

Project Name | BCWD Permit 23-10 Curio Dance Studio**Date** | 06/09/2023**To / Contact info** | BCWD Board of Managers**Cc / Contact info** | T.J. Rose Larson Engineering**Cc / Contact info** | Karen Kill, Administrator / BCWD**From / Contact info** | Camilla Correll, PE / EOR; John Sarafolean, EOR**Regarding** | Permit Application No. 23-10 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: Patricia Schaber, CDS Properties LLC**Permit Submittal Date:** 05/12/2023**Completeness Determination:** 06/02/2023**Board Action Required By:** 08/01/2023**Review based on BCWD Rules effective April 1, 2020****Recommendation: Approve with Conditions**

GENERAL COMMENTS

Existing Conditions: The 1.3-acre project is located northeast of the intersection of Washington Avenue and Curve Crest Boulevard, immediately north of the Stillwater Veterinary Clinic. The existing project site consists of an open field of turf grass, prairie grass, and trees. Under existing conditions, portions of the site drainage are conveyed to the east, south, and west, all to existing stormwater conveyance systems that drain to the Washington Avenue/Trunk Highway 36 Pond, and ultimately to Long Lake.

The site is located within 2,000 feet of Long Lake, which is an impaired resource. The site is also located in a Drinking Water Supply Management Area that has been classified as having moderate vulnerability in the City of Stillwater's Wellhead Protection Plan. Because the site is not also within an Emergency Response Area, the state Construction Stormwater General Permit does not restrict the use of infiltration, and as explained in more detail below, the applicant does intend to meet BCWD stormwater-management requirements, in part, through an infiltration facility.

Proposed Conditions: The proposed project includes the construction of a dance studio, parking lot, and associated stormwater and utilities as illustrated in Figure 1. Stormwater facilities are proposed to capture stormwater from the site by storm catch basins and a swale along the south side of the property that drain to a constructed infiltration basin along the east side of the lot. The infiltration basin outlets by storm pipe into an existing manhole located at the northeast corner of the site and into the existing stormwater basin to the east. The project will disturb 1.3 acres and the total proposed impervious area will be 0.73 acres.

Recommendation: The BCWD engineer recommends that the Board approve the application with the conditions outlined in the report.

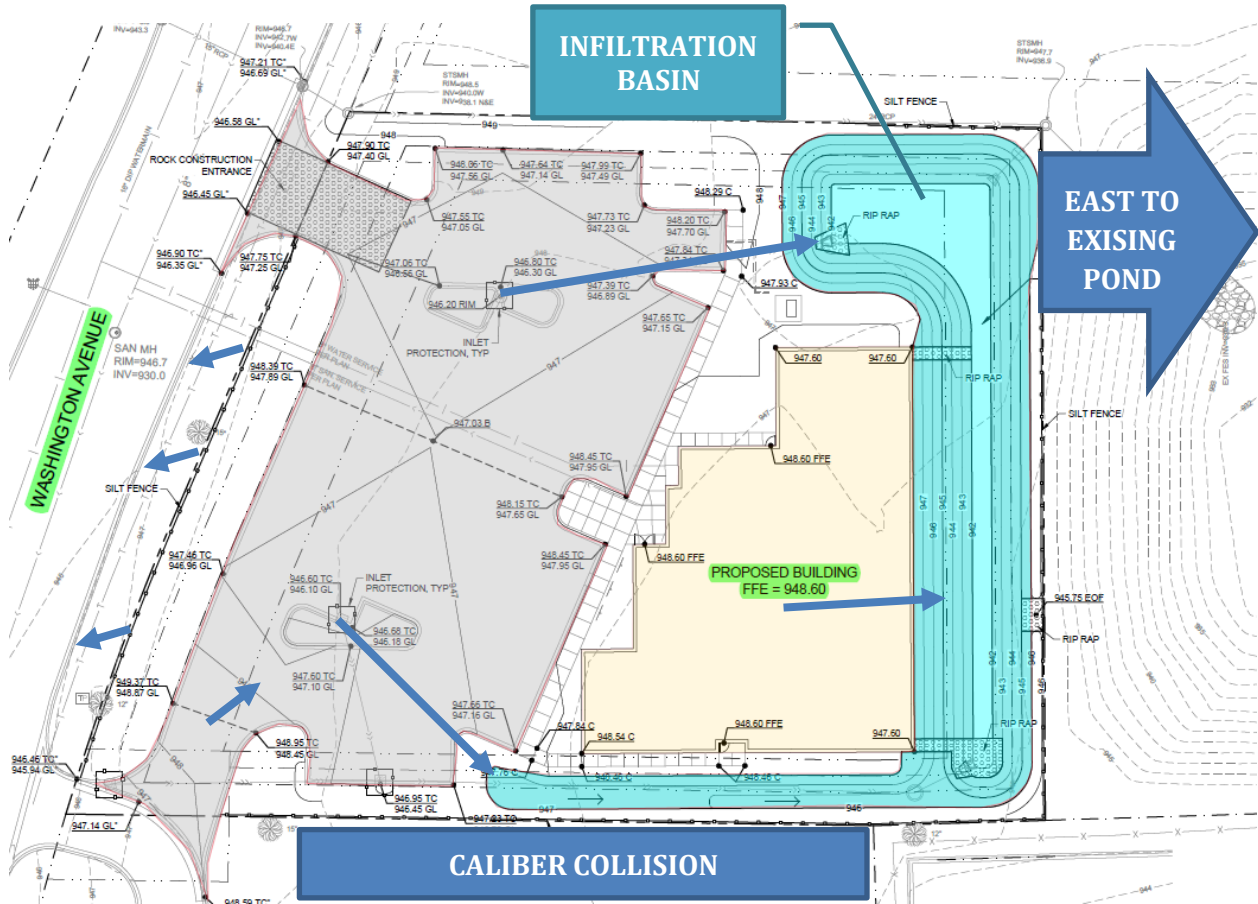


Figure 1: Site plan for Curio Dance Studio.

Rule 2.0—STORMWATER MANAGEMENT

Under 2.2(b) of the rule, the proposed project triggers the application of Rule 2.0 Stormwater Management because it creates more than 10,000 square feet of impervious area on the 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 proposed project (Curio Dance Studio and a 51-stall parking lot).*
- *Catch basin manhole sumps (pretreatment devices in two storm structures collecting stormwater runoff from the parking lot prior to discharging into the infiltration basin).*

Drainage from the site's three discharge points will be altered in the following ways:

- *East Discharge – Approximately 0.74 acres of the site drains to an existing stormwater basin to the east. Under proposed conditions this area will drain to an infiltration basin, which has an outlet structure connecting it to the existing stormwater basin (located on the Lakeview Medical Center property). The infiltration basin has been sized to address impacts to downstream stormwater management facilities that are currently subject to flooding for the existing 100-year, 24-hour design event. As a result, the infiltration basin retains all runoff for the 2-, and 10-year, 24-hour events and has limited discharge for the 100-year, 24-hour event.*
- *South Discharge – Approximately 0.44 acres of the site drains to the south onto the Caliber Collision property. This runoff drains to a parking lot storm sewer that is piped to the Washington Avenue/Trunk Highway 36 Pond via the Curve Crest Boulevard storm sewer system. Under proposed conditions, this runoff will be collected via a vegetated swale and routed to the infiltration basin.*
- *West Discharge – Approximately 0.10 acres of the site drains to the Washington Avenue storm sewer system, thence to the Washington Avenue/Trunk Highway 36 Pond. Proposed conditions will divert 0.05 acres of this area to the east where it will be treated in the proposed infiltration basin.*

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 is included in Table 1 thru 3.

Table 1 – Summary of Peak Discharge Rates to the East

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	0.14	0.00
10-year (4.17")	0.63	0.00
100-year (7.23")	2.30	0.64

Table 2 – Summary of Peak Discharge Rates to the South

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	0.08	0.00
10-year (4.17")	0.38	0.00
100-year (7.23")	1.37	0.00

Table 3 – Summary of Peak Discharge Rates to the West

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	0.05	0.03
10-year (4.17")	0.18	0.09
100-year (7.23")	0.57	0.28

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.

Rule Requirement Met

The applicant is proposing to utilize an infiltration basin along the east side of the property for volume control.

Soil borings in the location of the infiltration basin indicate that the soil is conducive to infiltration, with a design rate of 0.8 inches per hour, and that there is no sign of the groundwater table within 10 feet of the bottom of the basin. Due to the relatively shallow depth of the soil borings (10 feet) and the potential for shallow groundwater indicated by the Washington County Geologic Atlas, a groundwater mounding analysis was performed by EOR to ensure that the minimum distance from the seasonally high groundwater table or groundwater mound to the bottom of the infiltration basin is maintained. The results indicate that the top of the mound at 927.6 feet, or 14.3 ft below the bottom of the infiltration basin. This meets the requirement of 3 ft separation between the bottom of the basin and the water table.

A summary of the required stormwater volume shown in Table 4 demonstrates that the required retention volume is met. Due to sensitivity to flooding of downstream resources, further analysis for discharge volume at all discharge points from the site is discussed under Rule 7.3.5.

Table 4 - Discharge Volume

<i>Impervious Surface Area (acres)</i>	<i>Required Volume (acre-ft)</i>	<i>Provided Volume (acre-ft)</i>
0.73	0.067	0.26

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 Met with Conditions

The project includes an infiltration basin to meet the stormwater requirements (rate, volume and water quality). Therefore, pretreatment is required for runoff directed to this facility.

All runoff being routed to the infiltration basin will first be directed to two 4' storm structure sumps. The permit applicant submitted results from the Sizing Hydrodynamic Separators and Manholes (SHSAM) model demonstrating compliance with Rule 2.5.2. The pretreatment requirement is met as demonstrated by the results in Table 5.

Table 5 - Infiltration Basin Pretreatment

<i>Practice</i>	<i>TSS Inflow Loading (lb/yr)</i>	<i>TSS Outflow Loading (lb/yr)</i>	<i>TSS Reduction (%)</i>
CB-1	862	268	69.0
CB-2	927	312	66.4

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 Not Applicable to Permit.

Rule 2.0 Conditions:

- 2-1. The submitted civil plan set is unsigned and therefore not for construction. Provide BCWD with the final Civil Plan Set prior to start of construction. (BCWD 2.7.9)
- 2-2. Submit stormwater facility maintenance declaration in a form acceptable to the District for review and approval prior to recordation, and proof of recordation with Washington County. A template is available under the permit section of the District's website. (BCWD Rule 2.6).
- 2-3. Provide documentation as to the status of a National Pollutant Discharge Elimination System stormwater permit for the project from the Minnesota pollution Control Agency and provide the Storm Water Pollution Prevention Plan (SWPPP) as it becomes available (BCWD Rule 2.7.15).

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 there will be both movement of more than 50 cubic yards of earth and removal of vegetative cover on 5,000 square feet of land.

☒ Rule Requirements Met with Conditions

The erosion and sediment control plan includes:

- *Rock construction entrance*
- *Storm sewer inlet protection*
- *Temporary sedimentation basin*
- *Silt fence perimeter control*
- *Redundant silt fence perimeter control*
- *Rip rap at outlet structures*

To meet the criteria of BCWD Rule 3.2, the erosion and sediment control plan must include:

- a) *Provide the Landscaping Plan for the project and include specifications for topsoil, identify seed mix or sod for areas outside of the infiltration basin.*
- b) *Add the construction limits to the plan set.*
- c) *Add redundant silt fence along the east side of the site. The disturbed area is within 50 feet of a surface water.*
- d) *Change the rock construction entrance rock size to 1.5" to 3", as recommended in the Minnesota Stormwater Manual.*
- e) *Add a note to the plan concerning construction of the infiltration basin stating, "excavation must extend to SP soils identified in geotechnical report."*

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. Address erosion control comments a through e above in a revised plan set (BCWD 3.2.2).
- 3-2. 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).

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 pursuant to Minnesota Statutes section 103G.005, subdivision 15; a lake, as defined in these 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, streams or wetlands within the applicable buffer width of the site.*

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 Requirements Met

Because the BCWD Stormwater Management Rule is triggered, the applicant must show compliance with subsection 7.3.2, which requires all new and reconstructed buildings to 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.

Table 6 - Freeboard Requirement Summary

<i>Stormwater Facility</i>	<i>EOF</i>	<i>100-Year HWL</i>	<i>Allowable Basement Floor</i>	<i>Lowest Proposed Basement Floor</i>
Infiltration Basin	945.75	945.36	946.75	948.60

Under BCWD Rule 7.3.5, the District will issue a permit to alter surface flows under paragraph 7.2 only on a finding that the alteration will not have an unreasonable impact on an upstream or downstream landowner and will not adversely affect flood risk, basin or channel stability, groundwater hydrology, stream baseflow, water quality or aquatic or riparian habitat.

Flow from the site is currently divided to the east, south, and west. The proposed development will direct 96 percent of the drainage area to an infiltration basin that overflows to the east to an existing stormwater pond system (2 ponds) adjacent to the Lakeview Medical Center. Therefore, the flow of stormwater is altered at the property boundary.

The ponds adjacent to the medical center were designed and constructed when the 100-year event design standard was 5.9 inches of rainfall instead of 7.2 inches per the current standard (NOAA Atlas 14). The updated 7.2 inch 100-year event has been run using the BCWD H&H model, and the resulting high water level of both ponds is 943.5 feet. The pond water level at this elevation will result in overflow into Curve Crest Boulevard, and water up to the curb line of the medical center entrance road. All flow from these ponds, the Curve Crest Boulevard storm sewer, and street overland flow, is conveyed to the Washington Avenue Pond, aka Herberger's Pond, located at the intersection of Washington Avenue and Trunk Highway 36 frontage road, an area identified as having high risk of flooding for the 100-year event. Therefore, the areas downstream of the project are sensitive to additional discharge volume that will increase the risk of flooding. The applicant's design maintains the existing discharge volume up to the 100-year event for all discharge points from the site, thereby not adversely affecting flood risk or basin stability to upstream or downstream landowners (see Table 7 thru 9). Due to the sensitivity to flood elevations downstream, the BCWD engineer reviewed the impact of additional volume to the downstream pond system should the infiltration basin be full prior to a 100-year rainfall, such as can occur with back-to-back rainfall events. The result will raise the water level less than 0.1 feet on the downstream ponds, which will still contain water below the medical center driveway curb line and therefore not prevent ingress or egress of the medical facility.

Table 7 – Summary of Discharge Volume to the East

Event	Existing Volume (Cubic Feet)	Proposed Volume (Cubic Feet)
2-year (2.80")	512	0
10-year (4.17")	1,856	0
100-year (7.23")	6,598	6,333

Table 8 – Summary of Discharge Volume to the South

Event	Existing Volume (Cubic Feet)	Proposed Volume (Cubic Feet)
2-year (2.80")	305	0
10-year (4.17")	1,107	0
100-year (7.23")	3,936	0

Table 9 – Summary of Discharge Volume to the West

Event	Existing Volume (Cubic Feet)	Proposed Volume (Cubic Feet)
2-year (2.80")	111	91
10-year (4.17")	311	207
100-year (7.23")	989	560

Rule 8.0—FEES

Fees for this project as outlined below:

1. Stormwater management fee	\$3,000
2. Erosion control fee for grading	\$1,250
3. Shoreline and streambank alterations fee	\$NA
4. Stream and lake crossings fee	\$NA
5. Floodplain and drainage alterations fee	\$NA
▪ TOTAL FEES	\$4,250

Rule 9.0—FINANCIAL ASSURANCES

Financial assurances for this project are as outlined below:

1. Grading or Alteration (1.30 acres disturbed x \$2,000/acre)	\$2,600
2. Stormwater Management Facilities (125% of facility cost)	\$126,370
▪ TOTAL FINANCIAL ASSURANCES (\$5,000 Minimum Performance Financial Assurance)	\$128,970

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.

Rule Not Applicable to Permit. *There are no requested variances.*

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. Demonstrate that the plan has received preliminary plat approval (BCWD Rule 1.3a).
2. Address all stormwater management requirements (Conditions 2-1 to 2-3).
3. Address all erosion control requirements (Conditions 3-1 to 3-2).
4. Replenish the Permit fee deposit to \$4,250 (BCWD Rule 8.0). If the permit fee deposit is not replenished within 60 days of receiving notice that such deposit is due, the permit application or permit will be deemed abandoned and all prior approvals will be revoked and collection proceedings will begin on unpaid balances.
5. Provide the required financial assurances (BCWD Rule 9.0):
 - a. Total grading or alteration assurance 1.3 acres (\$2,600).
 - b. Stormwater management facilities assurance (\$126,370).

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 and the conveyance swale. 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.