

**MINUTES OF THE SPECIAL MEETING
OF THE
COMFORT LAKE–FOREST LAKE
WATERSHED DISTRICT
Tuesday, October 26, 2021**

1. Call to Order

Manager Schmaltz called the October 26, 2021, special board meeting to order at 1:03 p.m. via online video conference.

Present: Vice President (President Pro-Tem.) Jackie Anderson, Secretary Pro-Tem. Dave Bakke, Treasurer Steve Schmaltz, Manager Doug Toavs, Manager Chris Loth.

Absent: None.

Others: Mike Kinney, Bobbie Law, Nick Bancks, Blayne Eineichner, Emily Heinz (CLFLWD staff); Cecilio Olivier, Mike Talbot, Kevin Biehn (Emmons & Olivier Resources).

Mr. Kinney introduced the meeting topic and presenters.

2. Floodplain Vulnerability and H&H Modeling

Mr. Olivier gave a presentation focused on hydrologic and hydraulic (H&H) modeling. The main topics of his presentation included what models are, how models are built, how models are used, and the District's model update status and timeline. He gave an example of hydraulic flow through a natural and a developed area. He noted that about 45% more runoff is created in a developed area versus a natural area.

He then moved on to explain why Emmons & Olivier Resources (EOR) builds models. Reasons include prioritizing limited funding to maximize benefits, reviewing impacts of other projects and system changes, and gaining a deeper understanding of a watershed. He noted the importance of modeling areas that can not always be monitored on the ground. Mr. Olivier explained that models don't only show water quantity data but also quality data. He explained how hydrographs and grab samples are used to calculate loads of phosphorus, nitrogen, total suspended solids, and metals. He noted a correlation between erosion and high phosphorus and total suspended solids.

Mr. Olivier explained why models are built. He showed an example of a model completed in 2018 for the Sunrise River. He explained that the sources of data in an H&H model include topography digital elevation models, land cover, soils data, as-built data such as surveys and design plans, and aerial imagery. He explained the importance of soil data in modeling runoff amounts. The bulk of the soils in the District are classified as A and AD. He then gave an overview of a project completed on the Heims Lake Channel including drone footage of the project. Mr. Olivier explained the landscape and ditching. He noted

that extensive loads coming from this area triggered a project design and implementation using culverts to treat highly polluted waters. Vice President Anderson noted the ditches shown in the drone footage. Mr. Olivier expanded on the ditch system explaining that they are used for agriculture and used in the modeling process. Vice President Anderson noted the connections to Forest Lake's downtown stormwater flowing into this system. She explained that this will be a large focus in the coming year. Mr. Olivier stressed the importance of restoring the natural functions of these ecosystems. He noted multiple possible and planned projects for water quality improvement in the area. He also covered the components of the hydrology and hydraulics models, including delineation of subwatersheds and their characteristics and storage nodes like ponds and lakes and conduits including pipes and culverts.

Mr. Olivier gave an overview of observed and simulated water flows and levels collected in 2020. He explained that EOR compares peak flow and total volume data. He noted that these observed and simulated values calibrate well. Vice President Anderson asked if staff could tell what is causing that the variation in results. Mr. Olivier explained that it can be difficult to see, but a significant amount of the time it can be human error. He gave an example of collecting incorrect culvert size data. He also gave an example of baseflow and groundwater effects that are not modeled. He noted that soil type may clarify that situation. He then discussed how the models are used. He stressed the importance and role the model plays in planning and implementing projects. The ways models are used include informing possible projects, identification of potential project locations, confirming District boundary lines, and assisting with the District permitting program.

The Board discussed a Sunrise River profile animation. Mr. Olivier noted that the updated software allows for this type of visual output that was not available before. He noted that this animation can show possible flooding scenarios. Manager Loth asked what was making the water back up during the animation. Mr. Olivier explained that the main reasons for this are the slope upstream and level downstream. The other reason could be poor culvert sizing or culverts not being maintained. Mr. Talbot clarified that the scale in the animation is skewed and looks steeper than in real life. Manager Loth then asked about the time and effort that goes into the calibration of the models. Mr. Olivier explained that each model is different. Typically the process of calibration can be time-consuming but does not need to be done multiple times. He noted that EOR also checks other years to validate the data. Mr. Olivier explained that the process of updating the model takes months. He noted that the new management plan calls for the modeling to be completed in 2022. The budget also reflects and accounts for this modeling goal.

Vice President Anderson mentioned the issue of excess runoff flowing into the system compared to the past. She discussed the modeling completed in the past that showed the Board issues. She explained that getting Forest Lake's stormwater design information has been a struggle for the District. She noted that the managers are at a critical point where they need to get those data to complete the modeling. Manager Loth asked if the Sunrise River is a natural watercourse. Manager Anderson explained that it is not necessarily natural and was ditched in some locations. She noted that the report for stormwater management will be presented. Manager Loth asked if the goal is to restore the river. Manager Anderson

explained that re-meandering has been considered in the past. She noted that the philosophy of the District is to restore those natural areas. Mr. Olivier explained that the Sunrise River was not originally a river; it was more of a wetland complex. He noted the importance of restoring the natural wetland systems.

Manager Loth asked if it is always the responsibility of watersheds to model these systems, or is it done in connection with municipalities. Mr. Olivier explained that it is very common for watershed districts to have models completed, but cities and townships can also have models for specific uses. He noted that municipalities are likely to focus on infrastructure. Vice President Anderson explained that the obligation of all watershed districts, to protect the waters, is clear in statute. She clarified that the Board has the right to move forward with projects. She also noted that oftentimes the municipalities can use the District's technical experts' reports for their benefit. Mr. Olivier noted a road project planned in Scandia that used the District's data. Manager Toavs asked if Forest Lake originally had an outlet to Comfort Lake. Mr. Olivier explained that the outlet was not natural or even present in the past. He noted that outlets are often put in after houses are built on lakes. He explained that outlets were often installed during wet years to protect these homes. Vice President Anderson explained that the river system has been impacted greatly by development, and that the final plan will be used to map an inventory of the systems and whether they are man-made or natural. She explained that the map inventory can be found in the 2022-2031 Watershed Management Plan.

Mr. Olivier gave an overview of a modeling application on Bone Lake. He explained that some of the crossings in the area are in good condition and well maintained, but some are in poor shape and should be replaced as part of Scandia's road project. He showed the modeling for a well-maintained culvert that showed a possibility of the road getting overtopped with water. He explained that the good news is that those areas with high flows to the culvert will be addressed by land use changes such as perennial crops. He noted the importance of the City having this flooding and H&H modeling info when it is planning road projects. Manager Bakke mentioned that there are additional culverts around Bone Lake. Mr. Kinney explained the model's importance for assessing re-development. Manager Anderson asked why the City wouldn't just use a larger culvert. Mr. Olivier explained that this would be something the City decides. Vice President Anderson asked about the cost differences of different culvert sizes. Mr. Olivier explained that the cost difference is minimal. Vice President Anderson requested that EOR estimate the cost of possible upstream damages if these culverts are not replaced. Mr. Olivier reiterated the importance of collaboration with the cities and townships. Manager Toavs asked if smaller culverts and roads have been used to slow water. Mr. Oliver explained that it has been done in the past but infrequently. Mr. Kinney gave an example of culvert updates done in the past where modeling was not used, causing driveway blow-out issues.

Mr. Olivier then gave an overview of the District H&H model upgrade and update. He noted that a District-wide model has been used as a backbone to the new updated model. He explained that EOR has also updated the model platform. He stressed the importance of updated data, calibration, and coordination with cities and counties. Managers discussed the

difference between GIS and H&H. Mr. Olivier gave an overview of the model update schedule starting in 2015 and ending in 2022 or possibly beyond.

Vice President Anderson voiced her opinion on the importance of this information being provided. She explained that the topics can be broken up for all managers to understand the foundational aspects of the watershed district.

Mr. Olivier gave an overview of previously completed modeling timelines categorized by lake management districts. He also outlined the projects that have been a product of monitoring and modeling. Vice President Anderson explained that these are a good example of the process of projects. She thanked him for his presentation.

Manager Anderson asked the managers if they would like to reschedule to cover the other scheduled topics. Mr. Talbot explained that his presentation would be around thirty minutes to an hour presentation. Managers agreed to continue with one more presentation and reschedule a different time to discuss the greenway corridor.

Mr. Talbot introduced geographic information systems (GIS). He explained that GIS can have a broad meaning but is generally data displayed spatially. He noted that the data come from multiple sources including, surveys, monitoring, and government data. He explained that the most common functions used by Emmons and Olivier Resources are adjacency, proximity, and overlay analyses.

Using a Venn diagram, he then explained how GIS and H&H modeling are separate and similar. He noted that using the two tools together helps the District with targeting, resiliency analysis, and flood hazard mapping. He listed the pros and cons of each system. Manager Bakke thanked Mr. Talbot for the presentation and asked that it be available for managers to view later. Ms. Law noted the presentation will be uploaded to the board packet webpage. Mr. Talbot explained how each system is used based on the pros. Manager Loth asked what parameterization means. Mr. Talbot clarified that it is a function where two layers are combined based on certain data parameters, and a new layer of data is created with both of those layers. Mr. Talbot then discussed a PCSWMM model as it ran for the Board. He explained that LiDAR is created by an airplane that flies over an area with lasers that collect elevation data using 1-meter by 1-meter data. He explained how crucial this tool is. He noted that the updated data is another great reason to update the H&H model.

Mr. Talbot discussed monitoring and its associated expenses and accuracy. He noted that monitoring is very expensive and is only used to confirm the models to save funds. EOR tries to find a balance of accuracy, cost-effectiveness, and scalability. Mr. Talbot explained that the key GIS and H&H components in greenway visioning include site assessments, prioritization, adjacency and proximity analysis, overlay analysis, targeting, and flood hazard mapping. He explained that it is a prioritization practice to see which parcels provide good opportunities for conservation practices. Mr. Talbot walked the group through the analysis model. He explained the key GIS and H&H components in flood risk assessment including predictive analyses, targeting, resiliency analysis, prioritization, adjacency, and proximity analysis, overlay analysis, vulnerability mapping, and flood hazard mapping. He

explained the three components of risk including hazard, vulnerability, and exposure. Mr. Talbot explained the flood hazard components such as, height, distance, slope, and land cover. He explained social vulnerability factors such as very old individuals, very young individuals, financially struggling, and homeless. He explained exposure and importance of protecting valuable buildings like hospitals. Mr. Talbot explained resilience in terms of the community's ability to adapt and recover. He presented a few questions regarding climate resiliency:

- Will flooding get worse in the future?
- How much worse?
- What does the resilient approach look like?
- What storm event should we prepare for?

Manager Anderson asked why the resiliency slide does not include information on stopping the flooding problem before it happens. She also mentioned the importance of groundwater. Mr. Talbot explained that the purpose of the flood risk mapping is to avoid flooding, but the resiliency model takes into account that you can never completely avoid flooding. He explained the importance of mitigating flooding that does not include avoidance, for example, control measures like levies and elevating homes. Manager Toavs thanked Mr. Talbot for his presentation. Manager Anderson thanked the new managers for their willingness to absorb additional information to help them make water resource decisions.

3. Greenway Corridor

Discussion postponed date and time to be determined.

By unanimous consent, the meeting was adjourned at 3:43 pm.

Dave Bakke, Secretary Pro-Tem. _____