

October 1, 2019

Re: Letter of Findings, Roseau Lake Improvements Project and Proposed Roseau River Habitat Restoration, Roseau County, MN

I am writing to report to you my findings from my review of

- A. HDR's June 2019 Engineering Report [the Report or Engineering Report] provided by Roseau River Watershed District (RRWD) for the proposed Roseau Lake Improvements Project.
- B. Pending Funding Request to Lessard-Sams Outdoor Heritage Council from Roseau River Watershed District for Restoration of Minnesota Ditch 51 (Connected to the Roseau River)
- C. Implications of Minnesota Statute 97A.056 (Outdoor Heritage Fund; Lessard-Sams Outdoor Heritage Council, Division 1) as it relates to Roseau Lake Restoration Project property "takings."

This letter expands upon and modifies a September 10, 2019 letter to Kirk Schnitker that commented on the June 2019 Engineering Report only.

**A. FINDINGS FROM REVIEW OF ENGINEERING REPORT FOR ROSEAU LAKE IMPROVEMENTS PROJECT
(JUNE 2019, BY HDR FOR ROSEAU RIVER WATERSHED DISTRICT)**

I have identified several items in the Report that lead me to believe that it is not sensible to proceed with the construction of this project at this time. Below are the main issues I identified with the project and/or the studies for the project, at this time.

1. Downstream flood reduction is minimal.
2. The project cost is not justified.
3. The engineer's cost estimate is low.
4. Improvements to ecology and wildlife are not justified.
5. Impacts to Fertile Agricultural Lands are Poorly Defined and Concerning

Below are specific details from the Report that support the above summary.

1. Downstream Flood Reduction is Minimal
 - The Report predicts that the project will reduce downstream flooding downstream by only 5 percent for the degree of flooding that occurs every 10 years, on average. Specifically, for a 10 year 10-day event (flow rate of 3,816 cubic feet per second), the report predicts a flood reduction of only 246 acres, or 5 percent of the areas that now floods with such an event (see Report Appendix A, Concurrence Point 3, Table 1 on Page 105)

- “The embankments overtop during the 5-year event (3,490 cubic feet per second, elevation 1036) at which point and the storage areas are overwhelmed resulting in no flood reduction benefit for larger events” [quote cut and pasted directly from Section 9.1, Page 42 of June 2019 Engineer’s Report]. The impacted farmland south of the Roseau River on which earthen embankments are proposed (including several Kveen parcels, will not increase flood storage.

2. Project Cost is not Justified

- “Concept Level” costs for preferred alternative (2A) in Engineering Report is shown to be ~\$19.6 million. (page 69 of Engineer’s Report).
- Per acre cost is \$80,000, based on Report estimates of \$19.6 million cost and 246 acres of flood reduction (although we are skeptical of these numbers).
- There is no justification or backup data in the Report for the cost estimate presented in the Report.

3. Engineer’s Cost Estimate is Low

I did a cursory review of HDR’s cost estimates. They provided estimates for Scenarios 1, 2A, and 2A’, three scenarios with different flood control embankment locations and varying lengths of embankment. Based on my experience with a similar floodwater management project in Ohio (Little Killbuck Creek Invasive Species Closure), the estimates appear to be low. My cursory review of the cost estimate for Scenario 2A is summarized in the following three bullets.

Scenario 2A Cost Estimate Evaluation

- “Contingency (25% of construction)” appears to be incorrectly applied. The amount of \$815,989 does not consider most of the line item costs in the report. Even if this contingency were based only on the soil embankment fill item (\$3,718,629), the contingency amount is too low. The contingency amount should include all construction items for drainage structures, new ditches, raising of roads, and more. The contingency amount should be the contingency percentage (HDR appropriately uses a 25% contingency) of \$16 million, the approximate sum of construction items in the estimate. This increases the contingency from \$815,989 to approximately \$4,000,000.
- This increases the contingency amount by approximately \$3.2 million, raising the bringing the total project cost estimate to approximately \$22.8 million, so far.
- Unit costs to derive the estimate of all three scenarios are much lower than those used on the “Little Killbuck” project. For example, the soil for the embankment would be expected to cost closer to \$9 per cubic yard as opposed to the \$4 per cubic yard in the Engineer’s Report. Using \$9 per cubic yard would raise the cost of Scenario 2A by an additional approximately \$4.7 million (based on 929,657 cubic yards x \$5 per cubic yard) plus additional contingency amount of \$1.2, raising the estimate by nearly \$5.9 million. The additional \$5.9 million now brings the total to approximately \$28.7 million. And this only adjusts for the soil embankment cost item. The cost of other line items, such drainage structures, new ditches, and raising of roads, should be further evaluated.

Scenario 2A' Cost Estimate Evaluation

Scenario 2a' is stated in the Report to be the preferred scenario. If Scenario 2A' is implemented, the cost is likely to be lower than Scenario 2A because the length embankment of 2A' is shorter. Like with Scenario 2A, I believe the reported cost estimate for Scenario 2A' (\$15.07 million) is extremely lower than what the actual cost is likely to be. Using my same logic presented for Scenario 2A (above) with Scenario 2A', I would expect the actual cost of Scenario 2A' to be more than \$20 million.

4. Improvements to Ecology and Wildlife are Not Justified

Although the project is touted to also be a wildlife restoration project for waterfowl and other aquatic species, the Report does not provide specific estimates of improvements to wildlife habitat or populations. The project appears to simply divert habitat for waterfowl, aquatic species, amphibians, and other water-dwelling species from downstream to the project area.

Based on my experience and involvement on the board of a watershed group like RRWD (where I regularly interact with aquatic biologists, ecologists, and other scientists and engineers), some of the wetland types that are commonly considered most ecologically valuable are forested wetlands and vernal pools. The forested wetlands and vernal pools that periodically flood during the wet spring season and/or after extreme precipitation and river flow events. These are the types of wetlands that are likely to be present along the floodplain of the Roseau River downstream of Roseau Lake. The Roseau Lake project is proposing to reduce the frequency of flooding of these valuable "floodplain" wetlands.

Although ponded wetlands provide some ecological benefit, large ponded wetland areas like proposed for Roseau Lake are generally considered less important to the overall ecology.

In summary, the Report does not explain or quantify, or compare the ecological value of a creating a centralized "pond" at Roseau Lake as opposed to continuing to allow disperse downstream flooding, and support of seasonal habitat downstream, during extreme river flow and seasonally wet conditions.

5. Impacts to Fertile Agricultural Lands are Poorly Defined and Concerning

The impact of the project does not adequately define which properties are being taken and what the impacts to the project will be. Below are some specific points regarding this issue.

- Section 11.4 of the Report does not provide mapping of the planned acquisition of easement areas necessary to complete the proposed project. Section 11.4 provides summary tables with estimates of "right of way" and temporary construction impacts (291 acres of right of way and 298 acres of temporary for alternative 2A').
- Mapping is provided in the report to clearly show where the various parcels will be impacted.

- RRWD has not yet responded to a request for information (letter dated August 29, 2019 from Kirk Schnitker of Schnitker Law), including a request for information for mapping to show the affected properties and flood impact to those properties.
- The impact to agricultural land is of grave concern to the Kveens and neighboring farmers. Nearly 1,500 acres of Kveen family property and thousands of additional acres owned by the Magnusson family and others will be impacted. Although the easements for the embankments may cover only 291 acres of private land, I currently understand (based on conversations with the Kveens and another farmer in the project area) that this project could deem several thousand acres unfarmable due to the increased risk of submergence due to the flood control, cutoff of access for farming equipment, and/or blockage of drainage. Bearing in mind that the enormity of the impact to farmland area and production is significant, I feel strongly that policymakers and politicians in the State of Minnesota should share the concerns of the Kveen family and neighboring farmers.

B. FINDINGS FROM REVIEW OF PENDING FUNDING REQUEST TO LESSARD-SAMS OUTDOOR HERITAGE COUNCIL (LSOHC) FROM ROSEAU RIVER WATERSHED DISTRICT FOR RESTORATION OF MINNESOTA DITCH 51 (THE ROSEAU RIVER)

The RRWD submitted a request to LSOHC for restoration of MN Ditch 51 to reconnect oxbows that had historically been disconnected. The Roseau River flow was diverted into straight channels instead of the natural historic meander pattern of the Roseau River. Based on review of various maps, such as that attached, the oxbows (the isolated curved portions of the river), although disconnected, are still present and hold water. So, to restore these segments of the river would simply require that soil be excavated to unblock flow into and out of the oxbows and “flip” that soil to block flow into and out of the straight channels that had been created. Initially the riverbed grades may not allow water to readily flow through these oxbows but, over a few seasons the river will scour any sediment that built up in the oxbows over the years and carry it downstream, a natural process of rivers. If left alone, a river will correct itself (at no cost to taxpayers) and reach a relative state of equilibrium within a few years. Since this stretch of river is almost exclusively in the Roseau River Wildlife Management Area, there should be little need to spend money on measures to protect infrastructure as part of this restoration. Reconnecting the oxbows can be done at some costs. Letting nature take its course to restore the river channels between the “repaired” connection points can be a cost-free approach.

As I understand, past and current agricultural drain tiling into State Ditch 51 has created significant increased water flow in the ditch. Any extraordinary measures along the streambank of the oxbows are likely to be unsuccessful. From my experience, these types of measures come at a great expense, often wash due to flood events within a few years, offer little added ecological uplift, and sometimes are harmful to the ecology.

The funding request from RRWD does not explain what exactly they will do to spend the requested \$7.2 million dollars. Based on the “Cost Analysis for Connecting Oxbows and Disconnecting

Diversion Channels” (below), I believe the cost of the reconnecting the oxbows and disconnecting the straight diversion channels should be \$2 million or less. How will the remaining \$5+ million be spent?

I think we should be asking: “Is RRWD seeking to use some of the funding in their current funding request to cover shortfalls on the Roseau Lake Restoration Project?” It would be prudent of the LSOHC committee to ask RRWD whether they plan to allocate some of the requested \$7.2 million (if received) to the Roseau Lake Restoration Project.

Cost Analysis for Connecting Oxbows and Disconnecting Diversion Channels

As I see it, each disconnection/reconnection location can be addressed in a few days. I assume the following to estimate the cost of disconnecting the diversion channels and reconnecting the oxbows.

- I estimate that the proposed project area contains 11 disconnected oxbows, each with an upstream and downstream location to be reconnected. So, with 11 oxbows, there will be a total of 22 work locations.
- I estimate it will require a maximum of four days per location to move earth and river sediment to reconnect the oxbow while disconnecting the diversion channel
- \$20,000 per day for a contractor (3 pieces of construction equipment, labor, materials, and overhead), a conservative but reasonable daily cost.

Based in the above, the cost can be calculated as follows.

$$\text{Project Cost} = 22 \text{ work locations} \times 4 \text{ days per location} \times \$20,000 = \underline{\$1,760,000 \text{ (say } \$2 \text{ million or less)}}$$

C. IMPLICATIONS OF MINNESOTA STATUTE 97A.056 (OUTDOOR HERITAGE FUND; LESSARD-SAMS OUTDOOR HERITAGE COUNCIL, Division 1) AS IT RELATES TO ROSEAU LAKE RESTORATION PROJECT PROPERTY “TAKINGS.”

Minnesota Statute “97A.056 OUTDOOR HERITAGE FUND; LESSARD-SAMS OUTDOOR HERITAGE COUNCIL, Division 1” does not allow for taking of land by eminent domain. Below is Division 1, verbatim.

Subdivision 1. Outdoor heritage fund. An outdoor heritage fund, under article XI, section 15, of the Minnesota Constitution, is established as an account in the state treasury. All money earned by the outdoor heritage fund must be credited to the fund. At least 99 percent of the money appropriated from the fund must be expended to restore, protect, and enhance wetlands, prairies, forests, and habitat for fish, game, and wildlife. Money appropriated from the outdoor heritage fund shall not be spent to acquire property by eminent domain unless the owner requests that the owner's property be acquired by eminent domain.

If LSOHC is going to commit millions to RRWD, I think LSOHC should be asking the following questions and get answers from RRWD. If there are not willing sellers on the Roseau Lake

Restoration project, how will RRWD be able to acquire the property? If they are relying on flood easements, is a forced flood easement a form of eminent domain? If LSOHC funding is not allowed for eminent domain takings, where is the land or easement acquisition funding coming from?

CLOSING

Below is a summary of the findings and analysis from above.

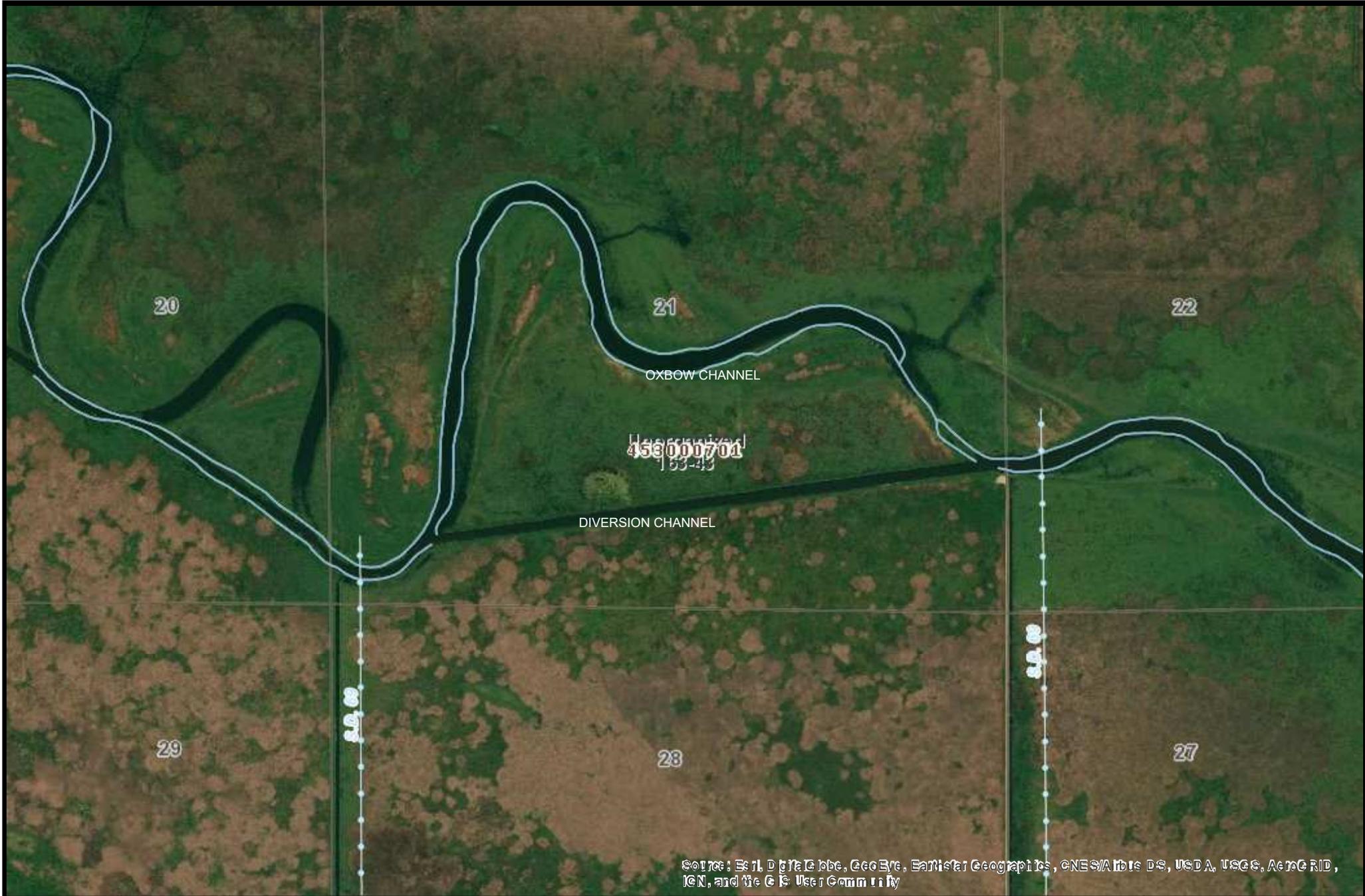
- A. *Review of Engineering Report.* Based on what I see in the Engineering Report, I estimate that the project design is approximately 30 percent complete. The certainty of the cost estimate can be refined when the design is advanced closer to 100 percent. Once the project is bid out and a contractor selected, the cost estimate will be even more refined. Even if the final project cost ends up being like the estimates in the report, \$15+ million is a high price to pay for the impact it is expected to have on the farmers in the Roseau Lake area. And the high price provides minimal downstream flood reduction.
- B. *Review of Pending Funding Request for MN Ditch 51 Restoration.* The request for \$7.2 million does not seem justified to close off 22 locations of former river diversion. I estimate that this can be accomplished for \$2 million or less.
- C. *Implications of Minnesota Statute 97a.056 as it relates to Roseau Lake Restoration Project Property "Takings."*
How will the RRWD fund the eminent domain takings on this project with the statute prohibiting use of LSOHC funds for eminent domain takings? I think LSOHC should be asking this question.

Do not hesitate to phone me with any questions.

Sincerely,



Patrick E. Nortz, Certified Professional Geologist, Professional Engineer (OH, IN, MN)



These data are provided on an "AS-IS" basis, without warranty of any type, expressed or implied, including but not limited to any warranty as to their performance, merchantability, or fitness for any particular purpose.

<h2>Diversions and Oxbows - MN State Ditch 51 and Roseau River</h2>	
<p>Date: 10/1/2019</p>	<p>Pat Nortz</p>

