STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

&

STORMWATER MANAGEMENT PLAN (SWMP)

FOR:

Glen Oaks Subdivision
Glen Circle
River Falls, WI
St. Croix County, WI

OWNER:

Terrain Inventory, LLC
241A Glen Circle
River Falls, WI 54022

SWPPP Construction Phase Contact(s):
[to be filled out by Owner(s) / Operator(s) once contractors are selected]

Prime Contractor:	Grading Contractor:	Restoration Contractor:

SWPPP Preparation Date: January 2026
AEC Project #25083

PREPARER:
Advanced Engineering Concepts
1360 International Drive
Eau Claire, WI 54701

***** THIS REPORT IS A PART OF THE CONSTRUCTION DOCUMENTS *****
AND SHALL BE IMPLEMENTED AND A COPY KEPT ON-SITE DURING ALL LAND-DISTURBING CONSTRUCTION ACTIVITIES.

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STORMWATER POLLUTION PREVENTION PLAN – Glen Oaks Subdivision

PROJECT SITE INFORMATION

Project/Site Name: Glen Oaks Subdivision

Project Street/Location: Glen Circle

City: River Falls State: WI ZIP Code: 54022

County or Similar Subdivision: St. Croix County

Latitude: 44.885076º N (decimal) Longitude: -92.748898º W (decimal)

Total Area of Construction Site: 33.56-acres

Total Estimated Disturbed Area: 3.26± acres

New Impervious Area as percentage of Disturbed Area
Before construction: 10 percent (0.34-ac. of 3.26-ac.)
After construction: 18 percent (0.60-ac. of 3.26-ac.)

Existing Soil Conditions
The soils are Pillot silt loam of HSG B, Burkhardt-Sattre complex of HSG A, Emmert loamy sand of HSG A, Rockton silt loam of HSG C.

Storm Sewer Receiving Waters
Storm water sheet flows off site. Stormwater eventually reaches St. Croix River. St. Croix River is approximately 3,042-feet southwest of the project boundary or proposed disturbance.

Description of Construction Activity
This project will disturb approximately 3.26-acres. Silt fence, erosion logs, erosion mat, a stone tracking pad and staged site grading will be used as the temporary means of erosion control during construction. Pavement, gravel surfacing, riprap, erosion mat, and seed & mulch will serve as permanent erosion control measures upon completion.

CONSTRUCTION PHASE PRACTICES
Temporary Construction, Soil Stabilization, and Erosion Control Practices

1. Silt Fence: Silt fence shall be installed prior to beginning any land disturbing activities. Additional silt fence may need to be installed where significant erosion potential exists.
2. Tracking Area for Vehicular Ingress/Egress (Stone Tracking Pad): Temporary gravel construction tracking areas shall be installed at the project entrance(s) as soon as practicable after the start of site disturbance. Any sediment reaching public or private roads shall be removed by street cleaning before the end of each workday.
3. Dust Control: Control Dust by applying water or other approved dust control measures to minimize dispersion of dust and dirt during construction operations and to confine dust and dirt within the immediate area of construction.
4. Permanent Vegetative Restoration: Upon completion of grading, disturbed areas not designated for installation of impervious surfaces or other infrastructure shall be seeded, fertilized and mulched over 4" of topsoil within seven (7) days of grading completion. Alternatively, sod may be installed if allowed by the design and proper maintenance care is provided.
5. Erosion Mat: Shall be installed on all disturbed slopes 3:1 or greater and other locations as indicated on the erosion control plan(s) or as directed by the engineer.
6. Temporary Grading Practices: During the process of stripping topsoil and vegetation, the site should be sub-cut lower than the existing ground and a temporary sediment trap should be excavated at the low point of the site. Install silt fence or a stone weeper berm along the temporary sediment trap if natural vegetation is not sufficient to protect the ground where the site would overflow to undisturbed ground.
7. Construction Site Measures: Contractor shall provide appropriate planning, prevention measures, and education to prevent pollution from construction site operations. Items to address include, but are not limited to:
    a. Material Handling and Waste Management
    b. Establish Proper Building Material Staging Areas
    c. Designated Washout Areas
    d. Establish Proper Equipment/Vehicle Fueling and Maintenance Practices
    e. Allowable Non-Stormwater Discharges and Control of Equipment/Vehicle Washing
    f. Spill Prevention and Control Plan

MAINTENANCE PLAN CONSTRUCTION PHASE:

1. General Maintenance: Owner shall check, or have contractor check, all erosion and sediment control devices for stability and operation following every rainfall event of 0.5" or greater in a 24-hour period, but in no case less than once every week. Any needed repairs will be made immediately to maintain all erosion control practices as designed. Repair or replace any damaged erosion and sediment control devices as per original design. Owner shall prepare or have contractor prepare a report documenting the findings on the conditions of the control devices and stabilized areas after every inspection. Use attached *Construction Site Inspection Report*, make additional copies as needed. **Weekly reports must be maintained throughout the project.**
2. Silt Fence: Sediment will be removed from behind all silt fences when it becomes approximately 0.5 feet deep above original installed grade at the fences. The silt fences will be repaired as necessary to maintain a barrier as per original design.
3. Inlet Protection: Sediment shall be removed from/around the perimeter of the inlet protection once it is determined that the erosion control device has become ineffective and clogged.
4. Erosion Logs: Sediment shall be removed from behind logs once height is ½ the height of the barrier. Remove once permanently vegetation is established.
5. Revegetation: Any damaged seeded areas shall be fertilized, reseeded, and mulched or re-sodded immediately and per specifications to maintain a vigorous, dense vegetative cover.
6. Stone Tracking Pad: Aggregate shall be replaced per the plan detail if the aggregate becomes mud-packed or dirt continues to get tracked onto the adjacent public roadway.
7. Contractor shall keep a copy of the erosion control plan and accompanying information at the construction site during the construction period. The plan shall be made available to authorized regulatory staff on demand.
8. Riprap: Shall be installed at discharge points from the sediment basins to the infiltration basins. Special care should be taken to ensure that proper gradation and placement of stone is utilized.
9. Temporary Sediment Trap, Sediment Basins & Catch Basins:
   a. Deposits of sediment shall be entirely removed when they reach a depth of one foot or when the site contractor is finished with the remaining construction.
   b. If the outlet becomes clogged it shall be cleaned to restore flow capacity.
   c. Any sediment removed from the depressions shall be placed in an upland area away from concentrated flows, seeded and mulched.
   d. Maintenance shall be completed as soon as possible with consideration given to site conditions.
   e. Sediment traps shall be removed and the location stabilized after the disturbed area draining to the sediment trap is stabilized and no longer susceptible to erosion.

CONSTRUCTION SCHEDULE:

Dates to be supplied by Contractor

Begin Date	*End Date*	
		1. Obtain plan approval.
		2. Hold pre-construction meeting.
		3. Install silt fence, sediment tracking construction exits, a sediment trap and any other BMP's according to erosion control plan.
		4. Strip topsoil and rough grade site. Place silt fence around any soil stockpiles whether temporary or permanent.
		5. The wet detention pond should be over excavated and used as a temporary sediment trap during construction, before runoff reaches existing storm sewer. Do not excavate the infiltration basin until the utility construction and pervious area restoration is complete.
		6. Fill and grade the site. Restore the finish graded area as soon as possible.
		7. Finish grade, re-spread topsoil and stabilize the site by installing seed, mulch and/or erosion mat on disturbed areas that will not be paved.
		8. Remove sediment buildup in the sediment basin and infiltration basin from construction site erosion.

STORMWATER MANAGEMENT PLAN – Glen Oaks Subdivision

INTRODUCTION:

This report addresses the hydrologic and hydraulic analysis performed for the Glen Oaks Subdivision at Glen Circle in the Town of Troy. The project will disturb approximately 3.26-acres and the proposed site is approximately 9.2 impervious. The site is classified as a new development site and is subject to the WDNR Chapter NR151.121 standards, the Town of Troy Municipal Code, and the St. Croix County Land Division Ordinance.

The objectives of this analysis are as follows:

1. Analyze the existing and proposed site conditions to determine the peak runoff rates generated from the 1, 2, 10, 25, and 100-year, 24-hour storm events.

2. Design storm water management facilities that will release runoff from the 1, 2, 10, 25, and 100-year, 24-hour developed storm events at or below the pre-developed rates.

3. Design water quality measures for removing at least 80% Total Suspended Solids (TSS) and from the new development site.

4. Design stormwater management facilities that will infiltrate 25 percent of the post-development runoff, using the 2-year 24-hour storm, with a maximum of 1% of the site used as an effective infiltration area.

EXISTING CONDITIONS:

The existing site is an old farm field. The site is bordered on the west by a single-family home and forest, on the south by single family homes and forest, on the east by a single family home and forest, and on the north by forest. The soils on the site are mainly Pillot silt loam of HSG B, Burkhardt-Sattre complex of HSG A, Emmert loamy sand of HSG A, Rockton silt loam of HSG C.

PROPOSED CONDITIONS:

This site will be developed with approximately 900 LF of new Town streets that will serve 9 single-family home lots. The site will be approximately 9% impervious with the following breakdown: 36,000-sf rooftop, 26,033-sf of Town streets, and 31,500-sf of paved driveways.

There will be one (1) sediment basin and one (1) infiltration basin that both will detain and treat stormwater runoff from both on-site and off-site areas. The sediment basin and infiltration basin will work in series to meet the WIDNR, Town of Troy, and St. Croix County stormwater requirements. It should be noted that the site flows to the west under existing and proposed conditions. The northern portion of the site flows to a different ultimate location than the southern portion of the site. Both areas and outlet locations were modeled and analyzed as part of this stormwater management plan. These areas are shown as 2R vs. 4R and also 6R vs. 8R. Analysis of these outlet locations are shown in tables within this report and the modeling outputs.

ANALYSIS:

Methodology:
The TR-20 method was applied using HydroCAD V.10.20-5c software for performing the pond design. WinSLAMM V. 10.5.0 was used to determine water quality treatment and infiltration performance.

Peak Discharge Performance Standard:
The overall post-construction peak discharge is reduced below the pre-development peak discharge for all 24-hour design storms including the 100-year storm event. The results of the HydroCAD analysis are shown in Tables 1-3. See the HydroCAD model and output data in the appendix.

Table 1. Pre. Vs. Post Discharge (South - 2R vs. 4R)

Storm Event	Pre-developed peak discharge (cfs) (2R)	Post-developed peak discharge (cfs) (4R)
1 yr-24hr	**1.54**	**0.79**
2 yr-24hr	**2.34**	**0.94**
10 yr-24hr	**6.09**	**1.53**
25 yr-24hr	**9.49**	**3.68**
100 yr-24hr	**16.59**	**10.73**

Table 2. Pre. Vs. Post Discharge (North - 6R vs. 8R)

Storm Event	Pre-developed peak discharge (cfs) (6R)	Post-developed peak discharge (cfs) (8R)
1 yr-24hr	**3.88**	**2.07**
2 yr-24hr	**6.11**	**3.10**
10 yr-24hr	**16.63**	**8.64**
25 yr-24hr	**26.31**	**14.01**
100 yr-24hr	**45.97**	**25.25**

Table 3. Peak rates, discharge volumes and high-water level (Infiltration Basin – 2P)

24-hr Storm Event	Post-Const. peak in-flow (cfs)	Infiltration Basin high water level	Post-const. peak discharge (cfs)	Post-const. runoff volume (ac-ft)
1-yr	5.44	830.76	**0.00**	0.00
2-yr	6.94	831.00	**0.00**	0.00
10-yr	13.26	832.02	**0.00**	0.00
25-yr	21.57	832.47	**0.89**	0.378
100-yr	56.78	833.18	**4.48**	1.807

Total Suspended Solids Performance Standards:
Water quality measures are required to remove at least 80% Total Suspended Solids (TSS) prior to infiltration and/or to a primary discharge point. The proposed system was modeled in WinSLAMM as a wet pond in series with the infiltration basin modeled as a bio-retention filter with infiltration into the native soil only. The average annual rainfall for Minneapolis, MN, 1959 was used with winter start and end being November 4th and March 13th. WinSLAMM model results are shown in **Table 3**. See the WinSLAMM model and output data in the appendix.

Table 3. WinSLAMM Modeling results (model 25083.mdb)

Drainage Area & WinSLAMM Device	TSS Reduction
LU#1 – 9.224 ac. - CP#1 - Biofilter #1	100.00 %
LU#2 – 9.877 ac. - CP#2 – Wet Pond #1	64.68%
LU#3 – 9.087 ac. - CP#3 – Other Device #1	100.00%
LU#4 – 13.034 ac. – Bypass	0.00%
Overall – 41.222 acres	80.81%

Infiltration Performance Standard

The disturbed area of the site is 9% impervious. The Town of Troy technical requirements require this site to infiltrate 25% of the annual post-development runoff of the 2-year 24-hour storm, with a maximum of 1% of the site required as an effective infiltration area. HydroCAD results are shown in **Table 5**.

Table 5. Post-developed infiltration performance (On-site areas only)

Storm Event	Total Post-developed peak runoff (cfs)	Total infiltrated runoff (cfs)	Percentage of total runoff infiltrated (%)
2 yr-24hr	**15.63**	**11.62**	**74.3%**

Volume based analysis: 2yr – Post – developed runoff = 15.63 cfs which converts to 0.00035 acre feet
Required infiltration volume = 0.0000875 acre feet
Infiltrated volume = 0.000266 acre feet > 0.0000875 acre feet therefore exceeding the requirement

*The total infiltration area is 26,019-sf. This is 1.7% of the total area. Above the maximum 1% required infiltration area.

Protective Areas Performance Standard:

There are no known protective areas that need to be addressed for this site. There are no wetlands, lakes, streams, or rivers within 300 feet of the project.

Fueling and Vehicle Maintenance Areas Performance Standard:

There are no fueling and/or vehicle maintenance areas planned for the proposed project.

CONCLUSION:

The proposed Glen Oaks Subdivision will disturb approximately 3.26-acres. Installation of the proposed sediment basin and infiltration basin, along with proper site grading according to the construction plans and this report, will allow this site to meet Town of Troy and Wisconsin NR151 post-construction performance standards for total suspended solids, peak discharge, and infiltration.

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