Lessard-Sams Outdoor Heritage Council
Laws of Minnesota 2019 Accomplishment Plan

HRE 06

Date: October 11, 2018

Program or Project Title: Pine River Fish Passage Project 2020

Funds Recommended: $ 1,246,000

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Legislative Citation: ML 2019, Ch. X, Art. 1, Sec. 2, subd, X(x)

Appropriation Language:

County Locations: Crow Wing

Eco regions in which work will take place:

- Northern Forest

Activity types:

- Enhance
- Restore

Priority resources addressed by activity:

- Habitat

Abstract:

The future of three state listed fish are at risk in 30 miles of the lower Pine River between Crosslake and the confluence of the Mississippi. IBI scores indicate a dam, in place since 1970, is affecting these populations. The dam blocks them from migrating to essential habitats and has degraded spawning substrate. Results of 2012 MPCA sampling on the river indicate these populations may be absent upstream of the dam. This project will reverse the affects and support fishery goals. It will reopen fish passage to interdependent communities in feeder streams and shallow and deep water habitats.

Design and scope of work:

Two issues are at hand; one is the threat the rock dam structure has on the health and diversity of aquatic organisms and migratory fish in the Pine River, Big Pine Lake, and upstream waters; and second is the fragile condition of the dam structure. The proposed design solves both issues; reconnect up and downstream communities and remove the dam. A series of five rock riffle structures will be installed in 40 ft intervals along the stream channel at a slope and depth that will effectively restore connectivity and stability. The design is based off a natural channel design method pioneered by Dave Rosgen P.H., Ph.D. and successfully tested on 17 dam replacement projects by DNR Division of Ecological Resources Stream Habitat Program. Based on current research the effects of barriers on aquatic biodiversity and fish distributions up and downstream of dams are clear. A DNR study evaluating 32 barrier dams on mainstem or tributaries of Minnesota rivers showed on average, the number of species declined 41% (MNDNR Barrier Effects on Native Fishes of Minnesota. 2015). Furthermore, intolerant, stream-dependent, imperiled species were the most likely to be absent upstream of barriers. Findings of a 2012 Minnesota Pollution Control survey of the Pine indicated sensitive populations above the dam are

declining. Although this reach passed the Fish Index of Biological Integrity, the score was low. Comparatively, the downstream reach scored good and supported a diverse fish community, including greater redhorse a sensitive species, and two rare species, the pugnose shiner a state threatened species, and the least darter, a species of special concern. Pugnose and least darter utilize habitat in slow moving streams and lakes. Habitat loss and degradation are the greatest threats to least darter populations (MNDNR). Big Pine Lake, located upstream of the rock dam is listed as a Biological Significant Lake for Outstanding Plant Community (MNDNR). Reconnecting this downstream stretch with upstream habitat in Big Pine Lake will open up spawning habitat for this species, as well as associated aquatic organisms and fish dependent on diverse aquatic plant communities. The dam is 48 years old and riddled with leaks despite regular maintenance. The design life of a typical dam is 50 years (Powers 2005). Dam failures are often precluded by seepages which increase and eventually cause the dam to fail. The effects would be devastating, drawing down over 400 acres of Big Pine Lake impacting acres of high quality vegetation and aquatic habitat. The low water levels would also affect fisheries, loon nesting, and recreational use of boats, canoes and kayaks.
Construction of the five rock riffle structures will add 40,000 sq feet of key spawning habitat for walleye, smallmouth bass, shorthead, greater redhorse, and several minnow species plus restore access to upstream lake and stream habitats.

How does the request address MN habitats that have: historical value to fish and wildlife, wildlife species of greatest conservation need, MN County Biological Survey data, and/or rare, threatened and endangered species inventories:

Diversity in this reach is declining. A comparison of IBI scores for fish and mussels above and below the dam show upstream numbers are up to 40% lower than downstream of the dam. Similar differences in IBI scores were found for inverts. According to Aadland, MNDNR, the health and vigor of these sensitive species is at risk and will preclude further declines to the Pine River's physical and biological health and diversity. This project will increase IBI scores in the upstream reach by as much as 60% within a few years of restoration (Aadland. Barrier Effects on Native Fishes of Minnesota. 2015). Increased spawning habitat and Pine Lake, listed as a Biologically Significant Lake for Outstanding Plant Community is located 1 miles upstream, expanding on resources needed to reach that goal and increasing diversity and populations of state listed fish species; horneyhead chub, a sensitive species, pugnose shiner a state threatened species, and least darter, a species of special concern. Stream health is also closely linked to land use changes. Forested lands cover 56% of this watershed (HUC 12). It has been well documented that stream health begins to decline when cover dips below 50% (Verry.The Hydrology of Minor Watersheds. 2016). Along a mile long corridor of this project area forest cover is 100% which will help rebuild stream health and recovery of all sensitive species. These are ecologically diverse lands in public ownership sustainably managed for timber production (FSC and FSI certified). The woodland buffer provides near riparian habitat and shade for fish, game, and wildlife as well as tree lined paddling corridors (2017 MN 97A.056). The adjacent land is also linked to more than 4000 acres (8 sq mi) of unbroken connections between woodlands, open prairies, and wetlands. Restoring fish passage maximizes the equity in these lands expanding ecological health and functional benefits to protected riparian upland, wetland complexes, shallow, and deep lake systems.

Describe the science based planning and evaluation model used:

Scores from a 2012 MPCA Index of Biological Integrity (IBI) survey were used to assess the site for aquatic health. A Minnesota Department of Natural (MNDNR) report on at risk fish species was used to evaluate habitat enhancement specifically for least darter, a state listed threatened species. Populations of this species on this reach are in decline which correlates to habitat loss and degradation. Several MNDNR studies (Aadland, MNDNR) regarding effects of barriers to native fish and restoration of fish passage as well peer reviewed studies (DS Nichols, ES Verry - Journal of Hydrology, 2001 - Elsevier) were also used.

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

- H3 Improve connectivity and access to recreation
- H6 Protect and restore critical in-water habitat of lakes and streams

Which other plans are addressed in this program:

- Long Range Plan for Fisheries Management
- Outdoor Heritage Fund: A 25 Year Framework

Which LSOHC section priorities are addressed in this program:

Northern Forest:

- Protect shoreland and restore or enhance critical habitat on wild rice lakes, shallow lakes, cold water lakes, streams and rivers, and spawning areas

Relationship to other funds:

- Clean Water Fund

Describe the relationship of the funds:

The Crow Wing Soil and Water Conservation District was awarded a $400,000.00 2016 CPL grant for this project. Construction of the project was delayed due to a dam failure that required emergency repairs. The project was then broken into two phases so that these repairs could be made. Repairs and streambank protection were completed in Phase I of the project, June 2017 at a cost of ~$100,000.00. Phase II, bid in spring 2018, exceeded the CPL total project cap of $550,000 prohibiting further grant dollar spending. Funding from the OHF will allow for Phase II completion.

Does this program include leverage in funds:

Yes

$75,000 in cash will be provided from a fund that assesses riparian landowners upstream of the project. The City of Crosslake has agreed to fund hauling-related road repairs estimated at $350,000. Without this commitment project cost would be almost 1.6 million.

Per MS 97A.056, Subd. 24, Any state agency or organization requesting a direct appropriation from the OHF must inform the LSOHC at the time of the request for funding is made, whether the request is supplanting or is a substitution for any previous funding that was not from a legacy fund and was used for the same purpose:

This is a substitution for previous funding that fell short of needs due to permit delays and cost escalations.

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

Not Listed

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

The Crow Wing County Highway Department will maintain the installed project features. This project will be monitored by the Crow Wing Soil and Water Conservation District to ensure it is functioning as designed, is stable and effective. Significant long-term maintenance costs are not expected because it follows natural channel design principles, which create habitat conditions that are self-sustaining (Aadland, DNR). However, dollars to fund maintenance will come from Big Pine Lake Subordinate Services District (SSD) fund administered by Crow Wing County Highway Dept. The SSD has been in place since 2010 for maintenance. Approximately 97 riparian landowners on Big Pine Lake are assessed $200.00 annually per property.

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

Year	Source of Funds	Step 1	Step 2	Step 3
Annually	Big Pine Lake Subordinate District	Inspect rock riffle structure and vegetation establishment on shoreline and stream banks	Perform maintenance and repairs as needed	
2022	MPCA	Fish, mussels, habitat, and macroinvert surveys	Report IBI scores	

Activity Details:

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

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

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 (County/Municipal, Public Waters, State Forests)**

Accomplishment Timeline:

Activity	Approximate Date Completed
Begin Construction	October, 2019
Complete Construction	December, 2019
Project maintenance inspection	January 2020

Date of Final Report Submission: 2/1/2021

Federal Funding:

Do you anticipate federal funds as a match for this program - **No**

Outcomes:

Programs in the northern forest region:

- Healthy populations of endangered, threatened, and special concern species as well as more common species *Horneyhead chub: species of greatest concern, Least Darter: special concern, Pugnose shiner:threatened have been documented below the dam but not above. These are species sensitive to turbidity, vegetation removal, and eutrophication. The area will be surveyed again by the MPCA in 2022; results will be used to measure project success.*

Budget Spreadsheet

Budget reallocations up to 10% do not require an amendment to the Accomplishment Plan

How will this program accommodate the reduced appropriation recoomendation from the original proposed requested amount

N/A

Total Amount of Request: $ 1246000

Budget and Cash Leverage

Budget Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	$70,000	$0		$70,000
Contracts	$1,123,000	$75,000	Big Pine Lake Subordinate District Fund	$1,198,000
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	$3,000	$0		$3,000
Professional Services	$45,000	$0		$45,000
Direct Support Services	$0	$0		$0
DNR Land Acquisition Costs	$0	$0		$0
Capital Equipment	$0	$0		$0
Other Equipment/Tools	$0	$0		$0
Supplies/Materials	$5,000	$0		$5,000
DNR IDP	$0	$0		$0
Total	$1,246,000	$75,000		$1,321,000

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Project manager	0.50	1.00	$60,000	$0		$60,000
Fiscal administration	0.10	1.00	$10,000	$0		$10,000
Total	0.60	2.00	$70,000	$0		$70,000

Amount of Request:	$1,246,000
Amount of Leverage:	$75,000
Leverage as a percent of the Request:	6.02%
DSS + Personnel:	$70,000
As a % of the total request:	5.62%

What is included in the contacts line?

Contracts to install project as bid including any subcontractors. The project is defined in the bid documents.

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

Describe and explain leverage source and confirmation of funds:

The source of the cash leverage comes from a Subordinate Services District (SSD) which assesses Big Pine Lake riparian owners $200.00 each annually. The account balance will exceed $75,000 before the project begins. See attached letter.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	1	1
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	1	1
Total	0	0	0	2	2

Table 2. Total Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	$0	$0	$0	$1,200,000	$1,200,000
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	$0	$0	$0	$46,000	$46,000
Total	$0	$0	$0	$1,246,000	$1,246,000

Table 3. Acres within each Ecological Section

Type	Metro Urban	Forest Prairie	SE Forest	Prairie	N Forest	Total
Restore	0	0	0	0	1	1
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	0	1	1
Total	0	0	0	0	2	2

Table 4. Total Funding within each Ecological Section

Type	Metro Urban	Forest Prairie	SE Forest	Prairie	N Forest	Total
Restore	$0	$0	$0	$0	$1,200,000	$1,200,000
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	$0	$46,000	$46,000
Total	$0	$0	$0	$0	$1,246,000	$1,246,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	$0	$0	$0	$1200000
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	$0	$0	$0	$46000

Table 6. Average Cost per Acre by Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	$0	$0	$0	$0	$1200000
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	$0	$46000

Automatic system calculation / not entered by managers

Target Lake/Stream/River Feet or Miles

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Parcel List

For restoration and enhancement programs ONLY: Managers may add, delete, and substitute projects on this parcel list based upon need, readiness, cost, opportunity, and/or urgency so long as the substitute parcel/project forwards the constitutional objectives of this program in the Project Scope table of this accomplishment plan. The final accomplishment plan report will include the final parcel list.

Section 1 - Restore / Enhance Parcel List

Crow Wing

Name	TRDS	Acres	Est Cost	Existing Protection?
Pine River Fish Passage Project 2020	13727233	1	$1,321,000	Yes

Section 2 - Protect Parcel List

No parcels with an activity type protect.

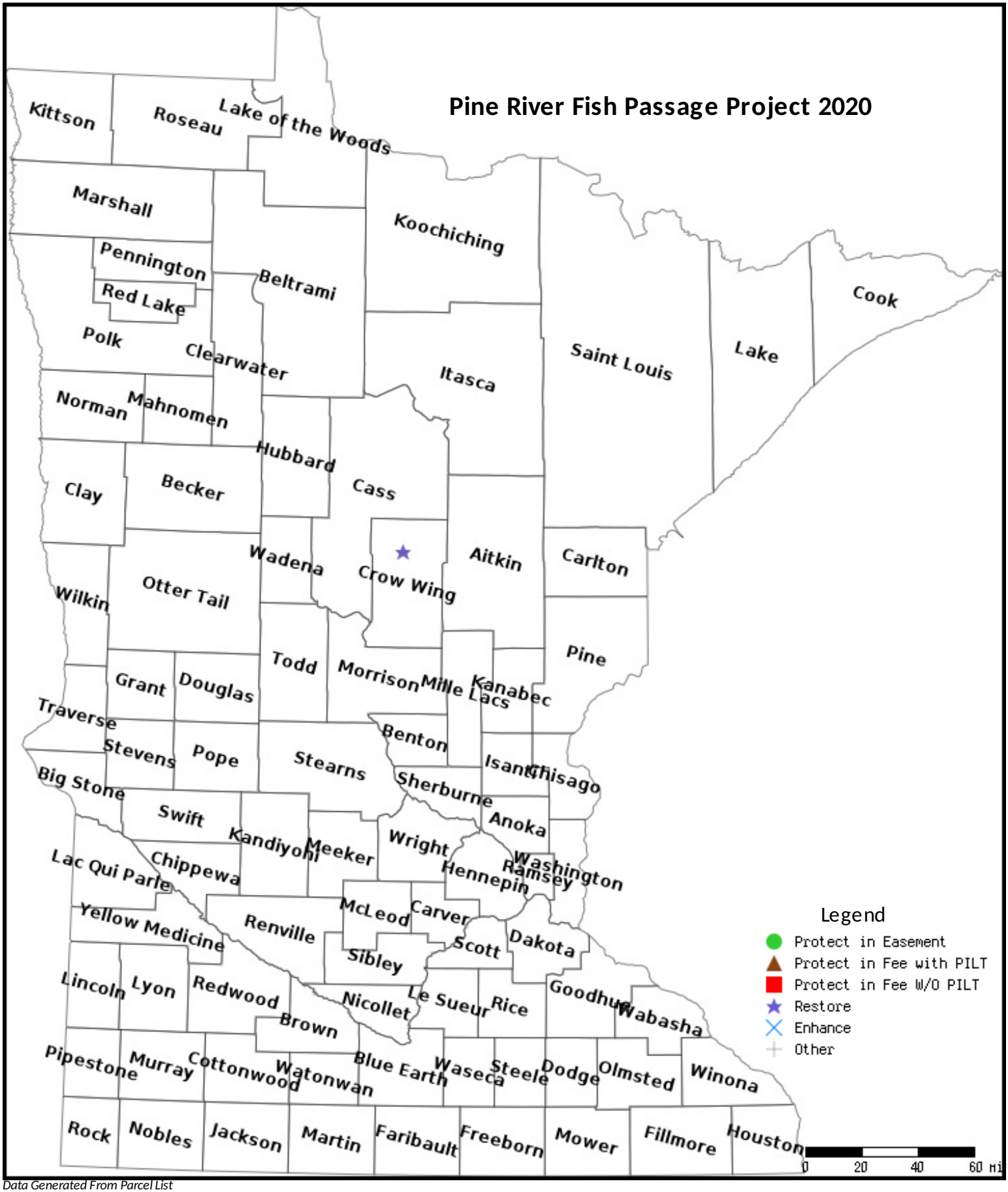
Section 2a - Protect Parcel with Bldgs

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

Lessard-Sams Outdoor Heritage Council
Comparison Report

Program Title: 2019 - Pine River Fish Passage Project 2020
Organization: Crow Wing Soil and Water Conservation District
Manager: Beth Hippert

Budget

Requested Amount: $1,246,000
Appropriated Amount: $1,246,000
Percentage: 100.00%

	Total Requested		Total Appropriated		Percentage of Request	
Budget Item	LSOHC Request	Anticipated Leverage	Appropriated Amount	Anticipated Leverage	Percentage of Request	Percentage of Leverage
Personnel	$70,000	$0	$70,000	$0	100.00%	-
Contracts	$1,123,000	$75,000	$1,123,000	$75,000	100.00%	100.00%
Fee Acquisition w/ PILT	$0	$0	$0	$0	-	-
Fee Acquisition w/o PILT	$0	$0	$0	$0	-	-
Easement Acquisition	$0	$0	$0	$0	-	-
Easement Stewardship	$0	$0	$0	$0	-	-
Travel	$3,000	$0	$3,000	$0	100.00%	-
Professional Services	$50,000	$0	$45,000	$0	90.00%	-
Direct Support Services	$0	$0	$0	$0	-	-
DNR Land Acquisition Costs	$0	$0	$0	$0	-	-
Capital Equipment	$0	$0	$0	$0	-	-
Other Equipment/Tools	$0	$0	$0	$0	-	-
Supplies/Materials	$0	$0	$5,000	$0	-	-
DNR IDP	$0	$0	$0	$0	-	-
Total	$1,246,000	$75,000	$1,246,000	$75,000	100.00%	100.00%

How will this program accommodate the reduced appropriation recommendation from the original proposed requested amount?

N/A

Output

Table 1a. Acres by Resource Type

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	1	1	100.00%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	1	-

Table 2. Total Funding by Resource Type

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	1,246,000	1,200,000	96.31%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	46,000	-

Table 3. Acres within each Ecological Section

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	1	1	100.00%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	1	-

Table 4. Total Funding within each Ecological Section

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	1,246,000	1,200,000	96.31%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	46,000	