Lessard-Sams Outdoor Heritage Council
Fiscal Year 2018 / ML 2017 Request for Funding

Date: May 26, 2016

Program or Project Title: Living Shallow Lake Enhancement & Wetland Restoration Initiative - Phase V (WRE02)

Funds Requested: $14,900,000

Manager's Name: Jon Schneider
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County Locations: Big Stone, Cottonwood, Freeborn, Grant, Jackson, Kandiyohi, Lac qui Parle, Le Sueur, Martin, Meeker, Murray, Nicollet, Nobles, Pope, Redwood, Sibley, and Swift.

Regions in which work will take place:

- Prairie

Activity types:

- Restore
- Enhance

Priority resources addressed by activity:

- Wetlands

Abstract:

This Phase 5 request for Ducks Unlimited's Living Lakes program will enhance 6,000 acres of shallow lakes and restore 200 acres of small wetlands by engineering and installing water control structures for Minnesota DNR and U.S. Fish & Wildlife Service on public lands and wetlands under easement. Structures will be used by DNR and Service partners to restore wetland hydrology and actively manage shallow lake water levels to enhance their ecology for ducks, other birds, and hunters in the Prairie Region of Minnesota. DU will engineer structures and contract with private sector firms for construction and earth-moving work.

Design and scope of work:

This is Phase 5 of Ducks Unlimited's ongoing shallow lake enhancement and prairie wetland restoration conservation program, and will enhance 6,000 acres of shallow lakes and restore 200 acres of small wetlands in the Prairie Pothole Region of SW Minnesota. DU provides wetland engineering services to the Minnesota DNR and U.S. Fish & Wildlife Service (FWS) to survey, design, and install water level control structures to enhance degraded shallow lakes and restore drained wetlands on public land and under easement. Water control structures will be used to conduct temporary water level draw-downs to rejuvenate shallow lake ecology and productivity. DU engineers will survey and design water control structures, and will manage their construction by private sector firms contracted by DU.

Shallow lake enhancement and wetland restoration are top priority actions in all major conservation plans for Minnesota. Our work addresses the habitat goals identified in North American Waterfowl Management Plan, Minnesota's Prairie Conservation Plan, and Minnesota's Duck Recovery Plan which calls for the active management of 1,800 shallow lakes and adding 64,000 wetlands to Minnesota's landscape. This work is time-sensitive because complex shallow lake enhancement projects take several years to design and implement, and because wetlands restorations are critically needed for breeding waterfowl.

Healthy and abundant wetlands are required to sustain breeding and migrating waterfowl. Minnesota has lost approximately 90% of our prairie wetlands along with 99% of native prairie uplands around them. This has had a profound negative impact on breeding ducks and other prairie wetland wildlife here. Shallow lakes and wetlands that remain are often those that were too deep to drain years ago, and they now function as the core of Minnesota's remaining waterfowl habitat complexes. However, these remaining wetland basins now often receive the excessive nutrient-laden water runoff from an intensively drained and interconnected landscape through which invasive fish such as carp have improved access. As a result, many of our remaining wetlands and shallow lakes are turbid and degraded due to highly drained watersheds, high and stable water levels in which nutrients collect and carp and other invasive fish proliferate. The result is that aquatic ecology functions stagnate and wetland productivity declines, and wetland basins with few aquatic plants and invertebrates result. This is especially detrimental to diving ducks and other species that rely exclusively on aquatic plant and invertebrate foods within wetlands and shallow lakes to survive. These factors have caused a decline in Minnesota's diverse waterfowl resources, and in Minnesota's rich waterfowling tradition too.

This funding request will support DU projects that biologists and wetland engineering staff assess shallow lake and wetland restoration project feasibility, and design and manage construction of water control structures and fish barriers required to improve public water shallow lakes and restore wetlands in the Prairie Pothole Region of SW Minnesota. Funding will support ongoing shallow lake technical assistance from DU biologists and engineers to assess, survey, and design future projects for implementation under future OHF appropriations for this program.

Which sections of the Minnesota Statewide Conservation and Preservation Plan are applicable to this project:

- H4 Restore and protect shallow lakes
- H5 Restore land, wetlands and wetland-associated watersheds

Which other plans are addressed in this proposal:

- Long Range Duck Recovery Plan
- Managing Minnesota's Shallow Lakes for Waterfowl and Wildlife

Describe how your program will advance the indicators identified in the plans selected:

Ducks Unlimited's "Living Lakes" conservation initiative provides wetland engineering expertise to enhance shallow lakes and restore wetlands to directly support the goals of Minnesota DNR's Long-range Duck Recovery Plan and objectives of its Shallow Lakes Program Plan ("Managing Minnesota Shallow Lakes for Waterfowl and Wildlife").

These plans call for maximizing management of all 200 shallow lakes that are designated wildlife management lakes and those within state WMAs and federal WPAs/NWRs along with the approximately 1,553 shallow lakes with a portion of their shorelines under state, federal, or county ownership for high quality waterfowl habitat, and increasing management of the other 201 shallow lakes with public access. Overall, these plans call for the active management of 1,800 shallow lakes and restoring 600,000 acres of wetlands in 64,000 basins in Minnesota.

This work also supports the goals of Minnesota's Prairie Conservation Plan and NAWMP.

Which LSOHC section priorities are addressed in this proposal:

Prairie:

- Protect, restore, and enhance shallow lakes

Describe how your program will produce and demonstrate a significant and permanent conservation legacy and/or outcomes for fish, game, and wildlife as indicated in the LSOHC priorities:

Ducks Unlimited professional engineers and biologists design and install robust steel and concrete water level control structures that provide long-lasting shallow lake enhancement and wetland restoration tools to Minnesota DNR and U.S. Fish & Wildlife Service field managers. These water structures are essential to enhancing shallow lakes and controlling outflows, and must be engineered to a very high level in order to withstand time and environmental pressures while providing wildlife managers with the means to regularly conduct temporary water level draw-downs to enhance their aquatic ecology to ensure optimal ecological condition for ducks. Similarly, smaller wetland restorations often involve complex drainage systems that require professional engineering to survey, design, and restore without negatively affecting upstream and downstream private landowners. Since 1984, Ducks Unlimited provided these wetland engineering services to our state and federal wildlife conservation agency partners.

Describe how the proposal uses science-based targeting that leverages or expands corridors and

complexes, reduces fragmentation or protects areas identified in the MN County Biological Survey:

Ducks Unlimited uses science-based targeting to evaluate shallow lake and prairie wetland restorations in the Prairie Region, especially small wetland restorations that help improve prairie-wetland complexes for breeding ducks. Models such as the U.S. Fish & Wildlife Service (USFWS) "Thunderstorm Maps" and "Restorable Wetlands Inventory" help determine landscape importance for breeding waterfowl. We consider biological diversity and significance according to the Minnesota DNR County Biological Survey (MCBS). For example:

Indian Lake is a 377-acre shallow lake in Sibley County partially included in a state WMA. It was identified by Minnesota DNR as having a high level of biological significance, and as having moderate biodiversity significance by the MCBS. Lake Hassel is a 703-acre shallow lake in Swift County in a landscape that currently supports 31-40 breeding duck pairs per square mile. It has a high level of biological significance and a moderate level of biodiversity significance, and is within 1.5 miles of three different native plant communities identified by the MCBS (Wet Prairie, Seepage Meadow, Dry Hill Prairie). Long Lake is a 206-acre shallow lake in Cottonwood County in a landscape that currently supports 31-40 breeding pairs of waterfowl per mile. This was identified by the MCBS as having a moderate biodiversity importance. North and South Badger Lakes are a combined 399 acres in Murray County in a landscape supporting 21-30 breeding duck pairs per square mile. It was identified by both the MCBS and MNDNR at a moderate level of importance. Middle Lake in the Swan Lake WMA is a 2,665-acre shallow lake in Nicollet County. It was identified as an outstanding lake of biological significance and as having high biodiversity significance by the MCBS. This basin occurs less than two miles from Swan Lake which contains Bulrush Marsh, a native plant community identified by the MCBS. The Todd Carlson FWS Easement restoration on which DU will restore 8 prairie wetlands is located in Kandiyohi County in a landscape supporting 41-50 breeding ducks per square mile. It is adjacent to Dry Sand – Gravel Prairie and 3 miles from Arrowhead Marsh, both native plant communities identified by MCBS.

How does the proposal address habitats that have significant value for wildlife species of greatest conservation need, and/or threatened or endangered species, and list targeted species:

This proposal enhances shallow lakes and restores non-forested prairie wetlands, which are identified as critical habitats for many "Species of Greatest Conservation Need" listed in Minnesota's "Tomorrow's Habitat for the Wild & Rare: An Action Plan for Minnesota Wildlife." Specific species listed in the Action Plan as requiring shallow lakes (page 273) include lesser scaup, northern pintail, common moorhen, least bittern, American bittern, marsh wren, and Virginia rail, along with being "important for many other species". Specific species listed in the Action Plan as requiring emergent marshes (page 267) include least bittern, American bittern, marsh wren, and Virginia rail, and Forster's terns are listed as requiring large deep-water marshes.

In addition to these specific wildlife species listed as SGCN examples in the Action Plan, shallow lakes and prairie wetlands will provide habitat of significant value for other species listed in Appendix B of the Action Plan too. Enhanced shallow lakes will provide habitat of significant value for other SGCN including: western grebe, black tern, northern harrier, trumpeter swan, common loon, bald eagle, Franklin's gull, whimbrel, black-crowned night heron, American white pelican, horned grebe, red-necked grebe, eared grebe, and common tern. Restored prairie wetlands will provide habitat of significant value for other SGCN including: include black tern, northern harrier, trumpeter swan, rusty blackbird and black-crowned night heron.

Identify indicator species and associated quantities this habitat will typically support:

Ducks Unlimited proposes to restore 200 acres of prairie wetlands and enhance 6,000 of shallow lakes to improve their ecological function for waterfowl and many other species of wetland-dependent wildlife. Science-based guidance provided by Minnesota DNR indicates that 200 acres of restored prairie wetlands and 6,000 acres of shallow lakes may be estimated to:

Support approximately 2,510 pairs of mallards based on the biological model of the Upper Mississippi River Great Lakes Joint Venture of the North American Waterfowl Management Plan that indicates one pair of mallards needs 2.47 acres of wetlands with adequate adjacent upland nesting habitat to support population growth; and,

Support at least 41 or more pairs of trumpeter swans assuming one pair for every 150 wetland acres, depending on the size, type, and number of wetland basins restored or enhanced.

Outcomes:

Programs in prairie region:

- Enhanced shallow lake productivity *Shallow lakes enhanced via temporary water level draw-downs made possible by DU-engineered and installed water control structures will be assessed by Minnesota DNR shallow lakes program surveys both before and after draw-downs to document improvements in water clarity, abundance of aquatic plants, and overall improvements in the aquatic ecology of each basin. Minnesota DNR and U.S. Fish & Wildlife Service field staff also conduct periodic counts of waterfowl and other wildlife using these basins in both spring and fall, along with hunters, and thus wildlife and human use is also monitored on a more informal basis.*

How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

Shallow lake enhancement water control structures and prairie wetland restorations are engineered and implemented for state and federal agency conservation partners on land under their state or federal long-term control and management responsibility. Thus, all projects constructed will be sustained and maintained by conservation partners Minnesota DNR and U.S. Fish & Wildlife Service, which are the two primary wildlife habitat management agencies in Minnesota.

Explain the things you will do in the future to maintain project outcomes:

Year	Source of Funds	Step 1	Step 2	Step 3
2020	DNR Game & Fish Account, OHF for DNR Shallow Lakes Program and DNR Roving Crews	DNR Area Wildlife and Shallow Lakes Program Staff will assess shallow lake and wetland conditions following initial water level draw-downs, and document for management consideration	Every 3-8 years, depending on wetland conditions, water control structures will be used to actively manage and enhance shallow lakes and wetlands via temporary water level draw-down to remove fish, stimulate aquatic plants, and rejuvenate their overall aquatic ecology, which includes stimulating aquatic invertebrate production. Some basins may need pumping via DNR pump purchased by DU via previous 2012 OHF grant.	DNR assess ecological conditions again following subsequent temporary water level draw-downs and refilling management treatments, and communicate results and questions or concerns to DU.

What is the degree of timing/opportunistic urgency and why it is necessary to spend public money for this work as soon as possible:

Most prairie wetlands have been drained and most shallow lakes degraded in southern Minnesota. Functioning wetland basins are the most important habitat variable for breeding ducks, and the most limiting factor for ducks in prairie Minnesota. Similarly, healthy and productive shallow lakes are the limiting habitat type for diving ducks and most other migrating waterfowl species as they pass through Minnesota in fall and spring. To improve wetland conditions for both breeding and migrating waterfowl in Minnesota, it is imperative that we restore wetlands and enhance shallow lakes, especially in the Prairie Pothole Region of SW Minnesota.

How does this proposal include leverage in funds or other effort to supplement any OHF appropriation:

DU strives to use all of our non-federal expense to leverage federal NAWCA grant funds to further our conservation mission. However, NAWCA is highly competitive and complex, and proposal success is uncertain. Nonetheless, DU works closely with Minnesota DNR, and NGO partners to offer recent past state OHF acquisitions as non-federal match to leverage federal NAWCA funds to help fund shallow lake and wetland restoration projects. DU intends to partner with DNR and other NGOs to pursue NAWCA grant funds in the future to help implement projects funded through this appropriation.

Relationship to other funds:

- Not Listed

Describe the relationship of the funds:

Not Listed

Describe the source and amount of non-OHF money spent for this work in the past:

Appropriation Year	Source	Amount
2009	DU private and federal USFWS and NAWCA grant funds	$1,111,000
2010	DU private and federal USFWS and NAWCA grant funds	$1,205,400
2012	DU private and federal USFWS and NAWCA grant funds	$839,300
2014	DU private and federal USFWS and NAWCA grant funds	$200,000 (ongoing)

Activity Details

Requirements:

If funded, this proposal will meet all applicable criteria set forth in MS 97A.056 - **Yes**

Will restoration and enhancement work follow best management practices including MS 84.973 Pollinator Habitat Program - **Yes**

Is the activity on permanently protected land per 97A.056, subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 - **Yes (WMA, WPA, Private Land, Public Waters)**

Do you anticipate federal funds as a match for this program - **Yes**

Are the funds confirmed - **No**

What is the approximate date you anticipate receiving confirmation of the federal funds - **July 2020**

Land Use:

Will there be planting of corn or any crop on OHF land purchased or restored in this program - **No**

Accomplishment Timeline

Activity	Approximate Date Completed
Recon projects with DNR and FWS partners and begin engineering survey and design of wetland restorations and shallow lake enhancements	June 2018
Complete small wetland restorations	June 2020
Complete larger shallow lake enhancement water control structure installations	June 2022

Budget Spreadsheet

Total Amount of Request: $14,900,000

Budget and Cash Leverage

Budget Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	$1,950,000	$45,000	DU Private & federal NAWCA	$1,995,000
Contracts	$12,000,000	$200,000	DU Private & federal NAWCA grants	$12,200,000
Fee Acquisition w/ PILT	$0	$0		$0
Fee Acquisition w/o PILT	$0	$0		$0
Easement Acquisition	$0	$0		$0
Easement Stewardship	$0	$0		$0
Travel	$225,000	$25,000	DU Private & federal USFWS and NAWCA grants	$250,000
Professional Services	$225,000	$0		$225,000
Direct Support Services	$215,000	$5,000	DU Private & federal USFWS and NAWCA grants	$220,000
DNR Land Acquisition Costs	$0	$0		$0
Capital Equipment	$0	$0		$0
Other Equipment/Tools	$60,000	$0		$60,000
Supplies/Materials	$225,000	$25,000	DU Private & federal USFWS and NAWCA grants	$250,000
DNR IDP	$0	$0		$0
Total	$14,900,000	$300,000	-	$15,200,000

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Manager - Grant Administration & Program Coordination	0.50	3.00	$150,000	$0		$150,000
Professional Engineers, Surveyors, Construction Managers, and Biologists to Design and Implement Projects	5.00	3.00	$1,800,000	$45,000	DU Private & federal NAWCA	$1,845,000
Total	5.50	6.00	$1,950,000	$45,000	-	$1,995,000

Amount of Request:	$14,900,000
Amount of Leverage:	$300,000
Leverage as a percent of the Request:	2.01%
DSS + Personnel:	$2,165,000
As a % of the total request:	14.53%
Easement Stewardship:	$0
As a % of the Easement Acquisition:	-%

How did you determine which portions of the Direct Support Services of your shared support services is direct to this program:

Minnesota DNR grants staff previously reviewed and approved DU accounting methodology for Direct Support Services, which are calculated and included in DU staff costs. DU Direct Support Services constitute approximately 10% of DU overall staff costs on average among all billable DU conservation staff categories. DU breaks out and invoices for Direct Support Service expenses approved by DNR for reimbursement separately from Personnel expenses.

Does the amount in the contract line include R/E work?

Yes, all of the budget request for Contracts is for shallow lake enhancement and wetland restoration work contracted to private sector construction firms specializing in earth moving and water control structure installation involving steel weirs, concrete culverts, etc.

Does the amount in the travel line include equipment/vehicle rental? - No

Explain the amount in the travel line outside of traditional travel costs of mileage, food, and lodging:

None - DU travel costs consist of in-state mileage, food, and lodging only. Travel is primarily mileage and lodging for engineering field staff and biologists during project survey and construction management.

Describe and explain leverage source and confirmation of funds:

DU will work hard to leverage OHF grant funds with additional sources of private support from individuals, foundations, and corporations and via federal NAWCA grants for specific projects, especially by using past OHF grant expense to leverage federal grants for shallow lakes and wetland restoration projects proposed in this program.

Does this proposal have the ability to be scalable? - Yes

Tell us how this project would be scaled and how administrative costs are affected, describe the "economy of scale" and how outputs would change with reduced funding, if applicable:

This project can be scaled approximately proportionally to funding recommended on a cost per acre basis. Administrative costs can be reduced too if less funding is recommended than requested, albeit not proportionately due to base costs of program and grant administration and reporting.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	200	0	0	0	200
Protect in Fee with State PILT Liability	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0
Protect in Easement	0	0	0	0	0
Enhance	6,000	0	0	0	6,000
Total	6,200	0	0	0	6,200

Table 2. Total Requested Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	$900,000	$0	$0	$0	$900,000
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0
Enhance	$14,000,000	$0	$0	$0	$14,000,000
Total	$14,900,000	$0	$0	$0	$14,900,000

Table 3. Acres within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	0	0	0	200	0	200
Protect in Fee with State PILT Liability	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0
Enhance	0	0	0	6,000	0	6,000
Total	0	0	0	6,200	0	6,200

Table 4. Total Requested Funding within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	$0	$0	$0	$900,000	$0	$900,000
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0	$0
Enhance	$0	$0	$0	$14,000,000	$0	$14,000,000
Total	$0	$0	$0	$14,900,000	$0	$14,900,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	$4,500	$0	$0	$0
Protect in Fee with State PILT Liability	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0
Enhance	$2,333	$0	$0	$0

Table 6. Average Cost per Acre by Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	$0	$0	$0	$4,500	$0
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0
Enhance	$0	$0	$0	$2,333	$0

Target Lake/Stream/River Feet or Miles

0

I have read and understand Section 15 of the Constitution of the State of Minnesota, Minnesota Statute 97A.056, and the Call for Funding Request. I certify I am authorized to submit this proposal and to the best of my knowledge the information provided is true and accurate.

Parcel List

Explain the process used to select, rank and prioritize the parcels:

Ducks Unlimited prioritizes prairie shallow lake enhancement and wetland restoration opportunities that are located in landscapes most heavily used by migrating and breeding waterfowl, and which our DNR and USFWS agency partners are willing to actively manage for optimal waterfowl habitat. Due to the overall shortage of prairie wetlands for breeding ducks, and relatively few shallow lakes in optimal condition for migrating ducks in Minnesota, DU relies on our DNR and USFWS agency partner biologists with land management responsibility to determine shallow lake and wetland project opportunities on public land or under easement. From there, DU prioritizes wetland restorations within landscapes of higher predicted breeding duck use, and prioritizes enhancement of shallow lakes where management success is most probable due to basin depth, landscape and hydrology conditions, and the likelihood that invasive fish can be minimized.

Section 1 - Restore / Enhance Parcel List

Big Stone

Name	TRDS	Acres	Est Cost	Existing Protection?
Otrey Lake WMA	12245222	116	$175,000	Yes

Cottonwood

Name	TRDS	Acres	Est Cost	Existing Protection?
Cottonwood Lake WPA	10535219	7	$35,000	Yes
Harder Lake WPA	10636216	1	$5,000	Yes
Long Lake	10638222	206	$300,000	Yes
Long Lake WPA	10638223	10	$50,000	Yes
Round Lake	10638226	75	$200,000	Yes
Ulhenhopp Long Lake FWS PL Easement	10638222	20	$100,000	Yes
Watonwan River WPA	10636211	9	$45,000	Yes

Freeborn

Name	TRDS	Acres	Est Cost	Existing Protection?
Halls Lake WPA	10322230	105	$150,000	Yes
Illinois, Chicago, and Eastern WPA	10222206	29	$145,000	Yes
Two Island WPA	10322224	4	$20,000	Yes

Grant

Name	TRDS	Acres	Est Cost	Existing Protection?
Cheney Trust WPA	12744235	94	$200,000	Yes
Demaree WPA	13043214	120	$300,000	Yes
Redhead Slough WPA	12941208	168	$400,000	Yes
Ronhovde FWS PL Easement	12841205	20	$120,000	Yes

Jackson

Name	TRDS	Acres	Est Cost	Existing Protection?
Fish Lake WPA	10435205	11	$55,000	Yes

Kandiyohi

Name	TRDS	Acres	Est Cost	Existing Protection?
Carlson FWS PL Easement	12233233	12	$60,000	Yes
Hubbard Lake	12233233	57	$180,000	Yes
Schultz Lake	11834223	167	$485,000	Yes
Wheeler Lakes	11834223	238	$200,000	Yes
Yarmon WPA	11834223	258	$150,000	Yes

Lac qui Parle

Name	TRDS	Acres	Est Cost	Existing Protection?
Riverside WMA	11743234	25	$100,000	Yes
Sweetwater WMA	11746236	69	$200,000	Yes
Wild Wings WMA	11643223	73	$250,000	Yes

Le Sueur

Name	TRDS	Acres	Est Cost	Existing Protection?
Diamond Lake	11023222	120	$250,000	Yes
Sanborn Lake	11223226	448	$500,000	Yes
Scotch Lake	11025223	596	$500,000	Yes

Martin

Name	TRDS	Acres	Est Cost	Existing Protection?
Holmes Lake FWS PL Easement	10232235	160	$300,000	Yes

Meeker

Name	TRDS	Acres	Est Cost	Existing Protection?
Butler Lake FWS PL Easement	11932210	60	$150,000	Yes
Doering FWS PL Easement	11931219	10	$50,000	Yes
Opsdahl FWS PL Easement	12033224	15	$75,000	Yes
Thoen and Harold Lakes	11931219	306	$400,000	Yes

Murray

Name	TRDS	Acres	Est Cost	Existing Protection?
Buffalo Lake WPA	10739207	4	$20,000	Yes
Dovray WPA	10739217	3	$15,000	Yes
North and South Badger Lakes	10541202	398	$975,000	Yes
Slaughter Slough WPA	10740211	18	$90,000	Yes

Nicollet

Name	TRDS	Acres	Est Cost	Existing Protection?
Swan Lake WMA - Middle Lake	11028226	2,665	$400,000	Yes

Nobles

Name	TRDS	Acres	Est Cost	Existing Protection?
Bloom WPA	10441220	4	$20,000	Yes
Graham Lake WPA	10439220	14	$70,000	Yes
Lake Bella WPA	10140227	1	$5,000	Yes

Pope

Name	TRDS	Acres	Est Cost	Existing Protection?
Ben Wade WPA	12639204	10	$100,000	Yes
Stewart WPA	12539215	15	$50,000	Yes

Redwood

Name	TRDS	Acres	Est Cost	Existing Protection?
Daubs Lake	11137211	175	$200,000	Yes

Sibley

Name	TRDS	Acres	Est Cost	Existing Protection?
Indian Lake	11329221	229	$250,000	Yes
Ward Lake	11330204	146	$200,000	Yes

Swift

Name	TRDS	Acres	Est Cost	Existing Protection?
Hassel Lake	12239216	706	$975,000	Yes
Loen WPA	12238218	35	$100,000	Yes

Section 2 - Protect Parcel List

No parcels with an activity type protect.

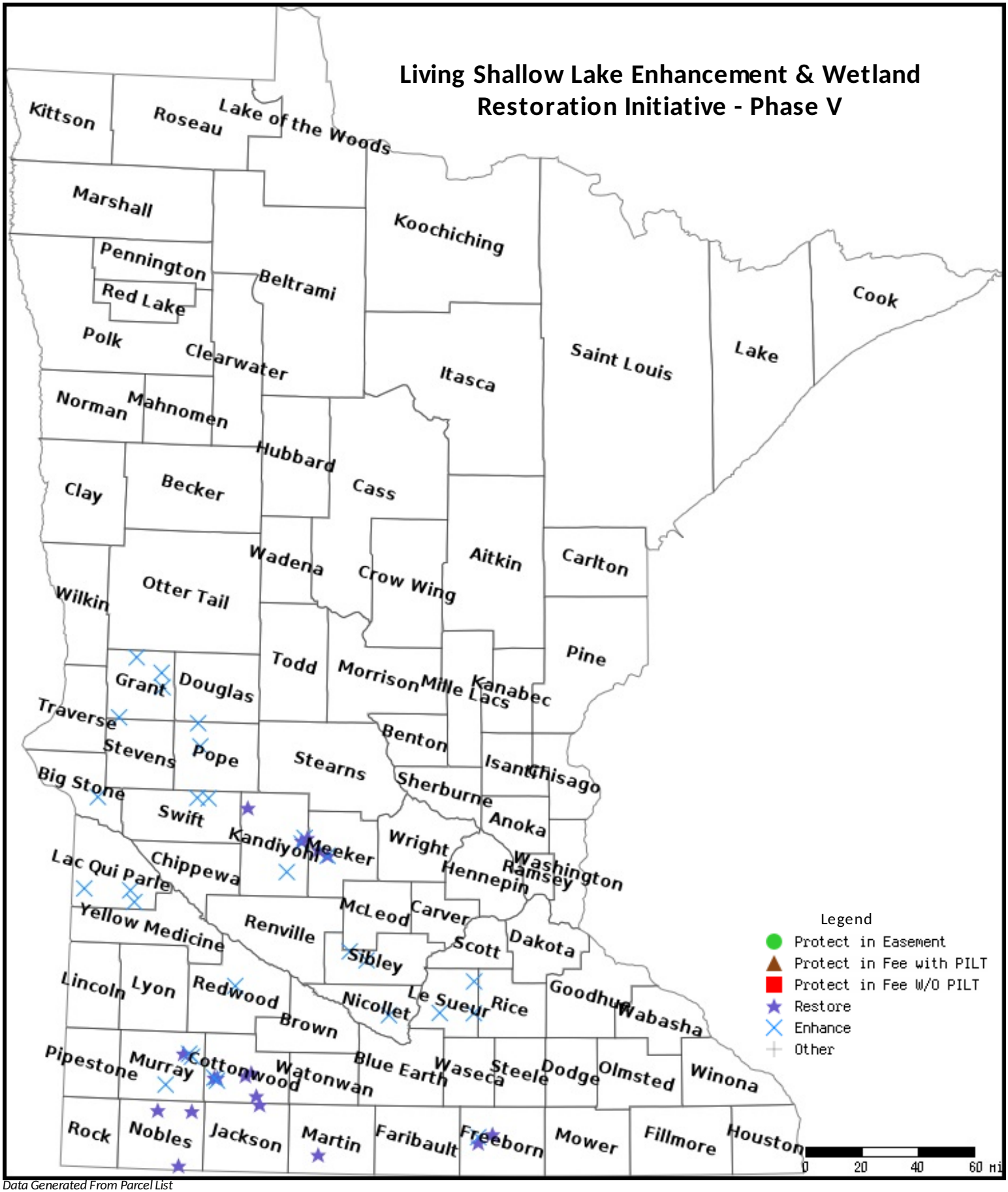
Section 2a - Protect Parcel with Bldgs

No parcels with an activity type protect and has buildings.

Section 3 - Other Parcel Activity

No parcels with an other activity type.

Parcel Map



Data Generated From Parcel List

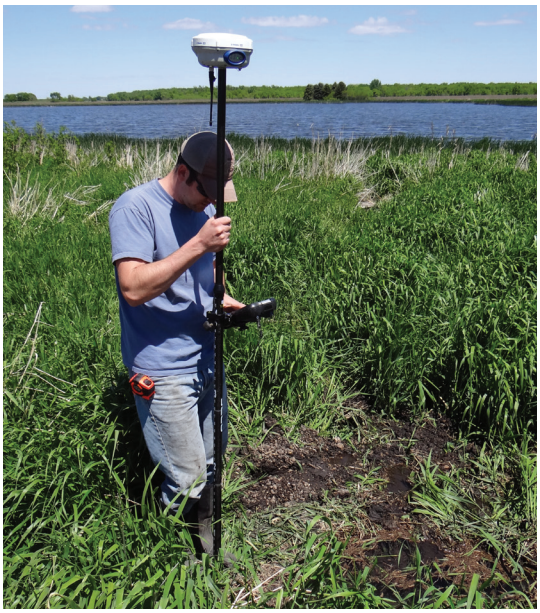
DUCKS UNLIMITED | LIVING LAKES

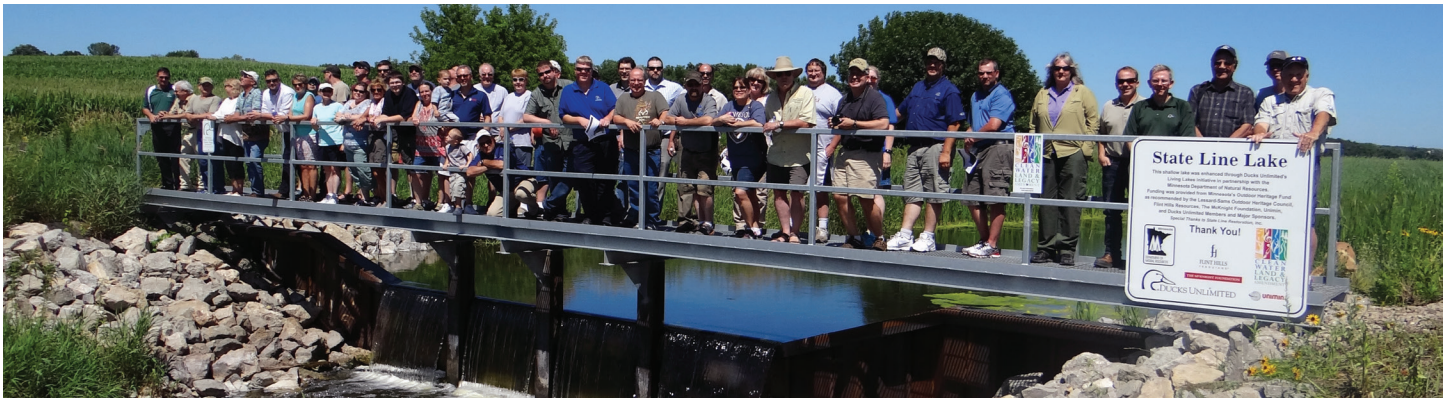
LIVING SHALLOW LAKE ENHANCEMENT & WETLAND RESTORATION INITIATIVE

PHASE V

Proposal Request: $14,900,000

Proposal Abstract: This Phase 5 request for Ducks Unlimited's Living Lakes program will enhance 6,000 acres of shallow lakes and restore 200 acres of small wetlands by engineering and installing water control structures for Minnesota DNR and U.S. Fish & Wildlife Service on public lands and wetlands under easement. Structures will be used by DNR and service partners to restore wetland hydrology and actively manage shallow lake water levels to enhance ecology for ducks, other birds and hunters in the Prairie Region of Minnesota. DU will engineer structures and contract with private sector firms for construction and earth moving work.





DUCKS UNLIMITED | LIVING LAKES

LIVING LAKES STAGES OF ENHANCEMENT

Stage 1

Pre-enhancement turbid water state typical of many shallow lakes located in the prairie and transition zones of Minnesota and Iowa. Note the lack of rooted aquatic plants resulting from stagnant high water levels, as well as the presence of undesirable fish and lack of upland perennial cover creating both internal and external nutrient loading. This condition is exacerbated by above-average precipitation patterns, increased drainage and connectivity within the watershed. Lakes in this turbid water condition provide poor waterfowl and wildlife habitat and impaired water quality.

Stage 2

Once the physical and legal means are in place, a drawdown is a common management practice used to shift shallow lakes from a turbid water state to a clear water state. Note sediment consolidation and the re-growth of rooted aquatic plants from the natural seed bank. Drawdown also helps control undesirable fish populations. A DU designed and constructed water control structure such as the one illustrated above will allow agency managers to manipulate water levels to enhance water quality and wildlife habitat. Upland restoration also helps improve habitat and sustain water quality improvements.

Stage 3

Post management drawdown clear water state typical of a healthy shallow lake system. Note the restored water levels and water quality, abundance of rooted aquatic plants, invertebrate response, and overall wildlife habitat improvement. When conditions in a managed shallow lake deteriorate over time the water control structure such as the one illustrated above can be managed in accordance with a lake specific comprehensive management plan to help maintain and improve habitat conditions and water quality.

Special Note: A managed drawdown mimics natural water level fluctuation such as temporary drought conditions, which are necessary for a healthy shallow lake much like fire is to native prairie.