

Memorandum

To: Riley-Purgatory-Bluff Creek Watershed District Board of Managers and District Administrator
From: Barr Engineering Co.
Subject: Engineer's Report Summarizing August 2023 Activities for October 4, 2023 Board Meeting
Date: September 28, 2023

The purpose of this memorandum is to provide the Riley-Purgatory-Bluff Creek Watershed District (RPBCWD) Board of Managers and the District Administrator with a summary of the activities performed by Barr Engineering Co., serving in the role of District Engineer, during September 2023.

General Services

- a. Met virtually with Administrator Jeffery, staff Nicklay, and Counsel Welch on September 5 and 19 to discuss status of permit violations, Upper Riley Creek restoration project status, Purgatory Creek Park berm, and upper Bluff Creek capital project.
- b. Met with the property owner at 1811 Lake Lucy Lane and their wetland scientist on September 6 to discuss the work performed in a wetland without a RPBCWD permit, needed restoration activities, and RPBCWD permitting requirements. Assisted Administrator Jeffery with draft responses to questions.
- c. Participated in the September 13 regular Board of Managers meeting.
- d. Participated in the September 21 and 27 continuations of the September 13 regular Board of Managers meeting.
- e. Met virtually with Administrator Jeffery and Chanhassen staff on September 22 to discuss the replacement of the culvert conveying Bluff Creek under Galpin Boulevard.
- f. Lead the discussion about altered hydrology of green spaces, soil health, and ecosystems during RPBCWD's fall tour on September 26, 2023.
- g. Met virtually with Administrator Jeffery, President Ziegler, Counsel Smith and Counsel Welch on September 29 to review draft agenda for October 4 regular board of managers meeting.
- h. Prepared Engineer's Report for engineering services performed during September 2023.
- i. Miscellaneous discussions with Administrator Jeffery about CIP, permits, and ongoing studies.

Permitting Program

- a. *Permit 2023-003 Galpin Boulevard Reconstruction* – The project proposes the reconstruction of roughly 2 miles of Galpin Boulevard (CR 117) between Hwy 5 and the Chanhassen/Shorewood border by converting the roadway from rural roadway to an urbanized section with curb and gutter. The project triggers RPBCWD floodplain management rule, erosion prevention and sediment control rule, creek and wetland buffer

- rule, waterbody crossing and structures rule, and the stormwater management rule. Reviewed September 15 resubmittal and provided review comments. Participated in a September 20 virtual meetings with the applicant to review comments and coordinate on creek crossing design parameters/constraints. Started drafting the permit report while waiting for responses to comments.
- b. *Permit 2023-012 Audubon Business Park* – The proposed work will develop a 28-acre site at the southwest corner of Hwy 5 and Audubon Road Chanhassen, Minnesota. The applicant proposes constructing 2 office/warehouse buildings and associated site improvements on an undeveloped lot. The stormwater management system includes the construction of filtration and infiltration basins to provide water quality treatment, rate control, and volume abstraction. The project triggers RPBCWD floodplain rule, erosion prevention and sediment control rule, creek and wetland buffer rule, and the stormwater management rule. Reviewed August 31 resubmittal Drafted the permit report for consideration at the October 4, 2023 regular meeting of the Board of Managers.
- c. *Permit 2023-022 CorTrust Bank Parking Lot Reconstruction* – The project involves the reconstruction of the existing CorTrust bank building parking lot that has experienced settlement since its original construction in the 1990s. The applicant is proposing to restore the parking lot and improve storm sewer. The project triggers RPBCWD's floodplain (Rule B), erosion and sediment control (Rule C), wetland and creek buffers (Rule D), and stormwater management (Rule J). . Reviewed September 19 & 25 resubmittals and drafted the permit report for consideration at the October 4, 2023 regular meeting of the Board of Managers.
- d. *Permit 2023-026 Café Zupas* – The project proposes construction of the Café Zupas building (3,050 square feet), drive thru, parking, landscaping, and an underground stormwater management facility (UGSWMF) in Chanhassen, Minnesota. The project triggers RPBCWD erosion prevention and sediment control Rule C and stormwater management Rule J. A resubmittal was received September 13, 2023 addressing review comments sent August 11, 2023. Drafted the permit report for consideration at the October 4, 2023 regular meeting of the Board of Managers.
- e. *Permit 2023-034 Lifetime Pickleball Building* – The project proposes to redevelop a portion of the Life Time complex at 2932 Water Tower Place and 2970 Water Tower Place in Chanhassen. Reviewed draft declaration.
- f. *2023-044 Chanhassen Trail Improvements* – The applicant proposes trail improvements at three sites (#1-Topaz Dr and Lucy Ridge Circle, #2-South Lotus Lake Park, and #3- Galpin boulevard) in Chanhassen, MN. The proposed land-disturbing activities at Sites #1 and #2 involve trail improvements that only require compliance with RPBCWD's Rule C, erosion prevention and sediment control rule. The land disturbing activity at site #3 must demonstrate compliance with RPBCWD's Rule B, floodplain management. Rule C, erosion prevention and sediment control and Rule D, wetland and creek buffers. Met with applicant on September 20 to review conditions of approval. Reviewed and provided comments on the draft maintenance agreement.
- g. *2023-055 Ridgewood Ponds* – The applicant proposes the subdivision of an existing single family home parcel into an 11-lot single-family residential development in Eden Prairie, including the construction of two infiltration basins for stormwater management. The project triggers erosion preventions and sediment control Rule C, wetland and creek buffer Rule D,

and stormwater management Rule J. Review September 11, 18, and 20 submittals. Drafted the permit report for consideration at the October 4, 2023 regular meeting of the Board of Managers.

- h. *2023-056 Kinsley Development* – The applicant proposes the subdivision of an existing single family home parcel into a 42-lot townhome development in Minnetonka. The project also includes the removal of an existing home and driveway. The applicant proposes an infiltration basin, two underground infiltration systems, and two infiltration trenches to provide volume control, water quality, and rate control. The project triggers erosion preventions and sediment control Rule C, and stormwater management Rule J. Review September 18 resubmittal. Drafted the permit report for consideration at the October 4, 2023 regular meeting of the Board of Managers.
- i. Miscellaneous preapplication calls from future applicants with questions about rule applicability and criteria.

Data Management/Sampling/Equipment Assistance

- a. Prepared, loaded, and verified 11 RMB Laboratory (RMB) reports to the database.

Task Order 6: WOMP Station Monitoring

Purgatory Creek Monitoring Station at Pioneer Trail

- a. No activity.

Purgatory Creek Monitoring Station at Valley View Rd

- a. Download and review data.
- b. Storm event sampling - set station, collect, prep, and deliver sample.
- c. Maintenance – clean up, troubleshoot, and remove damaged baseboard heater. Procure new baseboard heater.
- d. Review utilities and MCES lab invoices.

Task Order 24B: Silver Lake Water Quality Improvement Project

- a. Vegetation maintenance contract is underway through December 2025.

Task Order 28B: Rice Marsh Lake (RM_12a) Water Quality Improvement Project



- a. The three-year vegetation establishment period is in process.

- b. Provided a draft maintenance plan to the District on September 18. The District provided comments on September 21. Incorporation of comments is underway.
- c. Met on site with the contractor to assess the sinkhole that is forming at the CB-MH at Dakota Lane were held on Sept 15 and Sept 18. The contractor sent a camera through the rain garden underdrain to evaluate. The likely cause is a block in the underdrain connection with the CB-MH. A third site visit this week will confirm.
- d. Replanting of rain garden, native planting area, downy arrowwood for screening the monitoring equipment took place on Sept 18.

Task Order 29B: Middle Riley Creek (Reach R3) Stabilization Project Design

- a. Stantec (formerly Cardno – sub to Sunram) visited the site twice during September to inspect and treat site as needed for invasives as part of ongoing vegetation establishment management.
- b. Ongoing vegetation management will continue through July 15, 2025.

Task Order 30B: Pioneer Trail Wetland Restoration Project

- a. The three-year vegetation establishment period is in process.

Task Order 032B: Upper Riley Creek Ecological Enhancement Project

- a. Bid package and associated drawings were provided to RPBCWD legal in September for review.
- b. RPBCWD permit is planned for submittal after plans have been updated and property owner easements are in process in November.

Task Order 033: Wetland Assessment – Phase 1

- a. Continued drafting Phase 1 report to define ecosystem services and describe methodology for assessing each service.
- b. Having discussions with BWSR to determine if the approach they are developing will impact the RPBCWD approach.
- c. Having internal discussions to align the wetland plan with the Ecosystem Health Assessment currently in development for the district.

Task Order 036B: Upper Bluff Creek Reach 5 Design

- a. A scope of work for detailed design of the Upper Bluff Creek Reach 5 wetland and stream restoration project is underway. The proposed scope will be shared with Administrator Jeffery for consideration at a future Board workshop meeting.

Task Order 037: Sediment Analysis

- a. Sediment results for the Lake Susan wetland expected in October 2023.
- b. The Lake Susan and Lake Susan wetland memos will be delivered together in October.

Task Order 039A: Lotus Lake Water Quality Project – Preliminary Engineering

- a. Summarizing soil health data provided by District staff for additional sites in the Lotus Lake Watershed.
- b. Drafting feasibility study report including text, tables, and figures.
- c. Compiling summary of all concepts and developing project recommendations.

Task Order 040: Alum Application on Lotus Lake

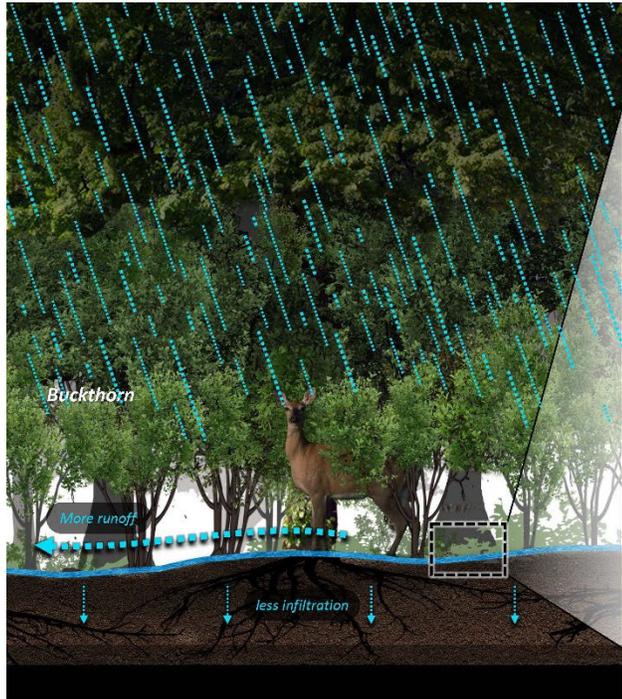
- a. Draft memo was delivered to the District Administrator in early June 2023.
- b. Next steps include incorporating comments from the District once received.

Task Order 41: Chanhassen Decant Facility

- a. Delivered evaluation of site layout options.
- b. Continued preliminary design.

Task Order 43: Ecosystem Health Action Plan

- a. Met twice monthly with District staff to discuss team efforts.
- b. Conducted research and discussions between Barr and District staff, along with Michael Welch, on how District and City rules/ordinances might be developed or changed to better address improvement of the District ecosystem.
- c. Wrote the report section on the altered hydrology of green space. The review documents how woodland hydrology is altered through the action of earthworms, deer herbivory, invasive species, and the actions of people. It also documents the altered hydrology of lawns; how this often-considered innocuous ground cover has limited infiltration capacity resulting in increased runoff to natural water bodies.
- d. Discussed the altered hydrology of green space at the Board of Managers sites tour September 26th.
- e. Developed a graphic on the altered hydrology of green spaces.

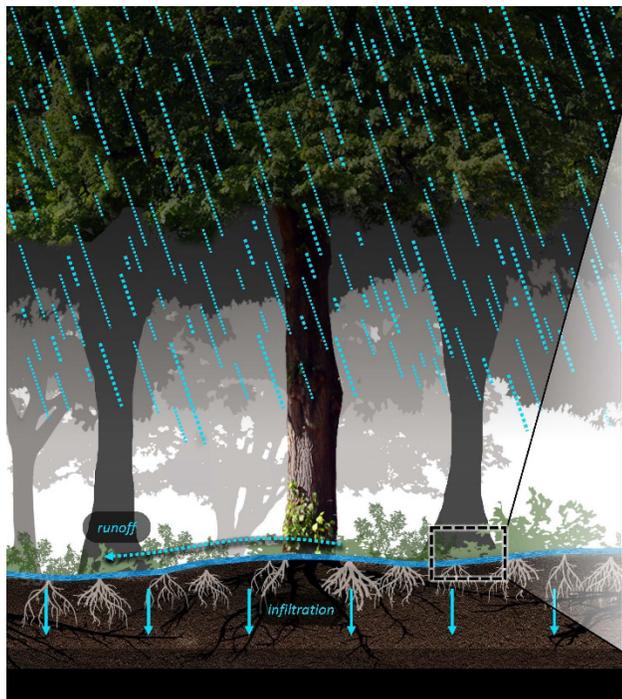


Altered Woodland Hydrology

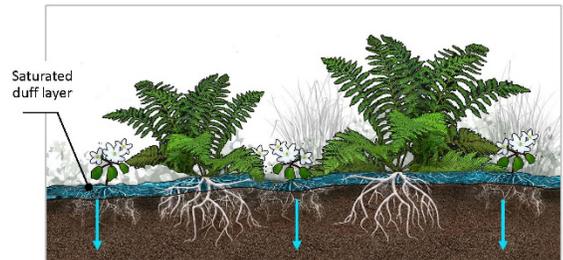


Woodlands can be disturbed by earthworms, deer herbivory, invasive species, and human foot traffic. The combination of these forces changes the physical components of the soil, preventing stormwater infiltration and increasing runoff. Here's how:

- Earthworms (not native to MN) devour forest floor duff leaving soil bare. Many species of native vegetation, including trees, are unable to reproduce without the protective cover of duff, therefore forest floor vegetation diminishes. This leaves forest soil open to crusting and erosion.
- Earthworms also compact the soil reducing stormwater infiltration capacity.
- Deer browse on woody and herbaceous vegetation, limiting their growth and preventing the reproduction of many trees and wildflowers. An overabundance of deer compacts the soil and decreases litter depth.
- The lack of vegetation and duff on the forest floor results in open soil that easily dries and becomes crusted from the impact of rain drops. Stormwater does not readily infiltrate into the soil, so water runs off carrying soil and organic material downstream.
- The resulting reduction in the amount of plant roots reduces water infiltration because of a lack of root channels and decreased soil food web activity.



Unaltered Woodland Hydrology



The physical components of an undisturbed woodland readily allow for stormwater infiltration which reduces runoff.

- Here's how:
- Native plants and forest floor duff protect soil from the erosive energy of raindrops through interception allowing it to softly drip to the ground.
 - Duff is the 2-6" layer of vegetative matter, such as leaves, twigs, dead logs, etc., that covers the ground in the forest located above mineral soil and below fallen leaves.
 - When it rains, water is held like a sponge in the woodland floor duff layer. This reduces runoff as water can slowly infiltrate, especially in heavy downpours.
 - As water moves down to the soil through the duff, it readily infiltrates into the soil due to its porosity maintained by soil organisms and root penetration. When roots die, they leave open channels through which water easily moves down deep into the soil. Soil organisms form soil crumbles that provide air space and ease for infiltration.
 - Runoff does occur, but is filtered through healthy vegetation and duff to enter surrounding water bodies carrying minimal nutrients.
 - Water infiltrating through the soil waters vegetation and recharges the groundwater and aquifers.

Task Order 44: Lake Susan Park Pond Reuse Intake Modification

- Conducted a virtual meeting with a potential contractor to solicit input of ways to streamline construction and reduce potential costs.
- Developed a revised quote package that was sent to 11 contractors on September 27 with a

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response deadline of October 20, 2023.

- c. Anticipate providing a recommendation to the Board of Managers at the November 2023 meeting.