; or
E. Projects outside this state or projects that are beyond the scope of defined activities that fulfill the purposes of Chapter 54-17.8 of the North Dakota Century Code.

**NO CONSIDERATION:**

In addition to those specific items in law that are ineligible for funding, in the absence of a finding of exceptional circumstances by the Industrial Commission, the following projects will NOT receive consideration for funding:

- A completed project or project commenced before the grant application is submitted;
- A feasibility or research study;
- Maintenance costs;
- A paving project for a road or parking lot;
- A swimming pool or aquatic park;
- Personal property that is not affixed to the land;
- Playground equipment, except that grant funds may be provided for up to 25% of the cost of the equipment not exceeding $10,000 per project and all playground equipment grants may not exceed 5% of the total grants per year (see Budget Form for how this will be calculated);
- Staffing or outside consultants except for costs for staffing or an outside consultant to design and implement an approved project based on the documented need of the applicant and the expenditures may not exceed 5% of the grant to a grantee if the grant exceeds $250,000 and expenditures may not exceed 10% of the grant to a grantee if the grant is $250,000 or less (see Budget Form for how this will be calculated);
• A building except for a building that is included as part of a comprehensive conservation plan for a new or expanded recreational project (see Budget Form for definition of comprehensive conservation plan and new or expanded recreational project); or
• A project in which the applicant is not directly involved in the execution and completion of the project.

Application Deadline
Applications for this grant round cycle are due on **October 1, 2015 at 5:00 p.m. CT**. All information, including attachments, must be submitted by that date. See instructions below for submission information.

Instructions
Please download this Word document (available on the Industrial Commission/Outdoor Heritage Fund Program website at [http://www.nd.gov/ndic/outdoor-infopage.htm](http://www.nd.gov/ndic/outdoor-infopage.htm)) to your computer and provide the information as requested. You are not limited to the spacing provided except in those instances where there is a limit on the number of words. After completing the application, save it and attach it to an e-mail and send it to outdoorheritage@nd.gov or print it and mail it to the address noted in the next paragraph.

Attachments in support of your application may be sent by mail to North Dakota Industrial Commission, ATTN: Outdoor Heritage Fund Program, State Capitol – Fourteenth Floor, 500 East Boulevard Ave. Dept. 405, Bismarck, ND 58505 or by e-mail to outdoorheritage@nd.gov. The application and all attachments must be received or postmarked by the application deadline. You will be sent a confirmation by e-mail of receipt of your application.

You may submit your application at any time prior to the application deadline. Early submission is appreciated and encouraged to allow adequate time to review your application and ensure that all required information has been included. Incomplete applications may not be considered for funding. **Any item noted with an * is required.**

**Oral Presentation.** Please note that you will be given an opportunity to make a ten-minute Oral Presentation at a meeting of the Outdoor Heritage Fund Advisory Board. These presentations are strongly encouraged.

**Open Record.** Please note that your application and any attachments will be open records as defined by law and will be posted on the Industrial Commission/Outdoor Heritage Fund website.

Name of Organization * Minot Retriever Club Inc.

Federal Tax ID# * 45-0306839

Contact Person/Title * George A Malaktaris Member appointed by Ed Sehn Club President

Address * 20 62nd Street SW
City * Minot
State * ND
zip Code * 58701
E-mail Address * malks@minot.com
Web Site Address (Optional)
Phone * 1-701-721-3674
Fax # (if available)
List names of co-applicants if this is a joint proposal

MAJOR Directive: (select the Directive that best describes your grant request)*
Choose only one response

O Directive A. Providing access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

O Directive B. Improving, maintaining and restoring water quality, soil conditions, plant diversity, animal systems and by supporting other practices of stewardship to enhance farming and ranching;

O Directive C. Developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands; and

X Directive D. Conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

Additional Directive: (select the directives that also apply to the grant application purpose)*
Choose all that apply

X Directive A. Providing access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;
O **Directive B.** Improving, maintaining and restoring water quality, soil conditions, plant diversity, animal systems and by supporting other practices of stewardship to enhance farming and ranching;

X **Directive C.** Developing, enhancing, conserving and restoring wildlife and fish habitat on private and public lands; and

O **Directive D.** Conserving natural areas and creating other areas for recreation through the establishment and development of parks and other recreation areas.

**Type of organization:** (select the category that describes your organization)*

O State Agency

O Political Subdivision

O Tribal Entity

X Tax-exempt, nonprofit corporation.

**Project Name**

**Saving Minot Retriever Club Grounds for Future Generations**

**Abstract/Executive Summary.** An Executive Summary of the project stating its objectives, expected results, duration, total project costs and participants.* (no more than 500 words)

**Background**

The Minot Retriever Club has been dedicated since 1957 to offering sportsmen the opportunity of training their retrievers on some of the finest training grounds in the Midwest.

The Minot Retriever Club has spent the last three decades developing ponds designed for retriever training. The clubs ponds received a majority of its water supply from Burlington Dam #1 located on the De Lacs River. Following the flood of 2011, it was determined the dam was damaged and the Ward County Water Resource Board had the dam removed in October of 2014. This resulted in the ponds located on club property were drained leaving mud flats where the ponds had been, greatly reducing our clubs mission.

**Objective**

The objective of this project would be to construct two dikes that would separate the current ponds from the De Lacs River allowing the ponds to maintain their water level. The club is fortunate that the current ponds were developed, so that if the water source from the river ended, we would easily be able to dike the current ponds and would have adequate watershed to maintain the majority of our training area.

**Expected Results**
This project would restore and maintain this sportsman’s resource. There has been an increased interest in retriever training, as well as other breeds, the last several years as more people move into the area from either oil field development or military people looking for this type of outdoor recreation opportunity. This project would continue to offer opportunities and ensure that the tradition of training dogs at the Minot Retriever Grounds would continue for future generations.

**Project Duration:**
It is the goal to have this project completed by the end of 2015 or if needed by the end of 2016

**Amount of Grant request $** $445,000.00

**Total Project Costs $** $195,000.00
(Note that in-kind and indirect costs can be used for matching funds)

A minimum of 25% Match Funding is required. Amount of Matching Funds $* $50,000.00

Please indicate if the matching funds will be in-kind, indirect or cash.

$7,000.00 Cash $7,000.00 supplied product and employee contribution

**Source(s) of Matching Funds**
Please provide verification that these matching funds are available for your project. Note that effective as of July 1, 2015 no State General Fund dollars can be used for a match unless funding was legislatively appropriated for that purpose.

$11,000 (cash) $2,000 (clay commitment)

$143,000.00 on hand or committed $35,000.00 applied for in process as of this deadline.
Grants applied for, approved or in process, Pheasants for the Future, Minot area community Foundation, Delta Waterfowl, Enbridge Corporation and Professional Dog Trainers Assoc.

**Certifications**
X I certify that this application has been made with the support of the governing body and chief executive of my organization.

X I certify that if awarded grant funding none of the funding will be used for any of the exemptions noted on Page 1 of this application.

**Narrative**

**Organization Information** – Briefly summarize your organization’s history, mission, current programs and activities.
Include an overview of your organizational structure, including board, staff and volunteer involvement. (no more than 300 words)
In 1956 a small group of avid hunters met to help each other train their hunting dogs. In 1957 the group formed the Minot Retriever Club and affiliated with the American Kennel Club (AKC).

The members of the club soon found they needed access to both land and water to properly train their Dogs. Through fund raising the club was able to purchase land that would meet their needs. Throughout the last 30 years the retriever club has conducted several projects to improve the sculpted ponds that are especially designed for retriever training. The last improvement project took place in 2012 following the Mouse River Flood. That projects goal was to repair and improve ponds and roads affected by flooding. The Minot Retriever Club grounds are located on 39 acres 2 and 1/2 miles NW of Burlington ND. The club has 31 members and growing with a variety of dog breeds represented. With recent action by the club the grounds are open to the public for the purpose of training hunting dogs with the exception when there is an AKC sanctioned event in progress. Having a Membership structure responsible for the holding of these licensed events makes it possible for us to give points toward championships.

The club held its first AKC Licensed event in 1959, and has held at least one trial every year since then. In 2001 the club held its first AKC Licensed Retriever hunt test. These events draw people from all over the US and Canada giving Motels, Restaurants and Gas Stations in the area an economic positive activity.

The mission of the club is to promote hunting conservation through the use of trained retrievers and to promote education and training of dogs and dog handlers. The club holds regularly scheduled meetings on the third Monday of the Month at 7:00 PM.

Purpose of Grant – Describe the proposed project identifying how the project will meet the specific directive(s) of the Outdoor Heritage Fund Program *
Identify project goals, strategies and benefits and your timetable for implementation. Include information about the need for the project and whether there is urgency for funding. Please indicate if this is a new project or if it is replacing funding that is no longer available to your organization. Identify any innovative features or processes of your project. Please note that if your proposal provides funding to an individual, the names of the recipients must be reported to the Industrial Commission/Outdoor Heritage Fund. These names will be disclosed upon request.

This is a new project that is being proposed because the dam that provides water to the Minot Retriever Club grounds was removed in October 2014. The goal of this grant is to preserve the ponds by constructing two dikes that will hold water in the ponds and allow the activity of training dogs to continue on these grounds.

The timetable for this project would be to complete the construction of the dikes and work on the ponds to be completed by the end of fall 2015. The pond work would include a clay liner to help in the retention of water.

We have contracted KLJ engineering and their engineering report is attached to this document. The permit process was initiated in Oct of 2014 to the Army Corps of Engineers and we have approval no State permit is required as the project is proposed.

This is a new project that has not been previously funded there is an urgency for funding of this project.
The Retriever club receives income from membership fees as well as the two AKC Events that are held each summer and are hosted by the Minot Retriever Club. At the end of the 2011 flood much of our savings were used to repair damage sustained as the result of that event. The revenue we generate is enough to sustain the club with a small excess saved for emergencies, however not enough for this project.

Management of Project – Provide a description of how you will manage and oversee the project to ensure it is carried out on schedule and in a manner that best ensures its objectives will be met.*
Include a brief background and work experience for those managing the project.

We have been working with a civil engineer from KLJ Engineering who will design the project. These individuals as well as the board of directors of the Minot Retriever Club will oversee this project to ensure that it is carried out in a manner that will meet the objectives of this project.

Evaluation – Describe your plan to document progress and results. *
How will you tell if the project is successful? Please be specific on the methods you will utilize to measure success. Note that regular reporting, final evaluation and expenditure reports will be required for every grant awarded.

Success will be measured when the water levels are maintained at a level that will allow for retriever training to continue at a level that it had been in the past. Also by again being one of the premier destinations for AKC Hunt Test and AKC Field trial participants from across the US and Canada.

Financial Information

ATTACHMENT: Project Budget – Using the standard project budget format that is available on the website at http://www.nd.gov/ndic/outdoor-infopage.htm, please include a detailed total project budget that specifically outlines all the funds you are requesting. Note that a minimum of 25% match funding is required.*
The project budget should identify all matching funds, funding sources and indicate whether the matching funds are in the form of cash or in-kind services. Effective July 1, 2015 no State General Fund dollars can be used for a match unless funding was legislatively appropriated for that purpose. As noted on the standard project budget format, certain values have been identified for in-kind services. Please utilize these values in identifying your matching funds. NOTE: No indirect costs will be funded.

X I certify that a project budget will be sent to the Commission* 

Sustainability – Indicate how the project will be funded or sustained in future years. * Include information on the sustainability of this project after all the funding from the Outdoor Heritage Fund has been expended and whether the sustainability will be in the form of ongoing management or additional funding from a different source.

The project will be sustained in the same manner as it was in the past with income from AKC events and participation by all those who actively support our AKC projects.
Partial Funding – Indicate how the project will be affected if less funding is available than that requested. *

We will have to compromise our plans and move on with the total project as funds become available.

Partnership Recognition - If you are a successful recipient of Outdoor Heritage Fund dollars, how would you recognize the Outdoor Heritage Fund partnership? * Please note it is a requirement that there be signage at the location of the project acknowledging the funding from the Outdoor Heritage Fund if appropriate for your project.

We will definitely allow signage stating grounds open to the public for the purpose of training hunting dogs, except on those occasions when sanctioned events are conducted. This would be because of concern for the safety of the public.

Scoring of Grants

All applications will be scored by the Outdoor Heritage Fund Advisory Board after your ten-minute oral presentation. The ranking sheet(s) that will be used by the Board is available on the website at http://www.nd.gov/ndic/outdoor-infopage.htm.

Awarding of Grants*

All decisions on requests will be reported to applicants no later than 30 days after Industrial Commission consideration. The Commission can set a limit on duration of an offer on each application or if there isn’t a specific date indicated in the application for implementation of the project, then the applicant has until the next Outdoor Heritage Fund Advisory Board regular meeting to sign the contract and get the project underway or the commitment for funding will be terminated and the applicant may resubmit for funding. Applicants whose proposals have been approved will receive a contract outlining the terms and conditions of the grant. Please note the appropriate sample contract for your organization on the website at http://www.nd.gov/ndic/outdoor-infopage.htm that set forth the general provisions that will be included in any contract issued by the North Dakota Industrial Commission. Please indicate if you can meet all the provisions of the sample contract. If there are provisions in that contract that your organization is unable to meet, please indicate below what those provisions would be. *

Responsibility of Recipient

The recipient of any grant from the Industrial Commission must use the funds awarded for the specific purpose described in the grant application and in accordance with the contract.
The recipient cannot use any of the funds for the purposes stated under Exemptions on the first page of this application.

If you have any questions about the application or have trouble submitting the application, please contact Karlene Fine at 701-328-3722 or kfine@nd.gov

Revised: June 10, 2015
Budget Standard Form

Please use the table below to provide a detailed total project budget that specifically outlines all the funds you are requesting and the matching funds being utilized to fund this project. Please note if the matching funds are in the form of cash, indirect costs or in-kind services. The budget should identify all other committed funding sources and the amount of funding from each source. Match can come from any source (i.e., private sources, State and Federal funding, Tribal funding, etc.). Effective as of July 1, 2015 no State General Fund dollars can be used for a match unless funding was legislatively appropriated for that purpose. Note a minimum of 25% match funding is required. An application will be scored higher the greater the amount of match funding provided. (See Scoring Form.)

Please feel free to insert columns and rows as needed. Please include narrative to fully explain the proposed budget.

Note that NO INDIRECT COSTS will be funded from the Outdoor Heritage Fund. Also by law several items are ineligible for funding -- see Exemptions in the Application Form. Effective June 10, 2015 the following guidelines were approved by the Industrial Commission:

NO CONSIDERATION:
In addition to those specific items in law that are ineligible for funding, in the absence of a finding of exceptional circumstances by the Industrial Commission, the following projects will NOT receive consideration for funding:

- A completed project or project commenced before the grant application is submitted;
- A feasibility or research study;
- Maintenance costs;
- A paving project for a road or parking lot;
- A swimming pool or aquatic park;
- Personal property that is not affixed to the land;
- Playground equipment, except that grant funds may be provided for up to 25% of the cost of the equipment not exceeding $10,000 per project and all playground equipment grants may not exceed 5% of the total grants per year; (See Definitions/Clarifications below)
- Staffing or outside consultants except for costs for staffing or an outside consultant to design and implement an approved project based on the documented need of the applicant and the expenditures may not exceed 5% of the grant to a grantee if the grant exceeds $250,000 and expenditures may not exceed 10% of the grant to a grantee if the grant is $250,000 or less; (See Definitions/Clarifications below)
- A building except for a building that is included as part of a comprehensive conservation plan for a new or expanded recreational project; (See Definitions/Clarifications below)
- A project in which the applicant is not directly involved in the execution and completion of the project.

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<th>Applicant's Match Share (In-Kind)</th>
<th>Applicant's Match Share (Indirect)</th>
<th>Other Project Sponsor's Share</th>
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<td>$0</td>
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In kind totals result as a contribution of all the clay we need for clay liner. $11,000.00 represents cash on hand Match share. Sponsors shares are as follow $5,000.00 design Pheasants for the future Contribution,$25,000.00 Minot Area Community Foundation Requested Clay Pond Liner, $3,000.00 requested from Professional Dog Trainers Association so they can continue to come here for events, $5,000.00 from the contractor as a contribution toward the completion of the project.

**DRAW TEXT BOX FOR DETAILS HERE**

In-kind services used to match the request for Outdoor Heritage Fund dollars shall be valued as follows:

- **Labor costs** $15.00 an hour
- **Land costs** Average rent costs for the county as shown in the most recent publication of the USDA, National Agricultural Statistics Services, North Dakota Field Office
- **Permanent Equipment** Any equipment purchased must be listed separately with documentation showing actual cost. (For example: playground equipment)
- **Equipment usage** Actual documentation
- **Seed & Seedlings** Actual documentation
- **Transportation** Mileage at federal rate
- **Supplies & materials** Actual documentation

More categories will be added as we better understand the types of applications that will be submitted. We will use as our basis for these standards other State and Federal programs that have established rates. For example the North Dakota Nonpoint Source Pollution Management Program has established rates. If your project includes work that has an established rate under another State Program please use those rates and note your source.

**Definitions/Clarifications:**

- **Building** - Defined as "A structure with a roof either with walls or without walls and is attached to the ground in a permanent nature."
- **Comprehensive Conservation Plan** - Defined as "A detailed plan that has been formally adopted by the governing board which includes goals and objectives--both short and long term, must show how this building will enhance the overall conservation goals of the project and the protection or preservation of wildlife and fish habitat or natural areas." This does not need to be a complex multi-page document. It could be included as a part of the application or be an attachment.
- **New and Expanded Recreational Project** means that the proposed building cannot be a replacement of a current building. The proposed building must also be related to either a new or expanded recreational project--either an expansion in land or an expansion of an existing building or in the opportunities for recreation at the project site.
- **Playground equipment calculation** - Only the actual costs of the playground equipment (a bid or invoice showing the amount of the equipment costs must be provided) - cannot include freight or installation or surface materials or removal of old equipment, etc.
- **Staffing/Outside Consultants Costs** - If you are requesting OHF funding for staffing or for an outside consultant, you must provide information in your application on the need for OHF funding to cover these costs. For example, if you are an entity that has engineering staff you must explain why you don't have sufficient staff to do the work or if specific expertise is needed or whatever the reason is for your entity to retain an outside consultant. If it is a request for reimbursement for staff time then a written explanation is required in the application of why OHF funding is needed to pay for the costs of that staff member(s)' time. **The budget form must reflect on a separate line item the specific amount that is being requested for staffing and/or the hiring of an outside consultant.** This separate line item will then be used to make
Minot Retriever Club
MINOT, ND

Prepared for:
Minot Retriever Club
Minot, ND

November 2014

This document was originally issued and sealed by John Wirries, Registration Number 4449 on November 3, 2014 and the original documents are stored at KLJ at Moorhead, MN

Project #7614175

KLJ
NATIONAL PERSPECTIVE
REGIONAL EXPERTISE
TRUSTED ADVISOR
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INTRODUCTION

Project Background and Description
The Minot Retriever Club requires a body of water for training and competition of their dogs. Multiple oxbows on the Des Lacs River on their property have supplied this need. However with the removal of a downstream dam, the water in the oxbows has receded leaving no water for the Minot Retriever Club’s needs. The Minot Retriever Club wishes to build a dam at the mouth of one of the oxbows to maintain water in the oxbow. This preliminary engineering report will review the feasibility of different options, the permitting requirements and the design and construction costs.

Location
The Minot Retriever Club’s property is in Ward County, North Dakota, north-west of Burlington off of US Highway 2 NW. A map of the location can be seen in Exhibit 1.

DESIGN CRITERIA

Regulations
This report was prepared in accordance with the “North Dakota Dam Design Handbook” and follows the guidelines set forth in the “North Dakota Hydrology Manual”. “Techniques for Estimating Peak-Flow Frequency Relations for North Dakota Streams” by the US Geological Survey was also used for hydrological design.

Analysis Methods
“Techniques for Estimating Peak-Flow Frequency Relations for North Dakota Streams” was used for the hydrological analysis. The site is in Region C of North Dakota and therefore Region C regression equations were used to determine the peak flows at the dam site. Regression equations are based on historical data from streams and rivers in North Dakota. Estimates of peak flows are determined by fitting a probability distribution function to a series of annual peak flows for gauged rivers. Peak flow relationships, and basin characteristics were used to create the generalized skew coefficients for the different regions. This method requires a drainage area and slope both of which were determined using GIS Arc-Hydro and Arc-HMS tools. GIS Arc-Hydro and Arc-HMS use lidar data to determine the watershed boundary and stream delineation.

Hydrologic Criteria
Due to the rural location with some homes in the area and the height of the dam it was determined that the proposed dam will have a dam classification of Type II. Table 5-1 in the North Dakota Dam Design Handbook has no requirement for a principal spillway and suggests a 25 year storm for the emergency spillway and 50 year storm for the freeboard requirements.

The “North Dakota Hydrology Manual!” Figures 1-4 through 1-8 and 1-15 were used to determine the rainfall depths seen in Table 1: Rainfall Depths.
TABLE 1: RAINFALL DEPTHS

<table>
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<th>Rainfall Duration</th>
<th>2-Year</th>
<th>10-Year</th>
<th>25-Year</th>
<th>50-Year</th>
<th>100-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-Hour</td>
<td>1.92</td>
<td>3.16</td>
<td>3.62</td>
<td>4.12</td>
<td>4.65</td>
</tr>
</tbody>
</table>

Soils

According to the Natural Resource Conservation Service (NRCS), the proposed project area consists of loams. NRCS provides this information through its website to allow people to predict the soil characteristics expected to be encountered during construction activity. While sufficient for planning purposes, the soil surveys should not take the place of project-specific soil borings, which will provide the engineer and the contractor with soil and water depth information that can be critical to the success of the project. KLJ recommends consultation with a qualified geotechnical engineer to determine additional measures to be pursued. See Exhibit 2 for the NRCS Soil Survey.

PRELIMINARY ENGINEERING

Hydrological Analysis

The total area for the watershed is 0.65 mile\(^2\) at a slope of 99 feet per mile. Table 2, provided below, summarizes the runoff that will reach the dam for the modeled storm events.

<table>
<thead>
<tr>
<th>Storm</th>
<th>Runoff (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>30.35</td>
</tr>
<tr>
<td>10</td>
<td>103.95</td>
</tr>
<tr>
<td>25</td>
<td>154.53</td>
</tr>
<tr>
<td>50</td>
<td>198.07</td>
</tr>
<tr>
<td>100</td>
<td>244.70</td>
</tr>
</tbody>
</table>

The runoff rates for the 25 and 50 year storm events were used for the spillway design discussed in the next section.

Hydraulic Analysis and Dam Design

There are two dam locations on the site. The oxbow to the east has a large watershed and the oxbow to the west has an insignificant watershed. The watershed draining to the eastern oxbow can be seen in Exhibit 3. Therefore design was done on the east oxbow since the flows will be much larger. The design can be used for both dam sites. Pumping may be required to fill the
western oxbow. The design includes an earthen dam with a weir protected with rip rap. The weir acts as both the primary and emergency spillway. The locations of the dams can be seen in Exhibit 1. A sketch of the design can be seen in Exhibit 4. A clay pond liner may be necessary to maintain water in the oxbows but cannot be determined until a geotechnical evaluation is done.

The dimensions of the dam were determined by using the max water depth in the oxbow of 5 feet, once muck is removed, and a permanent water depth of 3 feet by the Minot Retriever’s Club. The required rip rap needed is 0.5 feet deep leaving 1.5 feet of depth for the weir. With this depth the weir is required to be 45 feet in length as seen in Appendix B. The depth of the water over the weir for a 25 year event will be 1.2 feet and 1.5 feet for a 50 year event.

**Water Supply and Quality**

Closing the oxbows to the river requires a means to fill or drain the oxbows. Although the east oxbow does have watershed that could supply some water, the watershed for the west oxbow is very small. It is understood that the Minot Retriever Club plans to pump water from or to the river to fill or drain the oxbow. Further with dredging the depth of the oxbow may be below the river itself. These factors introduce an operating cost to maintain water levels. This cost is not estimated. It also raises potential water quality issues. As the oxbows will not have a continual water refreshing capability, water quality may become a significant issue. This issue is not analyzed in this report.

**COST ESTIMATE**

An approximate cost for design, permitting and construction of this project is $205,000. With soils data and additional survey this number can be refined.

**Table 3: Cost Estimate**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Dakota Permitting*</td>
<td>$10,000</td>
</tr>
<tr>
<td>Design</td>
<td>$30,000</td>
</tr>
<tr>
<td>Geotechnical Evaluation</td>
<td>$10,000</td>
</tr>
<tr>
<td>Clay Pond Liner**</td>
<td>$85,000</td>
</tr>
<tr>
<td>Dredging and Disposal</td>
<td>$40,000</td>
</tr>
<tr>
<td>Earthen Levy &amp; Erosion Protection</td>
<td>$30,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$205,000</strong></td>
</tr>
</tbody>
</table>

*Assumes that the Minot Retriever Club is responsible for all wetland permits.

**A geotechnical evaluation will be required to determine if a clay pond liner will be needed to keep water in the oxbows. For the purpose of this report it is assumed that the liner will be needed due to similar sites.
EXHIBIT 1: LOCATION MAP
Minot Retriever Club
Location Map

Legend

* Dam Locations

1 inch = 2,000 feet
Exhibit 2: NRCS Soils Map
Custom Soil Resource Report for Ward County, North Dakota

October 29, 2014
Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.scegov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# Contents

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<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
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<td>Preface</td>
<td>2</td>
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<td>Soil Map</td>
<td>5</td>
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<tr>
<td>Soil Map</td>
<td>6</td>
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<tr>
<td>Legend</td>
<td>7</td>
</tr>
<tr>
<td>Map Unit Legend</td>
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<td>Soil Information for All Uses</td>
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<td>Soil Properties and Qualities</td>
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<td>10</td>
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<tr>
<td>Hydrologic Soil Group</td>
<td>10</td>
</tr>
<tr>
<td>References</td>
<td>16</td>
</tr>
</tbody>
</table>
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.
## Custom Soil Resource Report

### MAP LEGEND

<table>
<thead>
<tr>
<th>Area of Interest (AOI)</th>
<th>Spoil Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of Interest (AOI)</td>
<td>Stony Spot</td>
</tr>
<tr>
<td>Soils</td>
<td>Very Stony Spot</td>
</tr>
<tr>
<td>Soil Map Unit Polygons</td>
<td>Wet Spot</td>
</tr>
<tr>
<td>Soil Map Unit Lines</td>
<td>Other</td>
</tr>
<tr>
<td>Soil Map Unit Points</td>
<td>Special Line Features</td>
</tr>
</tbody>
</table>

**Special Point Features**

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot

**Water Features**

- Streams and Canals

**Transportation**

- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

**Soil Survey Area:** Ward County, North Dakota  
**Survey Area Data:** Version 14, Sep 23, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 17, 2010—Jun 23, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
# Map Unit Legend

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2A</td>
<td>Tonka silt loam, 0 to 1 percent slopes</td>
<td>5.5</td>
<td>0.4%</td>
</tr>
<tr>
<td>F143C</td>
<td>Barnes-Buse-Langhei loams, 6 to 9 percent slopes</td>
<td>6.7</td>
<td>0.5%</td>
</tr>
<tr>
<td>F147C</td>
<td>Buse-Barnes-Darnen loams, 3 to 9 percent slopes</td>
<td>12.8</td>
<td>0.9%</td>
</tr>
<tr>
<td>F147F</td>
<td>Buse-Barnes-Darnen loams, 9 to 35 percent slopes</td>
<td>205.0</td>
<td>15.1%</td>
</tr>
<tr>
<td>F149F</td>
<td>Buse-Barnes-La Prairie, wooded, occasionally flooded loams, 6 to 35 percent slopes</td>
<td>201.8</td>
<td>14.9%</td>
</tr>
<tr>
<td>F177F</td>
<td>Buse-Barnes-Darnen loams, wooded, 9 to 35 percent slopes</td>
<td>18.2</td>
<td>1.3%</td>
</tr>
<tr>
<td>F178F</td>
<td>Buse-Barnes-La Prairie, occasionally flooded loams, wooded, 6 to 35 percent slopes</td>
<td>14.8</td>
<td>1.1%</td>
</tr>
<tr>
<td>F272E</td>
<td>Sioux-Arvilla-Renshaw complex, 9 to 25 percent slopes</td>
<td>1.4</td>
<td>0.1%</td>
</tr>
<tr>
<td>F560A</td>
<td>La Prairie, wooded-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded</td>
<td>24.0</td>
<td>1.8%</td>
</tr>
<tr>
<td>F562A</td>
<td>La Prairie-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded</td>
<td>34.2</td>
<td>2.5%</td>
</tr>
<tr>
<td>F576A</td>
<td>Velva loam, moist, 0 to 2 percent slopes, occasionally flooded</td>
<td>0.5</td>
<td>0.0%</td>
</tr>
<tr>
<td>F577A</td>
<td>Velva, moist-Fluvaquents, channeled fine sandy loams, 0 to 2 percent slopes, frequently flooded</td>
<td>16.7</td>
<td>1.2%</td>
</tr>
<tr>
<td>F596B</td>
<td>Darnen loam, 2 to 6 percent slopes</td>
<td>62.4</td>
<td>4.6%</td>
</tr>
<tr>
<td>F639F</td>
<td>Orthents-Aquents-Urban Land, highway complex, 0 to 35 percent slopes</td>
<td>28.5</td>
<td>2.1%</td>
</tr>
<tr>
<td>F655A</td>
<td>Aastad-Tonka complex, west, 0 to 3 percent slopes</td>
<td>50.9</td>
<td>3.7%</td>
</tr>
<tr>
<td>F657A</td>
<td>Forman loam, west, 0 to 3 percent slopes</td>
<td>21.1</td>
<td>1.6%</td>
</tr>
<tr>
<td>F657B</td>
<td>Forman loam, west, 3 to 6 percent slopes</td>
<td>128.6</td>
<td>9.5%</td>
</tr>
<tr>
<td>F658A</td>
<td>Forman-Aastad loams, west, 0 to 3 percent slopes</td>
<td>330.6</td>
<td>24.3%</td>
</tr>
</tbody>
</table>
### Ward County, North Dakota (ND101)

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>F658B</td>
<td>Forman-Aastad loams, west, 3 to 6 percent slopes</td>
<td>42.5</td>
<td>3.1%</td>
</tr>
<tr>
<td>F659A</td>
<td>Forman-Aastad-Tonka complex, west, 0 to 3 percent slopes</td>
<td>26.7</td>
<td>2.0%</td>
</tr>
<tr>
<td>F661B</td>
<td>Forman-Buse loams, west, 3 to 6 percent slopes</td>
<td>101.6</td>
<td>7.5%</td>
</tr>
<tr>
<td>F680D</td>
<td>Barnes-Sioux complex, 6 to 15 percent slopes</td>
<td>13.6</td>
<td>1.0%</td>
</tr>
<tr>
<td>F996</td>
<td>Water</td>
<td>10.8</td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>1,359.1</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
Custom Soil Resource Report

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.
Custom Soil Resource Report

**MAP LEGEND**

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Rating Polygons
  - A
  - A/D
  - B
  - B/D
  - C
  - C/D
  - D
  - Not rated or not available

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

**Soil Rating Lines**
- Not rated or not available

**Soil Rating Points**
- Not rated or not available

**MAP INFORMATION**

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Source of Map: Natural Resources Conservation Service
Coordinate System: Web Mercator (EPSG:3857)

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# Table—Hydrologic Soil Group

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2A</td>
<td>Tonka silt loam, 0 to 1 percent slopes</td>
<td>C/D</td>
<td>5.5</td>
<td>0.4%</td>
</tr>
<tr>
<td>F143C</td>
<td>Barnes-Buse-Langhei loams, 6 to 9 percent slopes</td>
<td>B</td>
<td>6.7</td>
<td>0.5%</td>
</tr>
<tr>
<td>F147C</td>
<td>Buse-Barnes-Damen loams, 3 to 9 percent slopes</td>
<td>B</td>
<td>12.8</td>
<td>0.9%</td>
</tr>
<tr>
<td>F147F</td>
<td>Buse-Barnes-Damen loams, 9 to 35 percent slopes</td>
<td>B</td>
<td>205.0</td>
<td>15.1%</td>
</tr>
<tr>
<td>F149F</td>
<td>Buse-Barnes-La Prairie, wooded, occasionally flooded loams, 6 to 35 percent slopes</td>
<td>B</td>
<td>201.8</td>
<td>14.9%</td>
</tr>
<tr>
<td>F177F</td>
<td>Buse-Barnes-Damen loams, wooded, 9 to 35 percent slopes</td>
<td>B</td>
<td>18.2</td>
<td>1.3%</td>
</tr>
<tr>
<td>F178F</td>
<td>Buse-Barnes-La Prairie, occasionally flooded loams, wooded, 6 to 35 percent slopes</td>
<td>B</td>
<td>14.8</td>
<td>1.1%</td>
</tr>
<tr>
<td>F272E</td>
<td>Sioux-Arvilla-Renshaw complex, 9 to 25 percent slopes</td>
<td>A</td>
<td>1.4</td>
<td>0.1%</td>
</tr>
<tr>
<td>F560A</td>
<td>La Prairie, wooded-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded</td>
<td>B</td>
<td>24.0</td>
<td>1.8%</td>
</tr>
<tr>
<td>F562A</td>
<td>La Prairie-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded</td>
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<td>34.2</td>
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</tr>
<tr>
<td>F576A</td>
<td>Velva loam, moist, 0 to 2 percent slopes, occasionally flooded</td>
<td>B</td>
<td>0.5</td>
<td>0.0%</td>
</tr>
<tr>
<td>F577A</td>
<td>Velva, moist-Fluvaquents, channeled fine sandy loams, 0 to 2 percent slopes, frequently flooded</td>
<td>A</td>
<td>16.7</td>
<td>1.2%</td>
</tr>
<tr>
<td>F596B</td>
<td>Darnen loam, 2 to 6 percent slopes</td>
<td>B</td>
<td>62.4</td>
<td>4.6%</td>
</tr>
<tr>
<td>F639F</td>
<td>Orthents-Aquents-Urban Land, highway complex, 0 to 35 percent slopes</td>
<td>C</td>
<td>28.5</td>
<td>2.1%</td>
</tr>
</tbody>
</table>
### Hydrologic Soil Group—Summary by Map Unit—Ward County, North Dakota (ND101)

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>F655A</td>
<td>Aastad-Tonka complex, west, 0 to 3 percent slopes</td>
<td>B</td>
<td>50.9</td>
<td>3.7%</td>
</tr>
<tr>
<td>F657A</td>
<td>Forman loam, west, 0 to 3 percent slopes</td>
<td>C</td>
<td>21.1</td>
<td>1.6%</td>
</tr>
<tr>
<td>F657B</td>
<td>Forman loam, west, 3 to 6 percent slopes</td>
<td>C</td>
<td>128.6</td>
<td>9.5%</td>
</tr>
<tr>
<td>F658A</td>
<td>Forman-Aastad loams, west, 0 to 3 percent slopes</td>
<td>C</td>
<td>330.6</td>
<td>24.3%</td>
</tr>
<tr>
<td>F658B</td>
<td>Forman-Aastad loams, west, 3 to 6 percent slopes</td>
<td>C</td>
<td>42.5</td>
<td>3.1%</td>
</tr>
<tr>
<td>F659A</td>
<td>Forman-Aastad-Tonka complex, west, 0 to 3 percent slopes</td>
<td>C</td>
<td>26.7</td>
<td>2.0%</td>
</tr>
<tr>
<td>F661B</td>
<td>Forman-Buse loams, west, 3 to 5 percent slopes</td>
<td>C</td>
<td>101.6</td>
<td>7.5%</td>
</tr>
<tr>
<td>F680D</td>
<td>Barnes-Sioux complex, 6 to 15 percent slopes</td>
<td>B</td>
<td>13.6</td>
<td>1.0%</td>
</tr>
<tr>
<td>F996</td>
<td>Water</td>
<td></td>
<td>10.8</td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td></td>
<td><strong>1,359.1</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

### Rating Options—Hydrologic Soil Group

**Aggregation Method:** Dominant Condition  
**Component Percent Cutoff:** None Specified  
**Tie-break Rule:** Higher
References


Table 4.--Regional regression equations that relate peak flow for selected recurrence intervals to selected basin characteristics

[Q, peak flow, in cubic feet per second; CA, contributing drainage area, in square miles; S, main-channel slope, in feet per mile]

<table>
<thead>
<tr>
<th>Recurrence interval (years)</th>
<th>Equation</th>
<th>Number of stations used in analysis</th>
<th>Standard error of estimate (percent)</th>
<th>Standard error of prediction (percent)</th>
<th>Equivalent years of record (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>( Q = 24.9 , CA^{0.543} , S^{0.094} )</td>
<td>41</td>
<td>60</td>
<td>64</td>
<td>3.1</td>
</tr>
<tr>
<td>10</td>
<td>( Q = 62.2 , CA^{0.600} , S^{0.168} )</td>
<td>41</td>
<td>55</td>
<td>60</td>
<td>5.0</td>
</tr>
<tr>
<td>15</td>
<td>( Q = 70.9 , CA^{0.609} , S^{0.181} )</td>
<td>41</td>
<td>56</td>
<td>60</td>
<td>5.6</td>
</tr>
<tr>
<td>25</td>
<td>( Q = 81.6 , CA^{0.619} , S^{0.197} )</td>
<td>41</td>
<td>57</td>
<td>61</td>
<td>5.3</td>
</tr>
<tr>
<td>50</td>
<td>( Q = 95.9 , CA^{0.631} , S^{0.217} )</td>
<td>41</td>
<td>59</td>
<td>64</td>
<td>7.1</td>
</tr>
<tr>
<td>100</td>
<td>( Q = 110 , CA^{0.640} , S^{0.234} )</td>
<td>41</td>
<td>60</td>
<td>66</td>
<td>7.8</td>
</tr>
<tr>
<td>500</td>
<td>( Q = 142 , CA^{0.656} , S^{0.268} )</td>
<td>41</td>
<td>67</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Region B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>( Q = 7.68 , CA^{0.697} , S^{0.299} )</td>
<td>88</td>
<td>83</td>
<td>88</td>
<td>2.3</td>
</tr>
<tr>
<td>10</td>
<td>( Q = 32.7 , CA^{0.716} , S^{0.294} )</td>
<td>88</td>
<td>60</td>
<td>64</td>
<td>5.9</td>
</tr>
<tr>
<td>15</td>
<td>( Q = 41.6 , CA^{0.717} , S^{0.286} )</td>
<td>88</td>
<td>60</td>
<td>67</td>
<td>6.7</td>
</tr>
<tr>
<td>25</td>
<td>( Q = 55.1 , CA^{0.716} , S^{0.276} )</td>
<td>88</td>
<td>61</td>
<td>66</td>
<td>7.5</td>
</tr>
<tr>
<td>50</td>
<td>( Q = 76.4 , CA^{0.715} , S^{0.262} )</td>
<td>88</td>
<td>65</td>
<td>70</td>
<td>8.2</td>
</tr>
<tr>
<td>100</td>
<td>( Q = 101 , CA^{0.713} , S^{0.249} )</td>
<td>88</td>
<td>70</td>
<td>76</td>
<td>8.5</td>
</tr>
<tr>
<td>500</td>
<td>( Q = 171 , CA^{0.708} , S^{0.229} )</td>
<td>88</td>
<td>84</td>
<td>91</td>
<td>8.6</td>
</tr>
<tr>
<td>Region C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>( Q = 4.08 , CA^{0.638} , S^{0.348} )</td>
<td>58</td>
<td>98</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>( Q = 22.3 , CA^{0.665} , S^{0.275} )</td>
<td>58</td>
<td>66</td>
<td>71</td>
<td>5.2</td>
</tr>
<tr>
<td>15</td>
<td>( Q = 29.4 , CA^{0.668} , S^{0.263} )</td>
<td>58</td>
<td>64</td>
<td>77</td>
<td>6.3</td>
</tr>
<tr>
<td>25</td>
<td>( Q = 39.7 , CA^{0.670} , S^{0.249} )</td>
<td>58</td>
<td>62</td>
<td>68</td>
<td>7.5</td>
</tr>
<tr>
<td>50</td>
<td>( Q = 56.3 , CA^{0.671} , S^{0.232} )</td>
<td>58</td>
<td>62</td>
<td>68</td>
<td>9.0</td>
</tr>
<tr>
<td>100</td>
<td>( Q = 75.6 , CA^{0.672} , S^{0.219} )</td>
<td>58</td>
<td>63</td>
<td>69</td>
<td>10.2</td>
</tr>
<tr>
<td>500</td>
<td>( Q = 129 , CA^{0.676} , S^{0.196} )</td>
<td>58</td>
<td>67</td>
<td>75</td>
<td>12.0</td>
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</tbody>
</table>
APPENDIX B: DAM HYDRAULIC WEIR DESIGN
**Rectangular Weir**

<table>
<thead>
<tr>
<th>Coeff</th>
<th>2.6 ***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>45 feet</td>
</tr>
</tbody>
</table>

**Equation:**

\[ Q = CLH^{1.5} \]

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Flow (cfs)</th>
<th>Depth (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>0.10</td>
<td>3.70</td>
<td>1.20</td>
</tr>
<tr>
<td>0.20</td>
<td>10.46</td>
<td>2.40</td>
</tr>
<tr>
<td>0.30</td>
<td>19.23</td>
<td>3.60</td>
</tr>
<tr>
<td>0.40</td>
<td>29.60</td>
<td>4.80</td>
</tr>
<tr>
<td>0.50</td>
<td>41.37</td>
<td>6.00</td>
</tr>
<tr>
<td>0.60</td>
<td>54.38</td>
<td>7.20</td>
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<tr>
<td>0.70</td>
<td>68.52</td>
<td>8.40</td>
</tr>
<tr>
<td>0.80</td>
<td>83.72</td>
<td>9.60</td>
</tr>
<tr>
<td>0.90</td>
<td>99.90</td>
<td>10.80</td>
</tr>
<tr>
<td>1.00</td>
<td>117.00</td>
<td>12.00</td>
</tr>
<tr>
<td>1.10</td>
<td>134.98</td>
<td>13.20</td>
</tr>
<tr>
<td>1.20</td>
<td>153.80</td>
<td>14.40</td>
</tr>
<tr>
<td>1.30</td>
<td>173.42</td>
<td>15.60</td>
</tr>
<tr>
<td>1.40</td>
<td>193.81</td>
<td>16.80</td>
</tr>
<tr>
<td>1.50</td>
<td>214.94</td>
<td>18.00</td>
</tr>
<tr>
<td>1.60</td>
<td>236.79</td>
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<td>1.70</td>
<td>259.33</td>
<td>20.40</td>
</tr>
<tr>
<td>1.80</td>
<td>282.55</td>
<td>21.60</td>
</tr>
<tr>
<td>1.90</td>
<td>306.42</td>
<td>22.80</td>
</tr>
<tr>
<td>2.00</td>
<td>330.93</td>
<td>24.00</td>
</tr>
</tbody>
</table>

25 Year Storm

50 Year Storm
Mr. Ed Sehn  
Minot Retriever Club  
PO Box 643  
Minot, North Dakota 58702  

Dear Mr. Sehn:  

We have reviewed your Department of the Army (DA) application for the Minot Retriever Club Oxbow Retention Project. The project will construct two (2) earthen berms, 5 feet in height, with a principle spillway 3 feet in height and with 4:1 side slopes. The berms will restore and retain wetland hydrology within two separate oxbow wetlands adjacent to the Des Lacs River. The project is located in Section 34 Township 156 North, Range 84 West, Ward County, North Dakota.

We have prepared a preliminary jurisdictional determination (JD) for the site which is a written indication that the waters in the project area may be jurisdictional waters of the United States. Such waters have been treated as jurisdictional for purposes of computation of impacts and compensatory mitigation requirements. If you concur with the preliminary JD, please sign it and return it to the letterhead address. If you believe the preliminary JD is inaccurate, you may request this office complete an approved JD prior to commencement of any work in waters of the US. An approved JD is an official determination regarding the presence or absence of such waters. Completion of an approved JD may require coordination with the US Environmental Protection Agency.

If you do not want the Corps to complete an approved JD, you may proceed your project in accordance with the terms and conditions of DA Nationwide Permit No. 27, found in the February 21, 2012 Federal Register (77 FR 10184), Reissuance of Nationwide Permits. Enclosed is a fact sheet that fully describes this Nationwide Permit and lists the General, Regional and Water Quality Certification Conditions that must be adhered to for this authorization to remain valid. Please note that deviations from the original plans and specifications of your project could require additional authorization from this office.

This determination is applicable only to the permit program administered by the Corps of Engineers. It does not eliminate the need to obtain other Federal, state, tribal, and local approvals before beginning work.

You are responsible for all work accomplished in accordance with the terms and conditions of the Nationwide Permit, including the Regional Conditions specific to projects undertaken in North Dakota. If a contractor or other authorized representative will be accomplishing the work authorized by the Nationwide Permit on your behalf, it is strongly recommended that they be provided a copy of this letter and the attached conditions so that they are aware of the limitations of the applicable Nationwide Permit. Any activity that fails to comply with all of the terms and conditions of the Nationwide Permit will be considered unauthorized and subject to appropriate enforcement action.
In compliance with General Condition 30, you are required to submit the following project compliance certification within thirty (30) days of project completion. [Please check all applicable statements]

[ ] I certify that I have completed the projects as permitted.
[ ] I certify that I have completed a modified version of the projects.
[ ] I certify that I have completed all required mitigation.

Permittee's Signature: ____________________________ Date: ______________

This verification will be valid until March 18, 2017.

Should you at any time become aware that either an endangered and/or threatened species or its critical habitat exists within the project area, you must immediately notify this office.

The Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at http://corpsmapu.usace.army.mil/cap_apex/f?p=regulatory_survey. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax.

If you have any questions concerning this determination or jurisdiction, please feel free to contact Mr. Matthew Mikulecky of this office at (701) 255-0015, extension 2009, and reference Corps Identification No. NWO-1996-60651-BIS.

Sincerely,

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosures
Copy of Water Commission Permit to be provided
November 26, 2014

Ed Sehn
President of Minot Retriever Club
PO Box 543
Minot, ND 58701

Dear Mr. Sehn:

Re: Minot Retriever Club:

I received your letter dated November 17th and have passed it on, along with the KLI report to the Ward County Water Resource Board. I do not serve as the Water Board Engineer as they have a contract with an engineering company to serve as their engineer. They will most likely have their engineer review the report and get back to you. I do not know how long this will take but their next meeting would most likely be December 8, and if you have questions you can get a hold of their secretary, Nancy at 701-839-6840.

I will also forward this information on to Ward County Planning and Zoning. Since the construction will be occurring within the 100 year flood plain, you may need a permit from the Flood Plain Administrator. We will try to coordinate with the Water Board on this second permit.

Sincerely,

Dana G Larsen P.E.
Ward County Engineer
December 10, 2014

Minot Retriever Club
PO Box 643
Minot, ND 58702-0643

RE: Dam Construction

The Ward County Water Resource Board received your November 17, 2014 letter, which appears to request a permit for construction of dams. The Board instructed me to inform you that a construction permit (if one is required) must be obtained through the State Engineer’s office. A permit is required for dams that are capable of retaining or diverting more than 50 acre-feet of water (if the dam is classified as a medium-hazard or high-hazard dam, a permit is required if the dam is capable of retaining or diverting more than 25 acre-feet of water). See N.D.C.C. § 61-16.1-38.

An application (SFN 51695) must be submitted to the State Engineer. Unless the proposed dams are low-hazard dams (less than 10’ in height), the application must include complete plans and specifications prepared by a professional engineer. The State Engineer will review the application and supporting materials and then forward the application to the Ward County Water Resource Board for review and comment. The final decision, however, rests with the State Engineer.

An Application Form is attached for your convenience. Forms can be obtained from the North Dakota State Water Commission website:

http://www.swc.state.nd.us/4dlink9/4dcgi/GetSubCategoryRecord/Permits%20and%20Applications/Construction%20Permits

You may also want to consult the Dam Design Handbook (also available at the link provided above). While not a comprehensive step-by-step set of requirements, this handbook provides...
helpful information about the gathering of data, the design of the structure, the preparation of construction drawings and specifications, and the inspection of construction.

Sincerely,
McGEE, HANKLA & BACKES, P.C.

Bryan Van Grinsven
E-mail: bvangrinsven@mcgeelaw.com

Encl.
cc: Ward County Water Resource Board Secretary
    Dennis Reep, HDR Engineering
Minot Retriever Club
Attn: Edward Sehn
PO Box 643
Minot, ND 58701

RE: Two small dams near Burlington, North Dakota.

Dear Mr. Sehn:

This is to acknowledge receipt of State Water Commission Form SFN-51695 for the construction of a couple of dams capable of storing less than 50 acre-feet located in the SW ¼, SW ¼, Section 34, Township 156 North, Range 84 West in Ward County. State law does not require a permit for creations with less than 50 acre-feet of storage. The State Water Commission Form SFN-51695 is for information only to enable the State Engineer to record locations of all dams and reservoir acreage and volumes.

It is noted on your construction permit application that the West dam riprap spillway will maintain a reservoir capacity of 3.33 acre-feet at the emergency spillway and that the East dam riprap spillway will maintain a reservoir capacity of 5.53 acre-feet at the emergency spillway. If the amount of water intended to be stored were to increase, Section 61-04-02 of the North Dakota Century Code states that regardless of the proposed use, all water users shall secure a Water Use Permit prior to construction an impoundment capable of retaining more than twelve and a half acre-feet of water measured at the top of the principal spillway. Contact James MacArthur of the Water Appropriation Division at 701-328-3441 with any questions regarding water use permits.

It is recommended that your dam be constructed in 6-inch layers and compacted with rubber-wheeled earth moving equipment. The material used for construction of the dam should not contain vegetative matter or consist primarily of sand and gravel. It is also suggested that a spillway be constructed around one or both ends of the embankment and that the top width be a minimum of 10 feet. It is suggested that the side slopes be no steeper than 3 horizontal to 1 vertical (3:1). If it is not possible to construct a spillway, it is suggested that the top width be 20 feet and that extra care be taken to ensure compaction.

It is your responsibility to ensure that the project will not back water onto land not under your control. Should the dam wash out; you may be liable for any damages caused. Construction of a dam does not constitute a water right. If the State Engineer determines the water is needed to

TODD SANDO, P.E.
STATE ENGINEER
fulfill a senior water right, you will be required to release the water by breaching, pumping, syphoning, or other means.

If you should have any questions or are in need of assistance, please feel free to contact me at 701-328-2752.

Sincerely,

Dwight Comfort, P.E.
Regulatory Section

DC:ph/1313
cc: Ward County WRD
    Robert White, Office of the State Engineer
Permit Not Required - Minot Retriever Club

SW1/4 SW1/4 Section 34, T156N, R84W, Ward County