State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Annual Report under MS4 General Permit No. WI-S050075-2

Form 3400-195 (R 12/15)

Due by March 31, 2016

Notice: Pursuant to s. NR 216.07(8), Wis. Adm. Code, an owner or operator of a Municipal Separate Storm Sewer System (MS4) is required to submit an annual report to the Department of Natural Resources (DNR) by March 31 of each year to report on activities for the previous calendar year. This form is being provided by the DNR for the user's convenience. Personal information collected will be used for administrative purposes and may be provided to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

This form is for reporting on activities undertaken in calendar year 2015.

Instructions: Complete each section of the form that follows. If additional space is needed to respond to a question, attach additional pages. Provide descriptions that explain the program actions taken to comply with the general permit. Complete and submit the annual report by March 31, 2016, to the appropriate address indicated on the last page of this form.

SECTION I. Municipal Information

Name of Municipality		Facility ID No. (FIN)	
City of Pewaukee		30726	
Mailing Address	**City**	**State**	**ZIP Code**
W240 N3065 Pewaukee Road	Pewaukee	WI	53072
County(s) in which Municipality is located	**Municipality Type: (select one)**		
Waukesha	○ County ◉ City ○ Village ○ Town ○ Other (specify)		

SECTION II. Municipal Contact Information

Name of Municipal Contact Person		Title	
Richard J. Wirtz, P.E., CFM		Civil Engineer	
Mailing Address (if different from above)	**City**	**State**	**ZIP Code**
		WI	
Email	**Phone Number (include area code)**	**Fax Number (include area code)**	
wirtz@pewaukee.wi.us	(262) 691-0804	(262) 691-5729	

SECTION III. Certification

I hereby certify that I am an authorized representative of the municipality covered under MS4 General Permit No. WI-S050075-2 for which this annual report is being submitted and that the information contained in this document and all attachments were gathered and prepared under my direction or supervision. Based on my inquiry of the person or persons under my direction or supervision involved in the preparation of this document, to the best of my knowledge, the information is true, accurate, and complete. I further certify that the municipality's governing body or delegated representatives have reviewed or been apprised of the contents of this annual report. I understand that Wisconsin law provides severe penalties for submitting false information.

Authorized Representative Printed Name	Authorized Representative Title	
Jeffrey Weigel, P.E.	Director of Public Works/City Engineer	
Signature of Authorized Representative	**Date**	
	3-31-16	
Email	**Phone Number (include area code)**	**Fax Number (include area code)**
weigel@pewaukee.wi.us	(262) 691-0804	(262) 691-5729

SECTION IV. General Information

a. Describe what efforts the municipality has undertaken to invite the municipal governing body, interest groups, and the general public to review and comment on the annual report.

The annual report is typically presented to the Public Works Committee each May for discussion and comment prior to posting on the City website. This past year the annual report was not take to the Committee prior to posting.

City staff are available for questions regarding the annual report via the City's website, telephone, electronic mail, meetings with elected officials and general walk-in questions. Few questions are received by City staff regarding the details of the annual report. The 2015 Annual Report will be posted on the City's website.

b. Describe how elected and municipal officials and appropriate staff have been kept apprised of the municipal storm water discharge permit and its requirements.

City staff work with our elected officials regarding the City's municipal storm water discharge permit through discussions regarding the function and need of the City's storm water utility; budget hearings; discussions regarding potential changes to the City's municipal discharge permit; changes to the City's storm water management ordinance; discussions related to components included in capital improvement projects that impact storm water discharges; and discussions regarding enforcement of City storm water management and erosion control ordinances.

SECTION IV. General Information (continued)

c. Has the municipality prepared its own municipal-wide storm water management plan? (●) Yes ( ) No

If yes, title and date of storm water management plan:

City of Pewaukee Storm Water Management Plan, June 1999
City of Pewaukee Storm Water Management Plan update, June 2007

d. Has the municipality entered into a written agreement with another municipality or a contract with another entity to perform one or more of the conditions as provided under section 2.10 of the general permit? (●) Yes ( ) No

If yes, describe these cooperative efforts:

Waukesha County and the Upper Fox River Partnership Group for the information and education components of the City's MS4 permit.

e. Does the municipality have an internet website? (●) Yes ( ) No

If yes, provide web address:
www.cityofpewaukee.us

If the municipality has an internet website, is there current information about or links provided to the MS4 general permit and/or the municipality's storm water management program? (●) Yes ( ) No

If yes, provide web address:
The link to the City's storm water page is http://www.cityofpewaukee.us/index.aspx?NID=218. The data posted on the storm water page should be updated to be more informative. The City's annual reports are posted on this page.

SECTION V. Permit Conditions

a. Minimum Control Measures: For each of the permit conditions listed below, provide a description of the implementation of each program element, the status of meeting measurable goals, and compliance with permit schedule in section 2.11 of the MS4 general permit. Provide an evaluation of program compliance with the general permit, the appropriateness of identified best management practices, and progress towards achieving identified measurable goals. Be specific in describing the actions that have been taken during the reporting year to implement each permit condition and whether measurable goals have been met, including any data collected to document a measurable goal. Also, explain the reasons for any variations from the compliance schedule in the MS4 general permit.

- Public Education and Outreach

  See attached Exhibit A for a summary of the Waukesha County Contracted Program.

- Public Involvement and Participation

  See attached Exhibit A for a summary of the Waukesha County Contracted Program.

  The bulk of the City Staff's time in regards to public involvement and participation continues to be focused on developers, contractors and developers' engineers. Continued development within the City has required City Staff to concentrate primarily upon post construction site storm water management and construction site erosion control, both from a plan review perspective as well as during construction.

  Typical involvement by staff with the general public comes in the form of concerns regarding illicit discharges, construction site discharges or concerns regarding the quantity/quality of runoff.

- Illicit Discharge Detection and Elimination

  City Staff did not respond to any illicit discharges or spills in 2015. City staff were made aware of a self reported spill of 246 gallons of 10-34-0 liquid fertilizer on the Trugreen site at N8 W22550 Johnson Drive. The cause of the spill was reported to be a loose strainer cup on a parked truck. The product leaked over night and affected a 400 square foot area of gravel parking lot. The report was forwarded by a representative of the WDNR to Waukesha County and subsequently to the City's Fire Chief.

- Construction Site Pollutant Control

  The Building Inspection Department performed 724 erosion control/bond inspections in 2015. The Public Works Department and its consultants conducted 508 erosion control inspections of private development construction sites and 104 inspections of City construction sites. A total of 10 Notices of Noncompliance and 2 Notices of

SECTION V. Permit Conditions (continued)

Violation were issued in 2015. There was one Recommendation for Fines as a result of the erosion control violations resulting in approximately $500.00 in recommended fines.

The City's construction site pollution control program was audited by the WDNR in June of 2015.

- Post-Construction Storm Water Management

  The City received one post construction site storm water inspection report for private facilities in 2015. The city conducted an inspection of both City owned ponds in 2015.

- Pollution Prevention

  The City performed catch basin/storm inlet inspection and cleaning in accordance with the City's plan. An estimated 4.2 tons of material was removed as a result of the cleaning. Approximately 1190 miles of roadway was swept in 2015 netting approximately 58.5 tons of solids captured. Sediments removed under both programs were disposed of properly. Ditch cleaning performed by the City netted 225 tons of solids removed. Maintenance was performed on approximately 764 lineal feet of ditches.

  Leaves and grass clippings are accepted at City Hall and taken to a County contracted site for composting. In 2015 approximately 1104 tons of material was collected and transported to the County Site.

b. Winter Road Management Activities:

Provide the name, title, and phone number for the individual(s) with overall responsibility for winter roadway maintenance.

Matt Stevens, Highway Superintendent, 262-691-0771

Describe the types of products used for winter road management (e.g., deicing, pre-wetting, salting, etc.).

The City uses road salt and salt brine in various combinations depending on weather conditions and road temperatures. The salt brine is used either alone as a pretreatment of the road surface ahead of a storm or in combination with the road salt to act as a pre-wetting agent in order to increase the efficiency of the salt.

Describe the type of equipment used to apply the products.

The products are applied utilizing single and dual axle trucks with brine tank/sprayers mounted to the trucks.

Report the amount of product used per month.

The amount of product used per month varied depending on the type of precipitation event and the temperature of the roadway. In general, 1900 tons of road salt was applied for the months of January, February, March, November and December of 2015. This would average approximately 380 tons per month of road salt applied to City streets during the winter plowing season. Over those same months approximately 2700 gallons of salt brine was utilized for an average of 540 gallons per month. For reference, the average road salt application for 2014 was approximately 430 tons per month with 2028 gallons per month of salt brine applied. The average road salt application for 2013 was approximately 900 tons per month with 4140 gallons per month of salt brine applied. See Exhibit B regarding road salt and brine use for winter season plowing. See Exhibit C for the snowfall totals for Milwaukee for the corresponding winter season.

Report the snow disposal locations, if snow is hauled away.

The City utilizes the City Hall site and the end of Yench Road as disposal locations for excess snow. During the 2015 winter season, approximately 20 single axle dump trucks were brought to the City Hall site (approx. 100 cubic yards).

Describe any anti-icing, equipment calibration, and salt reduction strategies considered.

The City utilizes a salt brine solution for pre-wetting applications of road salt as well as for use as a stand alone de-icer for critical areas. The estimated cost saving at the time the decision was made to utilize a brine solution as a pre-wetting/de-icing agent was between 10 and 20 percent over road salt alone.

The equipment utilized is calibrated by the manufacturer at the time of delivery. Salt applications are set based upon the ground speed of the vehicle and the temperature of the pavement. The brine solution used for pre-wetting the salt is set not to exceed 10 gallons per ton with 8 gallons per ton being typical.

SECTION V. Permit Conditions (continued)

Describe any other additional measurable data or information that the permittee used to evaluate its winter road management activities.

An evaluation of the winter road management program has not been performed yet. Due to the many variables associated with the application of deicers (such as pavement temperature, type of precipitation and lane miles of roadway) we have not determined an appropriate formula with which to evaluate our winter road management program.

c. Municipal facility(s):

Provide an inventory of municipally owned or operated structural storm water management facility(s), include: Location of each facility and contact information for the individual(s) with overall responsibility for each facility.

See Exhibit D for a copy of the Evaluation of the Public Works Yard.

Describe the housekeeping activities and best management practices installed to reduce or eliminate storm water contamination.

Discuss recommendations for improvements to current storm water management practices at the facility(s) and a timeline for installation and/or implementation of these recommendations.

Describe the municipal facility(s) employee training on storm water pollution prevention provided.

Describe the spill prevention and response procedures in place at the municipal facility(s).

d. Storm Water Quality Management: Has the municipality completed a pollutant-loading analysis to assess compliance with the 20% TSS reduction developed urban area performance standard? (●) Yes ( ) No

If yes, provide the following: Model used WinSlamm Version 9.4 Reduction (%) 59

If no, include a description of any actions the municipality has undertaken during 2015 to help achieve the 20% standard.

Has the municipality completed an evaluation of all municipal owned or operated structural flood control facilities to determine the feasibility of retrofitting to increase TSS removal? (●) Yes ( ) No

If yes, describe:

The City reviewed all of the municipally and privately owned facilities for retrofitting to meet the 40 percent TSS removal requirements under the water quality modelling update in 2011. The City currently achieves a 31 percent reduction in TSS loading from roadside swales and a 28 percent TSS reduction from existing wet ponds.

e. Best Management Practices Maintenance: Does the municipality have a maintenance program for installed storm water best management practices? ( ) Yes (●) No

If yes, describe the maintenance program and any maintenance activities that have occurred for best management practices in 2015. If available, attach any additional information on the maintenance program.

f. Storm Sewer System Map: Describe any changes or updates to the storm sewer system map made in the reporting year. Provide an updated map if any changes occurred during the reporting year.

See Exhibit J for the City's storm sewer system map and attached updates. A complete map will be provided once we have retrieved the final system inventory data from our consultant.

SECTION VI. Fiscal Analysis

a. Provide a fiscal analysis that includes the annual expenditures for 2015, and the budget for 2015 and 2016. A table to document fiscal information is provided on page 7.

See Exhibits E and F for the 2015 annual expenditures and 2016 budget.

b. What financing/fiscal strategy has the municipality implemented to finance the requirements of the general permit?

☒ Storm water utility ☐ General fund ☐ Other _____

c. Are adequate revenues being generated to implement your storm water management program to meet the permit requirements? ◉ Yes ○ No

Please provide a brief summary of your financing/fiscal strategy and any additional information that will assist the Department in understanding how storm water management funds are being generated to implement and administer your storm water management program.

The storm water utility was established to provide a consistent funding stream to address storm water deficiencies in terms of quantity, quality, maintenance and permit compliance components of the City's WPDES permit. Borrowing for capital improvement projects may occur when utility funds are not sufficient.

SECTION VII. Inspections and Enforcement Actions

Note: If an ordinance listed below has previously been submitted and has not been amended since that time, a copy does not need to be submitted again. If the ordinance was previously submitted, indicate such in the space provided.

a. As of the date of this annual report, has the municipality updated or revised its construction site pollutant control ordinance in accordance with subsection 2.4.1 of the general permit? ◉ Yes ○ No

If yes, attach copy or provide web link to ordinance:

See Exhibit G for a copy of the ordinance.

b. As of the date of this annual report, has the municipality updated or revised its post-construction storm water management ordinance in accordance with subsection 2.5.1 of the general permit? ◉ Yes ○ No

If yes, attach copy or provide web link to ordinance: See Exhibit G for a copy of the ordinance.

c. As of the date of this annual report, has the municipality updated or revised its illicit discharge detection and elimination ordinance in accordance with subsection 2.3.1 of the general permit? ○ Yes ◉ No

If yes, attach copy or provide web link to ordinance:

d. As of the date of this annual report, has the municipality adopted any other ordinances it has deemed necessary to implement a program under the general permit (e.g., pet waste ordinance, leaf management/yard waste ordinance, parking restrictions for street cleaning, etc.)? ○ Yes ◉ No

If yes, attach copy or provide web link to ordinance:

e. Provide a summary of available information on the number and nature of inspections and enforcement actions conducted during the reporting period to ensure compliance with the ordinances described in a. to d. above.

The Building Inspection Department performed 724 erosion control/bond inspections in 2015. The Public Works Department and its consultants conducted 508 erosion control inspections of private development construction sites and 104 inspections of City construction sites. A total of 10 Notices of Noncompliance and 2 Notices of Violation were issued in 2015. There was one Recommendation for Fines as a result of the erosion control violations resulting in approximately $500.00 in recommended fines.

SECTION VIII. Water Quality Concerns

a. Does any part of the MS4 discharge to an outstanding resource water (ORW) or exceptional resource water (ERW) listed under s. NR 102.10 or 102.11, Wis. Adm. Code? (A list of ORWs and ERWs may be found on the Department's Internet site at: http://dnr.wi.gov/topic/surfacewater/orwerw.html) ○ Yes ◉ No

If yes, list:

b. Does any part of the MS4 discharge to an impaired waterbody listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC § 1313(d)(1)(C)? (A list of the most current Wisconsin impaired waterbodies may be found on the Department's Internet site at: http://dnr.wi.gov/water/impairedsearch.aspx?status=303d) ◉ Yes ○ No

If yes, complete the following:

SECTION VIII. Water Quality Concerns (continued)

- Impaired waterbody to which the MS4 discharges:

  Spring Creek, Un-named Tributary to Spring Creek and the Fox River.

- Description of actions municipality has taken to comply with section 1.5.2 of the MS4 general permit for discharges of pollutant (s) of concern to an impaired waterbody:

  The City has enacted ordinances which address phosphorous in fertilizers, construction site erosion control and post construction site storm water management. The will look for further opportunitites to improve the water quality of its storm water runoff into these waterways as projects develop and are undertaken. Future control necessary to comply with the establishment of TMDL's and WLA's for those waterways will be addressed at such times as they are established.

c. Identify any known water quality improvements in the receiving water to which the MS4 discharges during the reporting period.

At this time the City is unaware of any improvement in the water quality of the 303(d) waters within the community.

d. Identify any known water quality degradation in the receiving water to which the MS4 discharges during the reporting period and what actions are being taken to improve the water quality in the receiving water.

The City is aware that the Pewaukee River has appeared on the draft list of 2016 303(d) waters, however we are unsure if this list has been formalized. The Pewaukee River is proposed to be impaired by chlorides.

SECTION IX. Proposed Program Changes

Describe any proposed changes to the storm water management program being contemplated by the municipality for 2016 and the schedule for implementing those changes. Proposed program changes must be consistent with the requirements of the general permit.

The City will be preparing a new comprehensive storm water management plan in the near future. Timing of the plan is dependent on completion of the inventory of the City's storm water management system. The new plan will address both water quality and quantity needs within the community.

SECTION X. Other

Any other additional information the permittee would like to provide in the Annual Report regarding their storm water program?

See Exhibit H for information relative to the City's leaf and grass clipping management program.
See Exhibit I for information relative to the City's management procedures for unplanned water main discharges.

Fiscal Analysis Table. Complete the fiscal analysis table provided below.

Program Element	Annual Expenditure 2015	Budget 2015	Budget 2016	Source of Funds
Public Education and Outreach				
Public Involvement and Participation				
Illicit Discharge Detection and Elimination				
Construction Site Pollutant Control				
Post-Construction Storm Water Management				
Pollution Prevention				
Storm Water Quality Management (including pollutant-loading analysis)				
Storm Sewer System Map				
Other:				

NORTHERN REGION COUNTIES		
Ashland	Langlade	DNR Service Center
Barron	Lincoln	Attn: Storm Water Program
Bayfield	Oneida	5301 Rib Mountain Rd.
Burnett	Polk	Wausau, WI 54401
Douglas	Price	Phone: (715) 359-4522
Florence	Rusk	
Forest	Sawyer	
Iron	Taylor	
	Vilas	
	Washburn	

WEST CENTRAL REGION COUNTIES		
Adams	Marathon	DNR Service Center
Buffalo	Monroe	Attn: Storm Water Program
Chippewa	Pepin	5301 Rib Mountain Rd.
Clark	Pierce	Wausau, WI 54401
Crawford	Portage	Phone: (715) 359-4522
Dunn	St. Croix	
Eau Claire	Trempealeau	
Jackson	Vernon	
Juneau	Wood	
La Crosse		

NORTHEAST REGION COUNTIES		
Brown	Marquette	DNR Northeast Region
Calumet	Menominee	Attn: Storm Water Program
Door	Oconto	2984 Shawano Ave.
Fond du Lac	Outagamie	Green Bay, WI 54313
Green Lake	Shawano	Phone: (920) 662-5100
Kewaunee	Waupaca	
Manitowoc	Waushara	
Marinette	Winnebago	

SOUTH CENTRAL REGION COUNTIES		
Columbia	Jefferson	DNR South Central Region
Dane	LaFayette	Attn: Storm Water Program
Dodge	Richland	3911 Fish Hatchery Rd.
Grant	Rock	Fitchburg, WI 53711
Green	Sauk	Phone: (608) 275-3266
Iowa		

SOUTHEAST REGION COUNTIES		
Kenosha	Sheboygan	DNR Service Center
Milwaukee	Walworth	Attn: Storm Water Program
Ozaukee	Washington	141 NW Barstow Street,
Racine	Waukesha	Room 180
		Waukesha, WI 53188
		(262) 574-2100

Exhibit A

Waukesha County Storm Water and Recycling Education Program
2015 Workplan Accomplishments

Target Audience: Contractors, Builders, Developers, Consultants & Municipal Staff

1. Workshops –
   Goal: To have at least 75 workshop participants with good evaluation rating (3.5 or higher)

   Accomplishment: Provided annual workshop with 104 people attending. Received participant evaluation rating of 4.4 out of 5.0. Workshop focused on the importance of soils in storm water planning.

2. Newsletters –
   Goal: To work with MBA on newsletter articles as opportunities arise.

3. Education Opportunities – In addition to sharing webinar and education opportunities with local MS4 communities, notices will be sent to developers and builders when appropriate opportunities arise.

   Accomplishment: Provided soils/groundwater/basement flooding training to 25 municipal planners at a Waukesha County Planners meeting.

Target Audience: General Public

1. Storm Drain Stenciling –
   Goal: To have a least 2 groups participate in stenciling

   Accomplishments: Had 3 groups participate in stenciling in 3 different communities.

2. News Releases/Newsletters/Recognition —.
   Goal: To send at least 2 press releases per year

   Accomplishments: A total of 11 press releases went out for various programs on topics from lawn care, rain gardens and household hazardous waste collection events. Proposed news story to local media on the impacts of urban leaves in the fall based on recent research by Roger Bannerman. Provided the annual "Recycling and Clean Water" newsletter to over 100,000 households.

3. Presentations –
   Goal: To speak to at least 5 groups other than schools and to provide at least one merit badge class for Boy Scouts

   Accomplishments: Spoke at 19 venues for 537 people about water quality and runoff pollution using either a power point program or the watershed model. Held two merit badge classes for Boy Scouts, Soil and Water Conservation and Environmental Science, serving 80 kids.

4. Displays/Handouts –
   Goal: To use the display in at least 15 of the 25 participating communities

   Accomplishments: Used the display at 28 different events in 16 communities plus the Retzer Nature Center reaching an estimated total of over 15,000 people.

5. Web Page –
   Goal: To promote local links to webpages

6. Businesses –
   Goal: To be involved in 1 new Chamber of Commerce

   Accomplishments: Participated in Hartland, Oconomowoc and Pewaukee chambers. Hosted one Chamber event to highlight available programs as well as water quality improvements at County facilities.

7. Rain Garden Grants/Technical Assistance –
   Goal: To have at least 30 participants in the rain garden grant program, hold one rain garden workshop and one rain barrel sale.

   Accomplishments: Provided 5 rain garden programs reaching 76 people, had 59 participants in the grant program and sold 47 rain barrels at annual sale.

8. Hazardous Waste/Used Oil Collection –
   Goal: Collect at least 200,000 pounds of hazardous waste from either permanent or temporary collection facilities, and to host at least 2 Green Cleaning events.

   Accomplishments: Hosted 7 Green Cleaning events for 134 people. Collected over 191,167 pounds of hazardous waste through October.

9. Yard Waste Composting –
   Goal: Compost approximately 2500 tons of municipal yard waste and host one compost bin sale.

   Accomplishments: Hosted 4 home composting workshops for 84 people and sold 51 compost bins. Composted over 2300 tons of municipal yard waste as of the end of October.

10. Citizen Stream Monitoring –
    Goal: To maintain stream monitoring at 20 sites throughout the County and provide at least one training opportunity for new volunteers.

    Accomplishments: Trained 12 new volunteers for level 1 monitoring and trained 6 returning volunteers for level 2 monitoring. Volunteers monitored 28 sites with additional 6 sites covered by Waukesha County. Phosphorus data was collected at 5 sites.

11. Education for Homeowners Associations –
    Goal: To promote BMP maintenance brochures through a press release and do at least one targeted mailing

    Accomplishments: Final editing and printing of three BMP maintenance fact sheets was completed. Targeted mailing is being combined into a project that will happen in early spring.

Target Audience: School Teachers & Students

1. Teacher Training –
2. Presentations –
3. Green Schools –
4. Stream Monitoring –

Goal: To reach at least 1400 students through presentations and field experiences. In addition, reach at least 12 teachers through training opportunities.

Accomplishments: Provided Project WET training to 14 teachers. Offered an additional training to 17 teachers in the form of a bus tour with stops at the new Materials Recycling Facility, Payne and Dolan gravel pit, the old county composting facility and a large scale wetland restoration project.

Provided 16 presentations to over 1150 students on water quality and runoff pollution using either a power point program or the watershed model. Provided 9 field experiences for over 600 students doing water quality monitoring including measuring dissolved oxygen, temperature, turbidity, and biotic index.

Exhibit B

Road Salt / Deicers Usage
City of Pewaukee
2012-2013

Date(s) of Event	Activity	Salt Brine Used (gal)	Product Used (mix=salt/sand)	Amount of Product Used (Tons)	Air Temperature Range during event (°F)	Pavement Temperature Range during event (°F)	Precipitation Amount (inches)	Hours of Event (worked)	# of Drivers/# of Trucks	Hours of Post-Event Clean-Up	Other Information
7-Dec-12	Pre-Wetting	1200									*Pre- storm Pre- Wet*
18-Dec-12	Pre-Wetting	1375									*Pre- storm Pre- Wet*
18-Dec-12	Plow	500	Salt	140	32 to 34		2	45	9	0	*Started at 2 pm and ended at 6 pm*
19-Dec-12	Pre-Wetting	650									*Pre- storm Pre- Wet*
20-Dec-12	Plow	600	Salt	120	32 to 36		6	100	9	0	*1 am started with 3 inches by morning; switched to rain 1.30 inches.....*
21-Dec-12	Plow	500	Salt	120	28		3	36	9	0	*Clean up from night before*
28-Dec-12	Plow	500	Salt	100	29		1	27	9	0	*7 am start 1 inch*
29-Dec-12	Plow	500	Salt	110	27		1	32	8	0	*5:30 start 1 inch*
29-Dec-12	Plow	600	Salt	110	26		1	27	8	0	*All day snow 1 inch*
5-Jan-13	Salting Only	400	Salt	120	31		0.5	24	7	0	*4 pm start 0.5 inch salt run*
13-Jan-13	Plow	500	Salt	110	23		1	30	8	0	*1 inch overnight*
13-Jan-13	Plow	350	Salt	90	16		0	32	8	0	*Had to re-plow and salt; roads wouldn't melt*
23-Jan-13	Salting Only	350	Salt	90	14		0.5	20	7	0	*Light dusting; temperatures dropping*
27-Jan-13	Plow	450	Salt	140	28		1	28	8	0	*1 inch of snow turned to rain*
28-Jan-13	Salting Only	500	Salt	150	32		Ice	32	8	0	*Roads refroze with rain turning to ice*
30-Jan-13	Salting Only	500	Salt	150	33		Ice	16	8	0	*Rain changing to ice; no accumulation*
30-Jan-13	Plow	500	Salt	120	33		2	32	8	0	*Snow, 2 inches by mid-morning*
30-Jan-13	Plow	400	Salt	100	28		1	32	8	0	*1 inch of additional snow with full clean-up*
31-Jan-13	Plow	250	Salt	120	16		0.5	24	8	0	*Light dusting with temperatures dropping and high winds*
2-Feb-13	Plow	0	Salt	100	13		2	36	8	0	*10 pm snow began; snow ends at 5 am*
4-Feb-13	Plow	0	Salt	100	10		2	36	9	0	*3 am start*
4-Feb-13	Plow	0	Salt	80	8					0	*Clean up from morning run*
5-Feb-13	Plow	500	Salt	80	17		2	36	8	0	*Started at 11 am and ended at 1 pm*
7-Feb-13	Plow	700	Salt	150	28		7	36	9	0	*Snow started at 11 am and ended at 11 pm*
8-Feb-13	Plow	500	Salt	80	20			54	9	0	*Clean up from 2/7*
13-Feb-13	Plow	672	Salt	60	22		3	27	9	0	*Pre-storm Pre-wet/3 inches of snow*
14-Feb-13	Plow	500	Salt	60	33		Ice	24	9	0	*Light rain turning to ice*
15-Feb-13	Salting Only	450	Salt	70	13		0.5	24	7	0	*Light snow overnight*
19-Feb-13	Plow	500	Salt	90	16		2	36	9	0	*0.5 inch rain changed over to snow*
19-Feb-13	Plow	400	Salt	90	16			40	9	0	*Second run for storm slush and ice.*
22-Feb-13	Plow	500	Salt	90	30		5	36	9	0	*2 am start with 5 inches ending be 6 am*
22-Feb-13	Plow	40	Salt	60	32			24	8	0	*Clean up from storm*
25-Feb-13	Pre-Wetting	1497	Salt								*Pre-storm Pre-wet*
26-Feb-13	Plow	500	Salt	60	31		7	27	9	0	*Start of Storm*
27-Feb-13	Plow	500	Salt	36	32			36	9	0	*Beginning of clean up*
27-Feb-13	Plow	500	Salt	45	32			48	9	0	*Finished clean up*
28-Feb-13	Salting Only	500	Salt	40	32		0.5	20	8	0	*Dusting overnight*
5-Mar-13	Plow	500	Salt	50	30		3	36	9	0	*9 am snow started; out until rush hour*

Road Salt / Deicers Usage
City of Pewaukee
2012-2013

Date(s) of Event	Activity	Salt Brine Used (gal)	Product Used (mix=salt/sand)	Amount of Product Used (Tons)	Air Temperature Range during event (°F)	Pavement Temperature Range during event (°F)	Precipitation Amount (inches)	Hours of Event (worked)	# of Drivers/# of Trucks	Hours of Post-Event Clean-Up	Other Information
6-Mar-13	Plow	500	Salt	70	30		3	36	9	0	*3 am start total cleanup*
6-Mar-13	Plow	500	Salt	40	32		0	24	8	0	*Slush run*
12-Mar-13	Salting Only	500	Salt	54	28		0.5	24	9	0	*Rain chaging to ice; no accumulation*
15-Mar-13	Pre-Wetting	695	Salt								*Pre-storm Pre-wet*
16-Mar-13	Salting Only	500	Salt	45	30		0.5	24	9	0	*Light dusting*
18-Mar-13	Plow	400	Salt	50	31		2	27	9	0	*Started at 8 am and done at 5 pm*
19-Mar-13	Salting Only	200	Salt	30	12		0	24	9	0	*Temps dropped overnight; spotty ice*
	Total Brine Used (gal)	*22679*	*Total Salt Used (tons)*	*3520*					*Number of Entries*	*44*	

Road Salt / Deicers Usage
City of Pewaukee
2013-2014

Date(s) of Event	Activity	Salt Brine Used (gal)	Product Used (mix=salt/sand)	Amount of Product Used (Tons)	Air Temperature Range during event (°F)	Pavement Temperature Range during event (°F)	Precipitation Amount (inches)	Hours of Event (worked)	# of Drivers/# of Trucks	Hours of Post-Event Clean-Up	Other Information
25-Nov-13	Salting Only	250	Salt	70	30	30	2	60	8	0	*2" started at 6:30 am and ended at 11:00 am*
8-Dec-13	Plow	400	Salt	60	23	21	2	38	9	0	*2" started at 10:00 am*
9-Dec-13	Plow	300	Salt	70	16	16	3	45	9	0	*Snowed throughout the night; 3:00 am start*
9-Dec-13	Plow	200	Salt	60	23	25	0			27	
10-Dec-13	Plow	0	Salt	60	5	7	Drifting	28	7	0	*30 mph wind from the West*
10-Dec-13	Plow	0	Salt	80	5	7	Drifting	12	4	0	*30 mph wind from the West*
11-Dec-13	Plow	0	Salt	60	7	9	1	27	9	0	*1" started at 3:00 am*
11-Dec-13	Plow	0	Salt	60	8	17	Drifting	15	5	0	*25 mph wind from the Northwest*
14-Dec-13	Plow	450	Salt	70	22	25	2	36	9	0	*2" started at 2:00 am with another 2" during the day*
14-Dec-13	Plow	450	Salt	70	26	28	2	40	9	0	
15-Dec-13	Plow	0	Salt	70	12	17	0.5	27	9	0	*0.5" started at 2:00 am*
16-Dec-13	Plow	450	Salt	70	15	18	2	27	9	0	*2" Clipper started @ 3:30 and ended at 7:30*
17-Dec-13	Plow	450	Salt	70	21	20	0.5	27	9	0	*0.5" from 5:00 am to 7:00 am*
19-Dec-13	Plow	0	Salt	70	29	31	Ice	20	9	0	*Rain with freezing rain*
20-Dec-13	Plow	0	Salt	90	26	22	Ice	32	9	0	*Freezing rain*
20-Dec-13	Plow	0	Salt	80	28	28	Ice	27	9	0	*Freezing rain*
21-Dec-13	Plow	0	Salt	70	26	28	Ice	18	9	0	*Freezing rain*
22-Dec-13	Plow	900	Salt	120	29	31	9	99	9	0	*9" started at 3:00 am*
23-Dec-13	Plow	200	Salt	60	22	24	0.5	18	7	0	*0.5" overnight*
24-Dec-13	Plow	0	Salt	60	0	4	1	27	9	0	*1" overnight*
25-Dec-13	Plow	200	Salt	60	17	19	2	32	9	0	*2" overnight*
26-Dec-13	Plow	200	Salt	60	18	19	0.5	36	8	0	*0.5" overnight*
31-Dec-13	Plow	0	Salt	60	2	8	1	27	9	0	*1" overnight*
31-Dec-13	Plow	0	Salt	80	7	13	1	24	9	0	*1" started at 3:00 pm*
1-Jan-14	Plow	200	Salt	60	15	21	2	32	9	0	*2" started at 7:00 am*
2-Jan-14	Plow	300	Salt	60	18	22	2	27	9	0	*2" started at 5:00 am*
4-Jan-14	Plow	400	Salt	60	29	30	1	27	9	0	*30 mph winds from Southwest and 1" of snow*
10-Jan-14	Plow	400	Salt	30	35	34	Ice	27	9	0	*Heavy freezing rain*
10-Jan-14	Plow	200	Salt	40	36	35	Ice	27	9	0	*Heavy freezing rain with 0.5" of ice*
11-Jan-14	Plow	400	Salt	40	33	32	Ice	27	9	0	*Roads refroze overnight*
14-Jan-14	Plow	0	Salt	50	25	24	3	27	9	0	*Still snowing back at 3:00 am*
15-Jan-14	Plow	0	Salt	50	12	14	0	42	9	0	*Total clean-up*
16-Jan-14	Plow	300	Salt	40	27	25	0.5	25	9	0	*Light dusting*
17-Jan-14	Plow	400	Salt	50	18	15	1	30	9	0	*1" all day snow*
18-Jan-14	Plow	400	Salt	50	15	19	1	24	8	0	*1" all day snow*
20-Jan-14	Plow	0	Salt	40	13	15	1	25	9	0	*1" all day snow*
22-Jan-14	Plow	0	Salt	50	13	18	0.5	27	9	0	*Light dusting*
25-Jan-14	Plow	200	Salt	60	16	12	2	38	9	0	*2" with a 40 mph wind and heavy drifting*

Road Salt / Deicers Usage
City of Pewaukee
2013-2014

Date(s) of Event	Activity	Salt Brine Used (gal)	Product Used (mix=salt/sand)	Amount of Product Used (Tons)	Air Temperature Range during event (°F)	Pavement Temperature Range during event (°F)	Precipitation Amount (inches)	Hours of Event (worked)	# of Drivers/# of Trucks	Hours of Post-Event Clean-Up	Other Information
26-Jan-14	Plow	0	Salt	60	15	12	3	45	9	0	*3" started at 3:00 am*
27-Jan-14	Plow	0	Salt	50	0	2	Drifting	72	9	0	*40 mph wind out of the Northwest*
30-Jan-14	Plow	400	Salt	50	26	28	1	30	9	0	*1" from fast moving system*
1-Feb-14	Plow	500	Salt	60	15	18	2	74	9	0	*All day snow*
5-Feb-14	Plow	40	Salt	50	20	23	2	30	9	0	*2" overnight*
8-Feb-14	Plow	100	Salt	40	15	12	1	32	9	0	*1" from fast moving system*
12-Feb-14	Salting Only	400	Salt	50	20	18	0.5	27	9	0	*0.5" in 4 hours*
13-Feb-14	Plow	400	Salt	40	26	28	2	36	9	0	*2" from fast moving system*
17-Feb-14	Plow	500	Salt	70	25	26	6	96	9	0	*6" all day snow*
20-Feb-14	Plow	200	Salt	30	32	31	1	36	9	0	*freezing rain turning to snow*
21-Feb-14	Salting Only	200	Salt	30	26	26	0	18	9	0	*1" of rain with temps drapping*
27-Feb-14	Plow	0	Salt	40	0	1	0.5	27	9	0	*Light dusting of snow*
1-Mar-14	Plow	400	Salt	40	15	16	2	30	9	0	*2" overnight*
2-Mar-14	Plow	0	Salt	50	6	8	2	42	9	0	*2" overnight*
4-Mar-14	Plow	200	Salt	50	13	15	3	64	9	0	*3" from fast moving system*
5-Mar-14	Plow	200	Salt	50	16	18	0.5	27	9	0	*Light dusting of snow*
25-Mar-14	Plow	300	Salt	40	18	22	1	30	9	0	*1" overnight*

	Total Brine Used (gal)	*11490*	*Total Salt Used (tons)*	*3160*	*Average Air Temp per Entry (deg F)*	*18.7*	*Average Pavement Temp. per Entry (deg F)*	*20.13*	*Number of Entries*	*54*

Road Salt / Deicers Usage
City of Pewaukee
2014-2015

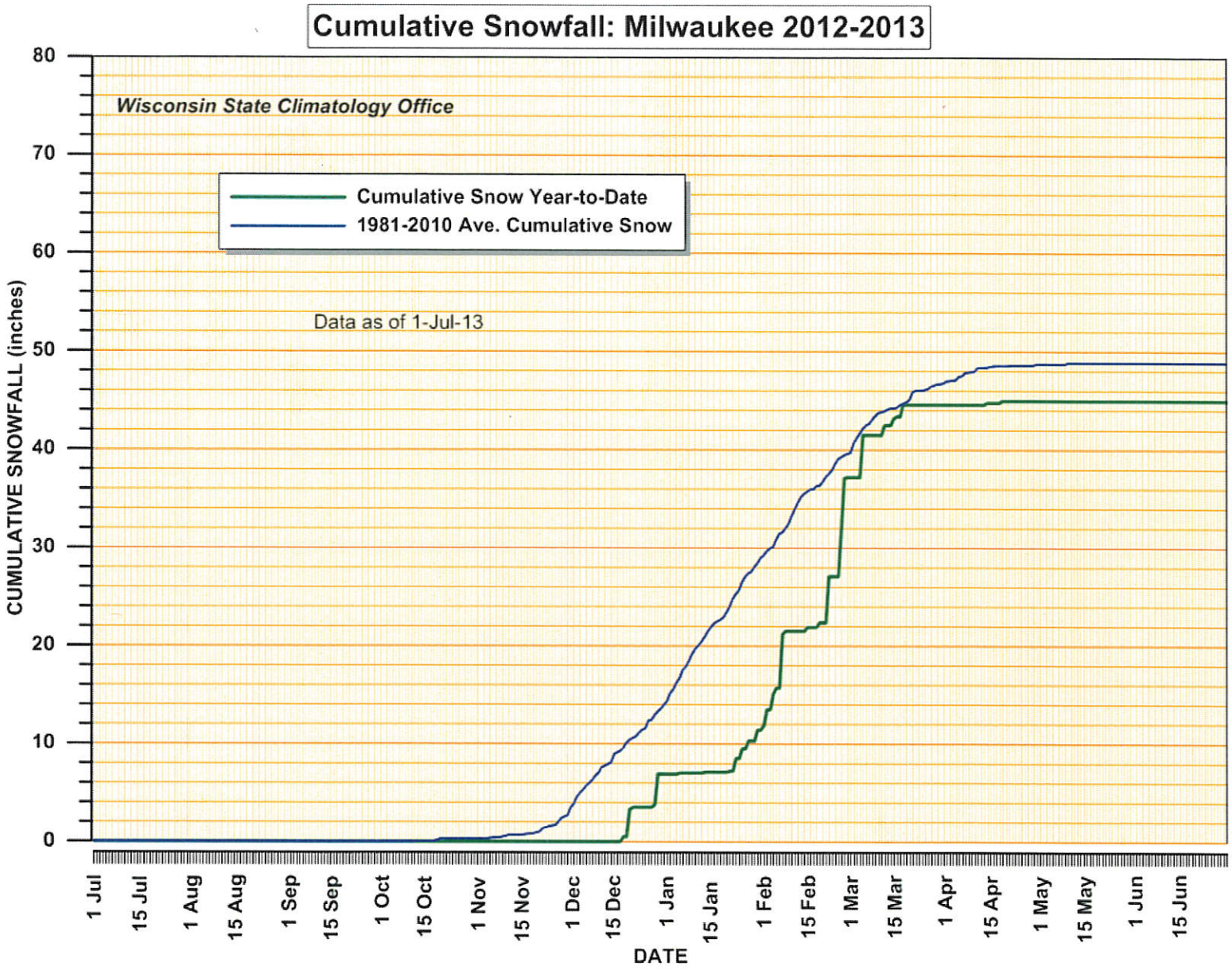
Date(s) of Event	Activity	Salt Brine Used (gal)	Product Used (mix=salt/sand)	Amount of Product Used (Tons)	Air Temperature Range during event (°F)	Pavement Temperature Range during event (°F)	Precipitation Amount (inches)	Hours of Event (worked)	# of Drivers/# of Trucks	Hours of Post-Event Clean-Up	Other Information
15-Nov-14	Plow	400	Salt	80	24	27	2	27	9	0	*2" of snow; very icy*
16-Nov-14	Salting Only	300	Salt	60	27	29	1	27	9	0	*1" overnight*
19-Nov-14	Salting Only	300	Salt	70	18	21	1	24	8	0	*1" of snow: 7:00 am run*
22-Nov-14	Salting Only	400	Salt	40	30	32	Ice	22	6	0	*Light iceing*
24-Nov-14	Plow	400	Salt	80	28	30	3	36	8	0	*3" total precip; rain changing to snow*
25-Nov-14	Plow	300	Salt	80	25	28	2	45	9	0	*2" overnight*
28-Nov-14	Salting Only	300	Salt	60	29	28	Ice	18	9	0	*Light iceing*
2-Dec-14	Plow	300	Salt	80	28	27	1	36	9	0	*1" overnight; fast moving system*
8-Dec-14	Salting Only	200	Salt	60	34	31	Ice	22	8	0	*Light iceing*
18-Dec-14	Plow	200	Salt	60	31	30	Ice	24	8	0	*Light iceing*
3-Jan-15	Plow	300	Salt	120	32	29	3	36	9	0	*3" changing to freezing rain*
4-Jan-15	Plow	0	Salt	80	10	13	2	96	9	0	*2" of blowing snow*
6-Jan-15	Plow	0	Salt	80	0	4	2	45	9	0	*2" of blowing snow*
8-Jan-15	Plow	0	Salt	120	0	3	3	27	9	0	*3" of snow with high winds*
8-Jan-15	Plow	0	Salt	80	-2	0	1	30	9	0	*1" during rush hour*
9-Jan-15	Plow	0	Salt	80	6	8	2	30	9	0	*2" overnight*
9-Jan-15	Plow	0	Salt	80	8	12	0	21	7	0	*Drifting and slush run*
21-Jan-15	Plow	300	Salt	90	27	28	2	24	9	0	*2" overnight*
25-Jan-15	Salting Only	300	Salt	60	27	26	0.5	21	9	0	*Light dusting of snow*
26-Jan-15	Plow	400	Salt	70	24	26	1	24	9	0	*1" overnight; fast moving system*
29-Jan-15	Salting Only	100	Salt	50	34	31	Ice	18	9	0	*Light iceing*
1-Feb-15	Plow	0	Salt	120	10	14		40	9	0	*Beginning of storm*
1-Feb-15	Plow	0	Salt	120	10	14		40	9	0	
2-Feb-15	Plow	0	Salt	150	8	10	9	54	9	0	*9" total accumulation with high winds*
3-Feb-15	Plow	0	Salt	100	13	15	2	30	9	0	*2" from fast moving system*
18-Feb-15	Salting Only	0	Salt	100	3	5	1	30	9	0	*Light dusting of snow*
25-Feb-15	Plow	0	Salt	100	12	16	1	20	9	0	*1" from fast moving system*
3-Mar-15	Plow	300	Salt	120	30	27	2	36	9	0	*2" from fast moving system*
	Total Brine Used (gal)	*4800*	*Total Salt Used (tons)*	*2390*	*Average Air Temp per Entry (deg F)*	*19.48*	*Average Pavement Temp. per Entry (deg F)*	*20.89*	*Number of Entries*	*27*	

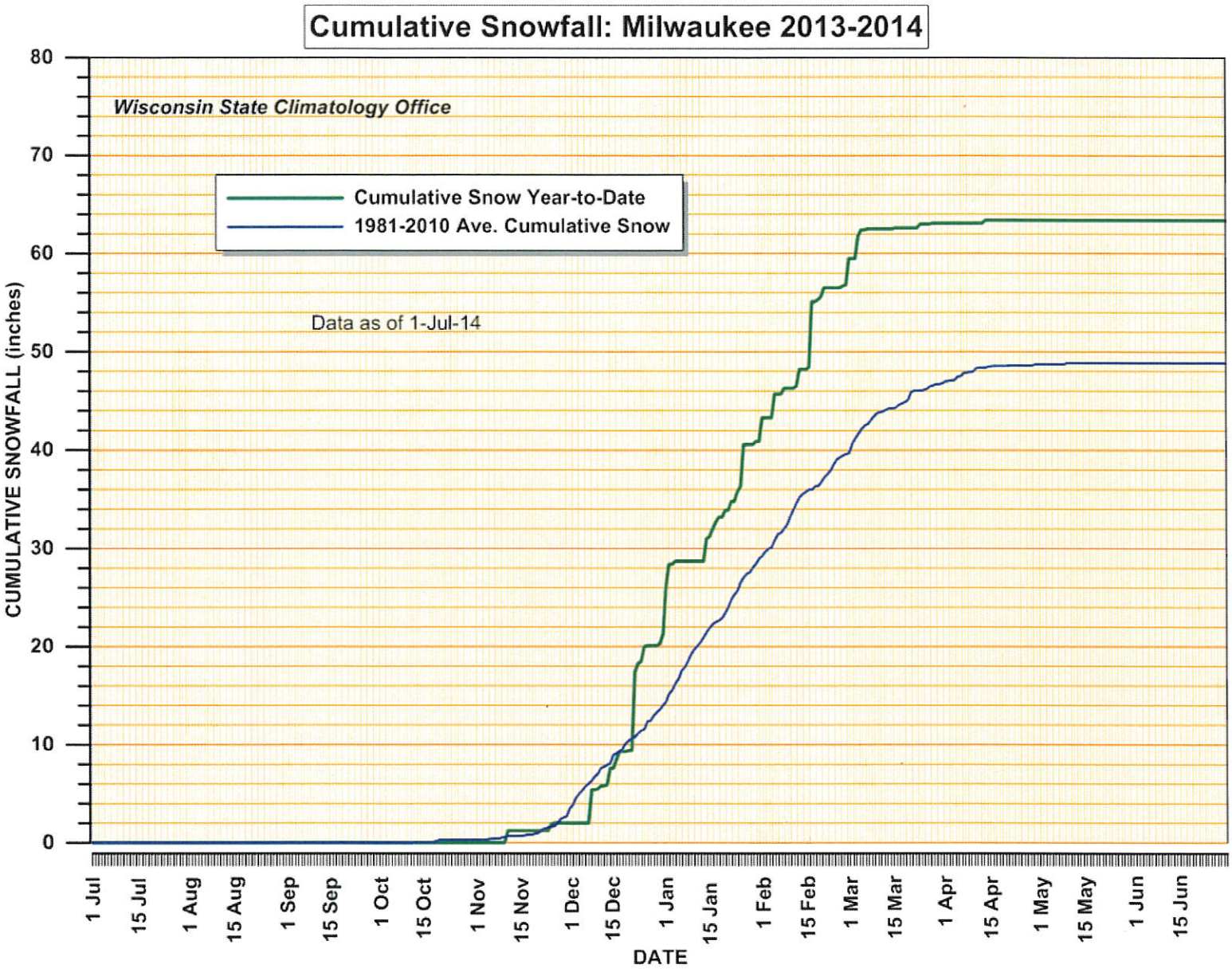
Road Salt / Deicers Usage
City of Pewaukee
2015-2016

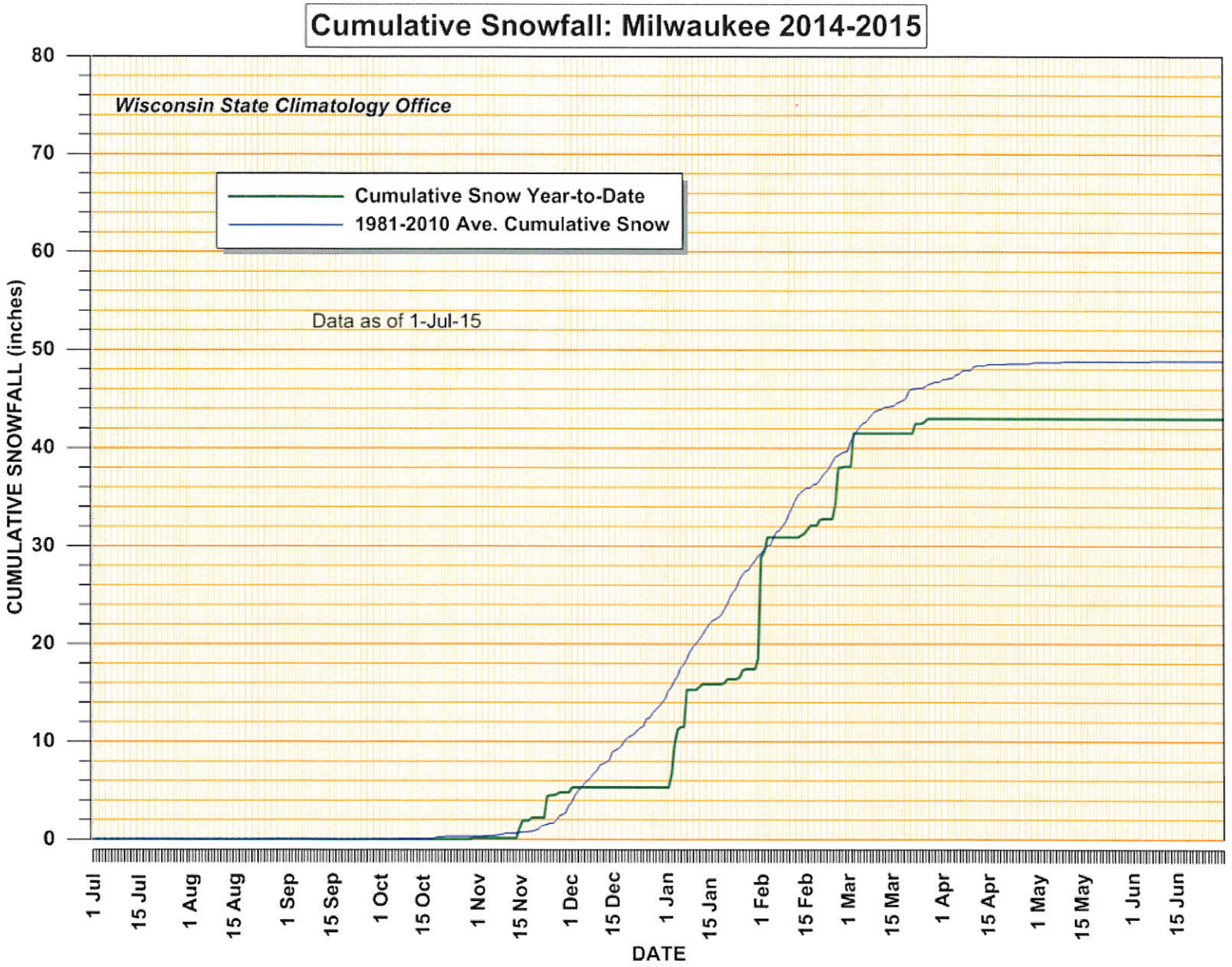
Date(s) of Event	Activity	Salt Brine Used (gal)	Product Used (mix=salt/sand)	Amount of Product Used (Tons)	Air Temperature Range during event (°F)	Pavement Temperature Range during event (°F)	Precipitation Amount (inches)	Hours of Event (worked)	# of Drivers/# of Trucks	Hours of Post-Event Clean-Up	Other Information
21-Nov-15	Plow	500	Salt	110	32	32	4	60	7		
21-Dec-15	Plow	500	Salt	150	30	30			9		
22-Dec-15	Plow	0	Salt	90	35	35	10	100	9		*Very Heavy.*
7-Jan-16	Salt	200	Salt	60	32	32	1	32	8		
9-Jan-16	Plow	350	Salt	80	29	28	2	27	9		
10-Jan-16	Plow	0	Salt	100	13	13	1	36	9		
12-Jan-16	Plow	0	Salt	175	4	6	2	75	9		*High wind followed by a slush run and a lot of drifting.*
25-Jan-16	Plow	350	Salt	75	32	33	1	24	9		
26-Jan-16	Plow	200	Salt	75	31	32	0.5	24	8		
1-Feb-16	Salt	200	Salt	75	26	24	Ice	24	8		*Rain froze over night.*
2-Feb-16	Salt	300	Salt	75	35	31	slush	24	8		*Rain /slush mix.*
8-Feb-16	Plow	300	Salt	80	30	28	1+4	26	8		*One inch with areas of 4 inches.*
9-Feb-16	Plow	0	Salt	80	14	16	1	36	9		*One inch overnight with high winds.*
10-Feb-16	Plow	0	Salt	80	12	15	1	36	9		*One inch overnight.*
14-Feb-16	Plow	0	Salt	80	22	18	1	27	9		*One inch - very dry.*
15-Feb-16	Plow	300	Salt	100	21	18	1	36	9		*One inch overnight.*
1-Mar-16	Plow	800	Salt	220	28	28	4	90	9		*One inch overnight. Three inches during the day.*
5-Mar-16	Plow	300	Salt	80	32	31	2	27	9		*Two inches overnight.*
24-Mar-16	Salt	300	Salt	80	31	31	Ice	28	8		*Light icing.*

	Total Brine Used (gal)	*4600*	*Total Salt Used (tons)*	*1865*	*Average Air Temp per Entry (deg F)*	*27.17*	*Average Pavement Temp. per Entry (deg F)*	*26.72*	*Number of Entries*	*18*

Exhibit C


Cumulative Snowfall: Milwaukee 2012-2013
Wisconsin State Climatology Office
Cumulative Snow Year-to-Date
1981-2010 Ave. Cumulative Snow
Data as of 1-Jul-13
CUMULATIVE SNOWFALL (inches)
0
10
20
30
40
50
60
70
80
1 Jul
15 Jul
1 Aug
15 Aug
1 Sep
15 Sep
1 Oct
15 Oct
1 Nov
15 Nov
1 Dec
15 Dec
1 Jan
15 Jan
1 Feb
15 Feb
1 Mar
15 Mar
1 Apr
15 Apr
1 May
15 May
1 Jun
15 Jun
DATE


Cumulative Snowfall: Milwaukee 2013-2014
Wisconsin State Climatology Office
Cumulative Snow Year-to-Date
1981-2010 Ave. Cumulative Snow
Data as of 1-Jul-14
CUMULATIVE SNOWFALL (inches)
0
10
20
30
40
50
60
70
80
1 Jul
15 Jul
1 Aug
15 Aug
1 Sep
15 Sep
1 Oct
15 Oct
1 Nov
15 Nov
1 Dec
15 Dec
1 Jan
15 Jan
1 Feb
15 Feb
1 Mar
15 Mar
1 Apr
15 Apr
1 May
15 May
1 Jun
15 Jun
DATE


Cumulative Snowfall: Milwaukee 2014-2015
Wisconsin State Climatology Office
Cumulative Snow Year-to-Date
1981-2010 Ave. Cumulative Snow
Data as of 1-Jul-15
CUMULATIVE SNOWFALL (inches)
0
10
20
30
40
50
60
70
80
1 Jul
15 Jul
1 Aug
15 Aug
1 Sep
15 Sep
1 Oct
15 Oct
1 Nov
15 Nov
1 Dec
15 Dec
1 Jan
15 Jan
1 Feb
15 Feb
1 Mar
15 Mar
1 Apr
15 Apr
1 May
15 May
1 Jun
15 Jun
DATE

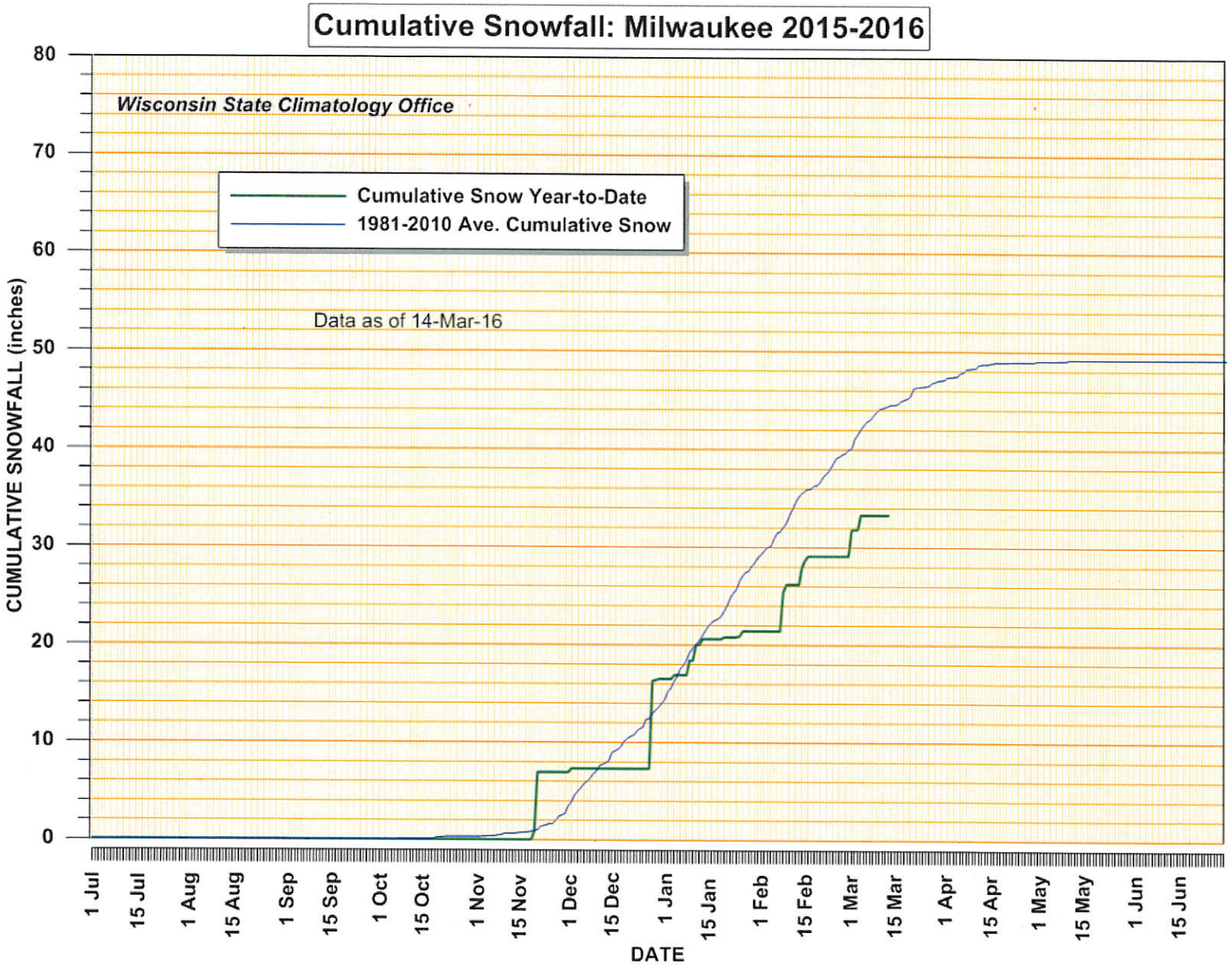

Cumulative Snowfall: Milwaukee 2015-2016
Wisconsin State Climatology Office
Cumulative Snow Year-to-Date
1981-2010 Ave. Cumulative Snow
Data as of 14-Mar-16
CUMULATIVE SNOWFALL (inches)
0
10
20
30
40
50
60
70
80
1 Jul
15 Jul
1 Aug
15 Aug
1 Sep
15 Sep
1 Oct
15 Oct
1 Nov
15 Nov
1 Dec
15 Dec
1 Jan
15 Jan
1 Feb
15 Feb
1 Mar
15 Mar
1 Apr
15 Apr
1 May
15 May
1 Jun
15 Jun
DATE

Exhibit D

City of Pewaukee 2015 Update of the Public Works Yard

General

Site conditions and operations at the City of Pewaukee Public Works Yard remain largely unchanged since the 2011 update, with the exception of the addition of a brine tank along the east side of the parks maintenance shop and repairs made to the salt storage shed. However, this will change as a number of planned projects will occur which will change the site conditions and operations at the yard. Unfortunately, the timing, nature and scope of some of these planned projects are in a state of flux as City Staff work with the City's leaders to better define the aspects of these projects relative to future needs. The following discussion will provide a brief update as to the planned projects anticipated for the site. A formal update will be made as staff receive more guidance from the City's leaders.

A copy of the Evaluation of Public Works Yard – 2011 Update is attached (as Appendix A) for reference as site conditions and operations remain largely unchanged.

Water Tower Project

The City awarded a contract on December 21, 2015, for the construction of a new 750,000 gallon elevated water tank to replace the existing 250,000 gallon elevated tank on the City Hall site. Construction of the new tank will involve significant grading around the new foundation, the installation of a retaining wall, the construction of an access drive, installation of new water main, miscellaneous drainage improvements and construction of a small bioretention basin. The existing water tower will be dismantled and removed under a separate contract. See Appendix B for a copy of the site plans and the water main plans.

Impacts to the operations of the yard due to the construction of the new tank are not fully known at this time. It is presumed the contractor will be storing equipment and materials in the southwest portion (west of the impound lot) of the site. This may necessitate moving some operations or equipment to an offsite location, but this is not known at this time.

City Hall Roof Project

Various improvements are planned for City Hall and the Highway Departments main garage (attached to City Hall). These improvements involve the relocation and replacement of a portion of the HVAC units, replacement of the roof over City Hall and the main garage, reconstruction or bracing of the north wall of the main garage, construction of a retaining wall north of the main garage, miscellaneous drainage improvements along the perimeter of the building, and extension of sanitary sewer to the pump house at the base of the existing water tower. See Appendix C for a copy of the site plans.

This contract is currently out for bid, but it is unclear if the project will be awarded or, if awarded, the scope of the proposed improvements to be included in the contract. It is speculated the cost of the project as currently laid out will exceed the budgeted funds available. Therefore there is a great deal of uncertainty regarding the scope and timing of the project. The impact to the operations of the public works yard is unclear at this time.

Salt Storage Facility

The City's current salt storage facility has recently received structural repairs to the walls, supporting members and roof trusses. Repairs were necessary due snow loading of the roof coupled with the outward pressure of the salt stored within the structure. The current capacity of this facility has been vastly reduced

from previous years. Only a small supply of salt in the short term will be stored on the City Hall Site while the bulk of the City's salt will be stored at the Waukesha County Highway facility.

Staff's recommendation is to build a new salt storage facility either on the City Hall site or in another centralized location. In addition to the salt storage facility staff would also be looking to put under roof equipment as well as a number of the loose material piles to isolate them from rain/runoff. This can be accommodated in some building configurations with the inclusion of a lean-to along the side of the building. Once the new facility would be constructed, the old salt storage shed would be converted to cold storage. A product brochure showing potential building configurations is included in Appendix D.

Staff has not received a direction from City leadership how to proceed at this point. Construction of an entirely new facility on the City hall site will necessitate reserving additional space to address storm water management. This will further limit the amount of space available for other operations, such as recycling. Constructing a new facility off site would free up space on the City Hall site which could be used to address water quality.

Summary

Updated photographs of the public works yard are attached in Appendix E. A formal update to the 2011 evaluation will be prepared as staff receive more information and direction regarding current and future projects at the City Hall site.

Appendix A

Report

Evaluation of Public Works Yard – 2011 Update

City of Pewaukee

Prepared for the:

CITY OF PEWAUKEE
The City in the Country

City of Pewaukee
W240 N3065 Pewaukee Road
Pewaukee, WI 53702

Prepared by:

AECOM
1020 N. Broadway, Suite 400
Milwaukee, WI 53202

March 2011

TABLE OF CONTENTS

LIST OF TABLES

LIST OF MAPS

1. GENERAL INFORMATION AND OVERVIEW

This evaluation describes site conditions and operations at the City of Pewaukee's Public Works Yard which relate to or impact stormwater management. This report documents current conditions at the site, as well as measures that can be taken to reduce nonpoint source pollution from the public works yard.

This document was originally prepared in March 2006, and submitted to WDNR as part of the 2005 NR 216 Annual Report. In 2011, it has been updated to meet the requirements of the revised Upper Fox River permit, and to document changes that have occurred on site.

1.1 Location and Contact Information

The City of Pewaukee is located in central Waukesha County, in the (Illinois) Fox River watershed. The City's Public Works Yard site is located on the west side of Pewaukee Road, between Watertown Road and Capitol Drive, at W240 N3065 Pewaukee Road. Map 1 shows the location of the public works yard.

The contact information for the Public Works Yard is:

Name of Facility:	City of Pewaukee – Public Works Yard
Facility Address:	W240 N3065 Pewaukee Road Pewaukee, WI 53702
Facility Contact:	Jeff Weigel Director of Public Works (262) 691-0770

Main activities that occur on the site include maintenance and repair of municipal vehicles, and storage of city trucks, equipment, and supplies. The site is also the recycling center, and a drop off location for used oil, yard waste, and other materials. Included on the site are five buildings. In addition, there are several stock piles, debris piles, and dumpsters located on the site. Map 2 shows an overview of the site.

Located on the same City-owned parcel, and connected to the main public works garage, is Pewaukee City Hall. Several parking lots for City Hall use are also located on the parcel. These areas are not considered part of the public works yard and are not included in this evaluation.

1.2 Stormwater Management Goals

The City of Pewaukee has made it a priority to reduce nonpoint source pollution to surface and groundwaters from urban stormwater sources. This evaluation is a part of comprehensive citywide stormwater management plan to identify nonpoint source pollution loadings and investigate mitigating measures. This report identifies opportunities for rainfall and stormwater runoff to come in contact with potential pollution sources. These observations will help the city to better understand how materials storage and management on site can impact water quality and lead to better materials management and pollution prevention measures. A review of existing best management practices (BMPs) and housekeeping practices in place on the site will lead to recommended improvements and additional controls to limit stormwater pollution.

1.3 Pollution Prevention Responsibility

The Highway Superintendent in charge is responsible for monitoring all activities on the site including pollution prevention activities. It is part of his regular duties to investigate potential stormwater pollution problems. In compliance with its municipal stormwater discharge permit, the City is expanding its staff training to include pollution prevention efforts. The City recently hired a new Highway Superintendent.

2. POTENTIAL SOURCES OF POLLUTANTS

2.1 Drainage

The City of Pewaukee Public Works Yard site is approximately 6.8 acres in size. Two main drainage basins exist at the facility. The South Basin drains by sheet flow and two asphalt flumes to a ditch on the north side of the Canadian Pacific railroad tracks. The West Basin drains by swales and sheet flow to a low area at the west end of the site, and then onto the Canadian Pacific Railroad right-of-way. The ground surface of the West Basin is irregular, and there are several low spots and depressions where stormwater appears to pool until it infiltrates or evaporates. This infiltration/ponding caused by the rough grading and undulations of the yard helps reduce runoff volumes from the site during smaller storm events, though these are not intentional stormwater BMPs.

Table 2-1 lists the drainage basins, approximate amount of land cover, and conveyance type. The drainage system of the Public Works Yard is shown on Map 2. This map identifies drainage basins, buildings, drainage structures, outdoor storage areas, structural control measures, and other relevant features.

TABLE 2-1
DRAINAGE BASINS

DRAINAGE BASIN	LAND COVER (ACRES)				TOTAL	OFF-SITE CONVEYANCE TYPE
	Vegetation	Roof	Gravel/Dirt	Pavement	(Acres)	
WEST	3.1	0.4	1.4	0.9	5.8	Swales / sheet flow
SOUTH	0.1	0.3	0.2	0.4	1.0	Sheet flow / asphalt flumes

Building drainage is characterized by the following:

- Main Garage: The building has a sloped roof. The portion of the building adjacent to the public works yard has no downspouts, and runoff spills to the ground surface below, into either the South or West drainage basins. The building floors slope inward towards sanitary sewer floor drains.

- Parks Maintenance Shop: The building has a sloped roof with no downspouts and discharges stormwater directly to the ground surface. The floor drains to a floor drain connected to the sanitary sewer system.

- Salt Storage Shed: The building has a sloped roof with no downspouts and discharges stormwater directly to the ground surface. There is no internal drainage system.

- Police Storage Building: The building has a sloped roof with no downspouts and discharges stormwater directly to the ground surface.

- Water Utility Wellhouse/Garage: The building has a sloped roof with no downspouts and discharges stormwater directly to the ground surface.

2.2 Facility Site Description, Activities, and Inventory of Exposed Materials

The following section identifies the materials stored in each area of the facility, operations at the site, and the general interaction between areas of interest on the site. The majority of activities take place in the

Main Garage Building, the Parks Maintenance Shop and the general yard area. Table 2-2 summarizes uses of each building.

TABLE 2-2
BUILDING INFORMATION

BUILDING	ROOF AREA (SQ. FT.)	DRAINAGE	USE/MATERIALS STORED
Main Garage	9,800 (garage portion only)	Direct runoff to yard surface	Vehicle maintenance and storage; supply storage (paints, lubricants, etc.)
Parks Maintenance Shop	10,400	Direct runoff to yard surface	General storage and maintenance, some equipment
Salt Storage	5,000	Direct runoff to yard surface	Road salt, salt/sand mix
Auto Storage	2,200	Direct runoff to yard surface	Autos / vehicles
Water Utility Wellhouse /Garage	1,700	Direct runoff to yard surface	Municipal well, water utility truck storage

2.2.1 Building Activities

Most maintenance activities including cleaning of municipal vehicles take place in the Main Garage Building. Floors in this building are sloped away from openings to the yard and drain to sanitary inlets in the middle of each of the rooms. Similar activity take place in the Parks Maintenance Shop, which also has a floor drain to a sanitary sewer.

The fully covered and enclosed salt storage shed is used for salt storage, and salt truck loading during the winter months. As salt is loaded or removed from the salt shed, material could potentially be spilled or tracked outside of the covered area. Overspill material is swept back into the shed as needed.

The Auto Storage building was formerly used by the City of Pewaukee Police Department to hold police evidence. It also stored all-terrain vehicles and a boat used for lake patrol by the police. Now that the Police Department has been disbanded and the Waukesha County Sheriff's Department handles policing in the City, this building will be used for general vehicle storage.

The Water Utility Wellhouse/Garage contains a municipal well. The water utility pick-up truck is housed in this building. The building also contains one control station for cell phone antennas located on the adjacent water tower.

Main Public Works Garage

Salt Storage Shed

2.2.2 Yard Activities

Activities in the yard are primarily city public works and police operations, with some citizen activities associated with the recycling and yard waste operations. Specific activities in the yard area include the movement, placement and storage of yard wastes and brush, construction/ landscaping materials, and

public works materials and equipment. Examples of materials present include gravel, topsoil, compost, street sweeping debris, concrete debris from construction, asphalt millings, pipes, buoys, and precast brick and concrete pieces. Portions of the yard are used for day-to-day parking of employee and city vehicles. The yard is also used for long-term storage of public works vehicles and equipment such as trailers.

A fueling station near the Main Garage Building consists of two pumps with storage tanks. One pump supplies unleaded gasoline, and the other pump supplies diesel fuel. The fueling station is used every business day to fuel public works equipment, fire and other municipal vehicles. A containment barrier exists around each fuel tank.

Fueling Station

For citizen recycling activities, residents enter on the east side of the yard and drive to the appropriate recycling or yard waste station. Because of past problems with illegal dumping, a fence is being installed this spring to limit access to the recycling area. This fence location is shown on the updated site plan. Dumpsters are available for certain recyclables such as paper, glass, aluminum cans and scrap metal. Brush is placed in piles. Used motor oil is poured into a tank that is pumped out as needed.

Recycling Dumpsters

Recently, an enclosed dumpster has been added to the recycling area for electronics recycling. This is part of the Waukesha County electronics recycling program.

The City hauls snow to the west end of the Public Works yard occasionally. It is estimated that snow is hauled in one to two times a year. Snow is hauled in after large snow events, or when too much snow accumulates in cul-de-sacs and along the lake area where snow storage is unavailable.

2.3 Spills and Leaks

Minor spills and leaks are treated with shop towels or absorbent materials as appropriate. Very small spills are cleaned with soap and water. If a large spill occurs, the Pewaukee Fire Department will be notified and they will treat/remove the spill. The City has documented procedures in the event of an emergency. In 2005, the City submitted their Spills Program proposal to WDNR as required by their NR 216 permit.

2.4 Summary of Potential Pollutant Sources

Based on site inspections of the facility, the most likely sources of nonpoint source pollution are as follows:

- The slope from the public works yard to the railroad track ditch has severe to moderate erosion in some locations. Numerous rivulets and gullies are apparent along this slope, and there are several bare and eroded areas at the top of the slope. This erosion was prominent during a winter visit to the yard; it may be reduced in warmer months when more vegetation has grown. This lack of a gutter and downspout on the Parks Maintenance Shop may contribute to this problem.

Slope to Ditch, South of Parks Maintenance Shop

Top of Slope, Between Parks Maintenance Shop and Police Storage Building

- A large area on the west side of the yard consists of mud and gravel parking and storage areas with no vegetation. High flows could cause sediment to wash off of this area. However, numerous areas of ponding and puddles in this area should promote some infiltration, and reduce runoff during small storm events.

- Outside storage areas of brush, compost, street sweeping debris, asphalt millings and topsoil are uncovered. Some of these storage piles drain off the site via sheet flow or nearby swales.

- The fueling area could potentially contribute nonpoint source pollution from minor spills and leakage, or a failure of the containment barrier in a major spill. The area surrounding the fueling area drains south approximately 30 feet over asphalt pavement, through one of two asphalt flumes and then into the drainage ditch along the railroad tracks.

- Although most vehicle washing is done indoors, with wash water draining to sanitary sewers, vehicle washing is occasionally done outside. Wash water from outside washing could potentially leave the site. Other general vehicle activity on the paved areas of the site could contribute nonpoint source pollution.

- Trash and debris is common in the railroad ditch. The City should contact the railroad to remove trash from this ditch.

Railroad Ditch, Looking East

- The salt storage shed is a potential risk for nonpoint source pollution, though it is completely enclosed with a roof and walls. Overspill of material can occur, but the material is generally swept back into the shed as necessary.

3. BEST MANAGEMENT PRACTICES

3.1 Source Area Control

To the maximum extent practicable, and to the extent it is cost effective, the use of source area control best management practices designed to prevent stormwater from receiving nonpoint source pollution will be used.

3.1.1 Sediment and Erosion Control

Areas prone to soil erosion should be protected, and the soil kept out of stormwater discharge leaving the site. As described earlier, significant erosion is occurring on the slope to the railroad ditch. Although not all of the eroded area is on city property (some is within the railroad right of way), the City should work with the railroad to revegetate and/or stabilize this slope. It appears that installing a gutter and downspout on the south roof of the Parks Maintenance Shop could reduce erosion in back of this building.

3.1.2 Good Housekeeping

Good housekeeping practices are designed to maintain a clean and orderly work environment. This will reduce the potential for detrimental materials to come in contact with stormwater. The following practices are included in the City's good housekeeping routine.

- Garage areas are generally maintained in a clean and orderly manner.
- Salt overspill is swept back into the salt shed as needed.
- Most maintenance work, materials use and washing is done indoors, in areas that do not drain to the stormwater system.
- The paved area of the yard will be swept once every month, or as conditions warrant.

3.1.3 Preventive Maintenance

Preventive Maintenance involves the regular inspection, testing and cleaning of facility equipment and operational systems. Inspections help to uncover conditions that might lead to a release of materials, and should result in maintenance to prevent such as release. The following equipment/activities are included in the preventive maintenance program:

- Inspection and repair of municipal vehicles and other equipment
- Oil and fluids used for maintenance, as well as tanks for waste fluids, are stored appropriately in the garages

3.1.4 Spill Prevention and Response Procedures

Spills and leaks together are the largest industrial sources of storm water pollution. Therefore, proper material handling procedures and storage requirements for significant materials are followed. As discussed earlier, minor spills and leaks are treated with shop towels or absorbent materials as appropriate. The City of Pewaukee stores absorbent materials, towels, brooms and other equipment for spill response throughout the yard. All material used to absorb a minor spill will be placed in a container and disposed of in an appropriate manner. All employees working in the yard area shall be made aware of proper procedures to follow for spill response.

If a large spill occurs, the Pewaukee Fire Department will be notified and they will treat/remove the spill. The City has documented procedures in the event of an emergency. In 2005, the City submitted their Spills Program proposal to WDNR as required by their NR 216 permit.

3.1.5 Bulk Storage

The City's salt storage area is completely enclosed and covered.

The storage of some bulk materials such as yard waste, topsoil, street sweeping debris, asphalt millings and compost appears to be a potential source of nonpoint source pollution at the yard. Where applicable and practicable, the City should apply of the recommendations of the WDNR "Storage Pile Best Management Practices" to upgrade the current storage of these materials. This may include covering these materials on a regular basis, or grading the area around the piles with berms and/or depressions to trap runoff. The stockpiles could potentially be relocated so there are longer stormwater flow distances from the stored materials to defined drainageways.

In 2011, the City further reviewed the management of these stockpiles. Because they are frequently accessed for material placement and removal, covering these stockpiles regularly would be impractical. Therefore, a higher priority will be placed on constructing a treatment swale or bioretention area north of this area. In the long term, the city will also evaluate the installation of more enclosures for these stockpiles.

Bulk Storage, West End of Yard, Looking South

Bulk Storage, Looking West

3.2 Stormwater Treatment Best Management Practices

Structural control measures may be necessary to control pollutants that are still present in the stormwater after the non-structural controls have been implemented. These types of controls are physical features that control and prevent stormwater pollution. They can range from preventive measures to collection structures to treatment systems. Structural controls require construction of a physical feature or barrier.

3.2.1 Preventive Measures

Preventive measures are controls that are intended to prevent the exposure of stormwater to possible contaminants. The City currently uses the preventive measure of doing most maintenance and materials handling indoors, in areas that will not drain to the stormwater system. Other preventive measures include the enclosure of the salt storage area, and the use of covered dumpsters. Many of the source control measures described earlier can also be considered preventive Best Management Practices.

Another measure the City will undertake in this category is to conduct an annual review of this Public Works Yard Evaluation. This review, and any updates/changes to the evaluation, will be documented in the Annual Report submitted to WDNR for the NR 216 permit. The permit also requires two inspections of the site a year now; one full inspection and one simpler visual inspection.

3.2.2 Diversions

Diversion practices are structures (including grading and paving) that are used to divert stormwater away from high risk areas and prevent pollutants from mixing with runoff. The site currently has a diversion swale along the north edge of the yard area, to prevent runoff from the large hillslope to the north from entering the working yard area. This reduces the amount of runoff which can potentially contact the storage piles of compost, topsoil and yard waste. Opportunities for additional diversion practices appear limited, because of physical site constraints.

3.2.3 Containment

Containment areas are structures designed to hold pollutants or contaminated stormwater to prevent it from being discharged to surface waters. Containment structures have been installed around the fuel tanks. The unintentional ponding and infiltration that occurs through the site, because of the rough grading and surface pockets and depressions, also provides some containment of runoff. The City should consider doing additional grading around the storage piles that drain directly off-site, to contain runoff from these areas.

3.2.4 Other Controls

No designed detention areas or other structural BMPs currently exist in the public works yard.

The City should consider creating some sort of treatment BMP at the downstream end of the swale draining the north side of the materials storage area. This could consist of a biofilter, treatment swale, or rain garden. There appears to be space in this area to construct a small-scale BMP. This would provide an opportunity for the City to conduct a demonstration project or pilot project and showcase the use of innovative stormwater BMPs to citizens, developers, other municipalities and the WDNR.

Possible Location for Treatment Swale or Rain Garden

If yard areas are reconstructed or repaved in the future, there may be opportunities to install structural treatment devices such as catch basins, oil/water separators or Stormceptors. However, the City has no plans in the near to medium term future to reconstruct or repave the yard.

3.3 Summary of Recommended Source Control and Best Management Practices

Some components of stormwater management in the public works yard have already been implemented and are working effectively. It is recommended the City consider implementing the following additional measures, where feasible:

1. Reduce soil erosion from the slope above the railroad ditch. Numerous bare spots, gullies and rivulets exist along this slope. The City should work with Canadian Pacific Railroad and use revegetation, slope protection and flow control to reduce erosion in these areas.

2. Where applicable and practicable, the City should apply of the recommendations of the WDNR "Storage Pile Best Management Practices" to the management of piles of topsoil, compost, yard waste and other bulk materials in the yard. This may include covering some materials, or using berms and depressions to contain runoff from these areas.

3. The City should coordinate cleanup of trash and debris in the railroad ditch with Canadian Pacific Railroad.

4. Consider modifying the swale along the north side of the bulk storage area to provide runoff treatment using a biofilter, treatment swale, or rain garden. This would provide an opportunity for the City to conduct a demonstration project or pilot project and showcase the use of innovative stormwater BMPs to citizens, developers, other municipalities and the WDNR.

5. If yard areas are reconstructed or repaved in the future, the City should investigate installing structural treatment devices such as catch basins, oil/water separators or Stormceptors.

6. The City's internal stormwater education program should include education of appropriate City employees on how to minimize stormwater pollution from yard operations.

7. This public works yard evaluation shall be reviewed on an annual basis. Any modifications or updates shall be noted in the City's Annual Report for the NR 216 permit. The yard should be inspected at least twice a year according to permit requirements; one full inspection and one simpler visual inspection.

ADDENDUM – IMPLEMENTATION SCHEDULE

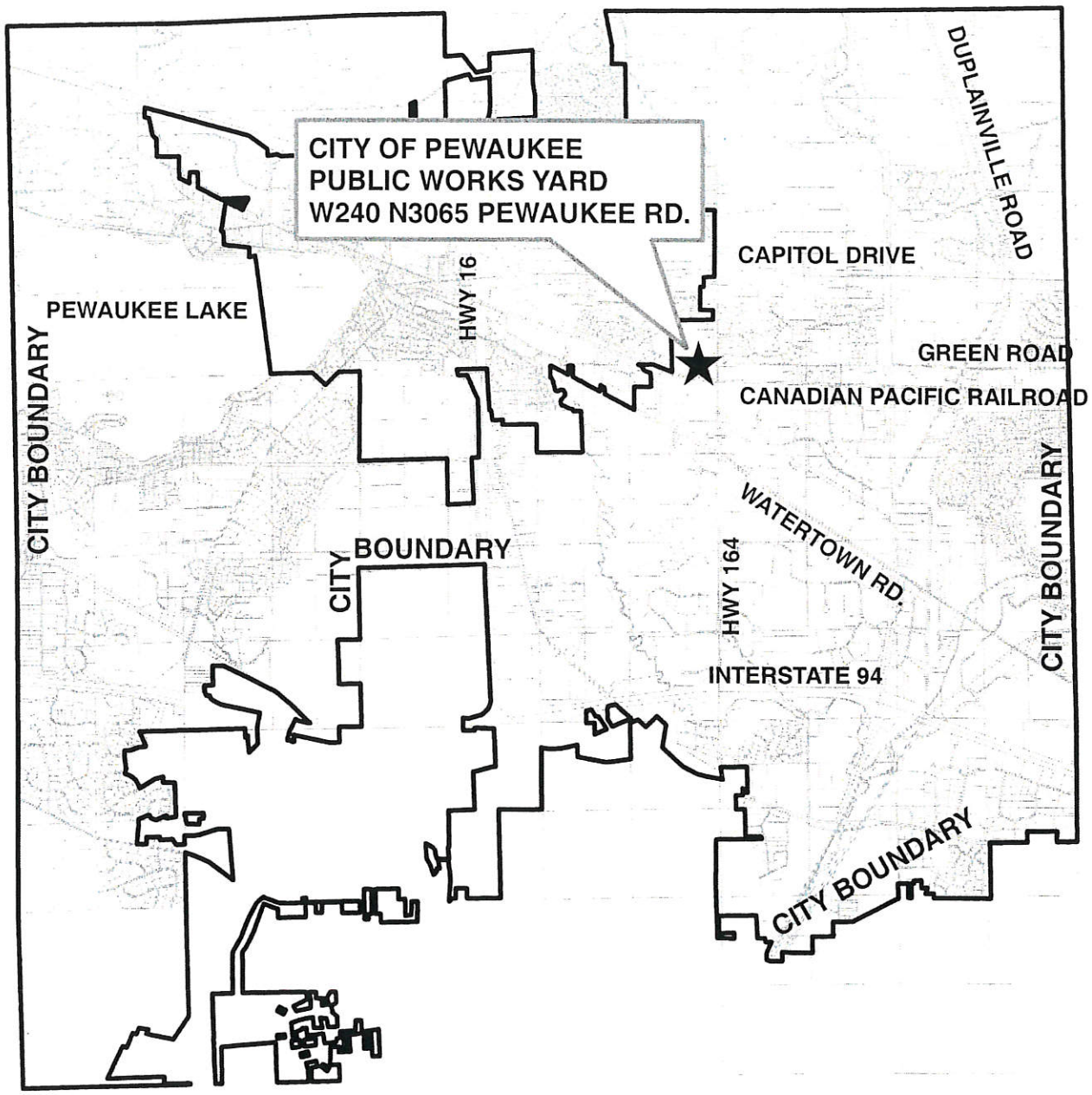
The implementation schedule of this plan is listed here separately so it is more easily updatable if conditions change.

The City anticipates implementation of a treatment swale or bioretention area at the west end of the yard in 2012.

Since it is unlikely that the yard pavement will be repaving or reconstructed in the foreseeable future, the City will begin to consider the possibility of a separate project to install some sort of stormwater treatment, probably underground, for the east yard area which currently drains to the surface flumes and then down the railroad slope.

It is uncertain when the restoration of any of the railroad property could occur, because this requires approval and possible participation with Canadian Pacific.

The other recommendations are implemented on an ongoing basis.



N

5,000 2,500 0 5,000 Feet

MAP 1
LOCATION OF PUBLIC WORKS YARD

Evaluation of Public Works Yard
City of Pewaukee

CITY OF PEWAUKEE
The City in the Country

EarthTech
A tyco International Ltd. Company

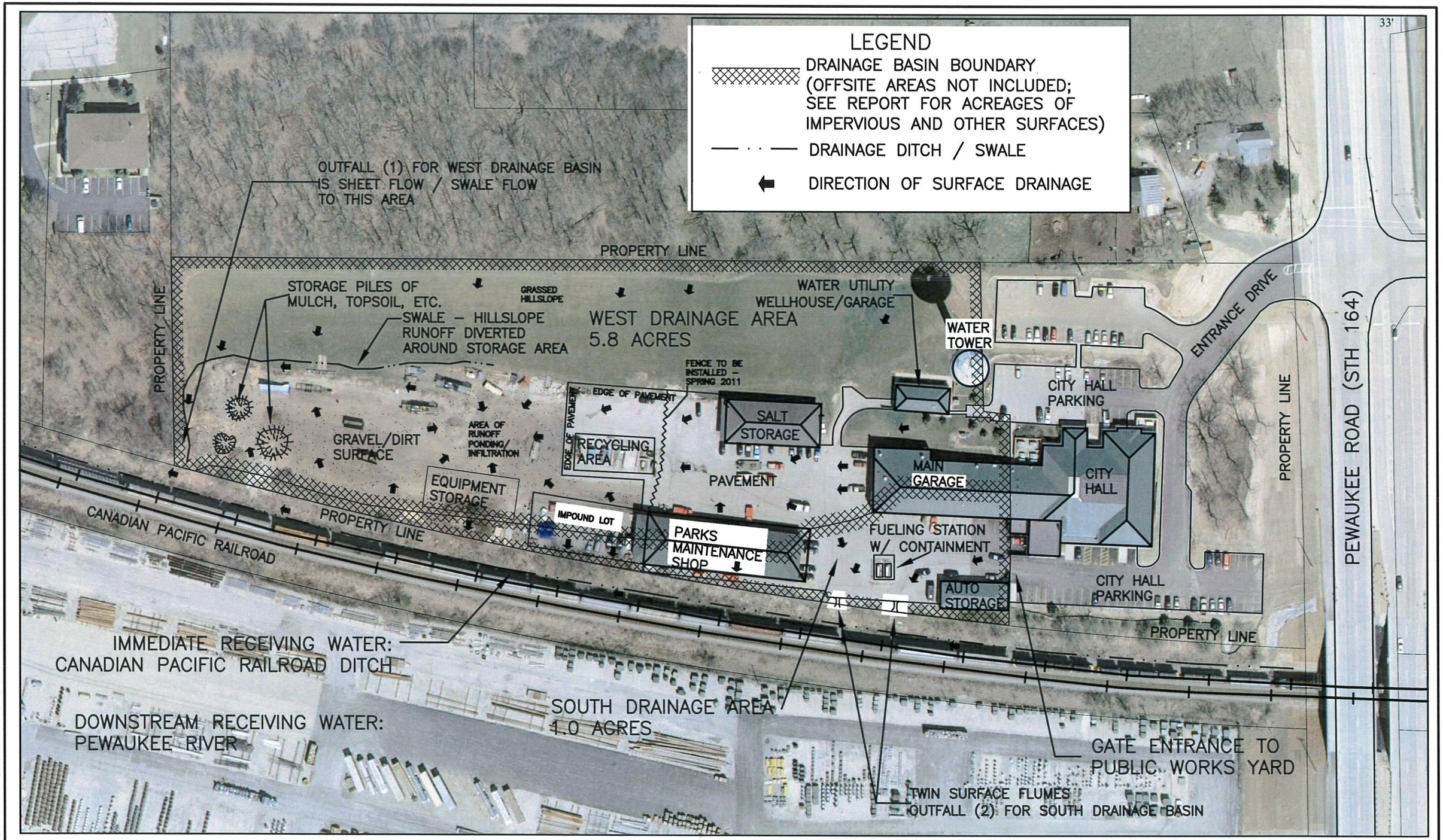
84626

March 2006

Spatial Reference: State Plane South, Datum 1927

Data Source: Pewaukee 2005, Waukesha County 2005, Earth Tech 2005

L:\work\84626\ArcGis\mxd\publicworksyard_march06\map1_yard.mxd



N

0' 50' 100' 200'

SCALE

AECOM

MAP 2
SITE MAP

CITY OF PEWAUKEE
EVALUATION OF PUBLIC WORKS YARD
MARCH 29, 2006 (UPDATED MARCH 2011) 84626

File: C:\projects\pewaukee\swppp\cad\cityhallarea_2011update.dwg Time: Mar 31, 2011 - 6:39am

Appendix B

SEE ENLARGED PARTIAL SITE PLAN

SITE LIMITS (TYP)

PROPOSED WATER TOWER

65' DIA. BALL (TYP)
35' DIA. BELL (TYP)

SALT SHED

TANK

PUBLIC WORKS GARAGE

AREA AVAILABLE FOR STAGING

WELL BUILDING

EXISTING TANK

UPPER PARKING LOT

LOWER PARKING LOT

MWEL

PUBLIC WORKS

VENT

CITY HALL

GARAGE

ACCESS ROUTE FOR TANK CONSTRUCTION

PEWAUKEE ROAD

S.T.H. 164

SITE PLAN

ZC01 50 0 50 100 FT

Ruekert•Mielke

W233 N2080 Ridgeview Parkway • Waukesha, WI 53188-1020
(262) 542-5783 • Fax (262) 542-2563 • www.ruekert-mielke.com

REVISIONS	TOWN:	RANGE:	SECTION(s):
1			
2			
3			
4			
5			
6			
7			

CITY HALL ELEVATED TANK

SITE PLAN

CITY OF PEWAUKEE
WAUKESHA COUNTY, WISCONSIN

DESIGNED BY: DRB

DRAFTED BY: JMC

CHECKED BY:

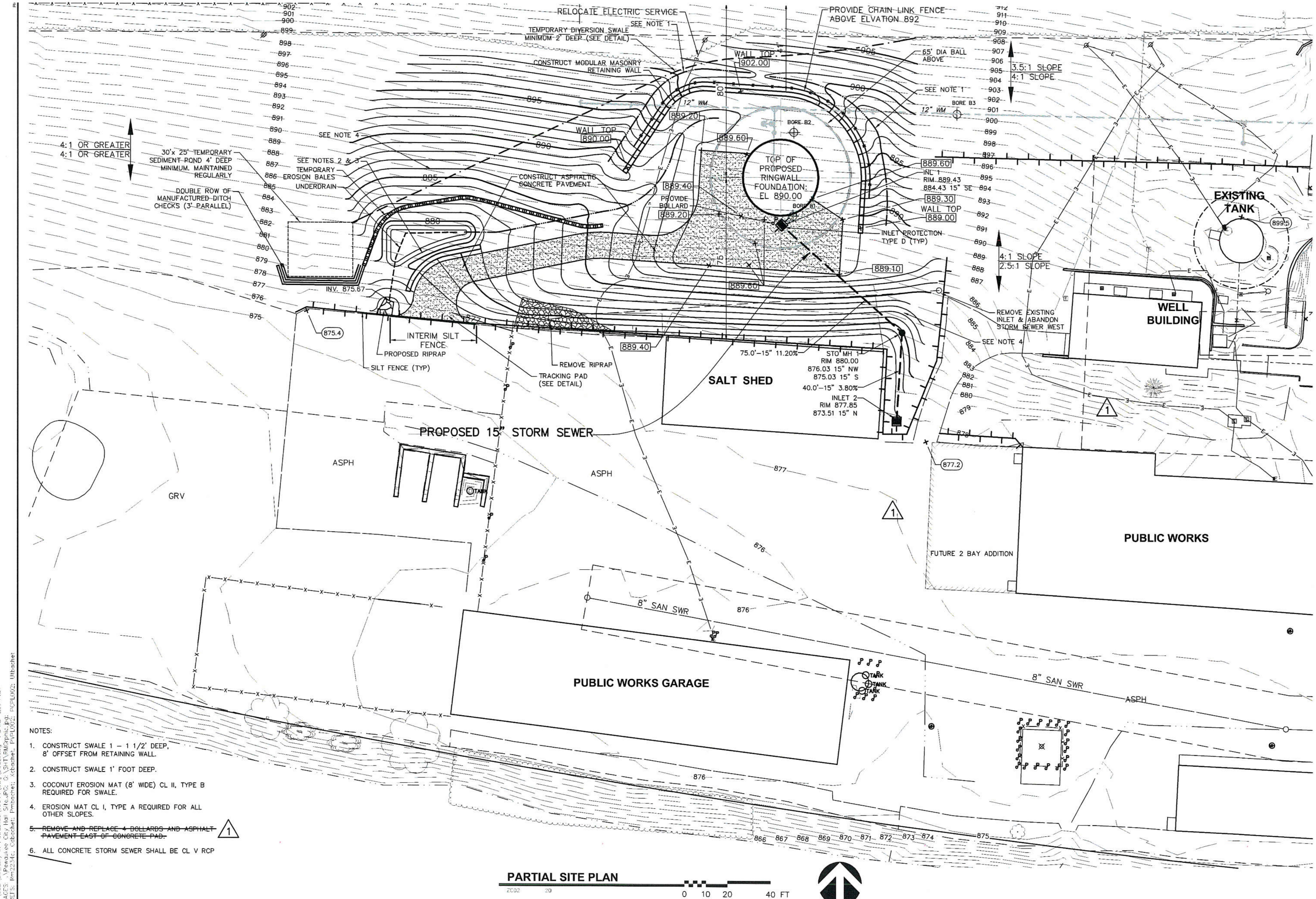
DATE: NOVEMBER, 2015

FILE NO.
26-10044

BID SET

SHEET NO.
C01

Nov 23, 2015 - 10:10am PLOTTED BY: CMUELLER SAVED BY: jcleslak
G:\C3D\26_City of Pewaukee\10044\dwg\ZC01.dwg Site Plan
IMAGES: G:\SHTRMGraphic.jpg
XREFS: Rm22134; Cdbachet; Pmbachet; Xcbachet; Utbachet


RELOCATE ELECTRIC SERVICE
SEE NOTE 1
PROVIDE CHAIN LINK FENCE ABOVE ELEVATION 892
TEMPORARY DIVERSION SWALE MINIMUM 2' DEEP (SEE DETAIL)
CONSTRUCT MODULAR MASONRY RETAINING WALL
WALL TOP 902.00
65' DIA BALL ABOVE
SEE NOTE 1
3.5:1 SLOPE
4:1 SLOPE
12" WM
BORE B3
BORE B2
WALL TOP 890.00
SEE NOTE 4
4:1 OR GREATER
4:1 OR GREATER
30'x 25' TEMPORARY SEDIMENT POND 4' DEEP MINIMUM. MAINTAINED REGULARLY
SEE NOTES 2 & 3
TEMPORARY EROSION BALES
UNDERDRAIN
DOUBLE ROW OF MANUFACTURED DITCH CHECKS (3' PARALLEL)
CONSTRUCT ASPHALTIC CONCRETE PAVEMENT
889.20
889.60
889.40
PROVIDE BOLLARD
889.20
TOP OF PROPOSED RINGWALL FOUNDATION: EL 890.00
889.60
INL 1
RIM 889.43
884.43 15" SE
889.30
WALL TOP
889.00
INLET PROTECTION TYPE D (TYP)
4:1 SLOPE
2.5:1 SLOPE
889.10
889.60
EXISTING TANK
899.5
INV. 875.67
875.4
INTERIM SILT FENCE
PROPOSED RIPRAP
SILT FENCE (TYP)
REMOVE RIPRAP
TRACKING PAD (SEE DETAIL)
889.40
75.0'-15" 11.20%
STO MH 1
RIM 880.00
876.03 15" NW
875.03 15" S
40.0'-15" 3.80%
INLET 2
RIM 877.85
873.51 15" N
SALT SHED
REMOVE EXISTING INLET & ABANDON STORM SEWER WEST
SEE NOTE 4
WELL BUILDING
PROPOSED 15" STORM SEWER
ASPH
ASPH
GRV
877.2
FUTURE 2 BAY ADDITION
PUBLIC WORKS
8" SAN SWR
PUBLIC WORKS GARAGE
8" SAN SWR
ASPH
TANK
PARTIAL SITE PLAN
0 10 20 40 FT

NOTES:

1. CONSTRUCT SWALE 1 – 1 1/2' DEEP, 8' OFFSET FROM RETAINING WALL.
2. CONSTRUCT SWALE 1' FOOT DEEP.
3. COCONUT EROSION MAT (8' WIDE) CL II, TYPE B REQUIRED FOR SWALE.
4. EROSION MAT CL I, TYPE A REQUIRED FOR ALL OTHER SLOPES.
5. ~~REMOVE AND REPLACE 4 BOLLARDS AND ASPHALT PAVEMENT EAST OF CONCRETE PAD.~~ (1)
6. ALL CONCRETE STORM SEWER SHALL BE CL V RCP

REV	DATE	DESCRIPTION
2	1-25-2016	REVISIONS TO PROPOSED GRADING
1	12-02-2015	DELETE SANITARY AND STORM SEWERS, DELETE NOTE.

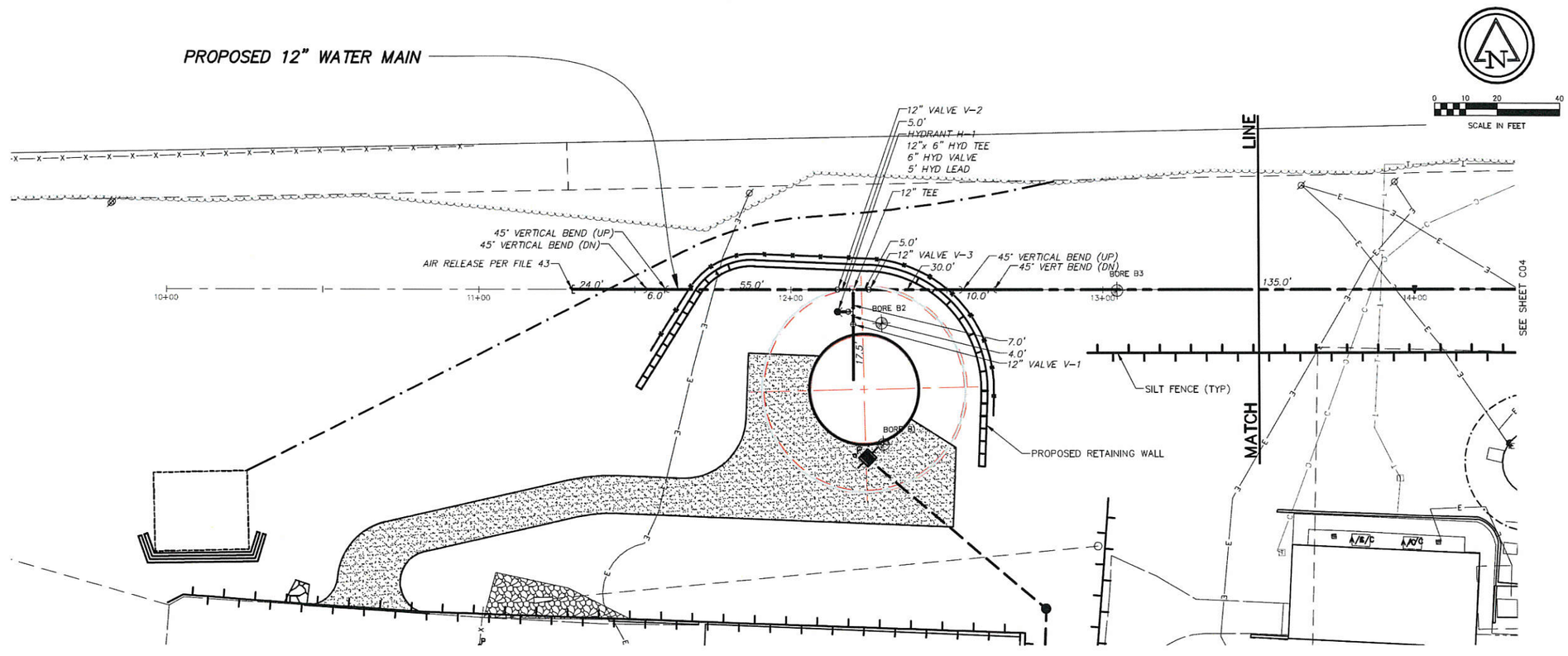
Ruekert·Mielke
W233 N2080 Ridgeview Parkway • Waukesha, WI 53188-1020

CITY HALL ELEVATED TANK
PARTIAL SITE PLAN INCLUDING SEWERS
CITY OF PEWAUKEE

DESIGNED BY: DRB
DRAFTED BY: JMC
CHECKED BY:
DATE: NOVEMBER, 20
FILE NO. 26-10044

BID SET

SHEET NO. C02-R



Ruekert·Mielke
W233 N2080 Ridgeview Parkway • Waukesha, WI 53188-1020
(262) 542-5733 • Fax: (262) 542-5681 • www.ruekert-mielke.com

TOWN: RANGE: SECTION(S):

CITY HALL ELEVATED TANK WATER MAIN
PROPOSED WATER MAIN
IN: CITY OF PEWAUKEE CITY HALL
FROM: 100' WEST OF PROPOSED WATER TOWER
TO: 100' EAST OF PROPOSED WATER TOWER
CITY OF PEWAUKEE
WAUKESHA COUNTY, WISCONSIN

DESIGNED BY: GEP
DRAFTED BY: PJR
CHECKED BY:
DATE: NOVEMBER, 2015
FILE NO.
26-10044.200
BID SET
SHEET NO.
C03

Nov 23, 2015 10:12am PLOTTED BY: CMUELLER SAVED BY: jcleslak
G:\C35\26_City of Pewaukee\10044\dwg\Z-C03-cpp-Elevated Tank Water Main.dwg Water Main Plan Profile
IMAGES: G:\SHT_RWGraphic.jpg
XREFS: G:\C30\26_City of Pewaukee\10044\dwg\Pritchet.dwg; G:\C35\26_City of Pewaukee\10044\dwg\Albachet.dwg; G:\C30\26_City of Pewaukee\10044\dwg\Dlgfdbachet.dwg;

PROPOSED 12" WATER MAIN

SCALE IN FEET: 0 10 20 40

SEE SHEET C03

12" VALVE V-2
5.0'
HYDRANT H-1
12"x 6" HYD TEE
6" HYD VALVE
5' HYD LEAD
12" TEE
5.0'
12" VALVE V-3
30.0'
45° VERTICAL BEND (UP)
45° VERT BEND (DN)
10.0'
7.0'
4.0'
12" VALVE V-1
55.0'
BORE B2
BORE B3
BORE B1
17.5'
PROPOSED RETAINING WALL
SILT FENCE (TYP)
LINE
MATCH
135.0'
37.7'
187.2'
12+00
13+00
14+00
15+00
16+00
2" AIR RELEASE
12"x 8" TEE
10.0'-8" 0.00%
8" VALVE V-4
GUY
22 1/2° BEND
INLET PROTECTION TYPE D (TYP)
22 1/2° & 11 1/4° BENDS
12" TAPPING TEE W/ 12" VALVE V-5 NW
NOTE: PROTECT DOWNSTREAM INLETS AND CATCH BASINS

EXIST GRADE OVER REFERENCE LINE
DUCTILE IRON — PVC
SOIL BACKFILL — GRANULAR BACKFILL
PROPOSED RETAINING WALL
2" INSULATION
10.0'-12" 97.72%
95.0' 12" 0.00%
68.5' 12" 1.32%
66.5' 12" 6.57%
75.0' 12" 0.00%
149.9' 12" 2.57%
53.7' 12" 11.55%
55.0' 12" 1.60%
12" STO SWR
12" STO SWR FIELD VERIFY DEPTH BEFORE STARTING WORK (TYP)
EXIST GRADE OVER PROPOSED WATER MAIN
PROPOSED 12" WATER MAIN
NOTE: GRANULAR BACKFILL 5' BOTH WAYS FROM CENTER OF RETAINING WALL

900
890
880
870

12
13
14
15
16
17

+15.01 12" VALVE V-2 INV. 883.00
+20.01 12" TEE INV. 883.00
+25.01 12" VALVE V-3 INV. 883.00
+54.99 45° VERTICAL BEND (UP) INV. 883.00
+64.99 45° VERT BEND (DN) INV. 892.77
+00.00 2" AIR RELEASE & GRD BRK INV. 896.08
+37.75 12"x 8" TEE INV. 888.25
+75.00 GRD BRK INV. 896.08
+24.94 22 1/2° BEND INV. 894.22
+74.59 22 1/2° & 11 1/4° BENDS INV. 888.00
+05.13 12" TAPPING TEE W/ 12" VALVE V-5 NW INV. 897.21±

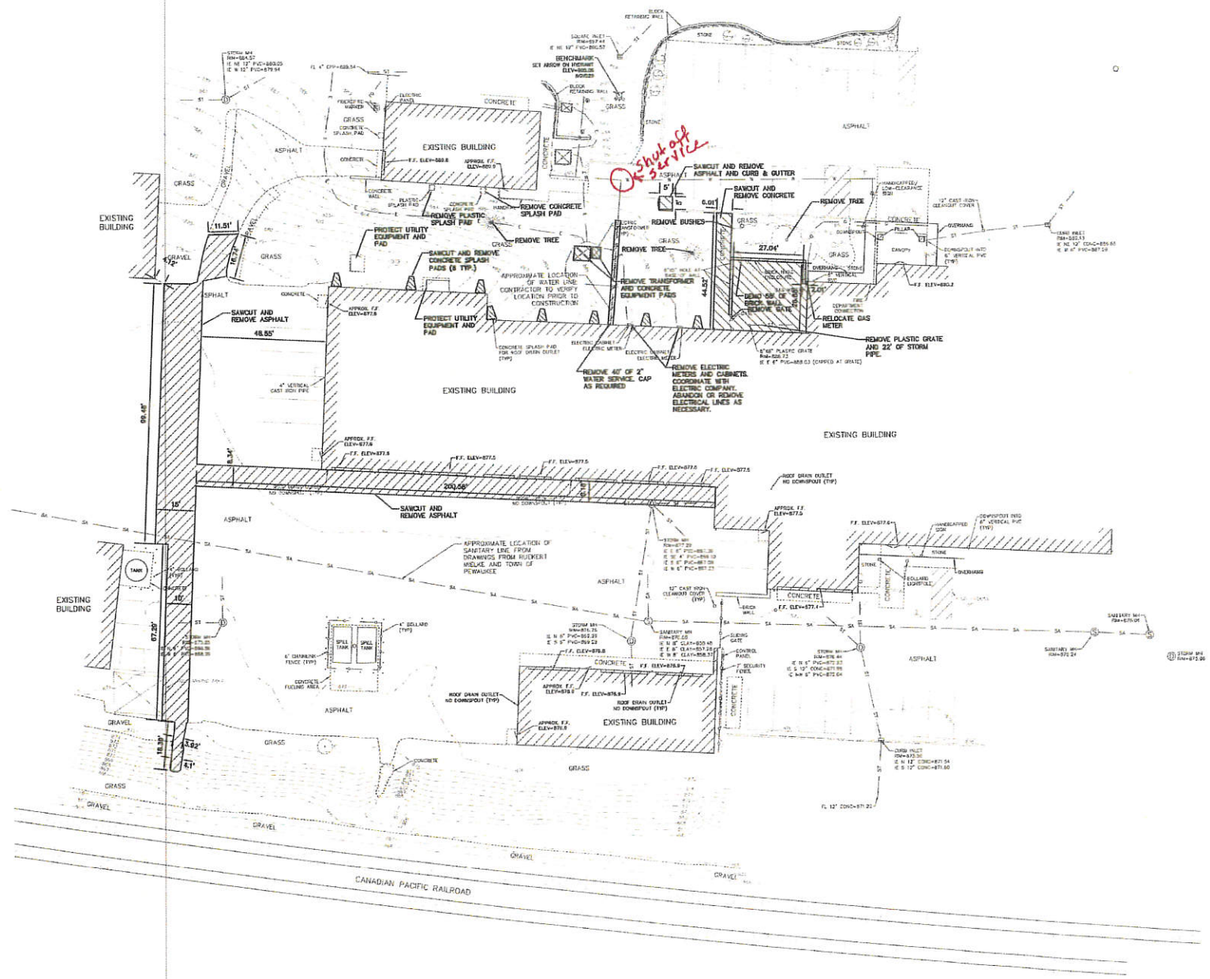
Ruekert·Mielke
W233 N2060 Ridgeview Parkway • Waukesha, WI 53188-1020
(262) 542-5733 • Fax: (262) 542-5651 • www.ruekert-mielke.com

TOWN:	RANGE: SECTION(S):

CITY HALL ELEVATED TANK WATER MAIN
PROPOSED WATER MAIN
IN: CITY OF PEWAUKEE CITY HALL
FROM: 100' EAST OF PROPOSED WATER TOWER
TO: DRIVEWAY
CITY OF PEWAUKEE
WAUKESHA COUNTY, WISCONSIN

DESIGNED BY: GEP
DRAFTED BY: PJR
CHECKED BY:
DATE: NOVEMBER, 2015
FILE NO. 26-10044.200
BID SET
SHEET NO. C04

Appendix C



NOTE:
EXISTING UTILITIES SHOWN ARE INDICATED IN ACCORDANCE WITH AVAILABLE RECORDS AND FIELD MEASUREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES, INCLUDING SEWER AND WATER FROM THE OWNERS OF THE RESPECTIVE UTILITIES. ALL UTILITY OWNERS SHALL BE NOTIFIED BY THE CONTRACTOR 72 HOURS PRIOR TO EXCAVATION

NORTH

EXISTING SITE AND DEMOLITION PLAN

1" = 20' SCALE

PRELIMINARY DRAWING - NOT FOR CONSTRUCTION

EXCEL ENGINEERING INC
100 CAMELOT DRIVE
FOND DU LAC, WI 54935
PHONE: (920) 926-9800
FAX: (920) 926-9801

Always a Better Plan

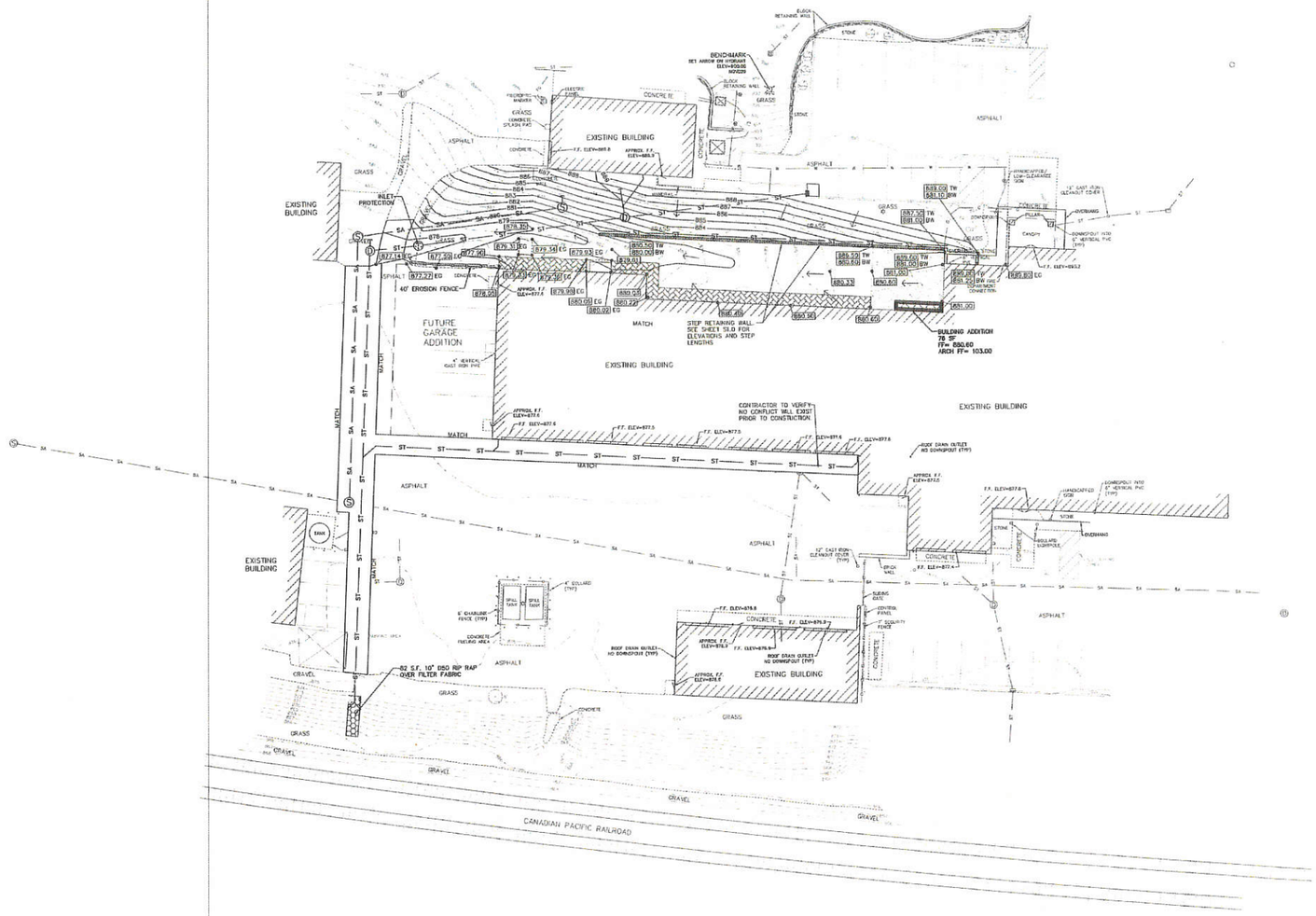
OWNER:
CITY OF PEWAUKEE
W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072

PROJECT:
ROOF IMPROVEMENTS FOR:
PEWAUKEE CITY HALL
W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072

PRELIMINARY SHEET DATES:
MARCH 1, 2016

JOB NUMBER:
1303190

SHEET
C1.1



NOTE:
CONTRACTOR TO PROVIDE TRACKING PAD AT CONSTRUCTION ENTRANCE

NORTH

GRADING, & EROSION CONTROL PLAN

1"= 20' SCALE 20' 0 20' 40' FEET

PRELIMINARY DRAWING - NOT FOR CONSTRUCTION

EXCEL ENGINEERING inc.
100 CAMELOT DRIVE
FOND DU LAC, WI 54935
PHONE: (920) 926-6800
FAX: (920) 926-5091

Always a Better Plan

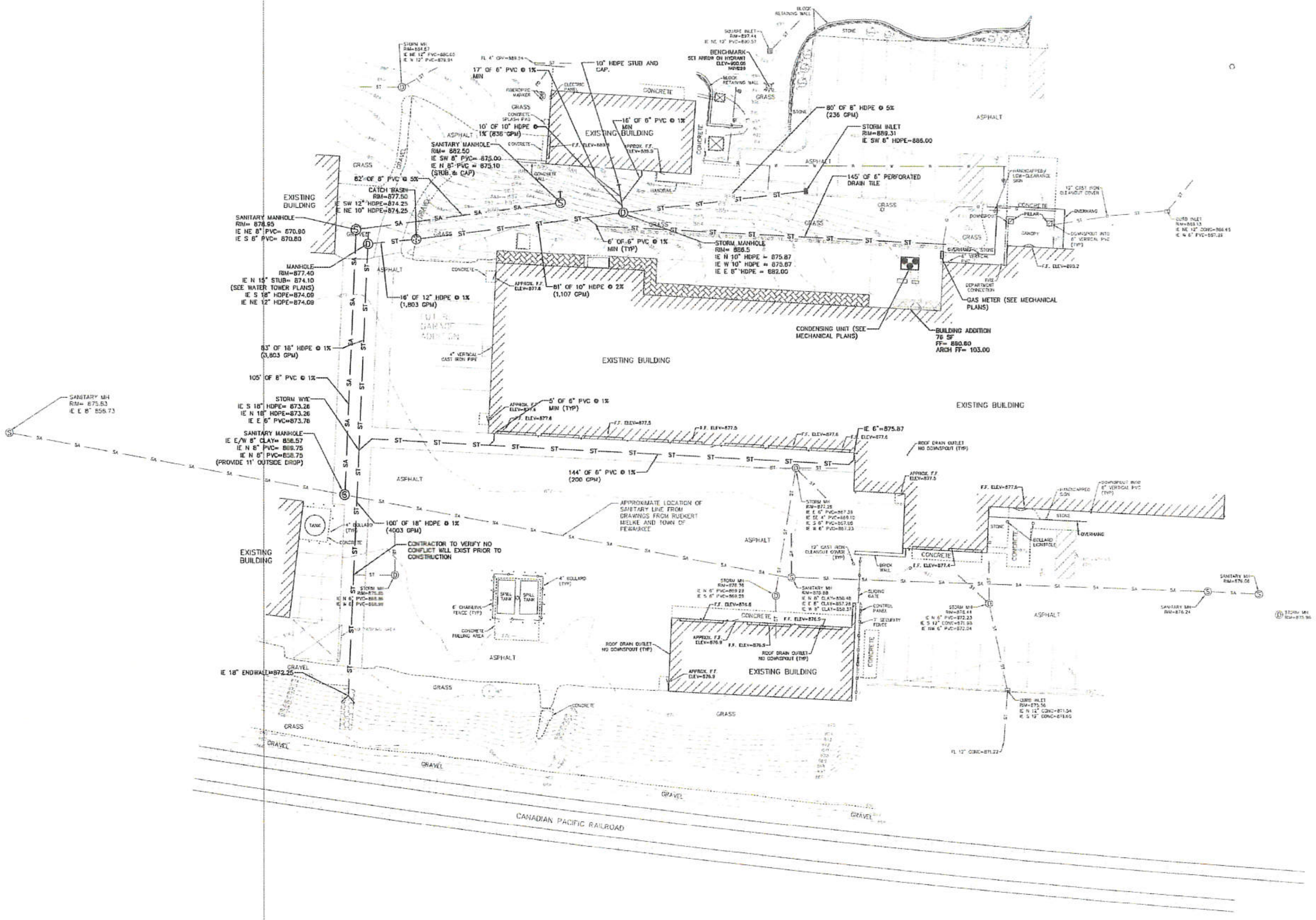
OWNER:
CITY OF PEWAUKEE
W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072

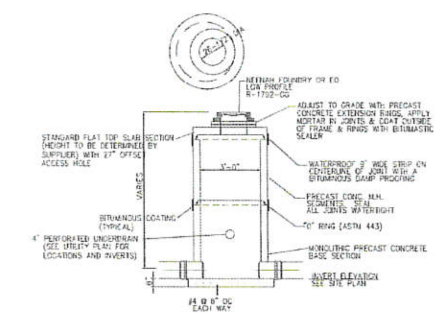
PROJECT:
ROOF IMPROVEMENTS FOR:
PEWAUKEE CITY HALL
W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072

PRELIMINARY SHEET DATES:
AUGUST 7, 2015
MARCH 1, 2016

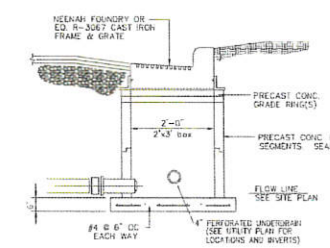
JOB NUMBER
1303190

SHEET
C1.3

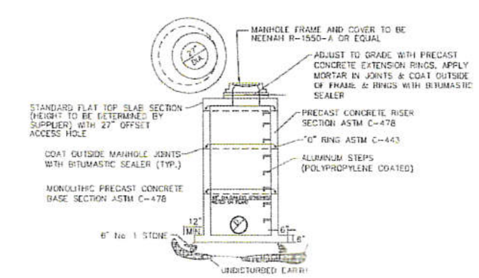




CATCH BASIN DETAIL
NO SCALE



CURB INLET
NO SCALE



STORM MANHOLE DETAIL
NO SCALE

NORTH

UTILITIES PLAN

1" = 20'
SCALE 20 0 20 40 FEET

PRELIMINARY DRAWING - NOT FOR CONSTRUCTION

EXCEL ENGINEERING Inc.
100 CAMELOT DRIVE
FOND DU LAC, WI 54935
PHONE: (920) 926-9800
FAX: (920) 926-9801
Always a Better Plan

OWNER:
CITY OF PEWAUKEE
W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072

PROJECT:
ROOF IMPROVEMENTS FOR:
PEWAUKEE CITY HALL
W240 N3065 PEWAUKEE ROAD
PEWAUKEE, WI 53072

PRELIMINARY SHEET DATES:
MARCH 1, 2016

JOB NUMBER
1303190

SHEET
C1.4

Appendix D

The Hi-Arch Gambrel™

The smart year-round solution for salt storage– and so much more

AST
ADVANCED STORAGE TECHNOLOGY, INC.

Undercover Operation

Since 1980, the Hi-Arch Gambrel™ has proven to be the smart solution for hundreds of municipalities, counties, and states across the U.S.

The Hi-Arch Gambrel features an interior clearance of 30' or more, extending the full length of the building. **As a result, tractor-trailers can dump salt directly under cover, and mixing and loading operations can be done inside too.** This not only protects the environment, but enables crews to work more safely and efficiently, saving both time and money.

Generous headroom maximizes the building's capacity. Ample lighting and ventilation also make it an ideal summer work area. A lean-to can be attached to add even more function and versatility to the structure.

Our building design has been analyzed and approved by numerous engineering departments, including many state Departments of Transportation. In fact, many of our clients are so satisfied with the Hi-Arch Gambrel's structural and fiscal performance that they have become repeat customers.

The Hi-Arch Gambrel gives you more for your money, because it's more than salt storage—it's a year-round, multi-purpose public works facility!

Each community and its storage needs are unique. The Hi-Arch Gambrel's versatile design can be tailored to store one or more piles of salt, mix or other materials, and to fit your site and budget requirements. A wide range of sizes can accommodate quantities from a few hundred tons to many thousands of tons.

After discussing your storage needs for salt and other materials, we can recommend sizes and layouts to meet your specific operational requirements.

Protects the Environment

Undercover operation improves efficiency and keeps you in compliance with environmental regulations. Inside dumping and operations:

- Eliminate outdoor salt piles
- Prevent weather exposure
- Prevent runoff and decrease pollution liability

Maximizes Your Capacity

The Hi-Arch Gambrel's 30-foot-plus vertical clearance and rectangular shape allow you to fill the structure to capacity without the need for costly conveyors. Twelve foot (12') high crib walls provide ample headroom, and front-end loaders can build the pile height toward the center of the building at the natural angle of repose of the material.

With the Hi-Arch Gambrel, you can store more material per square foot than other structures, so it takes up less space on your site—and that means lower site work and paving costs.

Inside Dumping

Strong Many Features

High Strength—Low Maintenance

The Hi-Arch Gambrel stands up to real-life working conditions. The crib wall panels are internally reinforced to withstand operational impact from equipment, as well as to support the weight of stored material. Salt will not harm the wall structurally, and the exterior can be painted or left natural. And while the wood wall is more economical, a concrete wall can be substituted if that would best meet the needs of your particular facility.

Our permanent, durable roof system consists of asphalt shingles or metal panels supported by a plywood deck over sturdy wood trusses.

The Lean-To—a popular and versatile option

A lean-to can be located on any side or end wall. When unenclosed, it serves as a basic and inexpensive way to shelter valuable equipment and supplies. When fully or partially enclosed, it can be customized for weathertight secure storage, a maintenance area or workshop—even office space. The lean-to can be built at the same time as the main structure or added at a future date.

Aesthetics

Materials and finishes can be chosen to harmonize with surroundings and other buildings nearby. You can have a shingle or metal roof, decorative elements such as cupolas, dormer windows and shutters, standard or custom siding, and colors of your choice.

Options

Vents and Skylights

The Hi-Arch Gambrel has full-length ridge and eave vents that provide ample passive ventilation; mechanical fans are not needed. Translucent skylight panels extend the length of the roof on both sides to provide plentiful natural lighting during daylight hours.

Overhead Doors

For added security or protection from the weather, an electrically operated overhead door can be installed in the main entranceway, with a manual exit door nearby.

Side Entrance

A side entrance offers an ideal design for storing multiple products. The side entrance can be off-centered in order to accommodate piles of various size while still providing a covered area for mixing and loading. Multiple entrances can also be provided.

Concrete Wall

If you prefer, a concrete wall can be substituted for the reinforced wood panel system.

Save Money

The Hi-Arch Gambrel:

- Prevents wasteful and costly runoff of salt
- Prevents double handling by your crews
- Prevents lumps and crusts which lead to clogged spreaders, downtime, and delays in serving your taxpayers
- Increases operational efficiency and reduces overtime and payroll costs
- Eliminates the need for conveyors which are expensive to purchase, operate, and maintain
- Prevents possible legal and environmental costs that result from salt runoff

The Hi-Arch Gambrel can help you save money on salt purchases, since many vendors give discounts for larger orders and early-season deliveries. This results in an even faster payback on your new building!

Improve Your Working Environment

- Delivery, mixing, and loading inside means your crews operate in dry, safe conditions regardless of the weather
- Salt and other materials stay dry and easy to work with
- Mixing can be done in advance, so your crews don't have to spend time mixing outdoors during a storm
- Inside operation reduces noise from loaders and other vehicles
- Both natural and artificial light sources facilitate operations and conserve energy
- Ridge and eave vents provide excellent passive ventilation and eliminate the need for fans

Small Building Design

For storage needs of less than 500 tons, we have developed a design for smaller structures. Please let us know if you would like further details on this option.

Economical

Efficient

Knowledgeable

We'll work with you

Our knowledgeable team can assist you throughout the planning process. We'll help analyze your needs and recommend the appropriate size and features for your operations– and your budget. We can work with your department and any other officials or consultants involved in your project.

To help you make the most informed decision, we can provide information including:

- Sizes, capacities, features, and budget prices
- How the Hi-Arch Gambrel compares to other types of storage structures
- Wall and foundation options
- Issues relating to salt storage sites
- Services we can provide
- Customer references

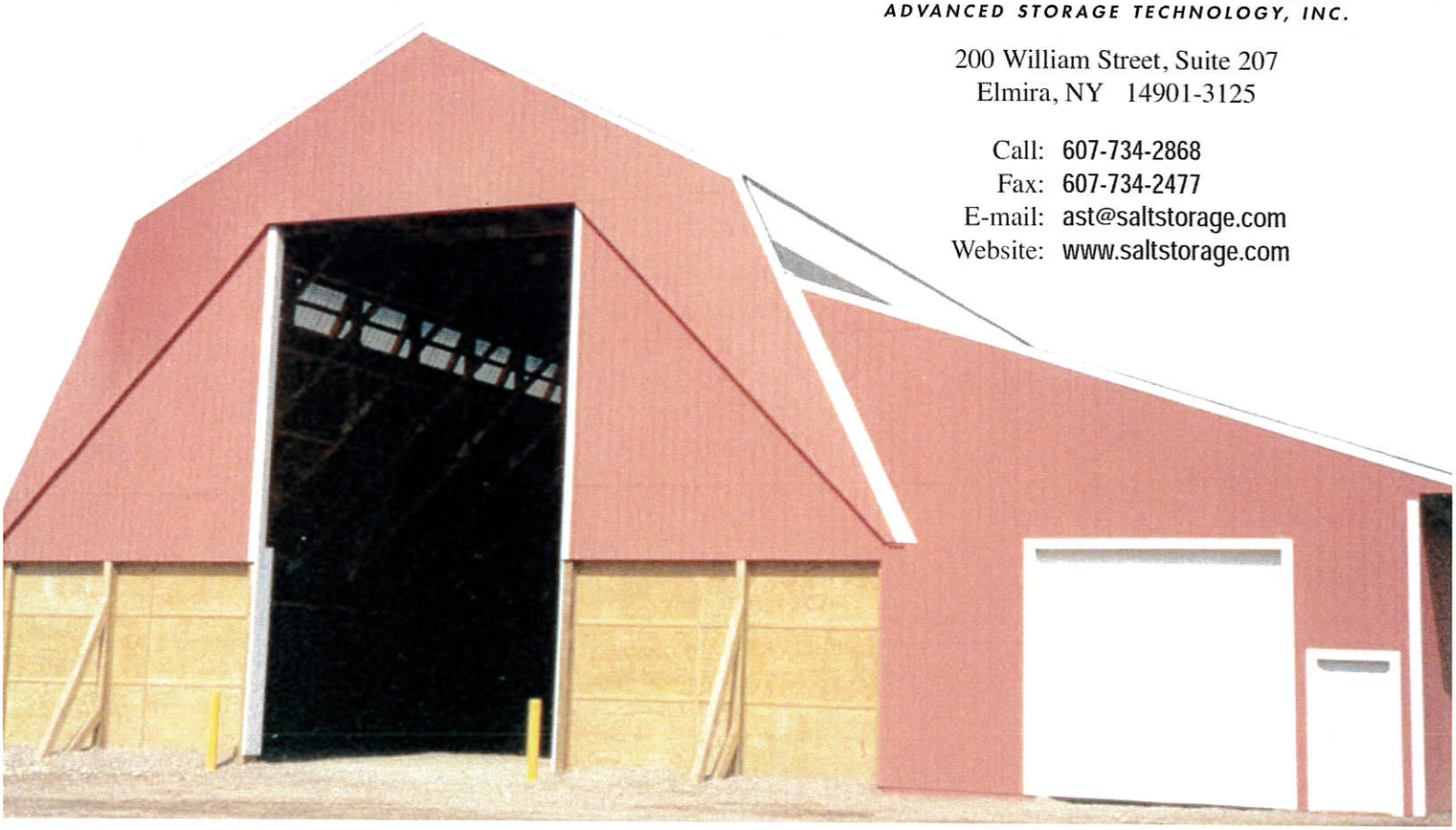
Let's get started!

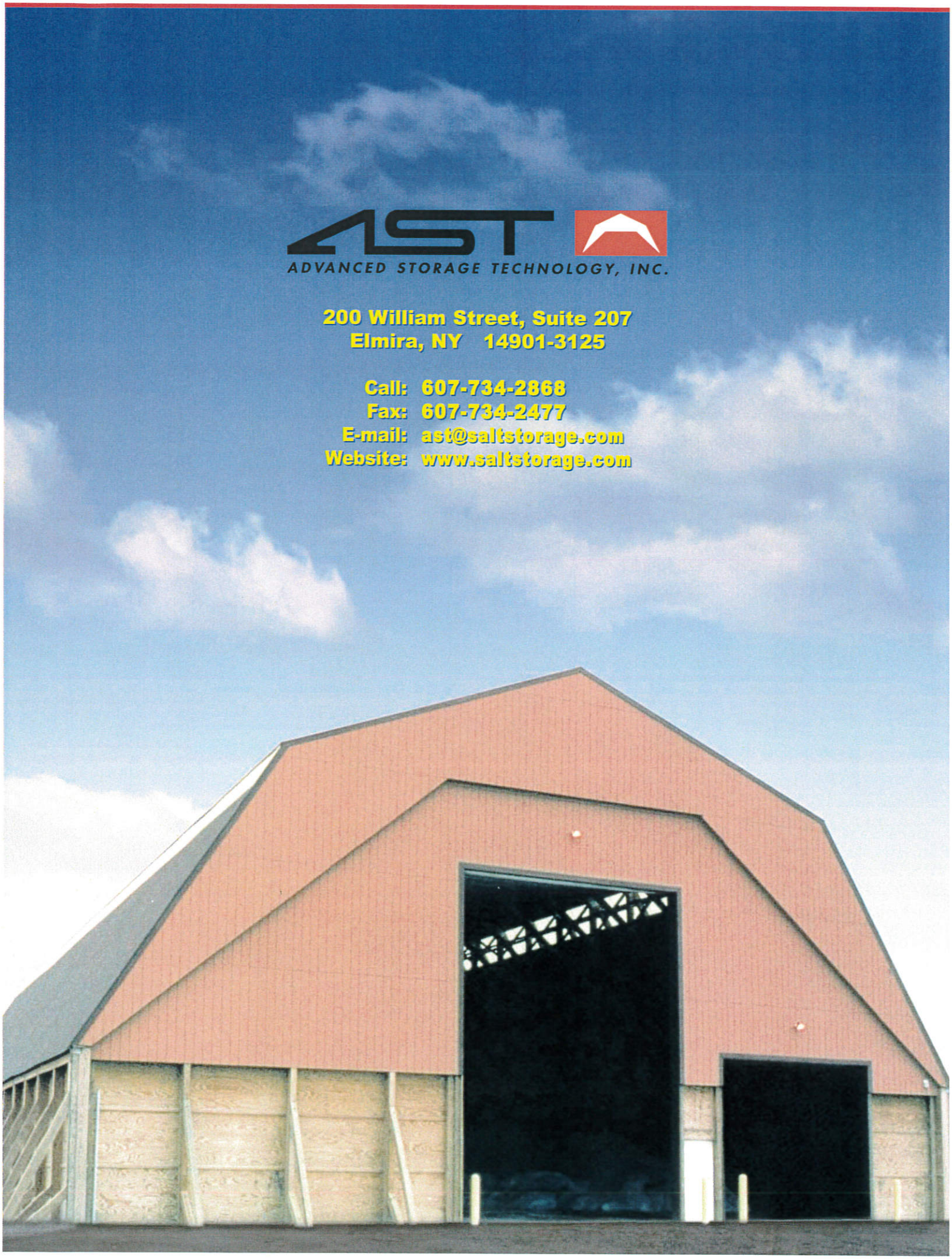
Just tell us how you work, and we'll design a building that will work for you for years to come.

AST
ADVANCED STORAGE TECHNOLOGY, INC.

200 William Street, Suite 207
Elmira, NY 14901-3125

Call: 607-734-2868
Fax: 607-734-2477
E-mail: ast@saltstorage.com
Website: www.saltstorage.com




AST
ADVANCED STORAGE TECHNOLOGY, INC.
200 William Street, Suite 207
Elmira, NY 14901-3125
Call: 607-734-2868
Fax: 607-734-2477
E-mail: ast@saltstorage.com
Website: www.saltstorage.com

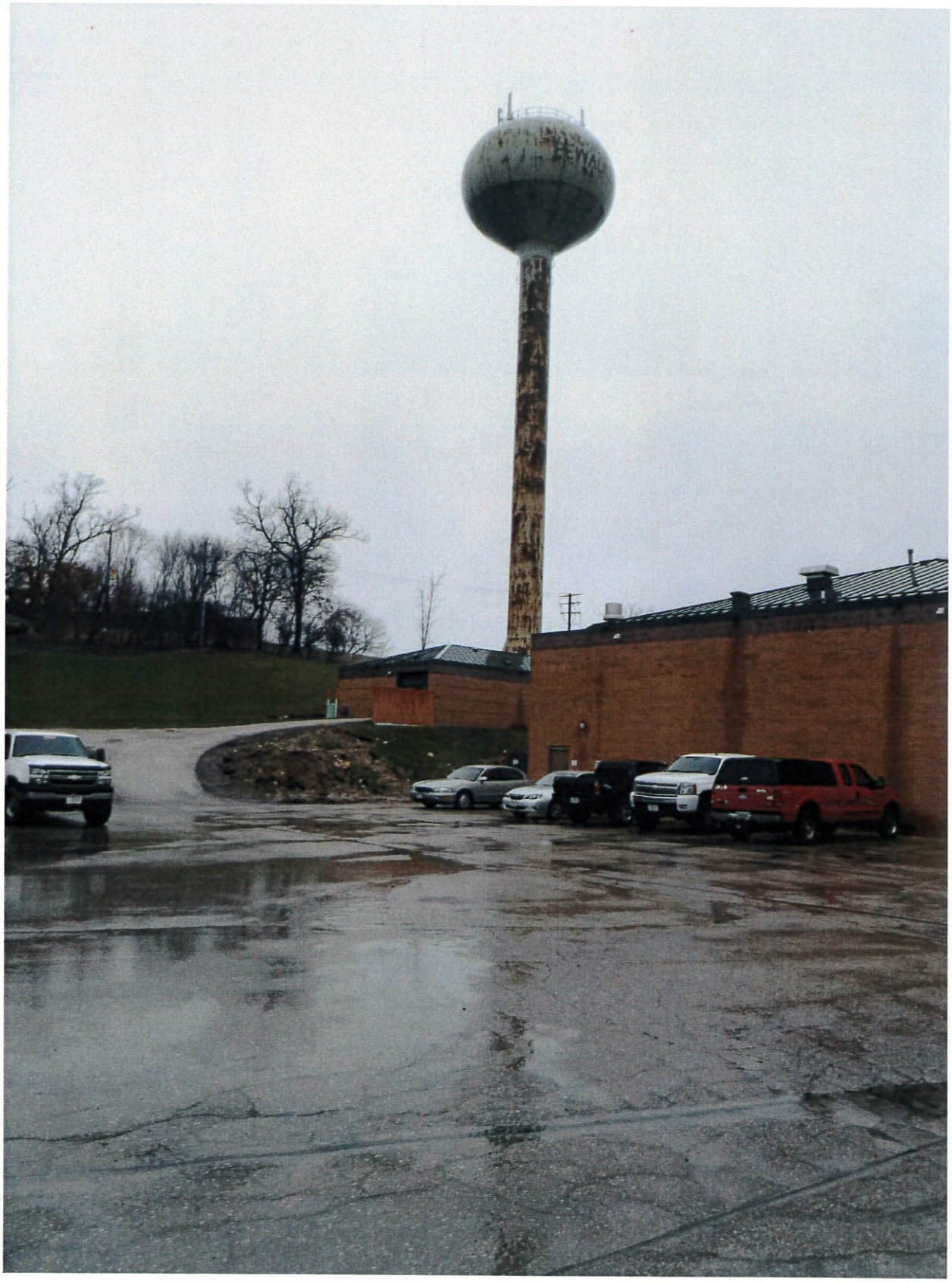
Appendix E

Brine tank on corner of parks maintenance shop.

Salt storage facility.

View southeast of fueling station & auto storage building.

View east of Main garage.



View northeast of pumphouse & watertower.

Inside of salt storage facility.

View west of the yard.

View South west of the yard.

Views west along the south end of yard (behind parks maintenance shop).

View east along south edge of yard.

Exhibit E

City of Pewaukee
Interoffice Memorandum

TO: Mayor and Common Council

FROM: Carol Sazama, Accountant

DATE: March 11, 2016

RE: Report for Storm Water Management Fund

Attached please find a summary of the various budget accounts. The summary shows the following information:

1. Account
2. 2015 Budget amount
3. Actual amount received/expended through December 31, 2015
4. Balance remaining as of December 31, 2015
5. Percent of account remaining as of December 31, 2015

If you would like to see the detailed information, please let me know.

Please keep in mind this is a preliminary end of year report, a final report will be distributed upon completion of the audit.

Attachment

cc: Jeff Weigel

Preliminary Storm Water Management Fund 12/31/15

Account	2015 Budget	Actual as of 12/31/15	Balance Remaining	Percent Remaining
Permits	$ 100	$ 300	$ (200)	0.00%
Storm Water Management Fee	$ 1,485,000	$ 1,471,404	$ 13,596	0.92%
Erosion Control Inspections	$ -	$ -	$ -	0.00%
Outside Engineering Fees Reimbursed	$ 15,000	$ 101,523	$ (86,523)	-576.82%
Inhouse Engineer Services Reimb.	$ 5,000	$ 28,618	$ (23,618)	-472.36%
Storm Water Services	$ 2,000	$ -	$ 2,000	0.00%
Storm Water Management-Credits & Rebates	$ (20,000)	$ (207)	$ (19,793)	98.97%
Storm Water Management-Credit Application Fee	$ 600	$ -	$ 600	100.00%
Interest on Investments	$ 1,000	$ 10,430	$ (9,430)	-943.00%
Miscellaneous Revenue	$ -	$ 67,964	$ (67,964)	0.00%
Proceeds of Long Term Debt	$ 520,000	$ -	$ 520,000	100.00%
Long Term Debt Premium	$ -	$ -	$ -	0.00%
Transfer from General Fund	$ 12,350	$ 12,348	$ 2	0.02%
Transfer from Cemetery Fund	$ 444	$ 444	$ -	0.00%
TOTAL REVENUES	$ 2,021,494	$ 1,692,824	$ 328,670	16.26%

Account	2015 Budget	Actual as of 12/31/15	Balance Remaining	Percent Remaining
Total Adminstration & General	$ 192,604	$ 233,402	$ (40,798)	-21%
Total Storm Sewer Maintenance	$ 34,236	$ 21,289	$ 12,947	38%
Total Ditch & Culvert Maintenance	$ 102,886	$ 77,947	$ 24,939	24%
Total Public Works Yard Maintenance	$ 3,147	$ -	$ 3,147	100%
Total Street Sweeping	$ 14,736	$ 15,603	$ (867)	-6%
Total Catch Basin Cleaning & Maint.	$ 100,886	$ 47,298	$ 53,588	53%
Total Permit Compliance	$ 80,678	$ 24,130	$ 56,548	70%
Total Storm Water Projects	$ 3,730,015	$ 1,041,788	$ 2,688,227	72%
Total Capital Equipment	$ 190,000	$ 202,508	$ (12,508)	-7%
Total Storm Water Other Expenditures	$ 288,888	$ 218,036	$ 70,852	25%
TOTAL EXPENDITURES	$ 4,738,076	$ 1,882,001	$ 2,856,075	60%
TOTAL STORM WATER MGMT. FUND	$ (2,716,582)	$ (189,177)		-44%
Fund Balance - Beginning of Year (Est.)	$ 3,148,696	$ 3,148,696		
Fund Balance - End of Year	$ 432,114	$ 2,959,519		

Exhibit F

CITY OF PEWAUKEE
2016 BUDGET
SPECIAL REVENUE - STORM WATER MANAGEMENT

	2014 Actual	2015 3 Month Actual	2015 9 Month Estimate	2015 Year End Forecast	2015 Budget	2016 Budget
Revenues and Other Sources						
230- 411100 0000 General Tax Levy	-	-	-	-	-	-
230- 443070 0000 Permits	600	-	150	150	100	-
230- 463240 0000 Storm Water Management Fee	1,480,908	1,471,536	-	1,471,536	1,485,000	1,485,000
230- 435350 0000 Community Development Block Grant	-	-	-	-	-	-
230- 443800 0000 Erosion Control Inspections	-	-	-	-	-	-
230- 461870 0000 Outside Engineering Fees Reimbursed	65,714	5,335	30,000	35,335	15,000	35,000
230- 461890 0000 Inhouse Engineering Fees Reimbursed	22,145	2,285	80,000	82,285	5,000	8,000
230- 463110 0000 Storm Water Services	2,374	-	-	-	2,000	-
230- 463250 0000 Credits and Rebates	(23,382)	(207)	(19,800)	(20,007)	(20,000)	(5,000)
230- 463280 0000 Credit Application Fee	250	-	200	200	600	200
230- 481000 0000 Interest on Investments	5,909	612	13,005	13,617	1,000	10,270
230- 489000 0000 Miscellaneous	2,835	122	3,213	3,335	-	-
230- 492100 0000 Transfer from General Fund	12,350	12,348	-	12,348	12,350	12,350
230- 492800 0000 Transfer from Cemetery Fund	444	444	-	444	444	444
230- 491100 0000 Proceeds of Long-term Debt	-	-	-	-	520,000	-
230- 491200 0000 Bond Premium	-	-	-	-	-	-
Total Revenue and Other Sources	1,570,147	1,492,475	106,768	1,599,243	2,021,494	1,546,264
ADMINISTRATION						
WAGES						
230- 536500 1100 Wages	63,239	-	69,000	69,000	69,734	96,014
230- 536500 1200 Clerical Wages	-	-	10,000	10,000	10,000	-
230- 536500 1240 Highway Dept Wages	7,577	687	10,000	10,687	10,000	-
230- 536500 1280 Overtime	-	-	-	-	-	-
230- 536500 1300 Social Security	5,417	53	5,200	5,253	5,292	7,345
230- 536500 1310 Health Insurance	6,631	58	11,000	11,058	11,512	17,388
230- 536500 1320 Dental Insurance	464	3	800	803	848	1,159
230- 536500 1330 Optical Insurance	173	1	200	201	227	265
230- 536500 1340 Life Insurance	171	2	165	167	163	225
230- 536500 1350 Disability Insurance	306	3	275	278	274	378
230- 536500 1360 Pension	4,957	47	4,600	4,647	4,604	6,337
TOTAL	88,935	854	111,240	112,094	112,654	129,111
GENERAL						
230- 536500 2100 Attorney	17,112	1,403	25,000	26,403	20,000	20,000
230- 536500 2130 Audit and Accounting Expenses	3,850	-	4,000	4,000	5,000	5,000
230- 536500 2190 Outside Engineering	73,638	-	35,000	35,000	10,000	10,000
230- 536500 2260 Cell Phones/Pagers	-	-	-	-	-	-
230- 536500 2430 Equipment Repair & Maintenance	7,715	698	6,300	6,998	7,000	7,000
230- 536500 2440 Equipment Use & Rental	425	-	500	500	5,000	5,000
230- 536500 2480 Computer/Program Maintenance	215	-	3,000	3,000	3,000	3,000
230- 536500 2980 Training & Seminars	880	525	2,500	3,025	3,000	3,500
230- 536500 3110 Postage	2,537	-	3,000	3,000	3,000	3,000
230- 536500 3200 Dues, Memberships & Subscriptions	-	130	340	470	500	800
230- 536500 3210 Meetings & Conventions	155	90	250	340	500	500
230- 536500 3300 Mileage	63	-	250	250	450	800

CITY OF PEWAUKEE
2016 BUDGET
SPECIAL REVENUE - STORM WATER MANAGEMENT

	2014 Actual	2015 3 Month Actual	2015 9 Month Estimate	2015 Year End Forecast	2015 Budget	2016 Budget
230- 536500 3400 Operating Supplies	1,947	-	3,000	3,000	4,000	4,000
230- 536500 3410 Uniforms & Protective Equipment	1,488	-	1,500	1,500	1,500	1,500
230- 536500 3420 Fuel	4,573	135	6,000	6,135	7,000	7,000
230- 536500 3950 New Equipment	-	-	-	-	-	-
230- 536500 5110 Worker's Compensation	6,673	134	6,800	6,934	7,000	7,801
230- 536500 5120 Property & Liability Insurance	2,512	1,492	1,300	2,792	3,000	3,337
TOTAL	123,783	4,607	98,740	103,347	79,950	82,238
STORM SEWER MAINTENANCE						
230- 536510 1100 Wages	1,759	-	2,000	2,000	9,962	2,232
230- 536510 1280 Overtime	-	-	-	-	-	-
230- 536510 1300 Social Security	134	-	153	153	756	171
230- 536510 1310 Health Insurance	154	-	400	400	1,645	404
230- 536510 1320 Dental Insurance	10	-	30	30	121	27
230- 536510 1330 Optical Insurance	4	-	8	8	32	6
230- 536510 1340 Life Insurance	4	-	6	6	23	5
230- 536510 1350 Disability Insurance	8	-	9	9	39	9
230- 536510 1360 Pension	123	-	245	245	658	147
230- 536510 2150 Easement Acquisition	-	-	-	-	1,000	1,000
230- 536510 2200 Digger's Hotline	14,747	2,626	8,000	10,626	2,000	10,000
230- 536510 2400 Televising	-	-	-	-	1,500	1,500
230- 536510 3510 Storm Sewer Maintenance	1,000	-	1,500	1,500	1,500	1,500
230- 536510 3520 As Builts & Mapping	-	-	-	-	5,000	5,000
230- 536510 3530 Curb and Gutter Repair	4,223	-	10,000	10,000	10,000	10,000
TOTAL	22,166	2,626	22,351	24,977	34,236	32,001
DITCH & CULVERT MAINTENANCE						
230- 536520 1100 Wages	36,291	1,697	40,000	41,697	45,825	49,124
230- 536520 1280 Overtime	500	-	-	-	-	-
230- 536520 1300 Social Security	2,789	129	3,478	3,607	3,478	3,758
230- 536520 1310 Health Insurance	6,279	354	7,565	7,919	7,565	8,896
230- 536520 1320 Dental Insurance	377	17	557	574	557	593
230- 536520 1330 Optical Insurance	107	2	149	151	149	135
230- 536520 1340 Life Insurance	84	4	107	111	107	115
230- 536520 1350 Disability Insurance	153	7	180	187	180	194
230- 536520 1360 Pension	2,573	114	3,025	3,139	3,025	3,242
230- 536520 2150 Easement Acquisition	-	-	-	-	-	-
230- 536520 3510 Culvert Replacement	13,094	-	30,000	30,000	30,000	30,000
230- 536520 3520 Ditch Maintenance	4,525	-	10,000	10,000	10,000	10,000
230- 536520 3530 Brush Removal	-	-	500	500	2,000	2,000
TOTAL	66,772	2,324	95,561	97,885	102,886	108,057
PUBLIC WORKS YARD MAINTENANCE						
230- 536530 1100 Wages	-	-	500	500	1,992	4,466
230- 536530 1280 Overtime	-	-	-	-	-	-
230- 536530 1300 Social Security	-	-	38	38	151	342
230- 536530 1310 Health Insurance	-	-	151	151	329	809
230- 536530 1320 Dental Insurance	-	-	329	329	24	54

CITY OF PEWAUKEE
2016 BUDGET
SPECIAL REVENUE - STORM WATER MANAGEMENT

	2014 Actual	2015 3 Month Actual	2015 9 Month Estimate	2015 Year End Forecast	2015 Budget	2016 Budget
230- 536530 1330 Optical Insurance	-	-	24	24	6	12
230- 536530 1340 Life Insurance	-	-	6	6	5	10
230- 536530 1350 Disability Insurance	-	-	5	5	8	18
230- 536530 1360 Pension	-	-	8	8	132	295
230- 536530 3510 Yard Maintenance	-	-	132	132	500	500
TOTAL	-	-	1,193	1,193	3,147	6,506
STREET SWEEPING						
230- 536540 1100 Wages	11,869	822	4,500	5,322	9,962	20,096
230- 536540 1280 Overtime	-	232	-	232	-	-
230- 536540 1300 Social Security	908	81	756	837	756	1,537
230- 536540 1310 Health Insurance	3,647	318	1,645	1,963	1,645	3,639
230- 536540 1320 Dental Insurance	176	16	121	137	121	243
230- 536540 1330 Optical Insurance	36	-	32	32	32	55
230- 536540 1340 Life Insurance	28	3	23	26	23	47
230- 536540 1350 Disability Insurance	51	4	39	43	39	79
230- 536540 1360 Pension	829	70	658	728	658	1,326
230- 536540 3510 Sediment Diposal/Sweeping	3,130	-	1,500	1,500	1,500	2,000
TOTAL	20,674	1,546	9,274	10,820	14,736	29,022
CATCH BASIN CLEANING & MAINTENANCE						
230- 536550 1100 Wages	21,048	-	50,000	50,000	45,825	29,028
230- 536550 1280 Overtime	-	-	-	-	-	-
230- 536550 1300 Social Security	1,611	-	3,825	3,825	3,478	2,221
230- 536550 1310 Health Insurance	3,027	-	7,500	7,500	7,565	5,257
230- 536550 1320 Dental Insurance	183	-	557	557	557	350
230- 536550 1330 Optical Insurance	63	-	149	149	149	80
230- 536550 1340 Life Insurance	49	-	107	107	107	68
230- 536550 1350 Disability Insurance	90	-	180	180	180	114
230- 536550 1360 Pension	1,473	-	3,000	3,000	3,025	1,916
230- 536550 3510 Catch Basin Cleaning/Maintenance/Repairs	2,258	-	40,000	40,000	40,000	-
TOTAL	29,802	-	105,318	105,318	100,886	39,034
PERMIT COMPLIANCE						
230- 536560 1100 Wages	17,084	-	15,939	15,939	15,939	22,329
230- 536560 1280 Overtime	-	-	-	-	-	-
230- 536560 1300 Social Security	1,307	-	1,210	1,210	1,210	1,708
230- 536560 1310 Health Insurance	1,588	-	2,631	2,631	2,631	4,044
230- 536560 1320 Dental Insurance	98	-	194	194	194	270
230- 536560 1330 Optical Insurance	49	-	52	52	52	62
230- 536560 1340 Life Insurance	42	-	37	37	37	52
230- 536560 1350 Disability Insurance	75	-	63	63	63	88
230- 536560 1360 Pension	1,196	-	1,052	1,052	1,052	1,474
230- 536560 2150 Maintenance Agreement-TSS Compliance	-	-	5,000	5,000	25,000	25,000
230- 536560 3510 Pond Inspections/Field Inventory	2,273	-	10,000	10,000	10,000	10,000
230- 536560 3530 Erosion Control Inspections	-	-	15,000	15,000	15,000	15,000
230- 536560 3540 Information & Education	2,541	-	2,605	2,605	7,500	7,500
230- 536560 3550 Permit Fees	1,500	-	1,500	1,500	1,500	1,500

CITY OF PEWAUKEE
2016 BUDGET
SPECIAL REVENUE - STORM WATER MANAGEMENT

	2014 Actual	2015 3 Month Actual	2015 9 Month Estimate	2015 Year End Forecast	2015 Budget	2016 Budget
230- 536560 3560 Annual Report	-	-	500	500	500	500
TOTAL	27,753	-	55,783	55,783	80,678	89,527
PROJECTS						
230- 573007 8210 Meadowbrook Farms/Deerhaven Ditch	-	-	-	-	-	20,000
230- 573009 8210 Springdale Estates Pond (RNP-4)	-	-	-	-	-	-
230- 573010 8210 Retrofit Pond (P24-2)	-	-	-	-	-	-
230- 573022 8210 Public Works Yard Bio-Infiltration Swale	-	-	-	-	-	-
230- 573025 8210 Lexington Drive Pond	-	-	-	-	-	-
230- 573039 8210 TMDL Reduction Projects	-	-	20,000	20,000	100,000	105,000
230- 573040 8210 Rocky Point Road Storm Sewer	-	-	-	-	10,000	10,000
230- 573038 8210 Hillside Grove Storm Sewer	-	-	20,000	20,000	40,000	50,000
230- 573023 8210 Rocky Point Subdivision I	54,739	(1,328)	10,628	9,300	9,300	-
230- 573041 8210 Rocky Point Subdivision II	-	-	70,000	70,000	81,000	-
230- 573045 8210 Rocky Point Oak/Peninsula	-	-	10,000	10,000	10,000	20,000
230- 573002 8210 Hill 'n Dale Subdivision	16,468	122	150,000	150,122	818,415	500,000
230- 573006 8210 Emerald Acres/Green Road	50,636	-	100,000	100,000	1,792,000	100,000
230- 573003 8210 Lindsay Road I	-	-	-	-	-	-
230- 573046 8210 Lindsay Road II	-	-	-	-	28,000	28,000
230- 573011 8210 Green Road Storm Drainage	97,818	(36,010)	-	(36,010)	-	-
230- 573013 8210 Sunnyridge Lane Drainage	4	(51)	-	(51)	-	-
230- 573014 8210 Valley View Drainage	(2,257)	-	-	-	-	-
230- 573015 8210 Busse Road	3,275	(1,211)	6,683	5,472	-	-
230- 573016 8210 Lakefield/Oak Springs	100,756	(719)	15,719	15,000	18,000	-
230- 573017 8210 Swan Road	186,688	-	50,545	50,545	46,600	-
230- 573018 8210 Weyer Road		-	20,000	20,000	180,000	20,000
230- 573048 8210 Duplainville (Tracks to Weyer)	-	-	10,000	10,000	10,000	-
230- 573019 8210 Elmwood Lane	5,198	-	-	-	-	-
230- 573020 8210 Carmelite Road	784	-	-	-	-	-
230- 573028 8210 Five Fields I	29,099	(706)	14,706	14,000	14,000	-
230- 573029 8210 Five Fields II	-	-	105,600	105,600	88,200	900
230- 573036 8210 Five Fields III		-	8,500	8,500	8,500	88,200
230- 573054 8210 Five Fields IV	-	-	-	-	-	8,500
230- 573030 8210 Hickory Grove Estates	-	-	-	-	-	-
230- 573031 8210 High Road	-	-	-	-	-	-
230- 573032 8210 Sherwood Forest	-	-	-	-	-	-
230- 573033 8210 Lexington Drive Ditch Enclosure	-	-	-	-	-	-
230- 573034 8210 Woodside Drive Ditch Enclosure		-	-	-	-	-
230- 573035 8210 Springdale 2012	364	-	-	-	-	-
230- 573037 8210 Shady Lane/Shady Nook	-	-	7,000	7,000	7,000	94,500
230- 573043 8210 Bluemound East Industrial Park Paving	-	-	10,000	10,000	10,000	20,000
230- 573047 8210 Roundys Park I	-	-	14,000	14,000	14,000	149,400
230- 573055 8210 Roundys Park II	-	-	-	-	-	20,000
230- 573049 8210 Lakeview Area I	-	-	15,000	15,000	15,000	20,000
230- 573056 8210 Steeplechase I	-	-	-	-	-	1,900
230- 573057 8210 Steeplechase II	-	-	-	-	-	-

CITY OF PEWAUKEE
2016 BUDGET
SPECIAL REVENUE - STORM WATER MANAGEMENT

	2014 Actual	2015 3 Month Actual	2015 9 Month Estimate	2015 Year End Forecast	2015 Budget	2016 Budget
230- 573044 8210 City Storm Water Study	-	-	-	-	250,000	350,000
230- 573042 8210 Catch Basins/Storm Inlets	124,906	(3,030)	703,030	700,000	150,000	150,000
230- 573053 8210 Lindsay Rd. Culvert Replacement	-	-	65,325	65,325	-	-
230- 573051 8210 Duplainville Bridge (50R/50S)	-	-	15,000	15,000	15,000	50,000
230- 573052 8210 Busse Rd. Bridge Culvert Repl. (50R/50S)	-	-	15,000	15,000	15,000	50,000
TOTAL	668,478	(42,933)	1,456,736	1,413,803	3,730,015	1,856,400
CAPITAL EXPENDITURES						
230- 536500 8100 Capital Equipment Expenditures	48,796	41,678	148,322	190,000	190,000	-
OTHER EXPENDITURES						
230- 582000 6980 Debt Issue Discount	-	-	-	-	-	-
230- 582000 6990 Debt Issue Costs	-	-	-	-	5,000	-
230- 592100 9000 Transfer to Debt Service Fund	326,295	92,288	158,674	250,962	283,888	259,412
TOTAL	326,295	92,288	158,674	250,962	288,888	259,412
TOTAL EXPENDITURES	1,423,454	102,990	2,263,192	2,366,182	4,738,076	2,631,308
Excess of Revenues Over (Under) Expenditures	146,693	1,389,485	(2,156,424)	(766,939)	(2,716,582)	(1,085,044)
Fund Balance:						
Beginning of Year	3,002,003	3,148,696	4,538,181	3,148,696	3,148,696	2,381,757
End of Year	3,148,696	4,538,181	2,381,757	2,381,757	432,114	1,296,713

Capital Equipment 2015:

12/31/14 Balance $3,148,696

CURRENT AND FUTURE PROJECT YEAR TOTALS

2015	Total Due to Paving Projects/Storm Water	1,229,353
2016	Total Due to Paving Projects/Storm Water	875,530
2017	Total Due to Paving Projects/Storm Water	883,953
2018	Total Due to Paving Projects/Storm Water	927,800
2019	Total Due to Paving Projects/Storm Water	2,716,500
2020	Total Due to Paving Projects/Storm Water	705,200
2021	Total Due to Paving Projects/Storm Water	433,800
2022	Total Due to Paving Projects/Storm Water	834,200
2023	Total Due to Paving Projects/Storm Water	1,093,000
2024	Total Due to Paving Projects/Storm Water	not available
	TEN YEAR PLAN	9,699,336

Exhibit G

19.01 AUTHORITY.

This ordinance is adopted under the authority granted by § 62.234, Wis. Stats. This ordinance supersedes all provisions of an ordinance previously enacted under § 62.23, Wis. Stats., that relate to site erosion control, storm water management and illicit discharge. Except as otherwise specified in § 62.234 Wis. Stats., § 62.23, Wis. Stats., applies to this ordinance and to any amendments to this ordinance.

a. The provisions of this ordinance are deemed not to limit any other lawful regulatory powers of the City of Pewaukee Common Council.

b. The Common Council hereby designates the City Engineer or designee authority to administer and enforce the provisions of this ordinance.

c. The requirements of this ordinance do not pre-empt more stringent erosion and sediment control requirements that may be imposed by any of the following:

(1) Wisconsin Department of Natural Resources administrative rules, permits or approvals including those authorized under §§ 281.16 and 283.33, Wis. Stats.

(2) Targeted non-agricultural performance standards promulgated in rules by the Wisconsin Department of Natural Resources under s. NR 151.004, Wis. Adm. Code.

19.02 PURPOSE AND INTENT.

It is the purpose of this ordinance to establish requirements for both land disturbing construction activity and post-construction runoff that will minimize the amount of sediment and other pollutants carried by runoff or discharged from land disturbing construction activity to waters of the state and that will diminish the threats to public health, safety, welfare and the aquatic environment. Specific purposes are to:

- Further the maintenance of safe and healthful conditions.
- Prevent and control water pollution; prevent and control the adverse effects of storm water; prevent and control soil erosion; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth.
- Control exceedance of the safe capacity of existing drainage facilities and receiving water bodies; prevent undue channel erosion; control increases in the scouring and transportation of particulate matter; minimize the amount of pollutants discharged from the separate storm sewer to protect waters of the state; and prevent conditions that endanger downstream property.

It is the intent of the Common Council that this ordinance regulates post-construction storm water discharges to waters of the state. This ordinance may be applied on a site-by-site basis. The Common Council recognizes, however, that the preferred method of achieving the storm water performance standards set forth in this ordinance is through the preparation and implementation of comprehensive, systems-level storm water management plans that cover hydrologic units, such as watersheds, on a municipal and regional scale. Such plans may prescribe regional storm water devices, practices or systems, any of which may be designed to treat runoff from more than one site prior to discharge to waters of the state. Where such plans are in conformance with the performance standards developed under § 281.16, Wis. Stats., for regional storm water management measures and have been approved by the Common Council, it is the intent of this ordinance that the approved

plan be used to identify post-construction management measures acceptable for the community.

19.03 APPLICABILITY.

a. In regard to land disturbing construction activities, this ordinance applies to any construction site as defined under Subsection 19.05 m. that has one or more acres of land disturbing construction activity. In regard to post construction sites, where not otherwise limited by law, this ordinance applies after final stabilization of a site that had one or more acres of land disturbing construction activity.

b. In regard to land disturbing construction activity, this ordinance does not apply to the following:

(1) Transportation facilities, except transportation facility construction projects that are part of a larger common plan of development such as local roads within a residential or industrial development.

(2) A construction project that is exempted by federal statutes or regulations from the requirement to have a national pollutant discharge elimination system permit issued under Chapter 40, Code of Federal Regulations, part 122, for land disturbing construction activity.

(3) Nonpoint discharges from agricultural facilities and practices.

(4) Nonpoint discharges from silviculture activities.

(5) Routine maintenance for project sites with less than 5 acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.

c. In regard to post-construction sites, a site that meets any of the criteria in this paragraph is exempt from the post-construction site storm water management requirements of this ordinance.

(1) A post-construction site with less than 10% connected imperviousness based on the area of land disturbance, provided the cumulative area of all impervious surfaces is less than one acre. However, the exemption in this paragraph does not include an exemption from the protective area standard in s. NR 151.125 Wis. Adm. Code and this ordinance.

(2) Agricultural facilities and practices.

(3) Underground utility construction but not including the construction of any above ground structures associated with utility construction.

d. Notwithstanding the applicability requirements in subsects. a. and b. above, this ordinance applies to construction sites and post-construction sites of any size that, in the opinion of the City Engineer or designee, are likely to result in runoff that exceeds the safe capacity of the

existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.

19.04 JURISDICTION.

This ordinance applies to land disturbing construction activities on lands within the boundaries and jurisdiction of the City of Pewaukee, as well as the extraterritorial division of land subject to an ordinance enacted pursuant to §§ 236.45(2) and (3), Wis. Stats.

a. Exclusions. This ordinance is not applicable to activities conducted by a state agency, as defined under § 227.01(1), Wis. Stats.

19.05 DEFINITIONS.

The following definitions are set forth herein for the purpose of interpreting Section 19.00 et seq. To the extent that these definitions may vary from the meaning of words as used or defined in other sections of the City of Pewaukee Municipal Code, they are limited to this section of the Code and do not modify the meaning of words as used in other Code sections.

a. "Adequate sod, or self-sustaining vegetative cover" means maintenance of sufficient vegetative types and densities such that the physical integrity of the streambank or lakeshore is preserved. Self-sustaining vegetative cover includes grasses, forbs, sedges and duff layers of fallen leaves and woody debris.

b. "Administering authority" means a governmental employee, or a regional planning commission empowered under § 62.234, Wis. Stats., that is designated by the City of Pewaukee to administer this ordinance.

c. "Agricultural facilities and practices" has the meaning in § 281.16(1), Wis. Stats.

d. "Alternate use" means the prevention of storm water discharges from a site to an MS4, water of the state, or a parcel under different ownership through the capture, storage and re-use of storm water runoff. Alternate uses of storm water runoff include but are not limited to toilette flushing, laundry, irrigation or storage on green roofs where an equivalent portion of the runoff is captured permanently by rooftop vegetation.

e. "Atlas 14" means the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Frequency Atlas of the United States, Volume 8 (Midwestern States) published in 2013.

f. "Average annual rainfall" means a calendar year of precipitation as determined by the Wisconsin Department of Natural Resources for users of models such as WinSLAMM, P8 or equivalent methodology. The average annual rainfall is chosen from a Department publication for the location closest to the City of Pewaukee.

g. "Best Management Practice" or "BMP" means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

h. "Business day" means a day the office of the City Engineer is routinely and customarily open for business.

i. "Cease and desist order" means a court-issued order to halt land disturbing construction activity that is being conducted without the required permit or in violation of a permit issued by the City Engineer or designee.

j. "City of Pewaukee Technical Standards" means a document identifying minimum technical standards, requirements, specifications and/or guidance for development and redevelopment within the City of Pewaukee.

k. "Combined sewer system" means a system for conveying both sanitary sewage and storm water runoff.

l. "Connected imperviousness" means an impervious surface connected to the waters of the state via a separate storm sewer, an impervious flow path or a minimally pervious flow path.

m. "Construction site" means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan. A long range planning document that describes separate construction projects, such as a 20-year transportation improvement plan, is not a common plan of development.

n. "Design storm" means a hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency, and total depth of rainfall.

o. "Development" means residential, commercial, industrial or institutional land uses and associated roads.

p. "Direct conduits to ground water" means wells, sink holes, swallets, fractured bedrock at the surface, mine shafts, non-metallic mines, tile inlets discharging to ground water, quarries or depressional ground water recharge areas over shallow fractured rock.

q. "Division of land" means the creation from one parcel of 2 or more parcels or building sites of one or more acres each in area where such creation occurs at one time or through the successive partition within a 5 year period.

r. "Effective infiltration area" means the area of the infiltration system that is used to infiltrate runoff and does not include the area used for site access, berms or pretreatment.

s. "Erosion" means the process by which the land's surface is worn away by the action of wind, water, ice or gravity.

t. "Erosion and sediment control plan" means a comprehensive plan developed to address pollution caused by erosion and sedimentation of soil particles or rock fragments during construction.

u. "Exceptional resource waters" means waters listed in s. NR 102.11, Wis. Adm. Code.

v. "Extraterritorial" means the unincorporated area within 3 miles of the corporate limits of a first, second, or third class city, or within 1.5 miles of a fourth class city or village.

w. "Filtering layer" means soil that has at least a 3-foot deep layer with at least 20-percent fines; or an engineered soil with an equivalent level of protection as determined by the regulatory authority for the site.

x. "Final stabilization" means that all land disturbing construction activities at the construction site have been completed and that a uniform perennial vegetative cover has been established, with a density of at least 70 percent of the cover for the unpaved areas and areas not covered by permanent structures, or that employ equivalent permanent stabilization measures.

y. "Financial guarantee" means cash deposit, irrevocable letter of credit, or similar guarantees submitted to the City Engineer or designee by the responsible party to assure that requirements of the ordinance are carried out in compliance with the storm water management plan.

z. "Governing body" means town board of supervisors, county board of supervisors, city council, village board of trustees, or village council.

aa. "Impervious surface" means an area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, gravel or paved parking lots and streets are examples of areas that typically are impervious.

bb. "In-fill area" means an undeveloped area of land located within an existing urban sewer service area, surrounded by development or development and natural or man-made features where development cannot occur.

cc. "Infiltration" means the entry of precipitation or runoff into or through the soil.

dd. "Infiltration system" means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

ee. "Land disturbing construction activity" means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover, that may result in runoff and lead to an increase in soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

ff. "Landowner" means any person holding fee title, an easement or interest in property, which allows the person to undertake cropping, livestock management, land disturbing construction activity or maintenance of storm water BMPs on the property.

gg. "Maintenance agreement" means a legal document that provides for long-term maintenance of storm water management practices.

hh. MEP" or "Maximum Extent Practicable" means the highest level of performance that is achievable but is not equivalent to a performance standard identified in this ordinance as determined in accordance with Section 19.055 of this ordinance

ii. "New development" means development resulting from the conversion of previously undeveloped land or agricultural land uses.

jj. "NRCS, MSE3 or MSE4 distribution" means a specific precipitation distribution developed by the United States Department of Agriculture, Natural Resources Conservation Service, using precipitation data from Atlas 14.

kk. "Off-site" means located outside the property boundary described in the permit application.

ll. "On-site" means located within the property boundary described in the permit application.

mm. "Ordinary high-water mark" has the meaning given in s. NR 115.03(6), Wis. Adm. Code.

nn. "Outstanding resource waters" means waters listed in s. NR 102.10, Wis. Adm. Code.

oo. "Percent fines" means the percentage of a given sample of soil, which passes through a # 200 sieve.

pp. "Performance standard" means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

qq. "Permit" means a written authorization made by the City Engineer or designee to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.

rr. "Permit administration fee" means a sum of money paid to the City by the permit applicant for the purpose of recouping the expenses incurred by the authority in administering the permit.

ss. "Pervious surface" means an area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or other similar vegetated areas are examples of surfaces that typically are pervious.

tt. "Pollutant" has the meaning given in § 283.01(13), Wis. Stats.

uu. "Pollution" has the meaning given in § 281.01(10), Wis. Stats.

vv. "Post-construction site" means a construction site following the completion of land disturbing construction activity and final site stabilization.

ww. "Pre-development condition" means the extent and distribution of land cover types present before the initiation of land disturbing construction activity, assuming that all land uses prior to development activity are managed in an environmentally sound manner.

xx. "Preventive action limit" has the meaning given in s. NR 140.05(17), Wis. Adm. Code.

yy. "Protective area" means an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the widths listed in Subsection 19.09 d. of this ordinance, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface.

zz. "Redevelopment" means areas where development is replacing older development. For the purposes of this ordinance a site is considered a redevelopment site when all of the following are met: the site has an existing building; the site is in a zoning other than agricultural or residential; the site is less than 1 (one) acre; and the existing building has a plan of operation on file at the City of Pewaukee.

aaa. "Responsible party" means the landowner or any other entity performing services to meet the requirements of this ordinance through a contract or other agreement.

bbb. "Runoff" means storm water or precipitation including rain, snow or ice melt or similar water that moves on the land surface via sheet or channelized flow.

ccc. "Sediment" means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

ddd. "Separate storm sewer" means a conveyance or system of conveyances including roads with drainage systems, streets, catch basins, inlets, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

(1) Is designed or used for collecting water or conveying runoff.

(2) Is not part of a combined sewer system.

(3) Is not of a publically owned wastewater treatment works that provides secondary or more stringent treatment.

(4) Discharges directly or indirectly to waters of the state.

eee. "Silviculture" means activities including tree nursery operations, tree harvesting operations, reforestation, tree thinning, prescribed burning and pest and fire control. Clearing and grubbing of an area of a construction site is not a silviculture activity.

fff. "Site" means the entire area included in the legal description of the land on which the land disturbing construction activity is proposed in the permit application or in which land disturbing has occurred.

ggg. "Stop work order" means an order issued by the City Engineer or designee which requires that all construction activity on the site be stopped.

hhh. "Storm water management plan" means a comprehensive plan designed to reduce the discharge of pollutants and the peak rate of runoff from storm water, after the site has under gone final stabilization, following completion of the construction activity.

iii. "Storm water management system plan" is a comprehensive plan designed to reduce the discharge of runoff and pollutants from hydrologic units on a regional or municipal scale.

jjj. "Technical standard" means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.

kkk. "Top of the channel" means an edge, or point on the landscape landward from the ordinary high-water mark of a surface water of the state, where the slope of the land begins to be less than 12% continually for at least 50 feet. If the slope of the land is 12% or less continually for the initial 50 feet landward from the ordinary high-water mark, the top of the channel is the ordinary high-water mark.

lll. "Total maximum daily load" or "TMDL" means the amount of pollutants specified as a function of one or more quality parameters that can be discharged per day into a water quality limited

segment and still ensure attainment of the applicable water quality standard.

mmm. "TP-40" means Technical Paper No. 40, Rainfall Frequency Atlas of the United States, published in 1961.

nnn. "TR-55" means the United States Department of Agriculture, Natural Resources Conservation Service (previously Soil Conservation Service), Urban Hydrology for Small Watersheds, Second Edition, Technical Release 55, June 1986.

ooo. "Transportation facility" means a highway, a railroad, a public mass transit facility, a public use airport, a public trail or any other public work for transportation purposes such as harbor improvements under § 85.095(1)(b), Wis. Stats. Transportation facility does not include building sites for the construction of public buildings and buildings that are places of employment that are regulated by the Department pursuant to § 281.33, Wis. Stats.

ppp. "TSS" means Total Suspended Solids. Total suspended solids are a measure of the suspended material in water.

qqq. "Type II distribution" means a rainfall type curve as established in the "United States Department of Agriculture, Natural Resources Conservation Service (previously Soil Conservation Service), Technical Paper 149, published 1973" which is incorporated by reference into this chapter.

rrr. "Waters of the state" has the meaning given in § 281.01(18), Wis. Stats.

19.055 APPLICABILITY OF MAXIMUM EXTENT PRACTICABLE.

Maximum extent practicable applies when a person or entity who is subject to a performance standard of this ordinance demonstrates to the City Engineer or designee's satisfaction that a performance standard is not achievable and that a lower level of performance is appropriate. In making the assertion that a performance standard is not achievable and that a level of performance different from the performance standard is the maximum extent practicable, the responsible party shall take into account the best available technology, cost effectiveness, geographic features and other competing interests such as public safety and welfare, protection of endangered and threatened resources, and preservation of historic properties.

19.06 TECHNICAL STANDARDS FOR CONSTRUCTION SITE EROSION CONTROL.

a. Design Criteria, Standards and Specifications. All BMPs required to comply with this ordinance shall meet the design criteria, standards and specifications based on any of the following:

(1) Design guidance and technical standards identified or developed by the Wisconsin Department of Natural Resources under subchapter V of chapter NR 151, Wis. Adm. Code.

(2) Soil loss prediction tools (such as the Universal Soil Loss Equation (USLE)) when using an appropriate rainfall or runoff factor (also referred to as the R factor) or an appropriate design storm and precipitation distribution, and when considering the geographic location of the site and the period of disturbance.

(3) City of Pewaukee Technical Standards.

b. Other Standards. Other technical standards not identified or developed in subsect. a., may be used provided that the methods have been approved by the City Engineer or designee.

19.07 TECHNICAL STANDARDS FOR POST-CONSTRUCTION STORM WATER MANAGEMENT.

a. The following criteria, standards and specifications shall be used in designing the water quality, peak discharge and infiltration components of storm water practices needed to meet the water quality and quantity standards of this ordinance:

(1) Consistent with the technical standards identified, developed or disseminated by the Wisconsin Department of Natural Resources under subchapter V of chapter NR 151, Wis. Adm. Code.

(2) Where technical standards have not been identified or developed by the Wisconsin Department of Natural Resources, other technical standards may be used provided the standards have been approved by the City Engineer or designee.

(3) City of Pewaukee Technical Standards.

19.08 PERFORMANCE STANDARDS FOR CONSTRUCTION SITE EROSION CONTROL.

The responsible party shall develop and implement a written, site-specific erosion and sediment control plan for each construction site, developed in accordance with Section 19.11 that incorporates the requirements of this section.

a. Erosion and other Pollutant Control Requirements. The erosion and sediment control plan required above shall include the following:

(1) Erosion and Sediment Control Practices. Erosion and sediment control practices at each site where land disturbing construction activity is to occur shall be used to prevent or reduce the following:

(a) The deposition of soil being tracked onto streets by vehicles.

(b) The discharge of sediment from disturbed areas into on-site storm water inlets.

(c) The discharge of sediment from disturbed areas into adjacent waters of the state.

(d) The discharge of sediment from drainage ways that flow off the site.

(e) The discharge of sediment from dewatering activities.

(f) The discharge of sediment eroding from soil stockpiles existing for more than 7 days.

(g) The discharge of sediment from erosive flows at outlets and in downstream channels.

(h) The transport by runoff into waters of the state or offsite of chemicals, cement and other building compounds and materials on the construction site during the construction period. However, projects that require the placement of these materials in waters of the state, such as constructing bridge footings or BMP installations, are not prohibited by this subdivision.

(i) The transport by runoff into waters of the state or offsite of untreated water from vehicle and wheel washing.

(2) Sediment Performance Standards. In addition to the erosion and sediment control practice requirements identified under par. (1) above, the following erosion and sediment control practices shall be employed:

(a) BMPs that, by design, discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.

(b) No person shall be required to employ more BMPs than are necessary to meet a performance standard in order to comply with maximum extent practicable. Erosion and sediment control BMPs may be combined to meet the requirements of this paragraph. Credit may be given toward meeting the sediment performance standard of this paragraph for limiting the duration or area, or both, of land disturbing construction activity, or for other appropriate mechanisms.

(c) Notwithstanding subd. (a), if BMPs cannot be designed and implemented to meet the sediment performance standard, the erosion and sediment control plan shall include a written, site-specific explanation of why the sediment performance standard cannot be met and how the sediment load will be reduced to the maximum extent practicable.

(3) Preventative Measures. The erosion and sediment control plan shall incorporate all of the following:

(a) Maintenance of existing vegetation, especially adjacent to surface waters whenever possible.

(b) Minimization of soil compaction and preservation of topsoil.

(c) Minimization of land disturbing construction activity on slopes of 20 percent or more.

(d) Development of spill prevention response procedures.

(4) Location. The BMPs used to comply with this section shall be located so that treatment occurs prior to runoff entering waters of the state.

b. Implementation. The BMPs used to comply with this section shall be implemented as follows:

(1) Erosion and sediment control practices shall be constructed or installed before land disturbing activities begin in accordance with the erosion and sediment control plan developed under Section 19.11 of this ordinance.

(2) Erosion and sediment control practices shall be maintained until final stabilization.

(3) Final stabilization activity shall commence when land disturbing activities cease and final grade has been reached on any portion of the site.

(4) Temporary stabilization activity shall commence when land disturbing activities have temporarily ceased and will not resume for a period exceeding 14 days.

(5) BMPs that are no longer necessary for erosion and sediment control shall be removed by the responsible party.

19.09 PERFORMANCE STANDARDS FOR POST-CONSTRUCTION STORM WATER MANAGEMENT.

The responsible party shall comply with this section and develop and implement a written post-construction storm water management plan for each post-construction site, in accordance with Section 19.12, which incorporates the requirements of this section. For redevelopment sites where the redevelopment will be replacing older development that was subject to post-construction performance standards of chapter NR 151, Wis. Adm. Code, in effect on or after October 1, 2004, the responsible party shall meet the total solids reduction, peak flow control, infiltration and protective area standards applicable to the older development or meet the redevelopment standards of this ordinance, whichever is more stringent. The storm water management plan required under this section shall include the following:

a. Total Suspended Solids

BMPs shall be designed, installed and maintained to control total suspended solids carried in runoff from the post-construction site as follows:

(1) BMPs shall be designed in accordance with Table 1 or to the maximum extent practicable as provided in par. (2) below. The design shall be based on an average annual rainfall, as compared to no runoff management controls.

Table 1 – TSS Reduction Standards

Development Type	TSS Reduction
New Development	80 percent
Infill Development	80 percent
Redevelopment	40 percent of the parking areas and roads

(2) Maximum Extent Practicable. If the design cannot meet a total suspended solids reduction performance standard of Table 1, the storm water management plan shall include a written, site-specific explanation of why the TSS reduction performance standard cannot be met and why the TSS load will be reduced only to the maximum

extent practicable.

(3) Offsite Drainage. When designing BMPs, runoff draining to the BMP from offsite shall be taken into account in determining the treatment efficiency of the practice. Any impact on the efficiency shall be compensated for by increasing the size of the BMP accordingly.

b. Peak Discharge.

By design, BMPs shall be employed to maintain or reduce the peak runoff discharge rates from the post-developed site according to the City of Pewaukee Technical Standards, to the maximum extent practicable, as compared to pre-development conditions for the: 1-year 24 hour; the 2-year 24-hour; the 10-year 24-hour; and the 100-year 24 hour design storm events. Pre-development conditions shall assume pre-settlement conditions and the runoff curve numbers in Table 2 shall be used. Peak discharges shall be calculated using TR-55 runoff curve number methodology, Atlas 14 precipitation depths and NRCS Wisconsin MSE3 precipitation distribution. On a case by case basis, the City Engineer or designee may allow the use of TP-40 precipitation depths and the Type II distribution.

Table 2– Maximum Pre-Development Runoff Curve Numbers

Hydrologic Soil Group	**A**	**B**	**C**	**D**
Runoff Curve Number	**30**	**55**	**70**	**77**

(1) The pre-development runoff curve numbers in Table 2 do not apply to any of the following:

(a) A post-construction site where the discharge is directly into a lake over 5000 acres in area or a stream or river segment draining more than 500 square miles.

(b) Except as provided under the first paragraph of Section 19.09 of this ordinance, a redevelopment post-construction site.

(c) For subds. (a) and (b) above, the pre-development curve number shall be the existing use of the land. If it is cropland, the maximum pre-development runoff curve numbers is as shown in Table 3.

Table 3 – Maximum Pre-Development Runoff Curve Numbers for Cropland Areas				
Hydrologic Soil Group	**A**	**B**	**C**	**D**
Runoff Curve Number	**55**	**69**	**78**	**83**

c. Infiltration.

BMPs shall be designed, installed, and maintained to infiltrate runoff in accordance with the following or to the maximum extent practicable.

(1) Low Imperviousness. For development with up to 40% connected imperviousness, such as parks, cemeteries and low density residential development, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 90% of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 1% of the project site is required as an effective infiltration area.

(2) Moderate Imperviousness. For development with more than 40% and up to 80% connected imperviousness, such as medium and high density residential, multi-family development, industrial and institutional development and office parks, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75% of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2% of the project site is required as an effective infiltration area.

(3) High Imperviousness. For development with more than 80% connected imperviousness, such as commercial strip malls, shopping centers, and commercial downtowns, infiltrate sufficient volume so that the post-development infiltration volume shall be at least 60% of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

(4) Pre-development condition shall be the same as in Subsection 19.09 b. above.

(5) Source Areas.

(a) Prohibitions. The runoff from the following areas may not be infiltrated and may not qualify as contributing to meeting the requirements of this section unless demonstrated to meet the conditions of the ground water standards in par. (9) below.

i. Areas associated with tier 1 industrial facilities identified in s. NR 216.21(2)(a), Wis. Adm. Code, including storage, loading, and

parking. Rooftops may be infiltrated with the concurrence of the regulatory authority.

ii. Storage and loading areas of tier 2 industrial facilities identified in s. NR 216.21(2)(b), Wis. Adm. Code.

iii. Fueling and vehicle maintenance areas. Runoff from rooftops of fueling and vehicle maintenance areas may be infiltrated with the concurrence of the regulatory authority.

(b) Exemptions. Runoff from the following areas may be credited toward meeting the requirement when infiltrated, but the decision to infiltrate runoff from these source areas is optional:

i. Parking areas and access roads less than 5000 square feet for commercial development.

ii. Parking areas and access roads less than 5000 square feet for industrial development not subject to the prohibition under subd. (a) above.

iii. Except as provided under the first paragraph of Section 19.09 of this ordinance, redevelopment post-construction sites.

iv. Infill development less than 5 acres.

v. Roads in commercial, industrial and institutional land uses and arterial roads.

(6) Location of Practices.

(a) Prohibitions. Infiltration practices may not be located in the following areas:

i. Areas within 1000 feet up gradient or within 100 feet down gradient of direct conduits to groundwater.

ii. Areas within 400 feet of a community water system well as specified in s. NR 811.16(4), Wis. Adm. Code, or within the separation distances listed in s. NR 812.08, Wis. Adm. Code, for any private well or non-community well for runoff infiltrated from commercial, including multi-family residential, industrial and institutional land uses or regional devices for one- and two-family residential development.

iii. Areas where contaminants of concern, as defined in s. NR 720.03(2), Wis. Adm. Code, are present in the soil through which infiltration will occur.

(b) Separation distances.

i. Infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of the seasonal high groundwater or the top of bedrock are in accordance with Table 4:

Table 4 – Separation Distances and Soil Characteristics		
Source Area	Separation Distance	Soil Characteristic
Industrial, Commercial, Industrial, Parking Lots and Roads	5 feet or more	Filtering Layer
Residential Arterial Roads	5 feet or more	Filtering Layer
Roofs Draining to Subsurface Infiltration Practices	1 foot or more	Native or Engineered Soil with Particles Finer Than Coarse Sand
Roof Draining to Surface Infiltration Practices	Not Applicable	Not Applicable
All Other Impervious Source Areas	3 feet or more	Filtering Layer

ii. Notwithstanding subd. (b) above, applicable requirements for injection wells classified under chapter NR 815, Wis. Adm. Code, shall be followed.

(7) Infiltration Rate Exemptions. Infiltration practices located in the following areas may be credited toward meeting the requirements under the following conditions, but the decision to infiltrate under these conditions is optional:

(a) Where the infiltration rate of the soil measured at the proposed bottom of the infiltration system is less than 0.6 inches per hour using a scientifically credible field test method.

(b) Where the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the U.S. Department of Agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.

(8) Alternate Use. Where alternate uses of runoff are employed, such alternate use shall be given equal credit toward the infiltration volume required by this paragraph.

(9) Groundwater Standards

(a) Infiltration systems designed in accordance with this paragraph shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventive action limit at a point of standards application in accordance with chapter NR 140, Wis. Adm. Code. However, if site specific information indicates that compliance with a preventive action limit is not achievable, the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.

(b) Notwithstanding subd. (9)(a), the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

(10) Pretreatment. Before infiltrating runoff, pretreatment shall be required for parking lot runoff and for runoff from new road construction in commercial, industrial and institutional areas that will enter the infiltration system. The pretreatment shall be designed to protect the infiltration system from clogging prior to scheduled

maintenance and to protect groundwater quality in accordance with par. (9), above. Pretreatment options may include, but are not limited to: oil and grease separators; sedimentation; biofiltration; filtration; swales; or filter strips.

(11) Maximum Extent Practicable. Where conditions of par. (5) and (6) limit or restrict the use of infiltration practices, the performance standard of Paragraphs 19.09 c.(1)-(3) of this ordinance, shall be met to the maximum extent practicable.

d. Protective Areas

(1) The protective area shall have the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface. However, in this paragraph, "protective area" does not include any area of land adjacent to any stream enclosed within a pipe or culvert, such that runoff cannot enter the enclosure at this location.

(a) For outstanding resource waters and exceptional resource waters, 75 feet.

(b) For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.

(c) For lakes, 50 feet.

(d) For wetlands not subject to subds. (e) or (f) below, 50 feet.

(e) For highly susceptible wetlands, 75 feet. Highly susceptible wetlands include the following types: calcareous fens, sedge meadows, open and coniferous bogs, low prairies, coniferous swamps, lowland hardwood swamps and ephemeral ponds.

(f) For less susceptible wetlands, 10 percent of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass; cultivated hydric soils; and any gravel pits or dredged material or fill disposal sites that take on the attributes of a wetland.

(g) In subds. (d) to (f) above, determinations of the extent of the protective area adjacent to wetlands shall be made on the basis of the sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in s. NR 103.03, Wis. Adm. Code.

(h) Wetland boundary delineations shall be made in accordance with s. NR 103.08(1m), Wis. Adm. Code. This paragraph does not apply to wetlands that have been completely filled in compliance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in compliance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after the fill has been placed. Where there is a legally authorized wetland fill, the protective area standard need not be met in that location.

(i) For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.

(j) Not withstanding subds. (a) thru (i) above, the greatest protective area width shall apply where rivers, streams, lakes and wetlands are contiguous.

(2) Applicability. This paragraph applies to post-construction sites located within a protective area, except those areas exempted pursuant to par. (4) below.

(3) The following requirements shall be met:

(a) Impervious surfaces shall be kept out of the protective area entirely or to the maximum extent practicable. If there is no practical alternative to locating an impervious surface in the protective area, the storm water management plan shall contain a written, site-specific explanation.

(b) Where land disturbing construction activity occurs within a protective area, and where no impervious surface is present, adequate sod or self-sustaining vegetative cover of 70% or greater shall be established and maintained. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Non-vegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion, such as on steep slopes or where high velocity flows occur.

(c) Best management practices such as filter strips, swales, or wet detention ponds that are designed to control pollutants from non-point sources may be located in the protective area.

(4) This paragraph does not apply to:

(a) Except as provided in the first paragraph of Section 19.09 of this ordinance, redevelopment post-construction sites.

(b) In-fill development areas less than 5 acres.

(c) Structures that cross or access surface waters such as boat landings, bridges and culverts.

(d) Structures constructed in accordance with § 59.692(1v), Wis. Stats.

(e) Areas of post-construction sites from which runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the local ordinance requirements for TSS and peak flow reduction, except to the extent that vegetative ground cover is necessary to maintain bank stability.

e. Fueling and Vehicle Maintenance Areas.

Fueling and vehicle maintenance areas shall, to the maximum extent practicable, have BMPs designed, installed and maintained to reduce petroleum within runoff, such that the runoff that travels offsite or enters waters of the state contains no visible petroleum sheen.

f. Swale Treatment for Transportation Facilities.

(1) Requirement. Except as provided in par. (2), below, transportation facilities that use swales for runoff conveyance and pollutant removal are exempt from the local ordinance requirements for peak flow control, total suspended solids control and infiltration, if the swales are designed to do all of the following or to the maximum extent practicable:

(a) Be vegetated. However, where appropriate, non-vegetative measures may be employed to prevent erosion or provide for runoff treatment, such as rock

riprap stabilization or check dams.

(b) Swales shall comply with sections V.F. (Velocity and Depth Criteria) and V.G. (Swale Geometry Criteria) with a swale treatment length as long as that specified in section V.C. (Pre-treatment) of the Wisconsin Department of Natural Resources Conservation Practice Standard 1005, "Vegetated Infiltration Swale", dated May 2007, or a superseding document. Transportation facility swale treatment does not have to comply with other sections of Conservation Practice Standard 1005.

(2) Other Requirements.

(a) Notwithstanding par. (1) above, the City Engineer or designee may, consistent with water quality standards, require other provisions, in addition to swale treatment, be met on a transportation facility with an average daily travel of vehicles greater than 2500 and where the initial surface water of the state that the runoff directly enters is any of the following:

i. An outstanding resource water.

ii. An exceptional resource water.

iii. Waters listed in s. 303(d) of the Federal Clean Water Act that are identified as impaired in whole or in part, due to nonpoint source impacts.

iv. Waters where targeted performance standards are developed under s. NR 151.004, Wis. Adm. Code.

(b) The transportation facility authority shall contact the City Engineer or designee to determine if additional BMPs beyond a water quality swale are needed under this section.

g. <u>General Considerations for on-site and off-site Storm Water Management Measures.</u>

The following considerations shall be observed in on-site and off-site runoff management:

(1) Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity, and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this section.

(2) Emergency overland flow for all storm water facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.

h. <u>Location and Regional Treatment Option.</u>

(1) To comply with the performance standards required under Section 19.09 of this ordinance, BMPs may be located on-site or off-site as part of a regional storm water device, practice or system but shall be installed in accordance with s. NR 151.003, Wis. Adm. Code.

(2) The City Engineer or designee may approve off-site management measures provided that all of the following conditions are met:

(a) The City Engineer or designee determines that the post-construction runoff is covered by a storm water management system plan that is approved by

the City of Pewaukee and that contains management requirements consistent with the purpose and intent of this ordinance.

(b) The off-site facility meets all of the following conditions:

1. The facility is in place.

2. The facility is designed and adequately sized to provide a level of storm water control equal to or greater than that which would be afforded by on-site practices meeting the performance standards of this ordinance.

3. The facility has a legally obligated entity responsible for its long-term operation and maintenance.

(3) Where a regional treatment option exists such that the City Engineer or designee exempts the applicant from all or part of the minimum on-site storm water management requirements, the applicant shall be required to pay a fee in an amount determined in negotiation with the City Engineer or designee. In determining the fee for post-construction runoff, the City Engineer or designee shall consider an equitable distribution of the cost for land, engineering design, construction, and maintenance of the regional treatment option.

i. Additional Requirements. The City Engineer or designee may establish storm water management requirements more stringent than those set forth in this ordinance if he or she determines that the requirements are needed to control storm water quantity or control flooding, comply with a federally approved total maximum daily load requirement, or control pollutants associated with existing development or re-development.

19.10 PERMITTING AND FEE REQUIREMENTS.

Permit Required.

No responsible party may undertake a land disturbing construction activity subject to this ordinance without receiving prior approval of an erosion and sediment control plan for the site and permit or a post-construction runoff permit, as applicable from the City Engineer or designee, prior to commencing the proposed activity.

a. Permit Application and Fees for Erosion Control.

The responsible party that will undertake a land disturbing construction activity subject to this ordinance shall submit an application for a permit and an erosion and sediment control plan that meets the requirements of Section 19.11 of this ordinance and shall pay an application fee as established by the Common Council as set forth in Section 19.15 of this ordinance. By submitting an application, the applicant is authorizing the City Engineer or designee to enter the site to obtain information required for the review of the erosion and sediment control plan.

b. Permit Application and Fees for Storm Water Management.

Unless specifically excluded by this ordinance, any responsible party desiring a permit shall submit to the City Engineer or designee a permit application made on a form provided by the City Engineer or designee for that purpose.

(1) Unless otherwise exempted by this ordinance, a permit application must be accompanied by a storm water management plan, a maintenance agreement and a non-refundable permit administration fee.

(2) The storm water management plan shall be prepared to meet the requirements of Sections 19.09 and 19.12. The maintenance agreement shall be prepared to meet the requirements of Section 19.13. The financial guarantee shall meet the requirements of Section 19.14, and the fees shall be those established by the Common Council as set forth in Section 19.15.

c. Review and Approval of Permit Application.

The City Engineer or designee shall review any permit application that is submitted with an erosion and sediment control plan or a storm water management plan and maintenance agreement and the required fee. The following approval procedure shall be used:

(1) After the receipt of a complete permit application, as required by subds. a. and b., the City Engineer or designee shall inform the applicant whether the application, plan and maintenance agreement are approved or disapproved based on the requirements of this ordinance.

(2) If the permit application, plan and maintenance agreement are approved, the City Engineer or designee shall issue the permit. In the alternative, if an agreed upon payment of fees in lieu of storm water management practices is made, the City Engineer or designee shall issue the permit.

(3) If the permit application, plan or maintenance agreement is disapproved, the City Engineer or designee shall state in writing the reasons for disapproval.

(4) The City Engineer or designee may request additional information from the applicant. If additional information is submitted, the City Engineer or designee shall inform the applicant that the plan is either approved or disapproved.

(5) As a condition of approval and issuance of an erosion control plan and permit, the City Engineer or designee may require the applicant to deposit a surety bond or irrevocable letter of credit to guarantee a good faith execution of the approved erosion control plan and any permit conditions.

d. Permit Requirements.

All permits issued under this ordinance shall be subject to the following conditions, and holders of permits issued under this ordinance shall be deemed to have accepted these conditions. The City Engineer or designee may suspend or revoke a permit for violation of a permit condition, following written notification to the responsible party. Compliance with any permit does not relieve the responsible party of the responsibility to comply with other applicable federal, state and local laws and regulations. An action by the City Engineer or designee to suspend or revoke this permit may be appealed in accordance with Section 19.19.

(1) All erosion control permits shall require the responsible party to:

(a) Notify the City Engineer or designee within 48 hours of commencing any land disturbing construction activity.

(b) Notify the City Engineer or designee of completion of any BMPs within 14 days after their installation.

(c) Obtain permission in writing from the City Engineer or designee prior to any modification pursuant to Subsection 19.11 f. of the erosion and sediment control plan.

(d) Install all BMPs as identified in the approved erosion and sediment control plan.

(e) Maintain all road drainage systems, storm water drainage systems, BMPs and other facilities identified in the erosion and sediment control plan.

(f) Repair any siltation or erosion damage to adjoining surfaces and drainage ways resulting from land disturbing construction activities and document repairs in a site inspection log.

(g) Inspect the BMPs within 24 hours after each rain of 0.5 inches or more which results in runoff during active construction periods, and at least once each week. Make needed repairs, install additional BMPs as necessary, and document these activities in an inspection log that also includes the date of inspection, the name of the person conducting the inspection, and a description of the present phase of the construction at the site. Reports must be submitted on a weekly basis to the City Engineer or designee upon request.

(h) Allow the City Engineer or designee to enter the site for the purpose of inspecting compliance with the erosion and sediment control plan or for performing any work necessary to bring the site into compliance with the erosion and sediment control plan. Keep a copy of the erosion and sediment control plan at the construction site.

(i) The responsible party is subject to the enforcement actions and penalties detailed in Section 19.17, if the responsible party fails to comply with the terms of this permit.

(2) All permits relating to storm water management shall require the responsible party to:

(a) Design and install all structural and non-structural storm water management measures in accordance with the approved storm water management plan and this permit.

(b) Notify the City Engineer or designee at least 3 business days before commencing any work in conjunction with the storm water management plan, and within 7 business days upon completion of the storm water management practices. If required as a special condition under subd. (e)

below, the responsible party shall make additional notification according to a schedule set forth by the City Engineer or designee so that the storm water management practice installations can be inspected during construction.

(c) Complete the storm water management practice installations required as part of this ordinance. Completed installations shall be certified "as built" by a licensed professional engineer. Completed storm water management practices must pass a final inspection by the City Engineer or designee to determine if they are in accordance with the approved storm water management plan and ordinance. The City Engineer or designee shall notify the responsible party in writing of any changes required in such practices to bring them into compliance with the conditions of this permit.

(d) Notify the City Engineer or designee of any significant modifications it intends to make to an approved storm water management plan. The City Engineer or designee may require that the proposed modifications be submitted for approval prior to incorporation into the storm water management plan and execution by the responsible party.

(e) Maintain all storm water management practices in accordance with the storm water management plan until the practices either become the responsibility of the City, or are transferred to subsequent private owners as specified in the approved maintenance agreement.

(f) Authorize the City Engineer or designee to perform any work or operations necessary to bring the storm water management measures into conformance with the approved storm water management plan, and consents to a special assessment or charge against the property as authorized under subch. VII of § 66, Wis. Stats., or to charging such costs against the financial guarantee posted under Section 19.14.

(g) Repair at the responsible party's own expense, if so directed by the City Engineer or designee, all damage to adjoining municipal facilities and drainage ways caused by runoff, where such damage is caused by activities that are not in compliance with the approved storm water management plan.

(h) Permit property access to the City Engineer or designee for the purpose of inspecting the property for compliance with the approved storm water management plan and this permit.

(i) Make appropriate legal arrangements with affected property owners concerning the prevention of endangerment to property or public safety, as may be required by the City Engineer or designee, where site development or redevelopment involves changes in direction, increases in peak rate and/or total volume of runoff from a site.

(j) The responsible party is subject to the enforcement actions and penalties detailed in Section 19.18, if the responsible party fails to comply with the terms of this permit.

d. Permit Conditions.

Permits issued under this section may include conditions established by the City Engineer or designee in addition to the requirements needed to meet the performance standards in Sections 19.08 or 19.09 or a financial guarantee as provided for in Section 19.14.

e. Permit Duration.

Permits issued under this section shall have the following duration:

(1) Permits for construction site erosion control shall be valid for a period of 1-year, or the length of the building permit or other construction authorizations, whichever is longer, from the date of issuance. The City Engineer or designee may grant one or more extensions not to exceed an additional 1-year cumulatively. The City Engineer or designee may require additional BMPs as a condition of the extension if they are necessary to meet the requirements of this ordinance. The maximum period of permit coverage for any project is limited to 2 years.

(2) Permits for post-construction site storm water management shall be valid from the date of issuance through the date the City Engineer or designee notifies the responsible party that all storm water management practices have passed the final inspection required under subd. d.(2)(c) above.

(3) Projects requiring permit coverage beyond the termination date of a permit shall be required to submit another permit application and fee in accordance with Section 19.10 to retain coverage under the existing permit or reissued version of the permit.

f. Maintenance.

The responsible party throughout the duration of the construction activities shall maintain all BMPs necessary to meet the requirements of this ordinance until the site has undergone final stabilization.

19.11 EROSION AND SEDIMENT CONTROL PLAN, STATEMENT, AND AMENDMENTS.

EROSION AND SEDIMENT CONTROL PLAN.

An erosion and sediment control plan shall be prepared and submitted to the City Engineer or designee and shall be designed to meet the performance standards in Section 19.08 and other requirements of this ordinance.

a. Pollution.

The erosion and sediment control plan shall address pollution caused by soil erosion and sedimentation during construction and up to final stabilization of the site. The erosion and sediment control plan shall include, at a minimum, the following items:

(1) The name(s) and address(es) of the owner or developer of the site, and of any consulting firm retained by the applicant, together with the name of the applicant's

principal contact at such firm. The application shall also include start and end dates for construction.

(2) Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a United States Geological Service 7.5 minute series topographic map.

(3) A description of the intended sequence of the major land disturbing construction activities for major portions of the construction site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.

(4) Estimates of the total area of the site and the total area of the site that is expected to be disturbed by land disturbing construction activities.

(5) Calculations to show compliance with the performance standards in Subdivision 19.08 a.(2)(a).

(6) Existing data describing the surface soil as well as subsoils.

(7) Depth to groundwater, as indicated by Natural Resources Conservation Service soil information where available.

(8) Name of the immediate named receiving water from the United States Geological Service 7.5 minute series topographic maps.

b. Site Map.

The erosion and sediment control plan shall include a site map. The site map shall include the following items and shall be at a scale not greater than 100 feet per inch and at a contour interval not to exceed five feet.

(1) Existing topography, vegetative cover, natural and engineered drainage systems, roads and surface waters. Lakes, streams, wetlands, channels, ditches and other watercourses on and immediately adjacent to the site shall be shown. Any identified 100-year flood plains, flood fringes and floodways shall also be shown.

(2) Boundaries of the construction site.

(3) Drainage patterns and approximate slopes anticipated after major grading activities.

(4) Areas of soil disturbance.

(5) Location of major structural and non-structural controls identified in the erosion and sediment control plan.

(6) Location of areas where stabilization BMPs will be employed.

(7) Areas which will be vegetated following land disturbing construction activities.

(8) Areal extent of wetland acreage on the construction site and locations where storm water is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.

(9) An alphanumeric or equivalent grid overlying the entire construction site map.

(10) Areas used for infiltration of post-construction storm water runoff.

c. Controls.

Each erosion and sediment control plan shall include a description of appropriate BMPs that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state or offsite areas. The erosion and sediment control plan shall clearly describe the appropriate erosion and sediment control BMPs for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control BMPs will be implemented. The description of erosion controls shall include, when appropriate, the following minimum requirements:

(1) Description of interim and permanent stabilization practices, including a BMP implementation schedule. The erosion and sediment control plan shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized.

(2) Description of structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the site. Unless otherwise specifically approved in writing by the City Engineer or designee, structural measures shall be installed on upland soils.

(3) Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.

(4) Trapping of sediment in channelized flow.

(5) Staging land disturbing construction activities to limit exposed soil areas subject to erosion.

(6) Protection of downslope drainage inlets where they occur.

(7) Minimization of tracking at all vehicle and equipment entry and exit locations of the construction site.

(8) Clean up of off-site sediment deposits.

(9) Proper disposal of building and waste materials at all sites.

(10) Stabilization of drainage ways.

(11) Control of soil erosion from dirt stockpiles.

(12) Installation of permanent stabilization practices as soon as possible after final grading.

(13) Minimization of dust to the maximum extent practicable.

d. Velocity Dissipation.

The erosion and sediment control plan shall require that velocity dissipation devices be placed at discharge locations and along the length of any outfall channel, as necessary, to provide a non-erosive flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.

e. Erosion and Sediment Control Plan Statement.

For each construction site identified under Subsection 19.03 d., an erosion and sediment control plan statement shall be prepared. This statement shall be submitted to the City Engineer or designee. The erosion and sediment control plan statement shall briefly describe the site, the development schedule and the BMPs that will be used to meet the requirements of this ordinance. A site map shall also accompany the erosion and sediment control plan statement.

f. Erosion and Sediment Control Plan Amendments.

The applicant shall amend the erosion and sediment control plan if any of the following occur:

(1) There is a change in design, construction, operation or maintenance at the site which has the reasonable potential for the discharge of pollutants to waters of the state or offsite and which has not otherwise been addressed in the erosion and sediment control plan.

(2) The actions required by the erosion and sediment control plan fail to reduce the impacts of pollutants carried by construction site runoff.

(3) The City Engineer or designee notifies the applicant of changes needed in the erosion and sediment control plan.

19.12 STORM WATER MANAGEMENT PLAN.

a. Plan Requirements.

The storm water management plan required under Subsection 19.10 b. shall contain at a minimum the following information:

(1) Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of storm water management practices; and person(s) responsible for maintenance of storm water management practices prior to the transfer, if any, of maintenance responsibility to another party.

(2) A proper legal description of the property proposed to be developed, referenced to the U.S. Public Land survey system or to block and lot numbers within a recorded land subdivision plat.

(3) Pre-development site conditions, including:

(a) One or more site maps at a scale of not less than 1 inch equals 100 feet or less. The site maps shall show the following: site location and legal property description; predominant soil types and hydrologic soil groups; existing cover type and condition; topographic contours of the site at a scale not to exceed 2 feet; topography and drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; watercourses that may affect or be affected by runoff from the site; flow path and direction for all storm water conveyance sections; watershed boundaries used in hydrology determinations to show compliance with performance standards; lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site; limits of the 100 year floodplain; location of wells and wellhead protection areas covering the project area and delineated pursuant to s. NR 811.16, Wis. Adm. Code.

(b) Hydrology and pollutant loading computations as needed to show compliance with performance standards. All major assumptions used in developing input parameters shall be clearly stated. The geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).

(4) Post-development site conditions, including:

(a) Explanation of the provisions to preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and wetlands.

(b) Explanation of any restrictions on storm water management measures in the development area imposed by wellhead protection plans and ordinances.

(c) One or more site maps at a scale of not less than 1 inch equals 100 feet or less showing the following: post-construction pervious areas including vegetative cover type and condition; impervious surfaces including all buildings, structures, and pavement; post-construction topographic contours of the site at a scale not to exceed 2 feet; post-construction drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; locations and dimensions of drainage easements; locations of maintenance easements specified in the maintenance agreement; flow path and direction for all storm water conveyance sections; location and type of all storm water management conveyance and treatment practices, including the on-site and off-site tributary drainage area; location and type of conveyance system that will carry runoff from the drainage and treatment practices to the nearest adequate outlet such as a curbed street, storm drain, or natural drainage way; watershed boundaries used in hydrology and pollutant loading calculations and any changes to lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site.

(d) Hydrology and pollutant loading computations as needed to show compliance with performance standards. The computations shall be made for each discharge point in the development, and the geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).

(e) Results of investigations of soils and groundwater required for the placement and design of storm water management measures.

(f) Detailed drawings including cross-sections and profiles of all permanent storm water conveyance and treatment practices.

(5) A description and installation schedule for the storm water management practices needed to meet the performance standards in Section 19.09.

(6) A maintenance plan developed for the life of each storm water management practice including the required maintenance activities and maintenance activity schedule.

(7) Other information requested in writing by the City Engineer or designee to determine compliance of the proposed storm water management measures with the provisions of this ordinance.

(8) All site investigations, plans, designs, computations, and drawings shall be certified by a licensed professional engineer to be prepared in accordance with accepted engineering practice and requirements of this ordinance.

b. Alternate Requirements.

The City Engineer or designee may prescribe alternative submittal requirements for applicants seeking an exemption to on-site storm water management performance standards under Subsection 19.09 h.

19.13 MAINTENANCE AGREEMENT.

The maintenance agreement required under Subsection 19.10 b. for storm water management practices shall be an agreement between the City and the responsible party to provide for maintenance of storm water practices beyond the duration period of this permit. The maintenance agreement shall be filed with the County Register of Deeds as a property deed restriction so that it is binding upon all subsequent owners of the land served by the storm water management practices. The maintenance agreement shall contain the following information and provisions and be consistent with the maintenance plan required by Paragraph 19.12 a.(6).

a. Identification of the storm water facilities and designation of the drainage area served by the facilities.

b. A schedule for regular maintenance of each aspect of the storm water management system consistent with the storm water management plan required under Subsection 19.10 b.

c. Identification of the responsible party(s), organization, or city, county, town or village responsible for long term maintenance of the storm water management practices identified in the storm water management plan required under Subsection 19.10 b.

d. Requirement that the responsible party(s), organization, or city, county, town or village shall maintain storm water management practices in accordance with the schedule included in subsect. b., above.

e. Authorization for the City Engineer or designee to access the property to conduct inspections of storm water management practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.

f. A requirement on the City Engineer or designee to maintain public records of the results of the site inspections, to inform the responsible party for maintenance of the inspection results, and to specifically indicate any corrective actions required to bring the storm water management practice into proper working condition.

g. Agreement that the party designated under subsect. c., as responsible for long term maintenance of the storm water management practices, shall be notified by the City Engineer or designee of maintenance problems which require correction. The specified corrective actions shall be undertaken within a reasonable time frame as set by the City Engineer or designee.

h. Authorization of the City Engineer or designee to perform the corrected actions identified in the inspection report if the responsible party designated under subsect. c. does not make the required corrections in the specified time period. The City Engineer or designee shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to subch. VII of § 66, Wis. Stats.

19.14 FINANCIAL GUARANTEE.

The City Engineer or designee may require the submittal of a financial guarantee, the form and type of which shall be acceptable to the City Engineer or designee.

a. The financial guarantee shall be in an amount determined by the City Engineer or designee to be the estimated cost of construction and the estimated cost of maintenance of the storm water management practices during the period which the designated party in the maintenance agreement has maintenance responsibility.

b. The financial guarantee shall give the City Engineer or designee the authorization to use the funds to complete the storm water management practices if the responsible party defaults or does not properly implement the approved storm water management plan, upon written notice to the responsible party by the City Engineer or designee that the requirements of this ordinance have not been met.

c. Conditions for Release.

Conditions for the release of the financial guarantee are as follows:

(1) The City Engineer or designee shall release the portion of the financial guarantee established under this section, less any costs incurred by the City Engineer or designee to complete installation of practices, upon submission of "as built plans" or "record" drawings by a licensed professional engineer. The City Engineer or designee may make provisions for a partial pro-rata release of the financial guarantee based on the completion of various development stages.

(2) The City Engineer or designee shall release the portion of the financial guarantee established under this section to assure maintenance of storm water practices, less any costs incurred by the City Engineer or designee, at such time that the responsibility for practice maintenance is passed on to another entity via an approved maintenance agreement.

19.15 FEE SCHEDULE.

The fees referred to in other sections of this ordinance shall be established by the City Engineer or designee and may from time to time be modified by resolution. A schedule of the fees established shall be available for review at City Hall.

19.16 INSPECTION.

If land disturbing construction activities are being carried out without a permit required by this ordinance, the City Engineer or designee may enter the land pursuant to the provisions of § 66.0119(1), (2), and (3), Wis. Stats.

19.17 ENFORCEMENT OF EROSION CONTROL.

a. The City Engineer or designee may post a stop-work order if any of the following occurs:

(1) Any land disturbing construction activity regulated under this ordinance is being undertaken without a permit.

(2) The erosion and sediment control plan is not being implemented in a good faith manner.

(3) The conditions of the permit are not being met.

b. If the responsible party does not cease activity as required in a stop-work order posted under this section or fails to comply with the erosion and sediment control plan or permit conditions, the City Engineer or designee may revoke the permit.

c. If the responsible party, where no permit has been issued or the permit has been revoked, does not cease the activity after being notified by the City Engineer or designee, or if a responsible party violates a stop-work order posted under subsect. a., the City Engineer or designee may request the city attorney to obtain a cease and desist order in any court with jurisdiction.

d. The Common Council may retract the stop-work order issued under subsect. a. or the permit revocation under subsect. b.

e. After posting a stop-work order under subsect. a., the City Engineer or designee may issue a notice of intent to the responsible party of its intent to perform work necessary to comply with this ordinance. The City Engineer or designee may go on the land and commence the work after issuing the notice of intent. The costs of the work performed under this subsection by the City Engineer or designee, plus interest at the rate authorized by the City Engineer or designee shall be billed to the responsible party. In the event a responsible party fails to pay

the amount due, the clerk shall enter the amount due on the tax rolls and collect as a special assessment against the property pursuant to subch. VII of § 66, Wis. Stats.

f. Any person violating any of the provisions of this ordinance shall be subject to penalties and forfeitures of not less than $50 nor more than $500 together with the costs of prosecution for each violation. Each day a violation exists shall constitute a separate offense.

g. Compliance with the provisions of this ordinance may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctional proceedings.

19.18 ENFORCEMENT OF STORM WATER MANAGEMENT.

Any land disturbing construction activity or post-construction runoff initiated after the effective date of this ordinance by any person, firm, association, or corporation subject to the ordinance provisions shall be deemed a violation unless conducted in accordance with the requirements of this ordinance.

a. The City Engineer or designee shall notify the responsible party by certified mail of any non-complying land disturbing construction activity or post-construction runoff. The notice shall describe the nature of the violation, remedial actions needed, a schedule for remedial action, and additional enforcement action which may be taken.

b. Upon receipt of written notification from the City Engineer or designee under subsect. a., the responsible party shall correct work that does not comply with the storm water management plan or other provisions of this permit. The responsible party shall make corrections as necessary to meet the specifications and schedule set forth by the City Engineer or designee in the notice.

c. If the violations to a permit issued pursuant to this ordinance are likely to result in damage to properties, public facilities, or waters of the state, the City Engineer or designee may enter the land and take emergency actions necessary to prevent such damage. The costs incurred by the City Engineer or designee plus interest and legal costs shall be billed to the responsible party.

d. The City Engineer or designee is authorized to post a stop work order on all land disturbing construction activity that is in violation of this ordinance, or to request the City Attorney to obtain a cease and desist order in any court with jurisdiction.

e. The City Engineer or designee may revoke a permit issued under this ordinance for non-compliance with ordinance provisions.

f. Any permit revocation, stop work order, or cease and desist order shall remain in effect unless retracted by the City Engineer or designee or by a court with jurisdiction.

g. The City Engineer or designee is authorized to refer any violation of this ordinance, or of a stop work order or cease and desist order issued pursuant to this ordinance, to the City Attorney for the commencement of further legal proceedings in any court with jurisdiction.

h. Any person, firm, association, or corporation who does not comply with the provisions of this ordinance shall be subject to penalties and forfeitures of not less than $500 nor more than

$2,500 together with the costs of prosecution for each violation. Each day that the violation exists shall constitute a separate offense.

i. Compliance with the provisions of this ordinance may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctional proceedings.

j. When the City Engineer or designee determines that the holder of a permit issued pursuant to this ordinance has failed to follow practices set forth in the storm water management plan, or has failed to comply with schedules set forth in said storm water management plan, the City Engineer or a party designated by him or her may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformance with requirements of the approved plan. The City Engineer or designee shall keep a detailed accounting of the costs and expenses of performing this work. These costs and expenses shall be deducted from any financial security posted pursuant to Section 19.14 of this ordinance. Where such a security has not been established, or where such a security is insufficient to cover these costs, the costs and expenses shall be entered on the tax roll as a special charge against the property and collected with any other taxes levied thereon for the year in which the work is completed.

19.19 APPEALS.

The Common Council:

a. Shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the City Engineer or designee in administering this ordinance except for cease and desist orders obtained under Subsection 19.17 c. and Subsection 19.18 d.

b. Shall use the rules, procedures, duties and powers authorized by statute in hearing and deciding appeals and authorizing variances; and

c. Upon appeal, may authorize variances from the provisions of this ordinance which are not contrary to the public interest and where owing to special conditions a literal enforcement of the provisions of the ordinance will result in unnecessary hardship.

d. Who May Appeal.

Appeals to the Common Council may be taken by any aggrieved person or by any office, department, board, or bureau of the City of Pewaukee affected by any decision of the City Engineer or designee.

19.20 ILLICIT DISCHARGES AND CONNECTIONS.

a. Definitions.

The following definitions shall be applicable in this section:

(1) "Illicit Connection" means any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including, but not limited to any conveyances which allow any non-storm water

discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been allowed, permitted, or approved by a government agency, prior to the adoption of this ordinance.

(2) "Person" means any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

(3) "Storm Drain System" means publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

b. Discharges Prohibited.

No person shall discharge, spill or dump substances or materials which are not entirely composed of storm water into receiving bodies of water or onto driveways, sidewalks, parking lots or other areas that drain into the storm drainage system.

c. Connections Prohibited.

The construction, use, maintenance or continued existence of illicit connections to the storm drainage system is prohibited. This prohibition expressly includes, without limitation, illicit connections made prior to the adoption of this ordinance, regardless of whether the connections was permissible under law or practice applicable or prevailing at the time of connection.

d. Exemptions.

The following activities are exempt from the provisions of this section unless found to have an adverse impact on the storm water:

(1) Discharges authorized by a permit issued by the Wisconsin Department of Natural Resources.

(2) Discharges resulting from firefighting activities.

(3) Discharges from uncontaminated ground water, potable water source, roof drains, foundation drain and sump pump, air conditioning condensation, springs, lawn watering, individual residential car washing, water main and hydrant flushing and swimming pools if the water has been dechlorinated.

e. Enforcement.

Whenever the City of Pewaukee finds a person has violated a prohibition or failed to meet a requirement of this section, the City of Pewaukee may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

(1) The elimination of illicit connections or discharges;

(2) That violating discharges, practices, or operations shall cease and desist within 72 hours of discovering violation;

(3) The abatement or remediation of storm water pollution or contaminated hazards and the restoration of any affected property;

(4) In the event the person fails to eliminate the illicit connects or discharge, fails to cease and desist in discharge, practices or operations in violation of this Section or fails to abate or remediate the storm water pollution or contamination hazards, that person may be subject to a forfeiture of not less than $50.00 nor more than $500.00 for each offense, together with the costs of prosecution. Each day that the violation exists shall constitute a separate offense.

19.21 SEVERABILITY.

If any section, clause, provision or portion of this ordinance is judged unconstitutional or invalid by a court of competent jurisdiction, the remainder of the ordinance shall remain in force and not be affected by such judgement.

Exhibit H

City of Pewaukee Leaf Management Program

Program Description

The City of Pewaukee accepts leaves and grass clippings at the City Recycling Center drop off site located on the lower level of Pewaukee City Hall on Saturdays from 9 am to 3 pm and Wednesdays from 1 pm to 6 pm from the first week in April through the week of Thanksgiving. Operations at the facility are supervised by Highway Department Staff.

Material collected at the City Hall site is taken to a facility in Genesee Depot for composting. The disposal site is owned by Genesee Aggregate Corporation and is operated by Purple Cow Organics, LLC through a contract with Waukesha County Department of Parks and Land Use. The facility is located at W239 S5104 Grush Road, Genesee Depot.

As an alternative to dropping off leaves and grass clippings at the City Recycling Center, residents may have Johns Disposal Service Inc., pick the material based upon a set schedule, provided the material is contained in brown paper, biodegradable yard waste bags not exceeding 50 pounds each and each bag is tagged with a sticker. Stickers are available for purchase from either City Hall or Johns Disposal Service Inc., and cost $1.25. Disposal of the material collected through this service is made at the discretion of the provider.

Location and Contact Information

Contact information for the City Recycling Center is:

Name of Facility:	City Recycling Center
Facility Address:	W240 N3065 Pewaukee Road Pewaukee, WI 53072
Facility Contact:	Matt Stevens Highway Superintendent (262)-691-0771

Estimates of Material Collected

Estimates of material collected at the City Recycling Center and disposed of at the Genesee composting site are: 1104 tons in 2015; 494 tons in 2014; and 639 tons in 2013. The cost for the disposal of material at the Genesee composting site was approximately $2208.00 for 2015.

Johns Disposal Service, Inc. reported approximately 25 tons of yard waste collected for 2015.

Department of Public Works
W240 N3065 Pewaukee Road
Pewaukee, WI 53072
DPW Main Office: (262) 691-0804
Fax: (262) 691-5729

Carefully *read* and *follow* the disposal instructions.

Store hazardous items safely until you are able to dispose of them properly.

RECYCLING CENTER

Hours: Saturdays: 9am to 3pm
Wednesdays: 1pm to 6pm
(1st week of April thru Thanksgiving week)

Location: Pewaukee City Hall LOWER LEVEL

- ✓ **NO ADMITTANCE during unscheduled hours or days.**
- ✓ **NO SCAVENGING** at or on this site.
- ✓ There is **INCREASED MONITORING** on the site to prevent future contaminations.
- ✓ **A "CITY TAG" must be** DISPLAYED on the resident's vehicle, in plan site, for the attendant to view to be admitted. (Tags are obtained at City Hall during regular office hours with a valid Driver's License and vehicle license plate numbers.)

The City has retained attendants with full authority to turn away persons and unauthorized materials.

Leaves and Grass Clippings

If bagged, they must be dumped out of the plastic bag. **NO plastic bags filled with leaves or grass clippings in the composting piles.** A barrel is available for disposal of the used plastic bags. In the past, our loads of yard waste as been rejected at the Composting Facility because the contained plastic bags. **Recyclable PAPER BAGS** that are sold in the local hardware stores **ARE** allowed in the composting operations.

ACCEPTED ITEMS:

Brush & small trees-
stumps or logs over 4" diameter AND cut into 4 foot sections.

Cardboard- corrugated only

~~Computers & Monitors~~ Pewaukee no longer accepts electronics for recycling

Engine / Motor Oil - Filters and antifreeze

Glass bottles & jars - Clear, amber & green

Magazines – bundled

~~Microwaves~~

Newspaper – flat & bundled

Plastic Bottles - #1 and #2

~~Stoves & Dishwashers Without the electrical ballast~~

Scrap iron & Steel & Tin cans

~~Washers & Dryers~~

~~Televisions~~

NOT ACCEPTED

Air conditioners or dehumidifiers

Refrigerators or Freezers

Garbage and Trash

Brake Fluid or Chemicals

Paint

Boards and/ or Lumber

Furniture

Propane or LP Tanks

Gasoline

Tires

Remodeling or Building debris. Such as: bricks, concrete blocks, drywall, paneling, plaster, studs, tile, and pressure treated wood.

HOUSEHOLD HAZARDOUS WASTE INFORMATION: (available sites)

Waukesha County Household Hazardous – DROP OFF SITE 900 Sentry Drive, Waukesha

Veolia Environment Services –W124 N9451 Boundary Road (124th St) Menomonee Falls, WI (262) 367-6040

Waukesha County Incinerator – 900 Sentry Drive, Waukesha, WI 53188 (262) 896-8300

http://www.waukeshacounty.gov/recycling

JOHNS DISPOSAL SERVICE INC.
Whitewater & Franksville, WI

CITY OF PEWAUKEE

2016 – YARD WASTE SCHEDULE

THURSDAY	THURSDAY	THURSDAY	THURSDAY
4/21/2016	5/12/2016	5/19/2016	6/2/2016
THURSDAY	THURSDAY	THURSDAY	THURSDAY
6/16/2016	7/14/2016	8/11/2016	9/22/2016
THURSDAY	THURSDAY	THURSDAY	FRIDAY
10/13/2016	10/20/2016	11/10/2016	11/25/2016

****ALL YARD WASTE MUST BE CURB SIDE NO LATER THAN 7 AM****

PROPER PREPARATION OF YARD WASTE MASTERIALS:

Dry grass clippings, leaves and small twigs are to be contained in brown paper biodegradable yard waste bags. Bags are available at most hardware and discount stores. Bags shall not exceed 50 pounds each. Plastic bags and appliance boxes are not acceptable containers.

EACH BAG MUST HAVE A STICKER ATTACHED FOR COLLECTION.

Brush (branches no larger than 4" in diameter), must be tied in bundles not to exceed 4 foot in length and 18 inches in diameter. Bundles shall not weigh more than 50 pounds per bundle. Twin must be able to support the weight of the material.

Daniel P. Vrakas
County Executive

Waukesha COUNTY

DEPARTMENT OF
PARKS AND LAND USE

Dale R. Shaver
Director

DATE: September 24, 2013
TO: Waukesha County Municipal Contacts, Advanced Disposal Services
FROM: Rebecca Mattano, Solid Waste Supervisor 262-896-8014
RE: Yard and Wood Waste Processing Site

Effective November 1, 2013, the yard and wood waste materials drop off and processing site will be located at W319 S5104 Grush Road, Genesee Depot. This site is owned by Genesee Aggregate Corporation and will be operated by Purple Cow Organics, LLC (PCO) through a contract with Waukesha County Department of Parks and Land Use. Municipalities must have an executed agreement with the County to deliver materials. All participating municipalities and associated haulers will be notified with an email memo regarding changes in site operations.

Business Hours

PCO will only accept materials from municipalities with executed agreements during normal business hours:

- April 1 - November 30: Monday-Friday - 7:00a.m. – 3:00 p.m.
- December 1 – March 31: Monday, Wednesday, Friday – 8:00 a.m. – 3:00 p.m.

Hours of operation are subject to change based on weather, demand for the site, and level of participation.

Truck Route and Site Protocol

1. **The truck route is required and must follow** Hwy 83, to Hwy 59 west, to County ZZ, then north on Grush Road to the entrance (refer to attached route map). No truck traffic allowed beyond the Genesee Aggregate entrances north on Grush Road.
2. All trucks must weigh in at the scale located on the west side of Grush Road. This is the same scale that Genesee Aggregate uses for their operation (refer to attached site map).
3. Drivers must report municipality and type of material: brush, yard residuals, or a blend of brush and yard residuals.
4. Posted Speed Limits must be strictly adhered to. In the event of a violation, PCO reserves the right to discontinue service to that municipality.
5. After weighing in, trucks will proceed to the PCO entrance on the east side of Grush Road, and tip their load in the appropriate location as posted in the drop-off area. Once material is unloaded, the truck must return to the scale to be weighed out.
6. All loads of material should be generally clean of trash and non-vegetated debris. PCO reserves the right to reject any load it deems to be contaminated. Wisconsin Law requires that yard materials not be disposed of inside of plastic bags. Loads containing excess plastic may be rejected.
7. The County will supply PCO with a list of all participating municipalities; the county will refuse payment on any loads delivered from a municipality that has not executed an agreement.

Haulers/Drivers

Each driver must sign and submit the attached Site Specific Hazard Awareness Training Form to POC, review the attached traffic pattern map and understand the new site protocols.

Attachments

1. Site and Traffic Pattern Map and Route Map
2. PCO Site Specific Hazard Awareness Training Form

Waukesha County Land Resources Division
515 W. Moreland Blvd.
Waukesha, WI 53188
Phone (262) 896-8300

Daniel P. Vrakas
County Executive

Dale R. Shaver
Director

Waukesha COUNTY
DEPARTMENT OF PARKS AND LAND USE

MUNICIPAL YARD AND WOOD WASTE PROCESSING AGREEMENT

THIS AGREEMENT, for Yard and Wood Waste processing and cost-sharing services, is between Waukesha County ("County") and the (~~Town~~/City/~~Village~~) of PEWAUKEE ("Municipality"). All references to "Purple Cow" refer to Purple Cow Organics, LLC, the entity with which the County has made arrangements for the processing of the County's and participating communities' Yard Waste and Wood Waste.

WHEREAS, subsection 287.07(2), Wis. Stats. (Solid Waste Reduction, Recovery and Recycling) prohibits land disposal and incineration of "Yard Waste" in a solid waste disposal facility. Yard Waste, as used herein, is defined by the Wisconsin Statutes as leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter, excluding stumps, roots or shrubs with intact root balls. *See* Wis. Stat. § 287.01(17). For the purposes of this Agreement, Yard Waste expressly excludes sod. "Wood Waste" is defined herein to mean clean woody vegetative material larger than 6 inches in diameter, excluding stumps.

WHEREAS, since the 1990's the County has facilitated the process for communities in the County to obtain Yard and Wood Waste processing services. This has helped communities comply with the landfill ban while obtaining competitive pricing, convenient processing services, and state grants to support the operation of a County-owned Yard Waste composting operation in the Town of Genesee from 2004 to 2013.

WHEREAS, the zoning permit for the County-owned Yard Waste composting operation expires October 31, 2013. Therefore, the County has completed a request for proposals process and executed a contract with Purple Cow to provide Yard Waste and Wood Waste processing services, as described below.

NOW THEREFORE, in consideration of these premises, the County and the Municipality hereby agree as follows:

1. **CONTRACT AND AGREEMENT**. The County shall administer a 10-year contract with Purple Cow for Yard Waste and Wood Waste processing services and execute an agreement substantially in the form hereof with each municipality that chooses to use the services. This Agreement shall be effective upon execution by both parties and written notice to proceed is given to the Municipality by the County, which notice shall be no given later than October 31, 2013. This Agreement shall remain in effect until December 31, 2023 unless otherwise

terminated in writing by either party.

2. **SITE.** The Yard Waste and Wood Waste drop-off and processing site (the "Site") is located at W319 S5104 Grush Road, Genesee Depot, which is owned by the Genesee Aggregate Corporation. The Municipality is solely responsible for transportation of its Yard Waste and Wood Waste to the Site.

3. **ACCEPTED MATERIALS.** Both Yard Waste and Wood Waste, as defined above, will be accepted the Site, but must be delivered in separate trucks, weighed and will be charged different fees in accordance with this Agreement. All delivered material must be free of contaminants. There is no limitation on size of wood logs accepted, although they must be free of soil and rocks.

4. **UNACCEPTABLE MATERIALS.** Any load containing materials not meeting the definition of Yard Waste or Wood Waste is unacceptable for delivery to the Site and is subject to rejection by Purple Cow. The presence of hazardous waste containers, or the presence of unusual colors, chemicals or odors in a delivery, shall also be cause for rejection of the load. For any rejected load, the Municipality shall be responsible for removing the materials from the Site at the expense of the Municipality. The decision to reject any load as unacceptable lies solely within the discretion of Purple Cow.

5. **DELIVERY.** Purple Cow shall accept deliveries a minimum of 8 hours per day at the Site, 2 days per week from April 1 through November 30 and 1-3 days per month from December 1 through March 31. Specific delivery days and times shall be coordinated between the Municipality or its waste hauler and Purple Cow.

6. **RECORDS AND REPORTS.** The Municipality shall identify each of their vehicles that enter the Site. Purple Cow shall operate and maintain a motor truck scale at the Site, calibrated to the accuracy required by Wisconsin law, and shall weigh all vehicles that deliver Yard Waste and Wood Waste to the Site. Purple Cow shall keep records that indicate gross weight, empty weight, net payload weight, date and time, vehicle identification number, material delivered and municipality of origin. Purple Cow shall provide the County with monthly and annual reports of all such records. The County will provide a copy of these reports to the Municipality and use them as the basis for all payments to Purple Cow and reimbursements from the Municipality.

7. **YARD WASTE COSTS.** Using carry-over funds from previous state grants received currently totaling not more than $438,956 ("Grant Funds"), the County agrees to share the cost of Yard Waste processing with the Municipality and other participating municipalities through the payment plan shown in Table 1 until the Grant Funds are depleted or the term of this Agreement expires, whichever comes first. Purple Cow shall invoice the County monthly for Yard Waste processed for the Municipality and the County shall pay the entire cost. The Municipality shall reimburse the County for these costs at the per ton rate shown for the applicable year in Table 1. No reimbursement by the Municipality is required for years 2013 and 2014.

   Total costs in Table 1 are estimated assuming a total of 7,000 tons of Yard Waste per year from the County and all participating municipalities and processing costs of $12 per ton, adjusted annually beginning in 2016 in accordance with the contract between the County and Purple Cow. Commencing with November 1, 2016, and for each contract year thereafter, this per ton payment shall be adjusted based upon the Consumer Price Index-Urban for the previous July, with no increase to exceed 3% of the previous per ton amount. If a reduction in the County share is

necessary or desirable due to the depletion of Grant Funds, the County shall notify the Municipality by March 1 of the calendar year prior to the effective date of the reduction.

8. **WOOD WASTE COSTS.** The Municipality shall be solely responsible for all processing costs for Wood Waste, which shall be billed at the rate of $27 per ton, adjusted annually beginning in 2016 the same as Yard Waste costs by contract between the County and Purple Cow. For each ton of Wood Waste delivered to the Site by the Municipality, Purple Cow shall invoice the County monthly and the County shall advance the entire cost of processing. The Municipality shall reimburse the County for all Wood Waste processing costs advanced by the County as described below.

9. **ANNUAL REIMBURSEMENT.** The County shall invoice the Municipality by January 31 each year for tons of Yard Waste and Wood Waste delivered to the Site by the Municipality during the previous calendar year in accordance with this Agreement. The Municipality shall reimburse the County within 30 days of invoice. Weight slips shall be the official weight upon which payment is based. For this Agreement, one "ton" equals 2000 pounds.

10. **ACKNOWLEDGMENT.** The Municipality acknowledges that the County has entered into its contract with Purple Cow for the convenience and benefit of participating municipalities, including the Municipality. The Municipality acknowledges that it is not required to deliver any materials to the Site and assumes all risks in the delivery of materials to the Site pursuant to this Agreement. The Municipality further acknowledges that the County does not control and is in no way responsible for the safety or operations at the Site or any damages that the Municipality or its employees or agents may suffer at the Site.

11. **CONDITIONS PRECEDENT.** All obligations of the County under this Agreement are conditioned upon (1) Purple Cow obtaining and maintaining all necessary permits to operate the Site for processing Yard Waste and Wood Waste; (2) the County's Contract with Purple Cow remaining in full force and effect; and (3) Grant Funds remaining available in a sufficient amount to satisfy the County's financial obligations hereunder.

WAUKESHA COUNTY:

By: _____ Date: 9-16-13

Dale Shaver, Director
Department of Parks and Land Use

MUNICIPALITY (name): CITY OF PEWAUKEE

By: _____ Date: August 28, 2013

SCOTT KLEIN, MAYOR

Printed Name and Title of Authorized Representative

Table 1

Waukesha County and Municipal Cost-Sharing Plan for Yard Waste Processing Services 2013 - 2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Tonnage	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	
Cost/Ton	$12.00	$12.00	$12.00	$12.00	$12.36	$12.73	$13.11	$13.51	$13.91	$14.33	$14.76	
TOTAL COST	$84,000	$84,000	$84,000	$84,000	$86,520	$89,116	$91,789	$94,543	$97,379	$100,300	$103,309	$998,956
County Share	$84,000	$84,000	$70,000	$56,000	$44,520	$33,116	$21,789	$17,543	$13,379	$9,300	$5,309	$438,956
Municipal Cost	$0	$0	$14,000	$28,000	$42,000	$56,000	$70,000	$77,000	$84,000	$91,000	$98,000	$560,000
	$84,000	$84,000	$84,000	$84,000	$86,520	$89,116	$91,789	$94,543	$97,379	$100,300	$103,309	
County Cost	$12.00	$12.00	$10.00	$8.00	$6.36	$4.73	$3.11	$2.51	$1.91	$1.33	$0.76	
Municipal Cost	$0.00	$0.00	$2.00	$4.00	$6.00	$8.00	$10.00	$11.00	$12.00	$13.00	$14.00	
County Share	100%	100%	83%	67%	51%	37%	24%	19%	14%	9%	5%	
Municipal Share	0%	0%	17%	33%	49%	63%	76%	81%	86%	91%	95%	

Exhibit I

City of Pewaukee Management Procedures for Unplanned Water Main Discharges

Introduction

The City of Pewaukee is required under its WPDES permit to develop and implement a plan to mitigate discharges of sediment to the City's MS4 system and to waters of the state from the municipal water system. More specifically, this plan focuses on unplanned water main discharges; better known as water main breaks. This plan will identify the procedures to be followed and the products that may be used to mitigate sediment loading from unplanned water main discharges. Please note, City staff does not repair breaks to its municipal water lines. The City has on call a contractor who will repair breaks to the water system. The erosion control procedures employed by the contractor are to be compliant WDNR Conservation Practice Standards and the City of Pewaukee Technical Standards. This procedure is focused on City staff priorities during an unplanned discharge.

Data Collection

Unplanned water main discharges do not provide an opportunity to develop an erosion control plan in advance of the event, nor do they always occur under ideal conditions. Developing an appropriate response to the conditions encountered during an unplanned discharge will require collection of all of the available information regarding the water main break. This information should be recorded in an incident log. Data which will need to be collected:

- Name and contact information of the person reporting the break.
- Location of the water main break.
- The size of the water main and the location of the shut off valves.
- Emergency contacts (i.e., police, fire, etc.).
- Available maps of the water system, sewer system, storm sewer system.
- Duration of time the discharge has occurred.
- Approximate quantity discharged.
- Determination of the point where the discharges reach the MS4 system or water of the state.
- Quality of the water discharged and assessment of any erosion/damage due to the break.
- Potential sources of contamination of the discharged water (i.e., was the discharge near achemical storage area, a fueling station or refuse containers).

Some of the above information can be assembled prior to an on-site assessment while the remainder will be compiled afterward.

General Procedure

The following general procedures shall be followed for all unplanned water main discharges.

1. Contact appropriate emergency personnel in case of a threat to public health and safety.
2. Locate and isolate the source of the water main break.
3. Assess the quality of the discharged water.
4. Sediment laden water will need to either be contained to the affected area or practices will need to be installed at downstream discharge points.

5. Contact Diggers Hotline.
6. Contact the City's on call contractor.
7. Contact the City Highway Superintendent regarding any sediment clean up.
8. Complete incident log.
9. Follow up with the City's Contractor regarding repair of the break and restoration of the immediate area.
10. Remove any installed erosion control measures.

Contact Information

Jane Mueller, Utility Superintendent
W240N3065 Pewaukee Road
Pewaukee, WI 53072
Ph (262) 691-0804
Fax (262) 691-5729

Matt Stevens, Highway Superintendent
W240N3065 Pewaukee Road
Pewaukee, WI 53072
Ph (262) 691-0771
Fax (262)-691-5720

D.F. Tomasini
N70W25176 Indian grass Lane
Sussex, WI 53089
Ph (262) 820-8300
Fax (262) 820-8400

Diggers Hotline
Ph (800) 242-8511

Erosion Control Products

Primary erosion control products to be utilized by City staff responding to an unplanned water main discharge will be reusable wattle/filter sock type products (See Appendix A for examples). These products can the placed as: a temporary containment device (to encircle a pile or discharge); act as a temporary slope interruption device; act as temporary perimeter control device; to act as a ditch check; or to act as an inlet protection device. The practice to be employed will depend on the nature of the discharge, the type of conveyance system and the physical characteristics of the site. Typically, if the discharge can be contained to a single small area and allowed to infiltrate/evaporate, this would be preferable. In such cases the wattle/filter sock can be placed to encircle the discharge to contain it. This most likely will not be the case and depending on the downstream conveyance system, other practices may be employed. The goal of erosion control practices is to prevent sediment from becoming detached from the land surface and carried in surface discharges. Once sediment is suspended in a discharge, it is much harder to control. Locating and isolating (i.e. shutting off) the source of the discharge will eliminate the need for many of the practices City Staff would be likely to employ.

In general, the following types of practices will be the most commonly employed be City staff when responding to a water main break, the type of practice will depend on conditions in the field.

Temporary Slope Break (WDNR Conservation Practice Standard 1071). A temporary slope break is a device designed to detain or slow the flow of sediment-laden sheet flow from small areas of disturbed soil along a slope. It functions by reducing the uninterrupted slope length to slow the velocity of runoff so as to retain transported sediment from disturbed areas. Slope breaks can be installed on soil surfaces or within a curb line of a street. See Appendix B for typical installation guidelines and details.

Temporary Ditch Check (WDNR Conservation Practice Standard 1062). A temporary ditch check is a device constructed across a swale or drainage ditch to reduce the velocity of water flowing in the channel. It functions to reduce the velocity and temporarily pond water carried by the swale or ditch, thereby reducing active channel erosion and promoting settling of suspended solids behind the ditch check. See Appendix C for typical installation guidelines and details.

Storm Sewer Inlet Protection (WDNR Conservation Practice Standard 1060). Storm sewer inlet protection is a temporary barrier installed around a storm sewer inlet (curb inlet or field inlet) to reduce or prevent sediment from entering the storm sewer system. The practice functions by either filtering the runoff prior to entering the inlet or by ponding water behind the device thereby allowing the sediment to settle out of the water column. See Appendix D for typical installation guidelines and details.

Perimeter Control Devices (WDNR Conservation Practice Standard 1071). Perimeter control devices are products designed to intercept and slow the flow of sediment laden runoff from small disturbed areas in order to retain sediment. These devices (such as silt fence, hay bales, coir logs, etc.) are utilized in areas of sheet and rill erosion and function to pond water to promote settling of suspended solids behind the device. See Appendix B for typical installation guidelines and details.

See Appendix E for photographs of common installations of the above practices. Questions regarding the selection, installation or use of erosion control practices can be directed to:

Richard Wirtz, P.E., CFM
W240N3065 Pewaukee Road
Pewaukee, WI 53094
Ph (262) 691-0804
Fax (262) 691-5729

Appendix A

Rubberosion KRUSH Rubber Wattles

Tapered Non Slip KRUSH Rubber Wattle

Standard KRUSH Rubber Wattle

Tapered Standard KRUSH Rubber Wat

The KRUSH Rubber wattle product line can be used for curb inlet protection and general sediment control applications. The KRUSH rubber wattles are available in different colors that include; florescent orange, construction orange, red, and black. KRUSH rubber wattles are also available in a variety of lengths, weights, and cuts to accommodate any type of application. The KRUSH rubber wattles are filled with 100% recycled rubber, making these products environmentally friendly, and eligible for LEED credits. Best of all, this product is re-usable and durable. The built in handles make it easy to install, maintain, and remove the KRUSH rubber wattles from the job site.

The KRUSH Rubber Wattle line is available in three styles:

1. Standard KRUSH Rubber Wattle
2.Tapered Standard KRUSH Rubber Wattle
3.Tapered Non Slip KRUSH Rubber Wattle
Available in Lengths of: 4', 6' or 8'
Colors include Orange, Red & Black

Fabric Specifications: PVC Mesh

Construction: 11 x 11 ends / inch
Coating: Flexible PVC
Core Yarn: 1300 Denier Polyester
Fabric Thickness: 0.3+oz/ sq. yd
Tensile Strength: (ASTM D5304) - Warp: 280 lbs/ inch
Grab - Fill: 300 lbs / inch
Tear Strength: (ASTM D2261) - Warp: 95 lbs
Tongue- Single Rip - Fill: 95 lbs.
Mullen Burst Strength: (ASTM D-3786) 480 PSI
Water Flow Rate: (ASTM D-4991) 200+ gpm/ft

Specifications for Interior Fill Material:
Material: Ground / Recycled used tire rubber. 98% Wire Free.
Particle Size = 1/2" - 3/4"
Weight: Approximately 8lbs. per lineal foot.

Installation:
For curb inlet protection make sure that the area is clear of any debris, and that the KRUSH rubber wattle is making full contact with the contour of the ground surface along with the contour of the curb itself.
Note:
Certain jurisdictions have specific details that must be followed when installing BMP's.

Maintenance:
- Routinely inspect KRUSH rubber wattles for tears or wear.
- Remove sediment that collects around the KRUSH rubber wattle and dispose of sediment in an approved area.
- If the rubber wattle becomes full of sediment remove the wattle from the inlet and wash off the wattle in an approved area.

RUBB INC.
6801 N. Peterson Rd.
Sedalia, CO 80135
Ph: 720-726-6120
www.rubberosion.com

HEAVYWEIGHT
SEDIMENT CONTROL SOLUTIONS

Effective • Durable • Reusable

WTBinc
INNOVATION & INTEGRITY

The Heavyweight DuraBags™ & DuraTubes™

Installation Instructions

1. When used as a check dam, place in desired location. If more than one bag/tube is needed for damming purposes, place them end to end.
2. When used for drain inlet protection, the bag/tube must be placed closely up against curb to form a tight connection
3. Make sure black non-woven fabric is placed on the ground with the colored (orange or green) fabric on top. The non-woven reduces movement of the bag/tube.
4. If needing to stack the barrier more than one bag in height, brick layer them so each layer overlaps the gap beneath it.

1627 Main Avenue, Suite 4, Sacramento, CA 95838 • Telephone: 916/922-9222 • Fax: 916/922-9229 • e-mail: info@wtbinc.net • www.wtbinc.net

HEAVYWEIGHT
SEDIMENT CONTROL SOLUTIONS
Effective • Durable • Reusable

WTBinc
INNOVATION & INTEGRITY

The Heavyweight DuraTube™

Specification Sheet

Made in USA

Item: HDT-11x48-OF, HDT-11x48-O
HDT-11x48-GF, HDT-11x48-G
HDT-11x96-OF, HDT-11x96-O
HDT-11x96-GF, HDT-11x96-G
Description: Durable, multi-layered construction tube made for use around drain inlets. More durable than most common imported gravel bags. In high visibility, florescent orange PVC mesh. Also available in Green.

Sizes: 11x48", 11x96"

Self-Closing Envelope Closure: This unique closure allows you to seal the bag in seconds. It allows utilization of the entire footprint of the bag. When compared to folding over the opening or flap of the bag, the self-closing closure will reduce labor and the number of bags used by as much as 50%.

Materials: Multi-layered construction for added durability

1) Top layer of high visibility, high flow florescent orange mesh, UV stabilized
2) Inner layer of high filtration fabric, UV stabilized
3) Bottom layer of low slip, high flow black nonwoven geotextile, UV stabilized

	10 oz Nonwoven	Monofilament Filter Fabric	Open Mesh	Testing
Tensile Strength	250 lbs	260/180 lbs	280 lbs	ASTM D-4632, D-2261
Mullen Burst	520 psi	175 psi	480 psi	ASTM D-3786
Apparent Opening Size	100 US Sieve	30 US Sieve	N/A	ASTM D-4751
Flow Rate	80 gpm/ft²	75 gpm/ft²	200 gpm/ft²	ASTM D-4491
UV Resistance @ 500 hrs	70%	80%	70%	ASTM D-4355

Filtration Testing Results: 89.8% total suspended solids reduction; 33.3% reduction of turbidity[1].

1 ASTM 3977c. Soil Control Lab. August 2013. Full testing results available upon request.

1627 Main Avenue, Suite 4, Sacramento, CA 95838 • Telephone: 916/922-9222 • Fax: 916/922-9229 • e-mail: info@wtbinc.net • www.wtbinc.net

Specification Sheet

Made in USA

Item: HDB-16x27-OF, HDB-16x27-O
HDB-16x27-GF, HDB-16x27-G
Description: Durable, multi-layered construction bag made for use around drain inlets. More durable than most common imported gravel bags. Available in Green or High Visibility Orange PVC mesh.

Size: 16x27"

Self-Closing Envelope Closure: This unique closure allows you to seal the bag in seconds. It allows you to utilize the entire footprint of the bag. When compared to folding over the opening or flap of the bag, the self-closing closure will reduce labor and the number of bags used by as much as 50%.

Materials: Multi-layered construction for added durability

1) Top layer of high flow green mesh or high visibility orange florescent mesh, UV stabilized
2) Inner layer of high filtration fabric, UV stabilized
3) Bottom layer of low slip, high flow black nonwoven geotextile, UV stabilized

	10 oz Nonwoven	Monofilament Filter Fabric	Open Mesh	Testing
Tensile Strength	250 lbs	260/180 lbs	280 lbs	ASTM D-4632, D-2261
Mullen Burst	520 psi	175 psi	480 psi	ASTM D-3786
Apparent Opening Size	100 US Sieve	30 US Sieve	N/A	ASTM D-4751
Flow Rate	80 gpm/ft²	75 gpm/ft²	200 gpm/ft²	ASTM D-4491
UV Resistance @ 500 hrs	70%	80%	70%	ASTM D-4355

Filtration Testing Results: 89.8% total suspended solids reduction[1]. 33.3% reduction of turbidity[1].

1 ASTM 3977c. Soil Control Lab. August 2013. Full testing results available upon request.

1627 Main Avenue, Suite 4, Sacramento, CA 95838 • Telephone: 916/922-9222 • Fax: 916/922-9229 • e-mail: info@wtbinc.net • www.wtbinc.net

Ultra-Filter Sock®

Stop harmful substances from entering the stormwater system

- Use in front of storm drains, around downspouts,in gullies and ditches, or anywhere there is potential for harmful stormwater runoff.
- Woven polymer casing allows water to pass through quickly while filtration media inside removes pollutants.
- High UV rating allows extended life in sun and elements.
- Available in 9-foot lengths. Units can be overlapped for longer coverage.
- Looped ends allow units to be staked in place and also assist in transport.
- Available with different types of media depending on which pollutant is present. (Multiple Ultra-Filter Socks can be used in a "treatment train" if the potential for more than one contaminant or a large quantity of a single contaminant is present.)
- Option for heavy-metal removal available.

QUESTIONS?

Technical stuff.
Inventory. Lead times.
Local distributor.
We've got the answers.

Contact Us

Media Descriptions

- **Activated Carbon:** Excellent "polishing media". Helps remove certain chemicals, hydrocarbons and odors.
- **Sorb 44:** Used to remove oil and other hydrocarbons.
- **Sediment Removal:** Recycled rubber media provides weight, keeps unit in place, allows maximum water flow.
- **Phos Filter:** Excellent for removal of phosphorous.
- **Heavy Metal Removal:** Custom filter media helps remove zinc, lead, copper and other harmful, heavy metals.

LEED MADE IN USA SWPPP

Ultra-Filter Socks

Part #	Description	Dimensions in. (mm)	Weight lbs. (kg)
9453	Activated Carbon	108 x 7 x 4 (2,743 x 178 x 102)	40.0 (18.0)
9455	Sorb 44	108 x 7 x 4 (2,743 x 178 x 102)	15.0 (7.0)
9457	Sediment Removal	108 x 7 x 4 (2,743 x 178 x 102)	40.0 (18.0)

Part #	Description	Dimensions in. (mm)	Weight lbs. (kg)
9456	Phos Filter	108 x 7 x 4 (2,743 x 178 x 102)	66.0 (30.0)
9454	Heavy Metal Removal	108 x 7 x 4 (2,743 x 178 x 102)	35.0 (16.0)

More info / Downloads

Instructions

Specifications

Heavy Metal Removal Media Data Sheet

Learn More

Hydrokleens

Learn More

Search...

ABOUT US
- Awards, News, Press

DISTRIBUTORS
- Distributor Application
- Find Distributor

PRODUCTS
- Advanced Technologies
- Spill Containment
- Stormwater Management
- Spill Response & Decon

SUPPORT
- Videos
- Regulatory Information
- Warranty For Rotationally Molded Spill Containment Products

CONTACT US

PRODUCT CATALOG (S)

Ultra-Gravel Bags®

Heavy-duty bags provide quick and easy sediment and erosion control

- Gravel bags are a basic BMP (Best Management Practice) used to meet regulatory requirements for stormwater and erosion control.
- The sizes are industry standard and allow the user to fill them up with as much or as little gravel (not included) as the application requires.
- Different sizes lend themselves to different applications; from drain protection to erosion control at construction sites.
- Made of very high quality polymer material that is woven into shape - eliminates the flaws and failures of sewn edges.
- High UV rating allows multi-year life in sun and elements.
- Rugged material and construction can, in most instances, withstand being driven-over, a typical problem with lesser bags.

< prev next >

QUESTIONS?

Technical stuff.
Inventory. Lead times.
Local distributor.
We've got the answers.

Contact Us

Ultra-Gravel Bags

Part #	Model	Quantity	Dimensions	Weight lbs. (kg)
9780	Individual, orange	(250) bags / box	19" x 28" (483 mm x 711 mm)	60.0 (28.0)
9781	Roll Form, orange	(1) continuous roll	19" x 250 yards (483 mm x 228.5 m)	75.0 (34.0)
9782	Individual, green	(250) bags / box	11" x 48" (280 mm x 1220 mm)	60.0 (28.0)
9783	Individual, green	(125) bags / box	11" x 96" (280 mm x 2439 mm)	60.0 (28.0)
9784	Roll Form, green	(2) continuous rolls	(2) rolls 11" x 250 yards each (500 yards total) (280 mm x 228.5 m)	60.0 (28.0)

Sediment Control Device
for All Construction Sites

Effective • Safe •Durable

TRIANGULAR SILT DIKE™®

Triangular Silt Dike™
10" Barrier

Triangular Silt Dike™
8" Barrier

Triangular Silt Dike™
5" Barrier

TRIANGULAR SILT DIKE™®

The better solution to bale barrier, silt fence and rock check dams!

Triangular Silt Dike™ 10" Barrier

The original 10" Triangular Silt Dike™ barrier consists of urethane foam and geotextile fabric. Designed with protective aprons on both sides of the barrier, there is only one sewn seam (on the front upstream side) which allows the barrier to be configured in several different applications. The materials and the design make this devise lightweight, easy and fast to install, and more effective than other sediment products.

Applications

- Ditch check dams
- Diversion Dikes
- Drop Inlet Protection
- Temporary Ditch Liner
- Stream & Pond Protection

The better solution to wire back silt fence, rock bags, sand bags and straw wattles!

Triangular Silt Dike™ 8" Barrier

The 8" Triangular Silt Dike™ barrier is designed smaller for development areas where vehicle traffic is greater. It also has protective aprons on both sides and has the front and back apron sewn into the barrier. With both aprons sewn, it allows this product to be easily installed on concrete and asphalt.

Applications

- Curb Protection
- Continuous Barrier
- Diversion Dikes
- Drop Inlet Protection
- Stream & Pond Protection
- Installations on Concrete and Asphalt

The better solution to silt fence, sand bags and straw wattles!

Triangular Silt Dike™ 5" Barrier

The 5" Triangular Silt Dike™ barrier was designed for smaller flatter runoff areas. It has a protective apron on the front or upstream side of the barrier. With no protective apron on the backside or downstream side, this should be installed along curbs or on hard surfaces where overtopping the barrier will not cause erosion on the backside.

Applications

- Along Curbs in Developments
- Diversion Dikes
- Inlet Protection
- Continuous Barrier
- Small Surface Drainage Areas
- Roadway Shoulder Protection
- Installations on Concrete and Asphalt

Triangular Silt Dike™ Barrier Installation

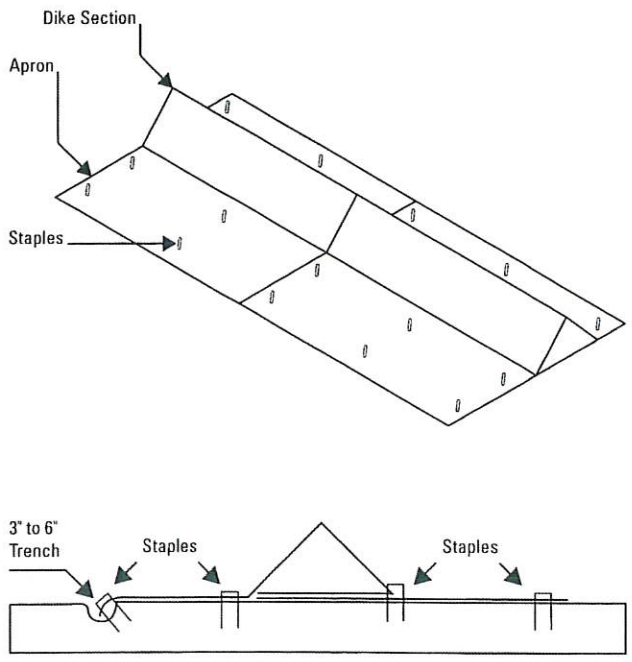
Made with lightweight and durable materials, Triangular Silt Dike™ barrier comes in seven foot section and installs in minutes with U-shaped wire staples.

The flexibility of the barrier allows it to be installed on rough and rocky terrain while the protective aprons on both sides of the barrier helps prevent erosion and failure of the structure.

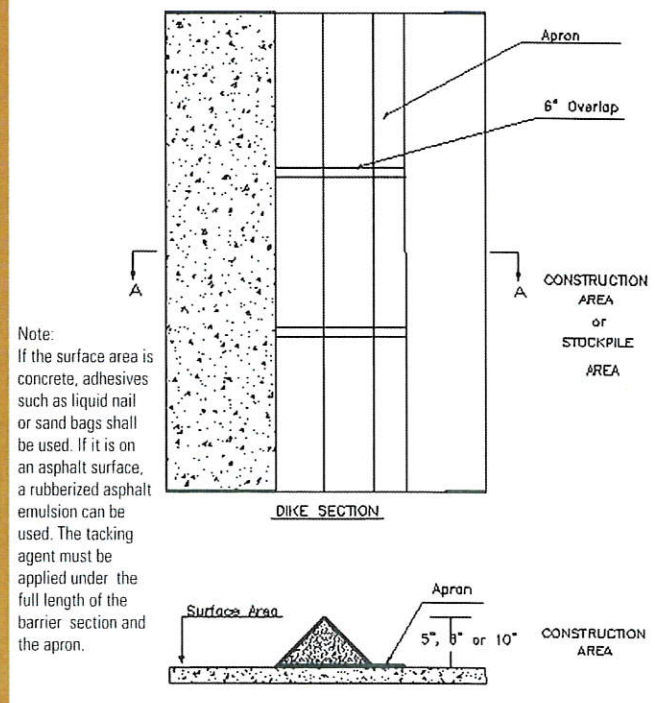
Advantages

- Effective
- Fast & Easy Installation
- Conforms to Curves and Rough Terrain
- Light Weight & Durable
- Re-usable
- Easy to Install on Concrete or Asphalt

Triangular Silt Dike™ Installation on Soil



Triangular Silt Dike™ Installation on Concrete or Asphalt



Note:
If the surface area is concrete, adhesives such as liquid nail or sand bags shall be used. If it is on an asphalt surface, a rubberized asphalt emulsion can be used. The tacking agent must be applied under the full length of the barrier section and the apron.

1-800-290-8473

www.tri-siltdike.com

Manufactured by:

TRIANGULAR

SILT DIKE™

US Patent No. 5,605,416
Triangular Silt Dike and the logo are trademarks of the Triangular Silt Dike Co., Inc.

Distributed by:

A.S.P. ENTERPRISES, INC.
275 Northwest Blvd.
Fenton, MO 63026

Appendix B

Interim Manufactured Perimeter Control and Slope Interruption Products
(1071)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Manufactured perimeter control and slope interruption products include a variety of products designed to detain or slow the flow of sediment-laden sheet flow runoff from small areas of disturbed soil. This definition does not include sediment bale barriers or silt fence which are covered under Conservation Practice Standards 1055 and 1056 respectively.

II. Purpose

The purpose of the installation of these products is to reduce uninterrupted slope length to slow the velocity of runoff so as to retain transported sediment from disturbed areas.

III. Condition Where Practice Applies

A. This standard applies to the following conditions:

1. Where only *sheet and rill erosion* occurs unless the product is listed as approved for use in concentrated flow areas (channel erosion) as a ditch check on the Wisconsin Department of Transportation (WisDOT) Erosion Control Product Acceptability List (PAL) and is designed and installed in accordance with WDNR Technical Standard 1062. All products that are not approved for use in concentrated flow areas and are to be installed on a slope that terminates in a channel shall be installed at an elevation no lower than 6 inches above the design flow depth of the channel.

2. Where usage is limited to 12 consecutive months.

3. Where conditions allow for proper installation as outlined in the Criteria Section V and maintenance as outlined in Criteria Section VIII.

B. Under no circumstance should products be used in the following applications:

1. Below the ordinary high watermark or placed perpendicular to flow in streams.

2. Where the maximum gradient upslope of the product is steeper than 50% (2:1).

IV. Federal, State and Local Laws

Users of this standard shall be aware of potentially applicable federal, state and local laws, rules, regulations or permit requirements governing manufactured perimeter control and slope interruption products. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements. Only products approved by the Wisconsin Department of Commerce (Commerce) for use on projects regulated under the Uniform Dwelling Code or products listed on the WisDOT PAL for use as ditch checks, perimeter control, or slope interruption will be accepted for use in this standard. The Commerce approval process is outlined in the document titled "Wisconsin Department of Commerce Manufactured Perimeter Control and Slope Interruption Product Approval Process (Commerce product approval process)."

A. **Product Classes** – Products are organized into product classes based on the installed product height as illustrated on Figure 1. Product classes are specified in Table 1.

Table 1	
Product Height Class	**Installed Height Above Grade (inches)**
Class I	Mat Products
Class II	6-9
Class III	10-15
Class IV	16-20
Class V	>20

B. **Placement**

1. Products should be placed on the contour whenever possible. J-hooks may be used for sloping installations of log-type products. See Figure 1 for installation illustrations for log-type products.

2. Products should not be placed perpendicular to the contour.

3. The ends of product installations should be extended upslope to prevent water from flowing around the ends of the product.

4. Products that are placed on a curved alignment shall be installed at a large enough radius of curvature to prevent kinking.

C. **Entrenchment**

1. *Log – Type Products*

a) Disturbed Ground – Log-type products installed on disturbed ground shall be entrenched a minimum of 2 inches to ensure continuous ground contact.

b) Vegetated Ground – Log-type products installed on vegetated ground may be installed without entrenchment. All gaps and ruts creating an undercutting situation shall be filled with soil or log-type product filter media.

c) Frozen Ground

i. No entrenchment required.

ii. Only products approved for installation on frozen ground under the Commerce product approval process or listed in the WisDOT PAL for installation on frozen ground may be installed on frozen ground.

iii. Products installed on frozen ground shall be assessed for effectiveness upon ground thaw and staked or replaced as needed.

2. *Other Products* – Products other than log-type products shall be entrenched as required by the manufacturer or as specified under Commerce product approval stipulations.

D. **Overlap** – Minimum 24 inches or as required by the manufacturer if more restrictive. Overlap should be shingled in the direction of flow. See Figure 1.

E. **Support** – Stake or anchor as needed to maintain constant ground contact along the entire length of product at all times and to prevent lateral movement and/or floatation. Staking or anchoring shall be performed per manufacturer's recommendations or as specified under Commerce or WisDOT product approval stipulations.

F. **Product Stacking** – Products shall not be stacked individually on top of one another. Products may be stacked in a "pyramid" manner (i.e., one on top of two) or for operation and maintenance purposes as stipulated in Section VIII.C.

G. **Maximum Spacing –** The spacing in direction of slope shall not exceed the maximum slope lengths for the appropriate slope as specified in Table 2.

Table 2					
	Max. Spacing (ft) per Product Class				
Slope	I	II	III	IV	V
0-2%	30	30	55	75	100
2.1-5%	25	25	40	55	75
5.1-10%	15	15	30	40	50
10.1-33%	NA	10	15	20	25
>33%	NA	5	10	15	20

Notes:
1. NA = Not Allowed
2. Products from a higher class are suitable for applications in a lower class.
3. Manufacturer's recommendations for maximum slope and maximum spacing should be used if more restrictive than the guidelines established above.

H. Products should be installed prior to disturbing the upslope area and/or when changes in disturbed slope or slope length require the installation of additional products.

I. The width of mat type products used for perimeter control/slope interruption shall be as specified in the product approval from Commerce or as specified in the WisDOT PAL.

J. **Filter Media**

1. Filter media used in any product shall be non-toxic and may not present a hazard to human health or the environment.

2. Filter media shall be compatible with any substance for which it is expected to come into contact with during use.

3. Polymer used in any product shall conform to WDNR Technical Standard 1050 and/or 1051 as applicable.

4. Filter media consisting of reused materials that are regulated as solid waste under ch. NR 500, Wisconsin Administrative Code shall have received an exemption under s. NR 500.08(5), Wisconsin Administrative Code prior to use in an erosion control product.

5. Compost used in any product shall conform to WDNR Specification S100 compost.

VI. Considerations

A. To protect products from damage in areas of active construction or heavy traffic, products should be flagged, marked or highlighted to improve visibility.

B. To help ensure effectiveness, products should be inspected and repaired as necessary prior to forecasted rain events.

C. Vehicular traffic should be diverted around the product unless allowed under the manufacturer's specifications.

D. When products are used to divert runoff, discharge should be made to a stabilized area or sediment control practice.

E. Products may be used in conjunction with other practices such as Seeding for Construction Site Erosion Control (1059), Non-channel Erosion Mat (1052), Mulching for Construction Sites (1058), or Vegetative Buffer for Construction Sites (1054) to enhance performance.

VII. Plans and Specifications

A. Plans and specifications for installing products shall be in keeping with this standard and shall describe the requirements for installing the product to achieve its intended purpose. The plans and specifications shall address the following:

1. Location of product

2. Contributory drainage area

3. Schedules

4. Product specifications

5. Standard drawings and installation details

6. Restoration after removal

B. All plans, standard detail drawings, or specifications shall include a schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Products shall be inspected at least weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

B. If the product becomes undermined, the voids shall be backfilled with soil and compacted to establish continuous contact between the ground and product.

C. If sediment reaches ½ of the log-type product height, the sediment shall be removed or a second log-type product may be positioned immediately upslope and in contact with the original log-type product.

D. If a product rolls out of position, the product shall be repositioned and secured with additional stakes.

E. Holes, rips or tears in the fabric of a log-type product less than 12 inches in any direction and located within the top 1/3 of the product may be repaired by stitching or wrapping a new piece of fabric around the product and securing. Sections of log-type product with holes, rips, or tears greater than or equal to 12 inches in any direction or located within the bottom 2/3 of the product shall be removed and replaced with new product or a second log-type product may be placed immediately upslope with a minimum 24 inches of overlap beyond the hole, rip, or tear.

F. Pinched, settled, or deformed log-type products may be re-contoured to their original diameter by hand if possible or a second log-type product shall be placed immediately upslope with a minimum 24-inch overlap beyond the deformation.

G. Destroyed or irreparable sections of log-type product shall be removed and replaced with new log-type product or a second log-type product may be placed immediately upslope with a minimum 24-inch overlap beyond the deformation.

H. Mat products shall be replaced when visible sediment covers 50% of the installed width or if damaged or degraded. A second mat may be placed immediately adjacent to or on top of the first mat in lieu of replacement.

I. Once the area the product is serving has been stabilized, the product should be removed and disposed of in accordance with relevant Federal, State, or Local regulations and per the manufacturer's recommendations.

IX. References

WDNR Technical Standard 1050 – Land Application of Anionic Polyacrylamide

WDNR Technical Standard 1052 – Non-channel Erosion Mat

WDNR Technical Standard 1054 – Vegetative Buffer for Construction Sites

WDNR Technical Standard 1055 – Sediment Bale Barrier (Non-Channel)

WDNR Technical Standard 1056 – Silt Fence

WDNR Technical Standard 1058 – Mulching For Construction Sites

WDNR Technical Standard 1059 – Seeding For Construction Site Erosion Control

WDNR Technical Standard 1062 – Ditch Check (Channel)

Wisconsin Department of Commerce Manufactured Perimeter Control and Slope Interruption Product Approval Process (http://www.commerce.state.wi.us/SB/docs/SB-SoilErosionControlInterruptProc.pdf)

Wisconsin Department of Transportation Erosion Control Product Acceptability List (http://www.dot.wisconsin.gov/business/engrserv/pal.htm)

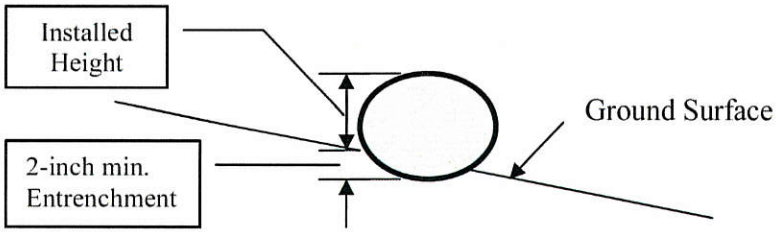
X. Definitions

Channel Erosion: The deepening and widening of a channel due to soil loss caused by flowing water. As rills become larger and flows begin to concentrate, soil detachment occurs primarily as a result of shear.

Sheet and Rill Erosion (III.A.1.): Sheet and rill erosion is the removal of soil by the action of rainfall and shallow overland runoff. It is the first stage in water erosion. As flow becomes more concentrated rills occur. As soil detachment continues or flow increases, rills will become wider and deeper forming gullies.

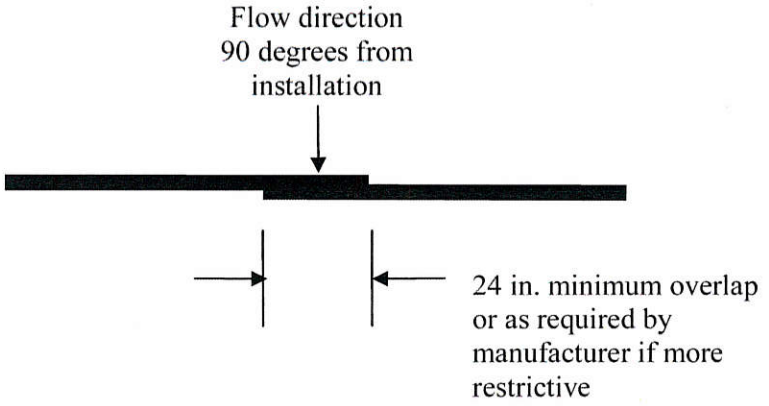
Log-Type Products: Sediment control products constructed of an outer sock of geotextile or other type of netting or permeable containment media surrounding an inner filtering media.

Mat Products: Low profile products consisting of one or more layers of fibrous material designed to slow and filter runoff.

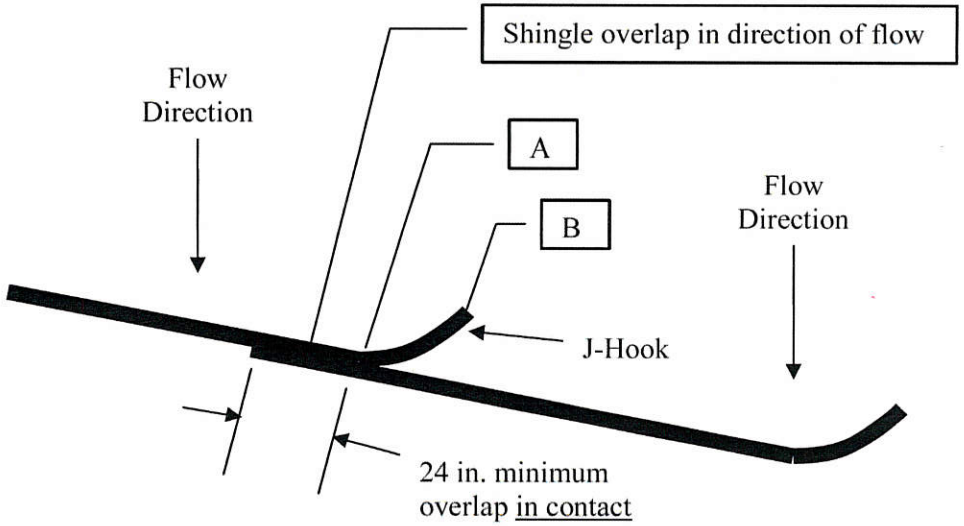


Note:
Installed height is measured from the upslope ground surface to the top of the product. Due to settlement and/or deformation, the installed height may not be equivalent to the nominal diameter of the product.

CROSS SECTION



TYPICAL INSTALLATION
(Plan View)



Notes:
1. J-hooks shall be installed so that the ground-product interface elevation at location B is higher than the top of product elevation at location A to create a weir at point A.
2. J-hooks shall be installed every 2 vertical feet of drop along the length of the installation.
3. Stake overlap as required by manufacturer.

SLOPING INSTALLATION
(Plan View)

FIGURE 1
LOG-TYPE PRODUCT INSTALLATION ILLUSTRATION

Appendix C

Ditch Check
(Channel)
(1062)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A temporary dam constructed across a swale or drainage ditch to reduce the velocity of water flowing in the channel. *Ditch checks*[1] can be constructed out of stone, a double row of straw bales or from engineered products found on the Wisconsin Department of Transportation (WisDOT) Erosion Control Product Acceptability List (PAL).

II. Purpose

The purpose of this practice is to reduce flow velocity and to pond water, thereby reducing active channel erosion and promoting settling of suspended solids behind the ditch check.

III. Conditions Where Practice Applies

This Standard applies where grading activity occurs in areas of channelized flows and a temporary measure is needed to control erosion of the channel until permanent stabilization practices can be applied.

Under no circumstance shall ditch checks be placed in intermittent or perennial stream without permission from WDNR. This Practice may not be substituted for major perimeter trapping measures.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of ditch checks. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Height

1. Installed, the minimum height of ditch checks shall be 10 inches and shall not exceed a maximum height of 16 inches for manufactured or biodegradable materials and 36 inches for stone (or other inorganic materials).

2. Ditch checks must be installed with the center lower than the sides forming a weir. If this is not done stormwater flows are forced to the edge of the ditch check thus promoting scour, or out of the channel causing excessive erosion

3. Stone ditch checks shall have a minimum top width of 2-feet measured in the direction of flow with maximum slopes of 2:1 (2 horizontal to 1 vertical) on the upslope side and 2:1 on the down slope side.

B. Placement

1. At a minimum install one ditch check for every two feet of drop in the channel.

2. Ditch checks shall be placed such that the resultant ponding will not cause inconvenience or damage to adjacent areas.

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

C. Material Specifications

1. Stone ditch checks shall be constructed of a well-graded angular stone, a D_{50} of 3 inch or greater, sometimes referred to as breaker run or shot rock.

2. Ditch checks may be constructed of other approved materials but must be capable of withstanding the flow velocities in the channel. Manufactured products listed in WisDOT's PAL are also acceptable for temporary ditch checks.

   Note: Silt fence and single rows of straw bales are ineffective as ditch checks and are not permitted.

D. Construction - Refer to Figure 1 & 2

1. Ditch checks shall be utilized during rough grading and shall be removed once the final grading and channel stabilization is applied, unless intended to be part of a permanent stormwater management plan.

2. Channel erosion mat or other non-erodible materials shall be placed at the base of a ditch check, and extended a minimum of 6 feet, to prevent scour and washing out the toe of the ditch check. DNR Conservation Practice Channel Erosion Mat (1053) contains criteria for the placement of erosion mat in this location.

3. Chink or seal stone and rock ditch checks to minimize the flow through the ditch check.

VI. Considerations

A. For added stability, the base of a stone or rock ditch check should be keyed into the soil to a depth of 6-inches.

B. Stone ditch checks may be underlain by a nonwoven geotextile fabric to ease installation and removal. If the geotextile fabric is extended, it can serve purpose specified in section V.D.2

C. Ditch checks installed in grass lined channels may kill the vegetation if water is ponded for extended periods or excessive siltation occurs. Proper maintenance is required to keep areas above and below the ditch check stabilized.

D. The best way to prevent sediment from entering the storm sewer system is to stabilize the disturbed area of the site as quickly as possible, preventing erosion and stopping sediment transport at its source.

E. When placing ditch checks in swales adjacent to roadways consider designating a 'clear zone' free of obstacles posing a threat to out of control vehicles.

F. Mowing operations may throw stones from ditch checks causing a potential safety hazard.

VII. Plans and Specifications

A. Plans and specifications for installing ditch checks shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

   1. Location and spacing of ditch check

   2. Schedules and sequence of installation and removal

   3. Standard drawings and installation details

   4. Rock gradation

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Ditch checks shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.

B. Unless incorporated into a permanent stormwater management system, ditch

checks shall be removed once the final grading and channel stabilization is applied.

C. Sediment deposits shall be removed when deposits reach 0.5 the height of the barrier. Removal of sediment may require replacement of stone. Maintenance shall be completed as soon as possible with consideration to site conditions.

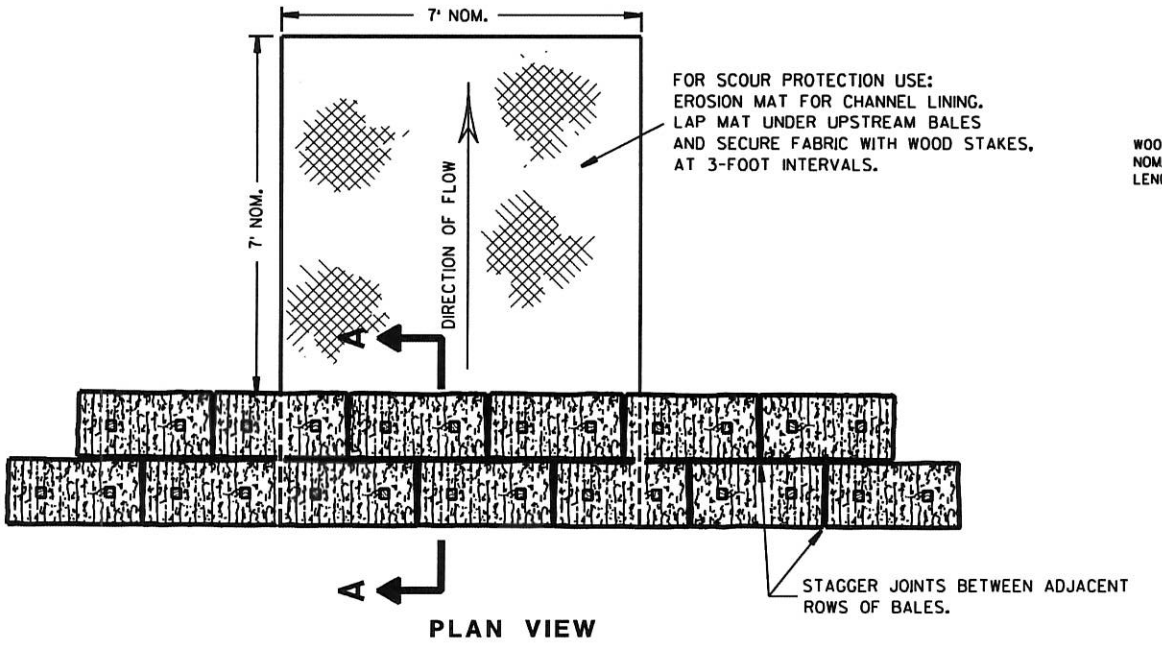
IX. References

WisDOT "Erosion Control Product Acceptability List" is available online at: http://www.dot.wisconsin.gov/business/engrserv/pal.htm Printed copies are no longer distributed.

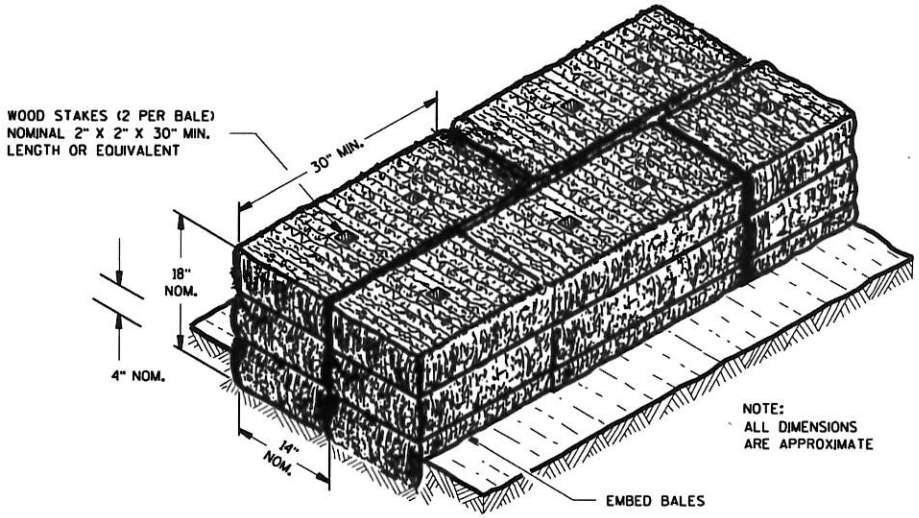
X. Definitions

D_{50} (V.C.1): The particle size for which 50% of the material by weight is smaller than that size.

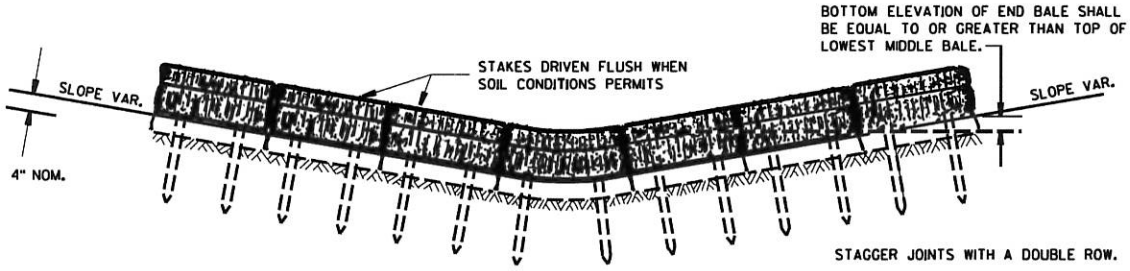
Ditch Checks (I) Are commonly referred to as temporary check dams. Stone ditch checks refer to those made out of either stone or rock.



PLAN VIEW



SECTION A-A



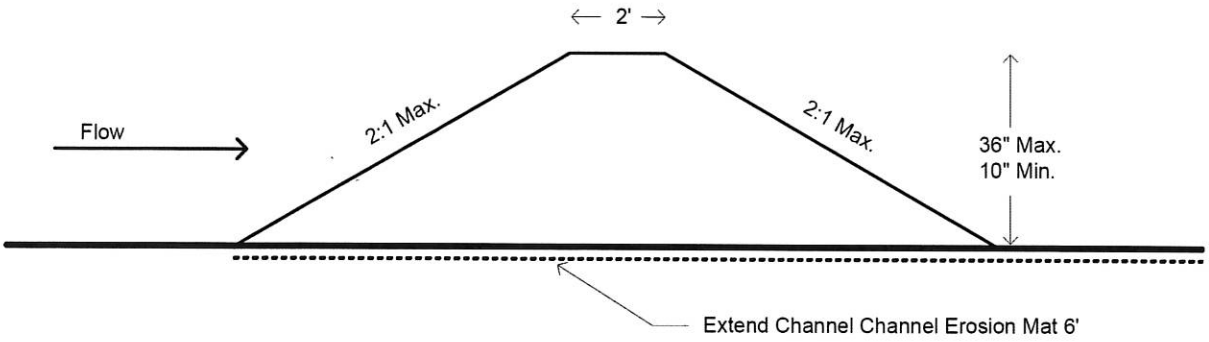
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

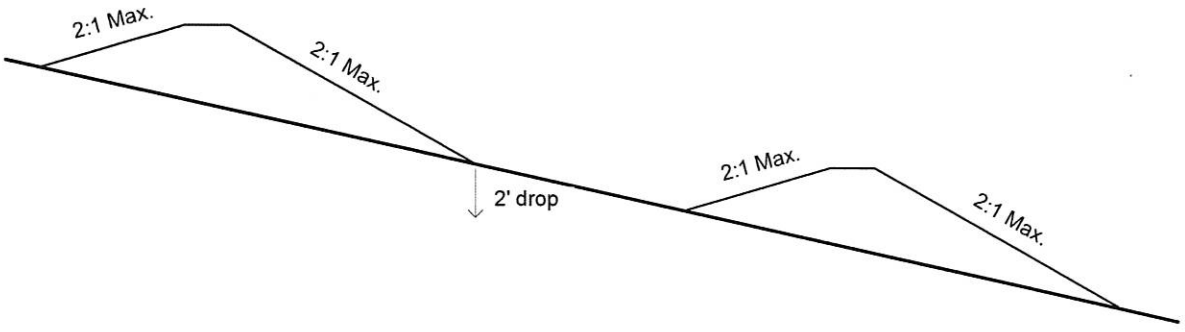
This drawing based on Wisconsin Deptartment of Transportation Standard Detail Drawing 8 E 8-3.

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

Figure 2. Stone Ditch Check



Side View



Side View

Not to Scale

WDNR

Appendix D

Storm Drain Inlet Protection for Construction Sites
(1060)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A temporary device installed in or around a storm drain inlet, drop inlet, or curb inlet.

II. Purposes

This practice is intended to minimize sediment from entering storm drainage systems in areas where the contributing drainage area is temporarily disturbed.

III. Conditions Where Practice Applies

This practice applies where runoff from construction sites enters conveyance system structures, such as drain inlets, drop inlets, and curb inlets. Inlet protection devices are for drainage areas of one acre or less. Runoff from areas larger than one acre shall be routed through a properly designed sediment trapping or settling practice upstream of the inlet.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state and local laws, rules, regulations, or permit requirements governing the use and placement of storm drain inlet protection. This standard does not contain the text of federal, state, or local laws.

V. Design Criteria

This section establishes the minimum standards for design, installation, and performance requirements.

The appropriate type of inlet protection shall be installed prior to drain, drop, or curb inlet receiving runoff. The device shall remain in place and be maintained until the disturbed area is stabilized.

A. General Criteria Applicable to All Inlet Protection Devices

1. Ponding water to settle sediment is encouraged; however ponding shall not interfere with the flow of traffic, create a safety hazard, or cause property damage. All devices shall have provisions such as overflow holes or "emergency spillways" to safely pass water if the device becomes clogged.

2. The contributing drainage area to the inlet protection device shall be one acre or less. In instances where a larger contributing drainage area exists, runoff shall be routed through a properly designed sediment trapping or settling practice upstream of the inlet.

3. No gaps shall be left in the material that would allow the flow of water to bypass the inlet protection device, except for overflow holes.

4. All fabrics used as part of Type A, B, C, D, D-M and D-HR inlet protection devices must meet WisDOT specifications for the selected fabric.

5. Type FF geotextile fabric shall be used for Type, A, B, C or D inlet protection.

6. Type D-M inlet protection fabric shall be Type FF for both the upper section and the outer lower sections of the device. The replaceable interior filter fabric type shall be based according to the particle size trapped. Refer to Table 1 for the filter fabric type and exposed soil particle diameter where the device is appropriate.

7. Type D-HR inlet protection fabric shall be Type FF for the upper half of the device. Type HR fabric shall be used in the lower half of the device. Refer to Table 1 for filter fabric type and exposed soil texture and particle diameter where the device is appropriate.

Table 1			
Exposed Soil Texture	**Exposed Soil Particle Diameter (average) (mm)**	**Filtering Fabric Type***	**Recommended Inlet Protection Device Type**
Course (Sand)	≥ 0.0625	FF	D, D-M
Medium (Silt Loam)	0.0624 – 0.005	DF	D-M
Fine (Clay)	≤ 0.004	R	D-M
		HR	D-HR

* DF, R or HR filters may be used where FF is the required minimum standard. R or HR filers may be used where DF is the required minimum standard.

B. Criteria Applicable to Inlet Protection Devices for Unpaved Areas or the Pre-Paving Phase of Construction

1. Inlet protection (all device types) - See Figures 1-3.

   a. Type A devices shall be utilized around inlets in unpaved areas and should be maintained until permanent stabilization has been established. Type A devices shall be utilized on inlets prior to installation of curb and gutter or pavement and where safety considerations are not compromised on the site.

   b. Type B and C devices shall be utilized after the casting and grate are in place and may only be utilized when sufficient depth is not available to use Type D, D-M, or D-HR devices.

   c. Inlet protection Type D-M and D-HR devices shall only be used after castings are in place on top of the inlet boxes.

      Type D, D-M, and D-HR devices shall conform to the standard drawings as shown in the figures. To prevent the filter bag from blocking overflow water, there shall be three inches of clearance between the bag and the sides of the inlet. Type D, D-M and D-HR devices when used in inlets less than 30 inches in depth shall have the filter bag cinched to provide the required clearance for overflow.

2. Other inlet protection devices include, but are not limited to: straw bales, rock bags and stone weepers. These devices can be used to settle sediment or divert flow. Note: these devices are not applicable to areas adjacent to traffic.

C. Criteria Applicable to Inlet Protection Devices for the Post-Paving / Curbing Phase of Construction

1. Inlet protection Types B, C, D, D-M, and D-HR are applicable to post-paving construction. See Figures 1-3.

   a. Type B devices shall be utilized on inlets without a curb box when Type D inlet devices cannot be used.

   b. Type C devices shall be utilized on street inlets with curb heads. A 2-inch by 4-inch (nominal) piece of wood shall be wrapped and secured in the fabric and placed in front of the curb head, as shown in the figures. The wood shall not block the entire opening of the curb box and shall be secured to the grate with wire or plastic ties. Use Type C devices when Type D devices cannot be used.

   c. Utilize Type D, D-M, and D-HR devices when the depth from the top of the grate to the bottom of the inlet is 30 inches or greater. Note: Type D style devices can be modified by cinching the filter bag to fit inlet structures that are less than 30 inches in depth.

   d. Utilize Type D, D-M, and D-HR devices where street flooding or ponding water and the associated traffic safety issues are a concern, or where more effective inlet filtering is needed.

2 Other inlet protection devices are applicable to post paving construction; these devices include but are not limited to: rock bags, manufactured bags, and stone weepers. These devices can be used to either settle sediment or divert flow. Note: other than for internal to the inlet type filters these devices are not applicable to areas adjacent to traffic.

a. Manufactured rock bags shall conform to the WisDOT standard for rock bag material, including fill material.

b. Straw bale installation shall conform to the criteria outlined in the WDNR Conservation Practice Standard (1062) Ditch Check.

c. Stone weeper installation shall conform to the criteria in WDNR Conservation Practice Standard (1063) Sediment Trap.

VI. Considerations

A. Inlet protection is only one element in an erosion control plan. Other practices, including temporary stabilization and area clean up, should also be utilized upstream of the inlet.

B. Inlets should be temporarily closed or sealed to prevent entrance of runoff and sediment when site conditions allow.

C. The disturbed area should be stabilized as quickly as possible. Timely stabilization is the most effective method to control sediment entering the storm sewer.

D. Storm drain inlet protection consists of several different types of inlet filters and sediment traps. Inlet protection is only one element in an erosion control plan. Each type differs in application with selection dependent upon site conditions and inlet type. Not all designs are appropriate in all cases. The user must carefully select a design suitable for the needs and site conditions.

E. Inlet protection is only as effective as the filter or device used around the inlet. Effectiveness decreases rapidly if the inlet protection is not properly maintained. In general, inlet protection provides relatively good removal of coarse and medium-sized soil particles from runoff; however, to effectively trap fine soil particles, other practices such as the use of polyacramides, may be required. (See DNR technical standard 1050)

F. Inlet protection requires routine inspection and maintenance. Field inspections have shown where inlet protection causes excessive ponding that the device is removed, punctured, or bypassed. In such situations, a structure with an adequate overflow mechanism should be utilized instead of simply removing the inlet protection device.

G. The effectiveness of inlet protection devices in unpaved areas can be enhanced by additional excavation to increase the storage capacity around the inlet.

H. Good construction site housekeeping measures, such as maintaining clean gutters and street sweeping, are important.

I. The use of fabric intended for a finer soil type on a construction site with coarser soil may increase the required maintenance frequency due to faster clogging.

J. Consider using Type D-M and D-HR inlet protection rather than Type B, C, or D in areas with fine soils where more effective filtering is desired.

VII. Plans and Specifications

Plans and specifications for installing inlet protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose:

A. Locations and types of inlet protection.

B. Material specification conforming to this standard.

C. All construction documents shall identify the responsible party and include a schedule for installation, inspection, and maintenance requirements.

VIII. Operation and Maintenance

A. Remove inlet protection devices once the contributing drainage area is stabilized with appropriate vegetation or impervious surface.

B. Inlet protection shall be at a minimum inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

C. For Type A, B or C inlet protection:

1. Remove sediment deposits when sediment has accumulated between ⅓ to ½ of the design depth or the device is no longer functioning as designed.
2. Inspect the device routinely, and repair (if necessary) and restore to original dimension.
3. Sediment removed from the device shall be deposited in a suitable area and stabilized.

D. For Type D and D-M inlet protection;

1. Remove sediment when it accumulates to within 6 inches of the bottom of the overflow holes.
2. If standing water remains within 6 inches of the bottom of the overflow holes 24 hours after a runoff event, accumulated sediment shall be removed and the filtering capacity of the fabric shall be restored.
3. Holes in the Type FF fabric less than 2 inches in length may be repaired by stitching. The bag must be replaced if holes greater than 2 inches are observed in the Type FF fabric.
4. The insert filter fabric shall be replaced if any holes are observed in the fabric.
5. The filter must be replaced if the flap pockets sustain damage that compromises the integrity of the filter or the ability to perform maintenance.

E. For Type D-HR inlet protection:

1. Remove sediment when it has accumulated to within 6 inches of the bottom of the overflow holes.
2. If standing water remains within 6 inches of the bottom of the overflow holes 24 hours after a runoff event, accumulated sediment shall be removed and the filtering capacity of the fabric shall be restored.
3. Holes in the Type FF fabric less than 2 inches in length may be repaired by stitching.
4. The filter shall be replaced if any holes are observed in the Type HR fabric or holes greater than 2 inches are observed in the Type FF fabric.
5. The filter must be replaced if the flap pockets sustain damage that compromises the integrity of the filter or the ability to perform maintenance.

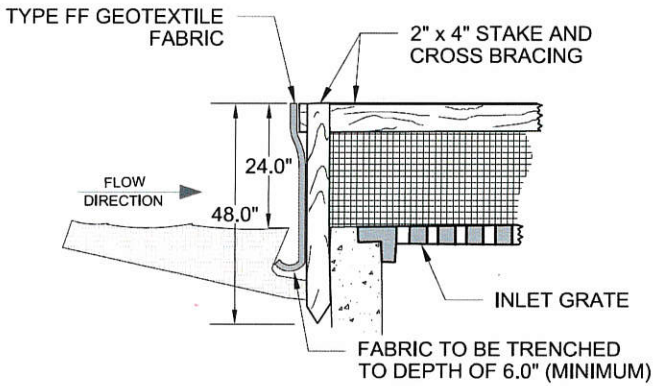
F. Due care shall be taken to minimize sediment falling into the inlet. Any material falling into the inlet shall be removed.

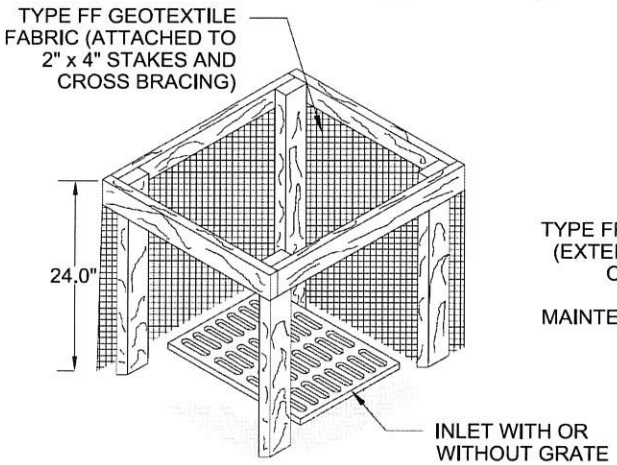
IX. References

WisDOT "Standard Specifications for Highway and Structures Construction" is available at: http://roadwaystandards.dot.wi.gov/standards/stndspec/index.htm

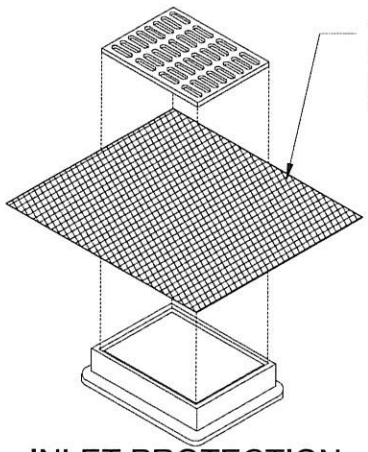
W:\storm water\tech std\ 1060 inlet pro

FIGURE 1. INLET PROTECTION TYPES A, B, C AND D

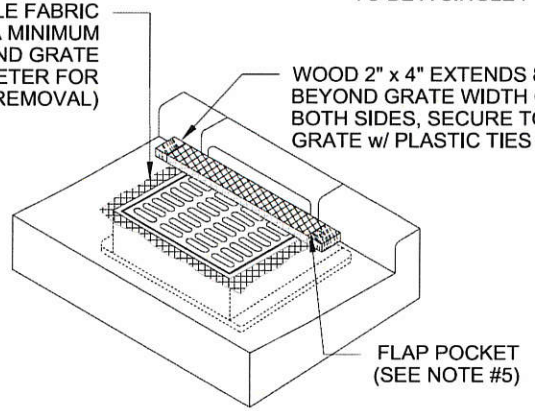




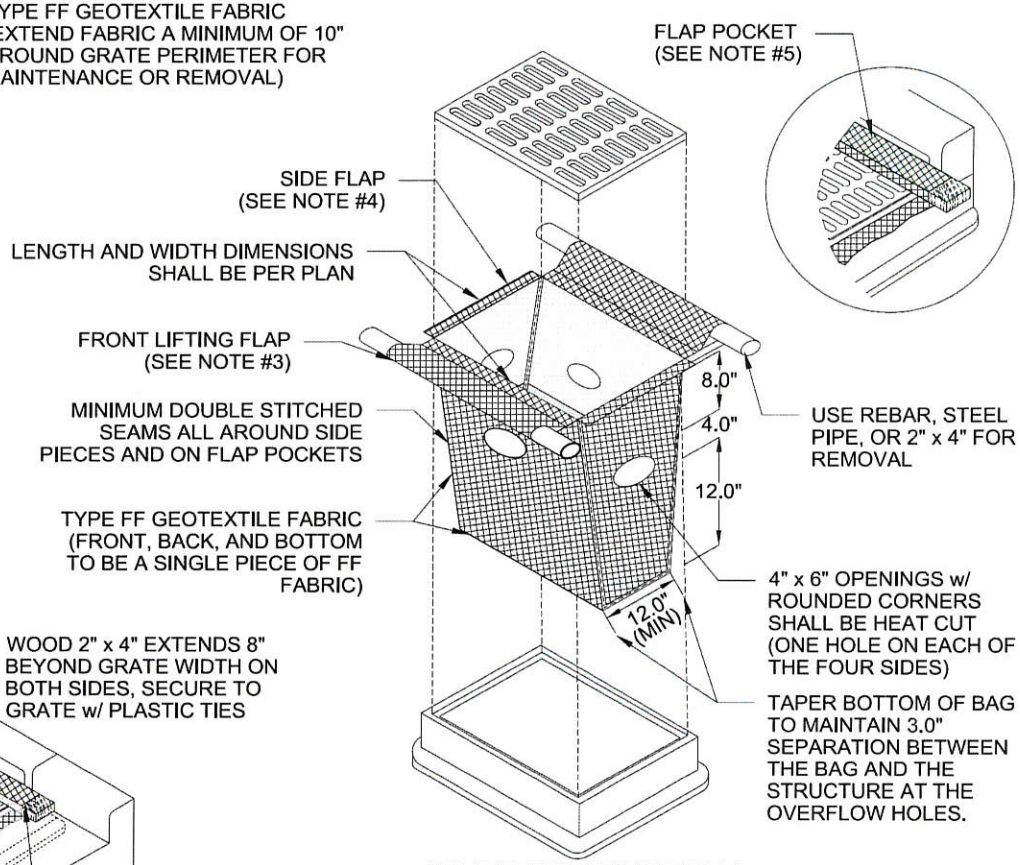
INLET PROTECTION TYPE A



INLET PROTECTION TYPE B
WITHOUT CURB BOX



INLET PROTECTION TYPE C
WITH CURB BOX



INLET PROTECTION TYPE D
CAN BE INSTALLED IN INLETS WITH OR WITHOUT CURB BOXES

NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG. FRONT, BACK, AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

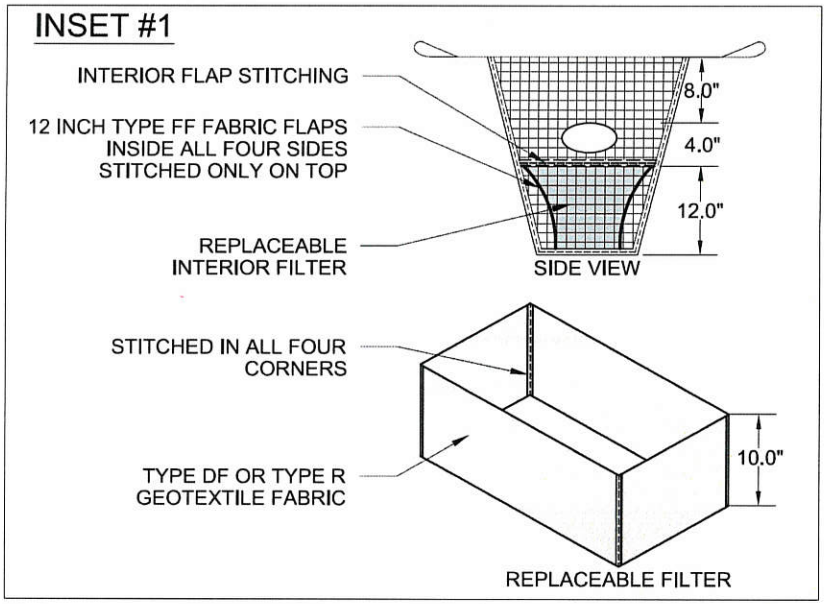
MAINTENANCE NOTES:

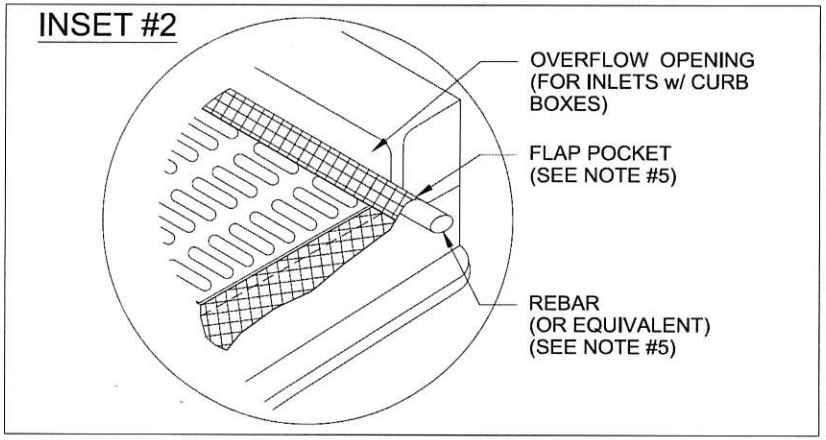
1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

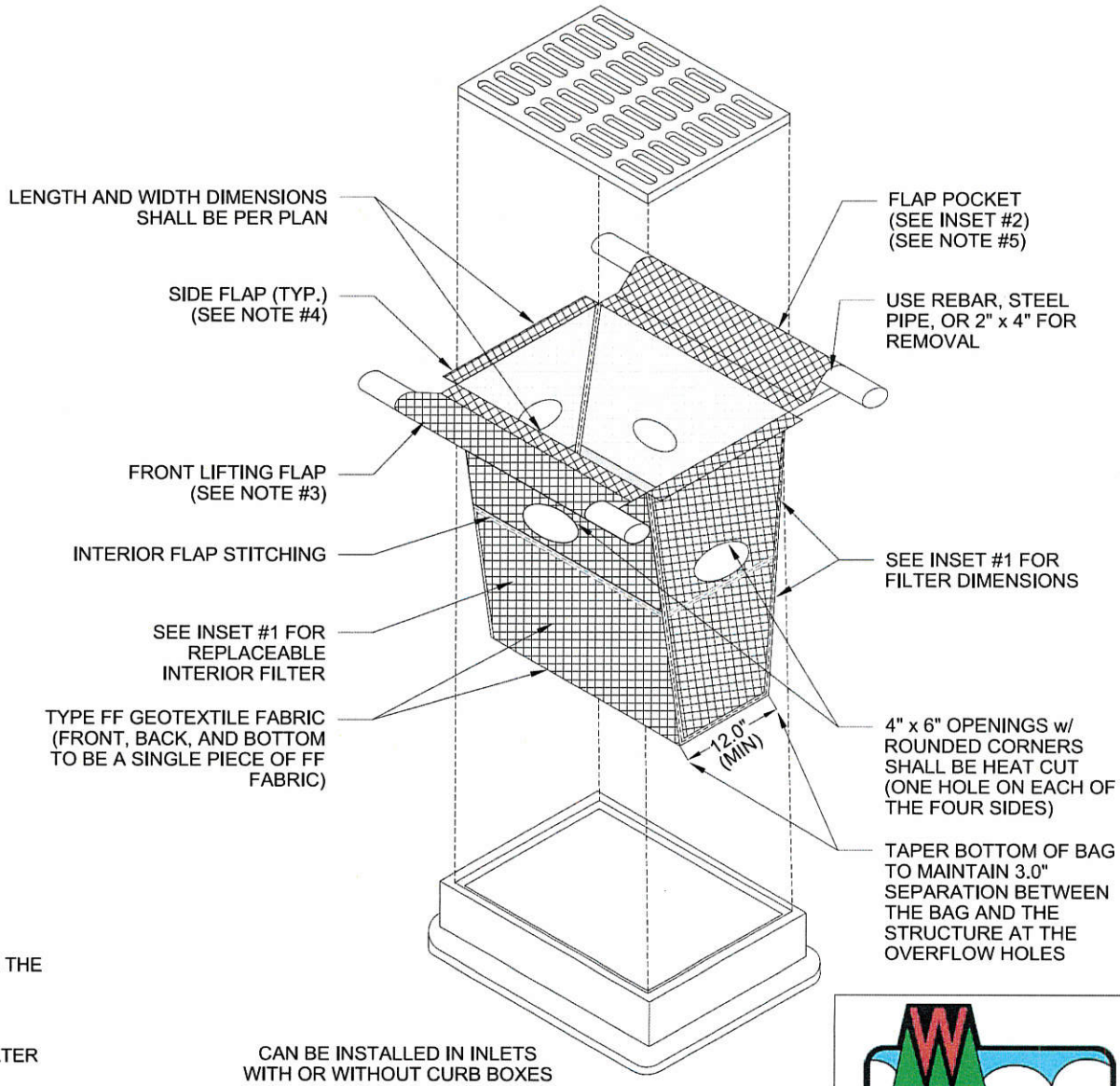
WISCONSIN DEPT. OF NATURAL RESOURCES

1060	TECHNICAL STANDARD No.
08/2014	REVISION DATE
NOT TO SCALE	

FIGURE 2. INLET PROTECTION TYPE D-M







NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG. FRONT, BACK, AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

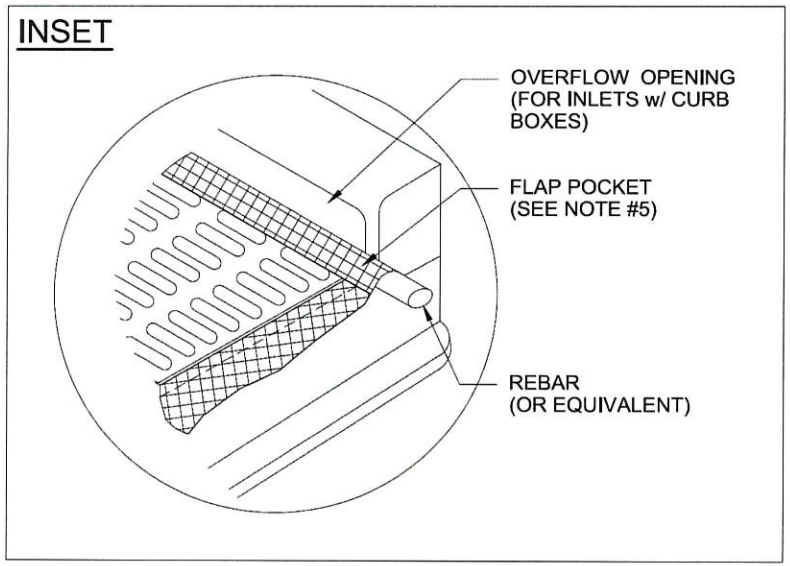
WISCONSIN DEPT. OF NATURAL RESOURCES

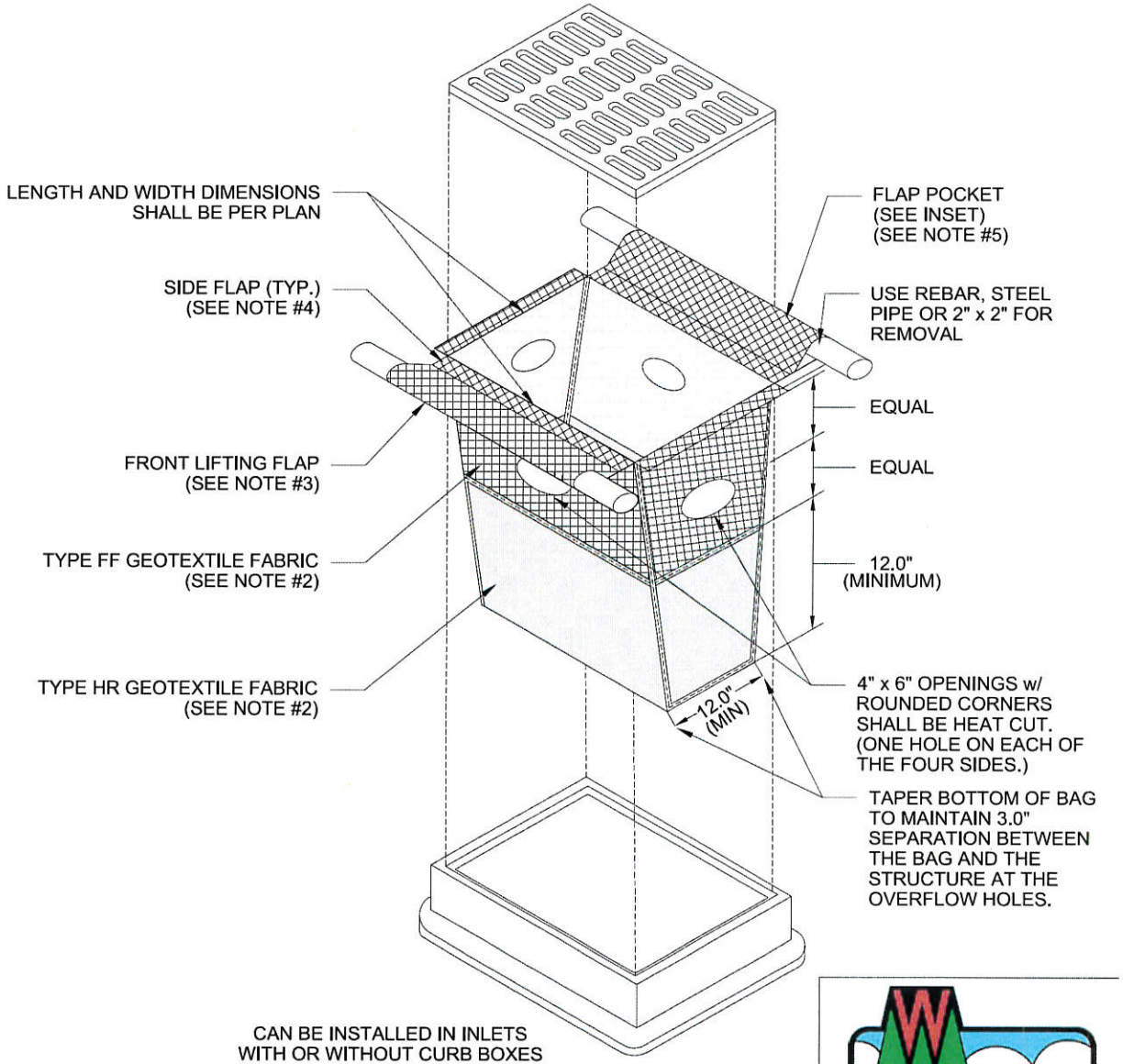
1060
TECHNICAL STANDARD No.

08/2014
REVISION DATE

NOT TO SCALE

FIGURE 3. INLET PROTECTION TYPE D-HR





NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC, TYPE FF FOR FLAPS AND TOP HALF OF FILTER BAG. GEOTEXTILE FABRIC, TYPE HR FOR BOTTOM HALF OF FILTER BAG WITH FRONT, BACK, AND BOTTOM BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 2". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

WISCONSIN DEPT. OF NATURAL RESOURCES

1060
TECHNICAL STANDARD No.

08/2014
REVISION DATE

NOT TO SCALE

Appendix E

Example of a typical ditch check.

Example of a typical ditch check.

Example of curbed inlet protection.

Example of field inlet protection.

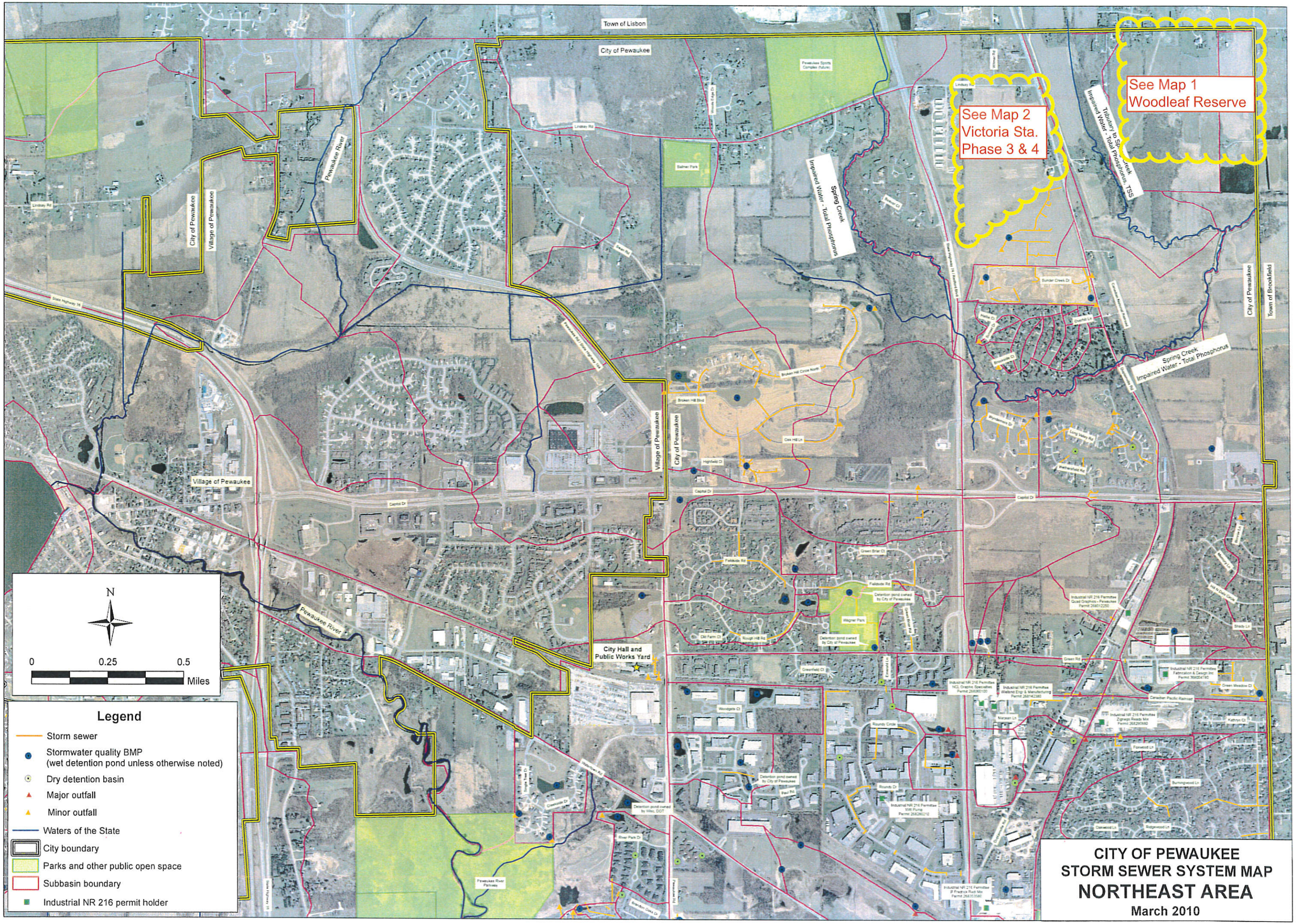
Example of a perimeter control installation.

Example of a perimeter control/containment installation.

Example of a temporary slope break installation.

Example of a temporary slope break installation and ditch checks.

Exhibit J


Town of Lisbon
City of Pewaukee
See Map 1
Woodleaf Reserve
See Map 2
Victoria Sta.
Phase 3 & 4
Spring Creek
Impaired Water - Total Phosphorus
Tributary to Spring Creek
Impaired Water - Total Phosphorus, TSS
Pewaukee River
City of Pewaukee
Village of Pewaukee
Town of Brookfield
City Hall and
Public Works Yard
N
0
0.25
0.5
Miles
Legend
Storm sewer
Stormwater quality BMP
(wet detention pond unless otherwise noted)
Dry detention basin
Major outfall
Minor outfall
Waters of the State
City boundary
Parks and other public open space
Subbasin boundary
Industrial NR 216 permit holder
CITY OF PEWAUKEE
STORM SEWER SYSTEM MAP
NORTHEAST AREA
March 2010

CITY OF PEWAUKEE
STORM SEWER SYSTEM MAP

NORTHWEST AREA

March 2010

Legend

- Storm sewer
- Stormwater quality BMP (wet detention pond unless otherwise noted)
- Dry detention basin
- Major outfall
- Minor outfall
- Waters of the State
- City boundary
- Parks and other public open space
- Subbasin boundary
- Industrial NR 216 permit holder

N

0 0.25 0.5 Miles

Town of Lisbon
Town of Delafield
Coco Creek (designated trout stream)
East Branch of Coco Creek
Ryan County Park
State Highway 16
City of Pewaukee
Village of Pewaukee
Pewaukee River
Pewaukee Lake
City Hall and Public Works Yard
Pewaukee High School
Detention pond owned by Wisc. DOT
Pewaukee River Parkway
Canadian Pacific Railroad

CITY OF PEWAUKEE
STORM SEWER SYSTEM MAP

SOUTHWEST AREA

March 2010

Legend

- Storm sewer
- Stormwater quality BMP (wet detention pond unless otherwise noted)
- Dry detention basin
- Major outfall
- Minor outfall
- Waters of the State
- City boundary
- Parks and other public open space
- Subbasin boundary
- Industrial NR 216 permit holder

N

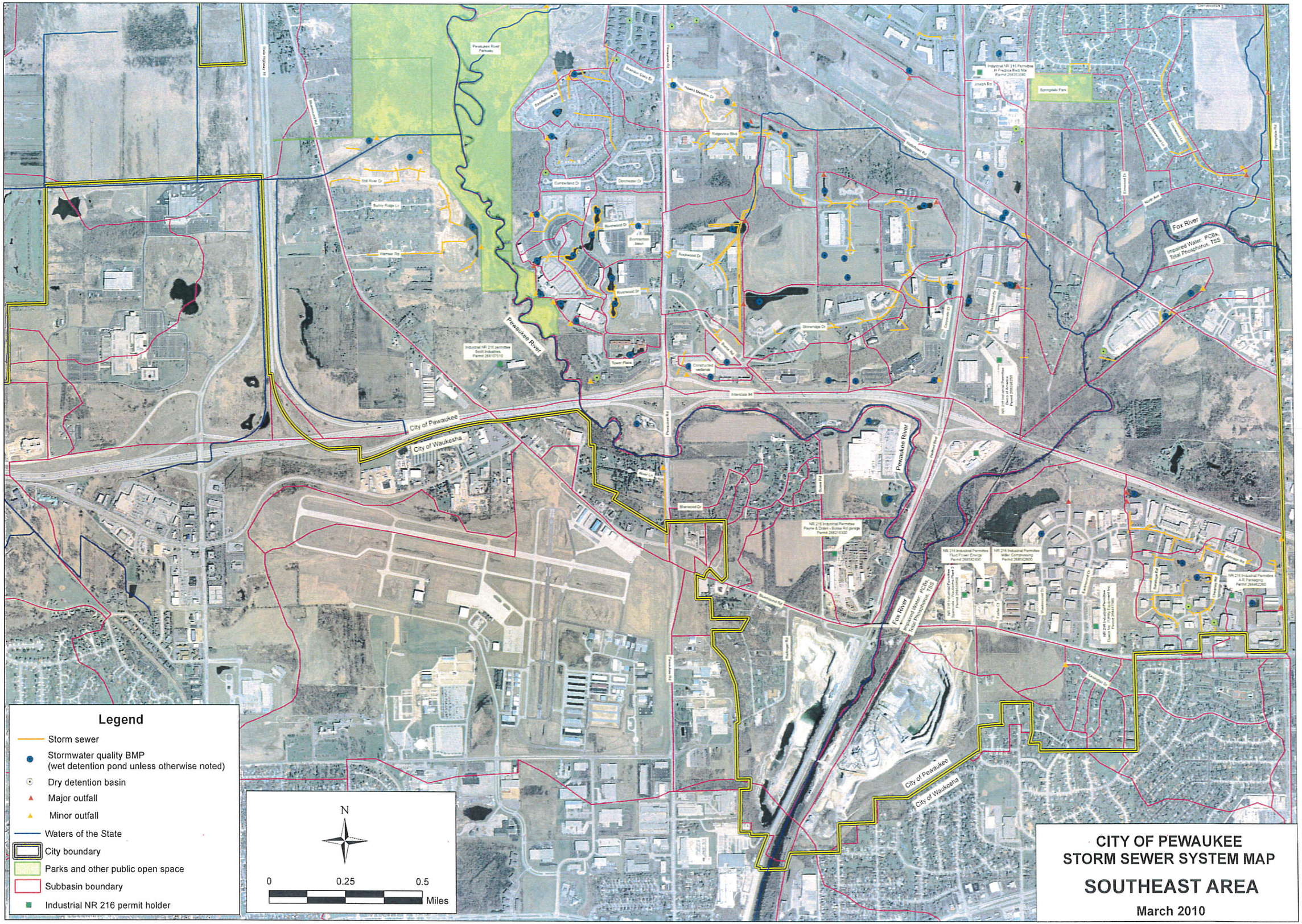
0 0.25 0.5 Miles

City of Pewaukee

City of Waukesha

See Map 3
Cloverland Farms

Pebble Creek



CITY OF PEWAUKEE
STORM SEWER SYSTEM MAP
SOUTHEAST AREA
March 2010

Map 2 Victoria Station Phase 3 and Phase 4

N
W E
S

1 inch = 300 feet

Storm water quality BMP

Dry detention basin

Major outfall

Minor outfall

Map 1 Woodleaf Reserve

N
W E
S

1 inch = 300 feet

- Storm water quality BMP
- Dry detention basin
- Major outfall
- Minor outfall

Map 3 Cloverland Farms

N
W E
S

1 inch = 300 feet

Storm water quality BMP

Dry detention basin

Major outfall

Minor outfall