

Project Name	BCWD Permit 24-06 2024 Rutherford Elementary Site Improvements	Date	05/03/2024
To / Contact info	BCWD Board of Managers		
Cc / Contact info	TJ Rose; Larson Engineering, Mitch Honsa; Larson Engineering, Tony Willger; Stillwater School District		
Cc / Contact info	Karen Kill, Administrator / BCWD		
From / Contact info	Paul Nation, PE; John Sarafolean / EOR		
Regarding	Permit Application No. 24-06 Engineer's Report		

The following review of the above-mentioned project located within the legal jurisdiction of the Brown's Creek Watershed District (BCWD) was conducted to determine compliance with the BCWD rules for purposes of the engineer's recommendation to the Board of Managers for its determination of the permit application.

Applicant: Stillwater School District

Permit Submittal Date: 04/02/2024

Completeness Determination: 04/12/2024

Board Action Required By: 06/11/2024

Review based on BCWD Rules effective April 1, 2020

Recommendation: Consider variance request and otherwise Approve with Conditions

GENERAL COMMENTS

The applicant proposes site improvements to the existing Rutherford Elementary school in Stillwater. The project site includes the 16.1-acre Rutherford Elementary parcel and the adjacent 2.7-acre Washington County parcel to the north shown in Figure 1. The Washington county parcel is included because of the land-disturbing activities to connect the Rutherford Elementary and Washington county trail systems. The total site area is 18.8 acres.

Existing conditions: The project site is located southeast of the intersection of 75th Street North and Rutherford Road. The existing Rutherford Elementary parcel consists of turf grass, three baseball fields, bituminous basketball courts, two playgrounds, parking lots, and the elementary school building.

The applicant proposes:

- removal of a 5,455-sf impervious gravel ball field on the east side of the property and replacement with a new 10,430 square feet (sf) pervious playground and 4,736 sf impervious gaga ball pit;
- construction of a new pervious playground and 5,344 sf bituminous gaga ball pit, with 1,524 sf of reconstructed gravel ball field to concrete walk to access the playground,
- reconstruction of the pervious playground on the west side of the property with a new 5,840 sf pervious playground and new 457 sf concrete walk to access the playground,
- overlay of a 4,232 sf gravel trail with a new 9,716 sf bituminous trail system around the east side of the property,

- construction of storm sewer improvements and a 5,200 sf infiltration basin to treat stormwater.

The project site impervious will increase from 7.4 acres to 7.6 acres, an increase of 3 percent. The proposed improvements will create 0.23 acres of new impervious. There is 265,366 sf of existing impervious on the site, proposed new and reconstructed impervious totals 14,254 sf which is less than 50 percent of existing impervious surface, therefore the BCWD stormwater criteria apply only to reconstructed and net additional impervious surface, and all disturbed areas on the project site.

None of the stormwater generated from the new and reconstructed impervious surface will be treated by the new infiltration basin to be installed; instead, the applicant has submitted a variance supported by proposed treatment-in-lieu of runoff from existing impervious area. The stormwater runoff generated by the trail will flow overland through a large turf grass field before being picked up by the existing storm sewer on site and routed to Rutherford Pond. The new infiltration basin is being installed north of the school's main parking lot and will capture the stormwater runoff generated by the upgradient bituminous parking lot that is not proposed to be disturbed. The parking lot flows to the curb and gutter encompassing the north side of the parking lot.

The Rutherford Elementary site contributes surface stormwater to the South-Central Tributary which is classified as a groundwater dependent natural resource, by way of Rutherford Pond and a wetland to the north before flowing north through a culvert pipe under 75th St. N. Therefore, the project must also meet the requirements of BCWD Rule 2.5.3 Basin in contributing area to groundwater-dependent natural resource.

Recommendation: The BCWD engineer recommends that the board consider the applicant's variance request in light of the analysis provided below and otherwise approve the application with the conditions outlined in the report.

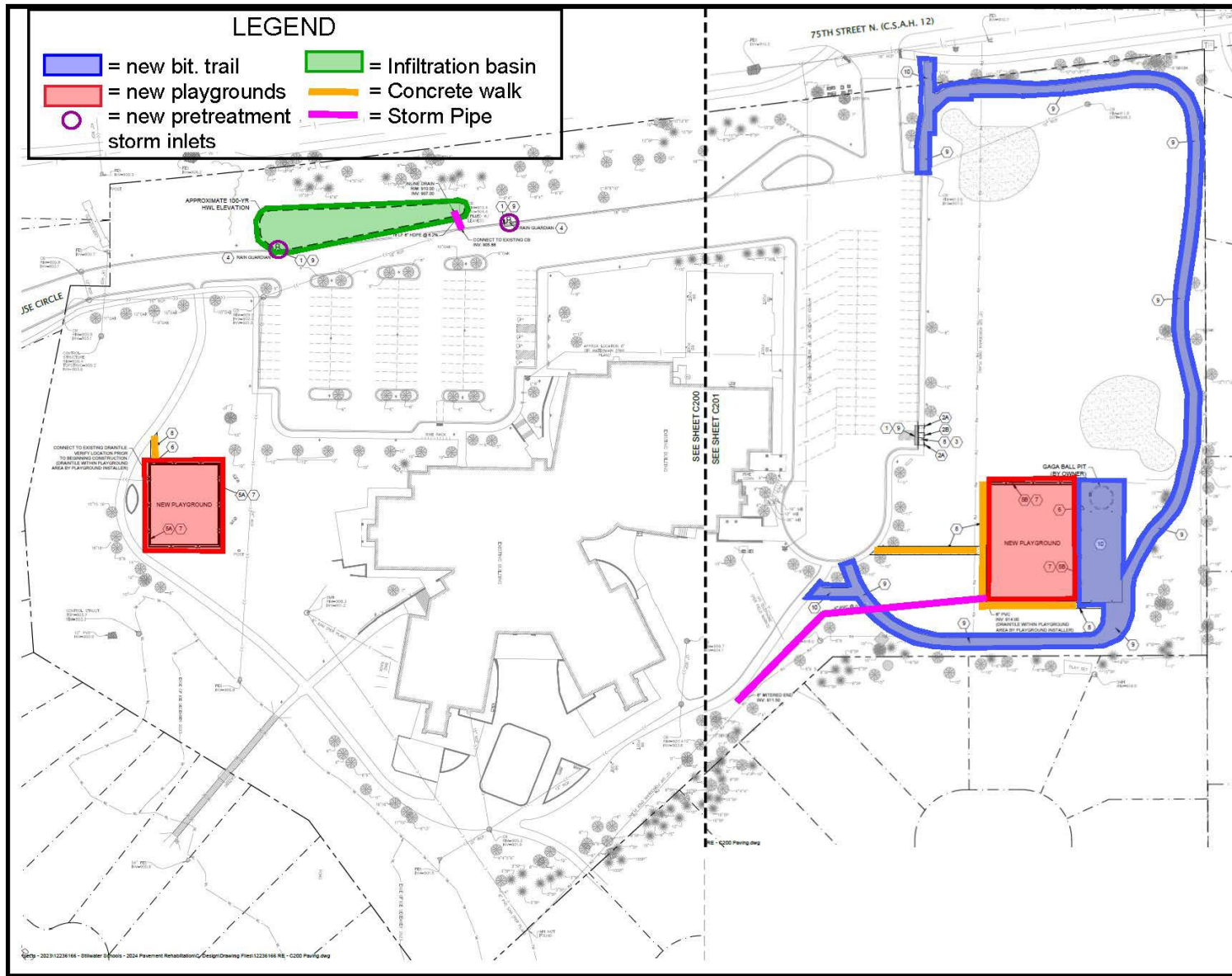


Figure 1: Site Plan

Rule 2.0—STORMWATER MANAGEMENT

Under 2.2(b) of the rules, the proposed project triggers the application of Rule 2.0 Stormwater Management because it is a redevelopment creating impervious surface that, aggregated with existing impervious on the site, equals 6,000 square feet (sf) or more on a site within the surface water contributing area of a groundwater-dependent natural resource. Because the proposed activity will disturb less than 50 percent of existing impervious surface, the criteria will apply only to reconstructed and net additional impervious surface, and all disturbed areas on the project site. The site is located within the Diversion Structure Subwatershed, so the stormwater criteria in subsection 2.4.1(b) apply.

The stormwater management plan for the project includes:

- *Constructing an infiltration basin to treat runoff from the school parking lot.*
- *Rain Guardian pretreatment inlets for the infiltration basin.*

The existing drainage of the project site consists of three discharge points: north, east, and west. Two drainage areas on the north side of the site totaling 0.78 acres in size drain overland to the north discharge point through turf grass and a wooded area into the ditch along 75th St. N. then travel from the ditch by culvert to a 0.67-acre wetland located at the northwest corner of the site. The east discharge point is fed by one drainage area that is 0.33 acres in size. The stormwater runoff sheet flows over turf grass discharging onto the adjacent property to the east. The west discharge point consists of an existing stormwater retention basin, Rutherford Pond, that was constructed with the initial construction of Rutherford Elementary and a 0.67-acre wetland immediately to the north. The west discharge point is fed by nine drainage areas on site totaling 13.4 acres in size. Stormwater runoff to the west runs overland through turf grass directly to the pond and wetland, and sheet flows over turf grass and impervious surfaces into existing storm sewer discharging into Rutherford Pond.

Under proposed conditions, drainage to the east discharge point will remain the same. Stormwater discharge to the north will be reduced with the construction of the infiltration basin but continuing to overland sheet flow through the turf grass and wooded areas. The Stormwater discharge to the west will decrease due to runoff diverting from flowing in existing storm sewer to Rutherford Pond to the infiltration basin, the mechanisms of reaching the discharge point will remain the same. All the new and reconstructed impervious surfaces on the site are within drainage areas that drain to the west discharge point.

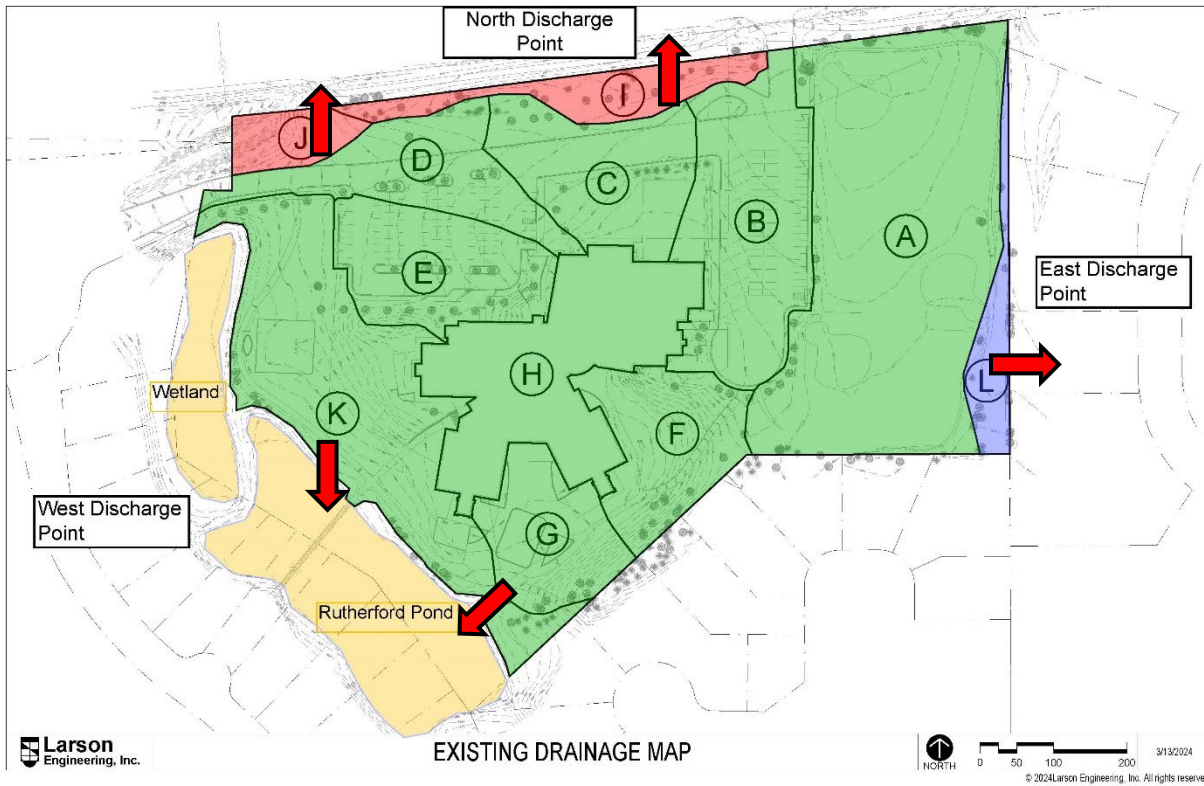


Figure 2: Existing site drainage.

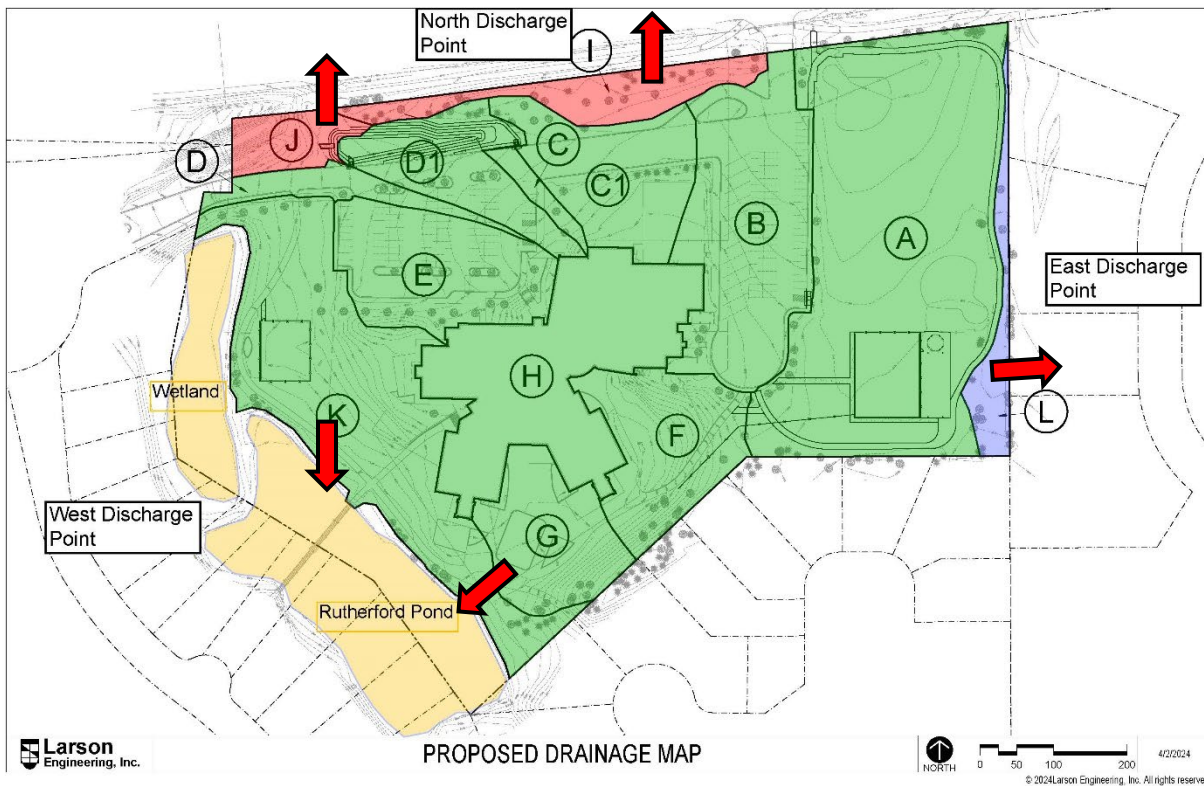


Figure 3: Proposed site drainage.

Rate Control

According to BCWD Rule 2.4.1(b)(i), an applicant must submit a stormwater-management plan providing no increase in the existing peak stormwater flow rates from the site for a 24-hour precipitation event with a return frequency of two, 10 or 100 years for all points where discharges leave the site.

Rule Requirement met.

The stormwater management plan developed for the site was evaluated using a HydroCAD model of existing and post-development site conditions. A comparison of the modeled peak flow rates from existing to proposed conditions for the North, East, and West discharge points is included in Table 1, Table 2, and Table 3

Table 1 - Peak Discharge Rate "North"

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	0.9	0.9
10-year (4.17")	2.0	2.0
100-year (7.23")	4.9	4.9

Table 2 - Peak Discharge Rate "East"

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	0.4	0.3
10-year (4.17")	0.8	0.6
100-year (7.23")	1.9	1.5

Table 3 - Peak Discharge Rate "West"

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	26.5	24.0
10-year (4.17")	44.7	40.0
100-year (7.23")	88.9	85.3

Volume Control

According to BCWD Rule 2.4.1(b)(ii), an applicant must submit a stormwater-management plan providing retention onsite of 1.1 inches of stormwater volume from the regulated impervious surface on the site.

- Rule Requirement Not Met. *See analysis of variance request under Rule 10.0 section below.*

The proposed activities onsite will disturb less than 50 percent of the existing impervious surfaces onsite. Therefore, the stormwater criteria will apply only to reconstructed and net additional impervious surface, and all disturbed surfaces on the project site. The total regulated impervious surface to be treated onsite equals 14,254 sf. The applicant is proposing to implement an infiltration basin along the north side of the property for volume control. The infiltration practice will be treating and storing water that drains from the parking lot that is not proposed to be disturbed in drainage areas C1 and D1 as shown on the proposed drainage map in Figure 3. The volume control requirement is not met, and the applicant has requested a variance to this requirement because the infiltration basin is not treating stormwater runoff from any of the new or reconstructed impervious surfaces. The stormwater from the new and reconstructed impervious surfaces is captured by existing storm sewer and discharged into Rutherford Pond. A summary of the required stormwater volume is shown in Table 4.

The infiltration basin has been oversized to provide stormwater management for 18,582 sf of future impervious surface re/development. Such future redevelopment and stormwater management will need to be evaluated against the BCWD Rules in place at the time of the future submittal.

Table 4 - Summary of Volume Requirements

<i>Impervious Surface Area (sf)</i>	<i>Required Volume (cf)</i>	<i>Provided Volume (cf)</i>
14,254	1,306	7,294

Infiltration Pretreatment

According to BCWD Rule 2.5.2 surface flows to infiltration facilities must be pretreated for long-term removal of at least 50 percent of sediment loads.

- Rule Requirement Not Met. *See analysis of variance request under Rule 10.0 section below.*

Lake/Wetland Bounce

According to BCWD Rule 2.4.1(b)(iii), an applicant must submit a stormwater-management plan providing no increase in the bounce in water level or duration of inundation for a 24-hour precipitation event with a return frequency of two, 10 or 100 years in the subwatershed in which the site is located, for any downstream lake or wetland beyond the limit specified in Appendix 2.1.

- Rule Requirement Met.

Wetland bounce and inundation was analyzed for the 2-year, 10-year, and 100-year 24-hour rainfall events using the submitted HydroCAD analysis for pre-development vs. proposed conditions. The wetland onsite has not been classified, therefore the applicant assumed the wetland to be classified as a “preserve”, the most conservative assumption. Preserve wetlands have a permitted bounce of pre-development, and a permitted inundation of existing. Table 5 and Table 6 show that the standards are met for rule 2.4.1(b)(iii).

Table 5 - Wetland Bounce Summary

<i>Wetland</i>	<i>Existing HWL (ft)</i>	<i>Proposed HWL (ft)</i>	<i>Bounce (ft)</i>
Preserve	903.96	903.94	-0.02

Table 6 - Wetland Inundation Summary

<i>Wetland</i>	<i>Pre-Development Duration of Inundation (hrs)</i>			<i>Proposed Duration of Inundation (hrs)</i>			<i>Change in Duration of Inundation (hrs)</i>		
	<i>2-year</i>	<i>10-year</i>	<i>100-year</i>	<i>2-year</i>	<i>10-year</i>	<i>100-year</i>	<i>2-year</i>	<i>10-year</i>	<i>100-year</i>
Preserve	56.4	88.0	142.6	52.2	83.8	141.4	-7.4	-4.8	-1.2

Basins in Contributing Area to Groundwater-Dependent Natural Resources

According to BCWD Rule 2.5.3, a stormwater basin within the surface contributing area to a groundwater-dependent natural resource must contain and infiltrate the volume generated by a two-year, 24-hour storm event, if feasible.

Rule Requirement Met.

The proposed infiltration basin contains and infiltrates the entire volume of the two-year, 24-hour storm event satisfying this requirement.

Rule 2.0 Conditions:

- 2-1. Provide BCWD with the final Civil Plan Set (BCWD 2.7.9).
- 2-2. Enter into an agreement for stormwater maintenance.

Rule 3.0—EROSION CONTROL

According to BCWD Rule 3.2, all persons undertaking any grading, filling, or other land-altering activities which involve movement of more than fifty (50) cubic yards of earth or removal of vegetative cover on five thousand (5,000) square feet or more of land must submit an erosion control plan to the District, and secure a permit from the District approving the erosion control plan. The proposed project triggers the application of Rule 3.0 Erosion Control because of land altering activities involving movement of more than fifty cubic yards of earth and removal of vegetative cover on five thousand square feet or more of land.

Rule Requirements Met with Conditions

The erosion and sediment control plan includes:

- *Silt fence*
- *Redundant silt fence*

- *Rock construction entrance*
- *Inlet protection*
- *Rip rap at stormwater outflows*
- *Temporary seeding and blanketing*

The following conditions must be addressed in the erosion and sediment control plan to comply with the District's requirements:

Rule 3.0 Conditions:

- 3-1. Provide the contact information for the erosion and sediment control responsible party during construction once a contractor is selected. Provide the District with contact information for the Erosion Control Supervisor and the construction schedule when available (BCWD 3.3.2).
- 3-2. Provide stabilization measures for final restoration of areas that are being seeded.

Rule 4.0—LAKE, STREAM, AND WETLAND BUFFER REQUIREMENTS

According to BCWD Rule 4.2.1, Rule 4.0 applies to land that is (a) adjacent to Brown's Creek; a tributary of Brown's Creek designated as a public water (Minnesota Statutes section 103G.005, subdivision 15); a lake, as defined in the rules; a wetland one acre or larger; or a groundwater-dependent natural resource; and (b) that has been either (i) subdivided or (ii) subject to a new primary use for which a necessary rezoning, conditional use permit, special-use permit or variance has been approved on or after April 9, 2007, (for wetlands and groundwater-dependent natural resources other than public waters) or January 1, 2000 (for other waters).

Rule Not Applicable to Permit. *There are no lakes or streams within the site. The one wetland on the project site does not require a buffer as it is less than one acre in size and is not a groundwater dependent natural resource.*

Rule 5.0—SHORELINE AND STREAMBANK ALTERATIONS

According to BCWD Rule 5.2, no person may disturb the natural shoreline or streambank partially or wholly below the ordinary high water mark of a waterbody, without first securing a permit from the District.

Rule Not Applicable to Permit. *There are no proposed shoreline or streambank alterations.*

Rule 6.0—WATERCOURSE AND BASIN CROSSINGS

According to Rule 6.2, no person may use the beds of any waterbody within the District for the placement of roads, highways and utilities without first securing a permit from the District.

Rule Not Applicable to Permit. *There are no proposed watercourse or basin crossings.*

Rule 7.0—FLOODPLAIN AND DRAINAGE ALTERATIONS

According to Rule 7.2, no person may alter or fill land below the 100-year flood elevation of any waterbody, wetland, or stormwater management basin, or place fill in a landlocked basin, without first obtaining a permit from the District. No person may alter stormwater flows at a property

boundary by changing land contours, diverting or obstructing surface or channel flow, or creating a basin outlet, without first obtaining a permit from the District.

Rule 7.0 is not triggered because there is no floodplain fill or drainage alterations at the property boundary. Rule 7.3.2 applies because rule 2.0 stormwater management is applicable.

Rule Requirements Met

According to BCWD rule 7.3.2 all new and reconstructed buildings must be constructed such that the lowest floor is at least two feet above the 100-year high water elevation or one foot above the emergency overflow (EOF) of a constructed basin.

The 100-year high water elevations, EOFs, and lowest adjacent building elevations were evaluated and meet the District’s low floor requirement as demonstrated in Table 6. Stormwater flows at property boundaries remain the same from existing to proposed conditions.

Table 6 - Freeboard Requirement Summary

<i>Stormwater Facility</i>	<i>EOF</i>	<i>100-Year HWL</i>	<i>Allowable Lowest Floor</i>	<i>Rutherford Elementary Lowest Floor</i>
Infiltration Basin	910.00	910.52	912.52	915.33

Rule 8.0—FEES

As the Stillwater School District is a government entity, the applicant is exempt from permit fees.

Rule 9.0—FINANCIAL ASSURANCES

As the Stillwater School District is a government entity, the applicant is exempt from financial assurances.

Rule 10.0—VARIANCES

According to BCWD Rule 10.0, the Board of Managers may hear requests for variances from the literal provisions of these Rules in instances where their strict enforcement would cause undue hardship because of the circumstances unique to the property under consideration. The Board of Managers may grant variances where it is demonstrated that such action will be keeping with the spirit and intent of these rules. Variance approval may be conditioned on an applicant’s preventing or mitigating adverse impacts from the activity.

The Permit Applicant has submitted a request for a variance from the following rule provision:

- BCWD Rule 2.4.1(b)(ii) states, “Within the Diversion Structure Subwatershed... an applicant must submit a stormwater-management plan providing: (ii) Retention onsite of 1.1 inches of stormwater volume from the regulated impervious surface.”*

As noted under Rule 2.0, the proposed infiltration basin provides retention of 7,294 CF, exceeding the volume required by Rule 2.4.1(b)(ii). However, the stormwater volume is coming from existing impervious (parking lot) instead of regulated impervious and therefore requires a variance.

The permit applicant has asserted the following regarding the feasibility of treating regulated impervious.

- Due to the linear nature of the trail, it was not feasible to capture the runoff directly from the trail in a stormwater BMP.*
- The BMP would have needed to consist of swales and pipes to route runoff from the trail to a proposed BMP.*
- The athletic field downstream of the proposed trail and playground improvements would become smaller to fit the BMP, which is not desirable.*
- The proposed location of the infiltration basin was chosen due to its ability to easily capture runoff from the existing parking lot.*
- Parking lot runoff will typically have more sediment and pollutants than a walking trail. By capturing runoff from the existing parking lot, the applicant asserts that significantly more benefit to downstream waterbodies will be achieved.*
- Although the runoff directly from the new trail will not be treated in the proposed infiltration basin, runoff from the trail will flow over the large grass field prior to entering the existing storm sewer system.*

The project includes an infiltration basin designed to meet the stormwater requirements in an in-lieu fashion (rate, volumes, and water quality). Therefore, pretreatment is required for runoff directed to this facility. All runoff directed to the infiltration basin will first be directed to two Rain Guardian Turret pretreatment inlet structures. According to the University of Minnesota St. Anthony Falls Laboratory Project Report No. 586, the Rain Guardian Turret structures capture 75% of sediment loads, demonstrating compliance with Rule 2.5.2.

The BCWD engineer concurs that it would have been more technically complex to design a BMP to treat the regulated impervious but disagrees that it is infeasible. However, the BCWD engineer concurs that the proposed design provides greater protection to the downstream waterbodies than would a BMP designed to treat the walking trail. The annual phosphorus load originating from the parking lot is anticipated to exceed that from the recreational trail. This is primarily attributable to the greater diversity of phosphorus and pollutant deposition sources present in the parking lot environment. For instance, vehicular traffic, in conjunction with pedestrian activity, contributes to a higher pollutant load compared to the recreational trail. Based on the above, the BCWD engineer finds that the applicant has provided a sufficient factual and analytical basis for the managers to grant the variance request. If the managers decide to grant the variance, the applicant will need to acknowledge that compliance with BCWD (and other) stormwater-management and water resource-protection requirements for future redevelopment work will need to account for the noncompliance here (e.g., a portion of the capacity of the stormwater facility would be already “used” under this application) and may be made more difficult.

Rule 10.0 Conditions:

- 10-1. Applicant acknowledgement that 1,306 cf of stormwater runoff from regulated impervious has been accounted for with the proposed improvements, leaving 1,704 cf of stormwater runoff of available capacity to be used in future development.
- 10-2. Applicant acknowledgement that future development or redevelopment will need to be evaluated against the BCWD Rules in place at the time of the future submittal.

RECOMMENDED CONDITIONS OF THE PERMIT:

The following is a summary of the remaining tasks necessary to bring the project into compliance with the BCWD Rules in all respects other than where variances are requested as discussed above:

1. Provide documentation from Washington County approving the trail connection.
2. Address all stormwater management requirements (Conditions 2-1 to 2-2).
3. Address all erosion control requirements (Conditions 3-1 to 3-2).
4. Address all variance requirements (Conditions 10-1 to 10-2).

STIPULATIONS OF APPROVAL:

1. Note that the permit, if issued, will require that the applicant notify the District in writing at least three business days prior to commencing land disturbance. (BCWD Rule 3.3.1)
2. To ensure that construction is carried out according to the approved plan, provide verification that construction standards have been met for all infiltration basins. This includes but is not limited to confirmation that infiltration basin sub-cut reaches soil material reflected in the geotechnical report and that the vegetation establishment procedures have been followed per the landscaping/restoration plan. This can be achieved by scheduling a BCWD inspection during the excavation of the basins, independent geotechnical engineer observation and note of confirmation, or clear photographic evidence by the onsite engineer along with collected survey elevations of the basins.
3. Provide the District with As-built record drawings showing that the completed grading and stormwater facilities conform to the grading plan.