

**APPENDIX E : STORMWATER MANAGEMENT AND EROSION CONTROL PLAN**



910 West Wingra Drive  
Madison, WI 53715  
Phone: 608-251-4843  
Fax: 608-251-8655

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May 22, 2009

Sue Finstad, Village Clerk  
Village of Poynette  
P.O. Box 95  
106 S. Main St.  
Poynette, WI 53955

Re: Stormwater Management and Erosion Control Plan  
Village of Poynette-Dekorra New Fire Department Site

[www.strand.com](http://www.strand.com)

Dear Ms. Finstad:

This letter summarizes the Stormwater Management and Erosion Control Plan (SM & EC Plan) for the proposed improvements at the Village of Poynette new fire department site located at the intersection of Water Tower Road and North Street. The SM & EC Plan is intended to address Village of Poynette and the Wisconsin Department of Natural Resources (WDNR) Stormwater Management and Erosion Control Requirements. The purpose of this letter is to provide the Village with an overview of the SM & EC Plan. Enclosed is the supporting documentation and calculations to demonstrate compliance with local and state stormwater management and erosion control performance standards.

**Project Description**

Existing site topography is shown on the enclosed exhibit. The 5.47-acre project site currently is vacant and grass-covered with the exception of an existing cold storage building and a water tower north of the proposed building area. The topography of the project site is hilly with an elevation difference of approximately 30 feet, sloping to the southeast. Soil samples were taken at 11 locations on the site. The surface materials present at the boring locations consist of about 10 to 12 inches of dark brown sandy silt topsoil. The surface materials at the borings are generally underlain by natural reddish brown silty sand to sand and gravel to the termination depths of the borings at depths of about 5 to 25 feet. The hydrologic soil group (HSG) present is HSG B.

The proposed project consists of a single-story fire station, approximately 21,000 square feet in size. A parking lot and sidewalks will be placed around the building. New curb and gutter and storm sewer will be constructed to drain runoff from the parking lot. Sufficient stormwater detention volume will be provided to compensate for new impervious area that is being constructed. The proposed site grading plan divides the existing drainage basin into two on-site drainage basins to the north and south, with a third smaller off-site drainage subbasin to the east. The attached site plan indicates the approximate layout of the site in a fully built-out condition. The existing gravel Water



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Tower Road will be replaced with a paved street with curb and gutter from North Street to the existing access driveway to the Alliant Energy building to the west. This roadway reconstruction is exempt from the following design criteria.

### **Design Criteria**

Based on review of the Village of Poynette's Code (Chapter 23: Post-Construction Storm Water Management) and NR 151, the following stormwater design criteria must be addressed:

1. Postdeveloped proposed conditions peak runoff discharge for the 2-year, 10-year, and 100-year 24-hour storm event shall not exceed the predeveloped 2-year, 10-year, and 100-year 24-hour peak runoff discharge for the site.
2. For new development, by design, reduce to the maximum extent practicable, the total suspended solids load by 80 percent, based on the average annual rainfall, as compared to no runoff management controls.
3. For nonresidential development, design practices to infiltrate sufficient runoff volume so that postdevelopment infiltration volume shall be at least 60 percent of the predevelopment infiltration volume, based on average annual rainfall.
4. Treatment must be provided for oil and grease. The first one-half inch of runoff shall be treated using the best oil and grease removal technology available.

### **Proposed Stormwater Management Facilities**

To address this design criteria, a new wet stormwater basin is required, which and will be located on the south end of the site. Also, based on review of the geotechnical exploration report dated March 9, 2009, by MES, Inc, the infiltration rate of native on-site soils does not exempt the site from the infiltration requirements of NR 151.12(5)(c) under NR 151.12(5)(c)6a. Therefore, an infiltration basin is being placed at the north end of the site to meet infiltration requirements. A description of the proposed stormwater management facilities follows:

1. The wet basin will have approximately 0.42 acre-feet of detention volume for storm events up to and including the 100-year event. The release from the basin will be via a 12-inch-diameter outflow pipe that leads to an outlet control structure, which contains a 4-foot-long sharp-crested rectangular weir and a 3-inch-diameter orifice. The outflow eventually drains to a newly graded ditch to the east. The proposed wet stormwater basin will have a permanent wet pool with a surface area of approximately 0.16 acres and a minimum depth of 5 feet. The basin has been designed to conform to requirements outlined in the WDNR Wet Detention Basin Technical Standard 1001. Review of native soil conditions at the pond site indicates that a 2-foot thick clay liner will be required.



- The infiltration basin will have approximately 0.08 acre-feet of detention volume for storm events up to and including the 10-year event. The excess runoff that does not infiltrate into the basin will be directed via a 100-year storm event overflow spillway draining into a ditch directing flow off-site or into a vertical standpipe, which is connected to the new storm sewer. Stormwater that is infiltrated will drain through a 0.50-foot perforated underdrain, which leads into the 12-inch outflow pipe connected to the proposed storm sewer that drains the parking lot.

### Peak Flow Reduction

We completed a hydrologic analysis of the site with both the wet stormwater basin and infiltration basin in place to evaluate compliance with peak flow reduction design criteria. The computer program HydroCAD was used to estimate peak discharges for the 2-, 10-, and 100-year storm frequencies. The existing drainage area of 4.75 acres was designated a runoff curve number (RCN) of 70 for HSG B as stated in 23.07(3)(c)3 of the Village of Poynette ordinances. The weighted RCNs for basins 1, 2, and 3 are 70, 83, and 70, respectively. A breakdown of the proposed land use and RCN of each basin are included in the enclosed calculations. The time of concentration ( $t_c$ ) was estimated using the TR-55 program. The  $t_c$  flow path and for each basin is shown on the enclosed figure with the basin delineations.

Estimated peak discharges and detention basin routing results for existing and proposed conditions are summarized in Table 1. Results of this analysis indicate that with the proposed detention facilities in place, Village of Poynette and WDNR stormwater management requirements will be met.

<b>Peak Discharge Summary</b> (cfs)			
<b>Storm Frequency</b>	<b>Existing</b>	<b>Postdeveloped Without Detention</b>	<b>Postdeveloped With Detention</b>
2-Year	0.47	0.77	0.25
10-Year	1.11	1.51	0.85
100-Year	2.59	3.07	2.20

Existing and Postdeveloped Peak Discharges, HydroCAD ver. 8.5

**Table 1 Peak Discharge Summary**

### TSS Reduction

The trapping efficiency of the proposed detention basin was estimated using WinSLAMM version 9.3.2.



Results of this analysis, summarized in Table 2, indicate the cumulative TSS removal efficiency for the site will be approximately 81 percent. This estimated removal efficiency exceeds the required TSS removal efficiency of 80 percent.

Basin	Proposed Conditions TSS Loading Without Controls (lbs)	Proposed Conditions TSS Loading With Controls (lbs)	TSS Removal (percent)
1	79	0	100
2	747	9	87
3	81	81	0
<b>Total</b>	<b>907</b>	<b>177</b>	<b>81</b>

Required TSS Removal = 80 percent  
Model Used: WinSLAMM, ver. 9.2.2

**Table 2 TSS Removal Summary**

### Infiltration

Review of the geotechnical exploration report indicates certain areas of the site may be conducive to infiltration. Infiltration on the Poynette-Dekorrra fire department site is desirable to limit postconstruction increases in downstream runoff volumes, provide groundwater recharge, and comply with the Village of Poynette and WDNR infiltration requirements.

Existing conditions WinSLAMM modeling indicates the existing stay-on depth or predevelopment infiltration volume for the 4.75-acre project site is 28.55 inches. To meet the postdevelopment infiltration volume requirement, 60 percent of this volume must be infiltrated. This equates to a target stay-on depth of 17.13 inches.

Proposed conditions WinSLAMM models were created for three distinct subbasins. The 2.02-acre north subbasin, which is primarily comprised of open green space from the north half of the site, will drain to a proposed infiltration basin. A 2.11-acre subbasin, which is mostly the newly developed area consisting of parking lots and some green space, will drain to a proposed wet detention basin on the south end of the site. The remaining 0.62 acres of the site will drain off-site. Results of the proposed WinSLAMM modeling indicated that the stay-on depth for the north infiltration basin, the south wet detention pond basin, and the offsite area is 28.81, 16.18, and 24.25 inches, respectively. The weighted proposed stay-on depth for the 4.75-acre site is 22.60 inches. This exceeds the required target stay-on depth of 17.13 inches and thereby meets Village of Poynette and WDNR infiltration requirements.



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### **Fueling and Maintenance Areas**

No fueling and maintenance areas are to be located on the subject site. Storage of petroleum-based materials will be confined indoors or under canopies to limit exposure to stormwater runoff.

### **Construction Site Erosion Control**

It is anticipated that construction will start in September 2009 and will end by June 2010. The Erosion Control Plan and Best Management Practices (BMPs) details for the site are shown on the enclosed construction drawings. The Erosion Control Plan indicates implementation of the following temporary erosion control measures: temporary erosion control mat, silt fence, silt screening, riprap, soil stabilizer, inlet protection, and a stone tracking pad.

The contractor, as designated operator of activities at the construction site, will be responsible for compliance with all Notice of Intent (NOI) permit conditions. This includes but is not limited to the following:

1. Implementing erosion and sedimentation practices necessary to meet federal, state, and local performance standards.
2. Obtaining required approvals from the owner and regulatory agencies for any modifications to the erosion and sediment control plan necessitated by site conditions or operations.
3. Performing all inspection, maintenance, and record-keeping activities required by the permit. This shall include inspecting erosion and sediment control facilities weekly and within 24 hours after a precipitation event of 0.5 inches or greater. The contractor shall maintain weekly written reports of all inspections as required by the permit. The contractor shall make any needed repairs within 24 hours of the inspection.
4. Paying any fines or other fees resulting from failure to comply with permit requirements.
5. Submitting a Notice of Termination (NOT) to the WDNR at the end of the project.

The erosion control measures indicated on the plans are the minimum requirements. Additional measures may be required as directed by engineer or governing agency. General requirements for the contractor to follow pertaining to implementation of the erosion control plan are as follows:



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1. Soil disturbance shall be conducted in a manner to minimize erosion. Soil stabilization measures shall consider the time of year, site conditions, and use of temporary or permanent measures.
2. Soil erosion and sediment control features shall be constructed prior to the commencement of hydrologic disturbance of upland areas.
3. Disturbed areas shall be stabilized with temporary or permanent measures within 14 calendar days of the end of active hydrologic disturbance or redistribution.
4. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization is achieved or after the temporary measures are no longer needed.

We have prepared a construction site erosion control plan that is in conformance with NR 151 construction site erosion control performance standards. The estimated major sequence of land disturbing activities follows:

1. Temporary silt fence is erected at construction limits.
2. Temporary erosion control is installed.
3. Proposed wet detention pond is constructed.
4. Approval is received for the disposal site of the excess excavated material and the borrow site for the hauled-in structural fill.
5. General earthwork and grading of the site takes place.
6. Underground utility construction takes place.
7. Building and structure excavation takes place.
8. Footing and foundation wall construction occurs.
9. Building is constructed.
10. Site work including roadways, sidewalks, and landscaping takes place.
11. Restoration of the site is completed.
12. Temporary erosion control is removed after restoration is established.

Please call if you have any questions.

Sincerely,

STRAND ASSOCIATES, INC.

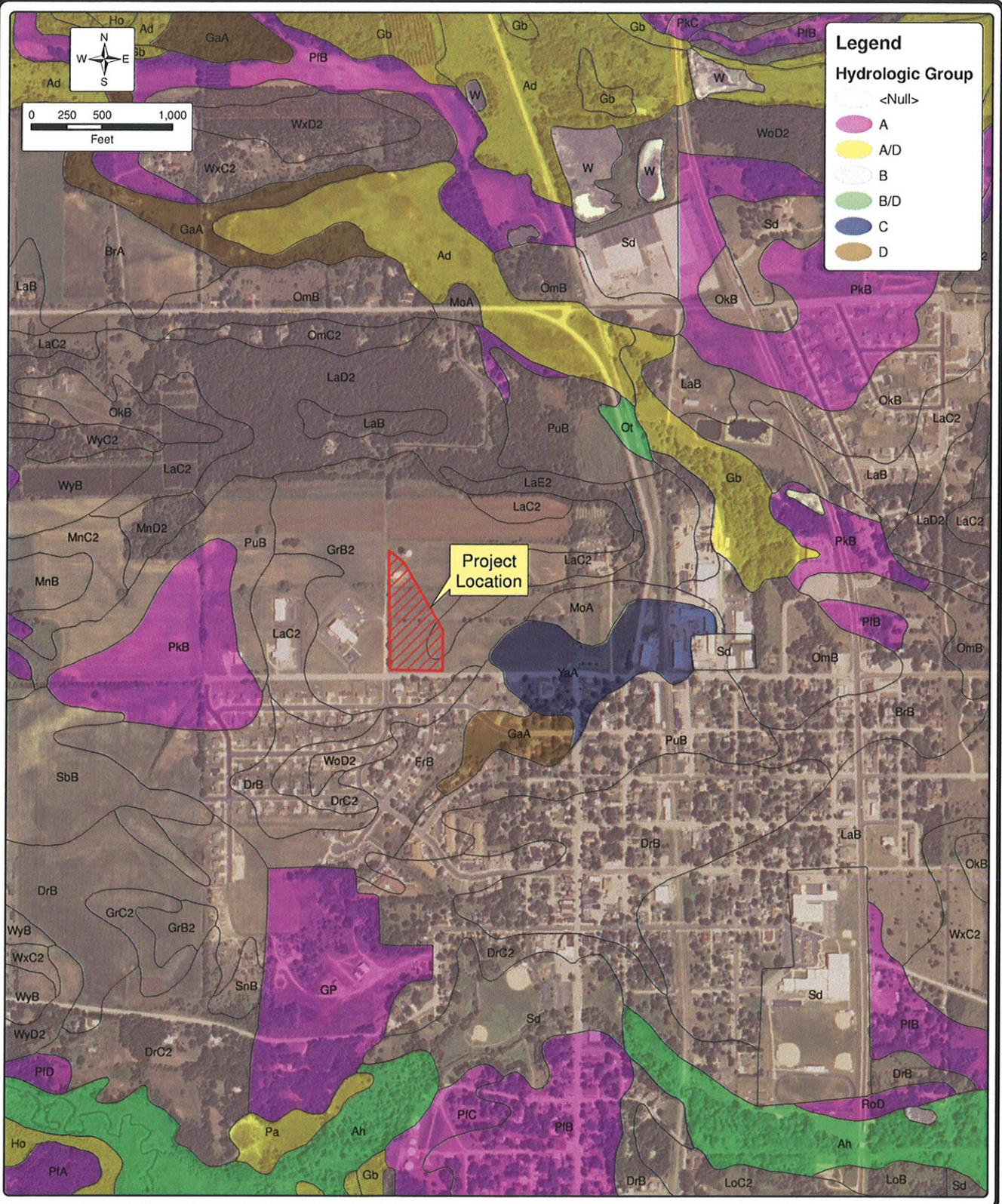
A handwritten signature in black ink that reads 'Justin J. Gutoski'.

Justin J. Gutoski

Enclosures: Figures  
Data Calculations  
Infiltration Analysis  
Soil Borings



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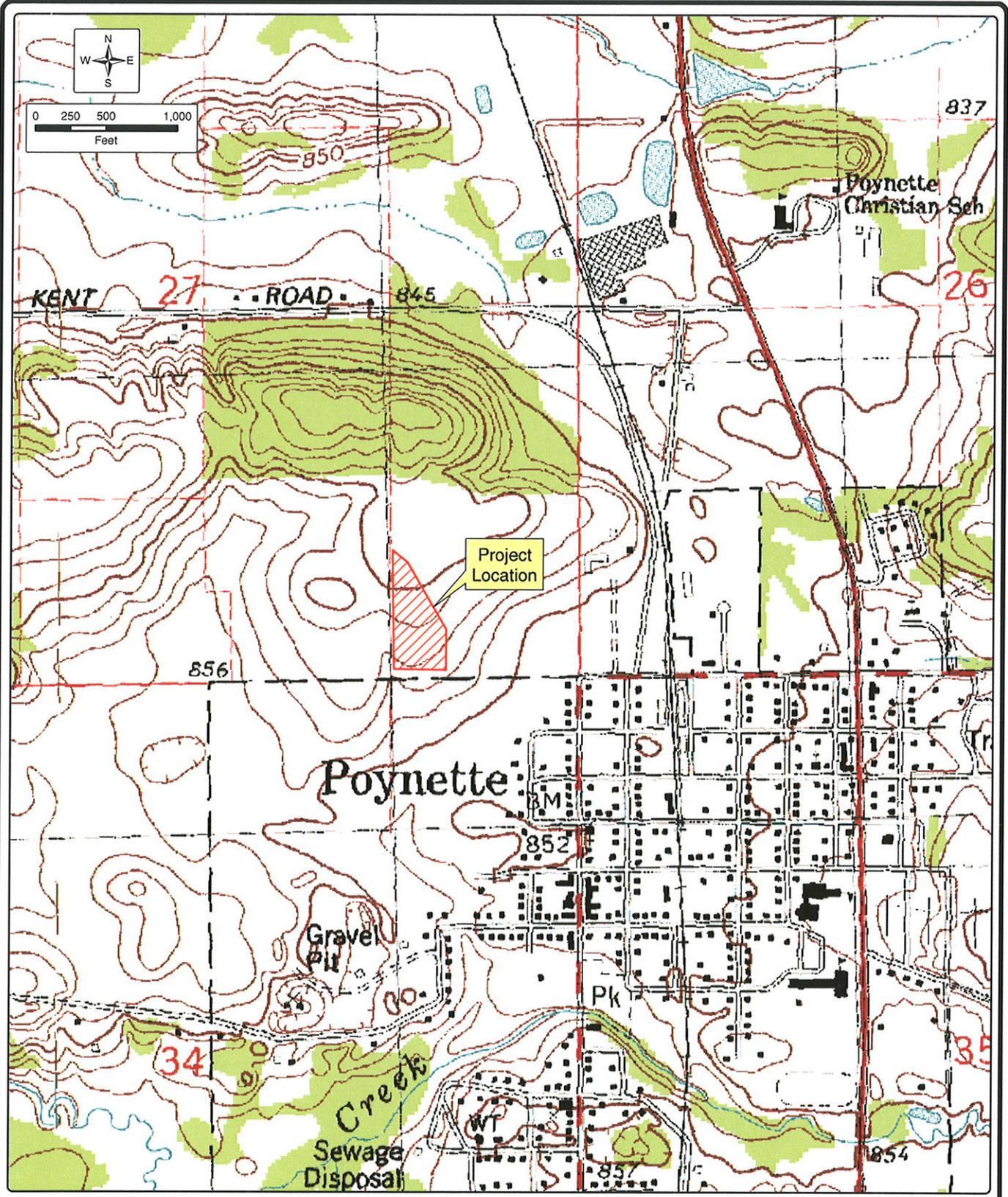


### HYDROLOGIC SOILS MAP

POYNETTE-DEKORRA FIRE STATION  
VILLAGE OF POYNETTE  
COLUMBIA COUNTY, WISCONSIN



FIGURE 2  
1117.003



**PROJECT LOCATION MAP**

**POYNETTE-DEKORRA FIRE STATION  
VILLAGE OF POYNETTE  
COLUMBIA COUNTY, WISCONSIN**



**FIGURE 1  
1117.003**



## INFILTRATION ANALYSIS

### A. General

Review of the Geotechnical Exploration report dated March 9, 2009 by MES, Inc. indicates that certain areas of the site may be conducive to infiltration. Infiltration on the Poynette-Dekorrra fire department site is desirable to limit postconstruction increases in downstream runoff volumes, provide groundwater recharge, and comply with Village of Poynette and DNR runoff rules (NR 151). This section identifies design features to be incorporated to enhance infiltration opportunities and quantifies potential infiltration volumes for compliance with NR 151 rules.

### B. Site Evaluation For Stormwater Infiltration

The new Poynette-Dekorrra fire department site was investigated for infiltration potential in general conformance with the DNR *Conservation Practice Standard Site Evaluation for Stormwater Infiltration* (1002). Primary conclusions of the evaluation are as follows:

1. Areas most conducive for stormwater infiltration appeared to be immediately north of the proposed building. Review of soil borings taken at this location indicated that a native loamy sand is approximately located from elevation 869 to 892. A native silty clay overlays the loamy sand.

### C. Proposed Infiltration Features

Village of Poynette and NR 151 rules for nonresidential development require infiltration to meet one of the following requirements:

1. The postdevelopment infiltration volume shall be at least 60 percent of the predevelopment infiltration volume, based on average annual rainfall.
2. Infiltrate 10% of the runoff from the 2-year, 24-hour design storm with a type II distribution.

Existing conditions WinSLAMM modeling indicates that the existing stay-on depth or predevelopment infiltration volume for the 4.83 acre project site is 28.55 inches. In order to meet the postdevelopment infiltration volume requirement, 60 percent of this volume must be infiltrated. This equates to a target stay-on depth of 17.13 inches.

Proposed conditions WinSLAMM models were created for three distinct subbasins. The 1.99 acre north subbasin, which is primarily comprised of open green space from the north half of the site, will drain to a proposed infiltration basin. A 2.08 acre subbasin, which is mostly the newly developed area consisting of parking lots and some green space will drain to a proposed wet detention basin on the south end of the site. The remaining 0.76 acres of the site will drain offsite. Results of the proposed WinSLAMM modeling indicated that the stay-on depth for the north infiltration basin, the south wet detention pond

# Stormwater Infiltration Analysis

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basin, and the offsite area is 28.81, 16.03, and 25.33 inches respectively. The weighted proposed stay-on depth for the 4.83 acre site is 22.76 inches. This exceeds the required target stay-on depth of 17.13 inches and thereby meets the Village of Poynette and WDNR infiltration requirements. Supporting calculations and documentation is attached for reference.

PROJECT	winsLamm Infiltration Analysis (updated)	BY	JJG	DATE	6-15-09	JOB NO.	1-117.003
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Existing Conditions

Total Area = 4.83 acres

Source Area = Dense Grass = 4.83

SLAMM results indicate stay-on depth = 28.55"

Commercial / Industrial target stay-on depth  
= 60% of exist. stay-on depth

$$= 0.6 \times 28.55 = 17.13"$$

Proposed Conditions

Trib. to infil. basin: Rooftop = 0.47 ac.  
0.04 ac.  
Grassed = 1.48 ac.

$\epsilon = 1.99 \text{ ac}$

SLAMM indicates stay-on depth of 28.81"

Trib. to det. basin: Parking / Driveway = 1.14 ac.  
Sidewalk = 0.11 ac.  
Grassed = 0.83 ac.

$\epsilon = 2.08 \text{ ac}$

SLAMM indicates stay-on depth of 16.03"

Trib. to off-site area: Parking / Driveway = 0.12 ac.  
Sidewalk = 0.03 ac.  
Grassed = 0.61 ac.

$\epsilon = 0.76 \text{ ac}$

SLAMM indicates stay-on depth of 25.33"

PROJECT	BY	DATE	JOB NO.
---------	----	------	---------

Cumulative stay-on depth for proposed cond.

$$= \frac{(28.81" \times 1.99 \text{ ac.}) + (16.03" \times 2.08 \text{ ac.}) + (25.33" \times 0.76 \text{ ac.})}{(1.99 + 2.08 + 0.76)} = 22.76"$$

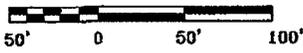
22.76" > 17.13", ∴ infil. req. is met

**SOIL BORINGS**

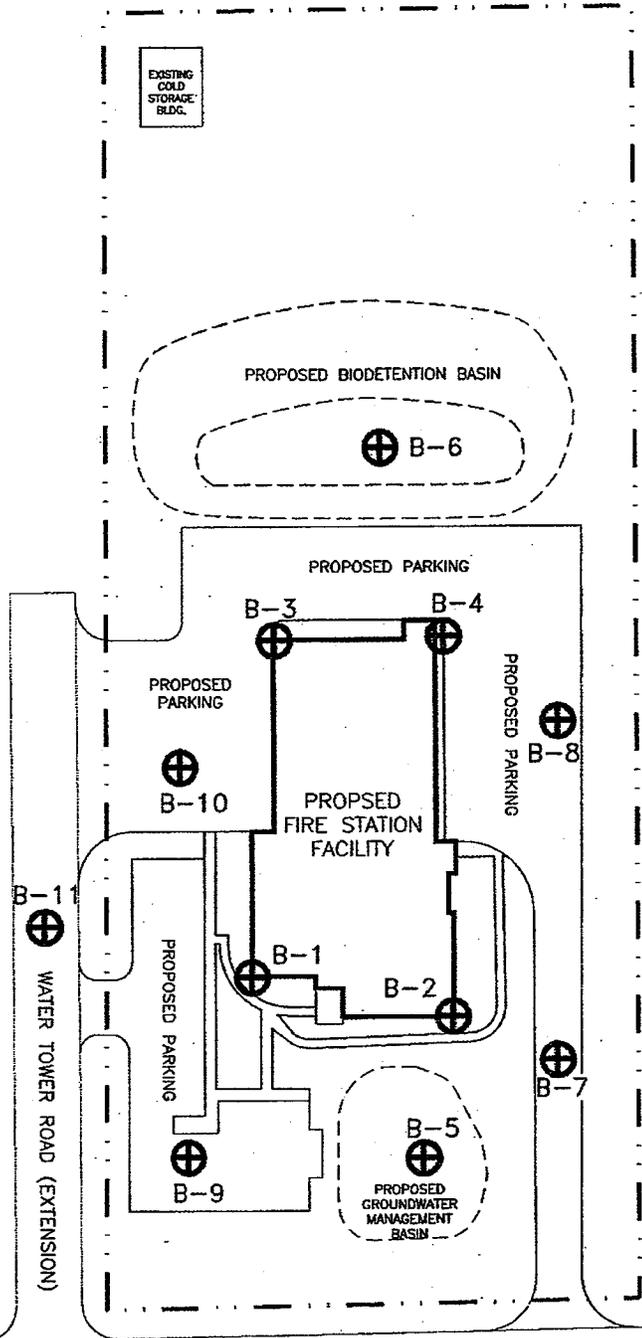
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SCALE: 1" = 100'



EXISTING  
COLD  
STORAGE  
BLDG.



NORTH STREET



SOIL BORING LOCATION DIAGRAMS

POYNETTE - DEKORRA FIRE DISTRICT  
NORTH STREET  
POYNETTE, WISCONSIN

Scale: 1" = 100'

Project No.:

Date: 2/09

Drawn By: KP



midwest engineering services, inc.

# SOIL BORING LOG: B-5

Project: Poynette-Dekorra Fire Station

Project No.: 12-93004

Drill Date: February 26, 2009

Location: Poynette, Wisconsin

Drilled by: Gary Wellner

Logged by: Clint Malinski

Depth Below Surface/Elev. (ft)	VISUAL SOIL CLASSIFICATION		Sample No.	N (bpf)	Qu (tsf)	Qp (tsf)	MC (%)	Remarks
	Ground Surface Elevation: 874.8							
1	873.8	10" 7.5 yr 2.5/3 Very Dark Brown Silty CLAY, (TOPSOIL), Damp	1-AS	--	--	--	14	
2	872.8	5 yr 5/4 Reddish Brown Sandy LOAM, Damp						
3	871.8		2-SS	9	--	--	4	
4	870.8							
5	869.8	5 yr 6/3 Light Reddish Brown Loamy SAND, Damp	3-SS	13	--	--	6	
6	868.8							
7	867.8	5 yr 6/3 Light Reddish Brown Loamy SAND, Trace Gravel, Damp	4-SS	23	--	--	6	
8	866.8							
9	865.8		5-SS	24			6	
10	864.8							
11	863.8		6-SS	27	--	--	6	
12	862.8							
13	861.8		7-SS	17	--	--	6	
14	860.8							
15	859.8	7.5 yr 7/4 Pink Loamy SAND, Trace Gravel and Cobbles, Damp	8-SS	37			4	
16	858.8							
17	857.8		9-SS	79/7"			3	
18	856.8							
19	855.8		10-SS	53	--	--	2	
20	854.8							
21	853.8		11-SS	61			2	
22	852.8							
23	851.8							
24	850.8		12-SS	79/8"	--	--	3	

End of Boring: 24.5' Auger refusal due to possible Cobbles or Boulders

Notes:	
<b>Water Level / Caving Observations:</b> Water Level During Drilling: Dry <span style="float: right;">V</span> Water Level Upon Completion: Dry <span style="float: right;">V</span> Caved at Upon Completion: 12 ± ft (El. 862.8±) Delay Time: 24 hr(s) Water Level Delayed: Dry <span style="float: right;">V</span> Caved at Delayed: N/A	<b>Additional Comments:</b>  

Lines of demarcation represent approximate boundaries between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes, such as fill-to-natural soil zone transitions.



midwest engineering services, inc.

# SOIL BORING LOG: B-6

Project: Poynette-Dekorra Fire Station

Project No.: 12-93004

Drill Date: February 26, 2009

Location: Poynette, Wisconsin

Drilled by: Gary Wellner

Logged by: Clint Malinski

Depth Below Surface/Elev. (ft)	VISUAL SOIL CLASSIFICATION Ground Surface Elevation: 893.9	Sample No.	N (bpf)	Qu (tsf)	Qp (tsf)	MC (%)	Remarks
1 - 892.9	12" 7.5 yr 2.5/3 Very Dark Brown Silty CLAY, (TOPSOIL), Damp	1-AS	-	-	-	20	
2 - 891.9	5 yr 6/3 Light Reddish Brown Loamy SAND, Trace Gravel, Damp	2-SS	28	-	-	4	
3 - 890.9		3-SS	38	-	-	5	
4 - 889.9		4-SS	38	-	-	5	
5 - 888.9		5-SS	47	-	-	5	
6 - 887.9	5 yr 6/3 Light Reddish Brown Loamy SAND, Trace Gravel and Cobbles, Damp	6-SS	41	-	-	6	
7 - 886.9		7-SS	44	-	-	4	
8 - 885.9		8-SS	49	-	-	4	
9 - 884.9		9-SS	46	-	-	4	
10 - 883.9		10-SS	73/8"	-	-	3	
11 - 882.9		11-SS	51	-	-	6	
12 - 881.9							
13 - 880.9		12-SS	48	-	-	6	
14 - 879.9							
15 - 878.9							
16 - 877.9							
17 - 876.9							
18 - 875.9							
19 - 874.9							
20 - 873.9							
21 - 872.9							
22 - 871.9							
23 - 870.9							
24 - 869.9							
25 - 868.9							

End of Boring: 25'

Notes:

Water Level / Caving Observations:

Water Level During Drilling: Dry

Water Level Upon Completion: Dry

Caved at Upon Completion: 10 ± ft (El. 883.9±)

Delay Time: 24 hr(s)

Water Level Delayed: Dry

Caved at Delayed: N/A

Additional Comments:

Lines of demarcation represent approximate boundaries between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes, such as fill-to-natural soil zone transitions.

**APPENDIX F : PUBLIC NOTICE**

**Federal Emergency Management Agency  
PUBLIC NOTICE**

**Notice of Availability of the Draft Environmental Assessment  
For Poynette-Dekorra Fire Protection District EOC/Fire/EMS Facility**

**Columbia County, Wisconsin**

Environmental Assessment (EA) for the Poynette-Dekorra Fire Protection District EOC/Fire/EMS Facility, Columbia County, Wisconsin.

Interested persons are hereby notified that the Federal Emergency Management Agency (FEMA)/Department of Homeland Security (DHS) is proposing to assist in the funding of an Emergency Operations Center (EOC)/Fire/Emergency Medical Service (EMS) facility at the intersection of North Street and Water Tower Road in the Village of Poynette. The EOC/Fire/EMS facility will meet the identified needs of the Poynette-Dekorra Fire Protection District. In accordance with the National Environmental Policy Act (NEPA) of 1969 and the implementing regulations of FEMA, an EA is being prepared to assess the potential impacts of the proposed alternatives on the human and natural environments. This public notice invites public comments on the proposed project in accordance with Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands. In addition, this notice and the draft EA provides information to the public on potential impacts to historic and cultural resources from the proposed undertaking, as outlined in the National Historic Preservation Act (NHPA) of 1966.

The draft EA is available for review between September 1, 2009 and October 1, 2009 at the Poynette Area Public Library, 118 N. Main Street, Poynette, WI 53955 and the Poynette Village Hall, 106 S. Main Street, Poynette, WI 53955 during normal hours of operation. The draft EA is also available for review online at the FEMA Web site <http://www.fema.gov/plan/ehp/envdocuments/ea-region5.shtm>.

Written comments regarding this environmental action should be received no later than 5 p.m. on October 1, 2009, by Amanda Ratliff, Regional Environmental Officer, FEMA, 536 South Clark Street, 6th Floor, Chicago, IL 60605-1521, or at [Amanda.Ratliff@dhs.gov](mailto:Amanda.Ratliff@dhs.gov). If no substantive comments are received by this deadline, the draft EA and associated Finding of No Significant Impact (FONSI) will become final and be published by FEMA. Substantive comments will be addressed as appropriate in the final documents.

The public may request a copy of the final environmental documents from Amanda Ratliff at the address listed above.