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

COPY

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 HARTFORD		31423	
Mailing Address	**City**	**State**	**ZIP Code**
109 N. Main Street	Hartford	WI	53027
County(s) in which Municipality is located	**Municipality Type: (select one)**		
Washington	○ County ◉ City ○ Village ○ Town ○ Other (specify)		

SECTION II. Municipal Contact Information

Name of Municipal Contact Person		Title	
Jason W. Schall		City Engineer	
Mailing Address (if different from above)	**City**	**State**	**ZIP Code**
109 N. Main Street	Hartford	WI	53027
Email	**Phone Number (include area code)**	**Fax Number (include area code)**	
jschall@ci.hartford.wi.us	(262) 673-8263	(262) 673-8309	

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		
Jason W. Schall	City Engineer		
Signature of Authorized Representative	**Date**		
Jason W. Schall	3-11-16		
Email	**Phone Number (include area code)**	**Fax Number (include area code)**	
jschall@ci.hartford.wi.us	(262) 673-8263	(262) 673-8309	

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 under MS4 is posted on the City's website under the Stormwater Management section (ci.hartford.wi.us/178/Storm-Water-Management-Program) each year at the beginning of March. A presentation is given to the Public Works Committee, which is televised on the City's Charter Cable Channel 99/979. The public is provided with an opportunity to review the document, ask questions, or request additional information and is encouraged to comment on the Annual Report by email or phone. Electronic copies are also provided to all elected officials and distributed to Staff for discussion at Staff Project Meetings and Common Council Meetings. A copy is placed at the Jack Russell Memorial Library and the Engineering Department at City Hall for citizen review.

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

Through the implementation and approval process for new storm water improvement measures, City Staff and Elected Officials have opportunities to review and comment on best management practices used under the MS4 discharge permit when attending Project, Staff, Public Works and Common Council Meetings as well as Budget Hearings. The City Engineer attended continuing education seminars, which included revised stormwater rules (2/25/15), wetlands

SECTION IV. General Information (continued)

(3/2/15), TMDL (4/14/15), dam safety (5/19/15), and a concrete pavement workshop (3/12/15). The City is a member of the Local Government Storm Water Group through the League of Wisconsin Municipalities and a member of the Rock River Coalition which provides current information.

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:

The City's Ordinance creating Chapter 20 of the Hartford Municipal Code entitled "Erosion Control and Stormwater Management" was adopted by the Common Council on May 12, 2009. The City is in the process of updating/ revising this ordinance to include the requirements of the new General Permit to Discharge Under the Wisconsin Pollutant Discharge Elimination System (WPDES Permit No. WI-S050075-2) dated May 1, 2014.

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:

Clean Ways for Waterways is a joint Public Education and Outreach program with Washington County that includes website access and video stormwater education. The City also Participates in two Clean Sweep Hazardous Waste Collections held at a County facility each year providing educational handouts and posters.

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

If yes, provide web address:
ci.hartford.wi.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:
ci.hartford.wi.us/178/Storm-Water-Management-Program

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

  The City shares involvement with Washington County's Clean Ways for Waterways Nonpoint Source Pollution Control Education & Outreach Program which is now under Washington County's Land & Water Conservation Division's webpage (http://www.co.washington.wi.us/departments.iml?mdl=departments.mdl&ID=LCD) and linked to the City's webpage. The Washington County Clean Sweep Program is promoted in the City with posters and handouts provided by Washington County and listed on the City's website.
  Brochures on the topics of Car Care for Cleaner Water, Lawn Weed Control, Rethinking Yard Care, Rain Gardens, and Storm Sewers - Rivers Beneath our Feet from the UW-Extension are available in the lobby of City Hall. The Jack Russell Memorial Library in the City displays two rain gardens on their grounds for patrons to view. The City's website offers public education and outreach including fact sheets on the proper discharge of your Sump Pump, Water Softners, Disposal of Hazardous Waste, Roof Runoff & Downspouts, and the City's policy for proper curbside leaf placement in the fall.
  As a member, the City promotes the education program of the Rock River Coalition on the City's website (www.rockrivercoalition.org).
  On an individual basis, information is provided to citizens when city staff is notified of illicit discharges into the city's storm sewer. Contractors are also provided with information giving guidance on following storm water best management practices on construction sites when taking out their building permits.

- Public Involvement and Participation

  The City's Pollution Concern Hotline (http://ci.hartford.wi.us/FormCenter/Department-of-Public-Works-7/Pollution-Reporting-Form-46) is available for citizens on the website to report pollution concerns either by email or phone. These tips or concerns are investigated by City staff according to the Illicit Discharge Detection and Elimination Plan. The City's Public Involvement and Participation Plan recognizes every citizen's right to

SECTION V. Permit Conditions (continued)

participate in the process of making local government decisions. All Public Works Committee, Utility Committee and Common Council meetings are properly noticed to the public per state statutes with publicly posted agenda and an opportunity for interested persons to comment.

Volunteers for a Beautiful Hartford continue to work with the City on beautification efforts in our parks and have plans for improving the Rubicon River bank next year between the post office and North Main Street in the downtown area with an "alpine-styled landscape" pending DNR permit approvals. The Cub Scouts assisted with the annual Arbor Day Tree Planting event at Willowbrook Park during 2015 and a volunteer group participated in several spring park clean-up events which included Willowbrook, Rotary, Centennial and West Side Parks all having the Rubicon River running through them.

- Illicit Discharge Detection and Elimination

  Field screenings of Outfalls are performed each year according to the City's Illicit Discharge Detection & Elimination Plan inspecting 191 Outfalls "greater than 24 inches" and 68 Outfalls along the Rubicon River bank, which includes the industrial park. The City's storm water system is divided into District 1, District 2 and District 3; each year one of these districts is inspected during dry weather. During 2015 City staff inspected 115 Outfalls in District 1 (doesn't include the Outfalls already included in the greater than 24" list or the Rubicon River bank list). Each Outfall screening is documented in a Field Inspection Report including photo (ATTACHMENT 1). After field inspections are completed a list of Outfalls in need of maintenance or cleaning is created and provided to the Public Works Department. In 2015 about 56 Outfalls were cleaned, repaired or landscaped. Sediment was removed, buried ends were dug out, rip rap was added and fabric was placed where needed (ATTACHMENT 2). City crews are instructed as to what to look for and are aware of the Illicit Discharge Ordinance so they can actively monitor outfall flows while completing their daily work and general maintenance operations.

  The City's Wastewater Department maintains a HACH Storm Water Test Kit (Cat. No. 24813-00) for on-site investigation of possible illicit discharges which tests for total chlorine, total copper, detergents, PH, phenols and chloroform. Only a few Outfalls indicated the presence of questionable color, odor, turbidity, oil sheen, surface scum or flow rate; these were referred to the Wastewater Department for investigation. The Wastewater Dept. also televises approximately Storm Sewer pipes prior to road reconstruction projects or when drainage issues are reported to city staff.

  The City will revise its Erosion Control and Illicit Discharge Ordinance during the spring of 2016 as required by its MS4 General Permit WPDES Permit No. WI-S950075-2.

- Construction Site Pollutant Control

  The City's Erosion Control and Stormwater Management Ordinance, Chapter 20 of the Hartford Municipal Code, administers and regulates construction sites according to the standards and procedures contained within the ordinance. The City is in the process of updating Chapter 20 to comply with the Post-January 1, 2011 "Erosion and sediment control practices", "Sediment performance standards" and "Preventive measures" contained in Subchapter III of NR 151.11(6m) and 151.23(4m), Wis. Adm. Code. The City's current "Construction Site Inspection and Enforcement Procedure" outlines responsibilities and the procedure to follow for enforcement mechanisms sufficient to obtain compliance (ATTACHMENT 3). When contractors apply for building permits they are given a packet of information which includes the Erosion Control Permit Application, Conditions of Approval for Erosion Control, Notice regarding enforcement, and a brochure for Clean Ways for Waterways. Erosion Control measures are monitored for effectiveness after building permits have been issued by the Building Inspector and any violations are given on-site verbal notice immediately and then later followed up with corrective actions. The Engineering Department monitors and inspects construction sites greater than 1 acre after rain events of more than .5 inches using an Erosion Control Diary/Inspection Form (ATTACHMENT 4).

- Post-Construction Storm Water Management

  The City is in the process of updating Chapter 20 to comply with the new development and infill post-construction performance standards equivalent to those contained in Subchapter III of NR 151.122 through 151.126 and 151.242 through 151.246, Wis. Adm. Code.

  All of the City's 97 Storm Water Ponds and their Outfalls are inspected and photographed by Engineering Dept. Staff using the City's Storm Water Management System Maintenance Checklist (ATTACHMENT 5). A summary report of needed repairs is given to the City Engineer and Public Works Director if there are any deficiencies to correct. The System Map is updated each year to include any added or deleted structures.

SECTION V. Permit Conditions (continued)

Storm Water Maintenance Agreements are required for construction sites which disturb more than one acre of land. During 2015 there were no new Storm Water Pond Maintenance Agreements. There were 72 Erosion Control Permits issued (6 commercial, 2 industrial and 64 residential) which were monitored throughout construction.

- Pollution Prevention

In 2015 the Public Works Department worked approximately 475 hours completing Street Sweeping operations in compliance with the City's "Street Sweeping Policy" (ATTACHMENT 6). The Public Works Department cleaned out two storm water drainage ditch lines (N. Wacker Dr. on the south side of the railroad tracks and Cleveland Avenue on the north side of Rettler Farm Estates Pond). City crews inspected approximately 350 Catch Basins during 2015 and 236 Catch Basins were cleaned or repaired. Each cleaned or repaired Catch Basin was documented by completing "Catch Basin Inspection Report" forms (ATTACHMENT 7) and also by documenting locations on the City's Storm Water System Map. The Public Works Director completed Public Works Yard Inspections using the "Quarterly Site Inspection Checklist" (ATTACHMENT 8) in compliance with the Public Works Yard Storm Water Pollution Prevention Plan. The annual WisDOT inspection of the Salt Storage Shed was performed on 3/16/2015 which showed compliance.

The Park & Recreation Department uses True Green products to fertilize the baseball fields and Park System following an approved turf nutrient management plan.

The City adopted an Ordinance requiring demand based water softening systems to reduce effluent chloride discharge levels under Hartford's WPDES Permit. The Sewer Utility Dept. sent out 5,900 brochures to residential customers with information on chlorides and what people can do to reduce the amount used to regenerate softeners. An informational letter was also sent to all commercial and industrial customers.

The Wastewater Treatment Plant is 18 months into a Pilot Program using Cerium Chloride (SorbX 100) for phosphorus removal which greatly reduces effluent phosphorus, lowers sludge (bio-solids) production and has a minimal impact on water ph compared to traditional coagulants. The results proved to be very successful by achieving an effluent discharge average well below the new proposed effluent limit of .075.

b. Winter Road Management Activities:

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

Darryl Kranz, Director of Public Works (Phone: 262-673-8225)

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

Sodium Chloride (Bulk Highway Coarse W/YPS) under the WisDOT Bid delivered through Compass Minerals. The City also purchased sodium chloride salt brine from Washington County as an effective deicer which was used on the state highways running through the City.

Describe the type of equipment used to apply the products.

The City uses nine (9) plow trucks with wingplow attachments and two end loaders during each snow event of more than two (2") inches. The Public Works Department installed rubber plow blades on three plow trucks in order to scrape snow closer to the pavement. Two trucks are equipped to use the Veritech Prewetting System of spraying deicing salt brine to decrease salt usage on STH 60 & STH 83. The City does not pre-wet streets before applying road salt.

Report the amount of product used per month.

950 Tons of sodium chloride road salt were used during 2015 which was an average of 190 tons/month for the five winter months. Approximately 1,200 gallons of sodium chloride salt brine were also used during 2015.

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

Snow from the downtown parking lots is hauled to a snow storage area located behind the Recreation Center, which site was approved by the DNR.

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

One of the two State Highways running through the City of Hartford (STH 60) was resurfaced in 2015 with the second State Highway (STH 83) being scheduled for reconstruction during 2016. These improvements allow the plows to clear the snow closer to the pavement; less salt is needed to melt the snow or ice on a smoother surface.

SECTION V. Permit Conditions (continued)

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

Weather/temperature monitoring data provided by local weather stations is used to anticipate the storm severity and ground temperature, which then determines the amount of salt that is used for each snow event. The Public Works Director follows the City's approved "Winter Road Maintenance Plan" (ATTACHMENT 9).

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 the Inventory of City owned/maintained structural storm water management facilities (ATTACHMENT 10).

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

See Section V(e)

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.

The area along North Wacker Drive at the railroad tracks is scheduled for improvements during the 2016 construction season by adding approximately 500 LF of storm sewer pipe. The construction of an additional storm water pond near the intersection of South Wilson Avenue and East Lincoln Avenue is also planned for the 2016 construction season; a Request for Proposals from design engineers has been completed. All drainage ditches have been dredged or repaired within the past five years and are monitored during each rain event. The storm water ponds are relatively new and are inspected by Engineering Department Staff each year as well as city crews keeping a watchful eye as part of their normal duties.

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

The Public Works Department crews receive snow and ice removal training in-house at regular shop meetings as well as review accomplishments and techniques regarding catch basin cleaning/repairs and street sweeping operations. The Engineering Department annually reviews Outfall and Pond field inspection forms and field inspection requirements with staff.

The Public Works Director shares information available from WisDOT and WisDNR websites with crew members as they become available.

The City has an approved Storm Water Pollution Prevention Plan which is reviewed with Staff periodically during each season.

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

The Public Works Department yard has a SWPPP in place which was developed and approved by WisDNR in 2009. The SWPPP for the Hartford Municipal Airport is under development and it is anticipated that it will be completed in 2016.

Spill kits are available at the City Garage, Utility Garage and Wastewater Treatment Plant facilities. In the event of a major spill, the Hartford Fire Department is called and an Emergency Spill Response Team is dispatched.

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 SLAMM Version 10.1 Reduction (%) 22

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:

SECTION V. Permit Conditions (continued)

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.

The City of Hartford has a Long-Term Management Plan & Strategy which is updated annually during Capital Improvement Program budgeting (ATTACHMENT 11). During 2015 approximately 4,188 L.F. of storm sewer pipe and 5,337 L.F. of underdrain was added/replaced to improve drainage. All 97 storm water ponds and about 375 Outfalls were inspected and then documented by identifying current conditions using our Storm Water Management System Maintenance Checklist for Ponds and Field Inspection Report for Outfalls. The inspections include review of sediment accumulation, side slopes, inlet structure, outfall structure, erosion, emergency spillway, and vegetation. With the cooperation of the Wastewater Department and Public Works Department, City staff has implemented a program to clean storm sewer lines and catch basins using the sewer line jetter. When catch basins and manholes are replaced or new installed, they are replaced with structures that have sumps. The Wastewater Department televises storm water pipes as requested to determine the condition of the pipes when planning roadway reconstruction projects.

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.

The Storm Water System Map is updated each year to include any new storm water BMPs implemented as a result of street reconstruction or commercial/industrial site improvements. The updated storm water map is available on the City's website at http://ci.hartford.wi.us/DocumentCenter/View/489

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 9.

SEE STORM WATER MANAGEMENT BUDGET ON TABLE PROVIDED (pg. 9)

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 City of Hartford budgets and documents storm water costs under the General Fund (Account No. 100.323.). These documented costs will be used in the future to determine whether a Storm Water Utility Program is established.

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:

ci.hartford.wi.us/DocumentCenter/View/255 (Section 20.05, pg 20-2)

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: ci.hartford.wi.us/DocumentCenter/View/255 (Sec 20.09, pg 20-14)

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:

ci.hartford.wi.us/DocumentCenter/View/255 (Section 20.50, pg 20-37)

SECTION VII. Inspections and Enforcement Actions (continued)

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.

During 2015 the Building Inspection Department issued 95 Building Permits (25 commercial, 6 industrial and 64 residential which included 17 two-family and 4 multi-family). There were no new subdivisions developed in 2015. 72 Erosion Control Permits were issued (6 commercial, 2 industrial, and 64 residential) which were monitored throughout construction. The inspector issued 35 verbal/written notices to enforce erosion control compliance (5 commercial, 2 industrial, and 28 residential construction sites). It was necessary to issue 5 Stop Work Orders (1 commercial and 4 residential) to contractors to enforce erosion control compliance.

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:

- Impaired waterbody to which the MS4 discharges:
  Rubicon River (ID # 1155, WBIC # 856500)
- 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:
  Continue to monitor existing BMPs and ensure that new developments comply with the City's Erosion Control and Stormwater Management Ordinance.

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

NONE

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.

NONE

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's Storm Water Ordinance (Chapter 20 of the Hartford Municipal Code) will be revised to comply with NR151 requirements by the May 2016 deadline.

The City of Hartford's Winter Road Maintenance Policy will be reviewed and updated during 2016 as well as the current attached Public Works Yard SWPPP (ATTACHMENT 12). It is also on our schedule to develop a SWPPP for the Wastewater Treatment Plant Yard and the Hartford Municipal Airport.

SECTION X. Other

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

SECTION X. Other (continued)

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	4,461	3,520	4,006	Account No. 100.323.534102
Public Involvement and Participation	4,888	3,924	4,509	Account No. 100.323.534103
Illicit Discharge Detection and Elimination	6,727	5,302	6,081	Account No. 100.323.534104
Construction Site Pollutant Control	4,409	3,232	3,839	Account No. 100.323.534105
Post-Construction Storm Water Management	5,449	3,812	4,323	Account No. 100.323.534106
Pollution Prevention	29,529	51,046	51,154	Account No. 100.323.534107
Storm Water Quality Management (including pollutant-loading analysis)	23,315	19,717	22,178	Account No. 100.323.534108
Storm Sewer System Map	9,689	13,997	8,637	Account No. 100.323.534109
Other: Storm Water Pond Mgm.	28,934	34,957	35,874	Account No. 100.323.534100

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	

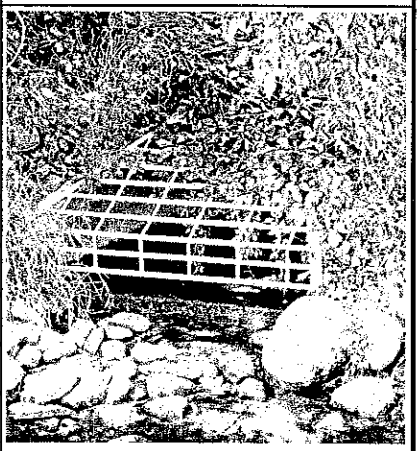
SOUTH CENTRAL REGION COUNTIES		
Columbia	Jefferson	DNR South Central Region
Dane	LaFayette	Attn: Storm Water Program
Dodge	Richland	3911 Fish Hatchery Rd.
Grant	Rock	Fitchburg, WI 53711
Green	Sauk	Phone: (608) 275-3266
Iowa		

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

FIELD INSPECTION REPORT

Storm Sewer Inspection Information

Location:	Behind Utility Building - 02-0134-OF (North of Rubicon River & West of Grant Street)			
Inspection Date:	8/12/2015	**Time:**		
Department:	Engineering			
Crew Name:	Olivia Fies			
Observation of Illicit Discharge or Connection:			☐ Yes	☑ No
Time of Last Rain:		☐ ≤ 24 Hrs.	☐ ≤ 48 Hrs.	☑ ≤ 72 Hrs.
Pipe Flow:	☐ None ☐ Full	☐ ≤ 1/4 Pipe ☑ Trickle	☐ ≤ 1/2 Pipe	☐ ≤ 3/4 Pipe
Pipe Submergence:	☑ None ☐ Full	☐ ≤ 1/4 Pipe	☐ ≤ 1/2 Pipe	☐ ≤ 3/4 Pipe



2015 Photo

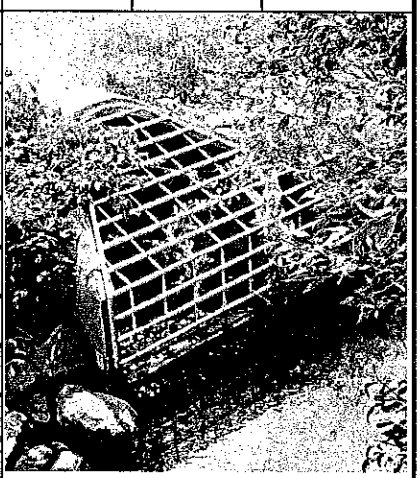
Outfall Size: 36"

Comments:

FIELD INSPECTION REPORT

Storm Sewer Inspection Information

Location:	Behind Utility Building - 02-0135-OF (south of Rubicon River; west of Grant Street)			
Inspection Date:	8/12/2015	**Time:**		
Department:	Engineering			
Crew Name:	Olivia Fies			
Observation of Illicit Discharge or Connection:			☐ Yes	☑ No
Time of Last Rain:		☐ ≤ 24 Hrs.	☐ ≤ 48 Hrs.	☑ ≤ 72 Hrs.
Pipe Flow:	☐ None ☐ Full	☐ ≤ 1/4 Pipe ☑ Trickle	☐ ≤ 1/2 Pipe	☐ ≤ 3/4 Pipe
Pipe Submergence:	☑ None ☐ Full	☐ ≤ 1/4 Pipe	☐ ≤ 1/2 Pipe	☐ ≤ 3/4 Pipe



2015 Photo

Outfall Size: 60"

Comments:

ATTACHMENT 1

FIELD INSPECTION REPORT

Storm Sewer Inspection Information

Location:	1209 KENNEDY			
Inspection Date:	12-14-15			
Department:	Engineering	DPW		
Crew Name:	Thomas Fahl	PS + JL		
Observation of Illicit Discharge or Connection:			☐ Yes	☒ No
Time of Last Rain:		☒ ≤ 24 Hrs.	☐ ≤ 48 Hrs.	☐ ≤ 72 Hrs.
Pipe Flow:	☐ None ☐ Full	☐ ≤ 1/4 Pipe ☐ Trickle	☐ ≤ 1/2 Pipe	☒ ≤ 3/4 Pipe
Pipe Submergence:	☐ None ☐ Full	☒ ≤ 1/4 Pipe	☐ ≤ 1/2 Pipe	☐ ≤ 3/4 Pipe

OUTFALL # 03-448

PHOTO # _____

PAGE # 113

Outfall Size: _____

Comments: REMOVED GRATE - FULL OF LEAVES - REMOVED LEAVES + HAND DUG TO ALLOW WATER TOO FLOW - GOOD FOR NOW - REINSTALLED GRATE -

Excell/IllicitDischargeForms/FieldInspectionReport

FIELD INSPECTION REPORT

Storm Sewer Inspection Information

Location:	HWY. K + PATTON			
Inspection Date:	12-14-15			
Department:	Engineering	DPW		
Crew Name:	Thomas Fahl	PS + JL		
Observation of Illicit Discharge or Connection:			☐ Yes	☒ No
Time of Last Rain:		☒ ≤ 24 Hrs.	☐ ≤ 48 Hrs.	☐ ≤ 72 Hrs.
Pipe Flow:	☐ None ☐ Full	☐ ≤ 1/4 Pipe ☐ Trickle	☐ ≤ 1/2 Pipe	☒ ≤ 3/4 Pipe
Pipe Submergence:	☐ None ☐ Full	☐ ≤ 1/4 Pipe	☒ ≤ 1/2 Pipe	☐ ≤ 3/4 Pipe

OUTFALL # 03-441

PHOTO # _____

PAGE # 104

Outfall Size: _____

Comments: AREA EAST OF OUTFALL SHOULD BE DUG OUT TO ALLOW BETTER FLOW

DONE - 12-22-15

LOCATES MINE

Excell/IllicitDischargeForms/FieldInspectionReport

ATTACHMENT 2

OUTFALLS
CLEANED OR REPAIRED - 2015

Number	Street	Date	Comments
01-0189-OF	Tower Drive, north of Ponds	10/12/2015	Cleaned Outfall & removed small trees around Outfall
01-0200-OF	Broadmoore Dr, 600 & 612	10/12/2015	Cleaned Outfall
01-0209-OF	N. Wacker Dr, SE of Pond	10/12/2015	Reattached Grate to Outfall Basin
01-0254-OF	Mill Pond, NE corner	12/21/2015	Cleaned Outfall
01-0259-OF	Grand Avenue & Park Avenue	12/21/2015	Hand Cleaned Outfall
01-0274-OF	Steel Craft Dr, east of Bridge, south side	12/21/2015	Hand Cleaned Outfall
01-0285-OF	N. Wilson Ave, east side, along railroad tracks	10/12/2015	Cleaned Pipe
01-0293-OF	Nature Trail, 675 & 683	10/12/2015	Outfall was cleared of debris & weeds
01-0294-OF	Nature Trail, 1612 & 1620	10/12/2015	Cleaned Pipe
01-0300-OF	Hilldale Drive, 416	10/12/2015	Dug out area east of Outfall for drainage
01-0317-OF	Gateway Avenue Pond	10/12/2015	Excavated Outfall to allow flow
01-0327-OF	Yellowstone Dr & N Main, SE corner	12/02/2015	Cleaned out 6" of silt from Outfall with backhoe
01-0332-OF	Rushmore Lane, 65 rear lot	12/2/2015	Clean ditch with mini-ex to allow flow (75' ditch to south
01-0335-OF	Yosemite Ave, 421 rear lot	12/2/2015	Clean south of Outfall to allow flow using mini-ex; remove small trees
01-0336-OF	Yosemite Ave, 513; rear lot line	12/2/2015	Minor cleaning of Outfall and ditch to allow better flow
01-0539-OF	Hilldale Drive, east side, north of railroad tracks	12/15/2015	Dug out area east of Outfall to allow drainage
01-0551-OF	Airport Dr & Cleveland Ave; east side of Pond, SW corner	12/2/2015	Removed debris from front of Outfall to allow better flow
01-0575-OF	N. Main Street & Arches Drive; SE corner	12/2/2015	Cleaned ditch south of Outfall to allow flow; needed mini-ex to load dirt
01-0576-OF	N. Main Street & Arches Drive; SE corner	12/2/2015	Cleaned ditch south of Outfall to allow flow; needed mini-ex to load dirt
02-0126-OF	W. Jackson St & N. Johnson, NW corner	12/18/2015	Pipe was 1/2 full of Silt & Gravel - Cleaned
02-0133-0F	Grant Street, 143	12/21/2015	Cleared weeds & debris
02-0150-OF	W. Sumner St, 258 (along river)	12/21/2015	Cleared weeds & debris
02-053-OF	Well No. 16 Site	12/14/2015	Removed Grate and Handcleaned Outfall
02-0544-OF	N. Wacker Drive, under railroad tracks	12/14/2015	Removed branches from Outfall
02-054-OF	Well No. 16 Site	12/14/2015	Removed Grate and Handcleaned Outfall
02-055-OF	Well No. 16 Site	12/14/2015	Cleaned grass and weeds away from Outfall
02-056-OF	Well No. 16 Site	12/14/2015	Clear debris and cleaned grass & weed away from Outfall
02-0590-OF	W. Monroe & Cedar, NE corner	12/14/2015	Removed leaves from Outfall
02-0635-OF	W. Jackson St & N. Rural St, NE corner	12/18/2015	Removed debris & silt from Outfall
02-096-OF	Cedar Street, east side, south of Central School	12/14/2015	Cleaned & Removed sod & silt from Outfall

ATTACHMENT 2 (a)

Number	Street	Date	Comments
03-0345-OF	Timberline Trail, 758	12/14/2015	Removed debris from front of Outfall to allow better flow
03-0349-OF	South Wilson Ave, across from baseball fields	12/15/2015	Cleaned weeds & Cattails from Outfall area
03-0360-OF	Huron Way, between 1080 & 1090	12/16/2015	Cleaned
03-0363-OF	Chippewa Drive, 1323	12/16/2015	Cleaned
03-0370-OF	Red Oak Pond	12/16/2015	Cleaned
03-0429-OF	CTH K, south of Kwik Trip, east side	12/21/2015	Cleaned Outfall
03-0430-OF	Novak Street, south of Bell Ave, east side	12/21/2015	Area east of Outfall was cleared to allow water flow (used Mini-X)
03-0432-OF	Northview Trail, west side, north of Stillwater Lane	12/21/2015	Cleared of debris, but under water
03-0433-OF	Northview Trail, east side, north of Stillwater Lane	12/21/2015	Cleared of debris, but under water
03-0441-OF	CTH K and Patton Drive	12/14/2015	Dug out area east of Outfall to allow better drainage
03-0448-OF	Kennedy Dr, 1209	12/14/2015	Removed grate and cleaned out leaves; hand dug sediment and dug out Outfall to allow drainage
03-0471-OF	STH 60, northwest corner, at Hilldale Drive	12/15/2015	Dug out area north of Outfall to allow drainage
03-0478-OF	STH 60, north side, west of High Rd	12/15/2015	Dug out area north of Outfall to allow flow
03-0480-OF	High Road & E. Sumner Street, SE corner	12/14/2015	Removed grass and debris from Outfall
03-0481-OF	STH 60, north side, east of High Rd	12/15/2015	Dug out area north of Outfall to allow drainage
03-0482-OF	STH 60, north side, east of High Rd	12/15/2015	Dug out area north of Outfall to allow drainage
03-0483-OF	High Road & E. Sumner Street, South side	12/14/2015	Removed grass and silt from Outfall
03-0484-OF	STH 60, north side, west of 6140	12/15/2015	Dug area north of Outfall to allow flow
03-0486-OF	STH 60, north side at 3250 Teri Ln	12/15/2015	Removed silt & debris from Outfall
03-0512-OF	STH 60, SE of Gateway Estates	12/21/2015	Hand Cleaned Outfall
03-0513-OF	STH 60, SE of Gateway Estates	12/21/2015	Hand Cleaned Outfall
03-0529-OF	Franklin Drive Bike Path	12/14/2015	Dug out Outfall to allow drainage
03-0530-OF	Franklin Drive Bike Path	12/14/2015	Dug out Outfall to allow drainage
03-0592-OF	STH 60, south side, east of Teri Ln	12/21/2015	Hand Cleaned Outfall
03-0596-OF	East Sumner St, north side at Brault Street	12/18/2015	Cleaned debris
03-0606-OF	Kettle Moraine Drive, west side, South of Gateway Avenue	12/15/2015	Removed Silt & Debris from Outfall; dug out sod north of Outfall

CITY OF HARTFORD
Construction Site Inspection and Enforcement Procedures

The following details the procedure that will be used by the City of Hartford for construction site inspection and enforcement of erosion and sediment control measures:

The Engineering Department shall be responsible for inspection and enforcement of all construction sites except single family residential. The inspection and enforcement of erosion control measures at single family residential homes shall be done by the Building Inspection Department.

The erosion and sediment control measures must be installed per the approved plan and an initial inspection of non-single family residential units shall be conducted by Engineering staff prior to the start of site grading. Inspection of erosion control measures will take place at least once per month between March 1st and October 31st. Active construction sites will be inspected less frequently between November 1st and February 28th, depending on weather conditions. The responsible party for construction sites will be required to conduct inspections at least once per week and within 24 hours of a precipitation event of 0.5 inches or greater. The responsible party shall maintain weekly written reports on forms provided by the City.

The City shall maintain a construction site inspection computer database including: date of inspection, an assessment of the condition of the erosion and sediment controls, any follow up actions required, and actions implemented.

The primary enforcement mechanisms that will be used to obtain compliance when there are deficiencies in the installation and maintenance of erosion and sediment controls are onsite verbal notice, telephone notice or written notice (with a copy to the DNR on any written enforcement actions for all sites) to repair any problems. The notice shall include a description of any deficiencies and indicate the date by which the repairs shall be completed. The above enforcement mechanisms are expected to be sufficient to obtain compliance in most cases. If necessary, the City may also utilize the following enforcement procedures: stop work order, revoke permit, cease and desist order and fine. The City may also perform any work necessary to bring the site into compliance or have an outside contactor bring the site into compliance and charge the responsible party for any costs incurred.

The responsible party for the construction site will be required to post a permit onsite that contains a number for citizens to call with any issues. Any calls or emails to the City must be made as complaints to Administration. The appropriate staff will conduct an inspection of the site and initiate any necessary enforcement actions.

ATTACHMENT 3

Street sweepings are taken to the Wastewater Treatment Plant grounds and deposited in a drying bed; once the material is dried the material is then hauled to a licensed landfill for disposal.

IV. PRIORITIES

The City has prioritized sweeping of City streets with attention to sensitive areas based on the street function, traffic volume, impact on water quality and the environment, and the welfare of citizens in the community, taking into consideration the following:

A. Storm Water Management Plan

B. Downtown watershed (swept at least two times per month) during warm weather season

V. WORK SCHEDULES

Sweeping operations are performed in conjunction with other maintenance operations. Sweeping operations are normally to be conducted Monday through Friday, from 7:00 a.m. to 3:30 p.m. Sweeping may be restricted due to hazardous weather conditions. Extended workdays may be expected for spring cleanup or emergency sweeping operations.

EROSION CONTROL DIARY / INSPECTION FORM

Inspection Date: 7/17/15

Project Eng./Inspector: OE

Field Office Phone #: (414) 828-5128

Prime Contractor: CG Schmidt

EC Sub Contractor:

PROJECT I.D	EC-15-C-575
ROADWAY	110 Lane Oak Lane
DESCRIPTION	parking lot expansion
COUNTY	Washington

Reason for Inspection: Weekly (Rain) Stage Other _____ (circle one) Weather: Clear

Estimated percent of project open and not landscaped:

Modifications Required:	YES	NO	Not Applicable	Modifications Required:	YES	NO	Not Applicable
Silt Fence	☐	☒	☐	Mulch	☐	☐	☒
Ditch Checks	☐	☐	☒	Silt Screen	☐	☒	☐
Erosion Mat	☐	☐	☒	Turbidity Barrier	☐	☐	☒
Riprap	☐	☐	☒	Temp. Diversion Channel	☐	☐	☒
Inlet Protection	☐	☒	☐	Temp. Settling Basin	☐	☐	☒
Temporary Seeding	☐	☐	☒	Grading Practices	☐	☐	☒
Permanent Seeding	☐	☐	☒	ECIP	☐	☐	☒
Sod	☐	☐	☒	Other _____	☐	☐	☐
Project Schedule	☐	☐	☒	Other _____	☐	☐	☐

Note: Any boxes checked "YES" must have comments and recommendations. Describe them below.

Comments/Recommendations concerning the effectiveness of, and any reasonable corrections needed to maintain or increase the effectiveness of, in-place erosion control and storm water management measures are described below by the individual erosion control item or other general erosion control measures. (Trans 401.10)

EROSION CONTROL ITEM	COMMENTS / RECOMMENDATIONS

☐ See Additional Sheets or Optional Erosion Control Diary – Page 2 for additional comments (Attached)

COMMUNICATION NOTES:

To Whom	Type of Communication (circle one)	Comments
_____	Direct E-mail Phone Fax Written Order Diary	_____
_____	Direct E-mail Phone Fax Written Order Diary	_____

ATTACHMENT 4

Storm Water Management System Maintenance Checklist

Location South of Airport Drive
Inspector Name: Olivia Fies
Date of Inspection: 6/11/15
Check if storm water management system has multiple ponds _____

Evaluation Criteria:
0 = Not a Problem
1 = Monitor condition for possible future maintenance
2 = Maintenance recommended
3 = Immediate maintenance needed

General Site Condition		Comments
Trash or debris	NA (0) 1 2 3	
Erosion	NA (0) 1 2 3	
Vegetation	NA 0 (1) 2 3	
Excessive sediment	NA (0) 1 2 3	
Other (_____)	NA 0 1 2 3	

Pond		Comments
Trash or debris in pond	NA (0) 1 2 3	
Sediment deposits	NA 0 (1) 2 3	
Chemicals or Oil present	NA (0) 1 2 3	
Vegetation	NA 0 1 (2) 3	Algae
General Condition	NA 0 (1) 2 3	
Other (_____)	NA 0 1 2 3	

Inlet/Outlets		Comments
Trash or debris blocking opening	NA (0) 1 2 3	
Sediment in opening	NA 0 (1) 2 3	
Structural Condition	NA (0) 1 2 3	
Low Flow opening clear	NA (0) 1 2 3	
Vegetation	NA 0 (1) 2 3	
Missing or damaged frames, covers, grates, etc.	NA (0) 1 2 3	
Other (_____)	NA 0 1 2 3	

Emergency Spillway and Embankment		Comments
Trash or debris	NA (0) 1 2 3	
Spillway Erosion	NA (0) 1 2 3	
Embankment Erosion	NA (0) 1 2 3	
Chemicals or Oil present	NA (0) 1 2 3	
Animal Burrows present	NA (0) 1 2 3	
Vegetation	NA (0) 1 2 3	
General Condition	NA (0) 1 2 3	
Other (_____)	NA 0 1 2 3	

ATTACHMENT 5

CATCH BASIN INSPECTION REPORT

Inspection Information

Street Location:	INNOVATION WAY			
Inspection Date:	12-17-15	Catch Basin #: 02-031		
Department:	Wastewater	(Public Works)	Engineering	Other
Crew Name:	PAUL S - BEN F			
Condition of Grate:	☒ Good	☐ Fair	☐ Poor	
Did Sump have dirt/debris?	☒ No	☐ Yes	☐ No Sump in Basin	
Necessary to use Jetter?	☒ No	☐ Yes	Date Completed:	
Inspected Outflow Pipe?	☐ No	☒ Yes	Comment: GOOD	
Cleaning Method Used:	—			
Condition of Concrete:	☐ Good	☒ Fair	☐ Poor	"Inspection Image"

☐ Tuckpointing
☐ Vacuum
☐ Cleaning
☐ Remove Leaves
☐ Rebuilt
☒ Repaired

Comments: POUR CONCRETE ON SOUTH SIDE OF BASIN —

CATCH BASIN INSPECTION REPORT

Inspection Information

Street Location:	BELL AVENUE			
Inspection Date:	12-18-15	Catch Basin No: 03-2204		
Department:	Wastewater	(Public Works)	Engineering	Other
Crew Name:	PAUL S. - BEN F			
Condition of Grate:	☒ Good	☐ Fair	☐ Poor	
Did Sump have dirt/debris?	☐ No	☐ Yes	☒ No Sump in Basin	
Necessary to use Jetter?	☒ No	☐ Yes	Date Completed:	
Inspected Outflow Pipe?	☐ No	☒ Yes	Comment:	
Cleaning Method Used:	HAND -			
Condition of Concrete:	☐ Good	☒ Fair	☐ Poor	"Inspection Image"

☐ Tuckpointing
☐ Vacuum
☐ Cleaning
☐ Remove Leaves
☒ Rebuilt
☐ Repaired

Comments: CLEAN OUT DEBRIS - THEN FORM + POUR CONCRETE ON SO. SIDE OF BASIN -

ATTACHMENT 7

PUBLIC WORKS YARD
QUARTERLY SITE INSPECTION CHECKLIST

Quarterly site inspections are performed to evaluate the effectiveness of controlling storm water contamination and to identify and additional measures that can be feasibly implemented. The Public Works yard Storm Water Pollution Prevention Plan identified the following areas for inspection:

1. Inspect site drainage conditions. Things to look for include the following:

- ☑ Inspect the site for possible erosion problems.
- ☑ Determine if drainage off the Yard has changed.
- ☑ Are there any new areas of ponding or streaming?

Notes: 10-1-15 to 12-31-15 Yard clean Free of Debris

2. Check for any potential pollution sources. These sources may include the following:

- ☑ Inspect the outdoor material storage areas. Is there any indication of oils or greases in the area?
- ☑ If there is any standing water at the time of inspection, is there any sheen, sludge, foam, etc?
- ☑ Are there signs of erosion or sediment transport into inlets or off site from storage areas?
- ☑ Is there any litter or debris not associated with normal operations (such as from snow storage)?
- ☑ Inspect all areas of the Yard for signs of spills (oil, resins, etc.) or other contaminants.
- ☑ Inspect the river bank for erosion, illegal dumping, or damage to silt fencing.

Notes: All Good -

3. Inspect catch basins. Things to look for include the following:

- ☑ Check sediment buildup and schedule for cleaning if necessary (sump should be no more than 40% full).
- ☑ Check inlet filters, if in place, and replace if needed per manufacture guidance.
- ☑ Check for floating oils and greases. Suction off floating material if necessary.

Notes: Ready for Winter,

4. Other observations – take note of anything else at the Yard that may be of significance to the Storm Water Pollution Prevention Plan.

Signed: Daryl Kranz Printed Name: Darryl Kranz
Title: P.W. Director Date: 1-4-16

APPENDIX B

ATTACHMENT 8

WINTER ROAD MAINTENANCE PLAN

The City of Hartford Public Works Department uses practices to minimize the use of de-icing materials in order to reduce negative environmental impacts.

De-icing:

(Factors affecting de-icing action are pavement temperatures, weather conditions, type of road surface, traffic volume, manpower, width of application, and most importantly, time of salt application.)

1. Solid road salt (calcium chloride) is the most effective treatment for packed snow and ice; they do a better job of de-icing thicker snow/ice accumulations. Applying de-icing agents during the storm prevents the bond of accumulated snow and keeps the snow in a plowable condition.
2. Research has shown that a strategy of using chemicals alone will be more effective and less costly than using mixtures of chemicals and abrasives. No abrasives (sand) are used in snow plowing events in the City of Hartford.
3. The salt is applied in narrow strips. By exposing a portion of road surface to the sun quickly, it can absorb heat and increase the melting rate.
4. **Salt distribution from the spreader with a spinner is operated manually by adjusting the auger and spinner speeds between 1 and 10 depending on the type of road conditions. Operators are instructed about their use and asked to limit the speed of the spinner to prevent the material from being cast beyond the area to be treated. Because melting action spreads across the pavement to lower areas, the salt is concentrated on the center (crown) of two-lane roads and on the high side of curves. The spinning circular plate throws the de-icer out in a semi circle.**
5. The longer a de-icing chemical has to react, the greater the amount of melting. At temperatures above 20° F salt/calcium chloride can melt ice in a reasonable time. At lower temperatures salt takes much longer.
6. Snow plow operators are sent to workshops on winter road maintenance/road salt applications every few years.

Most soil and vegetation damage occurs within 60 feet of the road. De-icing chemicals are highly soluble and follow any water flow. Therefore, we only apply enough de-icer to permit plows to remove the snow or melt glare ice. Experience shows that it is most effective to spread between 100 and 300 pounds per single lane mile and to not use any de-icer when temperatures are below its effective range (normally 15° to 20° F which is considered the lower limit for salt). If de-icing is necessary at lower temperatures, more salt is needed and melting will take much longer.

Effective use of plows:

1. Snow is never blown or plowed over a bridge into the water below.
2. Snow is removed from roads as quickly as possible to reduce compaction.
3. Carbide plow blade edges are used.

ATTACHMENT 9

4. Blade angles are adjusted to maximize cutting efficiency or snow throwing capabilities.
5. After a salting operation is completed to prevent the snow from sticking to the pavement, plows are sent out to clear the accumulated snow from the pavement.
6. Drivers are assigned to individual plow routes and keep each other informed of changing conditions; they report stranded motorists as necessary to the Police Dept.

Snow is removed from downtown streets and parking lots and then hauled to a site located behind the Wisconsin Auto Museum at 147 N. Rural Street allowing the melted snow to drain to the wetlands which captures the meltwater pollutants that would otherwise reach open waters.

Salt material use is recorded at the end of each snow removal event; post-storm meetings are held in the shop to evaluate the snow operation; equipment is cleaned and checked for maintenance.

The City is required to submit chemical information to the Wisconsin Emergency Management department annually with the Wisconsin Tier Two Emergency & Hazardous Chemical Inventory and a Road Salt Subsite Inventory record regarding the salt stored in the shed located in the Public Works Yard at the City Garage, 710 W. Sumner Street. Copies of the forms are also sent to the local Fire Department and Washington County. The site is also inspected annually by the State.

CITY OF HARTFORD WINTER ROAD MAINTENANCE POLICY

1. INTRODUCTION

The City of Hartford believes that it is in the best interest of the residents for the City to assume basic responsibility for control of snow and ice on city streets. Reasonable ice and snow control is necessary for routine travel and emergency services. The City will provide such control in a safe and cost effective manner, keeping in mind safety, budget, personnel and environmental concerns. The City will use city employees and city equipment.

2. WHEN WILL THE CITY START SNOW OR ICE CONTROL OPERATIONS?

The Public Works Director in cooperation with the Hartford Police Department will decide when to begin snow or ice control operations. The criteria for that decision are:

A. Snow accumulation of 2 inches or more;

B. Drifting of snow that causes problems for travel;

C. Icy conditions which seriously affect travel; and

D. Time of snowfall in relationship to heavy use of streets.

Snow and ice control operations are expensive and involve the use of limited personnel and equipment. Consequently snowplowing operations will not generally be conducted for snowfall of less than 2 inches.

3. HOW SNOW WILL BE PLOWED

The City currently uses nine plow trucks and two loaders during each snow event. Snow will be plowed in a manner so as to minimize any traffic obstructions. The center of the roadway will be plowed first. The snow shall then be pushed from left to right. The discharge shall go onto the boulevard area of the street. Snow and ice removal is prioritized based on traffic volumes to provide the greatest level of safety to the greatest number of residents as quickly as possible.

In times of extreme snowfall, streets will not always immediately be able to be completely cleared of snow. During long-lasting snow events, snow plow crews may conduct "interim" plowing which will provide basic access to streets until the storm is over. More complete clean-up plowing will then follow after the storm ends. Multiple passes by the snow plow are always necessary to complete the street plowing clean-up.

The Hartford Municipal Airport runways and taxiways are cleared after City streets, alleys & parking lots have been plowed.

ATTACHMENT 9 (a)

4. SNOW REMOVAL

The Public Works Director will determine when snow will be hauled by truck from downtown, parking lots and intersections. Such snow removal will occur in areas where there is no room on the boulevard for snow storage and in areas where accumulated piles of snow create a hazardous condition. Snow removal operations will not commence until other snowplowing operations have been completed. Snow removal operations may also be delayed depending on weather conditions, personnel and budget availability. The snow will be removed and hauled to a snow storage area as approved by the DNR behind the Recreation Center with minimal environmental contamination.

5. PRIORITIES AND SCHEDULE FOR WHICH STREETS WILL BE PLOWED

The City has classified city streets based on the street function, traffic volume, and importance to the welfare of the community. Routes will be plowed in the most cost effective and timely manner. Those streets classified as "Snow Plow Routes" will be plowed first. These are high volume routes which connect major sections of the city and provide access for emergency fire, police and medical services.

The second priority streets are those streets providing access to schools and commercial businesses. The third priorities are low volume residential streets. The fourth priority areas are alleys and city parking lots.

6. WORK SCHEDULE FOR SNOWPLOW OPERATORS

Snowplow operators will be expected to work eight-hour shifts. In severe snow emergencies, operators sometimes shall have to work in excess of eight-hour shifts. However, because of budget and safety concerns, no operator shall work more than a twelve (12) hour shift in any twenty-four hour period. Operators will take a fifteen minute break every two hours.

7. WEATHER CONDITIONS

Snow and ice control operations will be conducted only when weather conditions do not endanger the safety of employees or equipment, and operations are effective. Factors that may delay snow and ice control operations include: severe cold, significant winds, limited visibility and rapid accumulations of snow and/or ice.

8. USE OF SAND, SALT AND OTHER CHEMICALS

The City will salt all intersections when there is hazardous ice or slippery conditions due to snow fall even prior to accumulation of 2 inches of snow. This salting operation takes four trucks approximately two hours each event. The City is concerned about the effect of sodium chloride on the environment and limits its use for that reason. Only intersections and main arterial streets are salted. Even after reasonable care, snow and ice may still build up depending on temperature.

9. SIDEWALKS SNOW REMOVAL

Sidewalks are addressed in City of Hartford's Municipal Code Section 7.11. City crews use small truck-mounted plows and a skid loader to plow the sidewalks.

10. PARKING ON STREETS DURING SNOW REMOVAL OPERATION

During snowstorms, the City's primary goal is to provide for the safe and orderly movement of emergency equipment and the traveling public. Ice control and snow clearing operations are hindered by on-street parking. To ensure effective snow removal, the City of Hartford requests residential cooperation in keeping parked vehicles off the street at all times throughout a snow clearing operation by keeping vehicles parked in driveways so they do not impede snow plowing equipment as they work.

11. SHOVELING OR PLOWING SNOW INTO STREETS

It is unlawful for residents to remove snow from their private property onto the public streets when shoveling driveways and sidewalks after the snow has been plowed and cleaned by the City per Municipal Code Section 7.10(2).

12. EMERGENCY SITUATIONS

For emergency vehicles responding to emergency situations (fire, medical, police) within the city, or Fire Department/Police Department jurisdiction, necessary employees and equipment will be dispatched as soon as possible. Snow emergency and winter parking regulations go into effect between December 1 and March 31 during which no vehicles are allowed to park on city streets between 3:00 a.m. and 6:00 a.m.

13. DAMAGE TO PERSONAL PROPERTY

Damage to turf, plantings, landscaping, water services, to include irrigation systems, or any other structures located in the city right of way will not be considered for compensation.

Damage to mailboxes due to excess weight of snow will not be considered for compensation. Mailboxes damaged by actual contact with city equipment will be inspected and considered for repair or replacement.

The City will provide turf restoration to areas outside the City's right of way, disturbed due to snowplowing. Restoration will include black dirt, seed or in some instances sod replacement.

14. PLOWING OF PRIVATE PROPERTY

Unless there is direct benefit to city operations or unless emergency vehicles need access, there shall be no plowing of private property with city equipment.

15. STATE OF WISCONSIN, WASHINGTON COUNTY, TOWNSHIP PLOWING

Highway 60 and Highway 83 within the city's jurisdiction are maintained by the City of Hartford. By mutual agreement the City of Hartford and Town of Hartford have established snow and ice control routes along Town/City boundaries to efficiently plow and salt their borders.

SECTION V.

C. Provide an Inventory of municipally owned or operated structural storm water management facilities, include: Location of each facility and contact information for the individual with overall responsibility for each facility.

The Public Works Department Director (Darryl Kranz, 262-673-8225) is currently responsible for:

Manholes and curb inlets with sumps (Hydrodynamic Separation Devices), which were required under the City's Development Standards Manual since 2008.

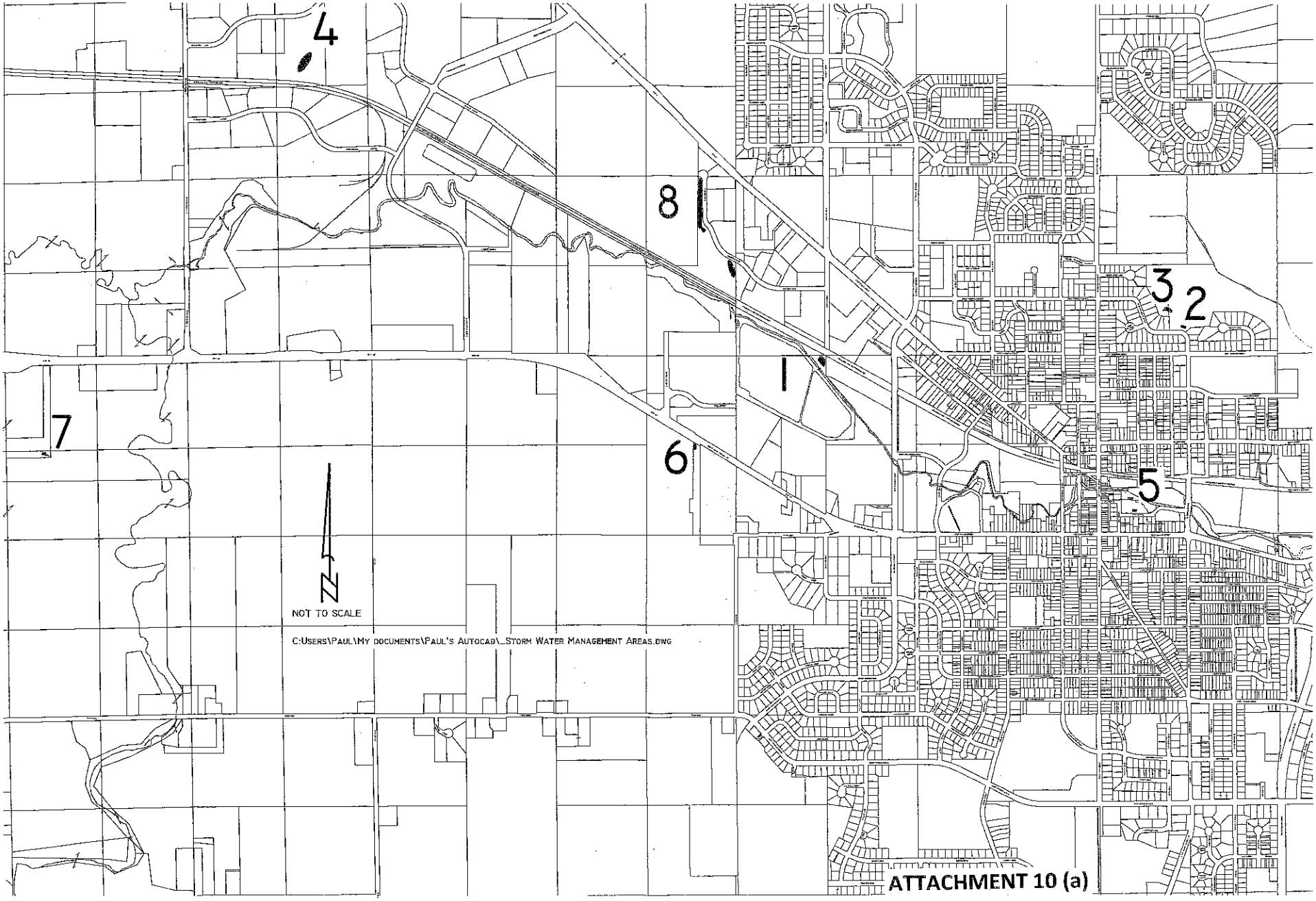
Grass ditches in right-of-way, easement area, or owned by City:
Misty Meadows Blvd.
N. Wacker Drive at railroad tracks
W. Monroe Avenue at S. Main Street
E. Lincoln Avenue at termini and S. Wilson Avenue
West Side Park ditch running through the park.

Stormwater Management Ponds:

1. Airport Drive at south termini
2. Hidden Creek Subdivision Add. # 2, north side of E. Prospect St, east side of walking trail
3. Hidden Creek Subdivision Add. # 3, north side of Hickory Lane behind residential lots
4. Industrial Park, west end of Innovation Way, south side
5. Jack Russell Memorial Library (2 Wet Ponds and 1 underground bio retention facility located under the parking lot)
6. Water Tower # 4 site, 1211 W. Sumner Street
7. Well # 16 site, south of STH 60 at lift station
8. Western Drive, two ponds, at the center and end of Western Dr, west side of roadway

All other 89 stormwater management ponds are the responsibility of Homeowner's Associations with the City being granted an easement for access to Outlots and responsible for occasional maintenance related solely to maintaining the capacity of the ponds. The City is to charge the Association for said maintenance.

ATTACHMENT 10



ATTACHMENT 10 (a)

LONG-TERM MANAGEMENT PLAN & STRATEGY - UPDATED 2/15/2016

(40% TSS Reduction - Maximum Extent Practicable)

Capital Improvements	Location/Description	2016	2017	2018	2019	2020
Storm Water Pond Dredging	Dredge two ponds each year to improve capacity of ponds	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00
S. Wilson Ave. Pond	Between Misty Meadows Blvd. & S. Wilson Avenue	$ 65,000.00				
Branch Street (STH 83) Reconstruction	E. Sumner Street to Monroe Avenue	$ 1,037,994.00				
Downtown Stormwater Improvements	Public improvements related to public/private downtown renewal project - improve stormwater detention-retention in older downtown areas	$ 300,000.00				$ 300,000.00
North Wacker Drive/West State Street Storm Sewer Additions	Between W. State St & Railroad Tracks - add 500 LF of Storm Sewer	$ 67,500.00				
Wheelock Avenue	Between E Monroe Ave & E Lincoln Ave	$ 36,000.00				
Independence Avenue Stormwater Pond	Construct stormwater pond at intersection of Independence Ave & Constitution Ave and reroute storm sewer to new storm water pond		$ 53,000.00			
High Street	N. Main to W. State; add 700 LF		$ 63,000.00			
Harrison Street Reconstruction	Cedar Street to Troeller Court - add stormsewer		$ 20,000.00			
Cedar Street Resurfacing	W. Lincoln Avenue to Harrison Street		$ 10,000.00			
Martin & Morgan Drive	Both Streets - add 300 LF		$ 27,000.00			
Fifth Street Reconstruction	E. Wisconsin St to Union Street - add 300 LF		$ 27,000.00			
E. Lincoln Avenue Reconstruction	S. Main Street to Grand Ave; add 1300 LF		$ 188,500.00	$ 54,000.00		
W. Rossman St Reconstruction	Between Elm St & Center St; add 900 LF			$ 81,000.00		
Maple Avenue	Grand Ave to Wheelock Ave; add 400 LF			$ 36,000.00		
West Prospect St Storm Sewer Extension	Connect Storm Sewer on W. Prospect to Black's Subdivision; add 620 LF				$ 55,800.00	
South Main Street Resurfacing	Between Monroe Avenue & Lincoln Ave				$ 10,000.00	
E. Lincoln Avenue	Grand Ave to Misty Meadows Blvd - add 1350 LF				$ 121,500.00	
E. Wisconsin St Reconstruction	Fifth Street to end of street - add 400 LF				$ 36,000.00	
Budd Street Reconstruction	Grant Street to W State Street - add 600 LF					$ 54,000.00
North Wacker Dr Reconstruction	Railroad Tracks to W. State Street - add 950 LF					$ 85,500.00
W. Loos Street Reconstruction	Summit Street to Cedar Street - add 300 LF					$ 27,000.00
		$ 1,536,494.00	$ 418,500.00	$ 201,000.00	$ 253,300.00	$ 496,500.00

Excel/StormWaterManagement/Long-TermPlan&Strategy

ATTACHMENT 11

CITY OF HARTFORD PUBLIC WORKS YARD
Storm Water Pollution Prevention Plan (SWPPP)

1.0 GENERAL INFORMATION

The City of Hartford Public Works Yard is located at the intersection of West Sumner Street (STH 60) and North Wacker Drive. The Public Works Yard is the only garage for the City of Hartford which includes the Public Works Director's office and all public works employees. The facility stores various pieces of equipment and miscellaneous materials both indoors and outdoors for use by City staff in maintaining City infrastructure. See **Figure 1** for descriptions of buildings and materials stored on site. Building and yard activities are detailed later in this document. This report documents current conditions and measures that can be taken to reduce nonpoint source pollution from the site.

1.1 SWPPP GOALS

The City of Hartford has made it a priority to reduce nonpoint source pollution to surface water and groundwater from urban storm water sources. This Storm Water Pollution Prevention Plan (SWPPP) for the City's Public Works Yard is a component of comprehensive city-wide storm water management efforts to identify nonpoint source pollution loadings and investigate mitigating measures. The goals of this report are to:

a. Identify potential sources of storm water and non-storm water contamination to the storm water drainage system;
b. Identify current and potential additional "source are" best management practices (BMPs); and
c. Identify current and potential additional "storm water treatment" type BMPs to reduce pollutants in contaminated storm water prior to discharge.

1.2 POLLUTION PREVENTION RESPONSIBILITY

The Director of Public Works is responsible for all activities on the site including pollution prevention activities. It is part of the regular duties as Public Works Director to investigate potential storm water pollution problems on a daily basis. There is also support from the City of Hartford Engineering Department.

2.0 INVENTORY OF POLLUTION SOURCES OF POLLUTIONS

The following section indentifies the materials stored in each area of the facility, operations at the site, and the general interaction between areas of interest on the site.

2.1 LAND COVERAGE & DRAINAGE

The City of Hartford Public Works Yard and Utility Operation site when combined are 10.20 acres in size. Several catch basins exist on the facility as shown on the attached **Figure 2.** Storm water on the parking area located in the front parking lots along West Sumner Street for both the

City Garage and the Utility Department buildings drain into several storm drains that drain into the storm sewer along Grant Street and North Wacker Drive. This storm sewer then drains into the Rubicon River.

Building drainage is characterized by the following:

a. *City Garage & Utility Dept. Buildings*: The City Garage building has roof drains that drain directly to the storm sewer system. The building floors slope inward towards sanitary sewer catch basins. These catch basins are not currently cleaned on a regular schedule, but on an as needed basis.

b. *Equipment/Cold Storage Building:* There are rain gutters on the Equipment/Cold Storage Building and storm water runs from the roof directly to the ground surface and eventually into the Rubicon River. There are no interior drains in the building connected to the storm sewer system.

c. *Salt Storage Building:* There are no rain gutters on the Salt Storage building and storm water runs from the roof directly to the ground surface and into the storm sewer. There are no interior drains in the Salt Storage building.

d. *Fuel Storage:* The City Garage Yard has no fuel buildings. All motor fuel is purchased at the local West Side Mart as needed.

2.1.1 Building Activities and Materials Found in each Building:

General building activities are as follows:

The Public Works Garage Area.

1. The Public Works Garage is the center of the DPW staffing and equipment for daily operations. The building includes the Public Works Director's office, is used for vehicle loading and unloading, mechanics vehicle maintenance garage, and equipment storage. Oil dry is always available. Vehicles are typically parked outside during the day when used for projects. New oil for the maintenance garage is purchased in 55 gallon containers. Vehicles are also washed in a designated area inside the building. All drains are connected to the City's sanitary sewer system.

2. The Equipment/Cold Storage Building is used for extra storage of vehicles and construction equipment, garbage truck and chipper. No maintenance is conducted in the building. The pole shed currently has a gravel floor. Oil dry is always available.

3. The Salt Storage Building can contain approximately 1,000 tons of sodium/calcium chloride when filled to capacity. The salt is stored on an asphalt pad without cracks or holes. The pad under the stockpile directs water away from the material. Salt from

runoff is contained within the salt storage area away from open water sources and is effectively protected from the elements. The shed is inspected annually by the WisDOT Bureau of Highway Operations, Material Storage Site Management.

2.1.2 Yard Activities

Throughout the yard various activities take place such as storage of equipment, raw materials, pipes, propane tanks, etc. Public Works staff accesses the yard to drive in and pick up and drop off material or items for road and sewer maintenance. Residents do not have access to the graveled yard area between North Wacker Drive and Grant Street. Residents drive through the paved area behind the City Garage as they go to the Recycling Center to drop off material and then exit onto Grant Street. This area is gated and locked except during the hours of Thursday evening (5:00 – 7:00 p.m.) and Saturday morning (9:00 – 12:00 p.m.). Materials dropped off at the Recycling Center are used waste oil, garden and yard waste, metal items, and paper & flattened cardboard. Waste oil is stored in two 550 waste oil drums and kept in state approved steel containments.

2.2 POTENTIAL SOURCES OF CONTAMINATION

Based on discussions with City staff and a site inspection of the facility, the most likely sources of non-point pollution are as follows:

a. Snow piles in garage yard melting in spring (no snow is hauled into the garage yard).

b. Rubicon River Bike Path planned for area behind City Garage yard – need to protect area from any possible erosion (in the future when this trail is installed).

c. Salt spills when loading and unloading.

d. Soil hauled into the yard and stored on site for short periods of time.

3.0 MEASURES AND CONTROLS

3.1 GOOD HOUSEKEEPING

The newly restored City Garage is maintained in a clean and orderly manner. When necessary the garage is swept and picked up to keep the interior clean. Outdoor storage is segregated into like materials and generally kept orderly.

The paved area of the Public Works yard is swept with a street sweeper on approximately a monthly basis.

Oil dry materials are available in the event of small spills and leakage and are cleaned up as needed.

3.2 PREVENTIVE MAINTENANCE

Major sources of contamination associated with petroleum products are managed appropriately. New and used products are managed within buildings that have little to no potential for storm water runoff. Staff has been trained on how to use equipment.

Spill Prevention and Response Policy: Staff is trained on the attached Spill Prevention and Response Policy. Spill response equipment is located at all potential spill areas. All transfers to and from the tank are observed by qualified personnel trained in spill response procedures.

Catch basins: All catch basins located on the Public Works Department yard are checked and cleaned as needed. Drainage swales/berms are kept clear.

Vehicles are inspected and maintained on a regular basis. Hydraulic equipment is kept in good repair to prevent leaks. Maintenance is conducted indoors.

3.3 SEDIMENT AND EROSION CONTROL

There is a vegetated area along the stream bank which is a potential for erosion on site given the highly urbanized location and nature of the facility. While erosion control does not appear to be an issue, there may be some areas which could be better managed. This is discussed below in the Recommended Control Measures section.

3.4 MANAGEMENT OF RUNOFF

It generally appears that potential storm water contact with pollutant sources outdoors is minimized with a few exceptions. Some specific areas could be better maintained and these are discussed under the existing and recommended control measures section.

3.5 EXISTING AND RECOMMENDED CONTROL MEASURES

a. *Salt Storage:* Salt is stored in the salt storage shed and appears to be well managed. Spilled salt is brushed back into the salt shed on a daily basis seasonally. Additional salt BMP information is available from the Wisconsin Department of Natural Resources ("Storage Pile Best Management Practices") included in **Appendix A** BMP Fact Sheet for Road Salt Storage.

b. *Outdoor Storage Piles:* Areas are generally segregated into like materials and generally kept orderly.

c. *Stream Bank Erosion:* The Rubicon River runs along the north side of the garage facility and has natural vegetation growth along its banks. Recommended control measures to prevent storm water runoff along its banks would be:

- Install silt fence along river bank
- Support the lower areas with hay bales to slow down runoff from heavy rain.

d. *Quarterly Inspections:* An inspection form for key areas has been developed for quarterly inspections to be completed (see **Appendix B**), which includes overall site for litter and debris not associated with normal operations; overall site for erosion and sediment build up; any snow storage areas for debris after snow melt; storage shed apron for migration of salt from storage shed; soil storage pile areas for erosion/wash off from the site; inspection of catch basin sumps; and inspection of silt fence along river bank.

N Grant St
W Sumner St
Water/Electric
Utility Dept.
Recycling
Center
Pavement
City Garage
Office
RUBICON RIVER
960
967.6
Cold Storage Bldg.
Salt Storage Shed
Entrance
972
N Wacker Dr
W Sumner St
2D
3D
Road
Aerial
Bird's Eye
Traffic

Figure 1

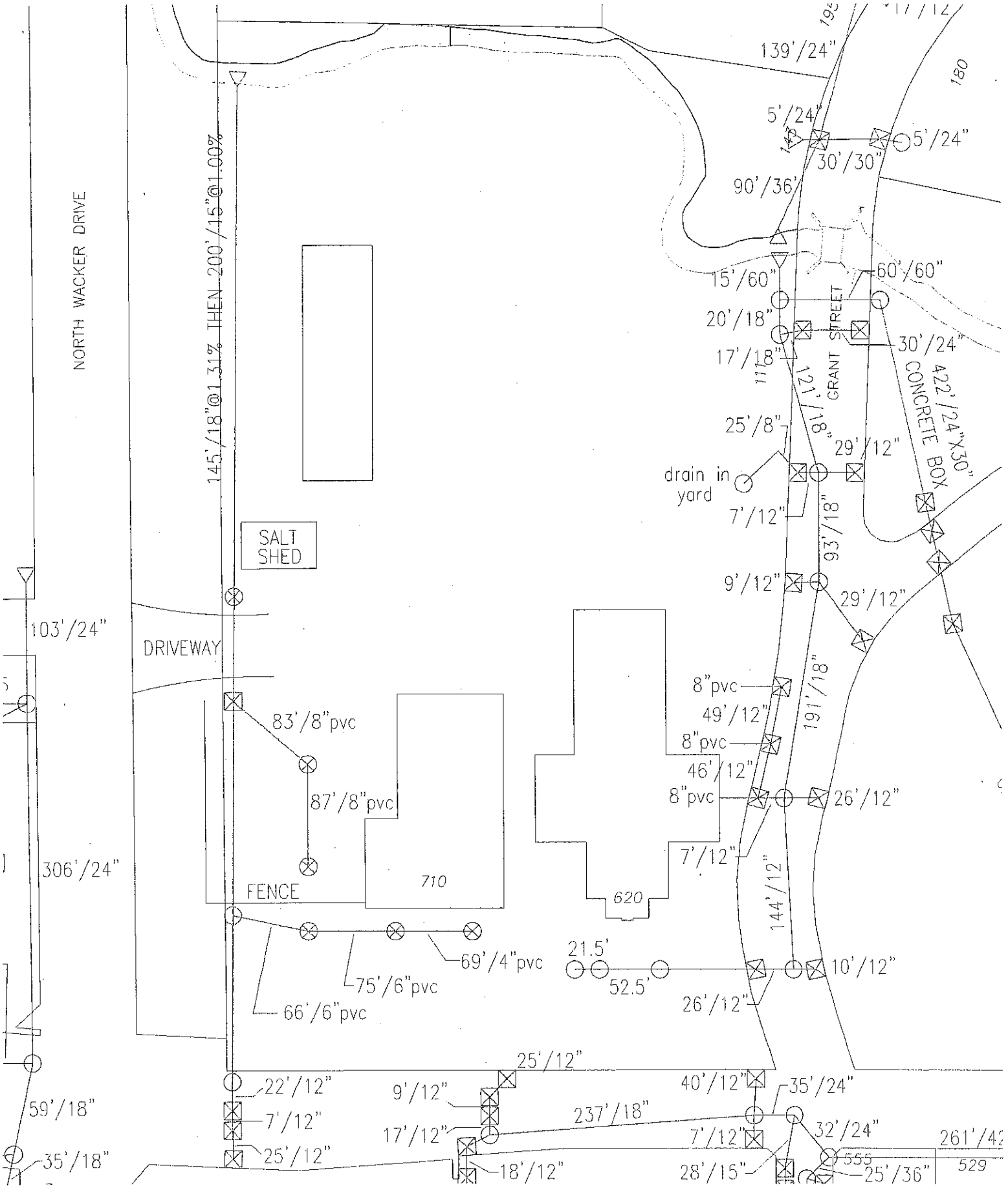
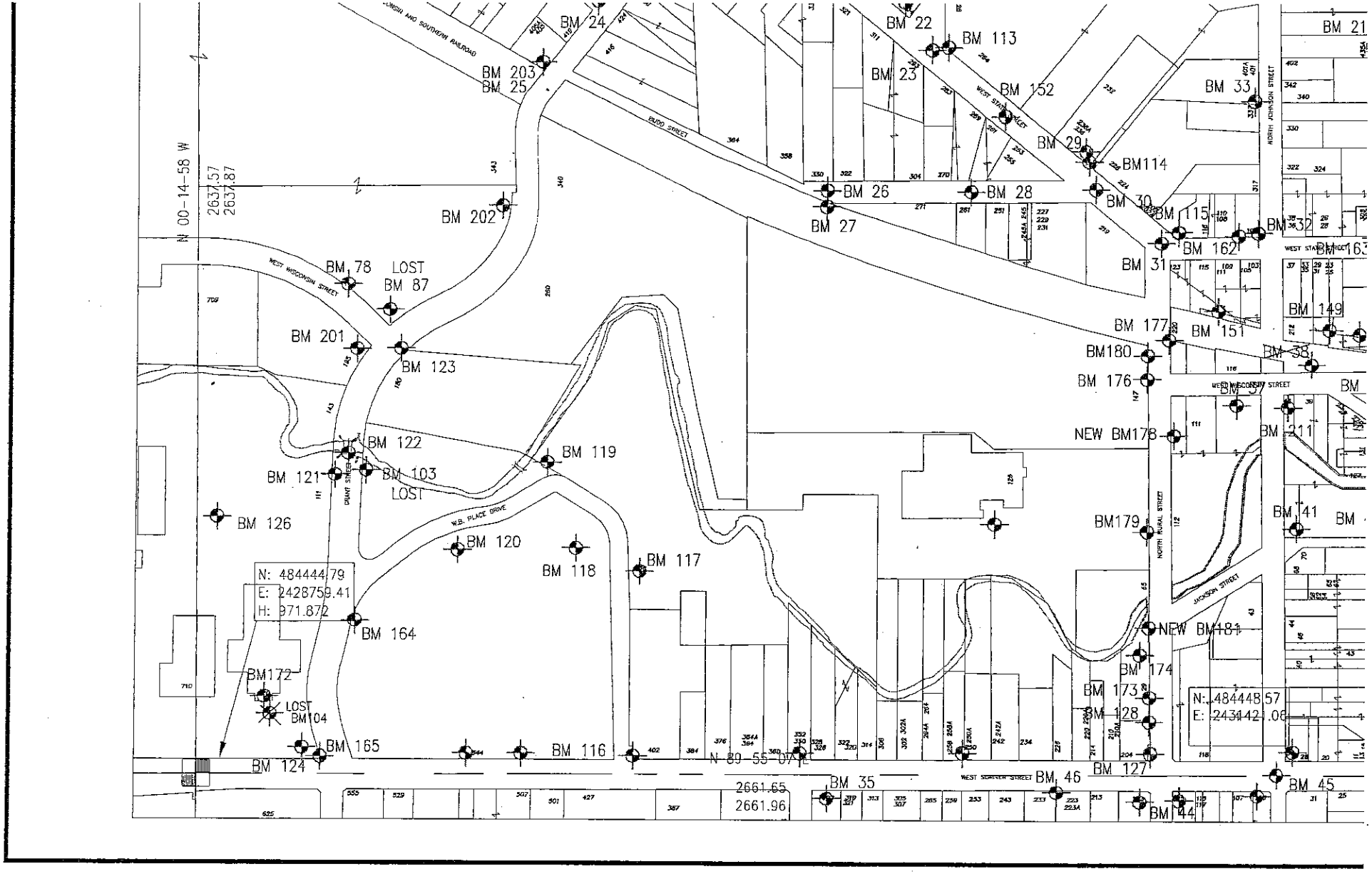

NORTH WACKER DRIVE
145'/18"@1.31% THEN 200'/15"@1.00%
SALT SHED
DRIVEWAY
FENCE
710
620
GRANT STREET
CONCRETE BOX
422'/24"X30"
139'/24"
5'/24"
30'/30"
90'/36"
15'/60"
60'/60"
20'/18"
17'/18"
30'/24"
25'/8"
29'/12"
drain in yard
7'/12"
93'/18"
9'/12"
29'/12"
103'/24"
83'/8"pvc
87'/8"pvc
306'/24"
8"pvc
49'/12"
8"pvc
46'/12"
8"pvc
26'/12"
191'/18"
144'/12"
69'/4"pvc
75'/6"pvc
66'/6"pvc
21.5'
52.5'
10'/12"
26'/12"
25'/12"
40'/12"
35'/24"
22'/12"
9'/12"
237'/18"
7'/12"
17'/12"
7'/12"
32'/24"
59'/18"
35'/18"
25'/12"
18'/12"
28'/15"
25'/36"
555
529

Figure 2



SALT STORAGE

(Best Management Practices)

Proper salt storage is a key measure to prevent the introduction of potentially harmful contaminant loads to nearby surface and ground waters. It is important to shelter salt piles from moisture and wind, as unprotected piles can contribute large doses of sodium chloride to runoff. Salt should be stored inside a covered, waterproof structure, such as a dome or shed. Soil type, hydrology, and topography must also be appropriate for the storage area. Any runoff should be cleaned up immediately and the collected brine reused. Spills during loading and unloading should be cleaned as soon as possible. Salt storage sites should also be located outside of wellhead and source water protection areas, away from private wells, sole source aquifers (where feasible), and public water supply intakes. These areas should be identified so application in these areas can be controlled and storage precautions enforced.

Deicing chemicals and methods can be a significant source of surface and ground water. Coarse "rock salt" often contains metals such as lead, zinc, copper, chromium and magnesium. The possible adverse impacts of excessive deicing chemical applications include*:

- Contamination of drinking water supplies
- Corrosion of automobiles
- Corrosion of bridges and other infrastructure
- Damage to roadside vegetation
- Temporary reduction in soil microbes
- Sensitivity of various deciduous trees
- Attraction of deer to salts on roadways, increasing the risk of accidents
- Secondary components (3-5% of road salt composition) may include N, P, and metals in concentrations exceeding those in natural waters

**Michigan Department of Transportation. 1993. The Use of Selected Deicing Materials on Michigan Roads : Environmental and Economic Impacts. Lansing, MI. Prep. by Public Sector Consultants, Inc.*

POLLUTANTS

Salt used for highway deicing is composed of more than 95 percent sodium chloride (NaCi) as specified in ASTM D 632094, Standard Specifications for Sodium Chloride. Road or deicing salts are generally NaCi) and calcium chloride (CaCi). Other road deicing materials can contain up to 95 percent sand. Deicing salt also may contain anticaking and freeze protectant additives such as ferric ferrocyanide (or prussian blue) and sodium ferrocyanide (yellow prussitat of soda or YPS). YPS is approved in food grade salt at 13 parts per million. YPS is added to deicing salt at concentrations typically ranging from 20 to 100 parts per million.

Contaminants may be carried from the salt piles via wind or storm water which can dislodge or dissolve the salt. These contaminants may be carried to surface waters or infiltrate into the groundwater. It is possible for rainfall to reduce an uncovered salt storage pile at a rate of one-quarter percent per annual inch of precipitation. That equates to the loss of up to 25 tons per year from 500 tons of exposed salt. This amount could contaminate 15 million gallons of water to the suggested 250 mg/liter chloride level set for drinking water and can raise the sodium levels to the

threshold level of 20 mg/1 in 120 million gallons of water (the maximum concentration recommended by the American Heart Association for patients on low sodium diets) (Schueller, 1992 and Salt Institute, 1995). Chlorides can also harm freshwater organisms and vegetation by increasing the level of salinity in surface water.

SOURCE AREA CONTROLS

Source area controls are those that prevent pollution from occurring at the source. They can range from elimination of use of a product to better control over the exposure of the product from rainfall. The following controls are suggestions for use if the storage pile is a source of storm water contamination.

Reduce Amount of Salt Used

Reducing the amount of salt used should obviously reduce the amount of sale that is potentially exposed to storm water. Reducing the amount and toxicity of deicing chemicals applied is the primary means of reducing ice and snow removal wastes. Recent advances in remote sensing devices and monitoring networks allows for applying a minimum amount of deicing chemicals when conditions are optimal for preventing ice buildup. This practice is sometimes referred to as "anti-icing".

Substitute deicers include calcium magnesium acetate. The calcium and magnesium ions' mobility in soil are limited, and the acetate anion is much less mobile in soil than the chlorine ion, thereby reducing the potential for groundwater contamination. There may, however, be biological oxygen demand associated with acetate breakdown. Calcium magnesium acetate works best as a deicer if applied before snow accumulates in any amount. CaCi or NaCi work better on packed snow and ice, (Fritzsche, 1992). However, more of the substitute deicers may be needed to achieve the same level of melting actions as NaC1 provides.

There should be storage room for an estimated average winter's salt requirements. Suppliers do their best to maintain deliveries from strategically located stockpiles. However, replenishment of agency salt storage piles becomes more difficult during heavy demand periods. Therefore, it is wise to take early delivery of winter supplies and store the salt until it is needed.

The most critical step in providing good storage is selecting the storage site. S-A-L-T-E-D is the key word in picking the right spot:

- **S**afety
- **A**ccessibility
- **L**egality
- **T**idiness
- **E**conomy
- **D**rainage

Safety means good visibility for operators, no direct access onto heavily-traveled roads, warning signs at entrances, security fencing, and safety for the surrounding environment.

Accessibility means easy access for equipment and delivery trucks, big enough for front-end loaders to maneuver, room for a 20-foot extension of the pad in front of storage buildings, and doors large enough to accommodate equipment.

Legality means complying with local zoning ordinances and any required discharge permits.

Tidiness means making buildings as attractive as possible, keeping buildings well maintained, good housekeeping around the storage site, and screening the storage site with fencing or plantings.

Economics means permanent covered storage and locating the storage site to avoid long distance hauling.

Drainage means good drainage away from the stockpile, sloping bituminous pads (1/4 inch per foot downward from the center), containing runoff, installing retention curbs if necessary, and disposing of salt brine in conformance with applicable federal and state regulations and local ordinances.

Salt Storage Building

There are three reasons why a public works agency should construct and properly operate salt storage facilities: economy, availability and convenience. Salt is the most economical deicing material available. Salt never loses its capability to deice no matter how long it is stored. Rock salt is already between 210 and 320 million years old when it is mined, and carrying over salt on storage piles to the next year or even longer does nothing to diminish its melting power. There is no loss to moisture from the air if salt is stored properly. Salt does not absorb moisture until the humidity reaches 75 percent. Any absorbed moisture will evaporate when the humidity falls below 75 percent. Any resulting thin crust on the surface of the salt is easily broken up.

Salt, however, can be lost to precipitation. Storage piles, whether large or small, should never be left exposed to rain or snow. A permanent under-roof storage facility is best for protecting salt. If this is not possible, then outside piles should be built on impermeable bituminous pads and covered with one of the many types of temporary waterproof materials, such as tarpaulins and polyethylene.

Salt storage piles also must be covered in order to prevent possible detrimental effects to the environment. Runoff should be properly controlled.

Covered storage facilities may seem expensive, but the benefits far outweigh the costs in the long run. Salt should be stored in a roofed enclosure in order to:

- Prevent formation of lumpy salt that is difficult to handle with loaders and to move through spreaders,
- Eliminate the possibility of contaminating streams and wells with salt runoff,
- Eliminate salt loss through dissolving and runoff.

Anti-caking additives

It's important to keep salt free flowing. To do this, salt producers add anticaking agents. However, if left exposed to precipitation, anti-caking agents can be washed from the outer layer of salt.

Cover the salt

If outdoor storage is used, the salt must be properly covered. North American Salt Company has an easy-to-use "stockpile calculator." Salt stored in bins or on pads may be covered with a suitable waterproof material. Old tires lashed together with rope or cable and placed uniformly over the flexible cover and tied down make a suitable weighting system. Poly-cord nets are also available for tying down covers. Be sure to weight down the base of covers to keep wind from peeling them off salt piles. Timbers, including railroad ties, may be used for that purpose.

For smaller deicing salt stockpiles, the best storage is the ground level storage building. There are as many types of storage building as there are ideas. Many agencies have developed their own particular design. Buildings may be constructed of railroad ties, pressure-treated timbers, assorted lumber, old bridge timbers and decking, concrete blocks, corrugated sheet metal or various other materials on hand.

Prefabricated buildings are also available. Use pressure-treated posts and timbers in pole-type buildings. Make sure all hardware is galvanized. Concrete block buildings should be waterproofed inside. In case of open ends, cover should be supplied for exposed salt. Areas around the building must be well lighted for safe nighttime operations. On the inside of buildings, place lights to the side and high enough to keep from covering wiring or light fixtures with salt when the building is full.

Construction tips

Wind and snow are enemies of storage buildings. Design storage buildings to withstand snow loading of 25 pounds or more per square foot of roof and winds of 80 miles per hour.

The following design considerations should be taken into account to allow for effects of wind and snow:

Location and Arrangement. Use trees to help shield buildings against strong winds and snow, but avoid constructing too close to a tree line, which could cause snow to accumulate around the building.

Foundation and Anchorage. Anchor buildings securely to resist the pushing and lifting forces of wind. Generally, embed strong, pressure-treated poles four feet or more into undisturbed soil or encase in concrete. Use closer pole spacing, heavier poles and deeper embedment for very high pole

Joints and Construction Practices. Use large enough coated nails and plenty of them. Secure building corners properly, use joint connector devices and fasten rafters properly at plate lines. Whole roof and wall sections may blow off as a unit because a building literally comes apart at the seams when not properly secured. Avoid skimpy knee bracing, poor location of crossties, poorly fastened joints or framing members that are too small. Poor construction causes many building failures.

Building Materials. Don't use lumber with defects such as knots or splits. These may cause supports to fail, especially under the weight of heavy snow. Failure of a weak member puts more load stress on adjacent members, leading to their failure. Use enough nails of the proper type and length in corrugated sheeting to avoid wind damage. Use 90 to 100 screw shank nails per 100 square feet of corrugated steel roofing. One-half to two-thirds of the nail should be embedded in the support member. Use only exterior type plywood for sheathing, gusset plates, braces, doors and other building parts exposed to moisture and weathering.

Many public works agencies have erected dome type structures for salt storage. Most are of wood with concrete base, but some are concrete or thermospheric structures. Other popular designs offer similar advantages and some unique features such as doors at each end for easier access. Choose a design that efficiently uses interior space, with no supporting posts or beams to get in the way. Sloping walls that accommodate the natural angle of repose (32) of deicing salt helps minimize pressure on walls. The shape of the building and proper positioning can lessen wind resistance. Building and bin walls must withstand pushing from front-end loaders and pressure from stored salt.

The most common method of filling inside storage facilities is to dump salt directly into the building or directly in front of it and push it inside with a front-end loader.

Loading and Unloading Concerns

Operators should take care during loading and unloading to avoid spilling salt as it is being transferred onto the pile or into the truck. Chunks of salt formed as the crust of the pile breaks up should be crushed and blended into the pile and not allowed to accumulate.

Vehicle Maintenance

Fluids from equipment operation and maintenance activities also contribute to storm water contamination on a salt storage site. Any vehicle maintenance that has the potential to result in loss of fluids or solvents should be done indoors and on an impervious pad. Any spills should be immediately cleaned up and properly dispose of fluids and solvents.

Routine maintenance of vehicles will minimize many accidental spills of fluid due to hose breaks and related leaks.

Vehicle washing should be done in an area where the wash water can be treated or kept from discharging into a water body.

TREATMENT PRACTICES

Brine Collection and Control

Storm water runoff or brine from salt storage activities should be disposed or discharged in accordance with state and local regulatory requirements. One option is to spray it back onto the pile during dry seasons. It may also be applied to spreader loads prior to street application.

If the brine cannot be recycled or reused, proper disposal methods should be followed. In Wisconsin, interim chloride toxicity values recommended for use are 788 milligrams/liter for acute toxicity and 399 milligrams/liter for chronic toxicity.

APPENDIX A

PUBLIC WORKS YARD
QUARTERLY SITE INSPECTION CHECKLIST

Quarterly site inspections are performed to evaluate the effectiveness of controlling storm water contamination and to identify and additional measures that can be feasibly implemented. The Public Works yard Storm Water Pollution Prevention Plan identified the following areas for inspection:

1. Inspect site drainage conditions. Things to look for include the following:

   - ☐ Inspect the site for possible erosion problems.
   - ☐ Determine if drainage off the Yard has changed.
   - ☐ Are there any new areas of ponding or streaming?

Notes: _____

_____

2. Check for any potential pollution sources. These sources may include the following:

   - ☐ Inspect the outdoor material storage areas. Is there any indication of oils or greases in the area?
   - ☐ If there is any standing water at the time of inspection, is there any sheen, sludge, foam, etc?
   - ☐ Are there signs of erosion or sediment transport into inlets or off site from storage areas?
   - ☐ Is there any litter or debris not associated with normal operations (such as from snow storage)?
   - ☐ Inspect all areas of the Yard for signs of spills (oil, resins, etc.) or other contaminants.
   - ☐ Inspect the river bank for erosion, illegal dumping, or damage to silt fencing.

Notes: _____

_____

_____

3. Inspect catch basins. Things to look for include the following:

   - ☐ Check sediment buildup and schedule for cleaning if necessary (sump should be no more than 40% full).
   - ☐ Check inlet filters, if in place, and replace if needed per manufacture guidance.
   - ☐ Check for floating oils and greases. Suction off floating material if necessary.

Notes: _____

_____

_____

4. Other observations – take note of anything else at the Yard that may be of significance to the Storm Water Pollution Prevention Plan.

Signed: _____ Printed Name: _____

Title: _____ Date: _____

APPENDIX B