

# **Boardwalk vs. Paved Trail Impacts**

**Vadnais-Snail Lakes Regional Park**

## Summary of comments from public meetings and online comments

- Trail loops are preferred
- Boardwalks are an accepted solution to flood prone trails
- Keep turf trails unpaved
- Create alternate connections around flooded tunnels at Gramsie Rd and Snail Lake Blvd.
- \*\*\*Make the trails resilient to future flooding
- Look for temporary solution for east side of Wetland A
- Keep existing paved trail paved where possible



# DESIGN CONSIDERATIONS FOR TRAIL FACILITIES

- Future flood resiliency
- Floodplain fill
- Wetland Impacts
- Stormwater Impacts
- User Safety
- ADA Compliance
- Trail Connectivity, Trail loop creation
- Length of Trail
- Cost and funding sources – Lower the cost, the greater chance of funding
- User Experience
- Maintenance – short term and long term; Winter vs. Summer
- Aesthetics/Visual impacts
- Trail use in different conditions i.e. – hot and dry, wet, snow and ice, etc.



## TRAIL FACILITY OPTIONS

- Paved Trails – limited areas due to poor soils
- Unpaved natural surface trail - not as accessible
- Fixed Boardwalk – more expensive in open water
- Floating Boardwalk – has issues in wetland areas, not bike friendly



[drakester96](#) | [Instagram shiannesinclair](#) | [Instagram](#)



# WETLAND A AREA

## Final Plan

- Re-establishes east-west connections across Wetland A
- Makes connections to East side neighborhoods accessible
- Existing flood prone trails to be maintained as paved or converted to “natural surface” trails if not maintainable
- Proposed trails resilient to flooding
- Boardwalk extents can be constructed in phases so a smaller project could be constructed sooner with less funding required and added on to in the future if required

### VADNAIS-SNAIL LAKES REGIONAL PARK MASTER PLAN UPDATE



# WETLAND A AREA

- High Priority  
short term implementation 1200 LF +-  
east side of Wetland A
- Medium Term Priority  
East/West connection loop creation at  
Dennison
- Long Term  
as future water conditions require  
boardwalk extensions to keep trails  
open
- Existing paved trails to be  
maintained as paved where  
feasible





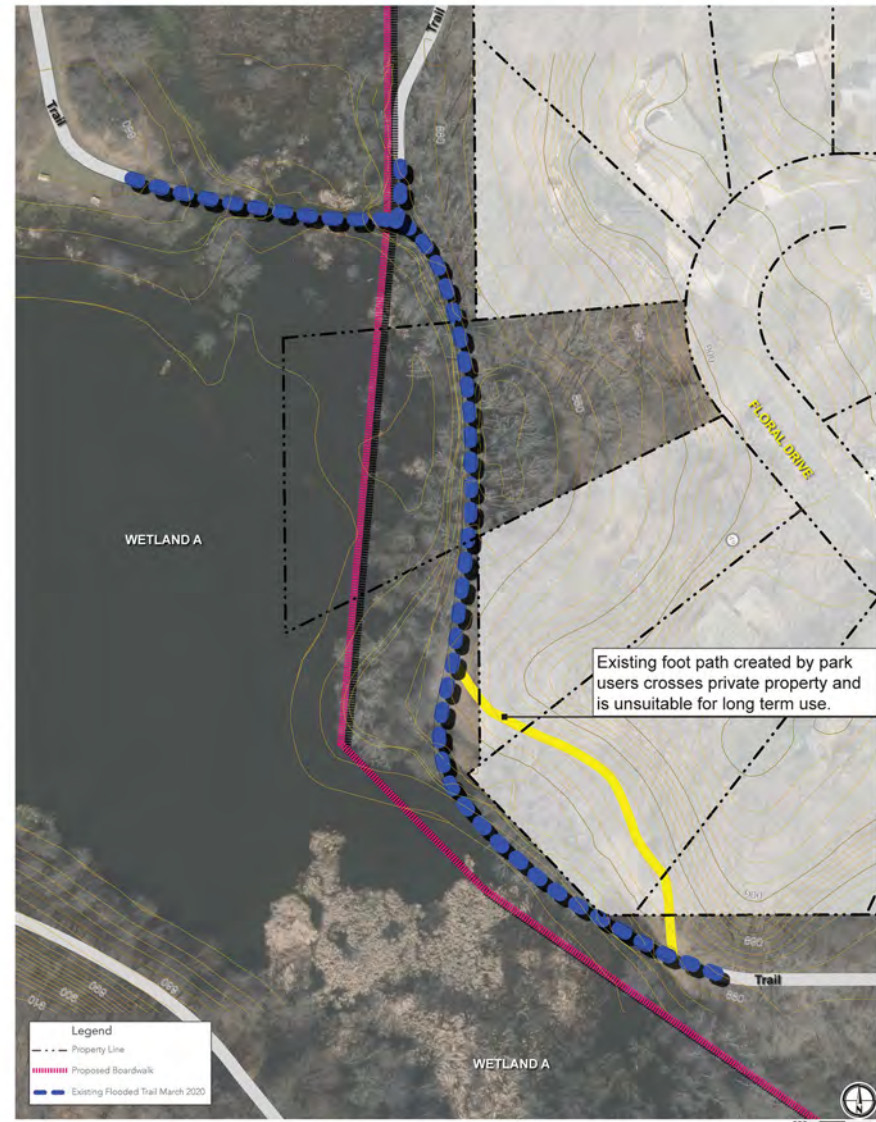
## WETLAND A – EAST SIDE FLOODING

### Is There a Temporary Solution?

- Blue line represents trail flooding extents (approx. 1200 LF)
- Yellow line represents unauthorized footpath created by trail users = Trespass
- Magenta line represents possible future boardwalk alignment

#### Temporary Solution Requirements:

1. Must meet ADA
2. Must meet building codes
3. Must not impact wetlands or floodplain.





## Wetland A – East side trail prior to flooding





## Wetland A – East side trail prior to flooding





## Wetland A – East side trail prior to flooding





## Wetland A – East side trail prior to flooding





## Wetland A – East side trail flooding





## Wetland A

### Why not simply pump the water out of wetland A?

*The following information has been provided by the Ramsey Washington Metro Watershed District for discussion:*

- Groundwater levels are currently very high in the area, and in fact, around the region. We anticipate that drawing Wetland A down effectively by pumping could be difficult as groundwater could seep in to the Wetland A as quickly as it is pumped. The groundwater level measured at a piezometer, placed to measure groundwater levels adjacent to Wetland A, as of June 2020 was at 879.4 feet. The surface water of Wetland A on the same day was measured at 880.2 feet. This is an elevation difference of only 0.8 feet between the groundwater and surface water, meaning that the water you are seeing on some flooded trails is coming from groundwater.
- Another issue is where to pump water from Wetland A. In June 2020, Grass Lake's water surface elevation was 883.4. When RWMWD pumped Wetland A in 2017, pumping was only allowed until Grass Lake reached an elevation of 883.5 in order to preserve some flood storage during storm events. If the county were to pursue pumping of Wetland A, an upper limit would need to be set at Grass Lake at which to stop pumping from Wetland A unless flooding of the parkland north of Gramsie Road would be deemed acceptable (above 884.1, Grass Lake overflows to the parkland north of Gramsie Road).
- Pumping would not be a quick fix for future trail flooding after large rain events due to highwater impacts downstream to flood-prone habitable structures, public roads, and other parkland.

## Impacts of Potential Solutions

- Floodplain fill not allowed without mitigation equal - only allowed if no other option exists
- Wetland Impacts (WCA) require mitigation at 2:1 ratio if allowed – only allowed if no other option exists
- Existing vegetation impacts on (non-wetland) trees
- Stormwater quantity and quality treatment
- Visual impact (structure or trail)
- Future flood water elevations
- Proximity to adjacent private residences
- Trail user experience



# Permit Requirements for work in Floodplains

Attachment C (From COE & DNR joint permit application)

## Avoidance and Minimization

**Project Purpose, Need, and Requirements.** Clearly state the purpose of your project and need for your project. Also include a description of any specific requirements of the project as they relate to project location, project footprint, water management, and any other applicable requirements. Attach an overhead plan sheet showing all relevant features of the project (buildings, roads, etc.), aquatic resource features (impact areas noted) and construction details (grading plans, storm water management plans, etc.), referencing these as necessary:

**Avoidance.** Both the CWA and the WCA require that impacts to aquatic resources be avoided if practicable alternatives exist. Clearly describe all on-site measures considered to avoid impacts to aquatic resources and discuss at least two project alternatives that avoid all impacts to aquatic resources on the site. These alternatives may include alternative site plans, alternate sites, and/or not doing the project. Alternatives should be feasible and prudent (see MN Rules 8420.0520 Subp. 2 C). Applicants are encouraged to attach drawings and plans to support their analysis:

**Minimization.** Both the CWA and the WCA require that all unavoidable impacts to aquatic resources be minimized to the greatest extent practicable. Discuss all features of the proposed project that have been modified to minimize the impacts to water resources (see MN Rules 8420.0520 Subp. 4):

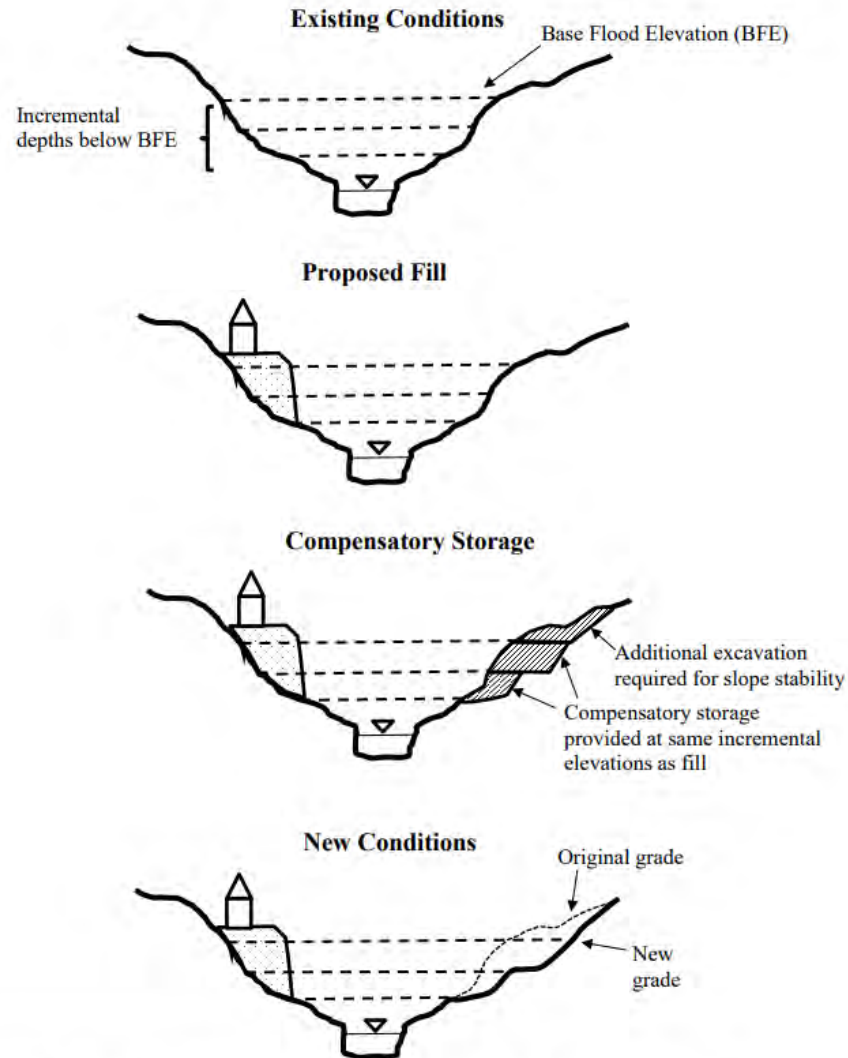
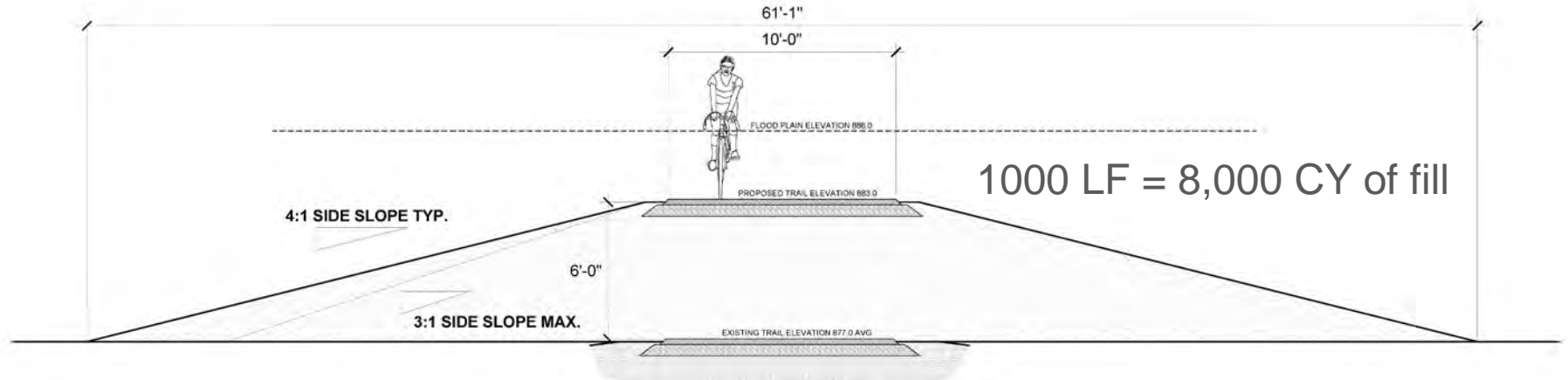


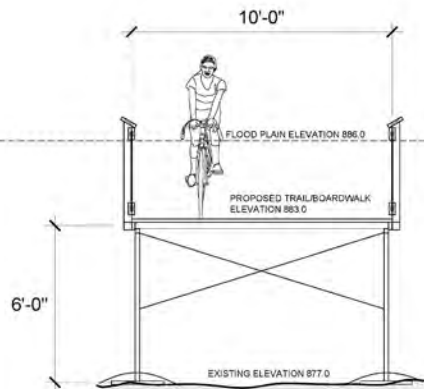
Figure 1. Conceptual model of compensatory storage requirements along a river to meet No Adverse Impact standard.

Illustration credit:  
[https://dec.vermont.gov/sites/dec/files/documents/rv\\_DEC\\_CompensatoryStorageGuidance.pdf](https://dec.vermont.gov/sites/dec/files/documents/rv_DEC_CompensatoryStorageGuidance.pdf) Vermont

# Impacts: Paved Trail vs Fixed Boardwalk



**PAVED TRAIL OPTION**



**FIXED BOARDWALK OPTION**



## Boardwalk Concerns Comments

- “Boardwalks are slippery”
  - material selection key
    - Multiple wood species, plastic, concrete, & metal options
    - Ipe, Locust, or Thermally Mod. wood are proposed surface for this project
      - All materials will outlast concrete and carry 25 year warranty
      - Slip coefficient is excellent
- “Boardwalks are noisy”
  - Dense material selection reduces any noise
  - Additional sound deadening possible
- “Boardwalks are not maintainable”
  - Sun/uv reduces potential for algae/fungi and rot
  - Use long lasting 40+ year durable materials – Steel frame, dense wood

## Conclusion

- Boardwalks are the preferred solution to address trail flooding and reconnection in the Snail Lake Regional Park
  - Can be permitted and installed with minimal impact to natural environment
  - Can be added on to or raised if needed in the future
  - Can last longer than typical bituminous trail construction with consideration given to material selection
  - Proper material selection reduces maintenance and improves user experience.