

2014-2016 Urban Nonpoint Source & Storm Water Program Planning Grant Summary Report Village of Little Chute, Outagamie County, WI



Prepared for the Village of Little Chute

REL Project Number: 4987-021

Date: December 22, 2016



Robert E. Lee & Associates, Inc.
Engineering • Surveying • Environmental Services

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CHAPTER 1

INTRODUCTION

In April of 2014, Robert E. Lee & Associates, Inc. (REL), on behalf of the Village of Little Chute, submitted an application for an Urban Nonpoint Source and Storm Water Planning Grant (UNPS&SW) to the Wisconsin Department of Natural Resources (WDNR). Soon after, the Village received a UNPS&SW grant from the WDNR in the amount of \$64,260. The Village contracted with REL to perform the storm water planning tasks laid out within the grant application, which included the following:

- ◆ Update the Village's construction site erosion control and post-construction storm water management ordinances
- ◆ Perform the Village-wide water quality necessary to illustrate the current level of compliance with the WDNR's updated TMDL water quality requirements.
- ◆ Update the Village's existing peak flow modeling to current conditions and to incorporate the more current NOAA Atlas 14, 24-hour storm events
- ◆ Identify and prioritize possible stream restoration projects in order to better prevent erosion and sedimentation of the downstream waterways.
- ◆ Review the Village's current illicit discharge screening program and update the program and mapping as necessary to meet current WDNR requirements for illicit discharge screening.
- ◆ Research and incorporate current WDNR TMDL requirements into Village policies and ordinances. Identify possible dedicated revenue sources to aid in the implementation of the TMDL requirements.

The following report summarizes how each of these tasks were completed and details the findings based on the work that was performed.

CHAPTER 2

CONSTRUCTION SITE EROSION CONTROL AND POST-CONSTRUCTION STORM WATER MANAGEMENT ORDINANCE UPDATES

The Village of Little Chute originally adopted both construction site erosion control and post-construction storm water management ordinances on December 19, 2007. Per the Village's WPDES General Permit (WI-S050075-2) the Village is required to update their ordinances to be in-line with the WDNR's model ordinances dated April 2015.

In order to update the Village's construction site erosion control and post-construction storm water management ordinances appropriately, REL cross-referenced the Village's original ordinances against the WDNR's current model ordinances. At a minimum, the Village's revised code needed to be at least as stringent as the WDNR's model ordinance. The proposed ordinances were also cross-referenced with the model ordinances released by the Northeast Wisconsin Stormwater Consortium (NEWSC) in March of 2016 in order to verify that the proposed ordinance changes would be in-line with other municipalities in the area as well.

Many small updates were made but the only significant variation from the WDNR's model ordinance was that the Village requested that the post-construction water quality and peak flow requirements become applicable for any construction site that disturbs 1 acre or more of land and also for any construction site that results in the cumulative addition of 20,000 square feet or greater of impervious surfaces. This change was made in order to be consistent with the model ordinance released by NEWSC and in order to give the Village the ability to capture more TSS removal in the portions of the Village that do not currently meet the TMDL pollutant removal requirements.

The draft ordinances were reviewed by the WDNR and approved through an email correspondence dated October 20, 2016. This emailed approval is included in Appendix A. As of the date of this report, the Village was in the process of adopting the proposed ordinance updates. The proposed ordinances are also included in Appendix A.

APPENDIX A – CONSTRUCTION SITE

- WDNR Approval E-Mail
- Updated Construction Site Erosion Control & Post-Construction Storm Water Management Ordinances

Aaron J. Breitenfeldt

From: Minser, Amy J - DNR <Amy.Minser@wisconsin.gov>
Sent: Thursday, October 20, 2016 3:05 PM
To: Aaron J. Breitenfeldt
Cc: Jared G. Schmidt; Fischer, Anthony R - DNR
Subject: RE: Village of Little Chute Storm Water Ordinances

The content looks fine now.

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Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Amy J. Minser, P.E.

Phone: (920) 662-5461

amy.minser@wisconsin.gov

From: Aaron J. Breitenfeldt [mailto:abreitenfeldt@releeinc.com]
Sent: Thursday, October 20, 2016 2:52 PM
To: Minser, Amy J - DNR
Cc: Jared G. Schmidt; Fischer, Anthony R - DNR
Subject: RE: Village of Little Chute Storm Water Ordinances

Thanks Amy, see below for my responses and attached for the revised ordinance. I highlighted in yellow the changes that were made. Please let me know if you have any additional comments. If not, I will have the Village finalize these ordinances.

Thanks,



Aaron Breitenfeldt, P.E. - Robert E. Lee & Associates, Inc.

920-662-9641

abreitenfeldt@releeinc.com

From: Minser, Amy J - DNR [mailto:Amy.Minser@wisconsin.gov]
Sent: Thursday, October 20, 2016 12:00 PM
To: Aaron J. Breitenfeldt <abreitenfeldt@releeinc.com>
Cc: Jared G. Schmidt <jschmidt@releeinc.com>; Fischer, Anthony R - DNR <Anthony.Fischer@wisconsin.gov>
Subject: RE: Village of Little Chute Storm Water Ordinances

Aaron,

I've reviewed the draft ordinances on behalf of Tony and have the following comments:

1. p. 2 Paragraph (d) pertaining to 1 and 2 family residential. The location of this paragraph is confusing—was it intended to be with the exemptions? For simplicity the Village may want to hold residential construction under 1 acre (and not part of a common plan of development) to the same standard as larger sites. **→I slid this paragraph to the section below where it discusses the items that this code does not apply to. I think that makes more sense.**
2. P. 6 Delete 34-809 (c)(1) and (2) as this was old code - **deleted**

3. P. 7, the preventative measures in 151.11(6m)(c) and implementation requirements of 151.11(8) appear to be missing from performance standards, please add **added both of these sections**
4. P. 27, is it the Village's intention to omit the exemption from infiltration provided in NR 151.124((4)(c)(2)? – **No, I added this section.**

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Amy J. Minser, P.E.

Phone: (920) 662-5461

amy.minser@wisconsin.gov

From: Aaron J. Breitenfeldt [<mailto:abreitenfeldt@releeinc.com>]

Sent: Thursday, October 20, 2016 10:02 AM

To: Fischer, Anthony R - DNR

Cc: Minser, Amy J - DNR; Jared G. Schmidt

Subject: RE: Village of Little Chute Storm Water Ordinances

Good Morning Tony, I just wanted to check in and see if you have had a chance to review the attached ordinance updates at all for the Village of Little Chute. Please let me know.

Thank you,



Aaron Breitenfeldt, P.E. - Robert E. Lee & Associates, Inc.

920-662-9641

abreitenfeldt@releeinc.com

From: Aaron J. Breitenfeldt

Sent: Monday, July 18, 2016 4:58 PM

To: Anthony.Fischer@wisconsin.gov

Cc: 'Minser, Amy J - DNR' <Amy.Minser@wisconsin.gov>; Jared G. Schmidt <jschmidt@releeinc.com>

Subject: Village of Little Chute Storm Water Ordinances

Hi Tony, I am working with the Village of Little Chute to revise their storm water management and erosion control ordinances. I have also been in contact with Amy Minser on these ordinances and she had asked that I send these to you for your review.

I have left all of the changes from their original ordinance in red and I have the old language crossed out where necessary. The only major variation from the WDNR model ordinances is that post construction TSS and peak flow requirements kick in at 1 acre and/or the addition of 20,000 square feet of impervious surface creation.

Please let me know your thoughts on the ordinance once you have a chance to review them and we will get this finalized and adopted.

Thanks for your help,



Aaron Breitenfeldt, P.E. | Civil/Municipal Engineer
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UPDATED CONSTRUCTION SITE EROSION CONTROL & POST-CONSTRUCTION STORM WATER MANAGEMENT ORDINANCES

ARTICLE VIII. - CONSTRUCTION SITE EROSION CONTROL

DIVISION 1. - GENERALLY

Sec. 34-771. - Authority.

- (a) This article is adopted under the authority granted by Wis. Stats. § 61.354. This article supersedes all provisions of an ordinance previously enacted under Wis. Stats. § 61.35, that relates to construction site erosion control. Except as otherwise specified in Wis. Stats. §§ 61.35, 61.354, applies to this article and to any amendments to this article.
- (b) The provisions of this article are deemed not to limit any other lawful regulatory powers of the same governing body.
- (c) The village board hereby designates the community development department and public works department to administer and enforce the provisions of this article.
- (d) The requirements of this article do not pre-empt more stringent erosion and sediment control requirements that may be imposed by any of the following:
 - (1) State department of natural resources administrative rules, permits or approvals including those authorized under Wis. Stats. §§ 281.16 and 283.33.
 - (2) Targeted nonagricultural performance standards promulgated in rules by the state department of natural resources under Wis. Admin. Code § NR 151.004.

(Code 2006, § 15-5-1; Ord. No. 16(Ser. of 2007), § 1, 12-19-2007)

Sec. 34-772. - Findings of fact.

The village board finds that runoff from land disturbing construction activity carries a significant amount of sediment and other pollutants to the waters of the state in the village.

(Code 2006, § 15-5-2(a); Ord. No. 16(Ser. of 2007), § 2, 12-19-2007)

Sec. 34-773. - Purpose.

It is the purpose of this article to further the maintenance of safe and healthful conditions; prevent and control water pollution; prevent and control soil erosion; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth, by minimizing the amount of sediment and other pollutants carried by runoff or discharged from land disturbing construction activity to waters of the state in the village.

(Code 2006, § 15-5-2(b); Ord. No. 16(Ser. of 2007), § 3, 12-19-2007)

Sec. 34-774. - Applicability and jurisdiction.

- (a) Article applicability to land disturbing activities; exception.
 - (1) This article applies to the following land disturbing construction activities except as provided under subsection (a)(2) of this section:

- a. A construction site, which has 4,000 square feet or greater of land disturbing construction activity.
 - b. A construction site, which has 100 cubic yards or greater of excavation volume, filling volume, or some combination of excavation and filling volume.
 - c. A construction site, which has 100 linear feet or greater of land disturbance to a highway, street, driveway, swale, ditch, waters of the state, wetland, protective area, or other nonagricultural drainage facility which conveys concentrated flow. Wetlands shall be delineated in accordance with Wis. Admin. Code § NR 103.08(1m).
- (2) This article does not apply to the following:
- a. A construction project that is exempted by federal statutes or regulations from the requirement to have a national pollutant discharge elimination system permit issued under 40 CFR 122, for land disturbing construction activity.
 - b. Nonpoint discharges from agricultural activity areas.
 - c. Nonpoint discharges from silviculture activities.
 - d. Mill and crush operations.
 - e. Land disturbing construction activity that includes the construction of one- and two-family residential dwellings that are not part of a larger common plan of development or sale and that result in less than one acre of disturbance. These sites are regulated by the Village of Little Chute Building Inspection Department.
- (3) Notwithstanding the applicability requirements in subsection (a)(1) of this section, this article applies to construction sites of any size that, in the opinion of the community development department or public works department, are likely to result in runoff that exceeds the safe capacity of the existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.
- (b) Jurisdiction - This article applies to land disturbing construction activity on construction sites located within the boundaries and jurisdiction of the village.
- (c) Exclusions - This article is not applicable to activities conducted by a state agency, as defined under Wis. Stats. § 227.01(1), but also including the office of district attorney, which is subject to the state plan promulgated or a memorandum of understanding entered into under Wis. Stats. § 281.33(2).

(Code 2006, § 15-5-3; Ord. No. 16(Ser. of 2007), § 4, 12-19-2007)

Sec. 34-775. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Administering authority means a governmental employee, or a regional planning commission empowered under Wis. Stats. § 61.354, that is designated by the village board to administer this article.

Agricultural activity area means the part of the farm where there is planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or outside yarding of livestock, including sod farms and silviculture. Practices in this area may include waterways, drainage ditches, diversions, terraces, farm lanes, excavation, filling and similar practices. The agricultural activity area does not include the agricultural production area.

Agricultural production area means the part of the farm where there is concentrated production activity or impervious surfaces. The term "agricultural production areas" include buildings, driveways,

parking areas, feed storage structures, manure storage structures, and other impervious surfaces. The term "agricultural production area" does not include the agricultural activity area.

Average annual rainfall means a calendar year of precipitation, excluding snow, which is considered typical. For purposes of this article, average annual rainfall means measured precipitation in Green Bay, Wisconsin, between March 29 and November 25, 1969.

Best management practice (BMP) means structural or nonstructural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

Business day means a day the office of the community development department or public works department is routinely and customarily open for business.

Cease and desist order means a court-issued order to halt land disturbing construction activity that is being conducted without the required permit.

Common plan of development or sale means a development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan. The term "common plan of development or sale" includes, but is not limited to, subdivision plats, certified survey maps, and other developments.

Construction site means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of development.

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

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

Division of land means the creation from one or more parcels or building sites of additional parcels or building sites where such creation occurs at one time or through the successive partition within a five year period.

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

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

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

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

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

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

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

Maximum extent practicable (MEP) means the highest level of performance that is achievable but is not equivalent to a performance standard identified in this ordinance as determined in accordance with section 34-776 of this ordinance.

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

Permit means a written authorization made by the community development department or public works department to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.

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

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

Protective area has the meaning given in section 34-949(c)(4).

Responsible party means any entity holding fee title to the property or performing services to meet the performance standards of this article through a contract or other agreement.

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

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

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

- (1) Is designed or used for collecting water or conveying runoff.
- (2) Is not part of a combined sewer system.
- (3) Discharges directly or indirectly to waters of the state.

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

Stop work order means an order issued by the community development department or public works department which requires that all construction activity on the site be stopped.

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

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

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

(Code 2006, § 15-5-4; Ord. No. 16(Ser. of 2007), § 5, 12-19-2007)

Sec. 34-776. – Applicability of Maximum Extent Practicable.

Maximum extent practicable applies when a person who is subject to a performance standard of this ordinance demonstrates to the Village's satisfaction that a performance standard is not achievable and that a lower level of performance is appropriate. In making the assertion that a performance standard is not achievable and that a level of performance different from the performance standard is the maximum extent practicable, the responsible party shall take into account the best available technology,

cost effectiveness, geographic features, and other competing interests such as protection of public safety and welfare, protection of endangered and threatened resources, and preservation of historic properties.

Sec. 34-777. - Fee schedule.

The fees referred to in other sections of this article shall be established by the village board and may from time to time be modified by resolution. A schedule of the fees established by the village board shall be available for review in the community development department and public works department.

(Ord. No. 16(Ser. of 2007), § 10, 12-19-2007)

Sec. 34-778. - Inspection.

If land disturbing construction activities are being carried out without a permit required by this article, the community development department or public works department may enter the land pursuant to the provisions of Wis. Stats. § 66.0119(1)—(3).

(Code 2006, § 15-5-9; Ord. No. 16(Ser. of 2007), § 11, 12-19-2007)

Secs. 34-779—34-807. - Reserved.

DIVISION 2. - STANDARDS

Sec. 34-808. - Technical standards.

- (a) Design criteria, standards and specifications. All BMPs required to comply with this article shall meet the design criteria, standards and specifications based on any of the following:
 - (1) Design guidance and technical standards identified or developed by the state department of natural resources under Wis. Admin. Code ch. NR 151, subch. V (Wis. Admin. Code §§ NR 151.30—151.32).
 - (2) Soil loss prediction tools (such as the Universal Soil Loss Equation (USLE)) when using an appropriate rainfall or runoff factor (also referred to as the R factor) or an appropriate design storm and precipitation distribution, and when considering the geographic location of the site and the period of disturbance.
 - (3) Technical standards and other guidance identified within the stormwater reference guide.
 - (4) For this article, average annual basis is calculated using the appropriate annual rainfall or runoff factor, also referred to as the R factor, or an equivalent design storm using a type II distribution, with consideration given to the geographic location of the site and the period of disturbance.
- (b) Other standards - Other technical standards not identified or developed in subsection (a) of this section, may be used provided that the methods have been approved by the community development department or public works department.

(Code 2006, § 15-5-5; Ord. No. 16(Ser. of 2007), § 6, 12-19-2007)

Sec. 34-809. - Performance standards.

- (a) Responsible party - The responsible party shall implement an erosion and sediment control plan, developed in accordance with division 4 of this article that incorporates the requirements of this section.

- (b) Plan - A written erosion and sediment control plan shall be developed in accordance with division 4 of this article and implemented for each construction site.
- (c) Requirements - The erosion and sediment control plan shall meet the following minimum requirements to the maximum extent practicable:
 - (1) Where appropriate, the plan shall include erosion and sediment controls to do all of the following to the maximum extent practicable:
 - a. Prevent tracking of sediment from the construction site onto roads and other paved surfaces.
 - b. Prevent the discharge of sediment as part of site dewatering.
 - c. Protect the separate storm drain inlet structure from receiving sediment.
 - d. Prevent the discharge of sediment from disturbed areas into adjacent waters of the state.
 - e. Prevent the discharge of sediment eroding from soil stockpiles existing for more than 7 days.
 - f. Prevent the discharge of sediment from erosive flows at outlets and in downstream channels.
 - g. Prevent the transport by runoff into the waters of the state of untreated wash water from vehicle and wheel washing.
 - (2) The use, storage and disposal of building materials, chemicals, cement, concrete truck washout, litter, sanitary waste, and other compounds and materials used on the construction site shall be managed during the construction period, to prevent their entrance into storm sewers and waters of the state. However, projects that require the placement of these materials in waters of the state, such as constructing bridge footings or BMP installations, are not prohibited by this subsection.
 - (3) Sediment Performance Standards - In addition to the erosion and sediment control practices under par. (3), the following erosion and sediment control practices shall be employed:
 - a. BMPs that, by design, discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.
 - b. No person shall be required to employ more BMPs than are needed to meet a performance standard in order to comply with maximum extent practicable. Erosion and sediment control BMPs may be combined to meet the requirements of this paragraph. Credit may be given toward meeting the sediment performance standard of this paragraph for limiting the duration or area, or both, of land disturbing construction activity, or for other appropriate mechanisms.
 - c. Notwithstanding subsection (a), if BMPs cannot be designed and implemented to meet the sediment performance standard, the erosion and sediment control plan shall include a written, site- specific explanation of why the sediment performance standard cannot be met and how the sediment load will be reduced to the maximum extent practicable.
- (d) Preventive Measures
 - (1) Maintenance of existing vegetation, especially adjacent to surface waters whenever possible.
 - (2) Minimization of soil compaction and preservation of topsoil.
 - (3) Minimization of land disturbing construction activity on slopes of 20 percent or more.
 - (4) Development of spill prevention and response procedures.
- (e) Location - The BMPs used to comply with this section shall be located prior to runoff entering waters of the state.

- (f) Implementation – The BMP's used to comply with this section shall be implemented as follows:
- (1) Erosion and sediment control practices shall be constructed or installed before land disturbing construction activities begin in accordance with the erosion and sediment control plan developed in Sec. 34-809.(c).
 - (2) Erosion and sediment control practices shall be maintained until final stabilization.
 - (3) Final stabilization activity shall commence when land disturbing activities cease and final grade has been reached on any portion of the site.
 - (4) Temporary stabilization activity shall commence when land disturbing activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.
 - (5) BMP's that are no longer necessary for erosion and sediment control shall be removed by the responsible party.
- (g) Alternate requirements - The community development department or public works department may establish requirements more stringent than those set forth in this section if the community development department or public works department determines that an added level of protection is needed for sensitive resources.

(Code 2006, §§ 15-5-6, 15-5-7; Ord. No. 16(Ser. of 2007), § 7, 12-19-2007)

Secs. 34-810—34-826. - Reserved.

DIVISION 3. - PERMITTING REQUIREMENTS, PROCEDURES AND FEES

Sec. 34-827. - Required.

No responsible party may commence a land disturbing construction activity subject to this article without receiving prior approval of an erosion and sediment control plan for the site and a permit from the community development department or public works department.

(Code 2006, § 15-5-8(a); Ord. No. 16(Ser. of 2007), § 8(1), 12-19-2007)

Sec. 34-828. - Application and fees.

At least one responsible party desiring to undertake a land disturbing construction activity subject to this article shall submit an application for a permit and an erosion and sediment control plan that meets the requirements of division 4 of this article and shall pay fees identified in section 34-776 to the community development department or public works department. By submitting an application, the applicant is authorizing the community development department or public works department to enter the site to obtain information required for the review of the erosion and sediment control plan.

(Code 2006, § 15-5-8(a); Ord. No. 16(Ser. of 2007), § 8(2), 12-19-2007)

Sec. 34-829. - Review and approval of permit application.

The community development department or public works department shall review any permit application that is submitted with an erosion and sediment control plan, and the required fee. The following approval procedure shall be used:

- (1) Within 20 business days of the receipt of a complete permit application, as required by section 34-828, the community development department or public works department shall inform the

applicant whether the application and plan are approved or disapproved based on the requirements of this article.

- (2) If the permit application and plan are approved, the community development department or public works department shall issue the permit.
- (3) If the permit application or plan is disapproved, the community development department or public works department shall state, in writing, the reasons for disapproval.
- (4) The community development department or public works department may request additional information from the applicant. If additional information is submitted, the community development department or public works department shall have 20 business days from the date the additional information is received to inform the applicant that the plan is either approved or disapproved.
- (5) Failure by the community development department or public works department to inform the permit applicant of a decision within 20 business days of a required submittal shall be deemed to mean approval of the submittal and the applicant may proceed as if a permit had been issued.

(Code 2006, § 15-5-8(d); Ord. No. 16(Ser. of 2007), § 8(3), 12-19-2007)

Sec. 34-830. - Surety bond.

As a condition of approval and issuance of the permit, the community development department or public works department may require the applicant to deposit a surety bond, cash escrow, or irrevocable letter of credit to guarantee a good faith execution of the approved erosion control plan and any permit conditions.

(Code 2006, § 15-5-8(e)(2); Ord. No. 16(Ser. of 2007), § 8(4), 12-19-2007)

Sec. 34-831. - Requirements.

All permits shall require the responsible party to:

- (1) Notify the community development department or public works department within 48 hours of commencing any land disturbing construction activity.
- (2) Notify the community development department or public works department of completion of any BMPs within ten business days after their installation.
- (3) Obtain permission, in writing, from the community development department or public works department prior to any modification, pursuant to section 34-829, of the erosion and sediment control plan.
- (4) Install all BMPs as identified in the approved erosion and sediment control plan.
- (5) Maintain all road drainage systems, stormwater drainage systems, BMPs and other facilities identified in the erosion and sediment control plan.
- (6) Repair any siltation or erosion damage to adjoining surfaces and drainageways resulting from land disturbing construction activities and document repairs in weekly inspection reports.
- (7) Conduct construction site inspections at least once per week and within 24 hours after a precipitation event of 0.5 inches or greater. Repair or replace erosion and sediment control BMPs as necessary within 24 hours of an inspection or notification that repair or replacement is needed. Maintain, at the construction site, weekly written reports of all inspections. Weekly inspection reports shall include all of the following:

- a. Date, time and location of the construction site inspection;
 - b. The name of individual who performed the inspection;
 - c. An assessment of the condition of erosion and sediment controls;
 - d. A description of any erosion and sediment control BMP implementation and maintenance performed; and
 - e. A description of the present phase of land disturbing construction activity at the construction site.
- (8) Allow the community development department or public works department to enter the site for the purpose of inspecting compliance with the erosion and sediment control plan or for performing any work necessary to bring the site into compliance with the control plan. Keep a copy of the erosion and sediment control plan, stormwater management plan, amendments, weekly inspection reports, and permit at the construction site until permit coverage is terminated.
- (9) The permit applicant shall post the certificate of permit coverage in a conspicuous location at the construction site.

(Ord. No. 16(Ser. of 2007), § 8(5), 12-19-2007)

Sec. 34-832. - Conditions.

Permits issued under this section may include conditions established by the community development department or public works department in addition to the requirements set forth in section 34-831, where needed to ensure compliance with the performance standards in section 34-949.

(Code 2006, § 15-5-8(e)(3); Ord. No. 16(Ser. of 2007), § 8(6), 12-19-2007)

Sec. 34-833. - Duration.

Permits issued under this section shall be valid for a period of 180 days, or the length of the building permit or other construction authorizations, whichever is longer, from the date of issuance. The community development department or public works department may extend the period one or more times for up to an additional 180 days. The community development department or public works department may require additional BMPs as a condition of the extension if they are necessary to meet the requirements of this article.

(Code 2006, § 15-5-8(e)(1); Ord. No. 16(Ser. of 2007), § 8(7), 12-19-2007)

Sec. 34-834. - Maintenance.

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

(Code 2006, § 15-5-6; Ord. No. 16(Ser. of 2007), § 8(8), 12-19-2007)

Sec. 34-835. - Alternate requirements.

The community development department or public works department may prescribe requirements less stringent for applicants seeking a permit for a construction site with less than one acre of disturbance.

(Ord. No. 16(Ser. of 2007), § 8, 12-19-2007)

Secs. 34-836—34-863. - Reserved.

DIVISION 4. - PLAN STATEMENT AND AMENDMENTS

Sec. 34-864. - Requirements.

The erosion and sediment control plan required under section 34-949(b) shall comply with the stormwater reference guide and contain at a minimum the following information:

- (1) Name, address, and telephone number of the landowner and responsible parties, and of any consulting firm retained by the applicant, together with the name of the applicant's principal contact at such firm. The application shall also include start and end dates for construction.
- (2) A legal description of the property proposed to be developed.
- (3) Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a United States Geological Service 7.5 minute series topographic map.
- (4) A site map with property lines, disturbed limits, and drainage patterns.
- (5) Total area of the site and total area of the construction site that is expected to be disturbed by construction activities. Include a description of intended sequence of major land disturbing construction activities for major portions of the construction site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
- (6) Calculations to show the compliance with the performance standard in section 34-809.
- (7) Existing data describing the surface soil as well as subsoils.
- (8) Depth to groundwater, as indicated by Natural Resources Conservation Service soil information where available.
- (9) Name of immediate named receiving water from the United States Geological Service 7.5 minute series topographic maps.
- (10) The erosion and sediment control plan shall include a site map. The site map shall include the following items and shall be at a scale not greater than 100 feet per inch and at a contour interval not to two five feet.
 - a. Existing topography, vegetative cover, natural and engineered drainage systems, roads and surface waters. Lakes, streams, wetlands, channels, ditches and other watercourses on or immediately adjacent to the site shall be shown. Any identified 100-year flood plans, flood fringes and floodways shall also be shown.
 - b. Boundaries of the construction site.
 - c. Drainage patterns and approximate slopes anticipated after major grading activities.
 - d. Areas of soil disturbance.
 - e. Location of major structural and non-structural controls identified in the erosion and sediment control plan.
 - f. Location of areas where stabilization BMPs will be employed.

- g. Areas which will be vegetated following land disturbing construction activities.
 - h. Area(s) and location(s) of wetland on the construction site, and locations where storm water is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.
 - i. Area(s) used for infiltration of post-construction storm water runoff.
 - j. And alphanumeric or equivalent grid overlying the entire construction site map.
- (11) Each erosion and sediment control plan shall include a description of appropriate control BMPs that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The erosion and sediment control plan shall clearly describe the appropriate erosion and sediment control BMPs for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control BMPs will be implemented. The description of erosion and sediment control BMPs shall include, when appropriate, the following minimum requirements:
- a. Description of interim and permanent stabilization practices, including a BMP implementation schedule. The erosion and sediment control plan shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized.
 - b. Description of structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the site. Unless otherwise specifically approved in writing by the [administering authority], structural measures shall be installed on upland soils.
 - c. Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.
 - d. Trapping of sediment in channelized flow.
 - e. Staging land disturbing construction activities to limit exposed soil areas subject to erosion.
 - f. Protection of downslope drainage inlets where they occur.
 - g. Minimization of tracking at all vehicle and equipment entry and exit locations of the construction site.
 - h. Clean up of off-site sediment deposits.
 - i. Proper disposal of building and waste material.
 - j. Stabilization of drainage ways.
 - k. Installation of permanent stabilization practices as soon as possible after final grading.
 - l. Minimization of dust to the maximum extent practicable.
- (12) The erosion and sediment control plan shall require that velocity dissipation devices be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.

(Code 2006, § 15-5-8(b), (c); Ord. No. 16(Ser. of 2007), § 9(1), 12-19-2007)

Sec. 34-865. - Erosion and sediment control plan statement.

For each construction site identified under section 34-920(a)(3), an erosion and sediment control plan statement shall be prepared. This statement shall be submitted to the community development department or public works department. The control plan statement shall briefly describe the site, the

BMPs that will be used to meet the requirements of the ordinance, and a site map. Further, it shall also include the best management practices that will be used to meet the requirements of this article, including the site development schedule.

(Code 2006, § 15-5-8; Ord. No. 16(Ser. of 2007), § 9(2), 12-19-2007)

Sec. 34-866. - Amendments.

The applicant shall amend the plan if any of the following occur:

- (1) There is a change in design, construction, operation or maintenance at the site which has the reasonable potential for the discharge of pollutants to waters of the state and which has not otherwise been addressed in the plan.
- (2) The actions required by the plan fail to reduce the impacts of pollutants carried by construction site runoff.
- (3) The community development department or public works department notifies the applicant of changes needed in the plan.

(Ord. No. 16(Ser. of 2007), § 9(3), 12-19-2007)

Sec. 34-867. - Alternate requirements.

The community development department or public works department may prescribe requirements less stringent for applicants seeking a permit for a construction site with less than one acre of disturbance.

(Ord. No. 16(Ser. of 2007), § 9(4), 12-19-2007)

Secs. 34-868—34-897. - Reserved.

DIVISION 5. - ENFORCEMENT AND APPEALS

Sec. 34-898. - Enforcement.

- (a) The community development department or public works department may post a stop work order if any of the following occurs:
 - (1) Any land disturbing construction activity regulated under this article is being undertaken without a permit.
 - (2) The erosion and sediment control plan is not being implemented in a good faith manner.
 - (3) The conditions of the permit are not being met.
- (b) If the responsible party does not cease activity as required in a stop work order posted under this section or fails to comply with the erosion and sediment control plan or permit conditions, the community development department or public works department may revoke the permit.
- (c) If the responsible party, where no permit has been issued, does not cease the activity after being notified by the community development department or public works department, or if a responsible party violates a stop work order posted under subsection (a) of this section, the community

development department or public works department may request the village attorney to obtain a cease and desist order in any court with jurisdiction.

- (d) The community development department, public works department, or the board of appeals may retract the stop work order issued under subsection (a) of this section or the permit revocation under subsection (b) of this section.
- (e) After posting a stop work order under subsection (a) of this section, the community development department or public works department may issue a notice of intent to the responsible party of its intent to perform work necessary to comply with this article. The community development department or public works department may go on the land and commence the work after issuing the notice of intent. The costs of the work performed under this subsection by the community development department or public works department, plus interest at the rate authorized by the village board shall be billed to the responsible party or recovered from the surety bond, cash escrow, or irrevocable letter of credit. In the event a responsible party fails to pay the amount due, the clerk shall enter the amount due on the tax rolls and collect as a special assessment against the property pursuant to Wis. Stats. ch. 66, subch. VII.
- (f) Any person violating any of the provisions of this article shall be subject to a forfeiture of not less than \$25.00 nor more than \$500.00 and the costs of prosecution for each violation. Each day a violation exists shall constitute a separate offense.
- (g) Compliance with the provisions of this article may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctive proceedings.

(Code 2006, § 15-5-10; Ord. No. 16(Ser. of 2007), § 12, 12-19-2007)

Sec. 34-899. - Appeals.

- (a) The board of appeals created pursuant to section 2-149 and Wis. Stats. § 61.354(4)(b):
 - (1) Shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the community development department or public works department in administering this article except for cease and desist orders obtained under section 34-898(c);
 - (2) Upon appeal, may authorize variances from the provisions of this article which are not contrary to the public interest and where owing to special conditions a literal enforcement of the provisions of the article will result in unnecessary hardship; and
 - (3) Shall use the rules, procedures, duties and powers authorized by statute in hearing and deciding appeals and authorizing variances.
- (b) Appeals to the board of appeals may be taken by any aggrieved person or by any office, department, board, or bureau of the village affected by any decision of the community development department or public works department.

(Code 2006, § 15-5-11; Ord. No. 16(Ser. of 2007), § 13, 12-19-2007)

Secs. 34-900. - Severability.

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

Secs. 34-901—34-916. - Reserved.

ARTICLE IX. - POST CONSTRUCTION STORMWATER MANAGEMENT

DIVISION 1. - GENERALLY

Sec. 34-917. - Authority.

- (a) This article is adopted by the village board under the authority granted by Wis. Stats. § 61.354. This article supersedes all provisions of an ordinance previously enacted under Wis. Stats. § 61.35, that relate to stormwater management regulations. Except as otherwise specified in Wis. Stats. § 61.354, Wis. Stats. § 61.35 applies to this article and to any amendments to this article.
- (b) The provisions of this article are deemed not to limit any other lawful regulatory powers of the same governing body.
- (c) The village board hereby designates the community development department and public works department to administer and enforce the provisions of this article.
- (d) The requirements of this article do not preempt more stringent stormwater management requirements that may be imposed by any of the following:
 - (1) State department of natural resources administrative rules, permits or approvals including those authorized under Wis. Stats. §§ 281.16 and 283.33.
 - (2) Targeted nonagricultural performance standards promulgated in rules by the state department of natural resources under Wis. Admin. Code § NR 151.004.

(Code 2006, § 15-5-20; Ord. No. 17(Ser. of 2007), § 1, 12-19-2007)

Sec. 34-918. - Findings of fact.

The village board finds that uncontrolled, post-construction runoff has a significant impact upon water resources and the health, safety and general welfare of the community and diminishes the public enjoyment and use of natural resources. Specifically, uncontrolled post-construction runoff can:

- (1) Degrade physical stream habitat by increasing stream bank erosion, increasing streambed scour, diminishing groundwater recharge, diminishing stream base flows and increasing stream temperature.
- (2) Diminish the capacity of lakes and streams to support fish, aquatic life, recreational and water supply uses by increasing pollutant loading of sediment, suspended solids, nutrients, heavy metals, bacteria, pathogens and other urban pollutants.
- (3) Alter wetland communities by changing wetland hydrology and by increasing pollutant loads.
- (4) Reduce the quality of groundwater by increasing pollutant loading.
- (5) Threaten public health, safety, property and general welfare by overtaxing storm sewers, drainage ways, and other minor drainage facilities.
- (6) Threaten public health, safety, property and general welfare by increasing major flood peaks and volumes.
- (7) Undermine floodplain management efforts by increasing the incidence and levels of flooding.

(Code 2006, § 15-5-21(a); Ord. No. 17(Ser. of 2007), § 2, 12-19-2007)

Sec. 34-919. - Purpose and intent.

- (a) Purpose - The general purpose of this article is to establish long term, post-construction runoff management requirements that will diminish the threats to public health, safety, welfare and the aquatic environment. Specific purposes are to:
- (1) Further the maintenance of safe and healthful conditions.
 - (2) Prevent and control the adverse effects of stormwater; prevent and control soil erosion; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth.
 - (3) Control exceedance of the safe capacity of existing drainage facilities and receiving water bodies; prevent undue channel erosion; control increases in the scouring and transportation of particulate matter; and prevent conditions that endanger downstream property.
- (b) Intent - It is the intent of the village board that this article regulates post-construction stormwater discharges to waters of the state. This article may be applied on a site-by-site basis. The village board recognizes, however, that the preferred method of achieving the stormwater performance standards set forth in this article is through the preparation and implementation of comprehensive, systems-level stormwater management plans that cover hydrologic units, such as watersheds, on a municipal and regional scale. Such plans may prescribe regional stormwater devices, practices or systems, any of which may be designed to treat runoff from more than one site prior to discharge to waters of the state. Where such plans are in conformance with the performance standards developed under Wis. Stats. § 281.16, for regional stormwater management measures and have been approved by the village board, it is the intent of this article that the approved plan be used to identify post-construction management measures acceptable for the community.

(Code 2006, § 15-5-21(b); Ord. No. 17(Ser. of 2007), § 3, 12-19-2007)

Sec. 34-920. - Applicability; jurisdiction; exclusions.

- (a) Applicability.
- (1) Where not otherwise limited by law, this article applies to all post-construction sites, unless the site is otherwise exempt under subsection (b) of this section. Post construction sites include those sites preexisting the adoption of the ordinance from which this article is derived and those sites completed following of the adoption of the ordinance from which this article is derived.
 - (2) A post-construction site that meets any of the criteria in this subsection is exempt from the requirements of this article.
 - a. One-family and two-family residential dwellings that are not part of a larger common plan of development or sale and that result in less than one acre of disturbance.
 - b. Nonpoint discharges from agricultural activity areas.
 - c. Nonpoint discharges from silviculture activities.
 - d. Mill and crush operations.
 - (3) Notwithstanding the applicability requirements in this subsection, this article applies to post-construction sites of any size that, in the opinion of the community development department or public works department, is likely to result in runoff that exceeds the safe capacity of the existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.
- (b) Jurisdiction - This article applies to post construction sites within the boundaries and jurisdiction of the village. Post construction sites include those sites preexisting the adoption of the ordinance from

which this article is derived and those sites completed following the adoption of the ordinance from which this article is derived.

- (c) Exclusions - This article is not applicable to activities conducted by a state agency, as defined under Wis. Stats. § 227.01(1), but also including the office of district attorney, which is subject to the state plan promulgated or a memorandum of understanding entered into under Wis. Stats. § 281.33(2).

(Code 2006, §§ 15-5-22, 15-5-24; Ord. No. 17(Ser. of 2007), § 4, 12-19-2007)

Sec. 34-921. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Administering authority means a governmental employee, or a regional planning commission empowered under Wis. Stats. § 61.354, that is designated by the village board to administer this article.

Agricultural activity area means the part of the farm where there is planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or outside yarding of livestock, including sod farms and silviculture. Practices in this area may include waterways, drainage ditches, diversions, terraces, farm lanes, excavation, filling and similar practices. The term "agricultural activity area" does not include the agricultural production area.

Agricultural production area means the part of the farm where there is concentrated production activity or impervious surfaces. The term "agricultural production areas" include buildings, driveways, parking areas, feed storage structures, manure storage structures, and other impervious surfaces. The term "agricultural production area" does not include the agricultural activity area.

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

Average annual rainfall means a calendar year of precipitation as determined by the Wisconsin Department of Natural Resources for users of models such as WinSLAMM, P8 or equivalent methodology. For purposes of this article, average annual rainfall means measured precipitation in Green Bay, Wisconsin between March 29 and November 25, 1969.

Best management practice (BMP) means structural or nonstructural measures, practices, techniques or devices employed to avoid or minimize sediment or pollutants carried in runoff to waters of the state.

Business day means a day the office of the community development department or public works department is routinely and customarily open for business.

Cease and desist order means a court-issued order to halt land disturbing construction activity that is being conducted without the required permit.

Combined sewer system means a system for conveying both sanitary sewage and stormwater runoff.

Common plan of development or sale means a development or sale where multiple, separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan. The term "common plan of development or sale" includes, but is not limited to, subdivision plats, certified survey maps, and other developments.

Connected imperviousness means an impervious surface that is directly connected to a separate storm sewer or water of the state via an impervious flow path.

Construction site means an area upon which one or more land disturbing construction activities occur, or have occurred, including areas that are part of a larger common plan of development or sale.

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

Conservation Service (NRCS) calculated Outagamie County Atlas 14 precipitation depths for the Midwest/Southeast (MSE) 4 precipitation distribution for the village are:

- (1) One-year, 2.14 inches;
- (2) Two-year, 2.45 inches;
- (3) Five-year, 3.01 inches;
- (4) Ten-year, 3.51 inches;
- (5) Twenty five-year, 4.24 inches;
- (6) Fifty-year, 4.85 inches; and
- (7) One hundred-year, 5.5 inches.

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

Division of land means the creation from one or more parcels or building sites of additional parcels or building sites where such creation occurs at one time or through the successive partition within a five-year period.

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

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

Exceptional resource waters means waters listed in Wis. Admin. Code § NR 102.11.

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

Filtering layer means soil that has at least a 3-foot deep layer with at least 20 percent fines; or at least a 5-foot layer with at least 10 percent fines; or an engineered soil with an equivalent level of protection as determined by the regulatory authority for the site.

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

Financial guarantee means a performance bond, maintenance bond, surety bond, irrevocable letter of credit, or similar guarantees submitted to the community development department or public works department by the responsible party to ensure that requirements of the ordinance are carried out in compliance with the stormwater management plan.

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

Highway has the meaning given in Wis. Stats. § 340.01(22).

Highway reconditioning has the meaning given in Wis. Stats. § 84.013(1)(b).

Highway reconstruction has the meaning given in Wis. Stats. § 84.013(1)(c).

Highway resurfacing has the meaning given in Wis. Stats. § 84.013(1)(d).

Impervious surface means an area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, parking lots and streets are examples of areas that typically are impervious. Gravel surfaces are considered impervious, unless specifically designed to encourage infiltration.

Infill area means a new development area less than five acres in size that is located within existing urban sewer service areas, surrounded by already existing development or existing development and natural or manmade features where development cannot occur.

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

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

Karst feature means an area or surficial geologic feature subject to bedrock dissolution so that it is likely to provide a conduit to groundwater, and may include caves, enlarged fractures, mine features, exposed bedrock surfaces, sinkholes, springs, seeps or swallets.

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

Maintenance agreement means a legal document that provides for longterm maintenance of stormwater management and best management practices.

Maximum extent practicable (MEP) means the highest level of performance that is achievable but is not equivalent to a performance standard identified in the ordinance as determined in accordance with Sec. 34-922 of this ordinance.

Minor reconstruction of a highway means reconstruction of a highway that is limited to 1.5 miles in continuous or aggregate total length of realignment and that does not exceed 100 feet in width of roadbed widening.

New development means that portion of a post-construction site where impervious surfaces are being created or expanded. Any disturbance where the amount of impervious area for the post-development condition is greater than the predevelopment condition is classified as new development. For purposes of this article, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

Offsite means located outside the property boundary described in the permit application.

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

Ordinary high-water mark has the meaning given in Wis. Admin. Code § NR 115.03(6).

Outstanding resource waters means waters listed in Wis. Admin. Code § NR 102.10.

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

Percent fines means the percentage of a given sample of soil, which passes through a No. 200 sieve.

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

Permit means a written authorization made by the community development department or public works department to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.

Permit administration fee means a sum of money paid to the community development department or public works department by the permit applicant for the purpose of recouping the expenses incurred by the authority in administering the permit.

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

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

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

Post-construction site means a construction site created after the adoption of this article, following the completion of land disturbing construction activity and final site stabilization, and only those preexisting construction sites where the village has required construction of a stormwater management facilities including but not limited to a detention or retention basin as a condition of site plan approval, issuance of building permits, or other development.

Post-development means the extent and distribution of land cover types present after the completion of land disturbing construction activity and final site stabilization.

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

Preventive action limit has the meaning given in Wis. Admin. Code § NR 140.05(17).

Redevelopment means that portion of a post-construction site where impervious surfaces are being reconstructed, replaced, or reconfigured. Any disturbance where the amount of impervious area for the post-development condition is equal to or less than the predevelopment condition is classified as redevelopment. For purposes of this article, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

Responsible party means any person or entity holding fee title to property, or other person contracted or obligated by other agreement to implement and/or maintain post-construction stormwater BMPs, involving a post-construction site.

Routine maintenance means that portion of a post-construction site where predevelopment impervious surfaces are being maintained to preserve the original line and grade, hydraulic capacity, drainage pattern, configuration, or purpose of the facility. Remodeling of buildings and resurfacing of parking lots, streets, driveways, and sidewalks are examples of routine maintenance, provided the lower one-half of the impervious surface's granular base is not disturbed. The disturbance shall be classified as redevelopment if the lower one-half of the granular base associated with the predevelopment impervious surface is disturbed or if the soil located beneath the impervious surface is exposed. For purposes of this article, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

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

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

- (1) Is designed or used for collecting water or conveying runoff.
- (2) Is not part of a combined sewer system.
- (3) Discharges directly or indirectly to waters of the state.

Site means the entire area included in the legal description of the land on which the land disturbing construction activity occurred.

Stop work order means an order issued by the community development department or public works department which requires that all construction activity on the site be stopped.

Stormwater management plan means a comprehensive plan designed to reduce the discharge of pollutants from stormwater after the site has undergone final stabilization following completion of the construction activity.

Stormwater management system plan means a comprehensive plan designed to reduce the discharge of runoff and pollutants from hydrologic units on a regional or municipal scale.

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

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

Total maximum daily load" or "TMDL" means the amount of pollutants specified as a function of one or more water quality parameters, that can be discharged per day into a water quality limited segment and still ensure attainment of the applicable water quality standard.

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

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

Transportation facility means a public street, a public road, a public highway, a public mass transit facility, a public-use airport, a public trail, or any other public work for transportation purposes such as harbor improvements under Wis. Stats. § 85.095(1)(b).

Type II distribution means a rainfall type curve as established in the United States Department of Agriculture, Soil Conservation Service, Technical Paper 149, published 1973. The Type II curve is applicable to all of the state and represents the most intense storm pattern.

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

(Code 2006, § 15-5-23; Ord. No. 17(Ser. of 2007), § 5, 12-19-2007)

Sec. 34-922. – Applicability of Maximum Extent Practicable

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

Sec. 34-923. - Fee schedule.

The fees referred to in other sections of this article shall be established by the village board and may from time to time be modified by resolution. A schedule of the fees established by the village board shall be available for review in the community development department or public works department.

(Ord. No. 17(Ser. of 2007), § 12, 12-19-2007)

Secs. 34-924—34-947. - Reserved.

DIVISION 2. - STANDARDS

Sec. 34-948. - Technical standards.

The following methods shall be used in designing and maintaining the water quality, peak discharge, infiltration, protective area, and fueling/vehicle maintenance components of stormwater practices needed to meet the water quality standards of this article:

- (1) Technical standards identified, developed or disseminated by the state department of natural resources under Wis. Admin. Code ch. NR 151, subch. V.
- (2) Technical standards and guidance identified within the stormwater reference guide.
- (3) Where technical standards have not been identified or developed by the state department of natural resources, other technical standards may be used provided that the methods have been approved by the community development department or public works department.

(Code 2006, § 15-5-25; Ord. No. 17(Ser. of 2007), § 6, 12-19-2007)

Sec. 34-949. - Performance standards.

- (a) Responsible party - The responsible party shall implement a post-construction stormwater management plan that incorporates the requirements of this section.
- (b) Plan - A written stormwater management plan in accordance with section 34-1000 shall be developed and implemented for each post-construction site.
- (c) Maintenance of effort - For redevelopment sites where the redevelopment will be replacing older development that was subject to post-construction performance standards of NR 151 in effect on or after October 1, 2004, the responsible party shall meet the total suspended solids reduction, peak flow control, infiltration, and protective areas standards applicable to the older development or meet the redevelopment standards of this ordinance, whichever is more stringent.
- (d) Requirements - The stormwater management plan shall meet the following minimum requirements to the maximum extent practicable.
 - (1) Total suspended solids - BMPs shall be designed, installed and maintained to control total suspended solids carried in runoff from the post-construction site as follows. The total suspended solids reduction shall be based on the average annual rainfall, as compared to no runoff management controls.
 - a. For post-construction sites whereupon one acre or more of land disturbing construction activity occurs during construction; or post-construction sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces, the following are required:
 1. Reduce the total suspended solids load by 80 percent for new development.
 2. Reduce the total suspended solids load by 40 percent for redevelopment.
 3. Reduce the total suspended solids load by 80 percent for in-fill development.
 4. No total suspended solids load reduction is required for routine maintenance areas, unless runoff from the routine maintenance area discharges into a proposed water quality BMP.
 - b. For post-construction sites with less than 20,000 square feet of impervious surface disturbance, reduce the total suspended solids load using BMPs from the stormwater reference guide. These sites are not required to satisfy a numeric performance standard.
 - c. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces are required to satisfy the performance standards within subsection (d)(1)a of this section.

- d. The amount of total suspended solids control previously required for the site shall not be reduced as a result of the proposed development or disturbance.
- e. Notwithstanding subsection (d)(1)a—d of this section, if the design cannot achieve the applicable total suspended solids reduction specified, the stormwater management plan shall include a written and site-specific explanation why that level of reduction is not attained and the total suspended solids load shall be reduced to the maximum extent practicable.
- f. Off-Site Drainage - When designing BMP's, runoff draining to the BMP from off-site shall be taken into account in determining the treatment efficiency of the practice. Any impact on the efficiency shall be compensated for by increasing the size of the BMP accordingly.

(2) Peak discharge - BMPs shall be designed, installed and maintained to control peak discharges from the post-construction site as follows:

- a. For post-construction sites whereupon one acre or more of land disturbing construction activity occurs during construction; or post-construction sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces, the following are required:
 - 1. The peak post-development discharge rate shall not exceed the peak predevelopment discharge rate for the one-year, two-year, ten-year, and 100-year, 24-hour design storms. These peak discharge requirements apply to new development and redevelopment areas. No peak discharge control is required for routine maintenance areas, unless runoff from the routine maintenance area discharges into a proposed peak flow control facility.
 - 2. Peak discharges shall be calculated using TR-55 runoff curve number methodology, Atlas 14 precipitation depths, and the appropriate NRCS Wisconsin MSE4 precipitation distribution. Peak predevelopment discharge rates shall be determined using the following grassland runoff curve numbers:

Maximum Predevelopment Runoff Curve Numbers —Grassland				
Hydrologic soil group	A	B	C	D
Runoff curve number	39	61	71	78

On a case-by-case basis, the community development department or public works department may allow the use of TP-40 precipitation depths and the Type II distribution.

- b. For post-construction sites with less than 20,000 square feet of impervious surface disturbance, reduce peak post-development discharge rates using BMPs from the stormwater reference guide. These sites are not required to satisfy a numeric performance standard.
- c. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces of this article are required to satisfy the performance standards within subsection (d)(2)a of this section.
- d. The amount of peak discharge control previously required for the site shall not be reduced as a result of the proposed development or disturbance.

- e. An adequate outfall shall be provided for each point of concentrated discharge from the post-construction site. An adequate outfall consists of nonerosive discharge velocities and reasonable downstream conveyance.
 - f. Exemptions. The following transportation facilities are not required to meet the peak discharge requirements of this subsection; provided the transportation facility is not part of a larger common plan of development or sale:
 - 1. A transportation facility where the change in hydrology due to development does not increase the existing surface water elevation at any point within the downstream receiving surface water by more than 0.01 of a foot for the two-year, 24-hour storm event.
 - 2. A highway reconstruction site.
 - 3. A transportation facility that is part of a redevelopment project.
- (3) Infiltration - BMPs shall be designed, installed, and maintained to infiltrate runoff for post-construction sites whereupon one acre or more of land disturbing construction activity occurs during construction; or post-construction sites whereupon 20,000 square feet or greater of existing impervious surfaces are disturbed during construction activities in accordance with the following or to the maximum extent practicable, except as provided in subsection (d)(3)i—k of this section.
- a. Low imperviousness. For development up to 40 percent connected imperviousness, such as parks, cemeteries, and low density residential development, infiltrate sufficient runoff volume so that the post development infiltration volume shall be at least 90 percent of the predevelopment infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than one percent of the post-construction site is required as an effective infiltration area.
 - b. Moderate imperviousness. For development with more than 40 percent and up to 80 percent connected imperviousness, such as medium and high density residential, multi-family development, industrial and institutional development, and office parks, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post construction site is required as an effective infiltration area.
 - c. High imperviousness. For development with more than 80 percent connected imperviousness, such as commercial strip malls, shopping centers, and commercial downtowns, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.
 - d. Predevelopment condition shall assume good hydrologic conditions for appropriate land covers as identified in TR-55 or an equivalent methodology approved by the administering authority. The meaning of the terms "hydrologic soil group" and "runoff curve number" are as determined in TR-55. However, when predevelopment land cover is cropland, rather than using TR-55 values for cropland, the following runoff curve numbers shall be used:

Maximum Predevelopment Runoff Curve Numbers - Cropland

Hydrologic soil group	A	B	C	D

Runoff curve number	55	69	78	83
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- e. For residential and nonresidential developments with less than 20,000 square feet of new impervious surfaces, infiltrate runoff volume using BMPs from the stormwater reference guide. These sites are not required to satisfy a numeric performance standard.
- f. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces of this article are required to satisfy the performance standards within subsection (d)(3)a—d of this section.
- g. The amount of infiltration previously required for the site shall not be reduced as a result of the proposed development or disturbance.
- h. Pretreatment. Before infiltrating runoff, pretreatment shall be required for parking lot runoff and for runoff from new road construction in commercial, industrial and institutional areas that will enter an infiltration system. The pretreatment shall be designed to protect the infiltration system from clogging prior to scheduled maintenance and to protect groundwater quality in accordance with subsection (d)(3)m. Pretreatment options may include, but are not limited to, oil and grease separation, sedimentation, biofiltration, filtration, swales or filter strips.
- i. Exclusions - Infiltration of runoff from the following areas are prohibited from meeting the infiltration requirements of this subsection (d)(3):
 1. Areas associated with tier 1 industrial facilities identified in Wis. Admin. Code § NR 216.21(2)(a), including storage, loading, rooftop and parking.
 2. Storage and loading areas of tier 2 industrial facilities identified in Wis. Admin. Code § NR 216.21(2)(b).
 3. Fueling and vehicle maintenance areas.
 4. Areas within 1,000 feet up gradient or within 100 feet downgradient of karst features.
 5. Areas with less than three feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock, except this subsection (d)(3)i.5 does not prohibit infiltration of roof runoff.
 6. Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than five feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.
 7. Areas within 400 feet of a community water system well as specified in Wis. Admin. Code § NR 811.16(4), or within 100 feet of a private well as specified in Wis. Admin. Code § NR 812.08(4), for runoff infiltrated from commercial, industrial and institutional land uses or regional devices for residential development.
 8. Areas where contaminants of concern, as defined in Wis. Admin. Code § NR 720.03(2) are present in the soil through which infiltration will occur.
 9. Any area where the soil does not exhibit one of the following soil characteristics between the bottom of the infiltration system and the seasonal high groundwater and top of bedrock: at least a three-foot soil layer with 20 percent fines or greater; or at least a five-foot soil layer with ten percent fines or greater. This does not apply where the soil medium within the infiltration system provides an equivalent level of protection. This subsection (d)(3)i.9 does not prohibit infiltration of roof runoff.

j. Exemptions - Infiltration of runoff from the following areas are not required to meet the infiltration requirements of this subsection (d)(3):

1. Areas where the infiltration rate of the soil is less than 0.6 inches per hour measured at the site.
2. Where the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the U.S. department of agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.
3. Parking areas and access roads less than 5,000 square feet for commercial and industrial development.
4. Redevelopment and routine maintenance areas.
5. Infill areas less than five acres.
6. Infiltration areas during periods when the soil on the site is frozen.
7. Roads in commercial, industrial and institutional land uses, and arterial residential roads.
8. Highways provided the transportation facility is not part of a larger common plan of development or sale.

k. Separation Distances

1. Infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock are in accordance with Table 3:

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

2. Notwithstanding par. B., applicable requirements for injection wells classified under ch. NR 815 shall be followed.

- l. Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternate use shall be given equal credit toward the infiltration volume required by this subsection (d)(3).
- m. Infiltration systems designed in accordance with this subsection (d)(3) shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventive action limit at a point of standards application in accordance with Wis. Admin. Code ch. NR 140.

1. If site specific information indicates that compliance with a preventive action limit is not achievable, the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.
2. Notwithstanding subsection (d)(3)m.1 of this section, the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

(4) Protective areas.

- a. The term "protective area" means an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface.
 1. For outstanding resource waters and exceptional resource waters, and for wetlands in areas of special natural resource interest as specified in Wis. Admin. Code § NR 103.04, a width of 75 feet.
 2. For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, a width of 50 feet.
 3. For lakes, a width of 50 feet.
 4. For wetlands not subject to par. 5. or 6., 50 feet.
 5. For highly susceptible wetlands, a width of 50 75 feet. Highly susceptible wetlands include the following types:
 - (i) Calcareous fens;
 - (ii) Sedge meadows;
 - (iii) Open and coniferous bogs;
 - (iv) Low prairies;
 - (v) Coniferous swamps;
 - (vi) Lowland hardwood swamps;
 - (vii) Ephemeral ponds.
 6. For less susceptible wetlands, ten percent of the average wetland width, but no less than ten feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass; cultivated hydric soils; and any gravel pits, or dredged material or fill material disposal sites that take on the attributes of a wetland.
 7. In subsections (c)(4)a.1, 4, 5 and 6 of this section, determinations of the extent of the protective area adjacent to wetlands shall be made on the basis of the sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in Wis. Admin. Code § NR 103.03.
 8. For concentrated flow channels with drainage areas greater than 130 acres, a width of ten feet.
 9. Notwithstanding pars. a. to i., the greatest protective area width shall apply where rivers, streams, lakes and wetlands are contiguous.

However, in this subsection, the term "protective area" does not include any area of land adjacent to any stream enclosed within a pipe or culvert, such that runoff cannot enter the enclosure at this location.

- b. Wetlands shall be delineated. Wetland boundary delineations shall be made in accordance with Wis. Admin. Code § NR 103.08(1m). This subsection (d)(4) does not apply to wetlands that have been completely filled in accordance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in accordance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed.
- c. This subsection (d)(4) applies to post-construction sites located within a protective area, except those areas exempted pursuant to subsection (d)(4)f of this section.
- d. The following requirements shall be met:
 - 1. Impervious surfaces shall be kept out of the protective area to the maximum extent practicable. If there is no practical alternative to locating an impervious surface in the protective area, the stormwater management plan shall contain a written site-specific explanation for any parts of the protective area that are disturbed during construction.
 - 2. Where land disturbing construction activity occurs within a protective area, and where no impervious surface is present, adequate sod or self-sustaining vegetative cover of 70 percent or greater shall be established and maintained. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Nonvegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion, such as on steep slopes or where high velocity flows occur.
 - 3. Best management practices such as filter strips, swales, or wet detention basins, that are designed to control pollutants from nonpoint sources may be located in the protective area.
- e. A protective area established or created by this article shall not be eliminated or reduced, except as allowed in subsections (d)(4)f.2, 3, or 4 or 5 of this section.
- f. Exemptions - The following areas are not required to meet the protective area requirements of this subsection (d)(4):
 - 1. Redevelopment and routine maintenance areas; provided the minimum requirements in subsection (d)(4)e of this section are satisfied.
 - 2. In-fill development areas less than 5 acres.
 - 3. Structures that cross or access surface waters such as boat landings, bridges and culverts.
 - 4. Structures constructed in accordance with Wis. Stats. § 59.692(1v).
- (5) Fueling and vehicle maintenance areas. Fueling and vehicle maintenance areas shall, to the maximum extent practicable, have BMPs designed, installed and maintained to reduce petroleum within runoff, such that the runoff that enters waters of the state contains no visible petroleum sheen.
- (6) Swale treatment for transportation facilities. This subsection is not applicable to transportation facilities that are part of a larger common plan of development or sale.
 - a. Applicability. Except as provided in subsection (d)(6)b of this section, transportation facilities that use swales for runoff conveyance and pollutant removal meet all of the requirements of this section, if the swales are designed to the maximum extent practicable to do all of the following:
 - 1. Be vegetated. However, where appropriate, nonvegetative measures may be employed to prevent erosion or provide for runoff treatment, such as rock riprap stabilization or check dams.

2. Swales shall comply with sections V.F. (Velocity and Depth) and V.G. (Swale Geometry Criteria) with a swale treatment length as long as that specified in section V.C. (Pre-Treatment) of the Wisconsin Department of Natural Resources technical standard 1005 "Vegetated Infiltration Swales", dated May 2007, or a superseding document. Transportation facility swale treatment does not have to comply with other sections of technical standard 1005.
- b. Exemptions - The community development department or public works department may, consistent with water quality standards, require other provisions of this section be met on a transportation facility with an average daily travel of vehicles greater than 2,500 and where the initial surface water of the state that the runoff directly enters is any of the following:
 1. An outstanding resource water.
 2. An exceptional resource water.
 3. Waters listed in section 303(d) of the Federal Clean Water Act that are identified as impaired in whole or in part, due to nonpoint source impacts.
 4. Waters where targeted performance standards are developed under Wis. Admin. Code § NR 151.004, to meet water quality standards.
- (7) Exemptions - The following areas are not required to meet the performance standards within subsection (d) of this section:
 - a. Agricultural production areas with less than 100,000 square feet of impervious surface disturbance.
 - b. Underground utility construction such as water, sewer, gas, electric, telephone, cable television, and fiber optic lines. This exemption does not apply to the construction of any above ground structures associated with utility construction.
 - c. The following transportation facilities are exempt; provided the transportation facility is not part of a larger common plan of development or sale:
 1. Reconditioning or resurfacing of a highway.
 2. Minor reconstruction of a highway. Notwithstanding this exemption, the protective area requirements within Wis. Admin. Code § NR 151.24(6) apply to minor reconstruction of a highway.
 3. A redevelopment transportation facility with no increase in exposed parking lots or roads.
 4. A transportation facility with less than ten percent connected imperviousness based on complete development of the transportation facility, provided the cumulative area of all parking lots and rooftops is less than one acre.
 5. Routine maintenance for transportation facilities if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.
- (e) General considerations for on-site and off-site stormwater management measures. The following considerations shall be observed in managing runoff:
 - (1) Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity, and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this section.
 - (2) Emergency overland flow for all stormwater facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.
- (f) Location and regional treatment option.

- (1) The BMPs may be located on-site or off-site as part of a regional stormwater device, practice or system.
- (2) Post-construction runoff within a nonnavigable surface water that flows into a BMP, such as a wet detention pond, is not required to meet the performance standards of this article. Post-construction BMPs may be located in nonnavigable surface waters.
- (3) Except as allowed under subsection (f)(4) of this section, post-construction runoff from new development shall meet the post-construction performance standards prior to entering a navigable surface water.
- (4) Post-construction runoff from any development within a navigable surface water that flows into a BMP is not required to meet the performance standards of this article if:
 - a. The BMP was constructed prior to the effective date of this article and the BMP either received a permit issued under Wis. Stats. ch. 30, or the BMP did not require a Wis. Stats. ch. 30, permit; and
 - b. The BMP is designed to provide runoff treatment from future upland development.
- (5) Runoff from existing development, redevelopment and infill areas shall meet the post-construction performance standards in accordance with this subsection.
 - a. To the maximum extent practicable, BMPs shall be located to treat runoff prior to discharge to navigable surface waters.
 - b. Post-construction BMPs for such runoff may be located in a navigable surface water if allowable under all other applicable federal, state and local regulations such as Wis. Admin. Code ch. NR 103 and Wis. Stats. ch. 30.
- (6) The discharge of runoff from a BMP, such as a wet detention pond, or after a series of such BMPs is subject to this article.
- (7) BMP Location - The community development department or public works department may approve off-site management measures as part of a regional storm water device, practice or system, provided that all of the following conditions are met:
 - a. BMPs are installed in accordance with s. NR 151.003, Wis. Adm. Code.
 - b. The community development department or public works department determines that the post-construction runoff is covered by a stormwater management system plan that is approved by the village and that contains management requirements consistent with the purpose and intent of this article.
 - c. The off-site facility meets all of the following conditions:
 1. The facility is in place.
 2. The facility is designed and adequately sized to provide a level of stormwater control equal to or greater than that which would be afforded by on-site practices meeting the performance standards of this article.
 3. The facility has a legally obligated entity responsible for its long-term operation and maintenance.
- (8) Where a regional treatment option exists such that the community development department or public works department exempts the applicant from all or part of the minimum on-site stormwater management requirements, the applicant shall be required to pay a fee in an amount determined in negotiation with the community development department or public works department. In determining the fee for post-construction runoff, the community development department or public works department shall consider an equitable distribution of the cost for land, engineering design, construction, and maintenance of the regional treatment option.

- (g) Alternate requirements - The community development department or public works department may establish stormwater management requirements more stringent than those set forth in this section if the community development department or public works department determines that an added level of protection is needed to protect sensitive resources. Also, the community development department or public works department may establish stormwater management requirements less stringent than those set forth in this section if the community development department or public works department determines that less protection is needed to protect sensitive resources and provide reasonable flood protection. However, the alternative requirements shall not be less stringent than those requirements promulgated in rules by state department of natural resources under Wis. Admin. Code ch. NR 151.

(Code 2006, § 15-5-25; Ord. No. 17(Ser. of 2007), § 7, 12-19-2007)

Secs. 34-950—34-971. - Reserved.

DIVISION 3. - PERMITTING REQUIREMENTS, PROCEDURES AND FEES

Sec. 34-972. - Permit required.

- (a) No responsible party may undertake a land disturbing construction activity without receiving a post-construction runoff permit from the community development department or public works department prior to commencing the proposed activity.
- (b) All responsible parties who have undertaken a land disturbing construction activity at a post-construction site without previously receiving a post-construction runoff permit who have constructed detention and/or retention basins under direction of the village as a condition for development shall obtain a post-construction runoff permit for future management and maintenance, meeting all other requirements hereunder, from the community development department or public works departments, within one year from the effective date of this article.

(Code 2006, § 15-5-26; Ord. No. 17(Ser. of 2007), § 8(1), 12-19-2007)

Sec. 34-973. - Permit application and fees.

Unless specifically excluded by this article, any responsible party desiring, or otherwise required to obtain, a permit shall submit to the community development department or public works department a permit application made on a form provided by the community development department or public works department for that purpose.

- (1) Unless otherwise excepted by this article, a permit application must be accompanied by a stormwater management plan, a maintenance agreement, a proposed financial guarantee, and a nonrefundable permit administration fee.
- (2) The stormwater management plan shall be prepared to meet the requirements of sections 34-949 and 34-1000, the maintenance agreement shall be prepared to meet the requirements of section 34-1001, the financial guarantee shall meet the requirements of division 5 of this article, and fees shall be those established by the village board as set forth in section 34-922.

(Ord. No. 17(Ser. of 2007), § 8(2), 12-19-2007)

Sec. 34-974. - Review and approval of permit application.

The community development department or public works department shall review any permit application that is submitted with a stormwater management plan, maintenance agreement, and the required fee. The following approval procedure shall be used:

- (1) Within 20 business days of the receipt of a complete permit application, including all items as required by section 34-973, the community development department or public works department shall inform the applicant whether the application, plan and maintenance agreement are approved or disapproved based on the requirements of this article.
- (2) If the stormwater permit application, plan and maintenance agreement are approved, or if an agreed upon payment of fees in lieu of stormwater management practices is made, the community development department or public works department shall issue the permit.
- (3) If the stormwater permit application, plan or maintenance agreement is disapproved, the community development department or public works department shall detail, in writing, the reasons for disapproval.
- (4) The community development department or public works department may request additional information from the applicant. If additional information is submitted, the community development department or public works department shall have 20 business days from the date the additional information is received to inform the applicant that the plan and maintenance agreement are either approved or disapproved.
- (5) Failure by the community development department or public works department to inform the permit applicant of a decision within 20 business days of a required submittal shall be deemed to mean approval of the submittal and the applicant may proceed as if a permit had been issued.

(Code 2006, § 15-5-26; Ord. No. 17(Ser. of 2007), § 8(3), 12-19-2007)

Sec. 34-975. - Permit requirements.

All permits issued under this article shall be subject to the following conditions, and holders of permits issued under this article shall be deemed to have accepted these conditions. The community development department or public works department may suspend or revoke a permit for violation of a permit condition, following written notification of the responsible party. An action by the community development department or public works department to suspend or revoke this permit may be appealed in accordance with section 34-1066.

- (1) Compliance with this permit does not relieve the responsible party of the responsibility to comply with other applicable federal, state, and local laws and regulations.
- (2) The responsible party shall design and install all structural and nonstructural stormwater management measures in accordance with the approved stormwater management plan and this permit.
- (3) The responsible party shall notify the community development department or public works department at least ten business days before commencing any work in conjunction with the stormwater management plan, and within ten business days upon completion of the stormwater management practices. If required as a special condition under section 34-976, the responsible party shall make additional notification according to a schedule set forth by the community development department or public works department so that practice installations can be inspected during construction.
- (4) Practice installations required as part of this article shall be certified as built by a licensed professional engineer. Completed stormwater management practices must pass a final inspection by the community development department or public works department or its designee to determine if they are in accordance with the approved stormwater management plan and ordinance. The community development department or public works department or its

designee shall notify the responsible party, in writing, of any changes required in such practices to bring them into compliance with the conditions of this permit.

- (5) The responsible party shall notify the community development department or public works department of any significant modifications it intends to make to an approved stormwater management plan. The community development department or public works department may require that the proposed modifications be submitted to it for approval prior to incorporation into the stormwater management plan and execution by the responsible party.
- (6) The responsible party shall maintain all stormwater management practices in accordance with the stormwater management plan until the practices either become the responsibility of the village board, or are transferred to subsequent private owners as specified in the approved maintenance agreement.
- (7) The responsible party authorizes the community development department or public works department to perform any work or operations necessary to bring stormwater management measures into conformance with the approved stormwater management plan, and consents to a special assessment or charge against the property as authorized under Wis. Stats. ch. 66, subch. VII, or to charging such costs against the financial guarantee posted under division 5 of this article.
- (8) If so directed by the community development department or public works department, the responsible party shall repair at the responsible party's own expense all damage to adjoining municipal facilities and drainageways caused by runoff, where such damage is caused by activities that are not in compliance with the approved stormwater management plan.
- (9) The responsible party shall permit property access to the community development department or public works department or its designee for the purpose of inspecting the property for compliance with the approved stormwater management plan and this permit.
- (10) Where site development or redevelopment involves changes in direction, increases in peak rate and/or total volume of runoff from a site, the community development department or public works department may require the responsible party to make appropriate legal arrangements with affected property owners concerning the prevention of endangerment to property or public safety.
- (11) The responsible party is subject to the enforcement actions and penalties detailed in section 34-1065, if the responsible party fails to comply with the terms of this permit.
- (12) The permit applicant shall post the certificate of permit coverage in a conspicuous location at the construction site.

(Ord. No. 17(Ser. of 2007), § 8(4), 12-19-2007)

Sec. 34-976. - Permit conditions.

Permits issued under this subsection may include conditions established by the community development department or public works department in addition to the requirements needed to meet the performance standards in section 34-949 or a financial guarantee as provided for in division 5 of this article.

(Ord. No. 17(Ser. of 2007), § 8(5), 12-19-2007)

Sec. 34-977. - Permit duration.

Permits issued under this section shall be valid from the date of issuance through the date the community development department or public works department notifies the responsible party that all stormwater management practices have passed the final inspection required under section 34-975(4).

(Ord. No. 17(Ser. of 2007), § 8(6), 12-19-2007)

Sec. 34-978. - Alternate requirements.

The community development department or public works department may prescribe alternative requirements for applicants seeking an exemption to on-site stormwater management performance standards under section 34-949(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

(Ord. No. 17(Ser. of 2007), § 8(7), 12-19-2007)

Secs. 34-979—34-999. - Reserved.

DIVISION 4. - STORMWATER MANAGEMENT PLAN AND MAINTENANCE AGREEMENT

Sec. 34-1000. - Required.

(a) Plan requirements. The stormwater management plan required under section 34-973 shall comply with the stormwater reference guide and contain at a minimum the following information:

- (1) Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of storm water management practices; and person(s) responsible for maintenance of storm water management practices prior to the transfer, if any, of maintenance responsibility to another party.
- (2) A legal description of the property proposed to be developed, referenced to the U.S. Public Land Survey system or to block and lot numbers within a recorded land subdivision plat..
- (3) Predevelopment site conditions, including:
 - a. One or more site maps at a scale of not less than 1 inch equals [number] feet. The site maps shall show the following: site location and legal property description; predominant soil types and hydrologic soil groups; existing cover type and condition; topographic contours of the site at a scale not to exceed 40 feet; topography and drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; watercourses that may affect or be affected by runoff from the site; flow path and direction for all storm water conveyance sections; watershed boundaries used in hydrology determinations to show compliance with performance standards; lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site; limits of the 100 year floodplain; location of wells and wellhead protection areas covering the project area and delineated pursuant to s. NR 811.16, Wis. Adm. Code.
 - b. Hydrology and pollutant loading computations as needed to show compliance with performance standards. All major assumptions used in developing input parameters shall be clearly stated. The geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).
- (4) Post-development site conditions, including:
 - a. Explanation of the provisions to preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and wetlands.

- b. Explanation of any restrictions on storm water management measures in the development area imposed by wellhead protection plans and ordinances.
 - c. One or more site maps at a scale of not less than 1 inch equals 40 feet showing the following: post-construction pervious areas including vegetative cover type and condition; impervious surfaces including all buildings, structures, and pavement; post-construction topographic contours of the site at a scale not to exceed 40 feet; post-construction drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; locations and dimensions of drainage easements; locations of maintenance easements specified in the maintenance agreement; flow path and direction for all storm water conveyance sections; location and type of all storm water management conveyance and treatment practices, including the on-site and offsite tributary drainage area; location and type of conveyance system that will carry runoff from the drainage and treatment practices to the nearest adequate outlet such as a curbed street, storm drain, or natural drainage way; watershed boundaries used in hydrology and pollutant loading calculations and any changes to lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site.
 - d. Hydrology and pollutant loading computations as needed to show compliance with performance standards. The computations shall be made for each discharge point in the development, and the geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).
 - e. Results of investigations of soils and groundwater required for the placement and design of storm water management measures. Detailed drawings including cross-sections and profiles of all permanent storm water conveyance and treatment practices.
- (5) A description and installation schedule for the storm water management practices needed to meet the performance standards in section 34-949.
 - (6) A maintenance plan developed for the life of each storm water management practice including the required maintenance activities and maintenance activity schedule.
 - (g) Cost estimates for the construction, operation, and maintenance of each storm water management practice.
 - (h) Other information requested in writing by the community development department or public works department to determine compliance of the proposed storm water management measures with the provisions of this ordinance.
 - (i) All site investigations, plans, designs, computations, and drawings shall be certified by a licensed professional engineer to be prepared in accordance with accepted engineering practice and requirements of this ordinance.
- (b) Alternate requirements - The community development department or public works department may prescribe alternative submittal requirements for applicants seeking an exemption to on-site stormwater management performance standards under section 34-949(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

(Ord. No. 17(Ser. of 2007), § 9, 12-19-2007)

Sec. 34-1001. - Maintenance agreement.

- (a) Required. The maintenance agreement required under section 34-973 for stormwater management practices shall be an agreement between the community development department or public works department and the responsible party to provide for maintenance of stormwater practices beyond the duration period of this permit. The maintenance agreement shall be filed with the county register of

- deeds as a property deed restriction so that it is binding upon all subsequent owners of the land served by the stormwater management practices.
- (b) Agreement provisions. The maintenance agreement shall contain the following information and provisions and be consistent with the maintenance plan required by section 34-949:
- (1) Identification of the stormwater facilities and designation of the drainage area served by the facilities.
 - (2) A schedule for regular maintenance of each aspect of the stormwater management system consistent with the stormwater management plan required under section 34-973.
 - (3) Identification of the responsible party, organization or city, county, town or village responsible for longterm maintenance of the stormwater management practices identified in the stormwater management plan required under section 34-973.
 - (4) Requirement that the responsible party, organization, or city, county, town or village shall maintain stormwater management practices in accordance with the schedule included in subsection (b)(2) of this section.
 - (5) Authorization for the community development department or public works department to access the property to conduct inspections of stormwater management practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.
 - (6) A requirement on the community development department or public works department to maintain public records of the results of the site inspections, to inform the responsible party responsible for maintenance of the inspection results, and to specifically indicate any corrective actions required to bring the stormwater management practice into proper working condition.
 - (7) Agreement that the party designated under subsection (b)(3) of this section, as responsible for longterm maintenance of the stormwater management practices, shall be notified by the community development department or public works department of maintenance problems which require correction. The specified corrective actions shall be undertaken within a reasonable time frame as set by the community development department or public works department.
 - (8) Authorization of the community development department or public works department to perform the corrected actions identified in the inspection report if the responsible party designated under subsection (b)(3) of this section does not make the required corrections in the specified time period. The community development department or public works department shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to Wis. Stats. ch. 66, subch. VII.
- (c) Alternate requirements. The community development department or public works department may prescribe alternative requirements for applicants seeking an exemption to on-site stormwater management performance standards under section 34-949(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

(Ord. No. 17(Ser. of 2007), § 10, 12-19-2007)

Secs. 34-1002—34-1030. - Reserved.

DIVISION 5. - FINANCIAL GUARANTEE

Sec. 34-1031. - Establishment of the guarantee.

The community development department or public works department may require the submittal of a financial guarantee; the form and type of which shall be acceptable to the community development department or public works department. The financial guarantee shall be in an amount determined by the community development department or public works department to be the estimated cost of construction and the estimated cost of maintenance of the stormwater management practices during the period which the designated party in the maintenance agreement has maintenance responsibility. The financial guarantee shall give the community development department or public works department the authorization to use the funds to complete the stormwater management practices if the responsible party defaults or does not properly implement the approved stormwater management plan, upon written notice to the responsible party by the community development department or public works department that the requirements of this article have not been met.

(Ord. No. 17(Ser. of 2007), § 11(1), 12-19-2007)

Sec. 34-1032. - Conditions for release.

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

- (1) The community development department or public works department shall release the portion of the financial guarantee established under this section, less any costs incurred by the community development department or public works department to complete installation of practices, upon submission of as-built plans by a licensed professional engineer. The community development department or public works department may make provisions for a partial pro rata release of the financial guarantee based on the completion of various development stages.
- (2) The community development department or public works department shall release the portion of the financial guarantee established under this section to ensure maintenance of stormwater practices, less any costs incurred by the community development department or public works department, at such time that the responsibility for practice maintenance is passed on to another entity via an approved maintenance agreement.

(Ord. No. 17(Ser. of 2007), § 11(2), 12-19-2007)

Sec. 34-1033. - Alternate requirements.

The community development department or public works department may prescribe alternative requirements for applicants seeking an exemption to on-site stormwater management performance standards under section 34-949(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

(Ord. No. 17(Ser. of 2007), § 11(3), 12-19-2007)

Secs. 34-1034—34-1064. - Reserved.

DIVISION 6. - ENFORCEMENT AND APPEALS

Sec. 34-1065. - Procedure.

- (a) Any land disturbing construction activity or post-construction runoff initiated after the effective date of the ordinance from which this article is derived by any person, firm, association, or corporation

subject to the article provisions shall be deemed a violation unless conducted in accordance with the requirements of this article:

- (b) The community development department or public works department shall notify the responsible party by certified mail of any noncomplying land disturbing construction activity or post-construction runoff. The notice shall describe the nature of the violation, remedial actions needed, a schedule for remedial action, and additional enforcement action which may be taken.
- (c) Upon receipt of written notification from the community development department or public works department under subsection (b) of this section, the responsible party shall correct work that does not comply with the stormwater management plan or other provisions of this permit. The responsible party shall make corrections as necessary to meet the specifications and schedule set forth by the community development department or public works department in the notice.
- (d) If the violations to a permit issued pursuant to this article are likely to result in damage to properties, public facilities, or waters of the state, the community development department or public works department may enter the land and take emergency actions necessary to prevent such damage. The costs incurred by the community development department or public works department plus interest and legal costs shall be billed to the responsible party.
- (e) The community development department or public works department is authorized to post a stop work order on all land disturbing construction activity that is in violation of this article, or to request the village attorney to obtain a cease and desist order in any court with jurisdiction.
- (f) The community development department or public works department may revoke a permit issued under this article for noncompliance with ordinance provisions.
- (g) Any permit revocation, stop work order, or cease and desist order shall remain in effect unless retracted by the community development department or public works department or by a court with jurisdiction.
- (h) The community development department or public works department is authorized to refer any violation of this article, or of a stop work order or cease and desist order issued pursuant to this article, to the village attorney for the commencement of further legal proceedings in any court with jurisdiction.
- (i) Any person, firm, association, or corporation who does not comply with the provisions of this article shall be subject to a forfeiture of not less than \$25.00 or more than \$500.00 per offense, together with the costs of prosecution. Each day that the violation exists shall constitute a separate offense.
- (j) Compliance with the provisions of this article may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctive proceedings.
- (k) When the community development department or public works department determines that the holder of a permit issued pursuant to this article has failed to follow practices set forth in the stormwater management plan, or has failed to comply with schedules set forth in said stormwater management plan, the community development department or public works department or a party designated by the community development department or public works department may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformance with requirements of the approved plan. The community development department or public works department shall keep a detailed accounting of the costs and expenses of performing this work. These costs and expenses shall be deducted from any financial security posted pursuant to division 5 of this article. Where such a security has not been established, or where such a security is insufficient to cover these costs, the costs and expenses shall be entered on the tax roll as a special charge against the property and collected with any other taxes levied thereon.

(Ord. No. 17(Ser. of 2007), § 13, 12-19-2007)

Sec. 34-1066: - Board of appeals.

- (a) Authorization. The board of appeals, created pursuant to section 2-149 and Wis. Stats. § 61.354(4)(b), shall hear and decide appeals where it is alleged that there is an error in any order, decision or determination made by the community development department or public works department in administering this article. The board shall also use the rules, procedures, duties, and powers authorized by statute in hearing and deciding appeals. Upon appeal, the board may authorize variances from the provisions of this article that are not contrary to the public interest, and where owing to special conditions a literal enforcement of the article will result in unnecessary hardship.
- (b) Who may appeal. Appeals to the board of appeals may be taken by any aggrieved person or by an officer, department, board, or bureau of the village affected by any decision of the community development department or public works department.

(Ord. No. 17(Ser. of 2007), § 14, 12-19-2007)

Sec. 34-1067. - Severability.

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

CHAPTER 3

TMDL STORM WATER QUALITY ANALYSIS

Introduction

The previous WPDES General Permit (WI-S050075) covering the Village of Little Chute required that each permitted MS4 provide a minimum reduction of 20% of Total Suspended Solids (TSS) from the portions of the municipality within the urbanized area boundary. The WDNR has reviewed the previous WinSLAMM modeling performed by McMahon Associates and per a letter from the WDNR dated October 26, 2014, the Village of Little Chute was found to be in compliance with the previous 20 % TSS reduction requirement. This letter is included in Appendix B.

With the issuance of WPDES General Permit WI-S050075-2 and with the Village's location within the Lower Fox River and Apple Creek drainage basins, the Village is now required to meet the applicable TMDL requirements for these drainage basins. In addition to the 20% TSS reduction requirement of the previous WPDES permit, the TMDL requirements include that the Village remove a minimum of 72% of TSS and 41% of Total Phosphorus (TP) from the portion of the Village that drains directly to the Fox River and 52% of TSS and 41% of TP from the portion of the Village that drains to Apple Creek. Per email correspondence with the WDNR, because a single waste load allocation was assigned to the main stem of the Lower Fox River throughout the Lower Fox River TMDL, excess pounds of TSS and TP removal above the required levels within the Apple Creek basin may be applied to the Fox River Basin. This email correspondence is included in Appendix B. However, the WDNR did state that if the Lower Fox River TMDL is ever re-calculated and the Fox River is subdivided into multiple reaches, this reapplication of excess pollutants from the Apple Creek basin to the Fox River basin may no longer be allowed.

Methodology

In order to determine the Village's level of compliance with the current WPDES General Permit, a detailed Village-wide storm water quality analysis was performed. To perform the storm water quality modeling, the Source Loading and Management Model (WinSLAMM version 10.2.0) was utilized. The entire Village and surrounding areas were then subdivided into separate drainage basins. Figure 1 in Appendix B shows the Village boundary as well as the locations of each of these sub drainage basins. It was determined that 2,565.13 acres of the Village drains towards the Fox River and 1,174.32 acres of the Village drains towards Apple Creek. Figure 2 shows the overall Fox River and Apple Creek sub drainage basins.

Unlike the previous 20% TSS reduction requirement that only considered the urbanized area of the Village, the TMDL TSS and TP analysis requires the entire Village be considered with a few exceptions. Areas that may be excluded from the analysis include:

- ◆ Area that never passes through a permittee's MS4 such as a riparian area.
- ◆ Land zoned for agricultural use and operating as such.
- ◆ Manufacturing, outside storage, and vehicle maintenance areas of industrial facilities permitted under NR 216, Wis. Adm. Code, are optional to include. DNR recommends

that municipalities include all industrial facility areas within their WLA analysis area instead of creating 'holes' within its area of analysis.

- ◆ Any area that discharges to an adjacent municipality's MS4 without passing through the jurisdictional municipality's MS4.
- ◆ State & County Highways.
- ◆ Other publicly owned parcels such as county or state owned lands.

Table 1 summarizes the areas within the Village that were excluded from the water quality analysis. Figure 3 depicts these different areas that were excluded from the modeling.

TABLE 1 - EXCLUDED AREA SUMMARY

Excluded Land Use	Area (Acres)	Description
Riparian Landowners and Fox River	349.69	Basins F1o, F1g, F1f2, F1d1, F1c2, F1a, and F1b
State / County Highway*	67.58	USH 41, STH 441, STH 96, CTH OO, CTH N, and CTH CC Right-of-Way
Agricultural Land*	482.47	Lands currently utilized for agricultural
County Owned Land*	194.35	Outagamie County Landfill and Outagamie County Highway Shop
Total =	1,094.09	

*Portions of these land uses drain to Village owned BMP's and were included in the WinSLAMM modeling

The existing land uses and existing soils were then analyzed throughout the Village and this information was compiled using a GIS system. Figure 4 shows the existing land uses as of December 2015 throughout the entire Village and Figure 5 shows the different soils types throughout the Village. Figure 6 shows the Village's future land uses per their Comprehensive Plan. These existing land uses and soils were input into the SLAMM model to determine the "No Controls" TSS and TP loading per each sub drainage basin and per each TMDL reach shed. The standard land use files within the WinSLAMM program were utilized to approximate the pollutant loadings from the existing land uses. The attached Table 2 shows the "No Controls" pollutant loads associated with each sub drainage basin.

The Village has numerous regional wet detention ponds throughout the Village limits which are designed to remove TSS/TP and these were input into the SLAMM model to determine their removal efficiencies. The size and outflow information was input into the model based on the separate storm water management plans created for each pond by McMahon Associates. The Village has multiple in-line ponds as well; however, these were not taken into account when calculating the pollutant removals, per direction from the WDNR. The Village also has a street sweeping program in place, which was also input into the model.

Based on a review of aerial photos within recent years, it was determined that the amount of on-street parking in the Village's residential areas would fall under the "light" classification as there would be adequate room for the street sweeper to reach the curb and gutter for significant sections of the street. Because on-street parking appeared to be more prevalent in the Village's downtown area near Village Hall, this area was modeled as having "medium" amounts of on-street parking. Since the street sweeping BMP was utilized in the analysis, the 5-year rainfall data was used. The Village does not have any inter-municipal agreements in place nor are there any maintenance agreements in place with private BMP owners that would allow them to claim any additional treatment. Table 2 summarizes the "No Controls" pollutant loadings as well as the pollutant reductions achieved with each of the BMP's. Pollutant values shown in this table have been divided by 5 in order to represent the pollutant loadings on an annual basis.

As can be seen in Table 2, the Village is already meeting the TMDL requirements for the Apple Creek reach shed. This can be attributed to the numerous regional BMP's that have been created to serve the more recent development projects. The Village currently does not meet the TMDL requirements for the Fox River reach shed, which contains more of the older development that was constructed prior to implementation of current storm water regulations. Even including the excess removals from the Apple Creek basin, the Fox River basin provides 42.7% TSS removal (72% is required) and 29.6% of TP removal (41% is required).

In order to bring the Fox River basin into compliance, additional storm water facilities will need to be constructed. Included in Appendix B is Figure 7, which illustrates which drainage basins are treated and untreated. The map also illustrates which untreated basins should be considered a priority basin. These priority basins contain a great deal of untreated development and it is unlikely that the Village could meet the required TMDL removal rates without providing treatment to a majority these basins, even with over treating in other areas. Also included in Appendix B is Table 3, which contains a listing of possible regional storm water ponds that could be constructed to help bring the Village to being in compliance. This table also summarizes the cost per pound of TSS removed for each of these ponds to help the Village prioritize future projects. Figure 7 shows the location of each of these ponds and Table 4 shows what the Village-wide TSS and TP removal rates would be should each of these ponds be constructed. As can be seen in Table 4, an additional future pond in basin F3f4, K1e, or F5g may also be required in order to meet the required TMDL treatment levels for TSS and TP.

The Village has continued to construct and expand existing regional storm water ponds over recent years but now many of the easier projects have been constructed. Each of these future ponds has numerous site constraints associated with them such as wetland and flood plain impacts, stream navigability, and property acquisition. Brief summary reports of each of these ponds were put together by McMahon Associates as part of the Village's original storm water report, and are included in the appendix. Each report summarizes the project

and discusses possible site constraints, including possible wetland impacts. A wetland inventory map is included with each pond report where wetland impacts may occur.

It is recommended that the Village continue to pursue regional storm water treatment BMPs in large areas of possible future development on the north side of the Village. Each pound of TSS and TP removed above and beyond the TMDL requirements in the Apple Creek basin will bring the Fox River basin closer to TMDL compliance. It is also recommended that the Village obtain maintenance agreements for all existing and future private storm water BMPs, so that these removals may be credited towards the Village's removals. Another possible way to improve the level of treatment within the Fox River basin is to require all redevelopment projects within the Village to remove the TMDL required amount of TSS and TP (72% and 41%) instead of just the current 40% of TSS. However, the Village already exceeds the WDNR's redevelopment performance standards by requiring projects with a cumulative addition of 20,000 of impervious surfaces to remove 40% of TSS. With the construction of future regional storm water ponds and the implementation of some of these recommendations, the Village will be effectively working towards full TMDL compliance.

APPENDIX B – TMDL WATER QUALITY ANALYSIS

- WDNR 20% TSS Approval Letter
- WDNR TMDL E-mail Correspondence
- Figure 1 – Drainage Basins & Existing Storm Water BMPs
- Figure 2 – Sub-watersheds
- Figure 3 – Excluded areas
- Figure 4 – Existing Land Uses
- Figure 5 – Soils
- Figure 6 – Future Land Uses
- Figure 7 – Priority Watersheds
- Table 2 – SLAMM Model Summary
- Table 3 – Regional Storm Water Pond Summary
- Potential Storm Water Pond Information
- Table 4 – TMDL Water Quality Summary with Future Ponds

WDNR 20% TSS APPROVAL LETTER

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2984 Shawano Avenue
Green Bay WI 54313-6727

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711



October 26, 2014

Roy Van Gheem, Director of Public Works
Village of Little Chute
108 W Main Street
Grand Chute, WI 54140

Subject: Pollutant Modeling to Demonstrate Compliance with 20% TSS Control
FIN: 30972

Dear Van Gheem:

Based on an order of magnitude evaluation using both the Storm Water Management Plan dated December 21, 2007 and the efficiency of regional ponds serving existing development (as documented in the Urban Non-Point Source Grant files), it appears that Little Chute is in compliance with the 20% total suspended solids (TSS) performance standard of s. NR 151.13, Wis. Adm. Code. The Department is still in the process of reviewing the Draft TMDL pollutant modeling for the Village of Little Chute and will provide comments once that review is complete.

Thank you for your attention to this matter. If you have any questions, please call me at 920-662-5461 or email Amy.Minser@wisconsin.gov.

Sincerely,

Amy Minser, P.E.
Storm Water Engineer
Northeast Region

Cc: Nick Vande Hey—McMahon (Neenah, WI) (copy by e-mail)
Tony Fischer—DNR Storm Water Specialist (copy by e-mail)
Jared Schmidt—Robert E. Lee & Associates (copy by e-mail)

WDNR TMDL E-MAIL CORRESPONDENCE

Aaron J. Breitenfeldt

To: Minser, Amy J - DNR
Subject: RE: Village of Little Chute SLAMM Modeling

From: Minser, Amy J - DNR [mailto:Amy.Minser@wisconsin.gov]
Sent: Monday, December 12, 2016 11:06 AM
To: Aaron J. Breitenfeldt <abreitenfeldt@releeinc.com>
Subject: RE: Village of Little Chute SLAMM Modeling

The current Lower Fox TMDL assigned a single waste load allocation to Lower Fox Mainstem, so the additional pounds of TSS and TP removed in the Apple Creek subbasin may be applied to the Lower Fox subbasin. However, if the Lower Fox TMDL is re-calculated in the future and the Fox River is subdivided into multiple reaches, this may change.

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Amy J. Minser, P.E.
Phone: (920) 662-5461
amy.minser@wisconsin.gov

From: Aaron J. Breitenfeldt [mailto:abreitenfeldt@releeinc.com]
Sent: Monday, December 12, 2016 10:50 AM
To: Minser, Amy J - DNR
Subject: RE: Village of Little Chute SLAMM Modeling

Hi Amy, I am updating the SLAMM info per your comments below and had just one other question for you. Because Little Chute is over treating in the apple creek basin but under treating in the Fox River basin, can they take credit in the fox River basin for over treating the apple creek basin? With apple creek being upstream of the fox river but discharging into the Fox river downstream of Little chute I was a little unclear on how the rule would apply to this. Please let me know your thoughts on this.

Thanks,



Aaron Breitenfeldt, P.E. - Robert E. Lee & Associates, Inc.
920-662-9641 abreitenfeldt@releeinc.com

FIGURE 1 – DRAINAGE BASINS & EXISTING STORM WATER BMPS

FIGURE 2 – SUB-WATERSHEDS

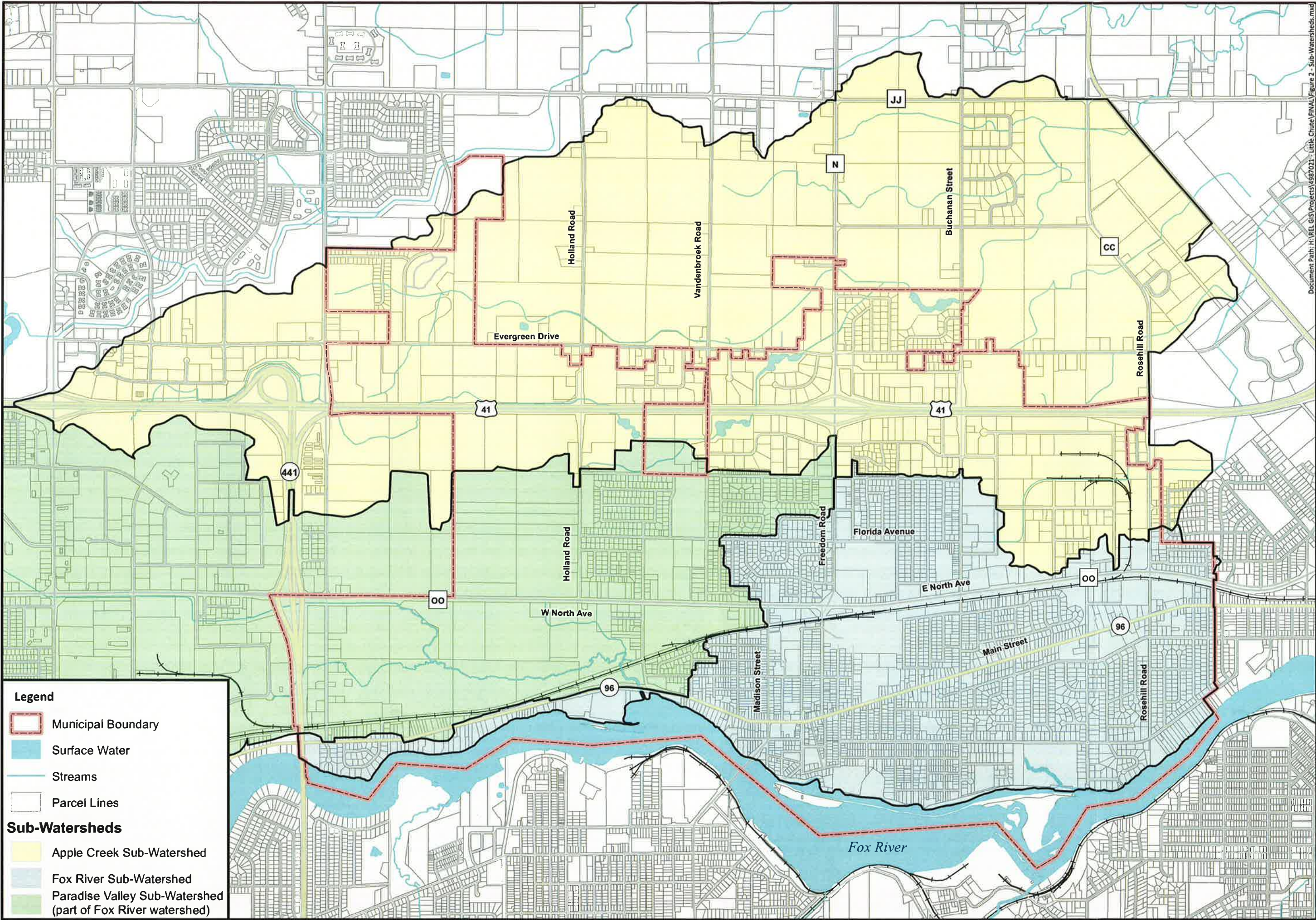


Figure 2
Sub-Watersheds

10/28/2016

STORM WATER MANAGEMENT PLAN
VILLAGE OF LITTLE CHUTE
OUTAGAMIE COUNTY, WISCONSIN

Sources: Robert E. Lee
& Associates, Inc.,
Outagamie County, WI

Disclaimer: Robert E. Lee & Associates, Inc. makes every effort to ensure this map is free of errors but does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use. Robert E. Lee & Associates, Inc., provides this map without any warranty of any kind whatsoever, either expressed or implied.

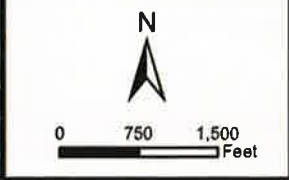


FIGURE 3 – EXCLUDED AREAS

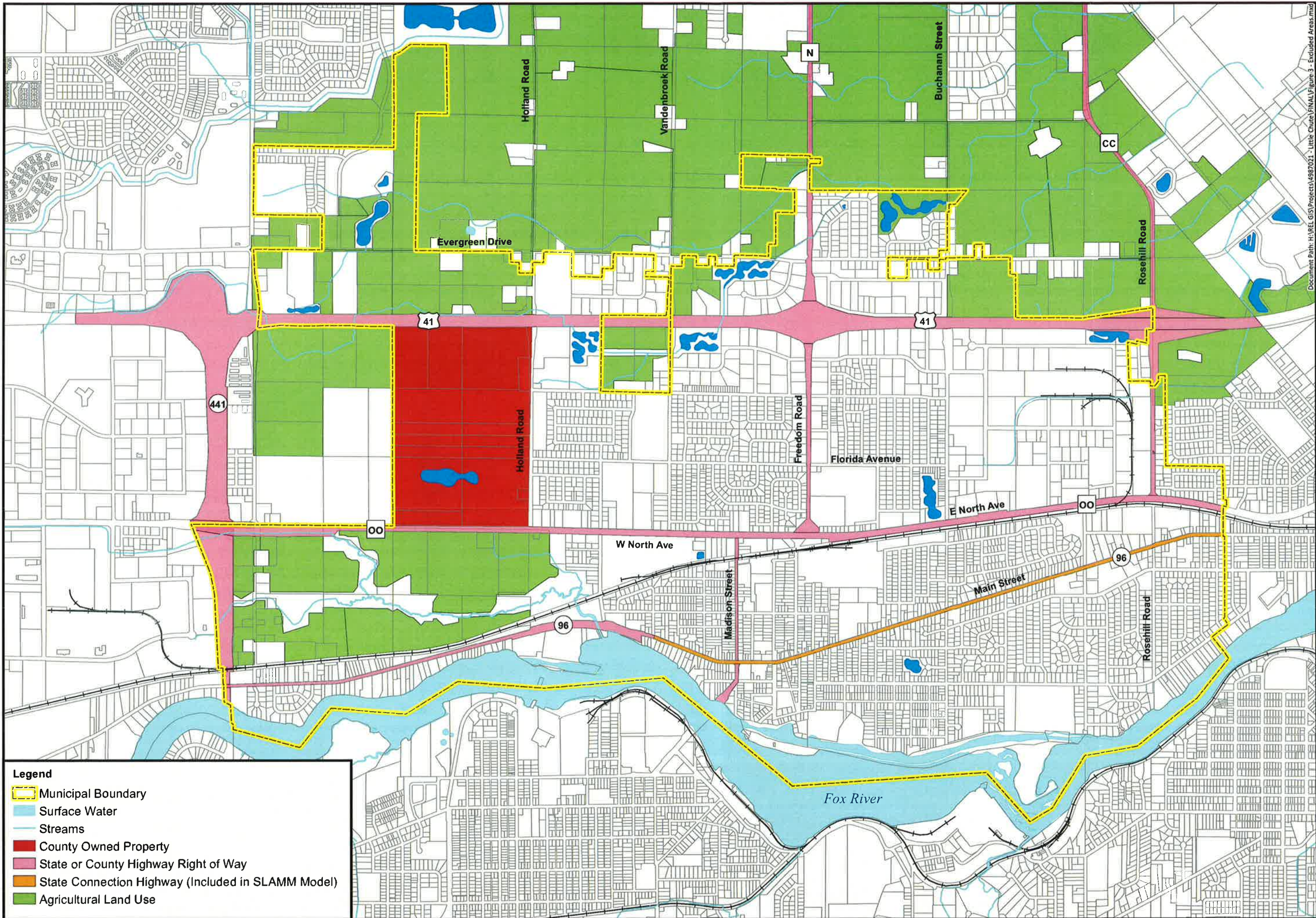


Figure 3
Excluded Areas

10/31/2016

STORM WATER MANAGEMENT PLAN
VILLAGE OF LITTLE CHUTE
OUTAGAMIE COUNTY, WISCONSIN

Sources: Robert E. Lee
& Associates, Inc.,
Outagamie County, WI

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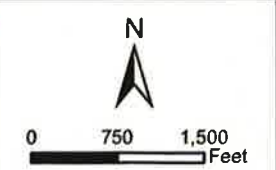


FIGURE 4 – EXISTING LAND USES

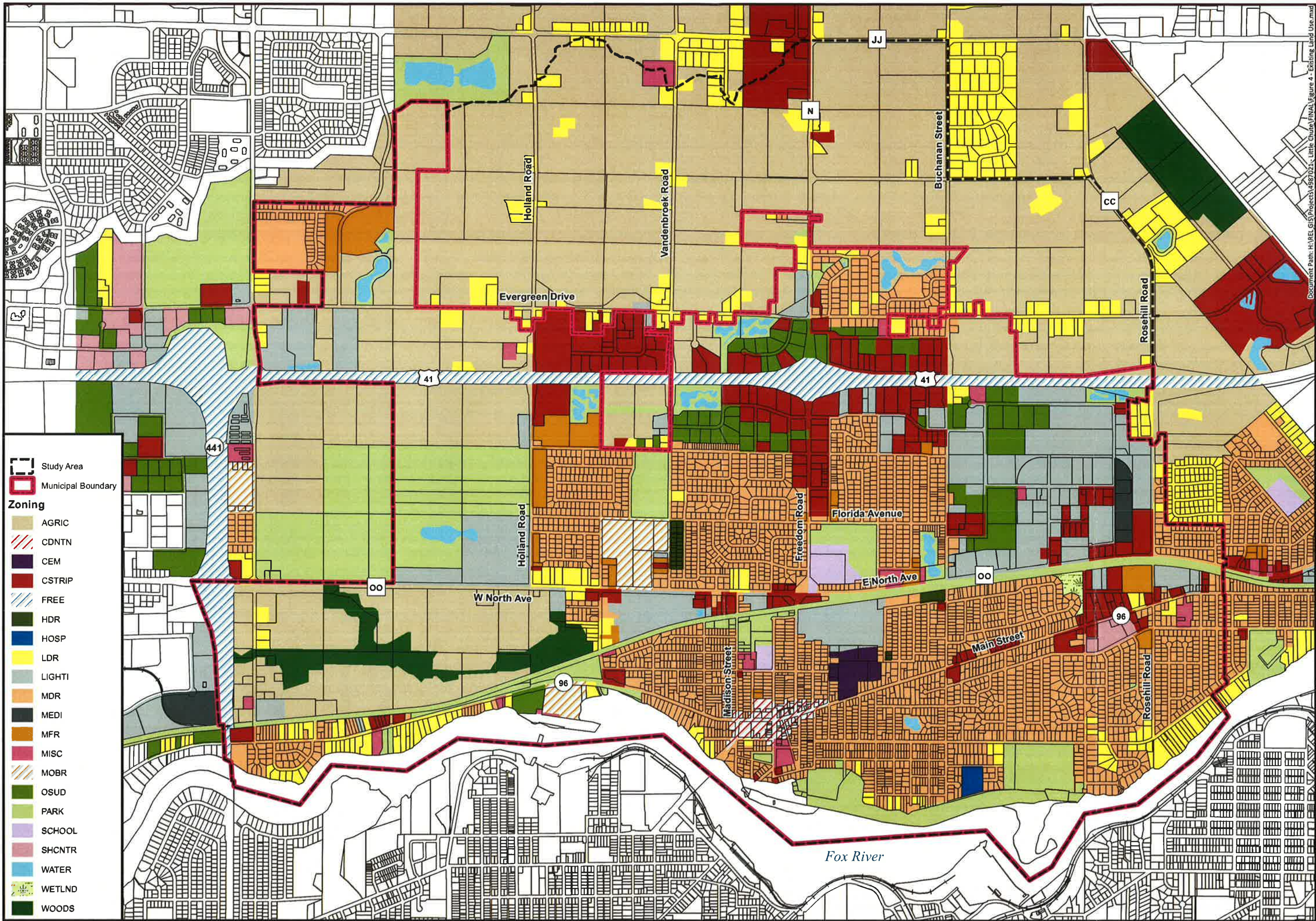


Figure 4
Existing Land Use

10/28/2016

STORM WATER MANAGEMENT PLAN
VILLAGE OF LITTLE CHUTE
OUTAGAMIE COUNTY, WISCONSIN

Sources: Robert E. Lee
& Associates, Inc.,
Outagamie County, WI

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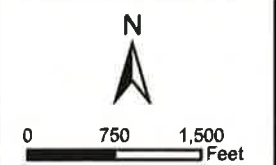
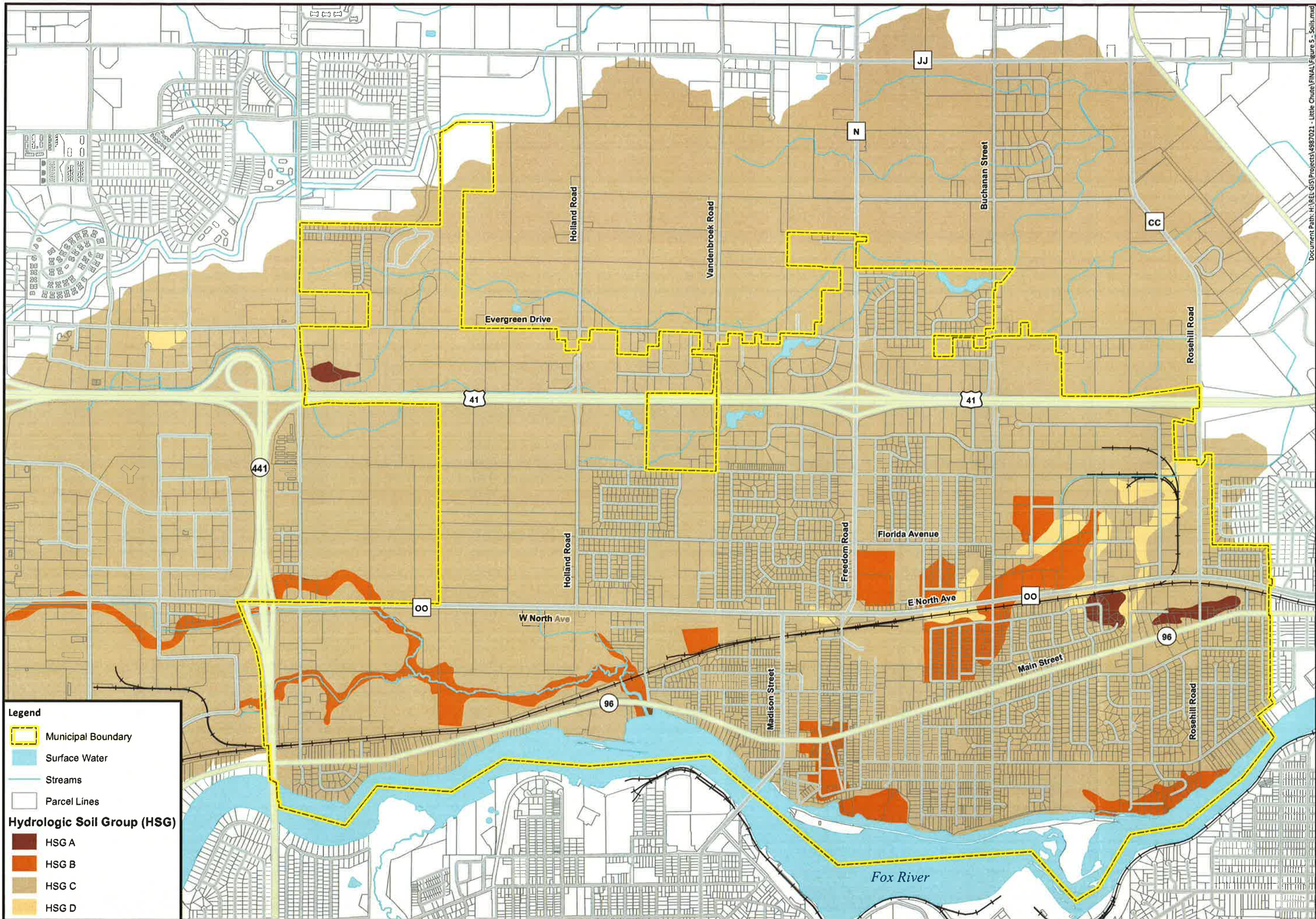


FIGURE 5 – SOILS



Legend

- Municipal Boundary
- Surface Water
- Streams
- Parcel Lines

Hydrologic Soil Group (HSG)

- HSG A
- HSG B
- HSG C
- HSG D

Robert E. Lee & Associates, Inc.

ANNIVERSARY
Engineering, Surveying,
Environmental Services

Figure 5
Soils

10/28/2016

STORM WATER MANAGEMENT PLAN
VILLAGE OF LITTLE CHUTE
OUTAGAMIE COUNTY, WISCONSIN

Sources: Robert E. Lee & Associates, Inc.,
Outagamie County, WI

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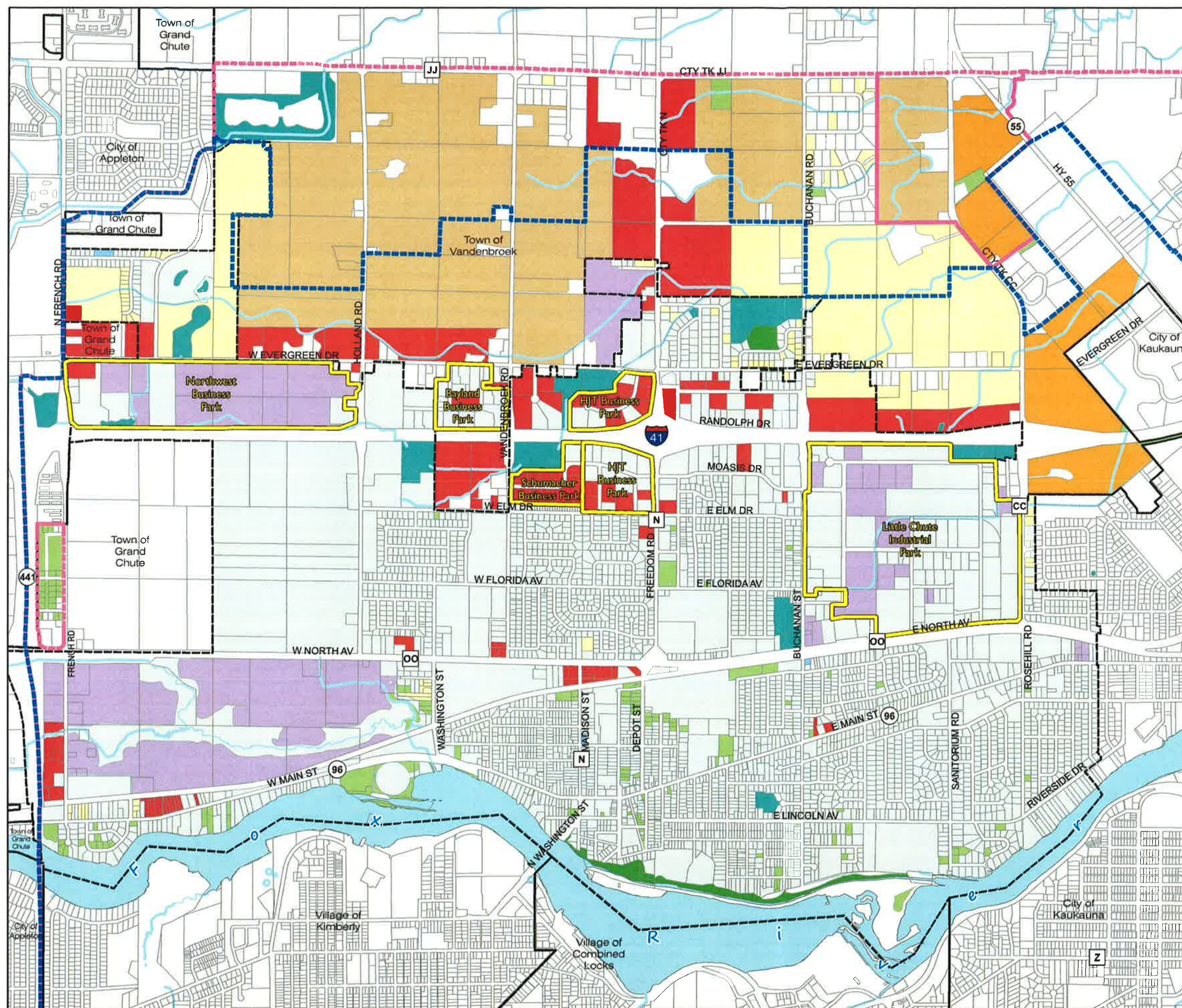
Document Path: H:\REL GIS\Projects\4987021 - Little Chute\FINAL\Figure 5 - Soils.mxd

FIGURE 6 – FUTURE LAND USES

FIGURE 6

Future Land Use

Village of Little Chute
Comprehensive Plan



- Commercial
- Currently Developed
Redevelopment on these parcels shall follow current zoning.
- Industrial
- Non-irrigated Cropland
- Other Open Land
Development on these parcels shall follow current zoning.
- Public Institution
- Recreation
- Residential
- Rural Preservation
- Stormwater Management Facility
- Industrial & Business Parks
- Sewer Service Area 2030
- Sewer Service Area 2050
- Municipal Boundary

Sources: Outagamie County, Village of Little Chute, East Central Regional Planning Commission, and Wisconsin Department of Natural Resources. April 2016.



0 0.25 0.5 1 Miles

FIGURE 7 – PRIORITY WATERSHEDS



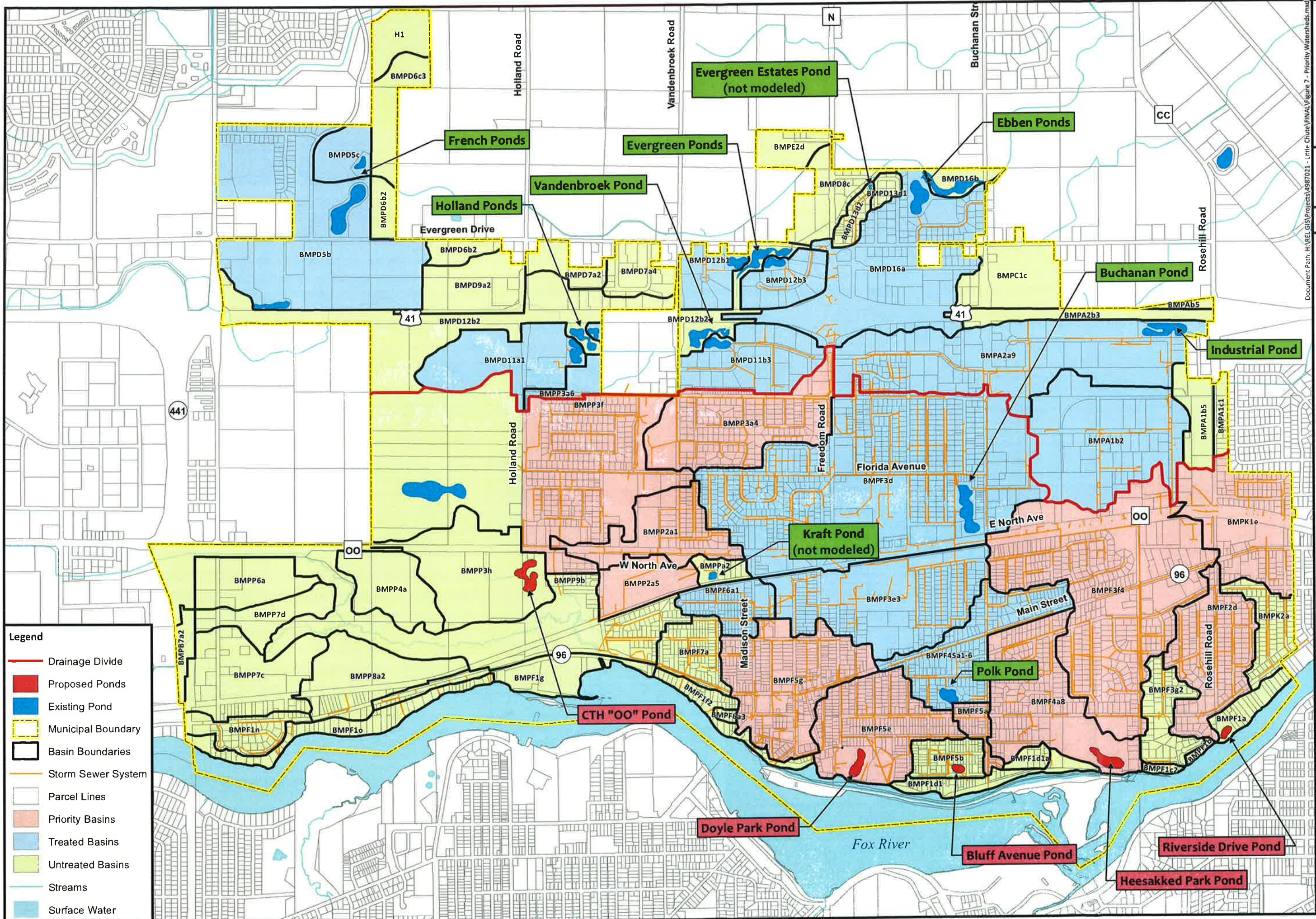
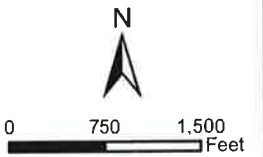
Figure 7
Priority Watersheds

12/22/2016

STORM WATER MANAGEMENT PLAN
VILLAGE OF LITTLE CHUTE
OUTAGAMIE COUNTY, WISCONSIN

Sources: Robert E. Lee
& Associates, Inc.,
Outagamie County, WI

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Document Path: H:\REL GIS\Projects\4987021 - Little Chute\FINAL Figure 7 - Priority Watersheds.mxd

TABLE 2 – SLAMM MODEL SUMMARY

Table 2. SLAMM Model Summary														
Drainage System	BMP ID	Area (Acres)	Total Suspended Solids (TSS)						Total Phosphorus (TP)					
			Pollutant Yield - No Controls (lbs)	Pollutant Yield - w/ Controls (lbs)	Load Reduction through Wet Detention Pond (lbs)	Load Reduction through Street Sweeping (lbs)	Total Load Reduction (lbs)	Total Load Reduction (%)	Pollutant Yield - No Controls (lbs)	Pollutant Yield - w/ Controls (lbs)	Load Reduction through Wet Detention Pond (lbs)	Load Reduction through Street Sweeping (lbs)	Total Load Reduction (lbs)	Total Load Reduction (%)
FOX RIVER SUB-WATERSHED														
E-BMP F3d, F3e3, F6a1	Buchanan Pond	433.9	121,625	23,124	81,416	17,085	98,501	81.0%	360	140	182	38	220	61.2%
E-BMP F5a1-6	Polk Pond	65.8	15,810	1,917	12,542	1,352	13,893	87.9%	55	19	33	4	37	66.3%
E-BMP F3f4		191.042	9,726	8,408	0	1,317	1,317	13.5%	31	28	0	3	3	8.8%
E-BMP F4a8, F5a7		93.64	18,007	15,005	0	3,002	3,002	16.7%	69	62	0	7	7	9.9%
E-BMP K1e		70.93	22,303	19,166	0	3,137	3,137	14.1%	62	56	0	6	6	9.6%
E-BMP K2a		25.49	5,540	4,556	0	984	984	17.8%	21	19	0	2	2	10.8%
E-BMP F2d		67.699	14,338	11,767	0	2,571	2,571	17.9%	55	49	0	6	6	10.9%
E-BMP F3g2		27.446	5,498	4,499	0	998	998	18.2%	21	19	0	2	2	10.9%
E-BMP F5b		18.77	4,029	3,304	0	725	725	18.0%	15	14	0	2	2	10.9%
E-BMP F5g		87.95	25,404	23,315	0	2,088	2,088	8.2%	78	74	0	4	4	5.1%
E-BMP F5e		76.93	14,974	12,416	0	2,559	2,559	17.1%	57	51	0	6	6	10.2%
E-BMP Pa2		8.736	3,714	3,714	0	0	0	0.0%	8	8	0	0	0	0.0%
E-BMP P3a4		85.437	18,767	15,536	0	3,231	3,231	17.2%	67	60	0	7	7	10.5%
E-BMP P2a1		41.51	11,129	9,723	0	1,406	1,406	12.6%	35	32	0	3	3	8.2%
E-BMP P2a5		28.629	11,906	11,635	0	271	271	2.3%	24	24	0	1	1	2.5%
E-BMP F7a		26.578	6,293	5,339	0	954	954	15.2%	23	21	0	2	2	9.4%
E-BMP F1n		19.18	4,338	3,567	0	771	771	17.8%	16	14	0	2	2	10.9%
E-BMP P7c		23.658	6,256	5,386	0	870	870	13.9%	17	16	0	2	2	9.1%
E-BMP P8a2		17.461	3,974	3,491	0	483	483	12.2%	12	12	0	1	1	6.9%
E-BMP P7d		10.108	635	635	0	0	0	0.0%	3	3	0	0	0	0.0%
E-BMP P6a		3.15	496	496	0	0	0	0.0%	2	2	0	0	0	0.0%
E-BMP P4a		2.969	145	145	0	0	0	0.0%	1	1	0	0	0	0.0%
E-BMP P9b		101.362	11,228	10,098	0	1,130	1,130	10.1%	47	44	0	2	2	5.2%
E-BMP P3h		0.709	35	35	0	0	0	0.0%	0	0	0	0	0	0.0%
E-BMP P3f		133.191	30,906	26,428	0	4,478	4,478	14.5%	107	97	0	10	10	9.2%
E-BMP F6a3		1.909	379	312	0	67	67	17.7%	1	1	0	0	0	10.4%
E-BMP F1d1a		3.185	798	663	0	135	135	16.9%	3	2	0	0	0	10.3%
TOTALS:		1667.369	368,252	224,679	93,957	49,615	143,572	39.0%	1,191	867	215	109	324	27.2%
INCLUDING EXCESS LBS FROM APPLECREEK							175,265	47.6%	INCLUDING EXCESS LBS FROM APPLECREEK				376	31.6%
TMDL REQUIREMENT =							265,141	72.0%	TMDL REQUIREMENT =				488	41.0%
APPLE CREEK SUB-WATERSHED														
E-BMP D5b	French Pond South	174.954	33,321	2,314	28,780	2,226	31,007	93.1%	100	36	60	5	64	64.3%
E-BMP D5c	French Pond North	19.509	942	79	713	150	863	91.6%	3	1	2	0	2	70.2%
E-BMP A2a9, A1b2	Industrial Pond	269.815	108,636	35,170	60,816	12,651	73,467	67.6%	220	109	92	19	111	50.4%
E-BMP D11a1, P3a6	Holland Pond 14B	82.769	15,609	1,891	13,718	0	13,718	87.9%	48	19	29	0	29	60.8%
E-BMP D11a4, D11a2	Holland Pond 14C	19.842	3,085	161	2,924	0	2,924	94.8%	11	4	7	0	7	64.3%
E-BMP D11b3	Vandenbroek Pond	52.588	12,807	1,383	9,097	2,327	11,424	89.2%	33	11	18	5	22	66.8%
E-BMP D12b1	Evergreen Pond 12A	29.528	4,451	330	3,539	581	4,120	92.6%	15	6	8	1	9	61.2%
E-BMP D12b3	Evergreen Pond 12B	26.982	5,453	354	4,100	999	5,099	93.5%	15	5	8	2	10	67.8%
E-BMP D16a	Ebben Pond	135.225	39,417	4,088	30,159	5,170	35,329	89.6%	115	35	68	12	80	69.3%
E-BMP 13d2	Evergreen Estates Pond	8.992	2,199	664	1,149	386	1,535	69.8%	7	4	3	1	4	51.6%
E-BMP A1c1		4.992	1,050	996	0	54	54	5.1%	4	4	0	0	0	3.2%
E-BMP A1b5		20.612	10,383	10,383	0	0	0	0.0%	19	19	0	0	0	0.0%
E-BMP A2b3		1.409	557	557	0	0	0	0.0%	1	0	0	1	1	100.0%
E-BMP C1c		10.988	4,326	4,326	0	0	0	0.0%	11	11	0	0	0	0.0%
E-BMP 13d1		5.524	1,155	949	0	206	206	17.8%	4	4	0	0	0	10.7%
E-BMP D8c		19.323	5,277	5,277	0	0	0	0.0%	15	15	0	0	0	0.0%
E-BMPE2d		1.242	232	232	0	0	0	0.0%	1	1	0	0	0	0.0%
E-BMPD7a4		22.12	11,204	11,204	0	0	0	0.0%	23	23	0	0	0	0.0%
E-BMPD7a2		14.551	7,410	7,410	0	0	0	0.0%	16	16	0	0	0	0.0%
E-BMPD9a2		5.103	1,272	1,272	0	0	0	0.0%	4	4	0	0	0	0.0%
E-BMPD6b2		3	92	92	0	0	0	0.0%	0	0	0	0	0	0.0%
E-BMPD12b2		48.922	15,842	15,842	0	0	0	0.0%	37	37	0	0	0	0.0%
TOTALS:		977.99	284,718	104,972	154,995	24,751	179,746	63.1%	704	363	294	46	341	48.4%
TMDL REQUIREMENT =							148,053	52.0%	TMDL REQUIREMENT =				289	41.0%
EXCESS LBS REMOVED =							31,693		EXCESS LBS REMOVED =				52	
VILLAGE TOTALS														
TOTALS:		2645.359	652969.4	207,550			323,318	49.5%	1894.627	1,230			665	35.1%

TABLE 3 – REGIONAL STORM WATER POND SUMMARY

TABLE 3. POSSIBLE REGIONAL STORM WATER PONDS							
BMP ID	Drainage Basins	2017 Construction Cost*	Average Annual O&M Costs Over 20 years*	Construction & O&M Costs Over 20 years	Average Annual TSS Removal (lbs)	TSS Removal Over 20 Years (lbs)	Average Annual Cost (\$/lb)
Heesakker Park Pond	F4a8, F5a7	\$260,000	\$55,000	\$315,000	12,749	254,980	\$1.24
Riverside Drive Pond	F2d	\$405,000	\$50,000	\$455,000	11,470	229,400	\$1.98
Bluff Avenue Pond	F5b, Fa7	\$265,000	\$40,000	\$305,000	4,482	89,640	\$3.40
Doyle Park Pond	F5e	\$350,000	\$50,000	\$400,000	11,980	239,600	\$1.67
CTH OO Pond	P3a4, P2a1, P3h, P3f	\$2,400,000	\$255,000	\$2,655,000	48,670	973,400	\$2.73

*Construction Costs are based on the original estimates done in 2007, 3% annual inflation has been added to the 2017 values

POTENTIAL STORM WATER POND INFORMATION

CTH "00" POND

POTENTIAL STORMWATER BMP RETROFIT

PROJECT NAME Village of Little Chute
PROJECT NO. L0001-950251.00

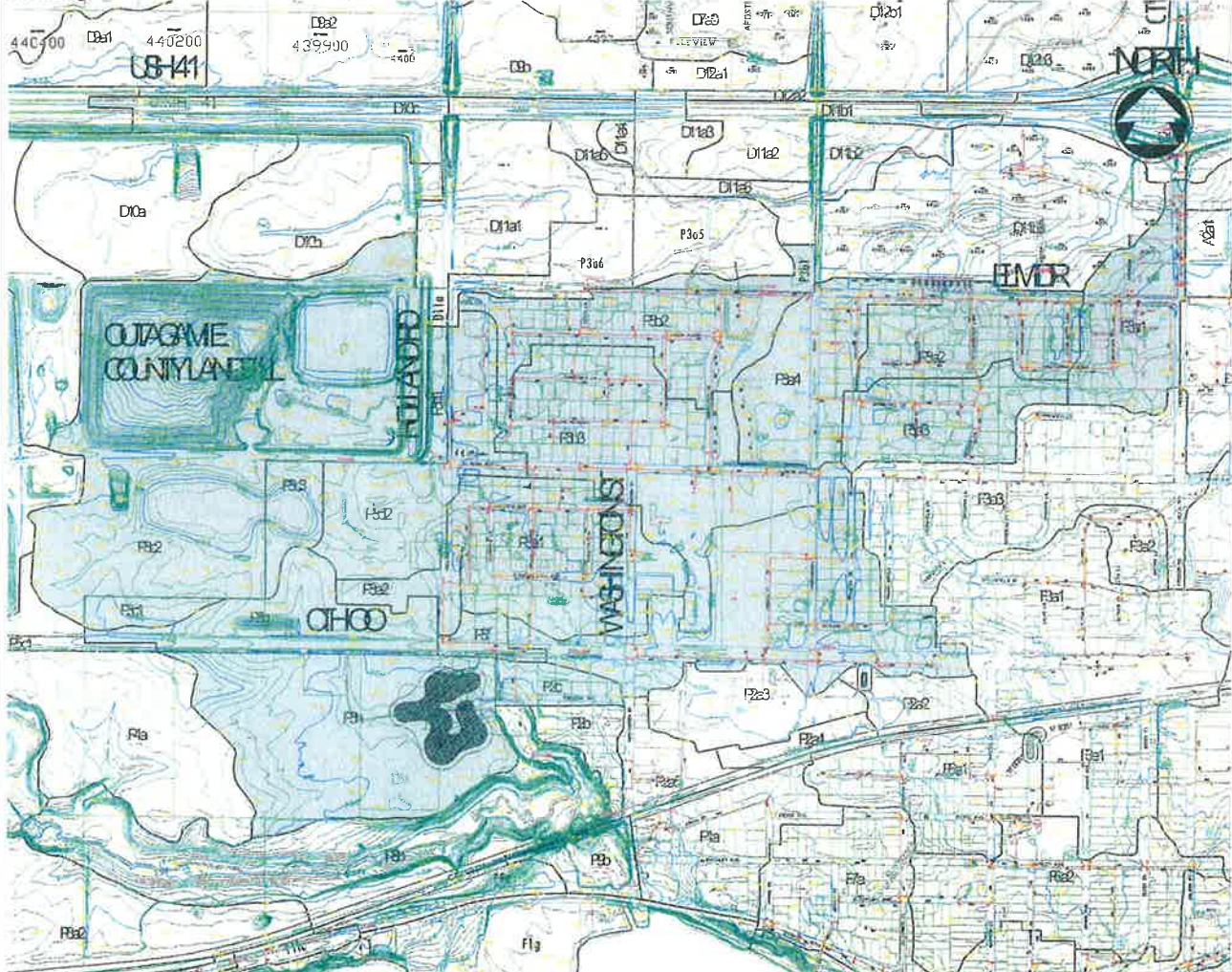
SITE INFORMATION:

Site Name: BMP2-P3h	Date: June 15, 2007
Location Description: South of Holland Road at CTH "00"	Initials: TAW
<input type="checkbox"/> City of <input type="checkbox"/> Township of, or <input checked="" type="checkbox"/> Village of <u>Little Chute</u>	County: <u>Outagamie</u> State: <u>Wisconsin</u>
Govt. Lot <u> </u> OR NW 1/4, of Section <u>21</u> , Township <u>21</u> <input checked="" type="checkbox"/> N <input type="checkbox"/> S, Range <u>18</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	

DRAINAGE AREA:

Sub-watershed ID: Paradise Valley	Tributary Drainage Area IDs: P2a1, P2c, P3a1-P3a4, P3b1-P3b3, P3c1-P3c3, P3d1, P3d2, P3e1, P3e2, P3f, P3g, P3h	Total Drainage Area: 509.35 acres
Imperviousness (Future): 43.7 %	Runoff Curve Number (Future): 84	Water Quality Volume (Future): 28.23 acre-feet

Drainage Area / Site Location Map:



PROPOSED BMP RETROFIT:

Type of proposed BMP retrofit (e.g. wet pond, bioretention, proprietary device, etc.):

Wet Detention Pond

Initial BMP Screening

NRCS Map Symbol: WnA,
WnB

Groundwater Depth (ft): 3-6

Wetlands: ☐ Yes ☐ No

USDA Soil Texture: Silty
Clay Loam

Bedrock Depth (in): >60

Public Well < 400 ft: ☐ Yes ☒ No

Infiltration (in/hr): <0.2-0.6

100-Year Floodplain: ☐ Yes ☐ No

Private Well < 100 ft: ☐ Yes ☒ No

BMP Outfall (storm sewer, stream, wetland, groundwater, etc.):

Wet pond to discharge via storm sewer into Unnamed tributary to the Fox River.

Infrastructure modifications or flow diversions required for retrofit:

Majority of the area naturally drains to the tributary. Storm sewer would need to be installed when the ponds develop.

Site access for future BMP maintenance:

Depending on future street layout, an access easement may be required.

Site constraints that require further investigation (e.g. utility conflicts, wetlands, groundwater, etc.):

Wetlands, soils, groundwater, floodplain and navigability

Approx. Size of BMP Retrofit:

5.4 acre permanent pool

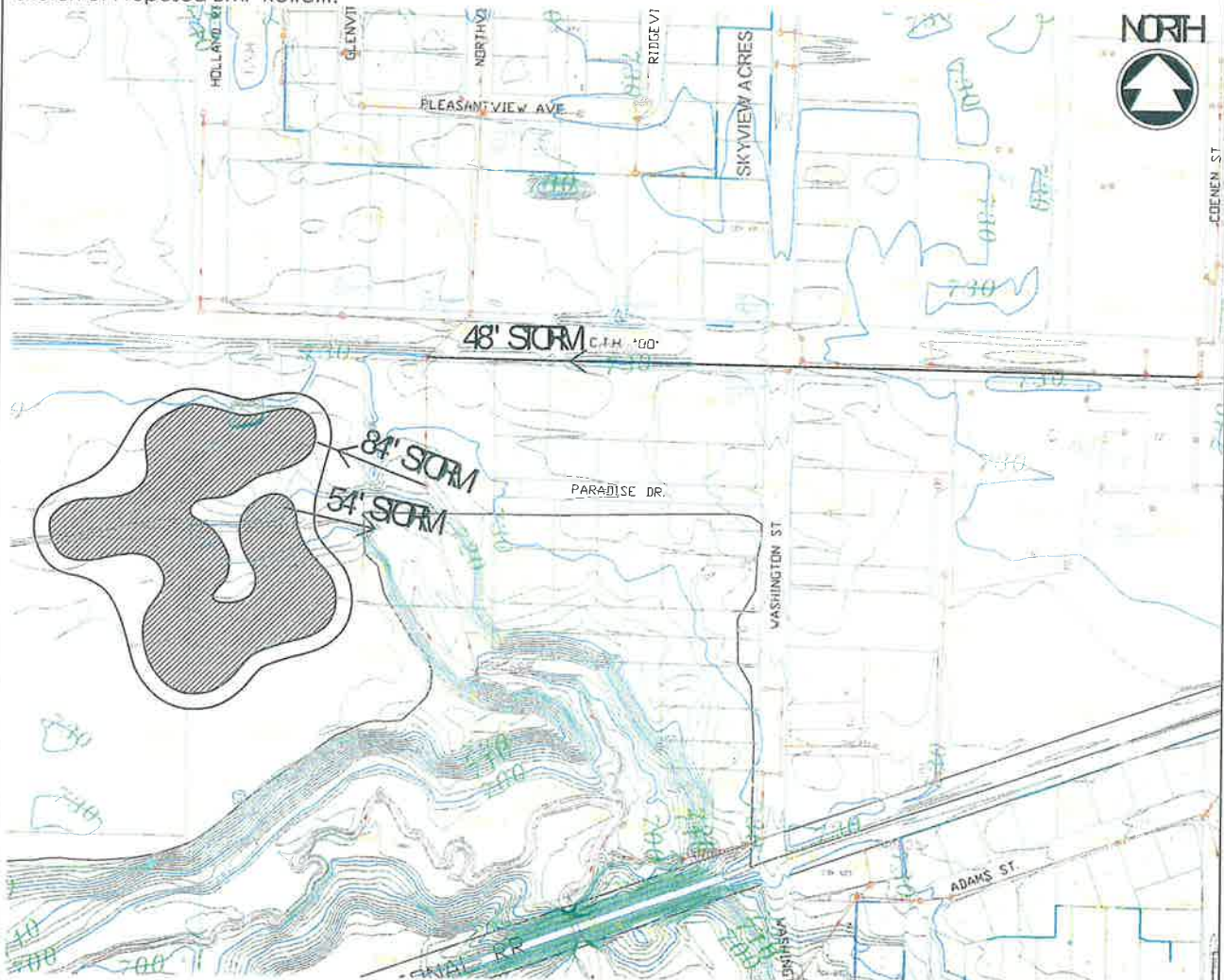
Approx. Land Required (ac):

14

Estimated Cost:

\$1,790,000

Sketch of Proposed BMP Retrofit:



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McMAHON ASSOCIATES, INC.

1445 McMahon Drive, PO Box 1025, Neenah, WI 54956/54957-1025 Phone: 920-751-4200 Fax: 920-751-4284



CTH OO WETLAND INVENTORY MAP



Legend

Wetland Class Points

- Dammed pond
- Excavated pond
- Filled excavated pond
- Filled/drained wetland
- Wetland too small to delineate

Filled Points

Wetland Class Areas

- Wetland
- Upland

Filled Areas

- NRCS Wetspots
- Wetland Indicators
- Municipality
- State Boundaries
- County Boundaries

Major Roads

- Interstate Highway
- State Highway
- US Highway

County and Local Roads

- County HWY
- Local Road

Railroads

- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

0.1 0 0.06 0.1 Miles

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1: 3,960

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Notes

RIVERSIDE DRIVE POND

POTENTIAL STORMWATER BMP RETROFIT

PROJECT NAME Village of Little Chute
PROJECT NO. L0001-950251.00

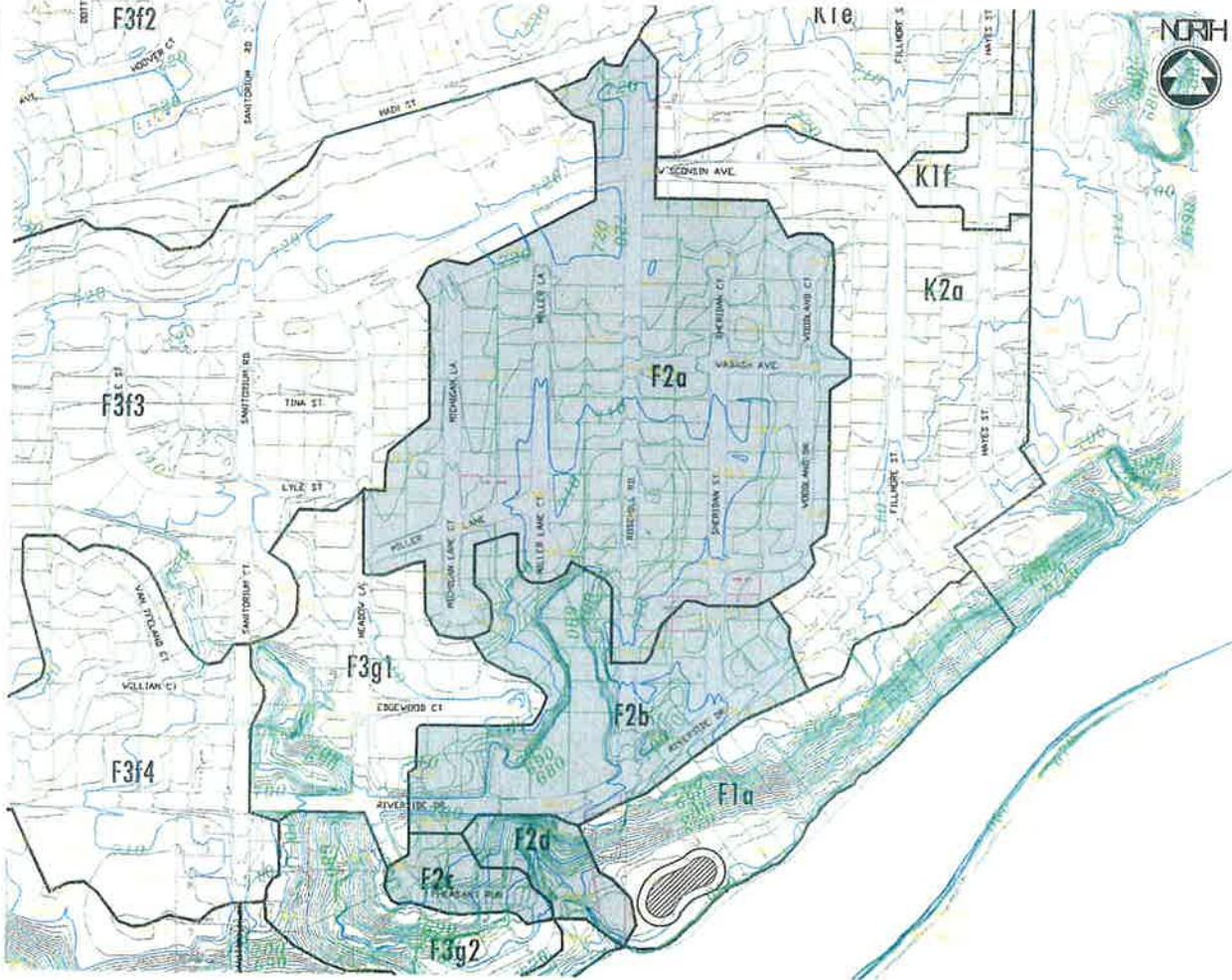
SITE INFORMATION:

Site Name: BMP-F2d	Date: June 15, 2007
Location Description: Located east of Pheasant Run Rd and south of Riverside Dr.	Initials: PTK
<input type="checkbox"/> City of <input type="checkbox"/> Township of, or <input checked="" type="checkbox"/> Village of <u>Little Chute</u>	County: <u>Outagamie</u> State: <u>Wisconsin</u>
Govt. Lot _____ OR SW 1/4, of Section <u>23</u> , Township <u>21</u> <input checked="" type="checkbox"/> N <input type="checkbox"/> S, Range <u>18</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	

DRAINAGE AREA:

Sub-watershed ID: Fox River	Tributary Drainage Area IDs: F2a, F2b, F2c, F2d	Total Drainage Area: 67.69 acres
Imperviousness (Future): 36.3 %	Runoff Curve Number (Future): 83	Water Quality Volume (Future): 3.19 acre-feet

Drainage Area / Site Location Map:



McMAHON ASSOCIATES, INC.

1445 McMahon Drive, PO Box 1025, Neenah, WI 54956/54957-1025 Phone: 920-751-4200 Fax: 920-751-4284

PROPOSED BMP RETROFIT:

Type of proposed BMP retrofit (e.g. wet pond, bioretention, proprietary device, etc.):
Wet Detention Pond

Initial BMP Screening

NRCS Map Symbol: Bc, KkE3	Groundwater Depth (ft): >6'	Wetlands: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
USDA Soil Texture: Silty Clay Loam, Silty Loam	Bedrock Depth (in): > 60 in	Public Well < 400 ft: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Infiltration (in/hr): 0.2-0.6 in/hr	100-Year Floodplain: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Private Well < 100 ft: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

BMP Outfall (storm sewer, stream, wetland, groundwater, etc.):
Wet pond to discharge by storm sewer outfall to the Fox River.

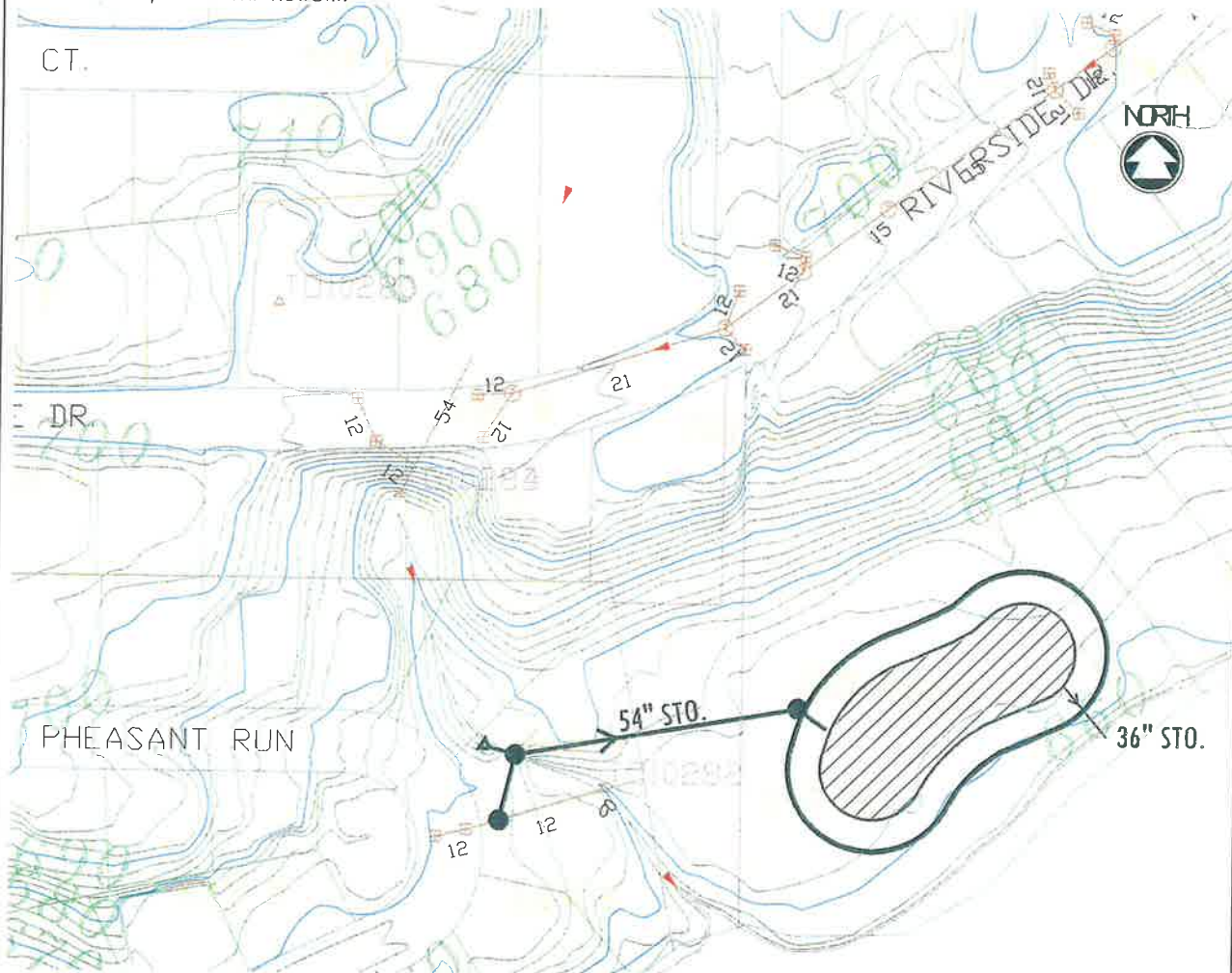
Infrastructure modifications or flow diversions required for retrofit:
Divert 12" storm sewer from Pheasant Run Rd and flows from ravine via a 54" storm sewer into the pond.

Site access for future BMP maintenance:
Fair. Access to BMP retrofit site from Riverside Drive via steep slopes.

Site constraints that require further investigation (e.g. utility conflicts, wetlands, groundwater, etc.):
Steep slopes down to pond retrofit. Access easement will need to be purchased.

Approx. Size of BMP Retrofit: 0.54 acre permanent pool	Approx. Land Required (ac): 1.5 ac	Estimated Cost: \$299,000
-----------------------------------------------------------	---------------------------------------	------------------------------

Sketch of Proposed BMP Retrofit:



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McMAHON ASSOCIATES, INC.

1445 McMahon Drive, PO Box 1025, Neenah, WI 54956/54957-1025 Phone: 920-751-4200 Fax: 920-751-4284



RIVERSIDE DR POND WETLAND INVENTORY MAP



Legend

Wetland Class Points

- Dammed pond
- Excavated pond
- Filled excavated pond
- Filled/draind wetland
- Wetland too small to delineate

Filled Points

Wetland Class Areas

- Wetland
- Upland

Filled Areas

- NRCS Wetspots
- Wetland Indicators
- Municipality
- State Boundaries
- County Boundaries

Major Roads

- Interstate Highway
- State Highway
- US Highway

County and Local Roads

- County HWY
- Local Road

Railroads

Tribal Lands

Major Roads

- County Road
- Interstate HWY
- State HWY
- US HWY

Local Roads

- Local Road
- Other

Notes

0.1 0 0.03 0.1 Miles

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1: 1,980

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SITE INFORMATION:	
Site Name: BMP-F5d	Date: June 15, 2007
Location Description: Doyle Park	Initials: PTK
<input type="checkbox"/> City of <input type="checkbox"/> Township of, or <input checked="" type="checkbox"/> Village of Little Chute	County: <u>Outagamie</u> State: <u>Wisconsin</u>
Govt. Lot _____ OR SW 1/4 of Section <u>22</u> , Township <u>21</u> <input checked="" type="checkbox"/> N <input type="checkbox"/> S, Range <u>18</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	
DRAINAGE AREA:	
Sub-watershed ID: Fox River	Tributary Drainage Area IDs: F5c, F5d
Imperviousness (Future): 33.7 %	Total Drainage Area: 66.44 acres Runoff Curve Number (Future): 80 Water Quality Volume (Future): 2.93 acre-feet
Drainage Area / Site Location Map:	

PROPOSED BMP RETROFIT:

Type of proposed BMP retrofit (e.g. wet pond, bioretention, proprietary device, etc.):
Wet Detention Pond

Initial BMP Screening

NRCS Map Symbol: Uo
USDA Soil Texture: Variable
Infiltration (in/hr): Not listed

Groundwater Depth (ft): > 6 ft
Bedrock Depth (in): > 60 in
100-Year Floodplain: ☒ Yes ☐ No

Wetlands: ☐ Yes ☒ No
Public Well < 400 ft: ☐ Yes ☒ No
Private Well < 100 ft: ☐ Yes ☒ No

BMP Outfall (storm sewer, stream, wetland, groundwater, etc.):
Wet pond to discharge by storm sewer into the Fox River.

Infrastructure modifications or flow diversions required for retrofit:
Divert 24" storm sewer along Doyle Park entrance into northern corner of pond. Replace 12" storm sewer running under softball fields to pond with a 24" storm sewer.

Site access for future BMP maintenance:

Good. Access to BMP retrofit site from Park Ave through the Doyle Park entrance.

Site constraints that require further investigation (e.g. utility conflicts, wetlands, groundwater, etc.):

Site is located near a municipal well. Park has numerous yard drains connected by storm sewer. Potential conflicts with getting park to drain to pond. Southern tip of proposed pond may be in the Fox River 100-Year flood plain.

Approx. Size of BMP Retrofit:

0.60 acre permanent pool

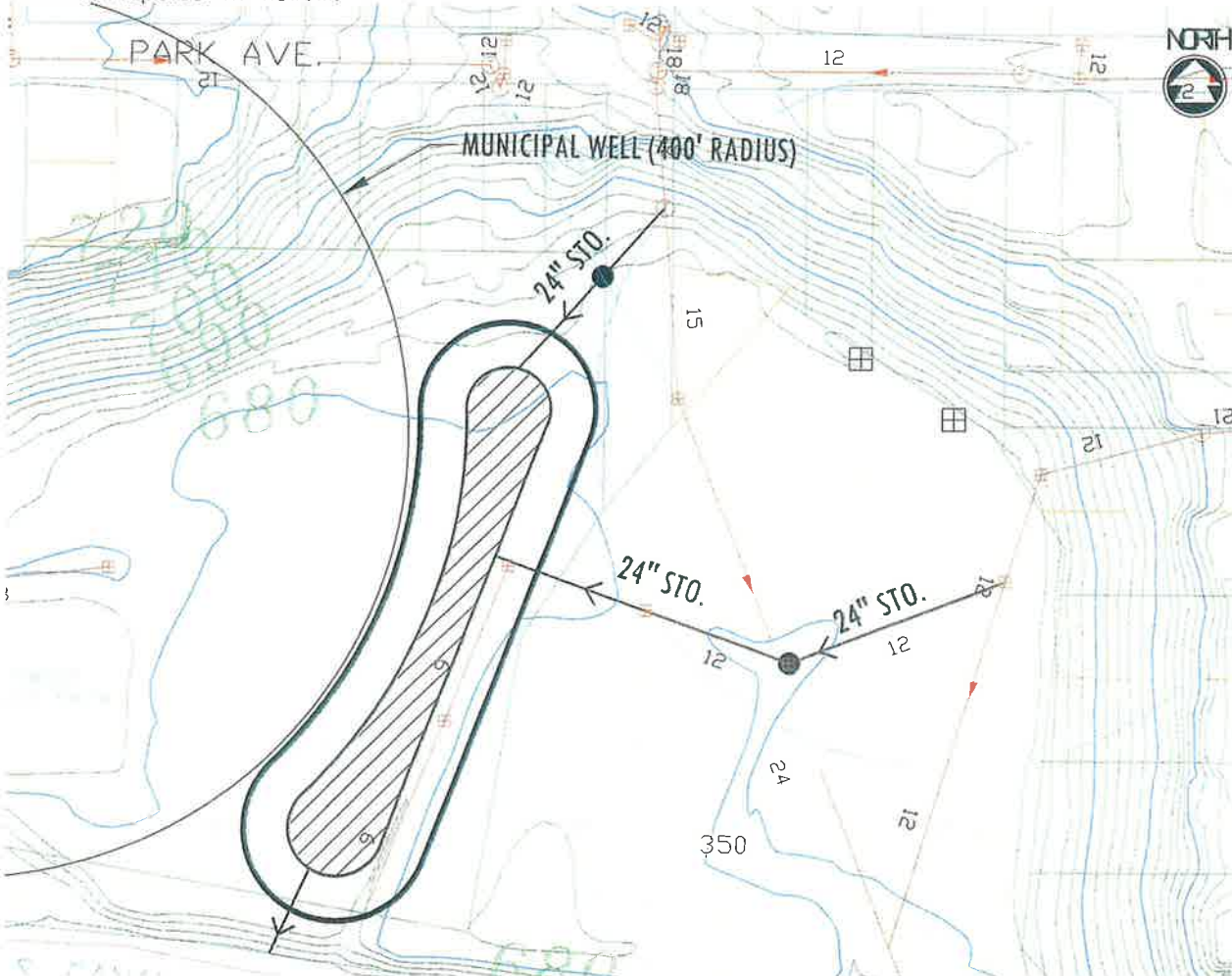
Approx. Land Required (ac):

1.8 (Village already owns land)

Estimated Cost:

\$ 258,000

Sketch of Proposed BMP Retrofit:



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McMAHON ASSOCIATES, INC.

1445 McMahon Drive, PO Box 1025, Neenah, WI 54956/54957-1025 Phone: 920-751-4200 Fax: 920-751-4284

BLUFF AVENUE Pond

POTENTIAL STORMWATER BMP RETROFIT

PROJECT NAME Village of Little Chute
PROJECT NO. L0001-950251.00

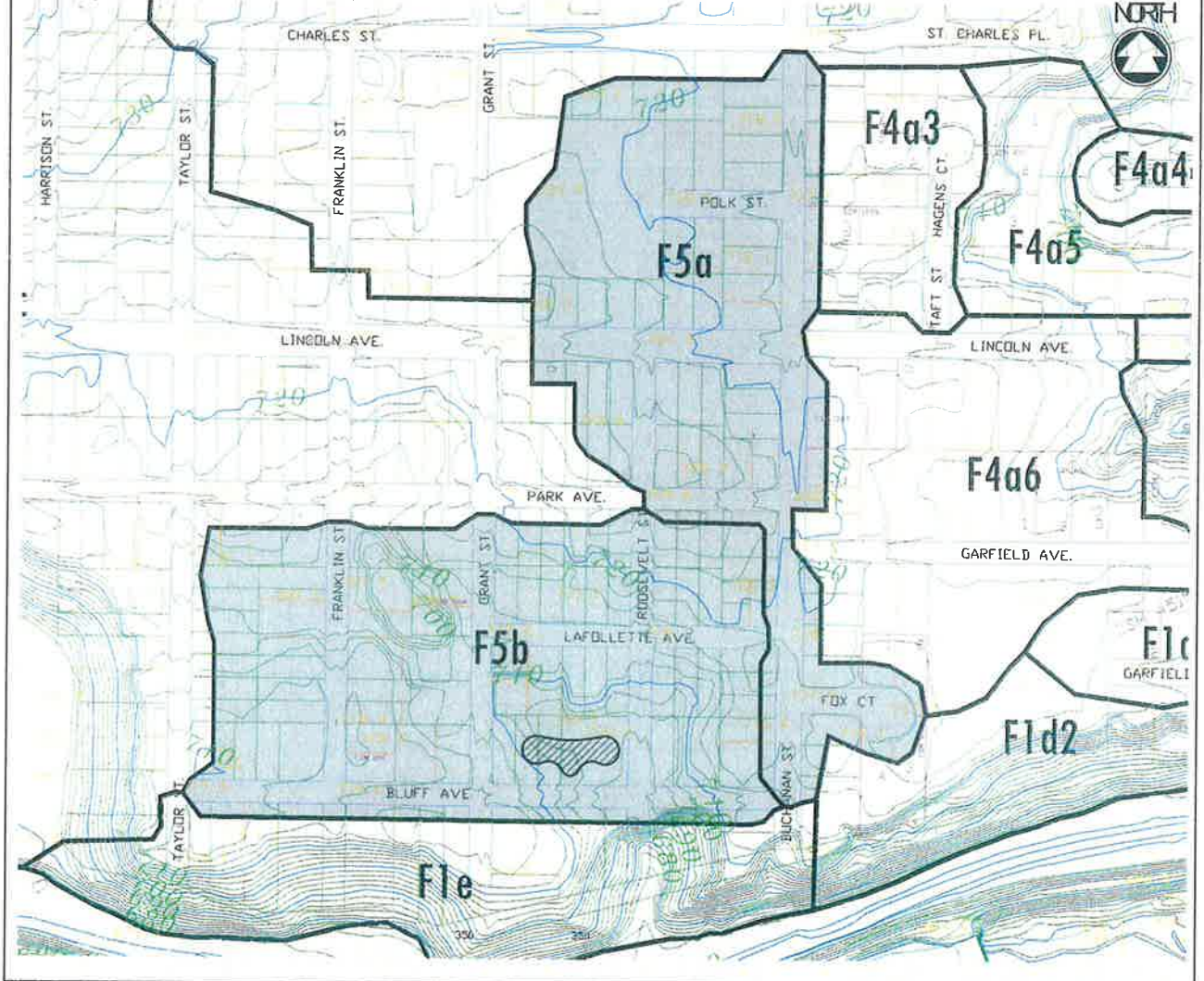
SITE INFORMATION:

Site Name: BMP-F5b	Date: June 15, 2007
Location Description: Old landfill site north of Bluff St. and west of Roosevelt St.	Initials: TAW
<input type="checkbox"/> City of <input type="checkbox"/> Township of, or <input checked="" type="checkbox"/> Village of <u>Little Chute</u>	County: <u>Outagamie</u> State: <u>Wisconsin</u>
Govt. Lot _____ OR SW 1/4, of Section <u>22</u> , Township <u>21</u> <input checked="" type="checkbox"/> N <input type="checkbox"/> S, Range <u>18</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	

DRAINAGE AREA:

Sub-watershed ID: Fox River	Tributary Drainage Area IDs: F5a, F5b	Total Drainage Area: 34.53 acres
Imperviousness (Future): 37.4 %	Runoff Curve Number (Future): 83	Water Quality Volume (Future): 1.67 acre-feet

Drainage Area / Site Location Map:



McMAHON ASSOCIATES, INC.

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PROPOSED BMP RETROFIT:

Type of proposed BMP retrofit (e.g. wet pond, bioretention, proprietary device, etc.):
Wet Detention Pond

Initial BMP Screening

NRCS Map Symbol: KkE3	Groundwater Depth (ft): >3 ft	Wetlands: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
USDA Soil Texture: Silty Clay Loam	Bedrock Depth (in): > 60 in	Public Well < 400 ft: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Infiltration (in/hr): 0.06-0.6 in/hr	100-Year Floodplain: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Private Well < 100 ft: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

BMP Outfall (storm sewer, stream, wetland, groundwater, etc.):
Wet pond to discharge by storm sewer into existing 12" culvert at southeast corner of pond.

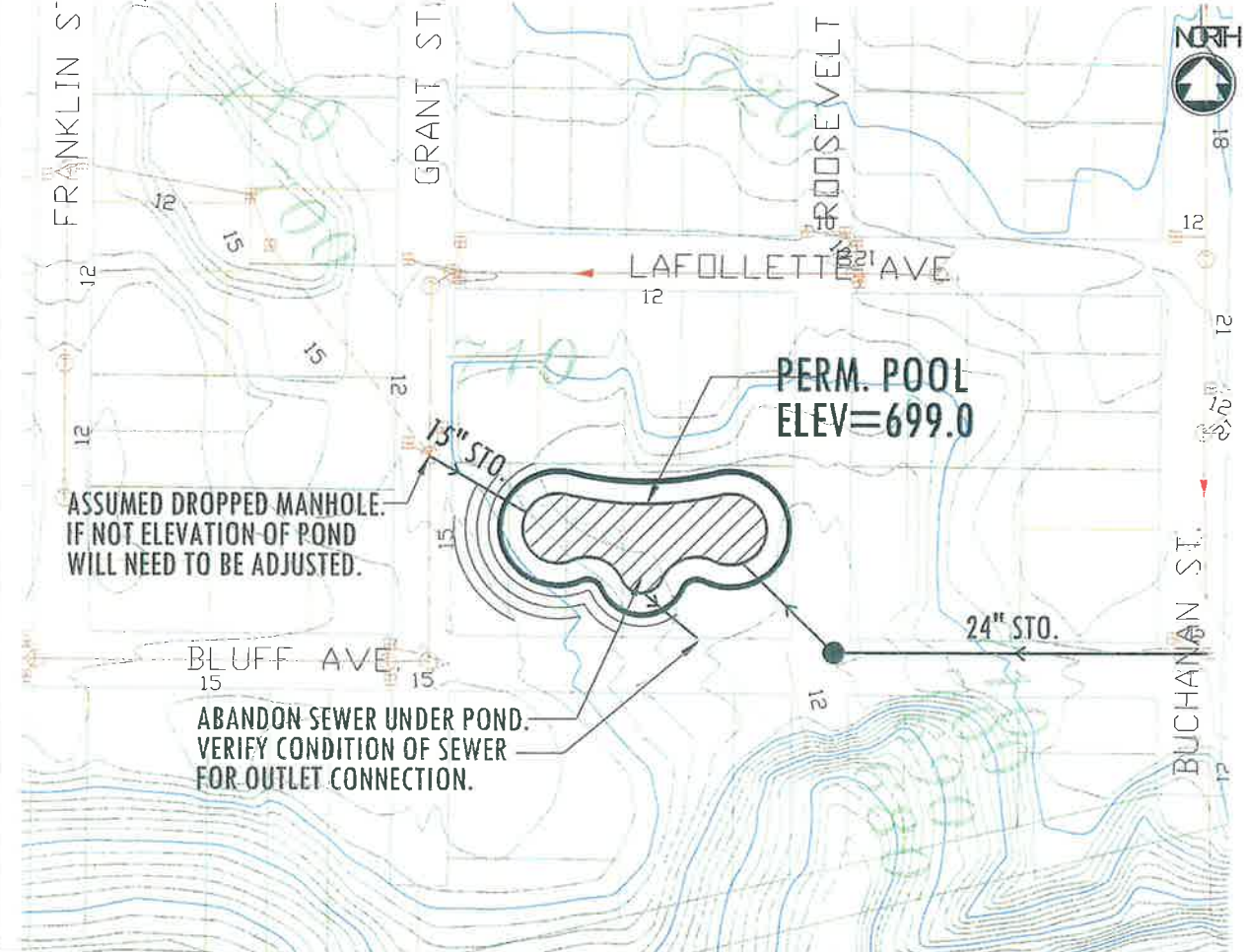
Infrastructure modifications or flow diversions required for retrofit:
Divert 15" storm sewer along Grant St into the west side of the pond. Divert the 21" along Buchanan St. into the east side of the pond.

Site access for future BMP maintenance:
Good. Access to BMP retrofit site from Bluff St. and Roosevelt St.

Site constraints that require further investigation (e.g. utility conflicts, wetlands, groundwater, etc.):
Site is an old landfill. May require investigation for possible soil contamination.

Approx. Size of BMP Retrofit: 0.28 acre permanent pool	Approx. Land Required (ac): 1.05 ac	Estimated Cost: \$195,000
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Sketch of Proposed BMP Retrofit:



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McMAHON ASSOCIATES, INC.

1445 McMahon Drive, PO Box 1025, Neenah, WI 54956/54957-1025 Phone: 920-751-4200 Fax: 920-751-4284

HEESAKKER PARK POND

POTENTIAL STORMWATER BMP RETROFIT

PROJECT NAME Village of Little Chute
PROJECT NO. L0001-950251.00

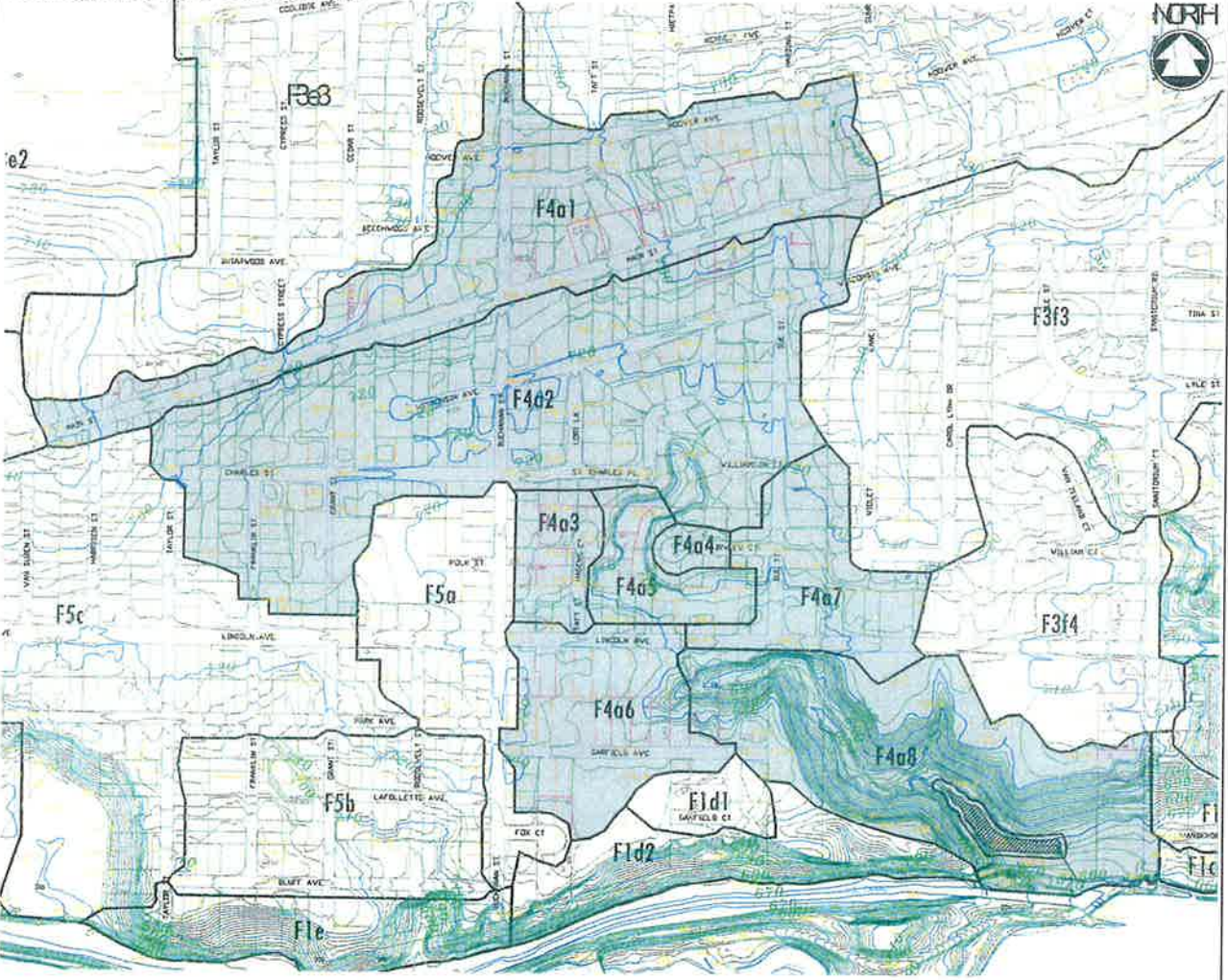
SITE INFORMATION:

Site Name: BMP-F4a8	Date: June 15, 2007
Location Description: Heesakker Park	Initials: TAW
<input type="checkbox"/> City of <input type="checkbox"/> Township of, or <input checked="" type="checkbox"/> Village of <u>Little Chute</u>	County: <u>Outagamie</u> State: <u>Wisconsin</u>
Govt. Lot <u> </u> OR SE 1/4 of Section <u>22</u> , Township <u>21</u> <input checked="" type="checkbox"/> N <input type="checkbox"/> S, Range <u>18</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	

DRAINAGE AREA:

Sub-watershed ID: Fox River	Tributary Drainage Area IDs: F4a1-F4a8	Total Drainage Area: 149.04 acres
Imperviousness (Future): 37.1 %	Runoff Curve Number (Future): 82	Water Quality Volume (Future): 7.16 acre-feet

Drainage Area / Site Location Map:



PROPOSED BMP RETROFIT:

Type of proposed BMP retrofit (e.g. wet pond, bioretention, proprietary device, etc.):
Wet Detention Pond

Initial BMP Screening

NRCS Map Symbol: Bc, KkE3	Groundwater Depth (ft): 3-6 ft	Wetlands: <input type="checkbox"/> Yes <input type="checkbox"/> No
USDA Soil Texture: Silty Clay Loam, Silty Loam	Bedrock Depth (in): > 60 in	Public Well < 400 ft: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Infiltration (in/hr): 0.06-2.0 in/hr	100-Year Floodplain: <input type="checkbox"/> Yes <input type="checkbox"/> No	Private Well < 100 ft: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

BMP Outfall (storm sewer, stream, wetland, groundwater, etc.):
Wet pond to discharge by storm sewer outfall to the Fox River.

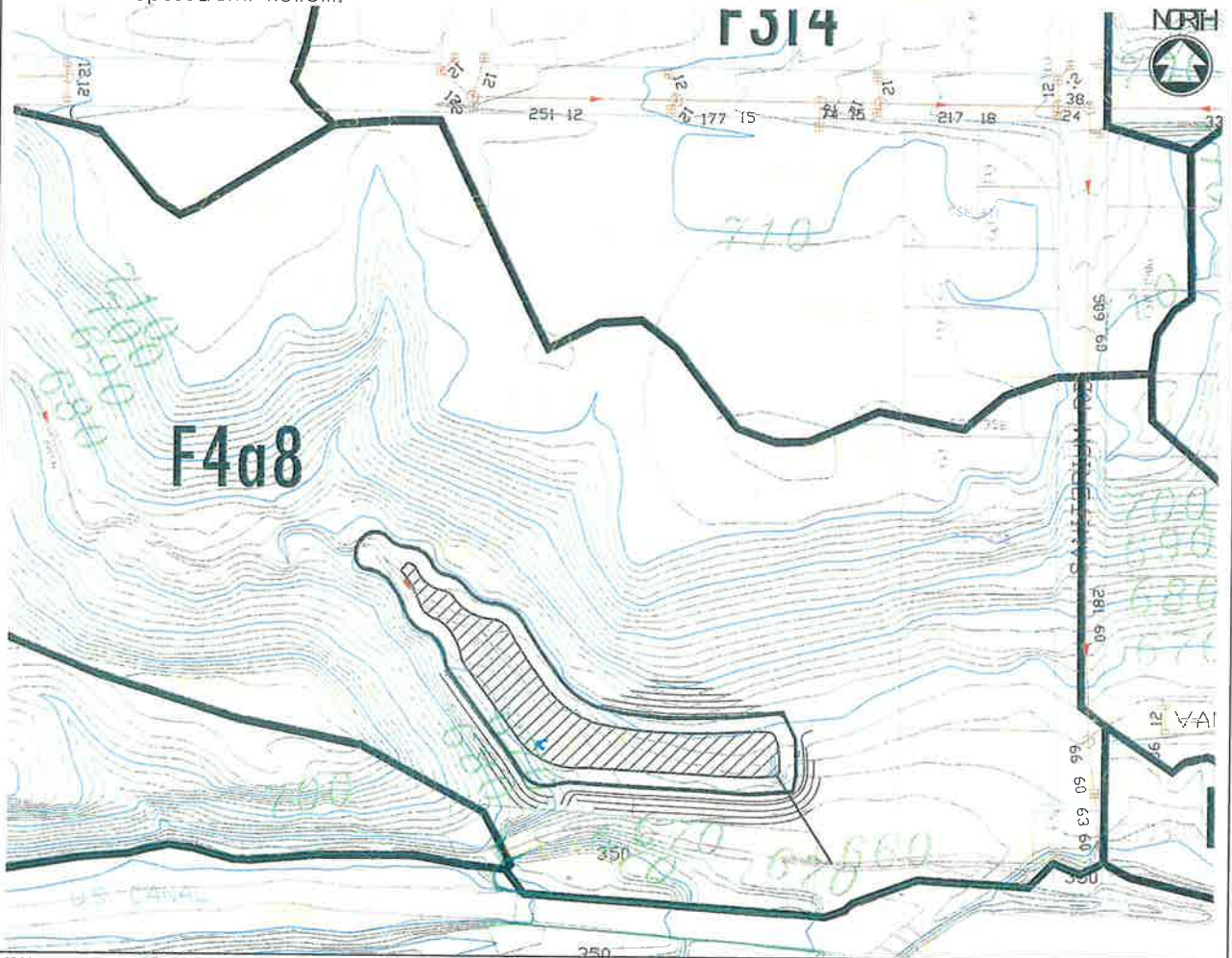
Infrastructure modifications or flow diversions required for retrofit:
Areas naturally drain to proposed retrofit site.

Site access for future BMP maintenance:
Fair. Access to BMP retrofit site from Sanitorium Road via Village of Little Chute property.

Site constraints that require further investigation (e.g. utility conflicts, wetlands, groundwater, etc.):
Removal of heavily wooded area in Heesakker Park. Steep slopes down to pond retrofit. Permitting may be difficult due to navigable stream and possible dam permit. Topographic survey would be needed to determine extents of Fox River 100-Year flood plain. Impacts to sledding hill and park would need to be reviewed.

Approx. Size of BMP Retrofit: 0.68 acre permanent pool	Approx. Land Required (ac): 1.7 (Village already owns land)	Estimated Cost: \$192,000
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Sketch of Proposed BMP Retrofit:



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McMAHON ASSOCIATES, INC.

1445 McMahon Drive, PO Box 1025, Neenah, WI 54956/54957-1025 Phone: 920-751-4200 Fax: 920-751-4284

TABLE 4 – TMDL WATER QUALITY SUMMARY WITH FUTURE PONDS

Table 4. TMDL Water Quality Summary with Future Ponds										
Drainage System	BMP ID	Area (Acres)	Total Suspended Solids (TSS)				Total Phosphorus (TP)			
			Pollutant Yield - No Controls (lbs)	Pollutant Yield - w/ Controls (lbs)	Total Load Reduction (lbs)	Total Load Reduction (%)	Pollutant Yield - No Controls (lbs)	Pollutant Yield - w/ Controls (lbs)	Total Load Reduction (lbs)	Total Load Reduction (%)
FOX RIVER SUB-WATERSHED										
E-BMP F3d, F3e3, F6a1	Buchanan Pond	433.9	121,625	23,124	98,501	81.0%	360	140	220	61.2%
E-BMP F5a1-6	Polk Pond	65.8	15,810	1,917	13,893	87.9%	55	19	37	66.3%
E-BMP F3f4		191.042	9,726	8,408	1,318	13.5%	31	28	3	10.3%
E-BMP F4a8, F5a7	Heesakker Park Pond	93.64	18,007	5,258	12,749	70.8%	69	37	32	46.5%
E-BMP K1e		70.93	22,303	19,166	3,137	14.1%	62	56	6	9.1%
E-BMP K2a		25.49	5,540	4,556	984	17.8%	21	19	2	10.8%
E-BMP F2d	Riverside Drive Pond	67.699	14,338	2,868	11,470	80.0%	55	22	33	59.6%
E-BMP F3g2		27.446	5,498	4,499	998	18.2%	21	19	2	10.9%
E-BMP F5b	Bluff Avenue Pond	18.77	4,029	806	3,223	80.0%	15	6	9	60.9%
E-BMP F5g	F5g Pond	87.95	25,404	5,081	20,323	80.0%	78	31	47	59.9%
E-BMP F5e	Doyle Park Pond	76.93	14,974	2,995	11,980	80.0%	57	23	34	60.1%
E-BMP Pa2		8.736	3,714	3,714	0	0.0%	8	8	0	0.0%
E-BMP P3a4	CTH OO Pond	85.437	18,767	3,753	15,014	80.0%	67	27	40	59.7%
E-BMP P2a1	CTH OO Pond	41.51	11,129	2,226	8,903	80.0%	35	14	21	59.8%
E-BMP P2a5		28.629	11,906	11,635	271	2.3%	24	24	1	2.5%
E-BMP F7a	Bluff Avenue Pond	26.578	6,293	1,259	5,034	80.0%	23	9	14	60.5%
E-BMP F1n		19.18	4,338	3,567	771	17.8%	16	14	2	10.9%
E-BMP P7c		23.658	6,256	5,386	870	13.9%	17	16	2	9.1%
E-BMP P8a2		17.461	3,974	3,491	483	12.2%	12	12	1	6.9%
E-BMP P7d		10.108	635	635	0	0.0%	3	3	0	0.0%
E-BMP P6a		3.15	496	496	0	0.0%	2	2	0	0.0%
E-BMP P4a		2.969	145	145	0	0.0%	1	1	0	0.0%
E-BMP P9b		101.362	11,228	10,098	1,130	10.1%	47	44	2	5.2%
E-BMP P3h	CTH OO Pond	0.709	35	7	28	79.8%	0	0	0	0.0%
E-BMP P3f	CTH OO Pond	133.191	30,906	6,181	24,725	80.0%	107	43	64	60.0%
E-BMP F6a3		1.909	379	312	67	17.7%	1	1	0	10.4%
E-BMP F1d1a		3.185	798	663	135	16.9%	3	2	0	10.3%
TOTALS:		1667.369	368,252	132,246	236,006	64.1%	1,191	619	572	48.0%
			INCLUDING EXCESS LBS FROM APPLECREEK		267,699	72.7%	INCLUDING EXCESS LBS FROM APPLECREEK		624	52.4%
			TMDL REQUIREMENT =		265,141	72.0%	TMDL REQUIREMENT =		488	41.0%

APPLE CREEK SUB-WATERSHED										
E-BMP D5b	French Pond South	174.954	33,321	2,314	31,007	93.1%	100	36	64	64.3%
E-BMP D5c	French Pond North	19.509	942	79	863	91.6%	3	1	2	70.2%
E-BMP A2a9, A1b2	Industrial Pond	269.815	108,636	35,170	73,467	67.6%	220	109	111	50.4%
E-BMP D11a1, P3a6	Holland Pond 14B	82.769	15,609	1,891	13,718	87.9%	48	19	29	60.8%
E-BMP D11a4, D11a2	Holland Pond 14C	19.842	3,085	161	2,924	94.8%	11	4	7	64.3%
E-BMP D11b3	Vandenbroek Pond	52.588	12,807	1,383	11,424	89.2%	33	11	22	66.8%
E-BMP D12b1	Evergreen Pond 12A	29.528	4,451	330	4,120	92.6%	15	6	9	61.2%
E-BMP D12b3	Evergreen Pond 12B	26.982	5,453	354	5,099	93.5%	15	5	10	67.8%
E-BMP D16a	Ebben Pond	135.225	39,417	4,088	35,329	89.6%	115	35	80	69.3%
E-BMP 13d2	Evergreen Estates Pond	8.992	2,199	664	1,535	69.8%	7	4	4	51.6%
E-BMP A1c1		4.992	1,050	996	54	5.1%	4	4	0	3.2%
E-BMP A1b5		20.612	10,383	10,383	0	0.0%	19	19	0	0.0%
E-BMP A2b3		1.409	557	557	0	0.0%	1	0	1	100.0%
E-BMP C1c		10.988	4,326	4,326	0	0.0%	11	11	0	0.0%
E-BMP 13d1		5.524	1,155	949	206	17.8%	4	4	0	10.7%
E-BMP D8c		19.323	5,277	5,277	0	0.0%	15	15	0	0.0%
E-BMPE2d		1.242	232	232	0	0.0%	1	1	0	0.0%
E-BMPD7a4		22.12	11,204	11,204	0	0.0%	23	23	0	0.0%
E-BMPD7a2		14.551	7,410	7,410	0	0.0%	16	16	0	0.0%
E-BMPD9a2		5.103	1,272	1,272	0	0.0%	4	4	0	0.0%
E-BMPD6b2		3	92	92	0	0.0%	0	0	0	0.0%
E-BMPD12b2		48.922	15,842	15,842	0	0.0%	37	37	0	0.0%
TOTALS:		977.99	284,718	104,972	179,746	63.1%	704	363	341	48.4%
					TMDL REQUIREMENT =		TMDL REQUIREMENT =			
					148,053		289			
					EXCESS LBS REMOVED =		EXCESS LBS REMOVED =			
					31,693		52			

VILLAGE TOTALS										
TOTALS:		2645.359	652969.4	207,550	415,752	63.7%	1894.627	982	912	48.2%

CHAPTER 4

PEAK DISCHARGE MODELING

The Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2016 was utilized to calculate the estimated peak discharges for the different drainage basins within the Village limits and the area immediately adjacent to the Village. Figure 1 in Appendix E shows the location for each of these drainage basins. Within the Hydraflow program, the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) Technical Release 55 (TR-55) methodology for hydrograph creation was utilized to calculate the hydrograph and peak discharge for each drainage basin for the different standard rainfall events.

All of the hydrologic parameters necessary for the TR-55 calculations were previously calculated within the Village's Storm Water Management Plan dated December 21, 2007. Both these hydrologic parameters and the drainage basin boundaries were reanalyzed and modified as necessary to match current conditions within the Village. Since the previous peak flow modeling was performed in 2007, more current rainfall data has been released as well. The rainfall depths used in the updated modeling were as found in the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation-Frequency Atlas of the United States, Volume 8 (Midwestern States), published in 2013. The rainfall depths for the various standard rainfall events are listed below in Table 1.

TABLE 1 - 24-HOUR RAINFALL DEPTHS

Rainfall Event	Rainfall Depth (inches)
1-Year	2.14
2-Year	2.45
5-Year	3.01
10-Year	3.51
25-Year	4.24
50-Year	4.85
100-Year	5.5

In addition to the revised rainfall depths, the 24-hour rainfall distribution has also been updated from the previous Type II distribution to the new MSE4 distribution for Outagamie County, Wisconsin. Table 2 in Appendix C lists all of the revised hydrologic parameters and calculated peak flows for each basin in their current pre-development condition. Because most of these drainage basins within the Village ultimately combine and drain to similar downstream locations, the sub-basins have been combined to form larger BMP basins. These larger basins were used to perform the water quality modeling and are shown on Figure 1 in Appendix B. Table 2 also combines the peak flows from each of the smaller drainage basins to show the total peak flows associated with each of the larger BMP drainage basins.

Table 3 in Appendix C shows the future post-construction hydrologic parameters and peak flows for each drainage basin. Both the existing and post-construction data can be utilized to plan for and design future storm water BMPs.

APPENDIX C – PEAK DISCHARGE MODELING

- Table 2 – Existing Conditions Hydrology Calculations
- Table 3 – Post-Construction Conditions Hydrology Calculations

TABLE 2 – EXISTING CONDITIONS HYDROLOGY CALCULATIONS

TABLE 2. EXISTING CONDITIONS HYDROLOGY CALCULATIONS

Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
A1a1	17.98	34%	80	52	5.961	8.074	12.25	16.27	22.44	27.77	33.56
A1a2	34.09	83%	93	47	30.74	36.73	47.58	57.26	71.32	83.01	95.4
A1a3	25.15	64%	89	69	14.5	17.95	24.34	30.13	38.66	45.8	53.4
A1b1	15.98	85%	95	35	18.63	21.92	27.83	33.08	40.7	47.03	53.74
A1b2	19.18	80%	94	41	18.21	21.59	27.68	33.1	40.97	47.51	54.45
Total BMPA1b2					83.55	100.93	132.8	161.55	203.75	239.11	276.8
A1b3	11.36	83%	94	53	9.653	11.45	14.7	17.59	21.78	25.27	28.97
A1b4	6.94	20%	79	29	3.286	4.535	6.991	9.341	12.95	16.07	19.46
A1b5	9.26	80%	94	26	12.22	14.47	18.53	22.14	27.38	31.73	36.34
Total BMPA1b5					22.19	26.91	35.79	43.85	55.75	65.77	76.48
A1c1/2	39.13	5%	80	41	14.53	19.71	30	39.81	54.8	67.75	81.8
A2a1	4.96	92%	96	16	8.579	10	12.55	14.82	18.11	20.84	23.75
A2a2	6.51	52%	87	40	10.4	13.08	18.09	22.68	29.47	35.19	41.29
A2a3	24.81	77%	93	33	26.19	31.3	40.54	48.78	60.75	70.7	81.25
A2a4	16.07	61%	89	41	11.5	14.22	19.22	23.75	30.41	35.99	41.92
A2a5	36.43	23%	79	69	9.979	13.75	21.18	28.3	39.46	49.14	59.71
A2a6	16.87	57%	88	51	10.1	12.6	17.26	21.5	27.77	33.02	38.63
A2a7	23.28	71%	91	54	17.15	20.85	27.62	33.7	42.58	49.98	57.84
A2a8/9	18.46	35%	82	43	8.07	10.71	15.81	20.61	27.87	34.1	40.81
Total BMPA2a9					89.7	111.83	153.33	191.4	248.01	295.84	347.09
A2b1	10.9	52%	87	39	8.038	10.11	13.99	17.54	22.79	27.2	31.91
A2b3	11.18	50%	86	19	11.3	14.28	19.86	24.98	32.55	38.92	45.73
Total BMPA2b3					16.63	21.11	29.52	37.25	48.73	58.4	68.75
A2b4	15.51	0%	79	45	5.289	7.246	11.22	15.03	20.88	25.96	31.48
A2c	18.14	2%	79	57	5.512	7.576	11.65	15.63	21.75	27.07	32.86
B1	11.5	0%	79	46	3.922	5.373	8.318	11.14	15.48	19.24	23.34
Total BMPA2c					14.61	20.11	30.92	41.26	57.13	70.86	85.79
A2b5	24.53	2%	79	39	9.789	13.42	20.78	27.83	38.68	48.08	58.31
A2b2	38.82	4%	79	51	11.8	16.21	24.92	33.44	46.55	57.93	70.33
C1a	8.03	84%	94	27	10.48	12.42	15.9	19	23.49	27.22	31.18
C1 b1/2	26.5	4%	79	69	7.259	10	15.41	20.59	28.7	35.75	43.43
C1c	121.27	2%	79	150	19.39	26.52	40.85	54.75	76.38	95.17	115.7
D17a	37.39	2%	79	38	14.92	20.45	31.67	42.43	58.96	73.29	88.89
Total BMPA2c					44.83	61.01	93.34	124.66	173.16	215.4	261.56
A2d	40.45	5%	78	51	11.22	15.66	24.46	33.11	46.55	58.25	71.05
B2	24.99	16%	77	69	5.687	8.056	12.87	17.55	24.86	31.33	38.43
C1d	10.12	9%	79	43	3.451	4.728	7.32	9.804	13.62	16.94	20.54
C1e	64.4	0%	73	114	6.8	10.13	17.27	24.6	36.41	47.06	58.91
D1a	40.97	52%	86	29	33.5	42.47	59.31	74.78	97.74	117.09	137.76
D1b	142.81	36%	83	72	49.28	64.47	96.8	121.55	163.47	199.29	237.93
D1c	7.83	9%	77	40	2.219	3.14	5.005	6.844	9.703	12.2	14.94
D2a	57.87	29%	81	23	32.61	43.71	65.24	85.6	116.53	143.07	171.77
D2b	55.23	46%	85	58	26.92	34.59	49.11	62.57	82.68	99.72	118
D2c	37.4	60%	88	39	29.44	36.7	50.19	62.46	80.55	95.72	111.89
D3a	22.36	2%	79	72	5.548	7.641	11.78	15.74	21.93	27.32	33.19
D3b	70.1	3%	79	75	17.39	23.96	36.93	49.35	68.76	85.65	104.06
D3c	23.94	30%	83	60	10.07	13.19	19.24	24.9	33.44	40.74	48.6
D9b	18.36	88%	95	63	14.88	17.52	22.29	26.52	32.66	37.76	43.18
D10a	36.3	0%	79	75	9.006	12.41	19.12	25.55	35.61	44.35	53.89
D10c	15.95	31%	83	56	6.709	8.789	12.82	16.59	22.28	27.14	32.38
D11a5	9.26	34%	82	29	5.657	7.486	11.01	14.33	19.33	23.62	28.23
D11a6	6.39	36%	83	22	4.217	5.516	8.002	10.32	13.82	16.79	20
D11b1	3.73	45%	85	27	2.847	3.645	5.153	6.546	8.622	10.38	12.26
D11b2	8.15	14%	77	22	3.176	4.544	7.272	9.916	14.02	17.6	21.51
D12a1/2	8.05	83%	94	39	8.947	10.61	13.6	16.26	20.12	23.33	26.74

Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
D12b2	11.78	23%	80	17	7.656	10.34	15.57	20.53	28.09	34.58	41.61
Total BMP D12b2					215.74	280.22	404.1	520.1	695.17	844.75	1006.15
D4	22.23	14%	77	41	6.3	8.914	14.21	19.43	27.55	34.64	42.41
D5a	76.04	0%	78	78	17.24	24.06	37.74	50.93	71.54	89.62	109.4
D5b	65.63	4%	80	79	68.02	87.99	125.98	161.26	214.09	258.92	307.03
D9a1	18.05	0%	79	45	6.155	8.433	13.06	17.49	24.3	30.21	36.64
Total BMP D5b											
D5c	43.89	1%	79	56	30.38	37.71	51.28	63.57	81.65	96.78	112.88
D6a	10.88	7%	79	44	3.71	5.083	7.869	10.54	14.65	18.21	22.08
D6b1	17.86	1%	79	36	7.127	9.77	15.13	20.27	28.16	35.01	42.46
D6b2	28.62	5%	79	36	11.42	15.66	24.24	32.47	45.13	56.1	68.04
Total BMP D6b2					22.22	30.45	46.58	62.09	86.43	107.52	130.5
D6c1	34.96	0%	79	88	8.025	11.02	17.03	22.79	31.66	39.47	47.99
D6c2	13.68	0%	79	44	4.665	6.391	9.895	13.25	18.42	22.89	27.77
D6c3	141.65	1%	79	137	23.77	32.56	50.14	67.25	93.74	116.75	141.87
Total BMP D6c3					32.15	43.89	67.5	90.29	125.38	155.83	189.02
D7a1/2	35.03	55%	89	63	20.2	25.01	33.9	41.97	53.84	63.79	74.38
D7a3/4	28.96	80%	93	36	30.58	36.54	47.33	56.94	70.91	82.52	94.84
D7b	111.99	1%	79	93	23.96	32.85	50.74	68	94.59	117.66	143.08
E2a	31.44	1%	79	51	9.553	13.13	20.19	27.08	37.7	46.92	56.96
Total BMP D7b					31.61	43.48	67.09	89.78	124.68	154.95	187.93
D8a	4.91	9%	79	10	2.929	4.014	6.141	8.17	11.28	13.96	16.87
D12b1	24.61	3%	79	60	7.478	10.28	15.8	21.2	29.51	36.72	44.58
Total BMP D12b1					8.242	11.36	17.48	23.35	32.36	40.16	48.65
D8b1/2	17.11	9%	79	23	8.103	11.18	17.24	23.03	31.92	39.62	47.98
D8c	5.71	2%	79	21	2.704	3.731	5.752	7.686	10.65	13.22	16.01
D13a	12.63	1%	79	30	5.04	6.909	10.7	14.33	19.92	24.76	30.02
D13b	7.2	70%	91	23	8.025	9.736	12.86	15.65	19.73	23.13	26.73
D13c	10.27	32%	82	18	7.83	10.31	15.08	19.55	26.3	32.05	38.24
Total BMP D7b					29.57	39.07	57.43	74.73	100.98	123.51	147.88
D8d	42.67	1%	79	25	20.21	27.88	42.98	57.43	79.61	98.8	119.67
E1b	67.08	2%	79	52	20.38	28.02	43.07	57.79	80.45	100.1	121.52
E2b	10.41	0%	79	79	2.583	3.558	5.484	7.328	10.21	12.72	15.45
E2d	85	1%	79	53	25.83	35.5	54.57	73.22	101.94	126.84	153.99
Total BMP D12b1					61.95	85.12	130.72	174.31	241.2	299.07	362.02
D9a2	41.14	10%	80	64	12.31	16.71	25.33	33.6	46.4	57.46	69.5
D10b	29.8	1%	79	56	9.055	12.45	19.13	25.67	35.74	44.47	53.99
D11 a/a1	27.11	64%	90	19	34.98	42.7	56.81	69.49	88.02	103.45	119.85
Total BMP 11a1					38.19	47.57	65.18	81.33	105.32	125.61	147.36
D11a2	11.5	14%	81	45	4.632	6.227	9.328	12.26	16.73	20.58	24.74
D11a4	8.32	14%	81	45	3.351	4.505	6.749	8.873	12.11	14.89	17.9
D11b3	52.58	33%	82	36	26.93	35.74	52.74	68.75	93	113.75	136.15
D12b3	26.83	21%	79	75	6.657	9.169	14.13	18.89	26.32	32.75	39.83
D13d1	5.52	36%	83	29	3.643	4.765	6.913	8.919	11.94	14.51	17.27
D13d2	9.14	44%	85	29	6.977	8.932	12.63	16.04	21.13	25.43	30.04
D14a	23.58	55%	87	25	20.6	25.88	35.72	44.7	57.98	69.14	81.05
D14b	24.73	49%	86	52	12.94	16.46	23.08	29.18	38.25	45.92	54.12
D14c	11.4	35%	82	48	4.985	6.616	9.764	12.73	17.21	21.06	25.2
D15a	12.23	72%	91	31	11.56	14.04	18.57	22.64	28.58	33.52	38.77
D15b1-3	38.01	48%	86	59	19.89	25.29	35.47	44.85	58.8	70.58	83.19
D16a/14d	35.73	5%	79	45	12.18	16.69	25.84	34.61	48.1	59.79	72.52
Total BMP D7b					74.41	95.33	134.99	171.77	226.84	273.61	323.86
D16b	30.09	2%	79	55	9.143	12.57	19.32	25.92	36.09	44.9	54.51
D17b	29.68	1%	79	65	8.13	11.2	17.26	23.06	32.15	40.04	48.64
D17c	26.68	3%	79	38	10.65	14.59	22.6	30.27	42.07	52.3	63.43

Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
D8e	15.27	1%	79	65	4.183	5.763	8.879	11.86	16.54	20.6	25.03
E3a	8.38	0%	79	28	3.968	5.476	8.442	11.28	15.64	19.4	23.5
E3b	36.46	2%	79	41	12.43	17.03	26.37	35.32	49.09	61.01	74
Total BMP D16b					45.06	61.97	95.29	127.16	176.09	218.42	264.49
E1a	99.83	2%	79	101	21.35	29.28	45.23	60.62	84.32	104.88	127.55
E2c	35.85	2%	79	72	8.895	12.25	18.89	25.24	35.17	43.8	53.22
Total BMP E1a					29.89	41.05	63.24	84.86	118.16	147.07	178.6
E3c	57.53	4%	80	56	19.07	25.83	39.18	52.07	71.81	88.86	107.39
E3d	14.49	20%	79	48	4.941	6.77	10.48	14.04	19.51	24.25	29.41
E3e	20.63	20%	79	63	5.651	7.786	12	16.03	22.34	27.83	33.81
E4a	28.46	43%	87	40	17.92	22.54	31.19	39.1	50.8	60.65	71.17
E4b	32.54	1%	79	54	9.888	13.59	20.89	28.03	39.02	48.56	58.95
E4c	65.03	0%	79	39	25.95	35.57	55.08	73.79	102.55	127.47	154.59
Total BMP E4c					52.29	69.89	104.08	136.42	185.65	227.97	273.8
E4d	39.55	18%	79	45	13.49	18.48	28.61	38.32	53.25	66.19	80.27
F2a	45.89	38%	83	34	25.43	33.34	48.52	62.72	84.12	102.37	122.02
F2b	16.46	32%	82	27	10.06	13.31	19.58	25.46	34.37	41.98	50.19
F2e/d	5.33	32%	79	15	3.179	4.357	6.666	8.868	12.24	15.15	18.31
Total BMP F2d					37.13	48.69	70.84	91.56	122.78	149.39	178.04
F3a1	47.89	51%	88	34	33.01	41.93	58.7	74.12	97.05	116.4	137.09
F3a2	6.2	38%	83	27	4.092	3.352	7.764	10.02	13.41	16.29	19.4
F3a3	48.17	39%	83	49	22.79	29.88	43.48	56.21	75.39	91.75	109.37
F3a4	22.02	64%	89	32	18.47	22.81	30.85	38.12	48.8	57.73	67.24
F3a5	46.6	36%	80	46	17.31	23.48	35.73	47.4	65.27	80.68	97.41
F3a6	35.81	38%	82	37	18.34	24.34	35.92	46.82	63.34	77.47	92.72
F3b	24.74	45%	85	38	15.9	20.4	28.91	36.79	48.55	58.5	69.17
F3c1	18.59	55%	84	39	11.11	14.4	20.68	26.52	35.28	42.72	50.71
F3c2	15.55	50%	83	46	7.357	9.646	14.04	18.15	24.34	29.62	35.31
F3d	11.61	28%	81	50	4.676	6.287	9.417	12.38	16.89	20.77	24.97
F3e4	27.46	41%	81	41	11.06	14.87	22.27	29.29	39.96	49.13	59.06
Total BMP D16b					161.25	209	300.07	384.88	512.27	620.65	737.22
F3e1	19.36	33%	82	52	7.549	9.971	14.75	19.25	26.08	31.93	38.25
F3e2	42.5	60%	88	53	25.44	31.75	43.48	54.17	69.95	83.19	97.31
F3e3	48.27	38%	78	61	12.06	16.87	26.45	35.68	50.14	62.82	76.88
Total BMP F3e3					44.36	57.71	83.39	107.43	143.75	174.79	208.31
F3e5	11.75	72%	89	29	11.65	14.37	19.39	23.93	30.58	36.15	42.07
F3f1	23.52	77%	92	39	23.53	28.34	37.09	44.91	56.3	65.78	75.83
F3f2	91.46	49%	82	43	40	53.08	78.33	102.1	138.11	168.93	202.21
F3f3	65.74	50%	86	28	53.75	68.15	95.17	119.99	156.83	187.87	221.05
F3f4	21.59	33%	82	26	13.19	17.45	25.68	33.4	45.08	55.06	65.83
Total BMP F3f4					132.01	168.11	236.31	299.32	393.41	473.13	558.63
F3g1	14.49	35%	82	19	11.05	14.55	21.28	27.59	37.1	45.22	53.95
F3g2	8.64	31%	77	11	4.276	6.061	9.609	13.04	18.34	22.95	27.99
Total BMP F3g2					15.32	20.61	30.89	40.63	55.44	68.17	81.94
F4a2 -1	28.45	39%	83	54	11.97	15.68	22.86	29.59	39.74	48.41	57.75
F4a3-5	10.94	38%	83	27	7.22	9.443	13.7	17.68	23.66	28.75	34.23
F4a6	12.86	44%	85	33	8.264	10.6	15.03	19.12	25.23	30.41	35.95
F4a7	10.65	35%	82	27	6.506	8.61	12.67	16.48	22.24	27.16	32.47
F4a8	26.83	19%	76	53	6.107	8.823	14.33	19.71	28.31	35.86	44.16
Total BMP F4a8					35.28	46.78	69.14	90.27	122.34	149.87	179.67
F4a1	34.45	46%	84	33	20.59	26.69	38.33	49.15	65.38	79.16	93.97
F4a2 -2	24.86	39%	83	54	10.46	13.7	19.98	25.86	34.73	42.3	50.47
F5a -1	6.96	38%	83	53	2.928	3.835	5.592	7.239	9.723	11.84	14.13
Total BMP F3g2					32.22	41.84	60.35	77.61	103.55	125.63	149.37
F5a -2	8.76	38%	83	53	2.928	3.835	5.592	7.239	9.723	11.84	14.13
F5b	18.78	42%	84	36	11.22	14.55	20.89	26.79	35.64	43.16	51.23

Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
F5c	58.83	36%	82	24	35.94	47.56	69.96	91.01	122.84	150.04	179.38
F5f	4.05	43%	82	23	2.474	3.274	4.817	6.266	8.456	10.33	12.35
Total BMP F5e					38.41	50.84	74.78	97.28	131.29	160.37	191.73
F6a1	26.19	30%	81	29	14.76	19.78	29.53	38.74	52.74	64.75	77.74
F5g	27.98	62%	88	38	22.03	27.46	37.55	46.73	60.26	71.61	83.71
F6a2	37.21	43%	84	57	16.85	21.88	31.48	40.42	53.84	65.26	77.53
F6a3	25.55	61%	88	29	23.8	29.63	40.42	50.23	64.68	76.79	89.68
Total BMP F5g					56.79	71.54	99.17	124.5	162.09	193.78	227.66
F7a	26.65	38%	83	35	14.77	19.36	28.18	36.42	48.85	59.45	70.86
G1a	50.76	4%	79	53	15.42	21.2	32.59	43.73	60.87	75.75	91.96
G1b	57.19	2%	79	62	15.67	21.58	33.25	44.43	61.94	77.15	93.73
G1c	32.69	27%	84	34	19.53	25.33	36.37	46.64	62.04	75.12	89.17
K1a-c	49.62	51%	86	41	29.2	37.09	51.9	65.57	85.86	102.99	121.31
K1d	4.34	42%	84	20	3.085	3.991	5.713	7.313	9.709	11.74	13.92
K1e	21.66	52%	85	35	13.92	17.86	25.31	32.21	42.5	51.22	60.56
Total BMP K1e					45.39	57.72	80.92	102.28	134.04	160.86	189.54
P2a1	50.43	52%	87	60	28.26	35.59	49.32	61.89	80.59	96.2	112.95
P2a2	14.33	77%	92	34	14.33	17.27	22.6	27.36	34.3	40.08	46.2
P2a4	9.2	40%	84	33	5.498	7.128	10.24	13.12	17.46	21.14	25.1
Total P3a4					19.83	24.4	32.83	40.49	51.76	61.22	71.3
P2a3	13.6	71%	91	65	8.868	10.79	14.31	17.47	22.09	25.94	30.04
P3a1	21.81	42%	84	35	13.03	16.9	24.26	31.11	41.39	50.12	59.49
P3a2	22	38%	83	32	12.19	15.98	23.26	30.07	40.33	49.08	58.5
P3a3	19.69	37%	83	40	9.316	12.21	17.77	22.98	30.82	37.5	44.71
P3a4	24.36	24%	80	58	8.076	10.94	16.59	22.05	30.41	37.63	45.47
Total BMP P3a4					41.14	54.03	78.77	101.96	136.96	166.84	199.06
P3a5	14.41	7%	80	45	4.491	6.246	9.81	13.27	18.62	232.8	28.37
P3a6	11.42	18%	78	43	3.559	4.95	7.775	10.52	14.46	18.45	22.48
Total BMP P3f					8.05	11.2	17.58	23.79	33.39	41.73	50.85
P3b1/2	30.54	32%	82	52	11.91	15.73	23.27	30.37	41.14	50.37	60.34
P3b3	49.36	40%	84	29	35.08	45.39	64.98	83.17	110.42	133.55	158.36
P3c1-3	131.32	19%	79	51	39.9	54.84	84.31	113.12	157.49	195.97	237.9
P3d1/2	31.4	61%	89	45	22.48	27.78	37.56	46.42	59.43	70.32	81.91
P3e1	35.69	37%	83	36	19.77	25.93	37.74	48.78	65.42	79.62	94.9
P3e2	5.7	71%	91	36	5.388	6.545	8.657	10.55	13.32	15.62	18.07
P3f-h	81.65	20%	82	37	41.81	55.49	81.91	106.76	144.41	176.63	211.42
Total BMP P3f,3h					162.24	213.01	310.74	402.46	541.13	659.75	787.81
P4a	38.19	0%	78	38	13.94	19.36	30.45	41.2	57.82	72.27	88.06
P5a1-3	155.78	21%	78	67	38.91	54.43	85.36	115.15	161.83	202.72	247.45
P1a	23.33	46%	85	38	14.99	19.23	27.27	34.69	45.78	55.17	65.23
P2b/c	12	40%	84	43	6.123	7.939	11.4	14.62	19.44	23.55	27.95
P5b1	8.05	50%	85	39	5.173	6.637	9.408	11.97	15.8	19.03	22.51
P5b3	16.87	29%	81	37	7.955	10.7	16.03	21.07	28.75	35.35	42.5
P5c1	3.92	9%	76	18	1.751	2.532	4.097	5.617	7.982	10.05	12.31
P6b	13.39	0%	63	31	0.532	1.193	2.957	5.075	8.925	12.55	16.78
P7e	11.27	0%	64	42	0.496	1.037	2.405	4.016	6.887	9.577	12.71
P8b	57	1%	66	44	3.812	6.983	15.04	24.21	39.75	54.15	70.94
P9a/b	14.77	20%	75	21	4.703	6.9	11.55	16.12	23.28	29.59	36.53
Total BMP P9b					42.48	58.85	93.26	127.82	182.87	231.77	286.46
P5b2	6.77	1%	78	67	1.691	2.366	3.71	5.004	7.033	8.81	10.75
P6a	28.11	2%	79	47	9.586	13.13	20.33	27.23	37.84	47.04	57.05
Total BMP P6a					11.03	15.19	23.39	31.24	43.52	54.23	65.9
P7a1/2	27.29	57%	87	56	15.29	19.26	26.69	33.49	43.57	52.06	61.12
P7b/c	63.59	18%	80	66	19.02	25.84	39.15	51.93	71.72	88.82	107.42
P7d	26.08	1%	75	40	6.015	8.838	14.59	20.41	29.58	37.66	46.57

Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
P8a1/2	52.68	13%	79	54	16.01	22	33.82	45.38	63.18	78.61	95.44
Z2a	39.08	26%	81	27	22.02	29.52	44.06	57.81	78.69	96.61	116
Z2b	42.03	27%	81	27	23.68	31.74	47.39	62.17	84.63	103.91	124.75

TABLE 3 – POST-CONSTRUCTION CONDITIONS HYDROLOGY CALCULATIONS

TABLE 3. POST-CONSTRUCTION CONDITIONS HYDROLOGY CALCULATIONS											
Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
A1a1	17.98	79%	92	27	21.18	25.49	33.30	40.28	50.44	58.89	67.85
A1a2	34.1	83%	93	20	42.34	50.54	65.36	78.56	97.74	113.68	130.58
A1a3	25.15	79%	93	24	31.23	37.28	48.22	57.96	72.11	83.87	96.34
A1b1	15.99	85%	95	21	21.86	25.70	32.59	38.71	47.59	54.97	62.80
A1b2	19.18	80%	94	27	25.04	29.66	37.98	45.37	56.10	65.02	74.47
Total 8MPA1b2					141.65	168.66	217.46	260.89	323.98	376.42	432.04
A1b3	11.36	83%	94	39	12.63	14.97	19.19	22.95	28.40	32.93	37.73
A1b4	6.94	20%	79	29	3.29	4.54	6.99	9.34	12.95	16.07	19.46
A1b5	9.27	80%	94	17	14.87	17.58	22.47	26.81	33.11	38.34	43.89
Total 8MPA1b5					26.44	31.96	42.11	51.30	64.84	76.21	88.35
A1c1/2	39.15	5%	80	41	14.53	19.71	30.00	39.81	54.80	67.75	81.80
A2a1	4.96	92%	96	16	8.58	10.00	12.55	14.82	18.11	20.84	23.75
A2a2	16.51	58%	88	40	11.10	13.83	18.92	23.54	30.37	36.09	42.19
A2a3	24.81	79%	93	33	26.19	31.30	40.54	48.78	60.75	70.70	81.25
A2a4	16.07	81%	93	19	24.33	28.99	37.41	44.90	55.78	64.81	74.40
A2a5	36.43	75%	92	23	42.92	51.64	67.47	81.62	102.20	119.32	137.47
A2a6	16.87	77%	93	23	20.95	25.01	32.35	38.88	48.37	56.26	64.62
A2a7	23.28	80%	93	34	25.13	30.03	38.89	46.79	58.27	67.82	77.94
A2a8/9	18.47	47%	85	18	17.46	22.27	31.35	39.71	52.14	62.64	73.86
Total 8MPA2a9					158.56	191.19	250.66	303.95	381.73	446.55	515.41
A2b1	10.91	53%	87	39	8.04	10.11	13.99	17.54	22.79	27.20	31.91
A2b3	11.2	50%	86	19	11.30	14.28	19.86	24.98	32.55	38.92	45.73
Total 8MPA2b3					16.63	21.11	29.52	37.25	48.73	58.40	68.75
A2b4	15.51	47%	85	23	11.84	15.16	21.43	27.22	35.85	43.15	50.97
A2c	18.14	36%	83	27	11.97	15.66	22.72	29.31	39.23	47.68	56.76
81	11.5	38%	83	30	6.37	8.36	12.16	15.72	21.08	25.65	30.58
Total 8MPA2c					29.17	37.93	54.66	70.23	93.62	113.51	134.89
A2b5	24.53	37%	83	24	16.19	21.17	30.72	39.63	53.05	64.47	76.76
A2b2	38.82	46%	85	24	29.63	37.94	536.63	68.13	89.73	108.00	127.57
C1a	8.03	85%	94	27	10.48	12.42	15.90	19.00	23.49	27.22	31.18
C1 b1/2	26.51	36%	83	34	14.68	19.25	28.02	36.22	48.58	59.12	70.46
C1c	121.27	36%	83	34	67.19	88.11	128.22	165.75	222.30	270.53	322.46
D17a	37.39	37%	83	38	20.72	27.17	39.53	51.10	68.54	83.41	99.42
Total 8MPA1c					140.02	181.22	259.75	332.84	442.55	535.83	636.10
A2d	40.45	5%	78	51	11.22	15.66	24.46	33.11	46.55	58.25	71.05
B2	24.99	17%	77	69	5.69	8.06	12.87	17.55	24.86	31.33	38.43
C1d	10.13	10%	79	43	3.45	4.73	7.32	9.80	13.62	16.74	20.54
C1e	64.4	0%	73	114	6.80	10.13	17.27	24.60	36.41	47.06	58.91
D1a	40.97	66%	90	29	43.11	52.74	70.38	86.27	109.50	128.87	149.46
D1b	142.86	62%	89	72	74.59	92.34	125.19	155.01	198.88	235.64	274.80
D1c	7.83	81%	93	40	7.06	8.44	10.93	13.15	16.38	19.07	21.91
D2a	57.88	79%	93	23	71.87	85.79	110.96	133.37	165.92	192.98	221.67
D2b	55.23	68%	90	58	37.49	45.97	61.56	75.62	96.23	113.44	131.74
D2c	37.41	60%	88	39	29.44	36.70	50.19	62.46	80.55	95.72	111.89
D3a	22.36	15%	78	72	5.07	7.08	11.10	14.98	21.04	26.35	32.17
D3b	70.1	14%	77	75	14.49	20.47	32.71	44.60	63.17	79.61	97.65
D3c	23.87	37%	83	60	10.07	13.19	19.24	24.90	33.44	40.74	48.60
D9b	18.36	88%	95	63	14.88	17.52	22.29	26.52	32.66	37.76	43.18
D10a	36.3	14%	77	75	7.50	10.60	16.94	23.10	32.71	41.22	50.56
D10c	15.95	36%	83	56	6.71	8.79	12.82	16.59	22.28	27.14	32.38
D11a5	9.26	34%	82	29	5.66	7.49	11.01	14.33	19.33	23.62	28.23
D11a6	6.39	39%	83	22	4.22	5.52	8.00	10.32	13.82	16.79	20.00
D11b1	3.73	49%	86	27	2.85	3.65	5.15	6.55	8.62	10.38	12.26
D11b2	8.16	15%	78	22	3.51	4.93	7.74	10.44	14.61	18.23	22.18
D12a1/2	8.04	84%	94	39	8.95	10.61	13.60	16.26	20.12	23.33	26.74
D12b2	11.78	28%	81	17	8.31	11.08	16.43	21.48	29.12	35.67	42.74
Total BMP D12b2					282.78	351.98	482.57	602.96	782.21	933.87	1096.57
D4	22.23	31%	81	41	8.95	12.04	18.03	23.71	32.35	39.77	47.81
D5a	76.04	91%	96	78	58.48	68.36	86.13	101.90	124.80	143.85	164.07
D5b	65.63	55%	87	79	43.83	55.26	76.67	96.31	125.44	149.98	176.22

TABLE 3. POST-CONSTRUCTION CONDITIONS HYDROLOGY CALCULATIONS											
Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
D9a1	18.06	92%	96	45	18.79	21.95	27.61	32.64	39.94	46.01	52.46
Total 8MP D5b					116.78	140.48	183.92	223.11	280.63	328.79	380.11
D5c	43.89	38%	83	56	8.59	11.27	16.42	21.24	28.51	34.71	41.43
D6a	10.88	90%	96	44	11.33	13.23	16.65	19.68	24.08	27.73	31.62
D6b1	17.86	56%	87	36	13.17	16.57	22.92	28.73	37.34	44.57	52.29
D6b2	28.63	61%	89	36	24.00	29.65	40.09	49.54	63.42	75.04	87.39
Total BMP D6b2					24.00	29.65	40.09	49.54	63.42	75.04	87.39
D6c1	34.96	38%	83	88	11.14	14.60	1.23	27.49	37.00	45.14	53.92
D6c2	13.68	38%	83	44	6.47	8.49	12.35	15.96	21.41	26.06	31.06
D6c3	141.66	37%	83	137	32.84	43.00	62.77	81.33	109.40	133.41	159.50
Total BMP D6c3					32.84	43.00	62.77	81.33	109.40	133.41	159.50
D7a1/2	35.03	80%	93	63	25.60	30.64	39.77	47.91	59.76	69.62	80.07
D7a3/4	28.96	83%	94	36	32.19	38.16	48.93	58.50	72.39	83.94	96.19
D7b	111.99	40%	84	93	35.79	46.43	66.73	85.64	114.41	138.94	165.37
E2a	31.45	37%	83	51	13.22	17.32	25.26	32.70	43.92	53.50	63.82
Total BMP D7b					35.79	46.43	66.73	85.64	114.41	138.94	165.37
D8a	4.91	59%	88	10	5.63	6.99	9.51	11.78	15.13	17.94	20.92
D12b1	24.61	78%	93	60	19.84	23.73	30.78	37.06	46.19	53.79	61.85
Total 8MP D12b1					19.84	23.73	30.78	37.06	46.19	53.79	61.85
D8b1/2	17.12	57%	88	23	15.94	19.84	27.07	33.64	43.31	51.42	60.06
D8c	5.71	89%	95	21	7.81	9.18	11.65	13.83	17.00	19.64	22.44
D13a	12.63	84%	94	30	14.04	16.64	21.34	25.51	31.57	36.61	41.95
D13b	7.22	72%	91	23	8.03	9.74	12.86	15.65	19.73	23.13	26.73
D13c	10.27	29%	81	18	7.24	9.66	14.32	18.72	25.39	31.10	37.26
Total 8MP D7b					46.58	60.49	87.04	111.79	148.99	180.66	214.73
D8d	42.68	91%	96	25	60.92	71.09	89.36	105.56	129.08	148.64	167.41
E1b	67.1	51%	86	52	35.10	44.64	62.60	79.15	103.76	124.56	146.81
E2b	10.41	92%	96	79	8.01	9.36	11.79	13.95	17.09	19.69	22.46
E2d	85.08	63%	89	53	54.24	67.09	90.85	112.37	144.03	170.54	198.75
Total 8MP D12b1					21.27	25.46	33.05	39.81	49.66	57.84	66.52
D9a2	41.16	80%	93	64	30.06	35.98	46.70	56.27	70.18	81.76	94.04
D10b	29.8	15%	78	56	8.26	11.54	18.02	24.39	34.29	42.92	52.34
D11 a/a1	27.11	65%	90	19	34.98	42.70	56.81	69.49	88.02	103.45	119.85
Total 8MP 11a1					34.98	42.70	56.81	69.49	88.02	103.45	119.85
D11a2	11.5	75%	92	45	9.82	11.83	15.49	18.76	23.52	27.48	31.68
D11a4	8.32	75%	92	45	7.11	8.56	11.21	13.57	17.02	19.88	22.92
D11b3	52.59	86%	95	36	61.31	72.13	91.59	108.85	133.91	154.74	176.84
D12b3	26.83	86%	95	75	19.70	23.20	29.52	35.12	43.27	50.03	57.22
D13d1	5.52	36%	83	29	3.64	4.77	6.91	8.92	11.94	14.51	17.27
D13d2	9.14	38%	83	29	6.03	7.89	11.45	14.77	19.77	24.02	28.60
D14a	23.59	55%	87	25	20.60	25.88	35.72	44.70	57.98	69.14	81.05
D14b	24.73	80%	93	52	19.94	23.85	30.93	37.24	46.42	54.05	62.15
D14c	11.4	35%	82	48	4.99	6.62	9.76	12.73	17.21	21.06	25.20
D15a	12.24	72%	91	31	11.56	14.04	18.57	22.64	28.58	33.52	38.77
D15b1-3	38.02	73%	92	59	29.01	34.98	45.84	55.55	69.71	81.49	94.00
D16a/14d	35.74	30%	81	45	14.39	19.35	28.98	38.10	51.99	63.93	76.85
Total 8MP D7b					46.58	60.49	87.04	111.79	148.99	180.66	214.73
D16b	30.09	37%	83	55	12.66	16.58	24.18	31.29	42.03	51.20	61.08
D17b	29.69	40%	84	65	12.18	15.75	22.68	29.14	38.87	47.15	56.05
D17c	26.69	35%	82	38	13.66	18.13	26.76	34.89	47.19	57.72	69.08
D8e	15.27	91%	96	65	12.96	15.15	19.08	22.57	27.64	34.86	36.33
E3a	8.38	81%	94	28	10.94	12.96	16.59	19.82	24.51	28.41	32.54
E3b	36.46	60%	88	41	24.51	30.55	41.75	51.99	67.06	79.70	93.17
Total BMP D16b					78.95	99.19	137.21	172.66	225.64	270.50	318.63
E1a	99.83	36%	83	101	29.58	38.80	56.51	73.11	98.35	120.05	143.48
E2c	35.85	36%	83	72	12.37	16.18	23.55	30.51	41.04	50.03	59.73
Total 8MP E1a					41.40	54.28	79.16	102.49	137.72	167.83	200.31
E3c	57.54	57%	88	56	34.44	42.98	58.86	73.33	94.68	112.61	131.73
E3d	14.49	20%	79	48	4941.00	6770.00	10.48	14.04	19.51	24.25	29.41
E3e	20.64	20%	79	63	5.65	7.79	12.00	16.03	22.34	27.83	33.81

TABLE 3. POST-CONSTRUCTION CONDITIONS HYDROLOGY CALCULATIONS											
Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
E4a	28.47	86%	95	40	28.35	33.35	42.36	50.35	61.95	71.59	81.82
E4b	32.55	2%	79	54	9.89	13.59	20.89	28.03	39.02	48.56	58.95
E4c	65.03	61%	89	39	54.53	67.38	91.10	112.57	144.11	170.50	198.57
Total BMP E4c					89.38	109.95	148.12	185.89	234.26	277.53	323.76
E4d	39.56	18%	79	45	13.49	18.48	28.61	38.32	53.25	66.19	80.27
F2a	45.9	38%	83	34	25.43	33.34	48.52	62.72	84.12	102.37	122.02
F2b	16.47	32%	82	27	10.06	13.31	19.58	25.47	34.37	41.98	51.19
F2e/d	5.33	32%	79	15	3.18	4.36	6.67	8.87	12.24	15.15	18.31
Total 8MP F2d					37.13	48.69	70.84	91.56	122.78	149.39	178.04
F3a1	47.89	53%	87	34	35.32	44.43	61.47	77.05	100.11	119.51	140.22
F3a2	6.2	38%	83	27	4.10	5.35	7.76	10.02	13.41	16.29	19.40
F3a3	48.19	39%	83	49	22.79	29.88	43.48	56.21	75.39	91.75	109.37
F3a4	22.02	64%	89	32	18.47	22.81	30.85	38.12	48.80	57.73	67.24
F3a5	46.61	36%	80	46	17.31	23.48	35.73	47.40	65.27	80.68	97.41
F3a6	35.82	38%	83	37	19.84	26.02	37.86	48.94	65.64	79.88	95.22
F3b	24.74	47%	85	38	15.90	20.40	28.91	36.79	48.55	58.50	69.17
F3c1	18.59	82%	93	24	23.09	27.56	35.64	42.84	53.30	61.99	71.21
F3c2	15.55	71%	90	19	20.07	24.49	32.59	39.86	50.48	59.34	68.74
F3d	11.61	28%	81	19	8.19	10.92	16.19	21.17	28.70	35.16	42.12
F3e4	27.47	41%	81	41	11.06	14.8/7	22.27	29.29	39.96	49.13	59.06
Total BMP D16b					78.95	99.19	137.21	172.66	225.64	270.50	318.63
F3e1	19.36	33%	82	52	7.55	9.97	14.75	19.25	26.08	31.93	38.25
F3e2	42.5	60%	88	53	25.44	31.75	43.48	54.17	69.95	83.19	97.31
F3e3	48.28	38%	78	61	12.06	16.87	26.45	35.68	45.10	54.14	62.82
Total 8MP F3e3					44.35	57.71	83.39	107.43	143.75	174.79	208.31
F3e5	11.75	73%	90	23	12.35	15.12	2.19	24.74	31.40	36.96	42.86
F3f1	23.52	77%	92	39	23.53	28.34	37.09	44.91	56.30	65.78	75.83
F3f2	91.47	49%	82	43	40.00	53.08	78.33	102.10	138.11	168.93	202.21
F3f3	65.75	50%	86	28	53.75	68.15	95.17	119.99	156.83	187.87	221.05
F3f4	21.6	33%	82	26	13.19	17.45	25.68	33.40	45.08	55.06	65.83
Total 8MP F3f4					132.63	168.76	236.98	300.01	394.10	473.80	559.28
F3g1	14.5	35%	82	19	11.05	14.55	21.28	27.59	37.10	45.22	53.95
F3g2	8.64	31%	77	11	4.28	6.06	9.61	13.04	18.34	22.95	27.99
Total BMP F3g2					4.28	6.06	9.61	13.04	18.34	22.95	27.99
F4a2 -1	28.45	39%	83	54	15.76	20.67	30.08	38.88	52.15	63.47	75.65
F4a3-5	10.94	38%	83	27	7.22	9.44	13.70	17.68	23.66	28.75	34.23
F4a6	12.86	44%	85	33	8.26	10.60	15.03	19.12	25.23	30.41	35.95
F4a7	10.65	35%	82	27	6.51	8.61	12.67	16.48	22.24	27.16	32.47
F4a8	26.83	19%	76	53	6.11	8.82	14.33	19.71	28.31	35.86	44.16
Total BMP F4a8					6.11	8.82	14.33	19.71	28.31	35.86	44.16
F4a1	34.45	46%	84	33	20.59	26.69	38.33	49.15	65.38	79.16	93.97
F4a2 -2	24.86	39%	83	31	13.77	18.06	26.28	33.98	45.57	55.46	66.10
F5a -1	6.96	38%	83	33	3.86	5.06	7.36	9.51	12.76	15.53	18.51
Total BMP F3g2					4.28	6.06	9.61	13.04	18.34	22.95	27.99
F5a -2	8.76	38%	83	33	4.85	6.36	9.26	11.97	16.06	19.54	23.29
F5b	18.78	42%	84	36	11.22	14.55	20.89	26.79	35.64	43.16	51.23
F5c	58.83	36%	82	24	35.94	47.56	69.96	91.01	122.84	150.04	179.38
F5f	4.05	43%	82	23	2.47	3.27	4.82	6.27	8.46	10.33	12.35
Total BMP F5e					35.41	50.84	74.78	97.28	131.29	160.37	191.73
F6a1	26.19	30%	81	29	14.76	19.78	29.53	38.74	52.74	64.75	77.74
F5g	28.01	62%	88	38	22.03	27.46	37.55	46.73	60.26	71.61	83.71
F6a2	37.21	43%	84	57	16.85	21.88	31.48	40.42	53.84	65.26	77.53
F6a3	25.55	61%	88	29	23.80	29.63	40.42	50.23	64.68	76.79	89.68
Total BMP F5g					56.79	71.54	99.17	124.50	162.09	193.78	227.66
F7a	26.66	38%	83	35	14.77	19.36	28.18	36.42	48.85	59.45	70.86
G1a	50.76	6%	79	53	15.42	21.20	32.59	43.73	60.87	75.75	91.96
G1b	57.19	2%	79	62	15.67	21.58	33.25	44.43	61.94	77.15	93.73
G1c	32.71	27%	84	34	19.53	25.33	36.37	46.64	62.04	75.12	89.17
K1a-c	49.62	51%	86	41	29.20	37.09	51.93	65.57	85.86	102.99	121.31
K1d	4.34	42%	84	20	3.09	3.99	5.71	7.31	9.71	11.74	13.92

TABLE 3. POST-CONSTRUCTION CONDITIONS HYDROLOGY CALCULATIONS											
Drainage Basin Data					Peak Flow (cfs)						
Drainage Area ID	Area (acres)	Impervious (%)	Runoff CN	Tc (min)	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
K1e	21.66	52%	85	35	13.92	17.86	25.31	32.21	42.50	51.22	60.56
Total BMP K1e					45.39	57.72	80.92	102.28	134.04	160.86	189.54
P2a1	50.43	53%	87	60							
P2a2	14.34	77%	92	34	14.33	17.27	22.60	27.36	34.30	40.08	46.20
P2a4	9.2	40%	84	33	5.50	7.13	10.24	13.12	17.46	21.14	25.10
Total P3a4					19.86	24.40	32.83	40.49	51.76	61.22	71.30
P2a3	13.6	74%	91	65	8.87	10.79	14.31	17.47	22.09	25.94	30.04
P3a1	21.81	70%	91	30	20.62	25.04	33.12	40.38	50.96	59.78	69.14
P3a2	22	39%	83	32	12.19	15.98	23.26	30.07	40.33	49.08	58.50
P3a3	19.69	37%	83	46	9.32	12.21	17.77	22.98	30.82	37.50	44.71
P3a4	24.36	24%	80	58	8.08	10.94	16.59	22.05	30.41	37.63	45.47
Total BMP P3a4					48.08	61.44	86.78	110.29	145.51	175.43	207.60
P3a5	14.42	87%	95	30	16.80	19.77	25.10	29.83	36.70	42.41	48.46
P3a6	11.42	77%	93	22	14.18	16.93	21.90	26.32	32.74	38.08	43.74
Total BMP P3f					29.71	35.13	44.88	53.55	66.13	76.60	87.81
P3b1/2	30.54	35%	82	52	11.91	15.73	23.27	30.37	41.14	50.37	60.34
P3b3	49.36	40%	84	29	35.08	45.39	64.98	83.17	110.42	133.55	158.36
P3c1-3	131.32	20%	79	51	39.90	54.84	84.31	113.12	157.49	195.97	237.90
P3d1/2	31.4	61%	89	45	22.48	27.78	37.56	46.42	59.43	70.32	81.91
P3e1	35.69	37%	83	36	19.77	25.93	37.74	48.78	65.42	79.62	94.90
P3e2	5.7	71%	91	36	5.39	6.55	8.66	10.55	13.32	15.62	18.07
P3f-h	81.65	78%	93	20	101.40	121.04	156.55	188.17	234.10	272.28	312.76
Total BMP P3f,3h					101.40	121.04	156.55	188.17	234.10	272.28	312.76
P4a	38.19	74%	92	20	44.99	54.13	70.73	85.56	107.14	125.08	144.12
P5a1-3	155.79	79%	79	67							
P1a	23.33	46%	85	38	14.99	19.23	27.27	34.69	45.78	55.17	65.23
P2b/c	12	41%	83	43	6.12	7.94	11.40	14.62	19.44	23.55	27.95
P5b1	8.06	50%	85	39	5.17	6.64	9.41	11.97	15.80	19.03	22.51
P5b3	16.87	49%	84	30	10.08	13.07	18.77	24.07	32.01	38.77	46.02
P5c1	3.92	45%	83	15	3.22	4.19	6.05	7.78	10.38	12.59	14.96
P6b	11.87	0%	61	31	0.35	0.79	2.25	4.13	7.64	11.07	15.04
P7e	11.28	13%	66	40	0.75	1.38	2.97	4.79	7.86	10.71	14.03
P8b	57.01	1%	63	44	2.04	4.44	10.84	18.46	32.43	45.68	61.00
P9a/b	14.77	20%	75	21	4.70	6.90	11.55	16.12	23.28	29.59	36.53
Total BMP P9b					43.37	58.99	91.79	125.25	179.21	227.56	281.26
P5b2	6.76	80%	93	33	7.15	8.54	11.06	13.31	16.58	19.29	22.17
P6a	29.64	80%	93	23	34.91	41.67	53.90	64.78	8.60	93.74	107.68
Total BMP P6a					34.91	41.67	53.90	64.78	80.60	93.74	107.68
P7a1/2	27.28	58%	87	56	15.29	19.26	26.67	33.49	43.57	52.06	61.12
P7b/c	63.61	64%	88	33	50.06	62.41	65.34	106.20	136.96	162.75	190.24
P7d	26.08	56%	85	20	19.91	25.49	36.03	45.77	60.28	72.56	85.70
P8a1/2	52.69	64%	89	27	52.22	64.42	86.92	107.27	137.12	162.07	188.61
Z2a	39.1	58%	88	30	30.77	38.35	52.44	65.27	84.17	100.02	116.92
Z2b	42.03	32%	82	27	25.68	33.98	49.99	65.02	87.76	107.19	128.15

CHAPTER 5

STREAM RESTORATION PROJECTS

The Village-wide storm water quality modeling that was completed as part of this project assumes that all waterways within the Village are already stabilized and that there is no stream bank erosion taking place that would also contribute to the sedimentation of the downstream receiving waterbodies. It was the intention of this investigation to determine whether or not there are currently any streambank erosion issues within the Village limits and if there are, to separate and prioritize the different streambank erosion control issues into different projects.

In order to perform this work, Robert E. Lee & Associates met with Village of Little Chute staff and traveled throughout the Village to different outfall and stream locations. The locations visited included major storm sewer outfall locations with known histories of erosion and other areas of previously known streambank erosion. The investigation included site visits to the following specific locations.

- ◆ Maple Street Bridge (Outfall A11)
- ◆ Freedom Road Stream Crossing (Outfall A23)
- ◆ All outfalls from the regional storm water ponds owned by the Village
- ◆ Unnamed tributary through Paradise Valley (Including Outfall P2 and P3)
- ◆ Unnamed tributary through Heesakker Park
- ◆ Roosevelt Street Crossing (Outfall F9)

Based on these field investigations, it was determined that outfalls A11, A23, F9, and all of the storm water pond outfalls were in stable conditions with minimal concerns for erosion. However, there was significant streambank erosion along the unnamed streams that flow through Heesakker Park and Paradise Valley.

HEESAKKER PARK

An unnamed stream flows from the northwest corner to the southeast corner of Heesakker Park through a wooded area. The contributing drainage basin to this stream is approximately 95 acres in size and is made up of the single-family residential area immediately to the north of the park. During the field investigation, this portion of the stream through the park was found to have significant streambank erosion.

There are a number of likely causes for this streambank erosion. The most likely cause is the increased flow volume and velocity caused by the increased development of the contributing drainage basins over the years. Secondly, there is a smaller 18" to 24" CMP culvert located at the downstream end of the park that discharges the stream to the Fox River. This culvert is likely undersized and is therefore altering the natural course of the stream by creating an area

of restriction during high flows and slowing streamflow upstream. In addition, this culvert may be leading to sedimentation and reoccurring flooding of the land and residences upstream.

Pockets of erosion as found within this stream are typically caused by components which change the direction of flow or increase the water velocity, including stream obstructions, channel narrowing, centrifugal force on the outer bank of a bend and steeply sloping streams. Bare soil surfaces are also more prone to erosion than surfaces covered with vegetation. Invasive species control has been conducted in the area in recent years in order to remove the existing stand of buckthorn, but this has thinned the vegetation along the banks in some areas. All of these components can contribute to the erosion occurring on the streambanks, as well as down cutting of the streambed itself. This type of erosion lowers the bed elevation, increases the angle of the bank and further weakens its toe. In cohesive soil, it usually causes slope failure, which can be found along this stream.

There are numerous methods available to remedy the existing streambank erosion. One of the common solutions to stabilize the toe and slopes of a stream are to install a hard armor such as rip rap or other proprietary manufactured products such as armorflex or flexamat. Information on these proprietary products is included in Appendix D. This option would effectively prevent erosion but may look out of place within the wooded Heesakker Park area. The other common solution is a more natural-looking option and involves different bioengineering techniques, including the installation of bio-logs or BioD-blocks to stabilize the toe of slope and the installation of erosion mat and native grasses/plantings to stabilize the slopes. Information on a few of the available proprietary bioengineering products is also included in Appendix D.

As mentioned, due to the location of the stream within a wooded area inside the park, the more natural-looking bioengineering solution may be more desirable. Because of the size and nature of the stream, the stream may also be classified as a navigable stream by the WDNR. As such, the rip and/or hard armoring option may be more difficult to permit. REL has completed stream stabilization projects in the past; Appendix D includes a cross-section example. This particular example included the installation of BioD-Blocks to protect the toe of slope and coconut fiber erosion mat and native grasses, shrubs, and trees to stabilize and protect the slopes. Overall, there is approximately 1,950 linear feet of stream through Heesakker Park. It is estimated that a stream restoration project on this stream, similar to that of the provided example cross-section, would cost approximately \$150,000 to \$250,000. Actual costs could vary greatly depending on the selected improvements and the amount of stream that needs to be improved.

Other possible site constraints that may exist if the project moves forward includes:

- ◆ Federal, state, and/or locally-regulated wetlands
- ◆ Federal Emergency Management Agency (FEMA) designated 100-year floodplain and floodway where earth fill and structures are limited
- ◆ Threatened or endangered species subject to the federal Endangered Species Act and/or state regulations

- ◆ Historical and/or archaeological resources or features (e.g., dams subject to the National Historic Preservation Act (NHPA) or state regulations promulgated by the State Historic Preservation Office (SHPO) (or Tribal HPO on Native American lands)
- ◆ Protected large "specimen" trees
- ◆ Steep slopes regulated by municipal and/or county governments for disturbances
- ◆ Other site features (e.g., buildings, utilities, walls, and bridges) that will potentially affect restoration work activities

PARADISE VALLEY

Paradise Valley is located in the southwest corner of the Village and contains an Unnamed Tributary to the Fox River that flows west to east through the valley towards the Fox River. Flow through the stream is made up of effluent outflow from the adjacent Outagamie County Landfill and storm water from the City of Appleton from the west. Storm water from the Village of Little Chute also discharges into the stream at the far east end of Paradise Valley, at outfalls P2&P3. Most of the land through Paradise Valley is privately owned from Washington Road to French Road. The specific areas that were inspected included the area immediately adjacent to outfalls of P3 & P2 as well as the area downstream of these outfalls. Rip rap has already been installed south of the P3 outfall to address previous bank erosion and rip rap now extends from P3 to the confluence of the P2 outfall.

During the field investigation, it was observed that this stream was experiencing similar streambank erosion as the stream through Heesakker Park, as many of the same issues were found here as well. High-velocity or turbulent flow has eroded the outer banks of stream bends and even the streambeds themselves. According to Village staff, the visible erosion within Paradise Valley has been getting progressively worse over recent years. This can likely be attributed to increased upstream development and increased storm water flows, as well as the increasingly deteriorated toe of slope along the stream.

The same stabilization methods are available to remedy the erosion issues along this stream as well. A combination of hard armoring at the specific storm sewer outfalls and bioengineering methods along the stream would be recommended for this project. The immediate area of concern along this stream would be from outfall P3 downstream to outfall P2 and ultimately downstream to the culvert crossing under the Canadian National Railroad. This area contains approximately 1,100 lineal feet of stream. It is estimated that a stream restoration project along this portion of the stream would cost approximately \$250,000 to \$350,000. The actual cost of the project could again vary greatly depending on the selected improvements and overall scope of the project. The same site constraints could also exist for this project as with the ones listed above for the Heesakker Park project. An additional constraint associated with this project is that the Village does not own the property through which this stream flows. Cooperation would be needed between the property owner and the Village.

CONCLUSIONS

Due to the high amounts of development and storm sewer within the Village limits, there are not many natural streams remaining. Because of this, the Village does not have a significant streambank erosion problem. Since the Village already owns and has access to the property through Heesakker Park, it is recommended that this project be the Village's first priority in fixing the existing stream erosion problems. In addition to then budgeting and planning for the Paradise Valley stream restoration, it is recommended the Village continue to monitor and inspect all outfall locations throughout the Village to ensure no other problems arise.


APPENDIX D – STREAM RESTORATION PROJECTS


- Stream Photos
- Proprietary Product Information
- Example Bio-Engineering Cross-Section
- Example Before & After Photos


STREAM PHOTOS


Photographic Log		
Client Name: Village of Little Chute		Site Location: Heesakker Park
Project No.:		
Photo No. 1	Date: 11/24/14	
Direction Photo Taken: West		
Description: NE Portion, near creek headwaters. House in foreground has had repeated basement flooding.		


Client Name: Village of Little Chute		Site Location: Heesakker Park
Project No.:		
Photo No. 2	Date:	
Direction Photo Taken: East		
Description: NE section of creek near headwaters running adjacent to Lincoln Ave.		


Photographic Log			
Client Name: Village of Little Chute		Site Location: Heesakker Park	Project No.:
Photo No. 3	Date: 11/24/14		
Direction Photo Taken: northwest			
Description: significant bank erosion and failure near headwaters			

Client Name: Village of Little Chute		Site Location: Heesakker Park	Project No.:
Photo No. 4	Date: 11/24/14		
Direction Photo Taken: west			
Description: meandering stream channel, high density of buckthorn, little herbaceous layer			

Client Name: Village of Little Chute		Site Location: Heesakker Park	Project No.:
Photo No. 5	Date: 11/24/14		
Direction Photo Taken: south			
Description: exposed roots, bank failure. Buckthorn has been removed, herbaceous layer needs to be restored.			


Client Name: Village of Little Chute		Site Location: Heesakker Park	Project No.:
Photo No. 6	Date: 11/24/14		
Direction Photo Taken: South			
Description: Significant channel erosion with loss of vegetation			

Client Name: Village of Little Chute		Site Location: Heesakker Park	Project No.:
Photo No. 7	Date: 11/24/14		
Direction Photo Taken: East			
Description: Area of creek with minimal erosion			


Client Name: Village of Little Chute		Site Location: Heesakker Park	Project No.:
Photo No. 8	Date: 11/24/14		
Direction Photo Taken: East			
Description: Creek following path East towards outfall			


Client Name: Village of Little Chute			Site Location: Heesakker Park			Project No.:		
Photo No. 9		Date: 11/24/14						
Direction Photo Taken: East								
Description: Outfall F5								


Client Name: Village of Little Chute			Site Location: Heesakker Park			Project No.:		
Photo No. 10		Date: 11/24/14						
Direction Photo Taken: South								
Description: Panoramic								


Photographic Log		
Client Name: Village of Little Chute		Site Location: Paradise Valley
Project No.:		
Photo No. 1	Date: 11/24/14	
Direction Photo Taken: North		
Description: P2 outfall – Washington St.		


Client Name: Village of Little Chute		Site Location: Paradise Valley
Project No.:		
Photo No. 2	Date:	
Direction Photo Taken: North		
Description: P2 outfall Panoramic – Washington St.		


Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 3	Date: 11/24/14		
Direction Photo Taken: southwest			
Description: Directly downstream from P2 outfall. Obstructions			


Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 4	Date: 11/24/14		
Direction Photo Taken: southwest			
Description: Confluence directly west of P2			

Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 5	Date: 11/24/14		
Direction Photo Taken: southwest			
Description: Confluence directly west of P2 - panoramic			

Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 6	Date: 11/24/14		
Direction Photo Taken: west			
Description: P3 outfall			

Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 7	Date: 11/24/14		
Direction Photo Taken: south			
Description: riprap downstream from P3			

Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 8	Date: 11/24/14		
Direction Photo Taken: south			
Description: south of P3 where riprap starts			

Client Name: Village of Little Chute		Site Location: Paradise Valley	Project No.:
Photo No. 9	Date: 11/24/14		
Direction Photo Taken: southwest			
Description: end of rip rap approaching confluence. Measurable bank erosion			

PROPRIETARY PRODUCT INFORMATION

Flexamat®



Applications



LEARN HOW FLEXAMAT IS THE BEST PERMANENT EROSION SOLUTION!

Flexamat® is a permanent erosion control mat utilized for stabilizing slopes, channels, low water crossing, inlet/outlet protection, and shorelines. It consist of concrete blocks (6.5" x 6.5" with a 2.25" profile) locked together and embedded into a high strength geogrid. There is 1.5" spacing between the blocks that gives the mat flexibility and allows for optional vegetation growth. The mat is packaged in rolls, making transporting and installing Flexamat® efficient.



Flexamat

FLEXAMAT BENEFITS

Permanent solution
High performance - un-vegetated, capable of 19ft./sec. and 24psf
Easy maintenance - commercial mowers can be used



Flexamat - one year after installation

Fast and simple
 installation - roll
 design makes
 installation efficient
 Reduces runoff
 velocities - 0.055
 Manning's "n" value
 un-vegetated
 Aesthetic solution -
 blends in with natural
 surroundings
 Improves safety - safe
 to walk or drive
 across
 Environmentally
 friendly - wildlife can

FLEXAMAT IS A "TIED CONCRETE BLOCK MAT".

(Tied Concrete Block Mat is a generic term for Flexamat.)

Flexamat consists of concrete shapes, locked together with a high strength, polypropylene geogrid. There are openings around each concrete block that give Flexamat the flexibility and enable it to be packaged in rolls. The openings also allow vegetation to grow through the mat. Eventually, vegetation will completely cover Flexamat. It can be manufactured with various backings such as non-woven fabric to stop vegetation growth or a TRM (turf re-enforcement mat) depending on the soil conditions and other factors.

There's a wide range of applications where Flexamat is utilized, but it is most commonly used for erosion control. Flexamat is used to control erosion in channels, outlet protection, on slopes, for shoreline protection and many other applications.

Flexamat offers permanent, hard armor protection, with a natural vegetated appearance. Flexamat may be mowed over with commercial mowing equipment or left to grow wild. Besides grass, there are many other types of native plant species that can be planted to grow within the mat. For example, Willow Saplings were planted through Flexamat for a streambank re-vegetation project.

walk across

- Reduces construction cost - low material cost, less labor, and faster project completion
- Versatile solution - customizable for site conditions

FLEXAMAT PROPERTIES

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Mat Width & Length	Manufactured in standard widths of 4', 5.5', 8', 10', 12, & 16'. Lengths can be cut to order per project requirements. Stocked lengths are 30', 40', & 50'. 4' x 4' mats stacked on pallets are also available.
Underlayment Options	Standard Flexamat® is manufactured with Curlex® II underlayment backing. It may also be manufactured with Recyclex® TRM or non-woven filter fabrics. Onsite conditions and project requirements determine the appropriate underlayment material. Customize Flexamat!
Weight per Square Foot	10 lbs per square foot
Block Size	The concrete blocks are 6.5" x 6.5" x 2.25". There is 1.5" spacing between the blocks.
Limiting Shear	24+ PSF (non vegetated)
Limiting Velocity	19+ft./second (non vegetated)

CONTACT US TODAY!

FLEXAMAT INFORMATION

- [Project Check List](#)
- [Flexamat Installation Guidelines](#)
- [Customize Flexamat](#)
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FLEXAMAT GALLERY



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- LEED Certification
- Installation Details
- Flexamat Installation Guidelines
- Canal Erosion Protection

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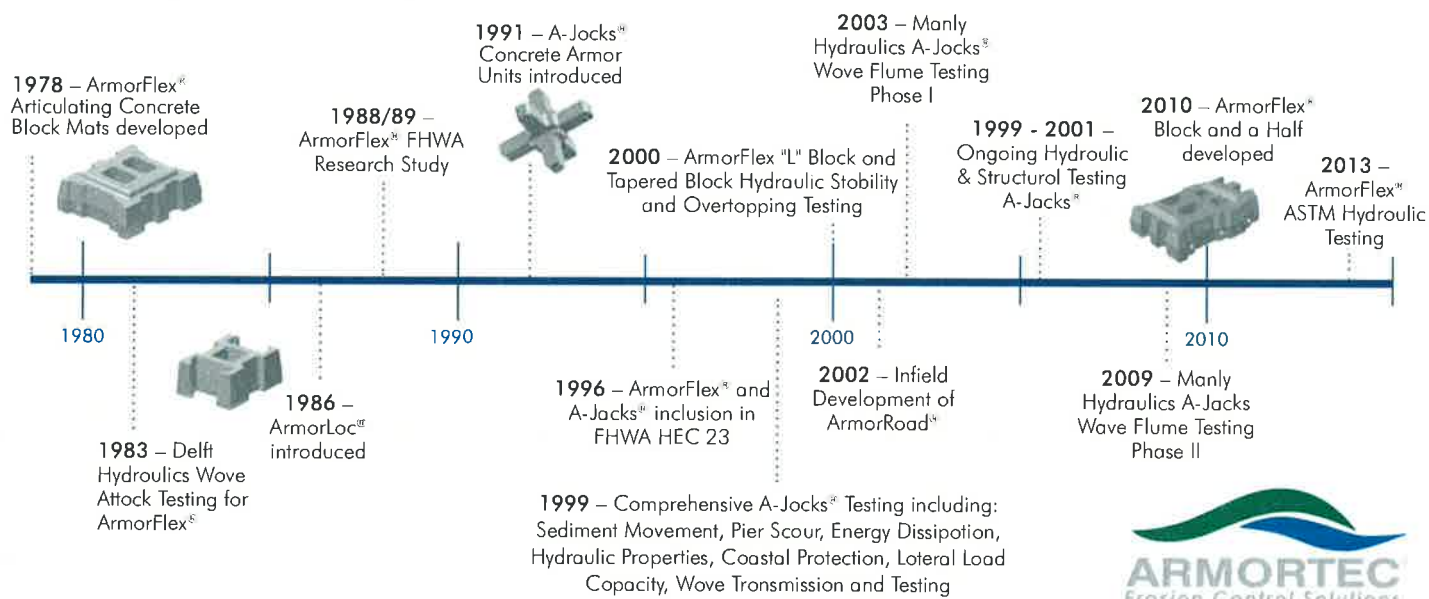
ARMORTEC® HARD ARMOR SOLUTIONS



ARMORTEC HARD ARMOR SOLUTIONS.

A LEGACY OF SUCCESS

Doing the seemingly impossible is an everyday job. With erosion control systems for any need in any application, Contech Engineered Solutions delivers a range of effective, efficient solutions. Our engineered systems provide performance-tested solutions for a wide variety of applications including channel lining, shoreline protection, dam crests and spillways, energy dissipation, pipeline and cable protection, bridge and abutment protection, boat ramps, low water crossings, outfall protection, wave attack protection and more.

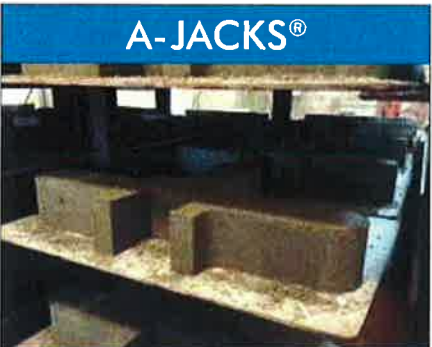
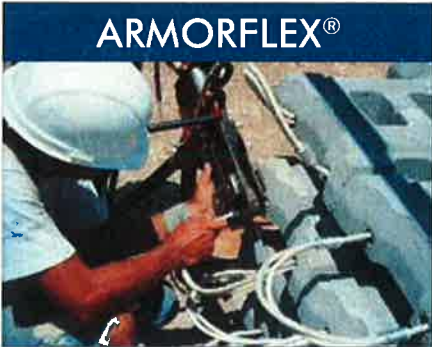


BUILDING CONFIDENCE EVERY STEP OF THE WAY



PROCESS – DESIGN, PREFABRICATION, INSTALL.

PRODUCTION



TRANSPORTATION



SITE PREPARATION



INSTALLATION



COMPLETION



ARMORFLEX® ARTICULATING CONCRETE BLOCKS

OPEN CELL BLOCK DESIGN ALLOWS FOR REVEGETATION



CLOSED CELL BLOCK DESIGN ALLOWS FOR HEAVY LOADING



BOTH BLOCKS READILY ADAPT TO COMPLEX SITE GEOMETRIES



BLOCK OPTIONS

Open-Cell Block



Closed-Cell Block



Tapered Open-Cell Block



Block and a Half®



ARMORFLEX UNIT SPECIFICATION

Block Class		Nominal Thickness (in)	Length (in)	Width (in)	Gross Area (sf)	Minimum Weight (lbs)	Open Area %	T _c 0° slope* (psf)
OPEN	30-S	4.75	13.0	11.6	0.98	33	20	5.2
	50-S	6.00	13.0	11.6	0.98	42	20	6.1
	40	4.75	17.4	15.5	1.77	59	20	11.2
	50	6.00	17.4	15.5	1.77	76	20	13.6
	70	8.50	17.4	15.5	1.77	107	20	17.7
	40-L	4.75	17.4	23.6	2.58	97	20	14.6
	50-L	6.00	17.4	23.6	2.58	116	20	22.1
	70-L	8.50	17.4	23.6	2.58	164	20	29.5
CLOSED	45-S	4.75	13.0	11.6	0.98	39	10	6.2
	55-S	6.00	13.0	11.6	0.98	50	10	7.3
	45	4.75	17.4	15.5	1.77	71	10	13.5
	55	6.00	17.4	15.5	1.77	91	10	16.3
	85	8.50	17.4	15.5	1.77	126	10	21.1
	45-L	4.75	17.4	23.6	2.58	109	10	21.9
	55-L	6.00	17.4	23.6	2.58	138	10	26.3
	85-L	8.50	17.4	23.6	2.58	195	10	35.1
HIGH VELOCITY APPLICATIONS								
TAPERED	40-T	4.75	17.4	15.5	1.77	58	20	25.0
	50-T	6.00	17.4	15.5	1.77	75	20	30.5
	70-T	8.50	17.4	15.5	1.77	109	20	38.5

* In accordance with ASTM D 7276 – Standard Guide for Analysis and Interpretation of Test Data for ACB Revetment Systems in Open Channel Flow.

ARMORFLEX® ARTICULATING CONCRETE BLOCKS

APPLICATIONS

- Channel Lining
- Shoreline Protection
- Scour Protection
- Slope Protection
- Outfall Protection
- Pipeline & Cable Protection
- Weirs
- Spillways
- Dam Overtopping
- Emergency Overflows
- Grade Transitions
- Intracoastal Waterways
- Bays
- Lakes
- Reservoirs
- Low Water Crossings
- Boat Ramps
- Down Chutes



SCOUR PROTECTION



SHORELINE PROTECTION



VEGETATED SLOPE



CHANNEL LINING



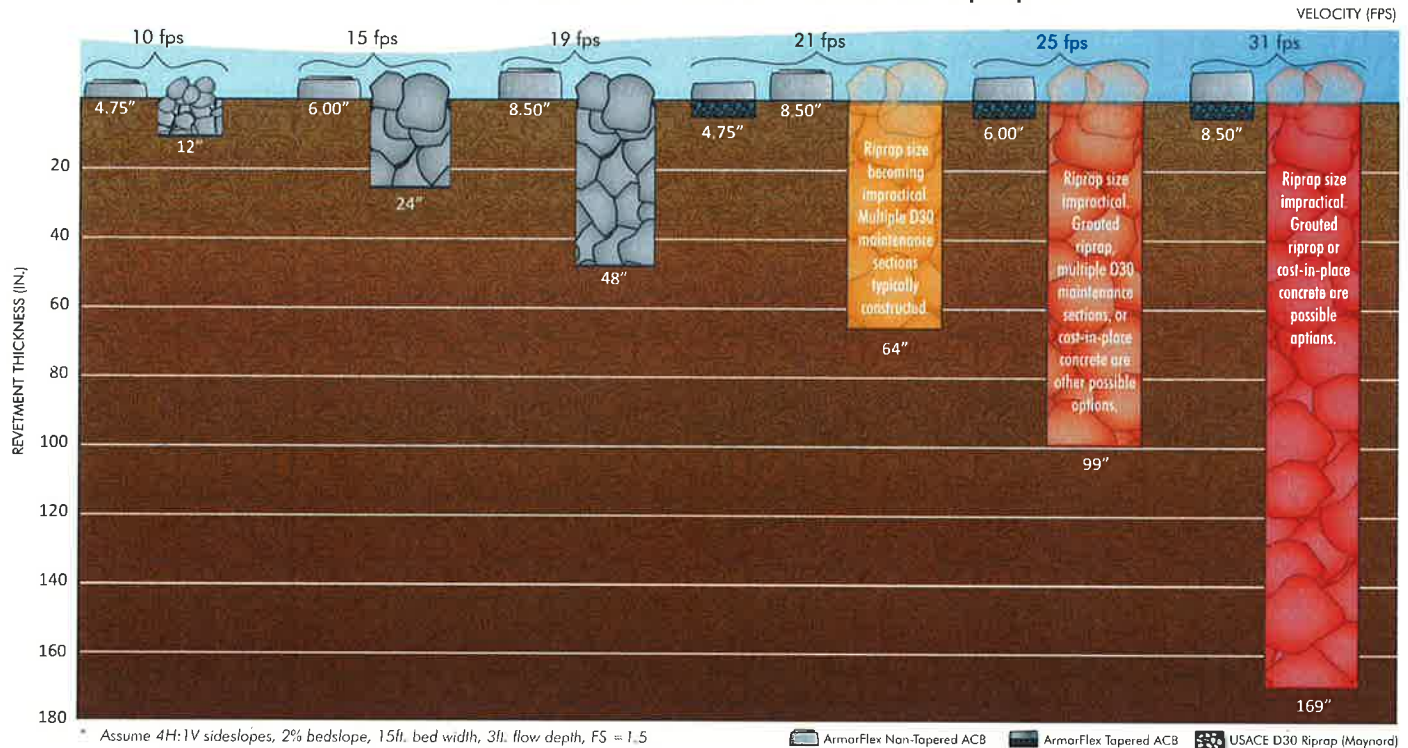
SUBMERGED ARMORING



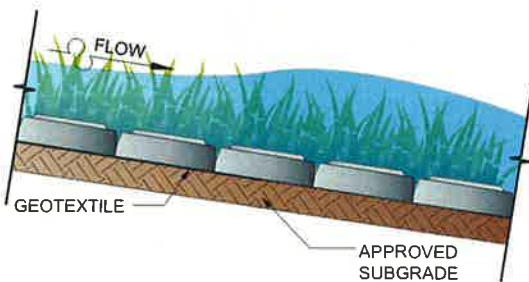
MATTED SOLUTIONS

SIZING

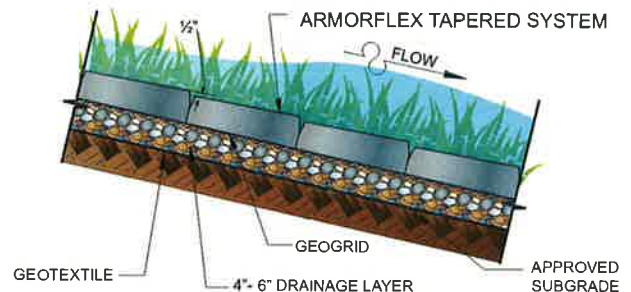
ArmorFlex® ACB vs Traditional Riprap*



TYPICAL CROSS SECTIONS (not to scale)



Standard Cross Section



Tapered Series - Cross Section

REFERENCES AND STANDARDS

- National Concrete Masonry Association (2010), "Design Manual for Articulating Concrete Block (ACB) Revetment Systems", NCMA Publication TR 220A
- ASTM D 7276 – Standard Guide for Analysis and Interpretation of Test Data for ACB Revetment Systems in Open Channel Flow
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- FHWA Hydraulic Engineering Circular NO. 23: Bridge Scour and Stream Instability Countermeasures: Experience, Selection and Design Guidance – Third Edition, Volume II, Design Guideline 8.
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ARMORFLEX® INSTALLATION

THE ARMORTEC® HARD ARMOR ADVANTAGE

EASE OF INSTALLATION



PROCESS



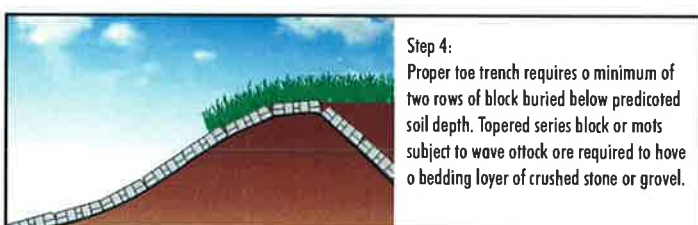
Step 1:
ArmorFlex arrives on-site as a system of factory-assembled mats. ArmorFlex is placed on a site specific geotextile which has been placed on a prepared subgrade using conventional construction equipment.



Step 3:
ArmorFlex Mats are placed according to the site plans with appropriately sized equipment. Above normal waterline mats may be topsoiled and seeded to give a vegetated effect.



Step 2:
Mats are supplied on flat bed trailers. Mats can be handled with a spreader bar which can be rented from Contech.



Step 4:
Proper toe trench requires a minimum of two rows of block buried below predicated soil depth. Tapered series block or mats subject to wave attack are required to have a bedding layer of crushed stone or gravel.

See ArmorFlex Installation Guide for additional information.

ARMORROAD® CONCRETE UNITS

APPLICATIONS

- Industrial Yards
- Durable Driving Surface
- Temporary Road
- Lay Down Yard
- Heaving and Expanding Subgrades



ARMORROAD UNIT SPECIFICATION

Block	L	W	H	Minimum Weight (lbs / sf)	SF per Truck load
Mat	18.00	15.60	6.00	60	750

A-JACKS® CONCRETE ARMORING UNITS (CAU)

APPLICATIONS

- Bridge/Pier Scour
- Energy Dissipation
- Streambank/Toe Stabilization
- Shoreline
- Drop Structure
- Weirs
- Coastal Breakwater (Jetty)
- Habitat Creation



A-Jacks® provided bridge pier foundation scour protection to withstand Hurricane Sandy.



ENERGY DISSIPATION



STREAMBANK



PIER SCOUR



INSTALLATION

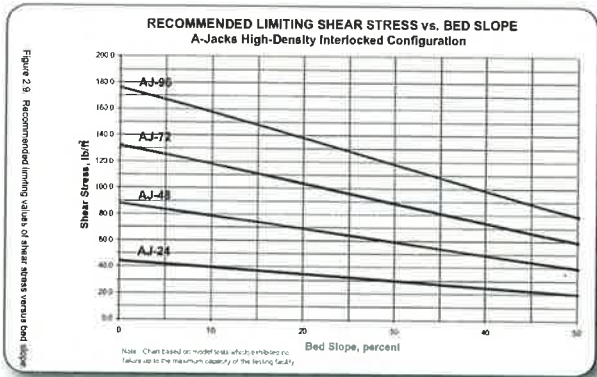
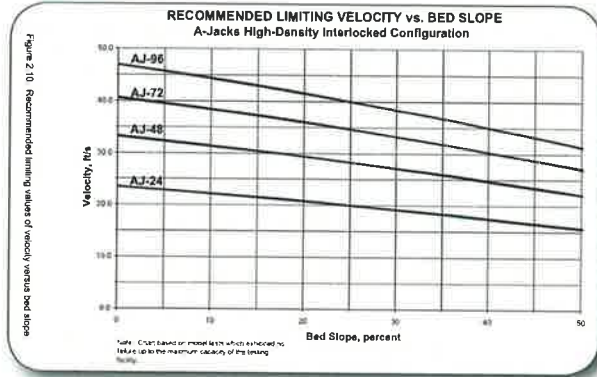
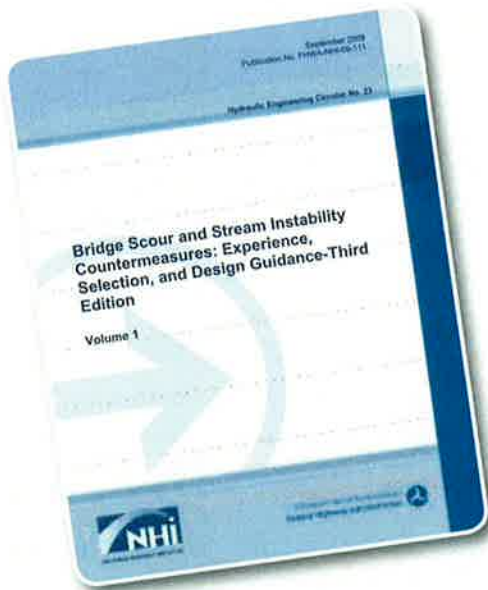
- Hand-placed and Bundled Unit Methods
- Field Technicians Available for Pre-con and Installation
- Construction Versatility



A-JACKS® DESIGN CONSIDERATIONS

DESIGN

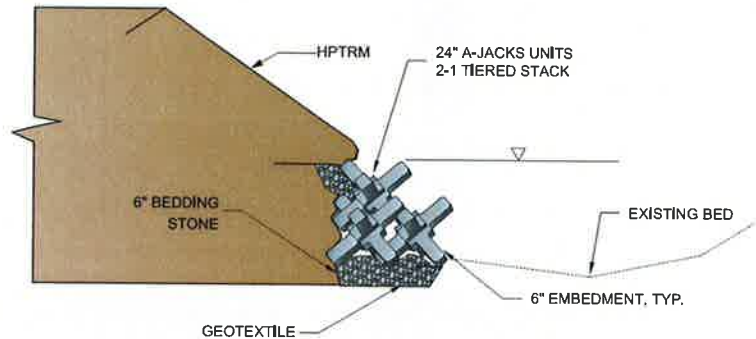
- A-Jacks® are recommended in FHWA HEC 23 with further guidance in Design Guideline 19.



STANDARD DETAILS



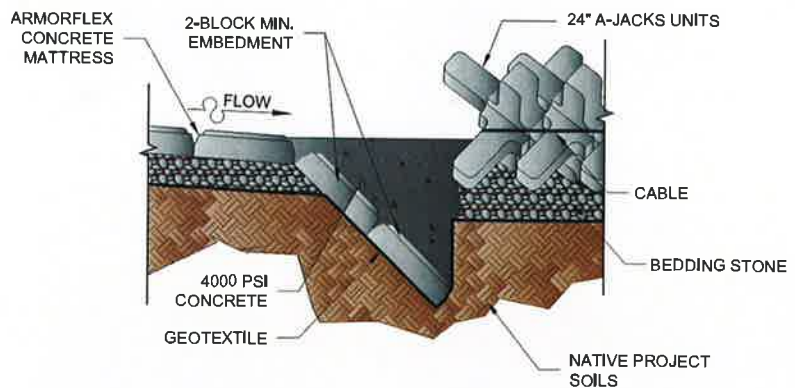
A-Jacks Placement Profile



A-Jacks Toe Stabilization Detail

A-JACKS UNIT SPECIFICATION

A-Jacks	Coverage (SF)	Weight (lbs)	Standing Height (H) (ft)
AJ-24	1.0	78	1.5
AJ-48	4.0	629	3.0
AJ-72	9.0	2,120	4.5
AJ-96	16.0	5,022	6.0
AJ-120	25.0	9,699	7.5



A-Jacks Energy Dissipation Detail

ADDITIONAL HAND-PLACED ACB SOLUTIONS

ARMORFLEX®

- Dam Overtopping
- Auxiliary Spillways
- Emergency Overflow
- Grade Transitions
- Retention Basins
- Shoreline Protection
- Drainage Ditch Lining
- Outfall Protection
- Bridge Abutment Protection



ARMORLOC®

- Auxiliary Spillways
- Emergency Overflow
- Grade Transitions
- Retention Basins
- Shoreline Protection
- Drainage Ditch Lining
- Outfall Protection
- Bridge Abutment Protection
- Walking Paths
- Auxiliary Parking
- Slope Paving



ARMORWEDGE®

- Dam Overtopping
- High Velocity Channels
- Primary and Secondary Spillways
- Down Chutes



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CONSIDERATIONS FOR ENGINEER OF RECORD

Site Design

Soil Borings

Hydraulic Analysis

Scour Analysis

Scour Countermeasures

Permitting

Inspections

SOLUTION DEVELOPMENT & DESIGN SUPPORT

Limit Assessment  

Hydraulic Analysis  

HEC RAS Review 

Factor of Safety Analysis 

Block Selection 

Engineer's Estimate 

Proposal Drawings  

Contract Drawings  

Specifications  

Approval Assistance  

Staging and Layout  

Fabrication Drawings 




Contech Support Available




Engineer of Record May Provide

INSTALLATION SUPPORT

Preconstruction Meeting 

Logistics Coordination 

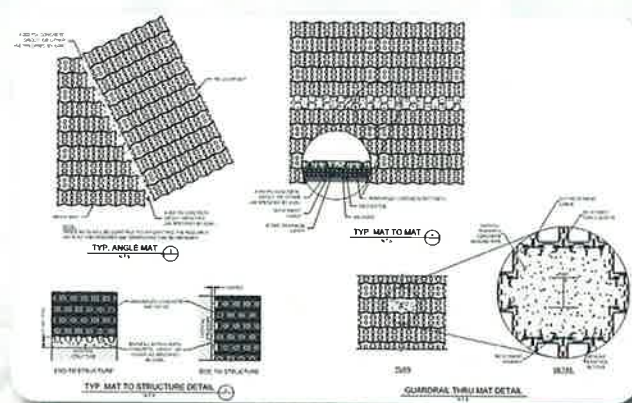
Onsite Installation Assistance 



HEC RAS REVIEW



DRAWINGS & TECHNICAL SUPPORT



STAGING & LAYOUT





STORMWATER SOLUTIONS

Helping to satisfy stormwater management requirements on land development projects

- Stormwater Treatment
- Detention/Infiltration
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- Tunnel Liner Plate

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TURF REINFORCEMENT MATS



BIN WALL



LIGHT GAGE METRIC SHEETING

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BioD-Block™
Fabric attached coir block system



BioD-Block is a versatile fabric attached coir fiber block system for slope stabilization, streambank and shoreline restoration and stream relocations. Improves the Performance of Fabric Encapsulated Soil Lift Techniques! It is an excellent tool for for easy construction of vegetated soil lifts.

BioD-Block™ is a coir fiber block system consisting of a densely packed elongated mattress coir fiber block attached to a bristle coir woven fabric. Coir fabric is tightly wrapped around two block sizes; 12-in tall, 5-in thick block and 16-in tall, 9-in thick. Both block sizes come in 10-ft long coir blocks. The fabric is connected to the coir block on three sides leaving the other side open to fill with dirt. Each coir block has a female and a male end. These male and female ends in BioD-Block™ create a strong and easy-to-handle connection, providing an excellent face to the soil layers. [Request a quote.](#)

**BioD-Block is a patented product in USA, India and Sri Lanka.
US patent #: 6893193.**



Specifications

Property	BioD-Block™ 12-300	BioD-Block™ 16-300	BioD-Block™ 16-400
Unit weight	4.2 lbs/ft (6.3 kg/m)	7.2 lbs/ft (10.7 kg/m)	7.7 lbs/ft (11.5 kg/m)
Block size			
Height	12 in (30 cm)	16 in (40 cm)	16 in (40 cm)
Thickness	5 in (13 cm)	9 in (23 cm)	9 in (23 cm)
Length	10 ft (305 cm)	10 ft (305 cm)	10 ft (305 cm)
Fabric length			
Top	47 in (117.5 cm)	28 in (71 cm)	48 in (122 cm)
Bottom	47 in (117.5 cm)	56 in (142 cm)	75 in (190 cm)
Tensile strength of fabric			
MD	1740 lbs/ft (25.4 kN/m)	1740 lbs/ft (25.4 kN/m)	1740 lbs/ft (25.4 kN/m)
CD	1176 lbs/ft (17.2 kN/m)	1176 lbs/ft (17.2 kN/m)	1176 lbs/ft (17.2 kN/m)
Fabric length at female end	6 in (15 cm)	6 in (15 cm)	6 in (15 cm)

GeoNatural Soil- Bioengineering Products

[BioD-Block](#)
[BioD-Roll](#)
[BioD-Mat 70](#)
[BioD-Mat 90](#)
[BioD-OCF 30](#)
[BioD-StrawCoco](#)
[BioD-Weedmat](#)
[BioD-Medium](#)

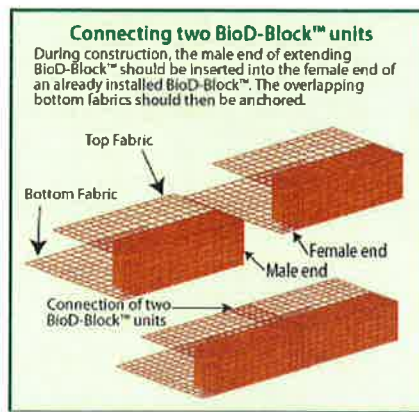
Supporting products

Applications of BioD- Block system

Slopes
Streambanks
Stream relocation



Advantages



- Provides much longer protection to soil wraps from the thick coir fiber block compared to soil wraps with fabrics only.
- The coir block in the system provides constant layer heights and makes construction of fabric wrapped soil layers easier.
- The male-female ends in the coir block system provide strong continuous sections, while maintaining its structural integrity.
- Provides better support to soil behind the rectangular block and more contact area at the bottom.
- In most situations, no inner fabric is required when soil wraps are done with the coir block system, reducing cost.
- Reduces valuable installation time, reduces overall project cost, and provides superior and worry-free designs/ finished products.

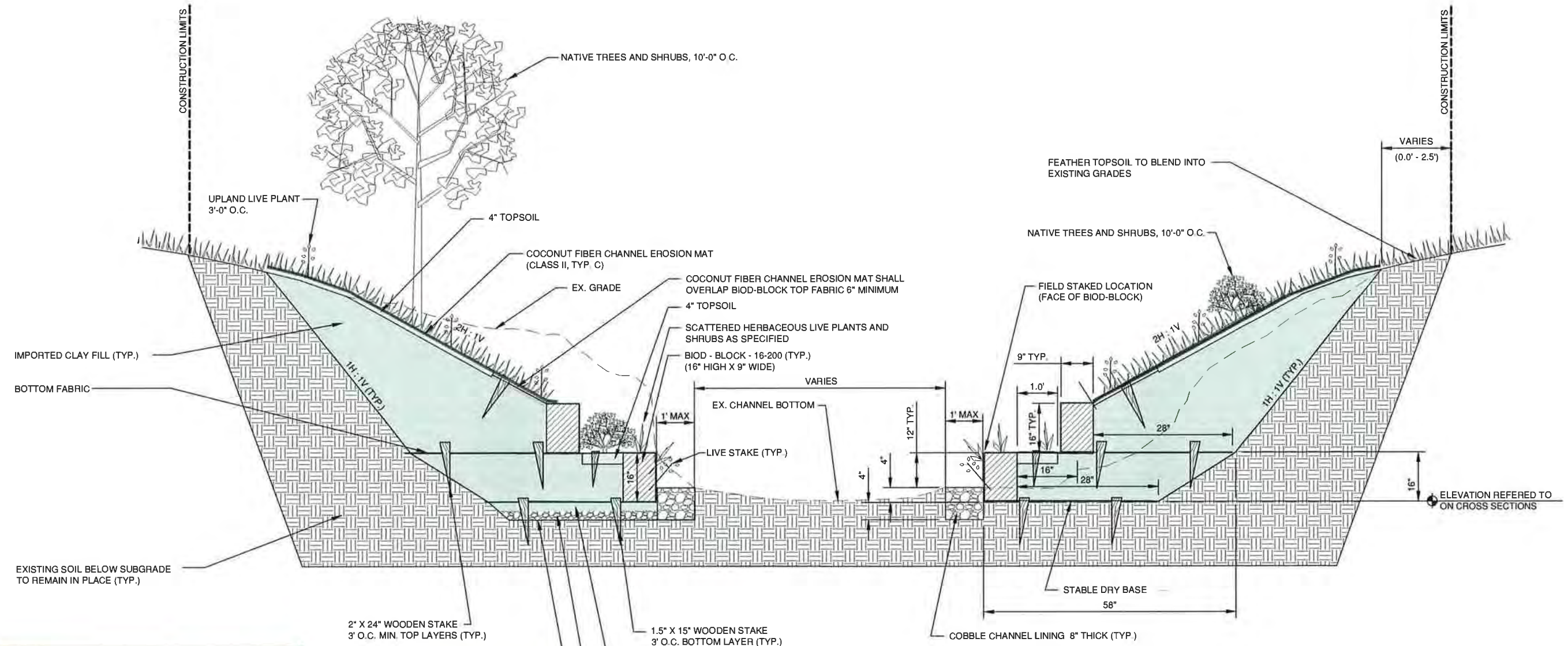


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EXAMPLES OF BIO-ENGINEERING CROSS-SECTION

EXAMPLE CROSS SECTION

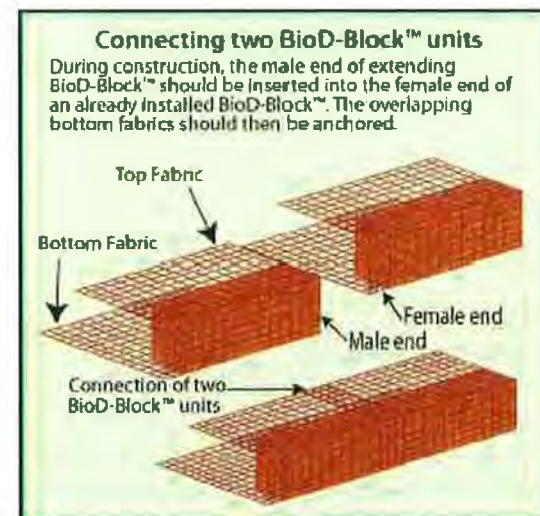


TYPICAL CROSS SECTION

NOT TO SCALE

BIOD - BLOCK INSTALLATION PROCEDURE

1. CLEAN AND LEVEL THE BASE OF THE ERODED STREAM BANK. IF DETERMINED NECESSARY BY ENGINEER, STRENGTHEN THE BIOD-BLOCK FOUNDATION USING 3-INCH CRUSHED STONE AS SHOWN. PLACE 3-INCHES OF CLAY FILL ON TOP OF THE CRUSHED STONE AND LEVEL THE SURFACE WELL. FOUNDATION STRENGTHENING PAID AS EXCAVATION BELOW SUBGRADE.
2. PLACE A BIOD - BLOCK UNIT ON LEVEL SURFACE, KEEPING THE FEMALE END TOWARDS DIRECTION OF EXTENDING, AND SPREAD THE BOTTOM FABRIC. ANCHOR THE BOTTOM FABRIC TO THE GROUND WELL WITH WOODEN STAKES. FILL SOIL UP TO THE HEIGHT OF THE COIR BLOCK AND COMPACT THE FILLED SOIL WELL. COVER THE COMPACTED FILLED MATERIAL WITH TOP FABRIC AND ANCHOR IT WELL.
3. REPEAT THE COIR BLOCK INSTALLATION PROCEDURE DESCRIBED ABOVE TO MAKE SOIL LIFT LAYERS AS NEEDED OR TO THE TOP OF THE BANK, AS SHOWN IN THE TYPICAL SECTION.
4. MALE AND FEMALE END CONNECTION IN BIOD-BLOCK MAINTAINS CONTINUITY AND STRUCTURAL INTEGRITY OF THE CONNECTED SECTION. FABRIC EXTENDING BEYOND FIBER BLOCK AT FEMALE END PROVIDES STRUCTURAL SUPPORT FOR INSERTED MALE END. INSERT MALE END OF SECOND BIOD-BLOCK TO FEMALE END OF FIRST BIOD-BLOCK AND DRIVE STAKES. MAKE SURE TO DRIVE STAKES THROUGH OVERLAPPING FABRICS OF TWO BIOD-BLOCK UNITS AT THEIR CONNECTION. DO NOT DRIVE STAKES ALL THE WAY.
5. ALL TOPSOILED AREAS SHALL BE SEEDED WITH SPECIFIED NATIVE SEED MIX.



NO.	DATE	APPROV.	REVISION	NO.	DATE	APPROV.	REVISION	DRAWN RLB	DETAILS	DATE 10/20/11	 Robert E. Lee & Associates, Inc. ENGINEERING, SURVEYING, ENVIRONMENTAL SERVICES 4664 GOLDEN POND PARK COURT HOBART, WI 54155 INTERNET: www.releelinc.com PHONE: (920) 662-9641 FAX: (920) 662-9141	SHEET NO. 10
								CHECKED JGS		FILE DETAILS		JOB NO. 5033003
								DESIGNED PHK				

EXAMPLES BEFORE & AFTER PHOTOS

EXAMPLE BEFORE AND AFTER PHOTOS OF BIOENGINEERING METHOD



Before



After

CHAPTER 6

ILLICIT DISCHARGE PROGRAM

In order to comply with NR216 and their WPDES permit, the Village of Little Chute began an illicit discharge detection and elimination program in December of 2007 when a formal illicit discharge ordinance was adopted. As part of this storm water grant, Robert E. Lee & Associates, reviewed the Village's illicit discharge detection and elimination program and has updated it accordingly in order to bring it into compliance with current WDNR guidance (included in Appendix E) and to update the outfall mapping and field screening data collection and organization. The following summarizes the work that was performed.

OUTFALL LISTING AND MAPPING

Since the implementation of the original illicit discharge program, the Village's storm sewer network has been upgraded and expanded to include new and/or modified outfalls. REL reviewed the original outfall list and updated it to incorporate the current storm sewer network. A complete listing of the outfalls and an updated map of the outfalls is included in Appendix E. The updated map includes the current storm sewer network and storm water ponds, the current outfalls, and the current parcel mapping.

OUTFALL PRIORITIZATION AND SCREENING FREQUENCY

The Village began their outfall inspections in the fall of 2015 and all major outfalls were inspected. No illicit discharges were detected throughout this initial screening. The initial field screening report is included in Appendix E. As part of the original storm water report, the Village initially planned to screen each major outfall every year after the initial screening and all other minor outfalls approximately every 5 years. Because no illicit discharges were detected, the Village is now planning on performing the minimum amount of recommended screening. Which, per the new WDNR guidance, is now every year for a "priority" outfall, every 5 years for all other major outfalls, and only as desired for all minor outfalls. The "priority" classification began with the WDNR's illicit discharge guidance document that was released in March of 2012. Because of this new classification, each of the Village's outfalls was reassessed per this new guidance and the "priority" classification was assigned to the following basins:

- ◆ A1-1
- ◆ A1-2
- ◆ A2-1
- ◆ A3-1
- ◆ A6-1
- ◆ A6-2

- ◆ F3
- ◆ F5
- ◆ P2
- ◆ P3

These outfalls were assigned the priority classification because their contributing drainage basins each contain either a school or a WDPES permitted industrial facility with a higher probability of illicit discharges. These outfall classifications will be reevaluated every year as the results of each year's field screening are analyzed. The "priority" classification may then be removed from any of the outfalls or added to any others based on the future probability of detecting an illicit discharge.

FIELD SCREENING COLLECTION AND DATABASE

The existing field screening data collection and database system were also analyzed and updated to make this process simpler and more organized for the Village moving forward. An application for smart phones was developed that would utilize the Village's current GIS program. The application allows the user to locate each outfall and input all of the requested information that was previously filled out on paper worksheets. This not only allows for less paperwork but the information for each outfall is then automatically stored and organized within the Village's GIS database so that each outfall may be more efficiently tracked from year to year.

The WDNR's guidance also provides additional details on proper field screening techniques for different scenarios. The following is a summary of the recommended techniques, the complete details can be found within the guidance document included in Appendix E.

- ◆ Submerged and enclosed outfalls shall be screened from the appropriate upstream manhole. On-site illicit connection inspections should be considered for any high risk facilities that can potentially discharge to the MS4 between the outfall and the field screening manholes.
- ◆ When one MS4 discharges to another, the point of interconnection is considered an outfall from the upstream or discharging MS4. Field screening shall be performed by the upstream MS4; however, it may be appropriate for interconnected MS4s to coordinate and potentially consolidate field-screening activities.
- ◆ For pumped storm water systems, field-screening activities should be conducted at appropriate manholes located upstream from the pump station or intake. If the first upstream manhole from the pump station is submerged, the pump should be operated if possible to remove accumulated water from the storm sewer system prior to conducting field-screening activities.

- ◆ For swale conveyance systems, it may be appropriate to conduct a visual or “windshield” survey within the swale area in conjunction with or as an alternative to field screening at the outfall. Locations where piped systems discharge to swales should be targeted during windshield surveys.
- ◆ Wet detention basins and other storm water treatment practices can potentially mask the presence of illicit discharges from the storm sewer system. Field screening activities should be conducted at inlets to storm water treatment practices rather than from the outlet. However, the size and location of practices can be considered when determining if field screening at inlets is necessary.

INDICATOR PARAMETER AND ACTION LEVELS

The WDNR also updated the list of illicit discharge indicator parameters that should be tested for when flow is found within the outfalls. A sample shall be taken from each flowing outfall and at a minimum should be tested for ammonia, detergents, pH, and total chlorine. Depending on the possible source of discharge, the sample may also be tested for total copper, phenol, potassium, fluoride, and E. coli or bacteriodes. The action levels for each of the parameters have also been updated. Table 1 below is from the WDNR’s Illicit Discharge guidance dated March 2012 and it lists the different indicator parameters and updated action levels associated with each parameter.

TABLE 1 – INDICATOR PARAMETERS ACTION LEVELS

Parameter	Action Level	Illicit Sources	Non-Illicit Sources
Ammonia	0.1 mg/l	Sanitary sewage and industrial wastewater	Pets, wildlife and potentially WPDES permitted discharges
Detergents	0.5 mg/l	Industrial cleansers, commercial wash water and sanitary sewage	Residential car washing
pH	Less than 6 or greater than 9	Industrial wastewater and concrete truck wash-out	Groundwater and WPDES permitted discharges
Total Chlorine	Detection or positive test unless associated with a WPDES permitted discharge at background water supply levels	Industrial wastewater, swimming pools and sanitary sewage	WPDES permitted discharges
Total Copper	0.1 mg/l	Copper-based product use and manufacturing	WPDES permitted discharges
Phenol	Detection or positive test	Chemical, textile, paint, resin, tire, plastic, electronics and pharmaceutical manufacturing	None
Fluoride	Detection above background groundwater or water supply levels	Commercial and industrial wastewaters with a water supply component	Groundwater and WPDES permitted discharges
Potassium	10 mg/l	Sanitary sewage and industrial wastewater	Groundwater and WPDES permitted discharges
E. coli	10,000 MPN/100 mL	Sanitary sewage	Wildlife and pets
Human Bacteriodes	Detection or positive test	Sanitary sewage	None

SUMMARY

All other aspects of the Village's original illicit discharge detection and elimination program are still in place. The Village continues to perform cross-connection inspections and televising of their older sanitary sewers to ensure that these contamination sources do not become a future illicit discharge. Since the inception of the Village's program in 2007, there have not been any potential illicit discharges reported by the public and there has only been one known spill. The spill happened at Land O'Lakes Purina Feed in July of 2012, when 4,000 gallons of rendered pork fat from the company's facility was discharged to the Village's storm sewer system. Due to the dry weather at the time of the spill and cleanup actions organized by Land O'Lakes, essentially all of the contamination was contained and cleaned up. A summary of the spill is included in Appendix E.

With the updated and revised outfall screening program in place and the Village's continued efforts in cross-connection and sanitary sewer inspections, the likelihood of an illicit discharges reaching any adjacent waterways should be minimized.


APPENDIX E – ILLICIT DISCHARGE PROGRAM

- WDNR Illicit Discharge Guidance
- Table 1 – Outfall Listing
- Figure 1 – Drainage Basin & Outfall Location Map
- 2015 Illicit Storm Sewer Outfall Discharge Inspections
- 2012 Land O'Lakes Spill Information

WDNR ILLICIT DISCHARGE GUIDANCE

DATE: March 15, 2012

TO: SW Program Staff

FROM: Pam Biersach – Bureau Director
Bureau of Watershed Management 

SUBJECT: Program Guidance #3800-2012-01

Illicit Discharge Detection and Elimination

**March 2012
3800-2012-01**

This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

A. Statement of Problem Being Addressed

Limited information is available to assist municipalities with the development of an effective program to determine the presence of illicit discharges from storm sewer system outfalls.

B. Background

State and federal storm water discharge regulations require permitted municipal separate storm sewer systems (MS4s) to develop, implement and enforce a program to detect and remove illicit connections and discharges to the MS4. In Wisconsin, this requirement is established in s. NR 216.07(3), Wis. Adm. Code. The program must include routine dry weather field screening at storm sewer system outfalls and procedures for locating the source of known or suspected illicit discharges. If flow is observed, a combination of sensory observations and indicator parameter sampling must be used to determine the presence of illicit discharges and assist in the tracking, location and elimination of sources.

C. Discussion

Section NR 216.07(3)(i), Wis. Adm. Code, requires that field screening is conducted at all major outfalls and any additional outfalls designated by the municipality or Department. Field screening must include the following when flow is observed:

- Narrative descriptions of color, odor, turbidity, oil sheen, surface scum, flow rate and other relevant observations.
- Sampling for pH, total chlorine, total copper, total phenol and detergents unless Department

approval has been obtained for alternative parameters such as ammonia, potassium or bacteria.

The combination of sensory and indicator parameters is intended to provide insight regarding the presence and potential sources of illicit discharges. However, ch. NR 216, Wis. Adm. Code does not identify specific discharge limits, action levels or other criteria that should be used to determine if an illicit discharge is either present or absent. In addition, ch. NR 216, Wis. Adm. Code does not address the following:

- Selection of outfalls for on-going field screening after the initial major outfall field screening has been completed.
- Frequency and timing of outfall field screening activities.
- Outfalls with baseflow consisting of groundwater and other non-illicit discharges.
- Submerged, enclosed, or otherwise inaccessible outfalls.
- Outfalls from pumped storm water systems.
- Outfalls from swale conveyance systems and storm water treatment practices.
- Proper documentation and evaluation of outfall field screening activities.

The purpose of this guidance document is to provide supplemental information that can be used by MS4 owners and operators to maximize the efficiency and effectiveness of illicit discharge detection and elimination programs.

D. Guidance

Outfall Selection

Currently, MS4 permits include a requirement that field screening is initially conducted at all major outfalls¹. However, a more targeted approach to illicit discharge detection and elimination (IDDE) is recommended. Outfalls should be prioritized based on illicit discharge potential in the contributing drainage area rather than solely on pipe or drainage area size. Outfalls selected for on-going field screening based on illicit discharge potential are considered “priority outfalls”. Contributing drainage area characteristics or land uses that should be considered when selecting priority outfalls include:

- History of known or suspected illicit discharges reported within the last five years
- Sections of storm sewer and/or sanitary sewer infrastructure that have exceeded or are approaching their design/useful life.
- Contributing drainage areas with 80 or more percent imperviousness.

¹ “Major outfall” means a municipal separate storm sewer system outfall that meets one of the following criteria:

(a) A single pipe with an inside diameter of 36 inches or more, or from an equivalent conveyance which is associated with a drainage area of more than 50 acres.

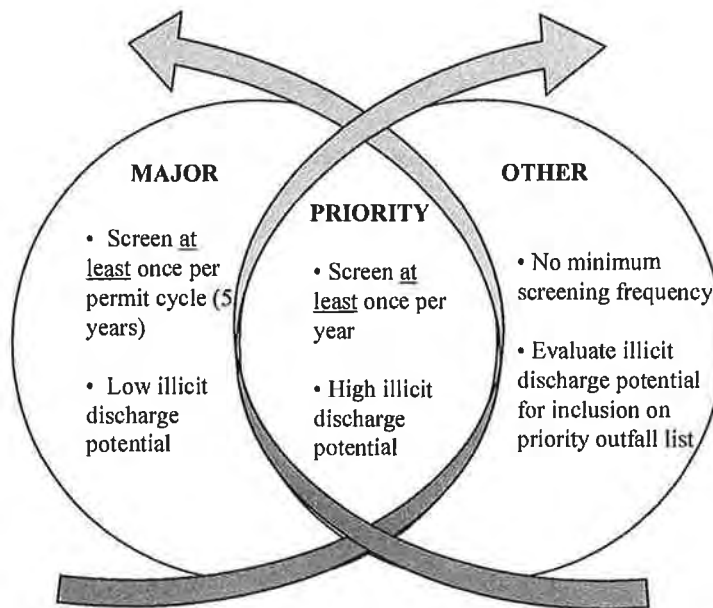
(b) A single pipe with an inside diameter of 12 inches or more, or from an equivalent conveyance which receives storm water runoff from lands zoned for industrial activity with 2 or more acres of industrial activity.

- Business or industrial parks with frequent changes in property ownership or operations.
- Schools or other institutional facilities.
- Commercial or industrial operations that generate wastewater or wash water including food processing, metal plating or machining shops, auto and scrap recyclers, commercial car washes and chemical manufactures or users.

Frequency

The recommended approach to outfall field screening frequency is depicted in Figure 1. All priority outfalls should be screened at least once per year. In some cases, it may be appropriate to conduct more than one field screening per year at a particular priority outfall depending on initial screening results or illicit discharge potential. All other major outfalls not identified as priority outfalls should be screened at least once during each MS4 permit cycle (i.e., 5 years). The priority outfall list should be reviewed and modified if necessary during an annual program evaluation.

Figure 1 - Outfall Field Screening Frequency



Timing

Outfall field screening must be conducted during dry weather periods to minimize potential interference from non-illicit sources including runoff and groundwater. In general, field screening should not be conducted within 48 hours after a precipitation event that produces runoff. However, it may be necessary to wait longer than 48 hours after precipitation events depending on contributing drainage area characteristics, the presence of extended discharges from stormwater facilities or the size of the event. Field screening during periods of high groundwater, such as the early spring, should be avoided. However, spring or fall screening may be necessary if outfall access is significantly obstructed by vegetation.

Sensory Parameters

Obvious illicit discharges can potentially be identified by color, odor or other physical characteristics such as sheen or foam. However, proper interpretation of sensory observations can be complicated by the fact that some sources are naturally occurring (e.g., iron bacteria) or non-illicit (e.g., dye testing).

Chapter 11 of the Center for Watershed Protection's guidance manual for illicit discharge detection and elimination includes photos of common physical indicators for illicit and non-illicit sources. The entire manual can be downloaded from the USEPA website at http://www.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

Indicator Parameters

Indicator parameter sampling is necessary to confirm sensory observations or distinguish illicit from non-illicit discharges. The following parameters are recommended for all observed discharges: **Ammonia, Detergents, pH and Total Chlorine**. Based on MS4 or outfall specific conditions, the following additional parameters should be considered:

- **Total Copper** in areas where industrial facilities that use or manufacture copper-based products are present.
- **Phenol** in areas where industrial facilities that utilize phenol in processes or products are present.
- **Potassium** when discharges of industrial wastewater or sanitary sewage are suspected.
- **Fluoride** when discharges with a drinking water supply component are suspected.
- **E. coli or Bacteriodes** when discharges of sanitary sewage are suspected.

The recommended parameters for all observed discharges are a deviation from the parameter lists identified in ch. NR 216, Wis. Adm Code and MS4 permits. Permitted MS4s should submit modified parameter list proposals to the Department for approval prior to implementation.

Test Methods

In order to provide relatively rapid results, indicator parameters should be analyzed using field test kits. However, field test kits should be used by staff with appropriate training and experience. Laboratory analysis is necessary for some parameters (e.g., E. coli, Bacteriodes) and recommended in cases where enforcement action may be necessary to eliminate illicit discharges or connections.

Action Levels

Recommended action levels for indicator parameters are found in Table 1. Sample results above these levels suggest the presence of an illicit discharge is likely. However, illicit discharges or connections should not be automatically ruled out in cases where parameters are detected below the recommended action levels. In some instances, illicit discharges can be masked by non-illicit sources depending on the time of the year, recent precipitation events, or other conditions, especially at outfalls with large

contributing drainage areas. With this in mind, the recommended action levels should be considered as starting points for decision making. Ultimately, identifying outliers to expected or past levels may be more important when determining if further investigation should be initiated. To determine when an outlier has been detected, each MS4 should maintain a database (or equivalent record) of indicator parameter test results for individual outfalls or groups of outfalls.

TABLE 1 – Indicator Parameters Action Levels

Parameter	Action Level	Illicit Sources	Non-Illicit Sources
Ammonia	0.1 mg/l	Sanitary sewage and industrial wastewater	Pets, wildlife and potentially WPDES permitted discharges
Detergents	0.5 mg/l	Industrial cleansers, commercial wash water and sanitary sewage	Residential car washing
pH	Less than 6 or greater than 9	Industrial wastewater and concrete truck wash-out	Groundwater and WPDES permitted discharges
Total Chlorine	Detection or positive test unless associated with a WPDES permitted discharge at background water supply levels	Industrial wastewater, swimming pools and sanitary sewage	WPDES permitted discharges
Total Copper	0.1 mg/l	Copper-based product use and manufacturing	WPDES permitted discharges
Phenol	Detection or positive test	Chemical, textile, paint, resin, tire, plastic, electronics and pharmaceutical manufacturing	None
Fluoride	Detection above background groundwater or water supply levels	Commercial and industrial wastewaters with a water supply component	Groundwater and WPDES permitted discharges
Potassium	10 mg/l	Sanitary sewage and industrial wastewater	Groundwater and WPDES permitted discharges
E. coli	10,000 MPN/100 mL	Sanitary sewage	Wildlife and pets
Human Bacteriodes	Detection or positive test	Sanitary sewage	None

Additional considerations for some of the indicator parameters are as follows:

- Field test methods for **detergents** are generally considered qualitative (i.e., positive or negative) tests. Some detergent test methods produce bubbles or a gel like substance that can be misinterpreted as a positive test for detergents. In addition, specific detergent test methods, such as the MBAS method, may not be capable of detecting all classes of detergents. Another potential

issue with detergent testing is distinguishing non-illicit discharges associated with residential car washing from illicit discharges.

- **Chlorine** residuals are typically short lived in the environment. Detection of chlorine at an outfall generally indicates a source that is relatively close to the outfall. However, chlorine detected at an outfall can be from an illicit or non-illicit source if chlorinated municipal drinking water supply is a component of the discharge (see "Non-Illicit Sources").
- Leaching of **copper** from plumbing systems can be a source of copper even in areas where copper-based product use or manufacturing does not occur.
- Municipal drinking water supply systems that add **fluoride** typically maintain levels between 1 and 1.5 mg/l.
- **E. coli** is a commonly used sanitary sewage indicator. However, dry weather flow outfall monitoring in Wisconsin and other states indicates that E. coli levels are highly variable and can be produced by naturally occurring, non-illicit sources in the environment such as raccoons in storm sewers. Elevated dry weather E. coli levels in conjunction with detection of other indicator parameters (e.g., detergents, total chlorine) may be more indicative of the presence of sanitary sewage.
- The ratio of human **Bacteriodes** to total Bacteriodes may be particularly useful in determining sanitary sewage sources. However, the availability of Bacteriodes testing may be limited.

Non-Illicit Sources

Indicator parameters can be detected from non-illicit sources such as groundwater inflows, non-contact cooling water discharges or other WPDES permitted discharges from commercial and industrial facilities:

- **Groundwater:** Flow rates associated with groundwater inflows can vary seasonally due to fluctuations in groundwater elevations. Groundwater inflows are typically highest in the early spring and lowest in the late summer. In some areas, groundwater inflows will also include natural levels of fluoride. Baseline conditions for outfalls with groundwater inflows can be established by documenting seasonal flow rates and/or fluoride levels over time. If baseline conditions have been established for an outfall, sampling for other indicator parameters can be avoided if flow rates and/or fluoride levels are consistent with the established baseline values.
- **Permitted Facilities:** In some areas, WPDES permitted industrial facilities are allowed to discharge wastewater to MS4s as long as discharge limits are met. These discharges can produce continuous or nearly continuous flows at outfalls. WPDES permitted discharges are considered non-illicit but can include one or more of the indicator parameters at detectable levels. In many cases, municipal drinking water supply is a component of WPDES permitted discharges and it may be difficult to distinguish non-illicit from illicit sources in these areas. However, establishing baseline flow rates and parameter levels for outfalls with WPDES permitted discharges is recommended. If necessary, the Department can assist in the identification and characterization of WPDES permitted discharge, including discharge limits.

The Department maintains a listing of current WPDES permit holders online:

- **WPDES Wastewater Permittees**
<http://dnr.wi.gov/org/water/wm/ww/permlists.htm>
- **WPDES Industrial Storm Water Permittees**
<http://dnr.wi.gov/runoff/stormwater/industrial/>

Submerged & Enclosed Outfalls

It may be difficult or impossible to conduct outfall field screening activities at outfalls that are fully or partially submerged by receiving waters or located within enclosed waterways. For these cases, field screening activities should be conducted at appropriate upstream manholes. On-site illicit connection inspections should be considered for any high risk facilities that can potentially discharge to the MS4 between the outfall and field screening manholes. Another option to consider is televising the storm sewer segments located between field screening manholes and the outfall.

Physically Interconnected Systems

One MS4 that discharges directly to a second MS4 is considered physically interconnected. The point of interconnection is considered an outfall from the upstream or discharging MS4. Although field screening activities should be conducted by the upstream MS4 at the point of interconnection, it may be appropriate for interconnected MS4s to coordinate and potentially consolidate field screening activities.

Pump Stations

For pumped storm water systems, field screening activities should be conducted at appropriate manholes located upstream from the pump station or intake. If the first upstream manhole from the pump station is submerged, the pump should be operated if possible to remove accumulated water from the storm sewer system prior to conducting field screening activities.

Swales Conveyance Systems

For swale conveyance systems, it may be appropriate to conduct a visual or “windshield” survey within the swale area in conjunction with or as an alternative to field screening at the outfall. Locations where piped systems discharge to swales should be targeted during windshield surveys.

Storm Water Practices

Wet detention basins and other storm water treatment practices can potentially mask the presence of illicit discharges from the storm sewer system. Field screening activities should be conducted at inlets to storm water treatment practices rather than from the outlet. However, the size and location of practices can be considered when determining if field screening at inlets is necessary.

PMT Approved on **3/15/2012**
Date

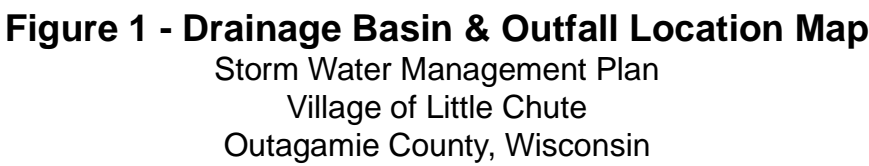
TABLE 1 – OUTFALL LISTING

TABLE 1. OUTFALL LISTING							
VILLAGE OF LITTLE CHUTE ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM							
Outfall ID	Outfall Location	Outfall Size	Watershed ID's	Watershed (acres)	Outfall Type	Priority Outfall	Active/Retired
A1-1	Rosehill Rd (CTH CC) South of Fair Ln	42" Culvert	A1a1-3; A1b1-5, F3c1	159*	Major	Yes	Active
A1-2	Rosehill Rd (CTH CC) South of Fair Ln	Ditch SW of stream	A1b3	11	Major	Yes	Active
A1-3	Rosehill Rd (CTH CC) South of Fair Ln	Ditch SE of stream	A1c1	8	Minor	No	Active
A2-1	Bohm Drive Near RR Tracks	60" x 36" Under Bohm	A1a1-3; A1b1-2, F3c1	131*	Major	Yes	Active
A2-2	Bohm Drive Near RR Tracks	36" SW of stream	A1b1	16	Major	No	Retired
A2-3	Bohm Drive Near RR Tracks	12" NW of stream	Portion of A1b2	1	Minor	No	Retired
A3-1	North of Elm Dr and Lamers Int.	48" x 36" ??	A1a2	34	Major	Yes	Active
A4-1	Elm Dr East of Nixon	42"	A1a1, F3c1	37	Major	No	Active
A4-2	Elm Dr East of Nixon	12" NW of stream	Portion of A1a3	4	Major	No	Retired
A5	Nixon Street (Overflow Pipe Only)	54" to the East of Nixon	F3c1	19	Minor	No	Active
A6-1	North of USH 41	48"	A2a1-9	157*	Major	Yes	Active
A6-2	North of USH 41	30"	A2a1-9, A2b3	169*	Major	Yes	Active
A7	North of USH 41	36"	A2b1	11	Minor	No	Active
A8	Evergreen Dr East of Buchanan	30"	C1a, C1b1-2	35	Minor	No	Active
A9	Buchanan St North of Evergreen	Ditch (8ridge)	D1-D16b	1,754	Major	No	Active
A10	Ebben Pond Discharge	36"	D14a-D16a	146	Major	No	Active
A11-1	Maple Drive	Ditch (8ridge)	D1-D3, D9-D13b	861	Major	No	Active
A11-2	Maple Drive - Evergreen Estates Pond Outfall	24"	D13d2	9	Minor	No	Active
A11-3	Maple Drive	Ditch East of stream	D13d1	6	Minor	No	Active
A12	Freedom Road 8ridge (CTH N)	Ditch (8ridge)	D1-D3, D9-D13b	836	Major	No	Active
A13-1	Evergreen Dr West of CTH N	Twin 36"	D1-D3, D9-D11b3	816	Major	No	Active
A13-2	Evergreen Dr West of CTH N	12"	Portion of D12b2	2	Minor	No	Active
A14	Evergreen Pond	24" Pond Outfall	D12b3	27	Minor	No	Active
A15	Evergreen Pond	30" Pond Outfall	D8a, D12b1	30	Minor	No	Active
A16	North of USH 41	Twin 72"	D1-D3, D9-D11b3	745	Major	No	Active
A17	Vandenbroek Pond	30" Pond Outfall	D11b3	53	Minor	No	Active
A18	Vandenbroek Road North of Patriot Dr	48"	D1-D3, D9-D11b3	680	Major	No	Active
A19	Holland Pond (Middle Pond Outfall)	Twin 42"	D1-D3, D9-D11a1, 3-5	663	Major	No	Active
A20	Holland Pond (Southern Pond Outfall)	30" Pond Outfall	D11a1	27	Minor	No	Active
A21	Holland Pond (Northern Pond Outfall)	18" Pond Outfall	D11a3-4	8	Minor	No	Active
A22	South of USH 41 NW of Middle Holland Pond	Stream (4' x 12')	D1-D3, D9b	536	Major	No	Active
A23	Freedom Road (CTH N) South of Karen	120" & 144"	D4-D8	696	Major	No	Active
A24	North of Evergreen Dr and Spirit Ct	24" Culvert	D8a*	5	Minor	No	Retired
A25	Evergreen Dr, West of Vandenbroek Rd	24" Culvert	D7a3-4	29	Minor	No	Retired
A26	North of Evergreen Dr and Southview Rd	24" Culvert	Portion of D7a1-2	35	Minor	No	Retired
A27	Evergreen Dr, West of Southview Rd	24" Culvert	Portion of D7a1-2	35	Minor	No	Active
A28	Evergreen Dr, West of Southview Rd	24" Culvert	Portion of D7a1-2	35	Minor	No	Active
A29	Evergreen Dr, West of Holland Dr	24" Culvert	D6a	11	Minor	No	Active
A30-1	Downstream of French Ponds	Stream	D5b-c		Major	No	Active
A30-2	Discharge from French Ponds Lift Station	Twin 24"	D5b-c	195	Major	No	Active
A31	Cherryvale Culvert Crossing	Triple 30"	Portions of D5b	12	Minor	No	Active
A32	East Tulip Tr Culvert Crossing	Triple 24" x 38"	Portions of D5b	10	Minor	No	Active
A33	Golden Hill Ct Culvert Crossing	Triple 24" x 38"	Portions of D5b	7	Minor	No	Active
A34	West Tulip Tr Culvert Crossing	Triple 24" x 38"	Portions of D5b	4	Minor	No	Active
F1	Riverside Drive	18"	K2a	26	Minor	No	Active
F2	Pheasant Run East	Ditch	F2a-d	68	Major	No	Active
F3	Pheasant Run West	Ditch	F3a1-f3, F3g1-2	630*	Major	Yes	Active
F4	Vandenberg Lane	12"	F1c1	4	Minor	No	Active
F5	Sanitorium Road	60"	F3a1-f4	629*	Major	Yes	Active
F6	Heesaker Park, North of Lock house on Trail	Ditch	F4a1-8	150	Major	No	Active
F7	Garfield Ct	12"	F1d1	3	Minor	No	Active
F8	End of Buchanan St	24"	F4a1-2, F5a	103*	Major	No	Active
F9	Roosevelt Street	Ditch	F5b	19	Minor	No	Active
F10	East end of Doyle Park	30"	F5c	59	Major	No	Active
F11	Doyle Park	4"	F5d	8	Minor	No	Active
F12	Doyle Park	15", 8"	F5e	7	Minor	No	Active
F13	Canal Street	24"	F5f	4*	Minor	No	Active
F14	Mill Street	42"	F5f, F5g, F6a1-3	121*	Major	No	Active
F15	Masion Street	24"	F6a1-3	89*	Major	No	Active
F16	Lincoln Street	12"	F1f1	2	Minor	No	Active
F17	Main St (STH 96)	36"	F7a	27	Major	No	Active
F18	Main St (STH 96)	18"	F1h	3	Minor	No	Active
F19	Main St (STH 96)	24"	F1i	2	Minor	No	Active
F20	Main St (STH 96)	12"	F1j	3	Minor	No	Active
F21	Main St (STH 96)	18"	F1k	6	Minor	No	Active
F22	Fox Point Road	18"	F1l	11	Minor	No	Active
F23	Rainbow Lane	12"	F1m	2	Minor	No	Active
F24	Main St (STH 96)	12"	F1n	4	Minor	No	Active
F25	Wisconsin Ave	Street	K1f	3	Minor	No	Active
F26	Main St (STH 96) (To Kaukauna storm sewer)	15"	K1e	22	Major	No	Active
F27	Railroad Tracks	Ditch	K1a-d	54	Major	No	Active
P1-1	Main St (STH 96)	Stream (twin 9' x 10')	P1a-P9b, D2a		Major	No	Active
P1-2	Main St (STH 96)	30" NE of Stream	P1a	23	Minor	No	Active



P1-3	Main St (STH 96)	Ditch NW of Stream	P9a	8	Minor	No	Active
P2	Washington Street, North of RR Tracks	48"	P2a1-4	88	Major	Yes	Active
P3	CTH OO	84"	P3a1-e2	398	Major	Yes	Active
P4	South side of CTH OO, West of Holland Rd	Ditch (30")	P3g	22	Major	Yes	Active
P5	Main St (STH 96)	15" S of Railroad	P8a1	15	Minor	No	Active
P6	East of French Road at RR Tracks	Ditch	P7b1-2	36	Major	No	Active
P7	French Road Box Culvert	Stream (Box Culvert)	P7a1-2	27	Major	No	Active
P8	USH 441	Stream (54"	P7a1-2	27	Major	No	Active
P9	CTH OO, South side Across from landfill gas blow off	Stream (Box Culvert)	PSa1-3	156	Major	No	Active
P10	CTH OO and French Road, south of CTH OO	Stream (8' x 12')	PSb, PSb1, D2a	-	Major	No	Active
P11	USH 441 and CTH OO, south of CTH OO	Stream (twin 8'x8')	PSb, PSb1, D2a	-	Major	No	Active

* Storm sewer system is interconnected. Watershed may drain to multiple outfalls

FIGURE 1 – DRAINAGE BASIN & OUTFALL LOCATION MAP



Legend

-  Priority Outfall
-  Major Outfall
-  Minor Outfall

A number line starting at 0 and ending at 800. There is a tick mark at 400. A horizontal line segment is drawn above the number line from 0 to 400, and another horizontal line segment is drawn above the number line from 400 to 800. The word "Feet" is written to the right of the 800 tick mark.

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2015 ILLICIT STORM SEWER OUTFALL DISCHARGE INSPECTIONS



**2015
ILLICIT STORM SEWER
OUTFALL
DISCHARGE INSPECTIONS**

VILLAGE OF LITTLE CHUTE

Outagamie County, Wisconsin



MIDWEST CONTRACT OPERATIONS, INC.
P.O. BOX 2108 NEENAH, WI 54957-2108
P 920.751.4299 / F 920.751.4767 www.mco-us.com



Midwest Contract Operations

Illicit Discharge Inspection Worksheet Summary & Findings

Year: 2015

Total Outfalls Inspected: 48

Total Number of Outfalls where flow was detected: 18

- Sample analysis was performed at all 18 outfalls where flow was documented, none of the samples shown indicators of illicit discharge.

Priority Concerns: 2

- Outfall A2-1: An oil sheen was found at the outfall, closer observation the oil looked like cutting oil. Further investigation upstream found no evidence of oil. The outfall was re-inspected twice in the following month and the oil sheen was not present.
- Outfall P2: Protected gate looks to be removed and missing, erosion around the bottom of the outfall was also noted.
- Outfall F10: The pipe is blocked with rocks, looks to have been thrown into the pipe.
- Outfall F6: Further flow investigation upstream found moderate flow into inlet and manholes in the intersection of Lincoln and Sue Street. Possible high discharge of sump lines, Water Department investigated for water main leaks.
- MCO found several document lists for outfall locations, all documents contradicted each other. The Village should re-inventory and GIS all outfalls.



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ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: _____
Outfall ID #: A1-1
Inspector: Nolan K
Date: 9/22/2015
Time: 8:00 ☒ AM ☐ PM
Size: 42" Inches
Location Type: Closed Pipe
Shape: Circular
Material: CMP



Location Notes: Rosehill and Fair lane, south of Fair lane

Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
Outfall Submerged: ☐ NO ☒ YES (If yes) ☒ Partially ☐ Full
Flow Present: ☐ NO ☒ YES (If yes) ☒ Slow ☐ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
Abnormal Vegetation: ☒ None ☐ Excessive ☐ Inhibited ☐ Other: List Below
Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	8.9	SU	6.0 to 9.0
Chlorine:	0.03	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	50	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES	(If yes)	Photo #'s: 25
GIS Info:	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Obtained by GIS Unit	<input type="checkbox"/> Other: List Coordinates Below	
Latitude:		Longitude:		

Comment and/or Observations: _____

Flow was present, further sample analysis found no Illicit discharge conditions.



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ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A1-2

Inspector:

Chris H

Date:

9/22/2015

Time:

8:30

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Earthen

Location Notes:

Rosehill, Ditch n/o Beverage

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES

(If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES

(If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES	(If yes)	Photo #'s: <input type="text"/>
GIS Info:	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Obtained by GIS Unit	<input type="checkbox"/> Other: List Coordinates Below	
Latitude: <input type="text"/>		Longitude: <input type="text"/>		

Comment and/or Observations:



Midwest Contract
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ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A2-1

Inspector:

NK

Date:

8/28/2015

Time:

7:00

☒ AM

☐ PM

Size:

60"x36"

Inches

Location Type:

Closed Pipe

Shape:

Elliptical

Material:

RCP

Location Notes:

Bohm Drive near RR tracks, pipe under Bohm



Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☐ None

☒ Odors

☐ Colors

☐ Floatables

☒ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor: ☐ None ☐ Sewage ☐ Rancid ☒ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☐ Clear ☐ Brown ☒ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☐ None ☒ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☒ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.6	SU	6.0 to 9.0
Chlorine:	0.07	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	52	Fahrenheit	
Ammonia:	0.5	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Possible cutting oil, manholes inspected to the south, nothing found.

Re-inspected twice the following week with No flow present found



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A2-2

Inspector:

NK

Date:

8/28/2015

Time:

7:00

☒ AM

☐ PM

Size:

18"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

Bohm Drive near RR tracks, pipe under RR

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☐ None

☐ Oily

☐ Flow Line

☐ Paint

☒ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor: ☐ None ☐ Sewage ☐ Rancid ☒ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☐ Clear ☐ Brown ☒ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☐ None ☒ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☒ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.7	SU	6.0 to 9.0
Chlorine:	0.05	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	52	Fahrenheit	
Ammonia:	0.4	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☒ NO ☐ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Same findings as Outfall A2-1



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A03

Inspector:

Jerry V/ Nolan

Date:

8/28/2015

Time:

1:20

☐ AM

☒ PM

Size:

42

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

Concrete



Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☐ None

☐ Excessive

☒ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Color:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Odor	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 1

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Also a second 15" outfall pipe with no flow.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE



Outfall Inspection Data

Water Shed: _____
Outfall ID #: A3-1
Inspector: NK
Date: 8/28/2015
Time: 1:20 ☐ AM ☒ PM
Size: 48"x36" ?? Inches
Location Type: Closed Pipe
Shape: Elliptical
Material: RCP

Location Notes: Elm and Lamers

Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
Outfall Submerged: ☐ NO ☒ YES (If yes) ☒ Partially ☐ Full
Flow Present: ☒ NO ☐ YES (if yes) ☐ Slow ☐ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
Abnormal Vegetation: ☒ None ☐ Excessive ☐ Inhibited ☐ Other: List Below
Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Color: ☐ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Odor: ☐ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☐ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☐ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____ Also found second 15" outfall with no flow (Minor ?)



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: _____

Outfall ID #:

A4-1

Inspector:

NK

Date:

8/28/2015

Time:

8:00

☒ AM

☐ PM

Size:

42"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

CMP

Location Notes:

Elm E/O Nixon

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☐ None

☒ Excessive

☐ Inhibited

☐ Other : List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Color:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Odor	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES (If yes)	Photo #'s: <input type="text"/>
GIS Info:	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Obtained by GIS Unit	<input type="checkbox"/> Other: List Coordinates Below
Latitude:	<input type="text"/>	Longitude:	<input type="text"/>

Comment and/or Observations: No evidence of flow, unable to obtain a picture because of the
excessive weed growth



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A4-2

Inspector:

NK

Date:

8/28/2015

Time:

8:00

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Earthen

Location Notes:

Elm E/O Nixon

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Color: ☐ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Odor: ☐ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☐ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Foatables: ☐ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☒ NO ☐ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____ Retired in 2015



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: _____
Outfall ID #: A5
Inspector: NK
Date: 8/28/2015
Time: 8:30 ☒ AM ☐ PM
Size: Open Ditch 14" deep Inches
Location Type: Open Drainage
Shape: Ditch
Material: Earthen



Location Notes: Buchanan rd n/o Evergreen (bridge)
Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
Outfall Submerged: ☒ NO ☐ YES (If yes) ☐ Partially ☐ Full
Flow Present: ☒ NO ☐ YES (If yes) ☐ Slow ☐ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
Abnormal Vegetation: ☒ None ☐ Excessive ☐ Inhibited ☐ Other: List Below
Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES	(If yes)	Photo #'s: <input type="text"/>
GIS Info:	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Obtained by GIS Unit	<input type="checkbox"/> Other: List Coordinates Below	
Latitude: <input type="text"/>		Longitude: <input type="text"/>		

Comment and/or Observations: Retired 2015



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A6

Inspector:

CH

Date:

9/22/2015

Time:

10:00

☒ AM

☐ PM

Size:

48 ?

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

North of Hwy 41, across from pond pumps

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES	(If yes)	Photo #'s:	36
GIS Info:	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Obtained by GIS Unit	<input type="checkbox"/> Other: List Coordinates Below		
Latitude:	<input type="text"/>		Longitude:	<input type="text"/>	

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A6-2

Inspector:

CH

Date:

9/22/2015

Time:

10:15

☒ AM

☐ PM

Size:

30"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

CMP

Location Notes:

North of Hwy 41, across from pond pumps

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____ 37

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____



Midwest Contract
Operations, Inc.

ILLCIT DISCHARGE INPECTION WORSHEET

Page: 1

VILLAGE OF LITTLE CHUTE



Outfall Inspection Data

Water Shed: _____
Outfall ID #: A9
Inspector: NK
Date: 8/28/2015
Time: 8:30 ☒ AM ☐ PM
Size: Open Ditch 14" deep Inches
Location Type: Open Drainage
Shape: Ditch
Material: Earthen

Location Notes: Buchanan rd n/o Evergreen (bridge)
Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
Outfall Submerged: ☐ NO ☒ YES (If yes) ☒ Partially ☐ Full
Flow Present: ☐ NO ☒ YES (If yes) ☐ Slow ☒ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
Abnormal Vegetation: ☒ None ☐ Excessive ☐ Inhibited ☐ Other : List Below
Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	0.11	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	43	Fahrenheit	
Ammonia:	0.5	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES (If yes)	Photo #'s: 8 and 9
GIS Info:	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Obtained by GIS Unit	<input type="checkbox"/> Other: List Coordinates Below
Latitude:	Longitude:		

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A10

Inspector:

NK

Date:

8/28/2015

Time:

9:00

☒ AM

☐ PM

Size:

Open Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Earthen

Location Notes:

Ditch across Evergreen e/o Water Dept.

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor: ☐ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☐ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☐ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☐ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____ 10

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE



Outfall Inspection Data

Water Shed:

Outfall ID #:

A11

Inspector:

NK

Date:

8/28/2015

Time:

9:30

☒ AM

☐ PM

Size:

Open Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Earthen

Location Notes:

Ditch across Maple Drive

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☐ Slow

☒ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor: ☒ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☒ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☒ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☒ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	8	SU	6.0 to 9.0
Chlorine:	0.02	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	52	Fahrenheit	
Ammonia:	n/d	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 11

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Further inspection upstream indicates majority of flow from cheese plant

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: D13d1-2
Outfall ID #: A11-1
Inspector: Jerry V/ Nolan
Date: 8/28/2015
Time: 2:30 ☐ AM ☒ PM
Size: 24" and Ditch Inches
Location Type: Closed Pipe
Shape: Circular
Material: Concrete



Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
Outfall Submerged: ☐ NO ☒ YES (If yes) ☒ Partially ☐ Full
Flow Present: ☒ NO ☐ YES (If yes) ☐ Slow ☐ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
Abnormal Vegetation: ☒ None ☐ Excessive ☐ Inhibited ☐ Other: List Below
Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 1

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Found 24" pipe discharge to pond and ditch east of stream, listed as

A11 minor. Found no flow coming into pond or in ditch. Location: Maple and Streamview.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: _____
 Outfall ID #: A12
 Inspector: CH
 Date: 9/23/2015
 Time: 3:30 ☐ AM ☒ PM
 Size: Ditch Inches
 Location Type: Open Drainage
 Shape: Ditch
 Material: Earthen



Location Notes: Freedom Road, Bridge n/o Cheese

Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
 Outfall Submerged: ☐ NO ☒ YES (If yes) ☒ Partially ☐ Full
 Flow Present: ☐ NO ☒ YES (If yes) ☒ Slow ☐ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
 Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
 Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
 Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
 Abnormal Vegetation: ☐ None ☐ Excessive ☒ Inhibited ☐ Other: List Below
 Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor: ☒ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☒ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☒ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☒ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	n/d	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	54	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 23

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A13

Inspector:

NK

Date:

8/28/2015

Time:

1:30

☐ AM

☒ PM

Size:

36" and 36"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

Evergreen w/o HWY N

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☒ NO ☐ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A16

Inspector:

CH

Date:

23-Sep

Time:

10:15

☒ AM

☐ PM

Size:

72" (2)

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

CMP



Location Notes:

North of Hwy 41, E/O Rainbow Systems off parking lot

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<u> </u>	SU	6.0 to 9.0
Chlorine:	<u> </u>	mg/L	Less than 0.2
Copper:	<u> </u>	mg/L	Less Than 0.2
Phenols	<u> </u>	mg/L	Less than 0.1
Detergents:	<u> </u>	mg/L	Less than 0.5
Temp:	<u> </u>	Fahrenheit	
Ammonia:	<u> </u>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<u> </u>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<u> </u>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 36

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A18

Inspector:

NK

Date:

8/28/2015

Time:

10:30

☒ AM

☐ PM

Size:

48"

Inches

Location Type:

Closed Pipe

Shape:

Elliptical

Material:

RCP

Location Notes:

Vandenbroek North of Patriot Drive



Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input checked="" type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.9	SU	6.0 to 9.0
Chlorine:	0.01	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	52	Fahrenheit	
Ammonia:	0.09	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 12

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A19

Inspector:

NK

Date:

8/28/2015

Time:

11:30

☒ AM

☐ PM

Size:

36" (2)

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

Holland Pond

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☒ NO ☐ YES (If yes) Photo #'s:

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A22

Inspector:

Ch

Date:

9/23/2015

Time:

11:15

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Earthen

Location Notes:

South of 41, e/o Holland, off North/east corner of Yellow transit parking lot

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES

(If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES

(If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Description has Open Ditch, should it reference the Outfall ?



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

A23

Inspector:

CH

Date:

9/23/2015

Time:

1:00

☐ AM

☒ PM

Size:

120" and 144"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

CMP

Location Notes:

Freedom s/o Karen



Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor: ☒ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☒ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☒ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☒ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.9	SU	6.0 to 9.0
Chlorine:	0.04	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	48	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 22

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F2

Inspector:

NK

Date:

9/24/2015

Time:

2:00

☐ AM

☒ PM

Size:

Ditch

Inches

Location Type:

Open

Shape:

Gabion

Material:

Stone

Location Notes:

Pheasant Run Gabion

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☐ Slow

☒ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	n/d	mg/L	Less than 0.2
Copper:	0.02	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	53	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____ 14

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F3

Inspector:

NK

Date:

9/28/2016

Time:

7:30

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open

Shape:

Gabion

Material:

Stone



Location Notes:

Pheasant Run at end of court

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☒ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	n/d	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	53	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 14

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F5

Inspector:

NK

Date:

8/28/2015

Time:

2:00

☐ AM

☒ PM

Size:

60"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

End of Sanitorium Road at River

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☐ Slow

☒ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.9	SU	6.0 to 9.0
Chlorine:	0.01	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	52	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 17

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: _____

Outfall ID #:

F6

Inspector:

CH

Date:

9/28/2016

Time:

9:00

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open

Shape:

Ditch

Material:

Earthen



Location Notes:

Heesaker Park, n/o of Lock House on trail system

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	8	SU	6.0 to 9.0
Chlorine:	0.08	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	0.02	mg/L	Less than 0.5
Temp:	49	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F8

Inspector:

NK

Date:

8/28/2015

Time:

3:00

☐ AM

☒ PM

Size:

24"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

CMP

Location Notes:

End of Buchanan at River

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☒ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.9	SU	6.0 to 9.0
Chlorine:	0.01	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	58	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☒ NO ☐ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F10

Inspector:

CH

Date:

9/28/2015

Time:

10:00

☒ AM

☐ PM

Size:

30"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

Doyle Park, East End



Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☐ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☒ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor ☒ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☒ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☒ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☒ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.9	SU	6.0 to 9.0
Chlorine:	0.04	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	54	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 19

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Rocks have been thrown into pipe and should be removed.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F14

Inspector:

Ch

Date:

9/28/2016

Time:

1:00

☐ AM

☒ PM

Size:

42"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

Under Temp bridge on Mill st

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☒ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☐ None

☒ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☐ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☐ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☐ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☐ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☐ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☐ YES (If yes) Photo #'s:

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☒ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Unable to inspect due to bridge construction



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F15

Inspector:

NK

Date:

8/29/2015

Time:

8:00

☒ AM

☐ PM

Size:

24"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

South end of Madison at River



Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☐ None

☐ Oily

☐ Flow Line

☐ Paint

☒ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	0.03	mg/L	Less than 0.2
Copper:	0.02	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	54	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 21

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

F17

Inspector:

NK

Date:

9/28/2015

Time:

3:30

☐ AM

☒ PM

Size:

36"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

RCP

Location Notes:

South of 41, e/o Holland, off North/east corner of Yellow transit parking lot

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Page: 2

VILLAGE OF LITTLE CHUTE

Odor

☒ None☐ Sewage☐ Rancid☐ Oil/Gas☐ Sulfide/Rotten Egg☐ Other: List Below

Color:

☒ Clear☐ Brown☐ Gray

☐ Yellow

☐ Orange

☐ Green

☐ Red☐ Other: List Below

Turbidity:

☒ None☐ Lightly Cloudy☐ Cloudy☐ Opaque

Floatables:

☒ None☐ Sewage☐ Suds☐ Surface Scum☐ Petroleum☐ Other: List Below

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less then 0.2
Copper:	_____	mg/L	Less Then 0.2
Phenols	_____	mg/L	Less then 0.1
Detergents:	_____	mg/L	Less then 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Photo Taken: ☒ NO ☐ YES (If yes) Photo #'s: _____

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

P2

Inspector:

Ch

Date:

9/23/2015

Time:

1:30

☐ AM

☒ PM

Size:

48"

Inches

Location Type:

Closed Pipe

Shape:

Circular

Material:

CMP

Location Notes:

West of Washington st, North of RR tracks

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☐ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☒ Other: List Below

Erosion at Outfall:

☐ NO

☒ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	0.04	mg/L	Less then 0.2
Copper:	n/d	mg/L	Less Then 0.2
Phenols	n/d	mg/L	Less then 0.1
Detergents:	n/d	mg/L	Less then 0.5
Temp:	52	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 32

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations: Gate is removed, soil eroding from bottom.

Flow was present, further sample analysis found no Illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed: _____
Outfall ID #: P3
Inspector: Ch
Date: 9/23/2015
Time: 2:30 ☐ AM ☒ PM
Size: 84" Inches
Location Type: Closed Pipe
Shape: Circular
Material: RCP
Location Notes: West of Paradise Drive



Last Rain Fall: ☒ >72hrs ☐ <72hrs (If < 72 hours:) Date: _____ Inches: _____
Outfall Submerged: ☒ NO ☐ YES (If yes) ☐ Partially ☐ Full
Flow Present: ☐ NO ☒ YES (If yes) ☒ Slow ☐ Moderate ☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage: ☒ None ☐ Spalling ☐ Cracked/Chipped ☐ Peeling Paint
☐ Corrosion ☐ Other: List Below
Erosion at Outfall: ☒ NO ☐ YES: Common/List Below
Stains/Deposits/Sediment: ☒ None ☐ Oily ☐ Flow Line ☐ Paint
☐ Sediment ☐ Other: List Below
Benthic Growth: ☒ None ☐ Brown ☐ Orange ☐ Green
☐ Other: List Below
Abnormal Vegetation: ☒ None ☐ Excessive ☐ Inhibited ☐ Other: List Below
Standing Pool Quality: ☒ None ☐ Odors ☐ Colors ☐ Floatables
☐ Oil Sheen ☐ Suds ☐ Excessive
☐ Oil Scum ☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor

☒ None

☐ Sewage

☐ Rancid

☐ Oil/Gas

☐ Sulfide/Rotten Egg

☐ Other: List Below

Color:

☒ Clear

☐ Brown

☐ Gray

☐ Yellow

☐ Orange

☐ Green

☐ Red

☐ Other: List Below

Turbidity:

☒ None

☐ Lightly Cloudy

☐ Cloudy

☐ Opaque

Floatables:

☒ None

☐ Sewage

☐ Suds

☐ Surface Scum

☐ Petroleum

☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	7.8	SU	6.0 to 9.0
Chlorine:	0.04	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	52	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:

☐ NO

☒ YES (If yes)

Photo #'s:

38

GIS Info:

☒ N/A

☐ Obtained by GIS Unit

☐ Other: List Coordinates Below

Latitude:

Longitude:

Comment and/or Observations: Further inspection upstream found no illicit discharge conditions.

Flow was present, further sample analysis found no illicit discharge conditions.



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

P4

Inspector:

Ch

Date:

9/24/2016

Time:

7:30

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Earthen

Location Notes:

HWY 00, W/O Holland, south side of HWY 00, 700' from Holland

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor ☐ None ☐ Sewage ☐ Rancid ☐ Oil/Gas
☐ Sulfide/Rotten Egg ☐ Other: List Below

Color: ☐ Clear ☐ Brown ☐ Gray ☐ Yellow
☐ Orange ☐ Green ☐ Red ☐ Other: List Below

Turbidity: ☐ None ☐ Lightly Cloudy ☐ Cloudy ☐ Opaque

Floatables: ☐ None ☐ Sewage ☐ Suds ☐ Surface Scum
☐ Petroleum ☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____ 31

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

P6

Inspector:

Ch

Date:

9/24/2015

Time:

8:30

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Concrete

Location Notes:

E/o French Road at RR tracks e/o parking lot

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor

☐ None

☐ Sewage

☐ Rancid

☐ Oil/Gas

Color:

☐ Clear

☐ Brown

☐ Gray

☐ Yellow

☐ Orange

☐ Green

☐ Red

☐ Other: List Below

Turbidity:

☐ None

☐ Lightly Cloudy

☐ Cloudy

☐ Opaque

Floatables:

☐ None

☐ Sewage

☐ Suds

☐ Surface Scum

☐ Petroleum

☐ Other: List Below

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken:

☐ NO

☒ YES

(If yes)

Photo #'s: 29

GIS Info:

☒ N/A

☐ Obtained by GIS Unit

☐ Other: List Coordinates Below

Latitude: _____

Longitude: _____

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE



Outfall Inspection Data

Water Shed:

Outfall ID #:

P7

Inspector:

CH

Date:

9/24/2015

Time:

9:30

☒ AM

☐ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Concrete

Location Notes:

French Road, n/o Lions pride, tree line

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	_____	SU	6.0 to 9.0
Chlorine:	_____	mg/L	Less than 0.2
Copper:	_____	mg/L	Less Than 0.2
Phenols	_____	mg/L	Less than 0.1
Detergents:	_____	mg/L	Less than 0.5
Temp:	_____	Fahrenheit	
Ammonia:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	_____	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: _____ 28

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: _____ Longitude: _____

Comment and/or Observations: _____



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE

Outfall Inspection Data

Water Shed:

Outfall ID #:

P9

Inspector:

Ch

Date:

9/24/2015

Time:

11:00

☒ AM

☐ PM

Size:

Nav. Stream

Inches

Location Type:

Open Drainage

Shape:

Nav. Stream

Material:

Earthen

Location Notes:

HWY 00, South side of hwy 00, across from Landfill Gas Blow OFF

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☒ NO

☐ YES (If yes)

☐ Partially

☐ Full

Flow Present:

☒ NO

☐ YES (If yes)

☐ Slow

☐ Moderate

☐ Fast



Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☐ None

☒ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	<input type="text"/>	SU	6.0 to 9.0
Chlorine:	<input type="text"/>	mg/L	Less than 0.2
Copper:	<input type="text"/>	mg/L	Less Than 0.2
Phenols	<input type="text"/>	mg/L	Less than 0.1
Detergents:	<input type="text"/>	mg/L	Less than 0.5
Temp:	<input type="text"/>	Fahrenheit	
Ammonia:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:	<input type="text"/>	mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s:

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 2

VILLAGE OF LITTLE CHUTE

Flowing Outfalls Only

Odor	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid	<input type="checkbox"/> Oil/Gas
		<input type="checkbox"/> Sulfide/Rotten Egg	<input type="checkbox"/> Other: List Below	
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Brown	<input type="checkbox"/> Gray	<input type="checkbox"/> Yellow
	<input type="checkbox"/> Orange	<input type="checkbox"/> Green	<input type="checkbox"/> Red	<input type="checkbox"/> Other: List Below
Turbidity:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Lightly Cloudy	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Opaque
Floatables:	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Suds	<input type="checkbox"/> Surface Scum
		<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other: List Below	

Sample Results

Parameter	Results	Units	Expected Range
pH:	8	SU	6.0 to 9.0
Chlorine:	0.04	mg/L	Less than 0.2
Copper:	n/d	mg/L	Less Than 0.2
Phenols	n/d	mg/L	Less than 0.1
Detergents:	n/d	mg/L	Less than 0.5
Temp:	44	Fahrenheit	
Ammonia:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER
TSS:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB
Phosphorus:		mg/L	ONLY SAMPLE IF REQUESTED BY OWNER - SAMPLE NEEDS TO GO TO LAB

Picture/ GIS Information

Photo Taken: ☐ NO ☒ YES (If yes) Photo #'s: 27

GIS Info: ☒ N/A ☐ Obtained by GIS Unit ☐ Other: List Coordinates Below

Latitude: Longitude:

Comment and/or Observations:



Midwest Contract
Operations, Inc.

ILLICIT DISCHARGE INSPECTION WORKSHEET

Page: 1

VILLAGE OF LITTLE CHUTE



Outfall Inspection Data

Water Shed:

Outfall ID #:

P10

Inspector:

Ch

Date:

9/24/2016

Time:

1:00

☐ AM

☒ PM

Size:

Ditch

Inches

Location Type:

Open Drainage

Shape:

Ditch

Material:

Concrete

Location Notes:

French and HWY 00, south side of HWY 00

Last Rain Fall:

☒ >72hrs

☐ <72hrs

(If < 72 hours:)

Date:

Inches:

Outfall Submerged:

☐ NO

☒ YES (If yes)

☒ Partially

☐ Full

Flow Present:

☐ NO

☒ YES (If yes)

☒ Slow

☐ Moderate

☐ Fast

Non-Flowing Outfalls and Flowing Outfalls

Outfall Damage:

☒ None

☐ Spalling

☐ Cracked/Chipped

☐ Peeling Paint

☐ Corrosion

☐ Other: List Below

Erosion at Outfall:

☒ NO

☐ YES: Common/List Below

Stains/Deposits/Sediment:

☒ None

☐ Oily

☐ Flow Line

☐ Paint

☐ Sediment

☐ Other: List Below

Benthic Growth:

☒ None

☐ Brown

☐ Orange

☐ Green

☐ Other: List Below

Abnormal Vegetation:

☒ None

☐ Excessive

☐ Inhibited

☐ Other: List Below

Standing Pool Quality:

☒ None

☐ Odors

☐ Colors

☐ Floatables

☐ Oil Sheen

☐ Suds

☐ Excessive

☐ Oil Scum

☐ Other: List Below

2012 LAND O'LAKES SPILL INFORMATION



SOLUTIONS FOR YOUR ENVIRONMENT
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Kenosha, WI 54180
Ph 920-766-6776 Fax 920-766-6776
enr@esss@environmentalservicescorp.com

Land O'Lakes Purina Feed LLC

Mr. Andy Nichols, Plant Manager
1700 Bohm Drive
Little Chute, WI 54140

RE: Rendered Fat Release July 11, 2012

Release Discovery, Assessment & Notification

On Wednesday July 11, 2012, Land O' Lakes Purina Feed LLC (LOL) staff discovered a release of an estimated 4,000 gallons (approximately 15 tons) of "choice white grease", (rendered pork fat) from the company facility located at 1700 Bohm Drive in Little Chute, WI, located in the Village of Little Chute's Industrial Park. This material is a component of animal feed formulations produced by the facility. It is delivered by tank trucks and stored in an outside above ground storage tank. Land O' Lakes staff notified the Wisconsin Department of Natural Resources (WDNR) of the release as provided for in the LOL spill response plan.

The material had entered the lower level of the LOL plant through a secondary containment pipe, when the primary product delivery pipe from the storage tank leaked. The material was pumped by the facility's sump pump into the Village of Little Chute's municipal storm sewer system. This chain of events occurred over an undetermined period of time, without the knowledge of the plant's staff. The situation was discovered when the material flowed out into the open drainage way north of the LOL facility, where the storm sewer pipe discharges.

Fortunately, recent near drought conditions had dried up the drainage way to the extent that there was no storm water flow in the system to move the floating fat. A review of rainfall data from the Heart of the Valley Metropolitan Sewerage District rain gauge in Little Chute shows that the last previous measurable rain event prior to the release had occurred on July 3, 2012. That event totaled 0.25-inches of rain. Daily temperatures had reached over 90°F each day since that rain event.

The impacted area is shown on Figure #1.

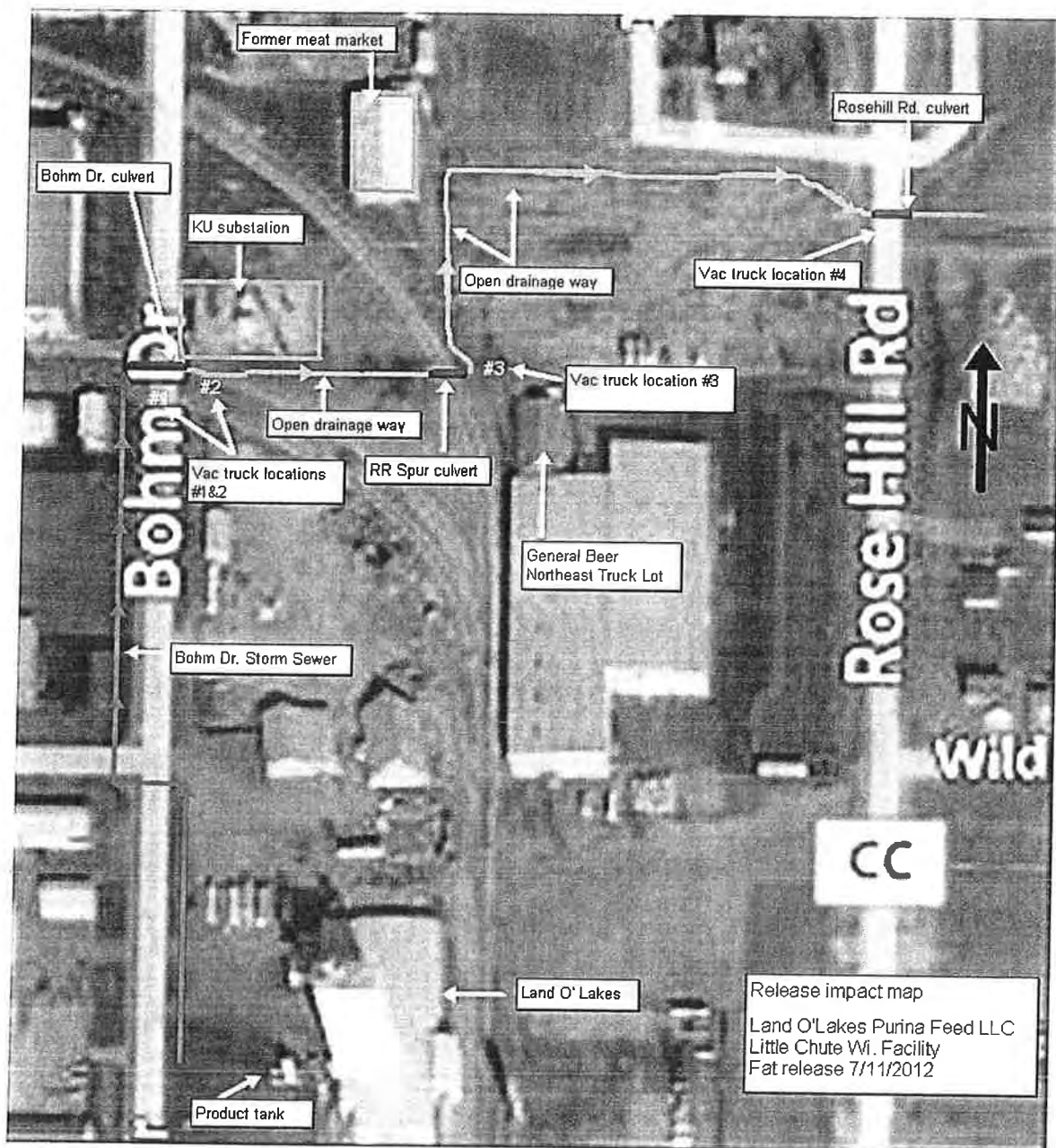


Figure 1 - Release Impact Area Map

LOL staff contacted Environmental Services Plus, (ESP) of Kaukauna WI for assistance to assess and remediate the impact of the release. Following a short initial assessment of the release impact, ESP contacted the Village of Little Chute's Department of Public Works, (LCDPW). ESP also contacted Badger Laboratories Engineering Co. (BL&E), to provide project documentation and consulting services

LCDPW personnel, along with LOL and the ESP team, met at the release site to review the situation and formulate strategies for both the short term mitigation, and subsequent cleanup of the released material.

LCPDW staff provided maps of the storm sewer system and drainage way and pledged to provide additional assistance if needed.

Response Planning and Initiation

The response team developed a mitigation/cleanup strategy. It was determined that the impacted area should be segregated into sections using oil absorbent booms to retard material movement in each segment, followed by removal of the fat from the surface of the water using vacuum trucks.

Land O'Lakes staff arranged for disposal of the fat and associated water, at the Mike De Coster farm located north of the site at W1077 Cty Hwy S Kaukauna, WI.

Oil absorbent booms were placed at the outlet of the storm sewer pipe on the west side of Bohm Dr. to prevent further movement of the remaining fat into the open drainage system of the industrial park. Booms were also placed across an upstream section of the drainage way west of the Bohm Dr. culvert to prevent fat from moving into an unaffected drainage way segment there.

Additional booms were placed at the extreme east (bottom) end of the drainage way where it crosses Outagamie Country Hwy CC (Rosehill Road).

Two sets of captioned photographs are provided with this report to illustrate and document the project. "Appendix A - Captioned Release Impact Photos" were taken during the discovery and assessment phase of the response. "Appendix B – Captioned Cleanup Photos", were taken during and following the mitigation and cleanup phase.

Each Appendix also contains a Photo Orientation Map to guide the user in understanding viewpoint and location of the photos. All photos bear a time and date stamp to aid in understanding the chronology of events depicted.

Initial Mitigation Action

At approximately 12:30 PM on 7/11/2012 the removal/cleanup process was initiated with one of the vacuum trucks placed at the outlet of the Bohm Dr. culvert (*vac truck location #2*) and another at the Rosehill Rd. culvert (*vac truck location #4*). *Refer to the impact map above for these locations.* Direct truck access to the drainage way was limited to 4 locations due to uneven terrain, slope, vegetation, or limited access along property lines.

In areas where the fat had accumulated on the bed of the nearly dry drainage way, or in the quiescent sections of the drainage way with very shallow water, sorbent towels were used to absorb the fat for disposal. Floating material was removed by carefully positioning the vacuum truck's suction nozzle just above the floating fat and pulling the material into the truck, while attempting to minimize the volume of water removed.

On 7/11/12, approximately 12,000 gallons of fat and water were removed from the drainage system.

Continuing Response

The work to remove the bulk of the fat at the 4 truck accessible locations continued throughout the remainder of 7/11/12 and was resumed on 7/12/2012.

Mr. Tom Sturm, a Hydrogeologist with the WDNR office in Shawano WI visited the site on the morning of 7/12/12. Mr. Sturm toured the site and took photographs to document the release. He was apprised of the cleanup procedures and progress and expressed the opinion that the immediate and effective response was both appropriate and appreciated.

During the latter part of 7/12/2012, one of the vacuum trucks (wet capacity of 1,800-gallons) was reassigned to jet and remove the fat that remained in the underground storm sewer pipes, starting at the first (farthest up-gradient) section of into which the LOL's facility sump pump discharged the fat. The multi-pass pipe jetting was requested by the Village of Little Chute to ensure that subsequent flow from the storm sewer pipes would not transport any residual fat downstream. The jetting operation systematically moved downstream to the last storm manhole above the system's discharge to the open drainage way at the Bohm Dr. culvert. Jetting the last storm sewer segment from the last manhole down to the discharge end at was not possible since the contractor could not plug the discharge end for jetting. While the sewer jetting was being performed, the second vacuum truck (wet capacity of 2,200 gallons) continued to clean the accessible segments of the open drainage way.

In the afternoon of 7/12/12, the Little Chute Water Department was contacted for permission to utilize a fire hydrant on the west side of Bohm Dr. as a source of water to flush the drainage system. They responded by providing a flow diverter assembly and meter for the hydrant. This system allowed the team to flush the last segment of storm sewer and the open drainage way at a controllable rate.

On July 12, 2012 approximately 17,800 gallons of fat and water were removed from the drainage system.

On 7/13/12, at approximately 9:00 AM, the team began to flush the drainage system. Water from the hydrant entered the last storm sewer segment through a curb drain box on the west side of Bohm Dr. Oil absorbent booms and hay bales were used to contain the oil at the storm sewer pipe outlet on Bohm Dr. and control the release rate of water through the open drainage way. As the residual fat in the last segment of sewer pipe above the outlet was flushed, the fat was captured in a pool by the oil absorbent booms and removed with a vacuum truck.

When no additional residual fat was seen to flow into the first pool, the operation was moved to the next downstream truck accessible location and repeated. This scenario was repeated at the outlet of the Bohm Dr.

culvert, at the outlet of a culvert under a railroad spur to the east, and finally at the outlet of the Rosehill Rd. culvert.

Using this method, the fatty material that remained in the sections of the drainage way that had not been directly accessible to the vacuum trucks was gently and thoroughly flushed to one of the 4 truck retrieval locations shown on the map.

In the very narrow and dry sections of the south to north section of the drainage way between the railroad spur culvert and the rear of a former meat market building, and in the west to east section from the meat market building to the Rosehill Road culvert, some of the fatty material accumulated on the vegetation. This material was rinsed off the vegetation with a spray nozzle on the hose of the jetter truck and carried downstream to Rosehill Rd. by the water flushing the system. This residual fat was pooled at the bottom of the system by the oil absorbent booms at the Rosehill Rd. culvert for removal with a vacuum truck. On 7/13/12, approximately 21,800 gallons of fat and water were removed from the drainage system.

Re-inspection and Follow-up

On Monday, July 16, 2012, the release site was re-inspected. ESP staff walked the impacted area to determine the extent of residual fat material that may have moved through the system in the time period since the active clean-up work had been completed on 7/13/12.

Residual fat and water had moved through the system and arrived at the Rosehill Rd. culvert, and the drainage area extending some 200-feet east of Rosehill Rd. The fatty material was seen to have been effectively controlled by the sorbent booms and hay bales placed at various points along the drainage way.

A vac truck was used to remove the accumulated residual material that had pooled at the Rosehill Rd. culvert. Approximately 2,200 gallons of fat and water were removed for disposal on the De Coster farm site. In addition, oil absorbent media was removed and placed in waste containers for landfilling.

On 7/17/12, an intense rain event occurred that inundated the drainage way and submerged the remaining sorbent booms. Flow depths of 1 to 2 feet and flow velocities of up to an estimated 2.5 feet/second were observed in the upper reaches of the drainage way. Following the rain event, there was no evidence that fatty material remained in the drainage way impacted by the release.

Summary

An approximate 4000 –gallon (15 ton) release of white pork grease (rendered pork fat) was discharged into the storm sewer system and the downstream open drainage way of the Village of Little Chute's North Industrial Park. The release was discovered on 7/11/12.

The prompt and effective response to the release by LOL and the clean-up team retained by LOL, resulted in the recovery and disposal of the released material from the entire impacted area with minimal damage to the flora and fauna. In total, approximately 53,800 –gallons of water and fat were vacuumed from the drainage system during the clean-up. Virtually all of the fat material was contained and recovered during the days

immediately following the discovery of the release. This quick and effective response prevented further uncontrolled downstream movement of the material that would have occurred with the flushing rain event that occurred on 7/17/12.



Village of

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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET (Page 1 of 2)

Section 1: Background Data

Sub-Watershed: <u>APPLE CREEK</u>		Outfall I.D. <u>A16</u>	
Today's Date: <u>6-28-12</u>		Time (Military): <u>14:35</u>	
Investigators: <u>RY BJ</u>		Form Completed By: <u>RY BJ</u>	
Temperature (°F): <u>92°</u>	Rainfall (inches):	Last 24-Hours: <u>0</u>	Last 48-Hours: <u>0</u>
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #'s:	
Land Use In Drainage Area (check all that apply):			
<input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Urban - Urban Residential <input type="checkbox"/> Suburban Residential <input type="checkbox"/> Commercial		<input type="checkbox"/> Open Space <input type="checkbox"/> Institutional <input type="checkbox"/> Other: <input type="checkbox"/> Known Industries: <u>Cargill</u>	
Notes (e.g., origin of outfall, if known): <u>Opening to west between tracks on West side of Bahn</u>			

Section 2: Outfall Description

Location	Material	Shape	Dimension (in.)	Submerged
<input checked="" type="checkbox"/> Closed Pipe	<input checked="" type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other:	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input checked="" type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other:	Diameter / Dimensions: <u>60" x 38"</u>	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other:	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other:	Depth: Top Width: Bottom Width:	With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, skip to Section 5.</i>			
Flow Description (if present)	<input type="checkbox"/> Trickle <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
Parameter		Result	Unit	Equipment
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle
	Time to Fill		Second	
<input type="checkbox"/> Flow #2	Flow Depth	<u>~ 8"</u>	Inches	Tape Measure
	Flow Width	<u>~ 4'</u>	Feet / Inches	Tape Measure
	Measured Length	<u>2'</u>	Feet / Inches	Tape Measure
	Time Of Travel	<u>13</u>	S	Stop Watch
Temperature		<u>74°</u>	°F	Thermometer
pH		<u>9.1</u>	pH Units	Test Strip / Probe
Ammonia		<u>0.20</u>	mg/l	Test Strip

Chlorine 1.8 mg/L
 Copper 0.0 mg/L
 Phenols 0.4 mg/L
 Detergents 0.2 mg/L
 Hardness 120 ppm



Village of

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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
(Page 2 of 2)

Section 4: Physical Indicators For Flowing Outfalls Only

Are any physical indicators present in the flow? ☒ Yes ☐ No (If No, Skip To Section 5)

Indicator	Check If Present	Description	Relative Severity Index (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid / Sour <input type="checkbox"/> Petroleum / Gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint	<input type="checkbox"/> 2 Easily Detected	<input type="checkbox"/> 3 Noticeable From A Distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint Colors in Sample Bottle	<input type="checkbox"/> 2 Clearly Visible in Sample Bottle	<input type="checkbox"/> 3 Clearly Visible in Outfall Flow
Turbidity	<input type="checkbox"/>	See Severity	<input type="checkbox"/> 1 Slight Cloudiness	<input type="checkbox"/> 2 Cloudy	<input type="checkbox"/> 3 Opaque
Floatables (Does Not Include Trash)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Surface Scum <input checked="" type="checkbox"/> Petroleum (oil sheen) <i>Coming from Southern Pipe</i> <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> 1 Few / Slight; origin not obvious	<input type="checkbox"/> 2 Some, indications of origin; (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary material)
Cold Weather	<input type="checkbox"/>	<input type="checkbox"/> Ice Melt <input type="checkbox"/> Ice Discoloration <input type="checkbox"/> "Rime Ice"	<input type="checkbox"/> 1 Slight	<input type="checkbox"/> 2 Moderate	<input type="checkbox"/> 3 Significant

Section 5: Physical Indicators For Both Flowing & Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (If No, Skip To Section 6)

Indicator	Check If Present	Description	Comments
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking Or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits / Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe Benthic Growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

- | | | |
|--------------------------------|-------------------------------|----------------------------------------|
| 1. Sample For the Lab? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 2. If Yes, Collected From: | <input type="checkbox"/> Flow | <input type="checkbox"/> Pool |
| 3. Intermittent Flow Trap Set? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs?)

☐ Yes ☐ No Comments:



Village of

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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
(Page 1 of 2)

Section 1: Background Data

Sub-Watershed: <u>Apple Creek</u>		Outfall I.D.: <u>A162</u>	
Today's Date: <u>6-28-12</u>		Time (Military): <u>14:00</u>	
Investigators: <u>RY BJ</u>		Form Completed By: <u>RY BJ</u>	
Temperature (°F): <u>92°</u>	Rainfall (inches):	Last 24-Hours: <u>0</u>	Last 48-Hours: <u>0</u>
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #'s:	
Land Use In Drainage Area (check all that apply):			
<input checked="" type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Urban - Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		<input type="checkbox"/> Other:	
<input type="checkbox"/> Commercial		<input type="checkbox"/> Known Industries: <u>Cargill</u>	
Notes (e.g., origin of outfall, if known): <u>opening to North under Southern tracks on Bahn St</u>			

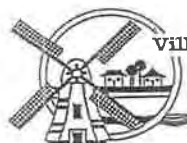
Section 2: Outfall Description

Location	Material	Shape	Dimension (in.)	Submerged
<input checked="" type="checkbox"/> Closed Pipe	<input checked="" type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> Circular <input checked="" type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other:	Diameter / Dimensions: <u>36"</u>	In Water: <input checked="" type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other:	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other:	Depth: Top Width: Bottom Width:	With Sediment: <input checked="" type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, skip to Section 5.</i>			
Flow Description (if present)	<input type="checkbox"/> Trickle <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
Parameter		Result	Unit	Equipment
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle
	Time to Fill		Second	
<input type="checkbox"/> Flow #2	Flow Depth	<u>7"</u>	Inches	Tape Measure
	Flow Width	<u>2' 6"</u>	Feet / Inches	Tape Measure
	Measured Length	<u>2'</u>	Feet / Inches	Tape Measure
	Time Of Travel	<u>18</u>	S	Stop Watch
Temperature		<u>73°</u>	°F	Thermometer
pH		<u>8.3</u>	pH Units	Test Strip / Probe
Ammonia		<u>0.25</u>	mg/l	Test Strip

Chlorine . 0.3 mg/L
Copper 0.0 mg/L
Phenols 0.3 mg/L
Detergents 0.25 mg/L
Hardness 350 ppm



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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
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Section 4: Physical Indicators For Flowing Outfalls Only

Are any physical indicators present in the flow? ☒ Yes ☐ No (If No, Skip To Section 5)

Indicator	Check If Present	Description	Relative Severity Index (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid / Sour <input type="checkbox"/> Petroleum / Gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint	<input type="checkbox"/> 2 Easily Detected	<input type="checkbox"/> 3 Noticeable From A Distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint Colors in Sample Bottle	<input type="checkbox"/> 2 Clearly Visible in Sample Bottle	<input type="checkbox"/> 3 Clearly Visible in Outfall Flow
Turbidity	<input type="checkbox"/>	See Severity	<input type="checkbox"/> 1 Slight Cloudiness	<input type="checkbox"/> 2 Cloudy	<input type="checkbox"/> 3 Opaque
Floatables (Does Not Include Trash)	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Surface Scum <input checked="" type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> 1 Few / Slight; origin not obvious	<input type="checkbox"/> 2 Some, indications of origin; (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary material)
Cold Weather	<input type="checkbox"/>	<input type="checkbox"/> Ice Melt <input type="checkbox"/> Ice Discoloration <input type="checkbox"/> "Rime Ice"	<input type="checkbox"/> 1 Slight	<input type="checkbox"/> 2 Moderate	<input type="checkbox"/> 3 Significant

Section 5: Physical Indicators For Both Flowing & Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (If No, Skip To Section 6)

Indicator	Check If Present	Description	Comments
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking Or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits / Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	Duck weed
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe Benthic Growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green Other:	

Section 6: Overall Outfall Characterization

<input type="checkbox"/> Unlikely	<input checked="" type="checkbox"/> Potential (presence of two or more indicators)	<input type="checkbox"/> Suspect (one or more indicators with a severity of 3)	<input type="checkbox"/> Obvious
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Section 7: Data Collection

1. Sample For the Lab?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
2. If Yes, Collected From:	<input type="checkbox"/> Flow	<input type="checkbox"/> Pool
3. Intermittent Flow Trap Set?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Section 8: Any Non-Illlicit Discharge Concerns (e.g., trash or needed infrastructure repairs?)

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Comments:
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Village of

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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
(Page 1 of 2)

Section 1: Background Data

Sub-Watershed: <u>APPLE CREEK</u>		Outfall I.D. <u>A163</u>	
Today's Date: <u>6-28-12</u>		Time (Military): <u>15:00</u>	
Investigators: <u>RY BJ</u>		Form Completed By: <u>RY BJ</u>	
Temperature (°F): <u>90°</u>	Rainfall (inches):	Last 24-Hours: <u>0</u>	Last 48-Hours: <u>0</u>
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	
Land Use In Drainage Area (check all that apply):			
<input checked="" type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Urban - Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		<input type="checkbox"/> Other:	
<input type="checkbox"/> Commercial		<input type="checkbox"/> Known Industries: <u>Car Wash</u>	
Notes (e.g., origin of outfall, if known):			
<u>Opens to East on East side of Pahr, just North of track</u>			

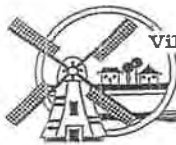
Section 2: Outfall Description

Location	Material	Shape	Dimension (in.)	Submerged
<input checked="" type="checkbox"/> Closed Pipe	<input checked="" type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other:	<input type="checkbox"/> Circular <input checked="" type="checkbox"/> Single <input checked="" type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other:	Diameter / Dimensions: <u>60" x 36"</u>	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other:	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other:	Depth: Top Width: Bottom Width:	With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, skip to Section 5.</i>			
Flow Description (if present)	<input type="checkbox"/> Trickle <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
Parameter		Result	Unit	Equipment
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle
	Time to Fill		Second	
<input type="checkbox"/> Flow #2	Flow Depth	<u>9"</u>	Inches	Tape Measure
	Flow Width	<u>4'</u>	Feet / Inches	Tape Measure
	Measured Length	<u>2'</u>	Feet / Inches	Tape Measure
	Time Of Travel	<u>13</u>	S	Stop Watch
Temperature		<u>79°</u>	°F	Thermometer
pH		<u>7.1</u>	pH Units	Test Strip / Probe
Ammonia		<u>0.20</u>	mg/l	Test Strip

Chlorine 1.8 mg/L
 Copper 0.0 mg/L
 Phenols 0.4 mg/L
 Detergents 0.2 mg/L
 Hardness 120 ppm



Village of

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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
(Page 2 of 2)

Section 4: Physical Indicators For Flowing Outfalls Only
Are any physical indicators present in the flow? ☒ Yes ☐ No (If No, Skip To Section 5)

Indicator	Check If Present	Description	Relative Severity Index (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid / Sour <input type="checkbox"/> Petroleum / Gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint	<input type="checkbox"/> 2 Easily Detected	<input type="checkbox"/> 3 Noticeable From A Distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint Colors in Sample Bottle	<input type="checkbox"/> 2 Clearly Visible in Sample Bottle	<input type="checkbox"/> 3 Clearly Visible in Outfall Flow
Turbidity	<input type="checkbox"/>	See Severity	<input type="checkbox"/> 1 Slight Cloudiness	<input type="checkbox"/> 2 Cloudy	<input type="checkbox"/> 3 Opaque
Floatables (Does Not Include Trash)	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Surface Scum <input checked="" type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> 1 Few / Slight; origin not obvious	<input type="checkbox"/> 2 Some, indications of origin; (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary material)
Cold Weather	<input type="checkbox"/>	<input type="checkbox"/> Ice Melt <input type="checkbox"/> Ice Discoloration <input type="checkbox"/> "Rime Ice"	<input type="checkbox"/> 1 Slight	<input type="checkbox"/> 2 Moderate	<input type="checkbox"/> 3 Significant

Section 5: Physical Indicators For Both Flowing & Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☒ Yes ☐ No (If No, Skip To Section 6)

Indicator	Check If Present	Description	Comments
Outfall Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking Or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	Very slight chipping
Deposits / Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe Benthic Growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely
 ☒ Potential (presence of two or more indicators)
 ☐ Suspect (one or more indicators with a severity of 3)
 ☐ Obvious

Section 7: Data Collection

1. Sample For the Lab? ☐ Yes ☒ No
 2. If Yes, Collected From: ☐ Flow ☐ Pool
 3. Intermittent Flow Trap Set? ☐ Yes ☒ No

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs?)

☐ Yes
 ☒ No
 Comments:



Village of

Little Chute

Figure E-1

OUTFALL FIELD SCREENING WORKSHEET

(Page 1 of 2)

Section 1: Background Data

Sub-Watershed: <u>APPLE CREEK</u>		Outfall I.D. <u>A16</u>	
Today's Date: <u>6-28-12</u>		Time (Military): <u>14:35</u>	
Investigators: <u>RY BS</u>		Form Completed By: <u>RY BS</u>	
Temperature (°F): <u>92°</u>	Rainfall (inches):	Last 24-Hours: <u>0</u>	Last 48-Hours: <u>0</u>
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #'s:	
Land Use In Drainage Area (check all that apply):			
<input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Urban - Urban Residential <input type="checkbox"/> Suburban Residential <input type="checkbox"/> Commercial		<input type="checkbox"/> Open Space <input type="checkbox"/> Institutional <input type="checkbox"/> Other: <input type="checkbox"/> Known Industries: <u>Cargill</u>	
Notes (e.g., origin of outfall, if known): <u>Opening to west between tracks on West side of Bahn</u>			

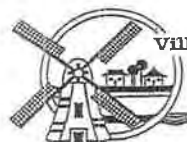
Section 2: Outfall Description

Location	Material	Shape	Dimension (in.)	Submerged
<input checked="" type="checkbox"/> Closed Pipe	<input checked="" type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other:	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input checked="" type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other:	Diameter / Dimensions: <u>60" x 36"</u>	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other:	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other:	Depth: Top Width: Bottom Width:	With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, skip to Section 5.</i>			
Flow Description (if present)	<input type="checkbox"/> Trickle <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
Parameter	Result	Unit	Equipment	
<input type="checkbox"/> Flow #1	Volume	Liter	Bottle	
	Time to Fill	Second		
<input type="checkbox"/> Flow #2	Flow Depth	Inches	Tape Measure	
	Flow Width	Feet / Inches	Tape Measure	
	Measured Length	Feet / Inches	Tape Measure	
	Time Of Travel	S	Stop Watch	
Temperature	<u>74°</u>	°F	Thermometer	
pH	<u>9.1</u>	pH Units	Test Strip / Probe	
Ammonia	<u>0.20</u>	mg/l	Test Strip	

Chlorine 1.8 mg/L
 Copper 0.0 mg/L
 Phenols 0.4 mg/L
 Detergents 0.2 mg/L
 Hardness 120 ppm



Village of

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Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
(Page 2 of 2)

Section 4: Physical Indicators For Flowing Outfalls Only

Are any physical indicators present in the flow? ☒ Yes ☐ No (If No, Skip To Section 5)

Indicator	Check If Present	Description	Relative Severity Index (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid / Sour <input type="checkbox"/> Petroleum / Gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint	<input type="checkbox"/> 2 Easily Detected	<input type="checkbox"/> 3 Noticeable From A Distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint Colors in Sample Bottle	<input type="checkbox"/> 2 Clearly Visible in Sample Bottle	<input type="checkbox"/> 3 Clearly Visible in Outfall Flow
Turbidity	<input type="checkbox"/>	See Severity	<input type="checkbox"/> 1 Slight Cloudiness	<input type="checkbox"/> 2 Cloudy	<input type="checkbox"/> 3 Opaque
Floatables (Does Not Include Trash)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Surface Scum <input checked="" type="checkbox"/> Petroleum (oil sheen) <i>Coming from Southern dip</i> <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> 1 Few / Slight; origin not obvious	<input type="checkbox"/> 2 Some, indications of origin; (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary material)
Cold Weather	<input type="checkbox"/>	<input type="checkbox"/> Ice Melt <input type="checkbox"/> Ice Discoloration <input type="checkbox"/> "Rime Ice"	<input type="checkbox"/> 1 Slight	<input type="checkbox"/> 2 Moderate	<input type="checkbox"/> 3 Significant

Section 5: Physical Indicators For Both Flowing & Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☒ No (If No, Skip To Section 6)

Indicator	Check If Present	Description	Comments
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking Or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits / Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe Benthic Growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green Other:	

Section 6: Overall Outfall Characterization

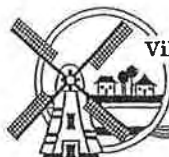
☐ Unlikely
 ☒ Potential (presence of two or more indicators)
 ☐ Suspect (one or more indicators with a severity of 3)
 ☐ Obvious

Section 7: Data Collection

1. Sample For the Lab? ☐ Yes ☒ No
 2. If Yes, Collected From: ☐ Flow ☐ Pool
 3. Intermittent Flow Trap Set? ☐ Yes ☒ No

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs?)

☐ Yes ☒ No Comments:



Village of

Little Chute

Figure E-1

OUTFALL FIELD SCREENING WORKSHEET

(Page 1 of 2)

Section 1: Background Data

Sub-Watershed: <u>Apple Creek</u>		Outfall I.D. <u>A162</u>	
Today's Date: <u>6-28-12</u>		Time (Military): <u>14:00</u>	
Investigators: <u>RY BJ</u>		Form Completed By: <u>RY BJ</u>	
Temperature (°F): <u>92°</u>	Rainfall (inches):	Last 24-Hours: <u>0</u>	Last 48-Hours: <u>0</u>
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #'s:	
Land Use In Drainage Area (check all that apply):			
<input checked="" type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Urban - Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		<input type="checkbox"/> Other:	
<input type="checkbox"/> Commercial		<input type="checkbox"/> Known Industries: <u>Cargill</u>	
Notes (e.g., origin of outfall, if known): <u>opening to North under Southern tracks, on Bohm St</u>			

Section 2: Outfall Description

Location	Material	Shape	Dimension (in.)	Submerged
<input checked="" type="checkbox"/> Closed Pipe	<input checked="" type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> Circular <input checked="" type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other:	Diameter / Dimensions: <u>36"</u>	In Water: <input checked="" type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other:	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other:	Depth: Top Width: Bottom Width:	With Sediment: <input checked="" type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, skip to Section 5.</i>			
Flow Description (if present)	<input type="checkbox"/> Trickle <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
Parameter		Result	Unit	Equipment
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle
	Time to Fill		Second	
<input type="checkbox"/> Flow #2	Flow Depth	<u>7"</u>	Inches	Tape Measure
	Flow Width	<u>2' 6"</u>	Feet / Inches	Tape Measure
	Measured Length	<u>2'</u>	Feet / Inches	Tape Measure
	Time Of Travel	<u>18</u>	S	Stop Watch
Temperature		<u>73°</u>	°F	Thermometer
pH		<u>8.3</u>	pH Units	Test Strip / Probe
Ammonia		<u>0.25</u>	mg/l	Test Strip

Chlorine 0.3 mg/LCopper 0.0 mg/LPhenols 0.3 mg/LDetergents 0.25 mg/LHardness 250 ppm

OUTFALL FIELD SCREENING WORKSHEET
(Page 2 of 2)

Section 4: Physical Indicators For Flowing Outfalls Only

Are any physical indicators present in the flow? ☒ Yes ☐ No (If No, Skip To Section 5)

Indicator	Check If Present	Description	Relative Severity Index (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid / Sour <input type="checkbox"/> Petroleum / Gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint	<input type="checkbox"/> 2 Easily Detected	<input type="checkbox"/> 3 Noticeable From A Distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint Colors in Sample Bottle	<input type="checkbox"/> 2 Clearly Visible in Sample Bottle	<input type="checkbox"/> 3 Clearly Visible in Outfall Flow
Turbidity	<input type="checkbox"/>	See Severity	<input type="checkbox"/> 1 Slight Cloudiness	<input type="checkbox"/> 2 Cloudy	<input type="checkbox"/> 3 Opaque
Floatables (Does Not Include Trash)	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Surface Scum <input checked="" type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> 1 Few / Slight; origin not obvious	<input type="checkbox"/> 2 Some, indications of origin; (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary material)
Cold Weather	<input type="checkbox"/>	<input type="checkbox"/> Ice Melt <input type="checkbox"/> Ice Discoloration <input type="checkbox"/> "Rime Ice"	<input type="checkbox"/> 1 Slight	<input type="checkbox"/> 2 Moderate	<input type="checkbox"/> 3 Significant

Section 5: Physical Indicators For Both Flowing & Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☒ Yes ☐ No (If No, Skip To Section 6)

Indicator	Check If Present	Description	Comments
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking Or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits / Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	Duck weed
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe Benthic Growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample For the Lab? ☐ Yes ☒ No
2. If Yes, Collected From: ☐ Flow ☐ Pool
3. Intermittent Flow Trap Set? ☐ Yes ☒ No

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs?)

☐ Yes ☒ No ☐ Comments:



Village of

Little Chute

Figure E-1

OUTFALL FIELD SCREENING WORKSHEET

(Page 1 of 2)

Section 1: Background Data

Sub-Watershed: <u>APPLE CREEK</u>		Outfall I.D. <u>A163</u>	
Today's Date: <u>6-28-12</u>		Time (Military): <u>15:00</u>	
Investigators: <u>RY BS</u>		Form Completed By: <u>RY BS</u>	
Temperature (°F): <u>90°</u>	Rainfall (inches):	Last 24-Hours: <u>0</u>	Last 48-Hours: <u>0</u>
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #'s:	
Land Use In Drainage Area (check all that apply):			
<input checked="" type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Urban - Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		<input type="checkbox"/> Other:	
<input type="checkbox"/> Commercial		<input type="checkbox"/> Known Industries: <u>Cargill</u>	
Notes (e.g., origin of outfall, if known):			
<u>Opens to East on East side of Bohm, just North of tracks</u>			

Section 2: Outfall Description

Location	Material	Shape	Dimension (in.)	Submerged
<input checked="" type="checkbox"/> Closed Pipe	<input checked="" type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other:	<input type="checkbox"/> Circular <input checked="" type="checkbox"/> Single <input checked="" type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other:	Diameter / Dimensions: <u>60" x 36"</u>	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open Drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Rip-Rap <input type="checkbox"/> Other:	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other:	Depth: Top Width: Bottom Width:	With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, skip to Section 5.</i>			
Flow Description (if present)	<input type="checkbox"/> Trickle <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
Parameter		Result	Unit	Equipment
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle
	Time to Fill		Second	
<input type="checkbox"/> Flow #2	Flow Depth		Inches	Tape Measure
	Flow Width	<u>4'</u>	Feet / Inches	Tape Measure
	Measured Length	<u>2'</u>	Feet / Inches	Tape Measure
	Time Of Travel	<u>13</u>	S	Stop Watch
Temperature		<u>74°</u>	°F	Thermometer
pH		<u>9.1</u>	pH Units	Test Strip / Probe
Ammonia		<u>0.20</u>	mg/l	Test Strip

Chlorine 1.8 mg/L
 Copper 0.0 mg/L
 Phenols 0.4 mg/L
 Detergents 0.2 mg/L
 Hardness 120 ppm



Village of

Little Chute

Figure E-1

OUTFALL FIELD SCREENING WORKSHEET
(Page 2 of 2)Section 4: Physical Indicators For Flowing Outfalls Only
Are any physical indicators present in the flow? ☒ Yes ☐ No (If No, Skip To Section 5)

Indicator	Check If Present	Description	Relative Severity Index (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid / Sour <input type="checkbox"/> Petroleum / Gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint	<input type="checkbox"/> 2 Easily Detected	<input type="checkbox"/> 3 Noticeable From A Distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 Faint Colors in Sample Bottle	<input type="checkbox"/> 2 Clearly Visible in Sample Bottle	<input type="checkbox"/> 3 Clearly Visible in Outfall Flow
Turbidity	<input type="checkbox"/>	See Severity	<input type="checkbox"/> 1 Slight Cloudiness	<input type="checkbox"/> 2 Cloudy	<input type="checkbox"/> 3 Opaque
Floatables (Does Not Include Trash)	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Surface Scum <input checked="" type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input checked="" type="checkbox"/> 1 Few / Slight; origin not obvious	<input type="checkbox"/> 2 Some, indications of origin; (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 Some; origin clear (e.g., obvious oil sheen, suds or floating sanitary material)
Cold Weather	<input type="checkbox"/>	<input type="checkbox"/> Ice Melt <input type="checkbox"/> Ice Discoloration <input type="checkbox"/> "Rime Ice"	<input type="checkbox"/> 1 Slight	<input type="checkbox"/> 2 Moderate	<input type="checkbox"/> 3 Significant

Section 5: Physical Indicators For Both Flowing & Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☒ Yes ☐ No (If No, Skip To Section 6)

Indicator	Check If Present	Description	Comments
Outfall Damage	<input checked="" type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking Or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	Very slight chipping
Deposits / Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor Pool Quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe Benthic Growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☒ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample For the Lab? ☐ Yes ☒ No
 2. If Yes, Collected From: ☐ Flow ☐ Pool
 3. Intermittent Flow Trap Set? ☐ Yes ☒ No

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs?)

☐ Yes ☒ No Comments: