VILLAGE OF SUTTONS BAY

Remote Access Attendance

COMMITTEE OF THE WHOLE
420 N Front St.
Suttons Bay, MI 49682
Thursday January 7, 2021, at 8:10 am

Electronic Remote Access, in accordance with Public Act 228 of 2020 will be implemented in response to COVID-19 social distancing requirements and Michigan Health and Human Services restrictions of indoor gatherings. The public may participate in the meeting through Zoom access by computer and smart phone and can find the link on our website at www.suttonsbayvillage.org

AGENDA

1. Call to Order
2. Roll Call
3. Additions / Deletions to the Agenda
4. Reports / Communications
5. Committee Member Information / Comments
6. Public Comments (*Please limit remarks to no more than three (3) minutes or less).*
7. Old Business
8. New Business
   a. Presentation by Sarah U'Ren, The Watershed Center – Leo Creek Watershed Road Crossings
9. Public Comments/Written Communication
10. Committee Member Comments
11. Announcements:
12. Adjourn

Topic: Committee of the Whole

Time: Jan 7, 2021 08:10 AM Eastern Time (US and Canada)

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The Watershed Center
GRAND TRAVERSE BAY

MEMORANDUM

Date: October 9, 2020
To: Rich Bahle, Suttons Bay Township
From: Sarah U'Ren, Program Director
Subject: Hydrologic and Hydraulic Assessment - Leo Creek Watershed Road Crossings

Rich,
Please see the proposal on the following pages for a hydrologic assessment to be completed for the Leo Creek Watershed, including the seven road crossings we have previously discussed. I have contacted the engineering firm Environmental, Consulting, & Technology, Inc. (ECT) and obtained a scope of work and proposed budget to complete that assessment. In speaking with ECT, we both agree that this is the basic, minimal amount of work that you could do to help pinpoint flooding problems in this area so we can begin to explore how to fix the issue.

TWC would be happy to oversee the contract and work with ECT, with a nominal oversight fee. ECT's fee for the work would be provided on a Time and Materials basis with a not-to-exceed fee of $9,680. To keep costs low, TWC would only charge an additional $320 for project oversight to keep your costs at $10,000 maximum. I will also assist ECT in fieldwork and data gathering wherever possible as well to keep costs low.

Total = $10,000 (ECT - $9,680; TWC - $320)

ECT has also provided a value-added option to determine why the flooding is occurring (the base proposal looks where flooding is occurring and focuses on the road crossings). You can read more about this option below.

Looking forward to working with you!

Thanks,
Sarah U'Ren
Program Director

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PROJECT UNDERSTANDING

We understand that the area around Leo Creek is experiencing flooding and an assessment is needed to understand if the flooding is caused by culvert size limitations at existing road crossings. The scope of this proposal is to estimate discharge/flow in the creek by performing hydrologic analyses and assess flooding at seven road-stream crossing culverts along Leo Creek (Leelanau County, Michigan) by evaluating their current size relative to estimated discharge and required size to pass the discharge size. It is our understanding that the need for this analysis is being driven by flooding that is occurring at and around the road-stream crossings. The purpose of this study is to determine if the culverts are under-sized or if hydrological alteration in the watershed is resulting in higher peak discharges. ECT will perform the following tasks:

1. Data Collection and Review:
   a. Obtain available topographic data (LiDAR and/or DEM) for the watershed from USGS, soil property data from USDA-NRCS.
   b. Obtain land use data from USDA-NASS/USGS-NLCD for the project area.
   c. Obtain rainfall data for multiple frequencies (10-yr, 25-yr, 50-yr and 100yr) from readily available public sources.
   d. Obtain existing culvert information (material type, shape, diameter, and slope) along the creek – to be provided by project partners such as The Watershed Center Grand Traverse Bay, the Village of Suttons Bay, Conservation Resource Alliance and possibly the Leelanau County Road Commission.
      - If above data is not available, this will need to be collected by ECT staff at an additional cost (see breakdown below).

2. Discharge Estimates:
   a. Perform ArcGIS modeling to determine upstream contributing drainage area at each culvert.
   b. Determine composite runoff coefficients and/or curve numbers using topography, land use and soil properties of the watershed.
   c. Calculate runoff for each rainfall frequency at each of the seven culverted stream crossings location using SCS runoff curve number method.

3. Hydraulic Analysis:
   a. Determine Manning's roughness for each culvert based on culvert type shape, size, and materials.
   b. Use Manning's equation to determine the minimum culvert size required at each crossing location for the above estimated runoff values.

4. Culvert Assessment and Recommendation:
   a. ECT staff will perform a visit to each of the road-stream crossings to better understand visual field indicators at each site, i.e. – clogging, incising, flooding, etc. Photo logs will be kept to document conditions.
   b. Compare calculated culvert sizes above with the existing culvert sizes and decide whether each culvert is sufficient to accommodate flows at required rainfall frequencies or which rainfall frequency results in exceedance of the culverts' capacities.
   c. For any culvert found to be undersized given current watershed conditions, determine recommendations on sizes and types of culvert so that flooding caused by the existing culvert could be reduced or eliminated.

5. Project Deliverables:
   a. Compile assessment processes of where, and the extent of, flooding that is occurring and provide recommendations in a report deliverable to client.

6. Project Management
   a. Project management tasks include project meetings, phone communications, and email communication.

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PROJECT ASSUMPTIONS & SCHEDULE

The above scope of work above will be conducted on a time and materials basis, not to exceed the amount shown below. The cost estimate for services included in this proposal are based on the following assumptions:

Project Assumptions

- This proposal is valid for a period of 60 days from the date of this proposal.
- Data collection and review efforts will be limited to the Project Site as necessary for analysis described above.
- This proposal does not include data gathering on-site, it is anticipated all necessary data will be provided by Client, project partners and/or available through readily available public sources (as described above).
- Should additional data collection be required, as discussed in task 1.d.i. above, ECT can do so at an hourly rate of $125/hour. Data collection needs will be determined upon review of existing information and a budget provided to client prior to initiation.
- For ease of communication for the Client, ECT will provide a dedicated project manager and consistent environmental team throughout performance of the work.
- In the event unforeseen circumstances are encountered, ECT will communicate with Client regarding any potential changes to the proposed work in this estimate and obtain prior approvals before initiating any additional work.

Project Schedule

ECT is prepared to commence work as soon as written authorization is provided. ECT will organize a kickoff call with the Client upon project authorization.

PROJECT COSTS

The ECT project team will provide the above services on a Time and Materials (T&M) basis for the Not-to-Exceed fee of **$9,680**.

Optional Project Investigation:

A potential project value add would include an investigation as to why for the flooding is occurring at the site(s) determined in above steps. This would allow the Client to better understand not only where the flooding is, but potential design parameter/land use/etc. changes from the time in which the current culverts were installed to current watershed conditions. This additional analysis would tell the client if the culvert(s) have become undersized due to land development or other inefficiencies, and tell more of the story of the impact of land use change on flow, as well as potential changes to rainfall and/or design methodologies to help the Client project safety factors for the future. This investigation can be completed for an additional **$2,750**.

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