



AGENDA
COMMITTEE OF THE WHOLE

Tuesday, March 19, 2019

6:30 p.m.

Common Council Chambers, 224 East Jefferson Street

Mayor Jeannie Hefty
Susan Kott, Alderman, 1st District
Theresa Meyer, Alderman, 1st District
Bob Grandi, Alderman, 2nd District
Ryan Heft, Alderman, 2nd District
Steve Rauch, Alderman, 3rd District
Jon Schultz, Council President, Alderman, 3rd District
Thomas Preusker, Alderman, 4th District
Todd Bauman, Alderman, 4th District

Student Representatives:

Jack Schoepke, Student Representative (BHS)
Morgan Tracy, Student Representative (BHS)

1. **Call to Order - Roll Call**

2. **Citizen Comments**

3. **Approval of Minutes** (*R. Heft*)

A. Approval of the March 5, 2019 Committee of the Whole Minutes.

4. **PRESENTATIONS:**

A. A presentation from the Central Racine County Health Department regarding their Annual Report.

B. A presentation from the Burlington Area Chamber of Commerce regarding their Annual Report.

5. **RESOLUTIONS:**

A. **Resolution 4940(42)** - To approve Change Order Number 1 for Well #11 Radium Compliance Improvements.

B. **Resolution 4941(43)** - To approve a Work Order with Baxter & Woodman, Inc. for Preparation of an Adaptive Management Plan.

6. **ORDINANCES:**

- A. **Ordinance 2046(12)** - To amend Chapter 104-8(C) and 234-2(B) of the City of Burlington Municipal Code to Allow Dogs in City Parks.
 - B. **Ordinance 2047(13)** - To approve annexing territory located at 1063 Spring Valley Road (51-002-02-19-06-016-000) to the City of Burlington, Racine County, Wisconsin.
 - C. **Ordinance 2048(14)** - To consider approval of a Rezone Map Amendment request at 157 S. Pine Street from B-2 District to Rd-2 District.
7. **MOTIONS:**
- A. **Motion 19-924** - To consider approval of the Southeastern Wisconsin Regional Planning Commission (SEWRPC) Stormwater Management Evaluation Study of the industrial area on the southwest side of the City that includes Lavelle Industries, KW Precast, Ardagh Group, WeEnergies, Asphalt Contractors, and Cretex Materials properties.
8. **ADJOURNMENT** (*S. Rauch*)

Note: If you are disabled and have accessibility needs or need information interpreted for you, please call the City Clerk's Office at 262-342-1161 at least 24 hours prior to the meeting.



COMMITTEE OF THE WHOLE

ITEM NUMBER 3A

DATE: March 19, 2019

SUBJECT: MEETING MINUTES - Approval of the March 5, 2019 Committee of the Whole Minutes.

SUBMITTED BY: Diahnn Halbach, City Clerk

BACKGROUND/HISTORY:

The attached minutes are from the March 5, 2019 Committee of the Whole meeting.

BUDGET/FISCAL IMPACT:

N/A

RECOMMENDATION:

Staff recommends approval of the attached minutes from the March 5, 2019 Committee of the Whole meeting.

TIMING/IMPLEMENTATION:

This item is scheduled for final consideration at the March 19, 2019 Common Council meeting.

Attachments

COW Minutes



City Clerk
300 N. Pine Street, Burlington, WI, 53105
(262) 342-1161 - (262) 763-3474 fax
www.burlington-wi.gov

CITY OF BURLINGTON
Committee of the Whole Minutes
Jeannie Hefty, Mayor
Diahnn Halbach, City Clerk
Tuesday, March 5, 2019

1. **Call to Order - Roll Call**

Mayor Hefty called the Common Council meeting to order at 6:30 p.m. Roll Call - Present: Mayor Hefty, Alderman Susan Kott, Alderman Bob Grandi, Alderman Ryan Heft, Alderman Steve Rauch, Alderman Jon Schultz, Alderman Tom Preusker, Alderman Todd Bauman. Excused: Alderman Theresa Meyer.

Student Representatives - Present: Jack Schoepke (BHS), Morgan Tracy (BHS). Excused: None.

Staff present: Administrator Carina Walters, City Attorney John Bjelajac, Finance Director Steve DeQuaker, Assistant City Administrator/Zoning Administrator Megan Watkins, Public Works Director Peter Riggs, Fire Chief Alan Babe, Police Chief Mark Anderson, Human Resource Manager Jason Corbin, Building Inspector Gregory Guidry and Intern Nick Faust.

2. **Citizen Comments** - There were none.

3. **Approval of the February 20, 2019 Committee of the Whole Meeting Minutes**

Motion: Alderman Kott. Second: Alderman Bauman. With all in favor, the motion carried.

4. **PRESENTATIONS:** There was none.

5. **DISCUSSION:** There was none.

6. **RESOLUTIONS:**

A. **Resolution 4936(38)** - To approve Task Order Number 108, with Kapur and Associates, for Engineering Services regarding the City of Burlington Municipal Landfill.

Director Riggs explained that the City is required by the DNR to complete regular monitoring and reporting for the closed, municipally owned, landfill located off of Maryland Avenue and that Kapur and Associates have been providing these services for the City of Burlington for many years. Riggs further stated that Task Order 108 provides for the completion of these services for 2019 and 2020, with a cost of \$52,732, which is a 5.8% increase from the 2017-2018 Task Order 101 and that the funding for the 2019 services has been included in the 2019 budget.

Alderman Rauch asked if the monitoring continues in perpetuity or if it will be discontinued if certain readings are eventually met. Riggs responded that the site has been closed for quite some time but would check with the DNR to see if such an opportunity exists.

- B. **Resolution 4938(40)** - To Approve a Task Order Number One with Ayres Associates to Update the Comprehensive Outdoor Recreation Plan.

Director Riggs explained that the CORP is a policy document that provides the vision for the development and maintenance of the City's park system and is critical in securing grant funding. Riggs stated that the CORP was created in 1996 and must be updated every 5 years to stay current and eligible for grant funding. Riggs further stated that the task order provides for contractual services through Ayres and Associates to update the CORP in order to continue securing grant funding for park development.

Alderman Schultz asked what items have been accomplished in the past five years. Riggs responded that many tasks were completed including the Congress Street bathrooms, bleachers, and the Wehmhoff Jucker Park Pavilion, but more still needs to be accomplished, including shoreline restoration and a kayaking launch site which is scheduled for 2019, as well as possibly updating the restroom at Wagner Park.

Alderman Grandi asked that he be notified when this item goes before the Park Board.

- C. **Resolution 4939(41)** - To Approve a Task Order Number Two for Ayres Associates for Design and Construction Management Services for Riverside Park Improvements.

Director Riggs explained that in April 2018, the City had worked with Ayres to secure a Stewardship Grant for improvements to Riverside Park that would consist of replacement of the existing pavilion structure, installation of a canoe/kayak launch, and shoreline stabilization, which were recommended in the 2015-2019 CORP and supported by the Park Board. Riggs further explained that Task Order Number Two with Ayres for Design and Construction Management Services for Riverside Park improvements is the next step of the project.

Alderman Schultz mentioned that the Burlington Rotary Club is considering using their Fall Fundraiser to raise money for the construction of a new kayak launch and suggested contacting Eric Burling, upcoming rotary president, as he has been involved in numerous meetings and has some specific ideas on design. Schultz also wanted to be sure that Ayres reaches out to actual kayak/canoe users to seek their input as to what they prefer when it comes to design and location.

7. **ORDINANCES:**

- A. **Ordinance 2045(11)** - To amend Sections 148-7(A), "Performance standards for construction Sites under one acre" 148-9(E)9, "Permit requirements; application procedures; fees" and 148-10(A)4(h) "Erosion and sediment control plans: statement; amendments" of the Municipal Code of Burlington.

Gregory Governatori, Kapur and Associates, explained that because the City of Burlington is a MS4 permitted community, it is required by the DNR to develop and maintain an erosion control ordinance. Governatori further explained that in 2015 the City received a Storm Water Management planning grant in the amount of \$80,000 to meet the initial permit requirements, which has now been met. In order to received the final grant reimbursement, the DNR has requested three small changes to the current erosion control ordinance.

8. **MOTIONS:**

- A. **Motion 19-922** - To consider approving a Certificate of Appropriateness for property located at 448 Milwaukee Avenue.

Building Inspector Gregory Guidry explained that according to Chapter 315-42(E)(1), Common Council must approve any alteration including architectural appearance of a structure within the Historic Preservation Overlay (HPO). Guidry explained that although this was approved by the Historic Preservation Committee, the applicant had already painted the building prior to any approvals, but did

use an approved historic color. Guidry further explained that the applicant was under the impression that if the building was painted with an approved historic color, then it did not need to go through the approval process.

Alderman Schultz inquired as to why does an applicant need approval from either HPC or Council if the applicant is using an approved historic color. Administrator Walters responded that if Council so chooses, staff can review and modify the ordinance. Alderman Kott felt that the HPC ensures that the applicant is using an approved historic district paint color and questioned if this is a task that could be handled at City staff level, as she wasn't sure if staff knows what the approved colors are.

B. **Motion 19-923** - To consider approving the 2019 Fireworks Agreement for July 4, 2019 with Five Star Fireworks Co.

Director Megan Watkins stated that the City has worked with Five Star since 2014 and has had no issues. Watkins then presented Five Star's agreement with the City for the 2019 Fourth of July Fireworks and stated that the cost of fireworks and insurance had increased, so in order to stay within the approved budget of \$10,000, they had to make several adjustments to the display, which resulted in about 200 fewer shells. Watkins stated that Five Star feels the less shells should go unnoticed overall.

Alderman Schultz calculated the estimate to be about 25% fewer shells and asked to have that reviewed as he felt it would make a noticeable difference. Schultz also suggested increasing the budget to keep the same number of fireworks. Alderman Grandi suggested staff reach out to Five Star to find out what was actually decreased.

Alderman Preusker wanted more information as to who does Browns Lake's fireworks display and what are their costs.

Alderman Heft asked if quotes were received from any other fireworks companies. Watkins replied that no other company's had been contacted for quotes.

Walters stated that staff would gather more information about the decrease in shells as well as quotes from other firework companies and would present to Council at the next meeting but also cautioned about the tight timeline, stating that 4th of July Fireworks are booked out well in advance.

9. **ADJOURNMENT**

Motion: Alderman Grandi. Second: Alderman Kott. With all in favor, the motion carried and the meeting was adjourned at 7:03 p.m.

Minutes respectfully submitted by:

Diahnn C. Halbach
City Clerk
City of Burlington



COMMITTEE OF THE WHOLE

ITEM NUMBER 4A

DATE: March 19, 2019

SUBJECT: PRESENTATION - A presentation from the Central Racine County Health Department regarding their Annual Report.

SUBMITTED BY: Carina Walters, City Administrator

BACKGROUND/HISTORY:

Margaret Gesner of the Central Racine County Health Department will be in attendance to present their 2018 Year in Review and identify the 2019 Initiatives for the City of Burlington.

BUDGET/FISCAL IMPACT:

N/A

RECOMMENDATION:

For discussion only.

TIMING/IMPLEMENTATION:

This item is for discussion at the March 19, 2019 Committee of the Whole meeting.

Attachments

2018 CRCHD Annual Report
CRCHD Annual Report Brochure



CRChD

Central Racine County Health Department

ANNUAL REPORT

2018

Central Racine County Health Department
10005 Northwestern Avenue, Suite A
Franksville, WI 53126

Table of Contents

Message from the Health Officer	4
Health Department Staff, Board of Health, and Mission	5
Health Department Principles, Priorities, Programs, Services	6
Essential Service 1 (Monitor Health Status)	7
Community Health Assessment	
Community Health Improvement Plan	
Morbidity and Mortality Data	
Essential Service 2 (Investigate Health Problems & Hazards)	11
Communicable Disease Control	
Outbreak Investigation	
Mosquito Surveillance	
Human Health Hazards	
Lead Poisoning Case Management	
Lead Hazard Investigation	
Essential Service 3 (Inform People about Health Issues)	16
Car Seat Education and Installation	
Cribs for Kids	
Community-Based Safe Sleep Education	
Radon Prevention	
Well Water Testing	
Community Education and Public Information	
Essential Service 4 (Mobilize Communities)	19
Fetal, Infant, Child Death Review	
Overdose Fatality Review	
Other Collaboratives and Coalitions	
Medication Collection Boxes	
Essential Service 5 (Plan to Support Health)	21
Strategic Plan	
Emergency Preparedness	
Essential Service 6 (Enforce Public Health Laws)	23
Licensing and Inspections	
Excellence Award for Food Facilities	
Food Safety Classes	
DNR Well Water Program	
Animal Bite/Rabies Investigations	
Beach Water Monitoring	

Essential Service 7 (Link People to Health Services)	26
Healthy Families America (HFA) Model Home Visitation Programs	
Family Connects Model Home Visitation Program	
School and Daycare Immunization Compliance Program	
Childhood Immunization Program	
Adult Services Program	
Welcome Baby Packets	
Essential Service 8 (Assure a Competent Workforce)	29
Workforce Development Plan	
Qualified Health Professionals	
Linkages with Academia,	
Linkages with Healthcare	
Linkages with Schools	
Essential Service 9 (Evaluate Effectiveness of Programs)	31
Performance Management Plan	
Quality Improvement Plan	
Essential Service 10 (Research for New Solutions)	32
Partnerships for Research and Innovation	
2018 Budget Summary	33

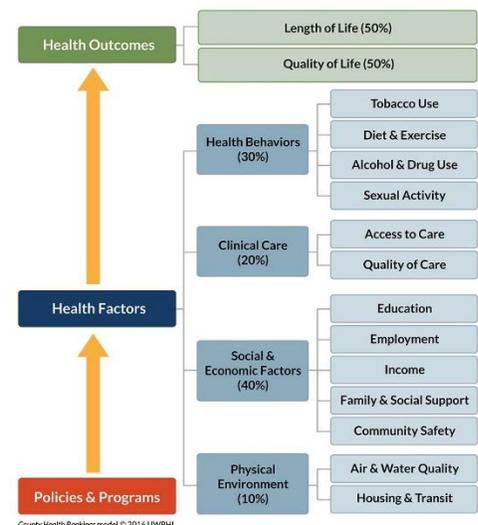
Message from the Health Officer

In 2018 Central Racine County Health Department (CRCHD) maintained a laser focus on our core functions of assurance, assessment and policy development while concurrently pursuing national public health accreditation and ensuring delivery of required and novel programs and services. Highlights for 2018 which show the growth and progress of CRCHD include the following:

- Developed the *CRCHD Community Health Improvement Plan 2018 (CHIP)* in conjunction with community partners to identify priority health issues in our jurisdiction. This process showed mental health, substance abuse, chronic disease and healthcare access as significant community concerns and areas for community improvement.
- Submitted 550+ documents to the Public Health Accreditation Board (PHAB) in advance of a 2019 site visit, as examples of CRCHD work which meets national public health standards.
- Became part of the *Kenosha/Racine Lead-Free Communities Partnership*, with Kenosha County as lead agency to implement a lead hazard reduction grant from the U.S. Department of Housing and Urban Development (HUD).
- Convened a workgroup to look at an increase in childhood drownings in Racine County; held two community listening sessions and provided for free swimming lessons at the new S C Johnson Community Aquatic Center and the new Burlington Community Aquatic Center.
- Received a new Overdose Fatality Review grant to convene Racine County partner agencies in order to better identify the underpinnings of overdose deaths and translate findings from the review process into prevention recommendations and strategies.
- Ran a *Fall 2108 Immunization Clinic Exercise* to ensure we are prepared for any public health emergency, especially important work in a global community.
- Continued to provide innovative, universal *Family Connects Racine County* program as well as *Healthy Families America* directed programming for pregnant and parenting Racine County families.
- Created a new organizational chart to enhance alignment with programs and services.
- Continued work on the *CRCHD 2016-2020 Strategic Plan* priorities.
- Implemented all work related to our required and value-added programming and services.

Now more than ever, as the face of public health changes and evolves, CRCHD focuses its work on population health – the health of all residents. This means we advance work that can change the health of entire communities while continuously working to ensure our programs and services reflect an understanding that health outcomes and health inequities are driven primarily by where people live, work, learn and play. This focus is illustrated in the County Health Rankings model to the right. The work of public health is a community endeavor, and to that end I want to give a large and heart-felt thanks to the great CRCHD staff, a strong and supportive Board of Health, and all our government and community partners, for your hard work, collaboration and support.

Margaret Gesner, Health Officer



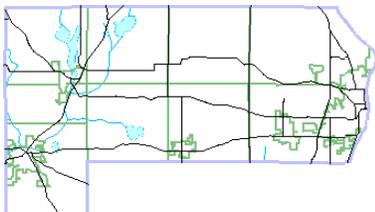
Health Department Staff

ADMINISTRATION & FINANCE	COMMUNITY HEALTH (cont.)
Margaret Gesner, Health Officer	Kari Villalpando, Public Health Nurse HV Supervisor (grant)
Wayne Krueger, Fiscal Director	Erin Donaldson, Public Health Educator HV Supervisor (grant)
Liz Staples, Health Technician	Yesenia Arjon, Public Health Educator Home Visitor (grant)
Shirley Vakos, Senior Health Technician	Miranda Bleichner, Public Health Nurse Home Visitor (grant)
ENVIRONMENTAL HEALTH	Carissa Brunner, Public Health Educator Home Visitor (grant)
Keith Hendricks, Environmental Health Director	Kate Dickinson, Public Health Nurse Home Visitor (grant)
Jennifer Loizzo, Sanitarian	Linda Garza, Public Health Nurse - Home Visitor (grant)
Michele Breheim, Sanitarian / Nathalia Arnouts, Sanitarian	Katie Whitaker, Public Health Nurse Home Visitor (grant)
Chuck Dykstra, Sanitarian	Brittany Gunn, Public Health Nurse Home Visitor (grant)
Patty Svendsen, Health Technician	Wendi Huffman, Public Health Nurse Home Visitor (grant)
EMERGENCY PREPAREDNESS	Kelley Marshman, Public Health Nurse Home Visitor (grant)
Kevin Plachinski, Public Health Specialist	Lindsey Visona, Public Health Educator Home Visitor (grant)
COMMUNITY HEALTH	Abby Apple, Public Health Nurse Home Visitor (grant)
Jeff Langlieb, Community Health Director	Rae Stewart, Public Health Educator Home Visitor (grant)
Joella Eternicka, Associate Community Health Director	EPIDEMIOLOGY
Ashlee Franzen, Community Health Supervisor	Pa Chang, Epidemiologist (grant)
Sai Moua, Public Health Nurse	Silviano Garcia, Epidemiologist
Amanda Busack, Public Health Educator	

Board of Health

CHAIRPERSON	TRUSTEES, BOARD MEMBERS & REPRESENTATIVES
Frances M. Petrick, RN	Sharon Korponai, Town of Raymond Citizen Representative
MEDICAL DIRECTOR/VICE-CHAIR	John Monsen, Village of Rochester Citizen Representative
Mark E. DeCheck, MD	Dan Moore, Sturtevant Trustee
TRUSTEES, BOARD MEMBERS & REPRESENTATIVES	Gordon Svendsen, Union Grove Trustee
Fran Martin, Caledonia Trustee	Sherry Gruhn, Village of Yorkville President
Susan Stroupe, Caledonia Citizen Representative	Teri Jendusa Nicolai, Town of Waterford Board Member
Gary Feest, Mt. Pleasant Trustee	Tamara Pollnow, Village of Waterford Trustee
Vikki Prochaska, Mt. Pleasant Citizen Representative	Theresa Meyer, City of Burlington Alderman
Kristin Holmberg-Wright, North Bay Trustee	Tyson Fettes, Town of Burlington Board Member
Tom Kramer, Town of Norway Administrator/Treasurer	Margaret Gesner, Health Officer, Secretary

The Central Racine County Board of Health meets on the 3rd Thursday of each month.



10005 Northwestern Avenue, Suite A
 Franksville, Wisconsin 53126
 Phone: (262) 898-4460 FAX: (262) 898-4490
Office Hours: Monday – Friday, 8:00 a.m. - 4:30 p.m.

CRCHD Mission Statement

The mission of Central Racine County Health Department is to improve the health of the communities we serve through health promotion, disease prevention, and protection from health and environmental hazards. This mission is achieved by:

- Assuring the enforcement of state public health statutes and rules.
- Developing policies and providing public health programs and services that prevent disease and injury, protect against environmental health hazards, promote healthy behaviors and provide education.
- Monitoring the health status of the community to identify health issues.
- Preparing for and responding to public health emergencies.
- Assessing the effectiveness, accessibility and quality of programs and services.

CRCHD Principles, Priorities, Programs and Services

CRCHD Vision and Guiding Principles

Vision:

Building a Healthy Future by Protecting the Public’s Health

Guiding Principles

Collaboration: *Engage partners & the community to promote health and meet common goals*

- Leaders
- Innovative problem-solvers
- Team players

Responsiveness: *Deliver accessible public health programs with integrity*

- Respectful, reliable, principled
- Community-driven
- Stewardship of resources

Caring: *Serve the community with the customer in mind*

- Accountable and respectful
- Competent and highly skilled staff
- Quality service-oriented

High Quality: *Provide excellence in programs and services*

- Evidence-based and data-driven
- Quality outcomes and performance-driven
- Effective, efficient, and sustainable

Diversity: *Promote public health services that address community needs*

- Advocate
- Culturally competent
- Focused on eliminating health disparities

CRCHD Strategic Priorities

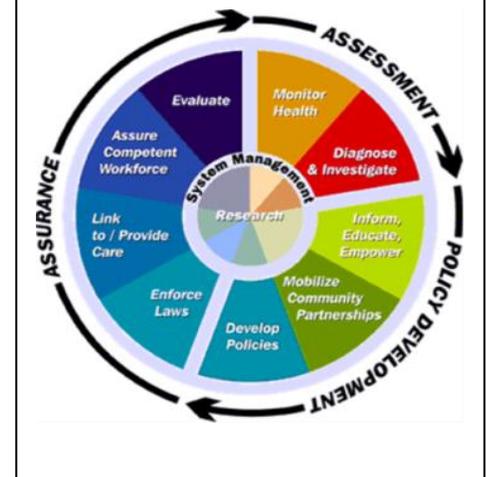
2016-2020

1. Achieve National Public Health Accreditation
2. Enhance External Communication and Partnerships
3. Focus Workforce Development on Performance
4. Align Organizational Programs and Services
5. Assure Financial Viability

CRCHD Programmatic Areas

1. Community Health
2. Environmental Health
3. Home Visiting
4. Emergency Preparedness
5. Administration

3 Core Functions & 10 Essential Services



The CRCHD Mission, Vision and Guiding Principles inform the CRCHD Strategic Priorities. In turn, the Strategic Priorities inform the CRCHD Programmatic Areas. Last, each CRCHD Programmatic Area correlates with a Public Health Essential Service. The 10 Essential Public Health Services (each related to a Core Function) are established by the Centers for Disease Control and Prevention and relate to how local health departments are evaluated by Wisconsin Department of Health Services. All CRCHD programs are operationalized within the 10 Essential Health Services.

MONITOR HEALTH STATUS TO IDENTIFY AND SOLVE COMMUNITY HEALTH PROBLEMS

Central Racine County Health Department (CRCHD) monitors and assesses our community’s health status through formal and informal needs assessments and data analyses. Staff work to identify threats to health, recognize health inequities, and determine current and emerging health needs in collaboration with multi-sectoral community partners. This work aligns with Wisconsin Statutes 250, 251 and Administrative Code DHS 140.

Community Health Assessment

Local health departments are required to conduct a community health assessment (CHA) every five years. The goal of the CHA is to collect, review, and analyze health data in the community. The CHA helps us better understand the health status of our community and the factors that impact health. It also helps us identify the effectiveness of interventions and the community’s capacity to address relevant health issues. Data are gathered from a variety of sources and through various methods of data collection, with input of many community sectors as an essential component. CRCHD most recently conducted a CHA in 2017. On a regular basis, CRCHD updates health data as necessary to provide the best programming and services. Key community themes and strengths are identified below.

What are our Demographics?

- **Population:** 114,938
- **Race:** White=91%; Black=3%; Other=5%
- **Ethnicity:** Hispanic=5%
- **Gender:** Male=50% Female=50%
- **Median Age:** 40
- **Born in US:** 97%
- **English Spoken at Home:** 95%
- **Home Ownership:** 79%
- **High School Education:** 92%
- **Disabilities:** 11%

What are our Assets for Health?

- Schools
- Community Centers
- Non-Profit Organizations
- Government
- Local Businesses
- Healthcare

What Factors that Impact Health Are Important to our Community?

- Low crime, safe neighborhoods
- Able to get health services
- Good schools
- Good and healthy economy
- Good place to raise children
- Affordable housing
- Collaboration and good use of funds

What are our Threats to Health?

- Prescription/OTC/Illegal Drug Use
- Mental Health Issues
- Alcohol Use/Abuse
- Access to Healthcare
- Affordable Healthcare
- Nutrition/Physical Activity
- Overweight/Obesity
- Chronic Diseases
- Education Level
- Tobacco Use
- Injury/Violence/Crime
- Adverse Childhood Experiences
- Environment/Jobs/Income
- Oral Health

How is our Quality of Life?

- **Quality of Life:** Good=62%; Excellent=9%; Fair=28%; Poor=2%
- **Health Status:** Excellent/Very Good=56%
- **Health/Quality of Life Over Past Few Years:** Same=53%; Better=34%; Worse=13%

Community Health Improvement Plan

Local health departments are required to conduct a community health improvement plan (CHIP) every five years, and CRCHD developed one in 2018. Using 2017 CHA data that highlights local health issues of significance, CRCHD convened community partners to prioritize health issues, develop goals and objectives, develop shared strategies for implementation, and articulate indicators by which to measure progress. The 2018 CHIP includes both existing and new health priorities and is used to help guide our community's work in addressing health conditions that impact residents, including those conditions which may disproportionately affect some of our residents. The health priorities that resonate most strongly with community partners and residents include: **1) mental health; 2) substance abuse; 3) chronic disease; and, 4) access to healthcare.** These are the primary focus of our CHIP and work is done collaboratively with community partners.

Mental Health

Goal	All residents experience their best mental health
Objectives	<ul style="list-style-type: none"> Reduce the prevalence of depression in youth Increase the % of adult residents who report good or excellent mental health Reduce suicide rates Provide data to measure process and outcome measures
Issues and Indicators	<ul style="list-style-type: none"> 23% of county students reported as suffering from depression Adults reporting a mental health condition in the past 3 years increased from 12% to 17% 6% of adults reported seldom/never finding purpose in daily life and 17% reported no social-emotional support 5% of adults reported having considered suicide in the last year 1 in 5 county students reported having attempted suicide ED visits related to self-inflicted injuries is increasing
Strategies	<ul style="list-style-type: none"> Raise public awareness of mental health stigma Increase local agency awareness of impact of childhood trauma on health outcomes Promote healthy families and healthy relationships Promote and enhance interventions aimed at improving coping skills and social-emotional resiliency Promote access to care Improve availability of mental health data

Substance Abuse

Goal	Prevent and effectively treat substance abuse across the lifespan
Objectives	<ul style="list-style-type: none"> Reduce overdose ED visits, hospitalizations and deaths Reduce rate of alcohol and drug abuse (adults and youth) Reduce access to and inappropriate use of prescription drugs Provide data to measure process and outcome measures
Issues and Indicators	<ul style="list-style-type: none"> The rate of emergency department (ED) discharges related to opioids increased over 400% between 2005 and 2016 while hospital discharges climbed over 200% between 2005 and 2016 The rate of overdose deaths (any drug) has nearly tripled between 2000 and 2016 in Racine County 16 % of middle and high school students reported binge drinking in their lifetime From 2005 to 2017, the % of adults who reported binge drinking increased by 43%
Strategies	<ul style="list-style-type: none"> Initiate Overdose Fatality Review Team (OFRT) Raise public awareness of the risks and consequences of alcohol abuse and opioids Reduce opioid overdose fatalities through expanded naloxone access Reduce inappropriate access to and use of prescription drugs Educate youth and adults about the risks of drug abuse (including prescription misuse) and excessive drinking Expand, facilitate and promote medication collection program to reduce drug access Promote access to care Improve availability of substance abuse data

Chronic Disease

Goal	Prevent and effectively treat chronic disease
Objectives	<ul style="list-style-type: none"> • Increase % of children and adults meeting physical activity targets • Increase % of children and adults meeting daily intake of fruits and vegetables • Reduce obesity rate among children and adults • Reduce mortality related to heart disease and cancer • Provide data to measure process and outcome measures
Issues and Indicators	<ul style="list-style-type: none"> • 57% of adults reported moderate or vigorous physical activity (5x/week) • From 2012 to 2017, there was a 14 % decrease in children (ages 5 to 17) who were meeting the US Department of Health and Human Services recommendation of 60 minutes of physical activity per day • 38% of adults and 46% of children reported eating 5+ fruits/vegetables per day • From 2005 to 2017, there was a 10% increase of adults who reported as overweight or obese (BMI≥25) • Heart disease and cancer are the leading causes of death
Strategies	<ul style="list-style-type: none"> • Make facilities available for physical activity • Support tobacco control efforts • Initiate Health in All Policies • Support community efforts to promote breastfeeding • Provide community and establishment education to prevent foodborne outbreaks • Identify additional strategies for health promotion and disease prevention • Improve availability of chronic disease data

Access to Healthcare

Goal	Increase access to comprehensive, quality healthcare across the lifespan
Objectives	<ul style="list-style-type: none"> • Increase proportion of children and adults with a usual medical home • Reduce the proportion of persons who are unable to obtain or delay in obtaining necessary medical care, dental care, mental health care, and/or prescriptions • Increase the availability and accessibility of primary care providers, mental health providers, and substance abuse providers • Provide data to measure process and outcome measures
Issues and Indicators	<ul style="list-style-type: none"> • Over 10 years, residents reported an 8-fold increase in use of urgent care centers as a primary source of care • Racine County has less primary care providers, dentists, mental health providers per capita than the State • 4% of children and 5% of adults reported no health insurance • 17% adults delayed/did not receive care in past 12 months due to cost • 8% household prescription medications were not taken due to cost • 14% of adults did not get needed dental care • 9% of adults did not get needed medical care • 3% of adults did not get needed mental health care
Strategies	<ul style="list-style-type: none"> • Explore a more integrated, effective health system through collaboration between clinical care & public health • Promote use of primary care provider for all clients • Obtain more detailed insurance coverage and access to the entire care continuum • Linking those in need with potential providers in a health assurance role (quality of care) • Promote early identification of mental health needs, substance abuse needs and/or and access to quality services • Explore public-private partnerships to implement community preventive services • Improve availability of healthcare access data

CRCHD work towards these priority areas is enumerated throughout the report and identified by a public health shield. 

Morbidity and Mortality Data

Morbidity and mortality data are two overarching mechanisms for monitoring the health of the community. The following three charts show the top causes of death, injury-related emergency department visits, and hospitalizations, all for Racine County.

Ranked Causes of Death (Broad Groups) by Age Group (2015-2017)			
	0-17	18-64	65+
1	Certain conditions originating in the perinatal period (n= 30)	Malignant neoplasms (n=336)	Diseases of heart (n=1025)
2	Other causes (n=18)	Diseases of heart (n=225)	Malignant neoplasms (n=843)
3	Accidents (unintentional injuries) (n=17)	Other causes (n=200)	Other causes (n=787)
4	Congenital malformations, deformations and chromosomal abnormalities (n=15)	Accidents (unintentional injuries) (n=176)	Chronic lower respiratory diseases (n=277)
5	Intentional self-harm (suicide) (n= < 5)	Intentional self-harm (suicide) (n=79)	Cerebrovascular diseases (n=249)

Ranked Causes of Injury-Related Emergency Department Visits by Age Group (2016-2017)			
	0-17	18-64	65+
1	Falls (n=2,664)	Falls (n=4,890)	Falls (n=2,794)
2	Struck by or against object or person (n=1,615)	Unspecified cause of injury (n=3,851)	Unspecified cause of injury (n=691)
3	Unspecified cause of injury (n=1,148)	Struck by or against object or person (n=2,914)	Motor vehicle traffic crash - Occupant (n=278)
4	Cutting or piercing objects (n=561)	Motor vehicle traffic crash - Occupant (n=2,502)	Struck by or against object or person (n=255)
5	Natural or environmental factors (n=467)	Cutting or piercing objects (n=2,131)	Cutting or piercing objects (n=225)

Ranked Causes of Injury-Related Hospitalizations by Age Group (2016-2017)			
	0-17	18-64	65+
1	Poisoning (n=33)	Poisoning (n=320)	Falls (n=921)
2	Falls (n=15)	Falls (n=320)	Poisoning (n=46)
3	Unspecified cause of injury (n=11)	Motor vehicle traffic crash - Occupant (n=90)	Motor vehicle traffic crash - Occupant (n=31)
4	Fire, heat, chemical burns (n=7)	Unspecified cause of injury (n=60)	Unspecified cause of injury (n=29)
5	Motor vehicle traffic crash - Occupant (n=5)	Motor vehicle traffic crash - Motorcyclist (n=34)	Struck by or against object or person (n=9)
5	Other specified classifiable cause of injury (n=5)		

IDENTIFY AND INVESTIGATE HEALTH PROBLEMS AND HAZARDS IN THE COMMUNITY

CRCHD provides for epidemiological investigation of communicable diseases, disease outbreaks, environmental health hazards, chronic diseases and injuries. This includes identifying community-level determinants of health and implementing prevention and intervention strategies. This work aligns with Wisconsin Statutes 250, 251, 252, and 254 and Administrative Code DHS 140, 145, 163, 181, and 182.

Communicable Disease Control

Wisconsin law requires many diseases be reported to local health departments. This reporting helps detect disease when and where it happens, stops disease before it spreads, prevent outbreaks, improves how we prevent and control disease, and keeps people healthy. Diseases may range in severity from asymptomatic (without symptoms) to severe and fatal, which is why investigation of them is so important.

CRCHD is required to investigate over 80 reportable communicable diseases (CDs), which include sexually transmitted diseases (STDs). A confirmed or probable disease case requires case investigation, follow-up of treatment, individual education, and community education, depending on the disease. Disease reports that ultimately do not meet the case definition still require timely investigation to determine if the diagnosis fits the case definition. The total number of confirmed/probable CD increased 11% from 688 in 2017 to 766 in 2018, in part due to an increase in required reportable diseases (see next page).



2018 Outcome Measures:

- Conducted and completed investigations of 1174 reported diseases.
 - *Confirmed/probable CD investigations (n= 406)*
 - *Suspect CD investigations (n=402)*
 - *Confirmed/probable STD investigations (n= 360)*
 - *Suspect STD investigations (n=6)*
- Developed a new algorithm for STD investigations.
- Initiated client feedback project for STD investigations.
- Implemented investigation of newly-required reportable diseases.
- Utilized a small state CD grant for some of the work.

Sexually Transmitted Disease Cases*					
	2018	2017	2016	2015	trend
STDs					
Chlamydia	308	287	312	248	▲
Gonorrhea	51	64	45	35	▲
Syphilis	<5	<5	<5	<5	
*Includes confirmed and probable Cases					

CRCHD 2018 CD Cases ≥ 5*	
	2018
Communicable ≥ Cases	
**Influenza Hospitalizations	109
Mycobacterium (non-TB)	49
Hepatitis C	35
Campylobacteriosis	27
Pertussis	23
**Tuberculosis, Latent	21
Salmonellosis	18
Lyme Disease	16
Giardiasis	16
Legionellosis	11
Streptococcal Disease (B)	9
Streptococcus Pneumoniae	7
Cyclosporiasis	7
Blastomycosis	7
E. Coli STEC	6
Haemophilus Influenzae	6
Varicella (Chicken Pox)	5
*Includes confirmed and probable Cases	
**Newly required reportable disease	

In 2018 the State of Wisconsin amended Wisconsin Administrative Code DHS 145 to require reporting of an additional 15+ diseases and conditions, adding to the communicable disease workload.

Newly Required Reportable Diseases in 2018

- Carbapenem-resistant *Enterobacteriaceae* (CRE)
- Middle Eastern Respiratory Syndrome-associated Coronavirus (MERS-CoV)
- Primary Amebic Meningoencephalitis (PAM) (*Naegleria fowleri*)
- Rabies (animal)
- Viral Hemorrhagic Fever (VHF) (including Crimean-Congo, Ebola, Lassa, Lujo, and Marburg viruses, and New World Arenaviruses)
- Borreliosis (other than Lyme disease)
- Coccidioidomycosis (Valley Fever)
- Environmental and occupational lung diseases (Asbestosis, Silicosis, Chemical pneumonitis, Occupational lung diseases caused by bio-dusts and bio-aerosols)
- Free-living amebae infection (including Acanthamoeba disease (including keratitis) and Balamuthia mandrillaris disease)
- Influenza-associated hospitalization
- Latent Tuberculosis infection (LTBI)
- Rickettsiosis (other than spotted fever rickettsiosis)
- Toxic substance related diseases (Blue-green algae (Cyanobacteria) and Cyanotoxin poisoning)
- Carbon monoxide poisoning
- Zika virus infection

CRCHD 2018 CD Cases <5*

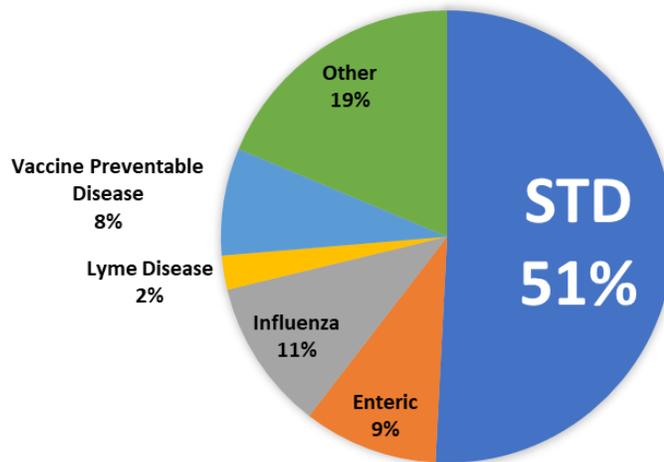
	2018
Communicable <5 Cases	
**Carbapenem-Resistant Enterobacteriaceae	<5
Cryptosporidiosis	<5
E. Coli EPEC	<5
Ehrlichiosis/Anaplasmosis	<5
Metal Poisoning (non-lead)	<5
Hepatitis B (Acute)	<5
Hepatitis B (Chronic)	<5
Mumps	<5
Histoplasmosis	<5
**Carbon Monoxide Poisoning	<5
Meningitis, Bacterial, Other	<5
Mumps	<5
Pelvic Inflammatory Disease	<5
Rocky Mountain Spotted Fever	<5
Shigellosis	<5
Streptococcus Disease (A)	<5
West Nile Virus	<5

*Includes confirmed and probable Cases
 **Newly required reportable disease

STDs remain the number one reportable disease locally, statewide and nationally.

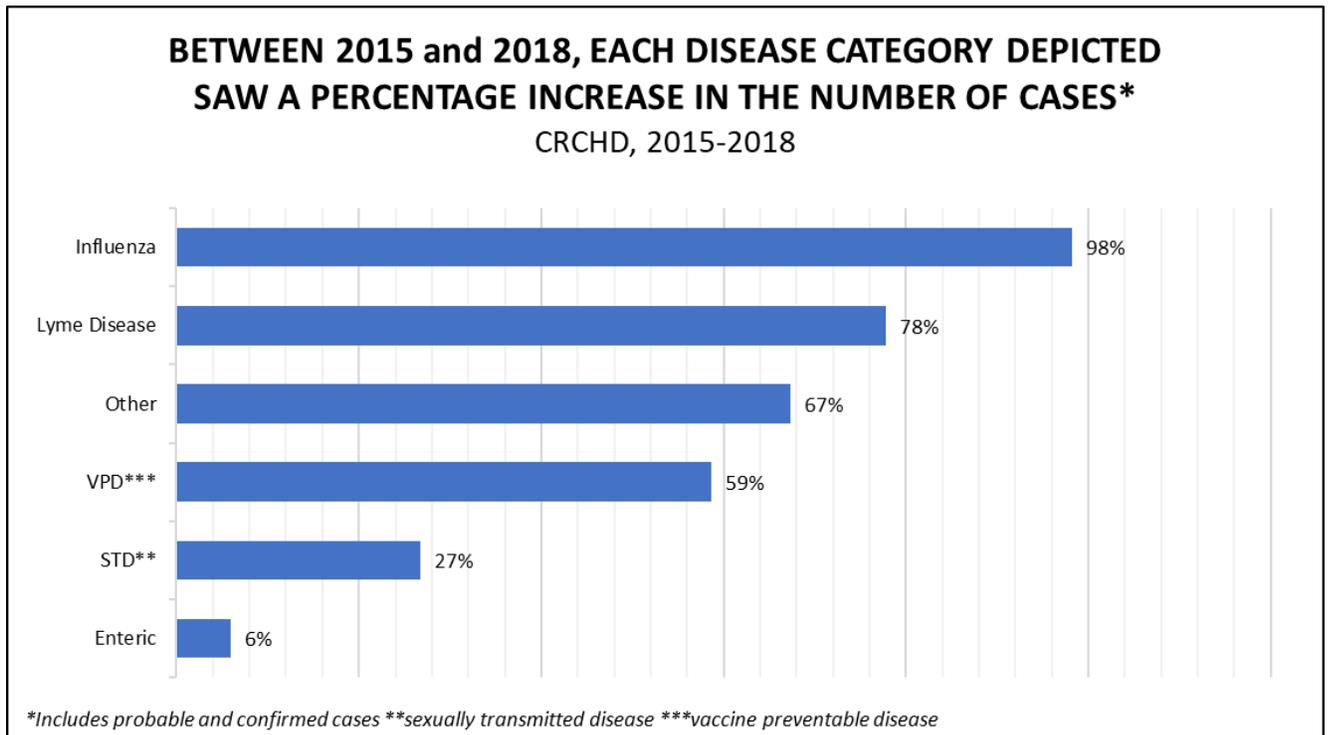
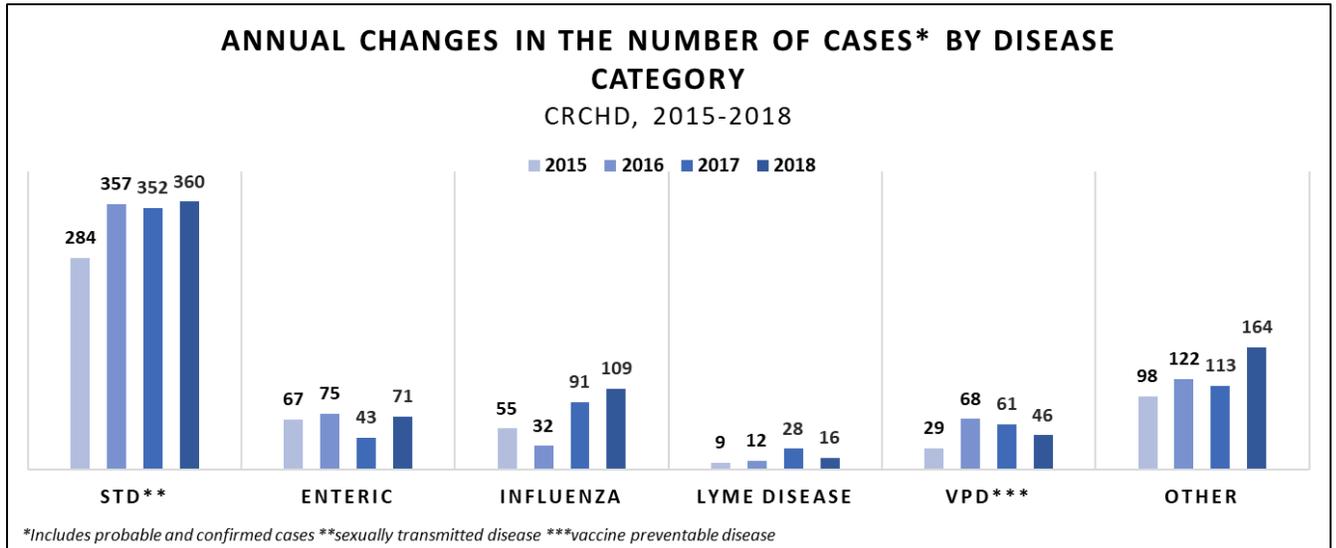
STDs HAVE ACCOUNTED FOR OVER 50% OF DISEASE CASES*

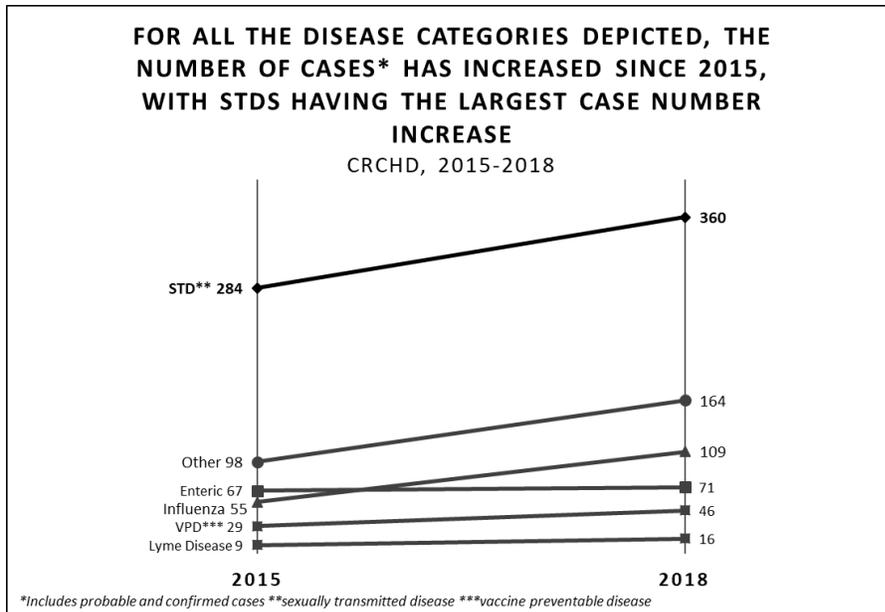
CRCHD, 2015-2018



*Includes probable and confirmed cases

The following graphs show an increase of disease reports in most categories. They also reveal which diseases saw the largest jump in percent of reported cases, and which ones increased most numerically.





26
Outbreak
Investigations

Outbreak Investigations

An outbreak is when more cases of disease occur than what would normally be expected in a defined community, geographical area or season. CRCHD investigates all disease outbreaks as defined and as required by law. Reported disease outbreaks increased 8%.

2018 Outcome Measures:

- Investigated all reported outbreaks and provided education and guidance as needed; all occurred at long-term care facilities with none at schools or in the community.
 - Types of organisms identified in the outbreaks included *Norovirus*, *Campylobacter jejuni*, *Influenza A*, *Influenza B*, *Coronavirus*, *Rhinovirus*, *Pneumonia*, and *Parainfluenza*.
 - Outbreaks affected 273 residents and 120 staff

Mosquito Surveillance

In the 2018 summer, CRCHD helped expand surveillance in Racine County for the invasive tiger mosquito and potential Zika vector, *Aedes albopictus*. University of Wisconsin-Madison was the lead for this endeavor, setting up traps designed to collect the eggs of various container breeding mosquitoes.

2018 Outcome Measures:

- Collected traps at five locations on 14 different days for a total of 192 traps. Traps yielded *Aedes japonicus* and *Aedes triseriatus*. *Aedes albopictus* is not established broadly throughout the state.

Human Health Hazards

CRCHD continues to investigate human health hazards which are defined as substances, activities or conditions that are known to have the potential to cause acute or chronic illness or death if exposure to the substances, activities or conditions is not abated.

2018 Outcome Measures:

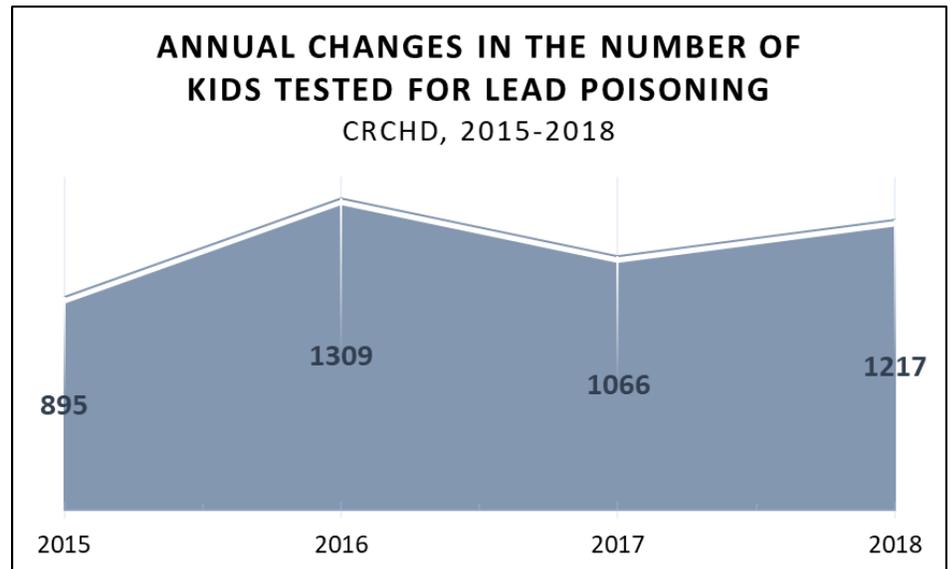
- Conducted 188 human health hazard investigations/interventions (a 18% decrease from 2017).
- Responded to 27 complaints (a 36% decrease from 2017).

Lead Poisoning Case Management

Lead exposure in young children can cause reduced IQ and attention span, impaired growth, reading and learning disabilities, hearing loss, and a range of other health and behavioral effects. CRCHD provides lead poisoning prevention and intervention services for children with a blood lead level (BLL) ≥ 5 micrograms per deciliter (ug/dL) to improve detection and treatment of lead poisoning in children.

2018 Outcome Measures

- Identified and tracked 1,217 blood lead tests completed for CRCHD jurisdiction children.
- Identified 16 new children with a capillary BLL of ≥ 5 ug/dL and all received a form of follow-up (e.g. call, letter, primary care physician contact).
- Identified 5 new children with a venous BLL ≥ 5 micrograms per deciliter who were offered a home visit and provided with verbal and written lead poisoning prevention and treatment education.
- Provided lead poisoning prevention information to 616 families in a new baby packet.
- Utilized a small state grant to conduct the work.



Lead Hazard Investigations

Most lead exposures occur in homes or daycares where lead-based paint has deteriorated because of deferred maintenance or where lead hazards have been created through painting or renovation done without using lead-safe work practices. CRCHD has Certified Lead Risk Assessors on staff who can provide an assessment to help determine the source of the lead contamination in homes with children who have a high lead level. The goal is to make housing lead-safe to prevent lead poisoning in children.

2018 Outcome Measures:

- No children had a venous BLL that required a lead hazard investigation.
- CRCHD became part of the *Kenosha/Racine Lead-Free Communities Partnership*, with Kenosha County as lead agency to implement a lead hazard reduction grant from the U.S. Department of Housing and Urban Development (HUD). The Kenosha/Racine Lead-Free Communities Partnership assists families in removing lead hazards from their home. The program is available to both homeowners and those renting a property.

INFORM, EDUCATE, EMPOWER PEOPLE ABOUT HEALTH ISSUES

CRCHD promotes healthy behaviors by making health information available in a variety of formats. Staff regularly share and discuss current and emerging health issues with the public, policy makers and decision-makers. CRCHD also provides programs and services that reinforce health promotion messages, and we work to ensure culturally and linguistically appropriate approaches. This includes areas such as childhood injury prevention, community events, and chronic disease prevention. This work aligns with Wisconsin Statute 250, 251, 253, 254, 255 and Administrative Code DHS 140.

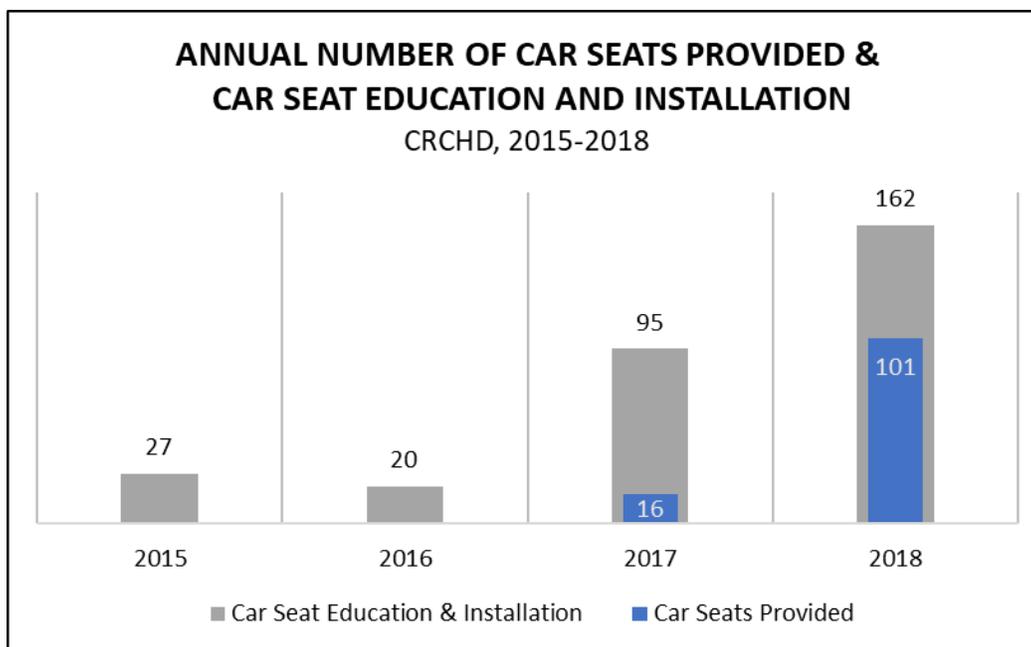
Car Seat Education and Installation

Child safety seats must be installed correctly, and the child restrained properly for them to be effective. While 96 percent of parents and caregivers believe their child safety seats are installed correctly, research shows that seven out of 10 children are improperly restrained. CRCHD certified technicians provide free child safety seat education and installation to families with children, by appointment; and provide low-cost seats to those without means to purchase a car seat. This crucial childhood injury prevention program saves lives.

As of June 1, 2006, Wisconsin law (Wis. Stats. 347.48(4)) requires that children be properly restrained in a child safety seat until they reach age 4 and in a booster seat until age 8.

2018 Outcome Measures:

- Provided education to families on how to safely transport their children using car seats, booster seats and seat belts.
- Evaluated 162 child safety seats for proper installation, a 72% increase from 2017.
- Provided 101 child safety seats.
- Provided car seat safety information to 616 families in a new baby packet.
- Mailed eight newsletters to residents including information reviewing proper use of child restraints.
- Utilized a small WI Bureau of Transportation Safety (BOTS) grant for low-cost car seats.
- Helped with training at a 4-day car seat safety training course.



Cribs for Kids

In 2017 CRCHD became an official Cribs for Kids® site. The mission of Cribs for Kids® is to prevent infant deaths by educating parents and caregivers on the importance of practicing safe sleep for their babies and by providing Graco® Pack ‘n Play® portable cribs to families who, otherwise, cannot afford a safe place for their babies to sleep. CRCHD provides crib set-up and safe sleep education as well as low-cost cribs to families with young children without means to purchase a crib, both through classes and appointments. This program helps save lives of our children.

2018 Outcome Measures:

- Maintained status as an official Cribs for Kids® site.
- Provided 110 low-cost cribs, including a Pack ‘n Play, sleep sack, fitted sheet, and pacifier (a 36% increase from 2017).
- Provided crib and safe sleep education based on the American Academy of Pediatrics guidance on how and where to put an infant to sleep to 125 new parents.
- Held Cribs for Kids® classes at CRCHD, Ascension All Saints, and WIC-Burlington. WIC-Burlington was a new site in 2018.
- Mailed a newsletter to residents including information regarding safe sleep and Cribs for Kids®.
- Utilized grant funds to purchase the cribs.



Community-Based Safe Sleep Education

CRCHD staff provides maternal child health (MCH) services and education to all residents. For 2018 the charge was for CRCHD, in collaboration with community partners, to implement and evaluate a strategy to support safe infant sleep practices in our communities.

2018 Outcome Measures

- Actively engaged 27 community groups in the jurisdiction.
 - 23 community groups accepted the invitation to hold trainings on safe sleep
 - 4 community groups did not wish to have a presentation but agreed to accept the written and electronic material.
- Educated 986 community members on safe sleep.
- Provided MCH information to 616 families in a new baby packet.

Radon Testing

CRCHD provides radon test kits to residents at a reduced cost and assists with test result interpretation as well as mitigation information and referrals for residents whose homes have high radon levels. A naturally occurring radioactive gas, radon causes lung cancer and claims about 20,000 lives annually in the U.S.

 CHIP Priority Strategy

2018 Outcome Measures:

- Sold 209 radon kits to residents, a 16% decrease from 2017.
- 154 radon kits sent for analysis; 55% had a result greater than or equal to 4.0 pCi/l (recommended remediation level).

Well Water Testing

CRCHD provides free well water test kits to residents for testing of bacteria and nitrates at Wisconsin State Lab of Hygiene (WSLH charges a nominal testing fee). CRCHD also provides assistance with interpretation of test results and mitigation information.

2018 Outcome Measures:

- Provided 31 bacteria/nitrate well water test kits to residents.

Community Information and Public Outreach

CRCHD provides educational materials to the public, partner agencies, and key stakeholders in a variety of formats to promote healthy behaviors. Health topics range from food safety and communicable disease and outbreak-related information to immunizations, infant safety, emergency preparedness and more. On a regular basis CRCHD shares and discusses current and emerging health issues with policy makers and decision-makers.

 CHIP Priority Strategy

2018 Outcome Measures:

- Mailed one newsletter to all residents; wrote 21 newsletter articles for municipalities.
- Sent a press release on precautions to be taken during influenza season.
- Sent press releases on the following topics: new Burlington area pool swimming lessons; 2018 CRCHD fall flu immunization exercise and clinic; Kidde smoke alarm recall; increase in Racine County influenza hospitalizations; and, medication collection events, to name a few.
- Sent out a press release regarding the 2018 County Health Rankings report.
- Put out advertisements regarding medication collection boxes and events.
- Advertised immunization and TB skin test appointments.
- Sent mass distribution information to healthcare providers on these topics: Parotitis follow-up and testing; seasonal influenza awareness and testing; severe bleeding among synthetic cannabinoid users; measles exposure in WI; increase in cyclospora cases; increase in cases of legionellosis; DHS 145 update; CRE guidance; acinetobacter calcoaceticus-baumannii complex associated with platelet transmission; acute flaccid myelitis cases and reporting; and nerve agent information for EMS and hospitals.
- Provided guidance to child care facilities and schools upon an identified increase in gastrointestinal illness, influenza, and other respiratory illness in Racine County.
- Presented at community events such as East and West End Networking Breakfasts, Sealed Air Family YMCA, Baby Expo, churches and civic organizations.
- Provided brochures on public health services at multiple venues and online.
- Posted on CRCHD social media accounts daily, including Facebook and Twitter, on topics including the 2017 CHA and 2018 CHIP; emergency preparedness; food, weather, home safety; and immunizations, to name a few.
- Provided quarterly communicable disease reports and potential changes to state laws to Board of Health.

436

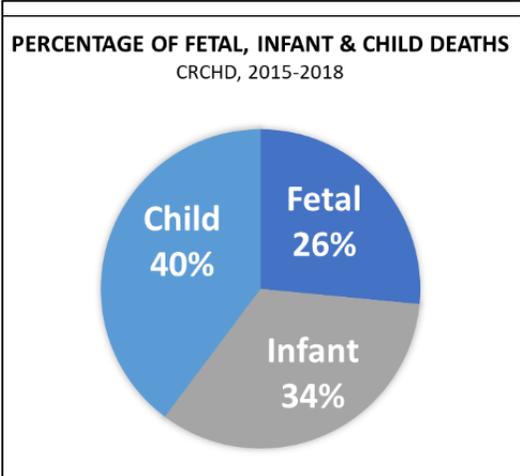
Targeted communication with media, healthcare providers, policy makers, residents

MOBILIZE COMMUNITY PARTNERSHIPS AND ACTION TO IDENTIFY AND SOLVE HEALTH PROBLEMS

CRCHD collaborates with and convenes community groups to work on prevention and population-focused activities. Through community traditional and non-traditional partnerships, we develop strategies for assessing and engaging the full range of individual and community assets to improve locally determined health and environmental issues. This aligns with Wisconsin State Statute 250, 251 and 255 and Administrative Code DHS 140 and 142.

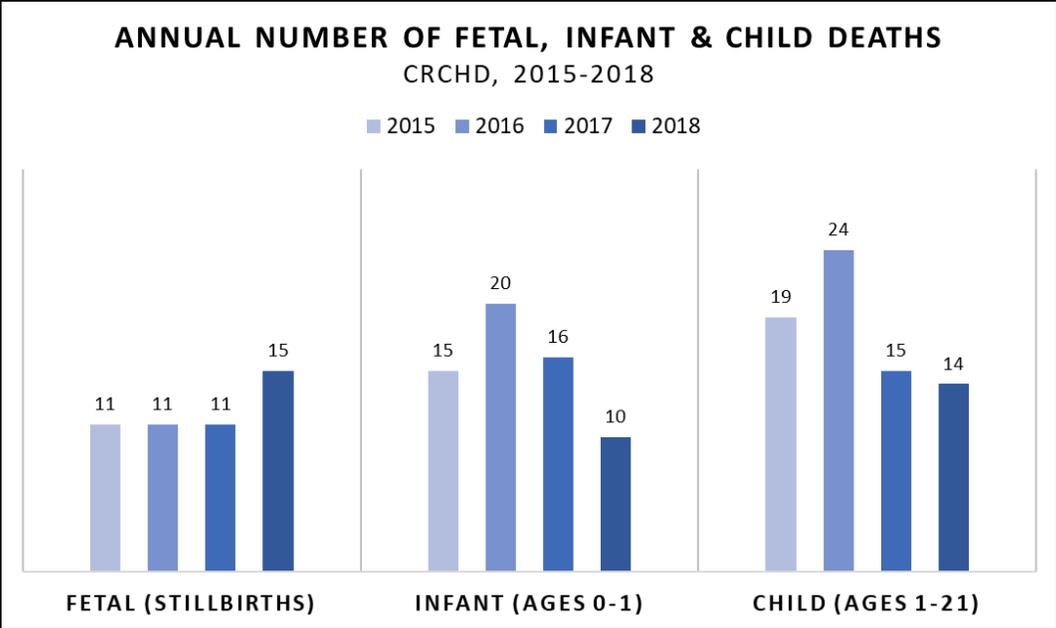
Fetal, Infant & Child Death Review

In 2010, CRCHD began chairing the Racine County child death review team and in 2012 added fetal and infant mortality review. The now hybrid FICDR team (composed of law enforcement, EMS, DA's office, ME's office, Child Protective Services, and other healthcare agencies) works to ensure accurate identification and uniform reporting of the cause, manner and relevant circumstances of every fetal, infant and child death. The goal is to identify preventable causes of death and inform program and policy direction in the community based on team findings and trend analyses.



2018 Outcome Measures

- 14 childhood (ages 1-21), 10 infant (ages 0-1), and 15 fetal (stillbirths) deaths reported to date.
- Convened a workgroup to look at an increase in childhood drownings, held two community listening sessions, provided for free swimming lessons at the new Racine and Burlington pools.
- Provided an Annual FICDR Report.
- Utilized a state MCH grant for this work, including contractual work for City of Racine Health Dept.



Overdose Fatality Review

With CRCHD as the lead agency, Racine County partner agencies created an Overdose Fatality Review Team (OFRT) with support from Wisconsin Department of Justice and Wisconsin Department of Health Services. The Racine County OFRT began to meet in 2018 to identify the underpinnings of overdose deaths and translate findings from the review process into prevention recommendations and strategies.

 CHIP Priority Strategy

2018 Outcome Measures:

- Received commitment from over 17 Racine County partner agencies to meet every other month to prevent overdoses (CRCHD, Medical Examiner, District Attorney’s Office, Human Services Department, Sheriff’s Office, Alcohol and Drug Treatment Court, Department of Corrections, 6+ other law enforcement agencies, Child Advocacy Center, Ascension All Saints, Advocate Aurora Health, City of Racine Health Department and EMS, Southshore EMS, and other partners.
- Wrote for and utilized a state DOJ grant for this work.

Other Collaboratives and Coalitions

CRCHD addresses many CHIP priorities and other community health needs through participation in community collaboratives and coalitions. Public health is a partner at the table to support and contribute to the work of other local agencies in provision of needed programs and services.

SE WI Association of Local Health Departments and Boards (WALHDAB)	Aurora Steering Council Racine/Kenosha market	Aurora Steering Council Burlington/Walworth market	Greater Racine Collaborative for Healthy Birth Outcomes	Healthier Wisconsin Partnership Program Mental Health Group
Environmental Health WALHDAB	SE Wisconsin Food Safety Committee	Racine County Home Visiting Stakeholders	Family Preservation West	Racine County Family Resource Network
Wisconsin Public Health Association	Healthcare Emergency Readiness Coalition (HERC)	Racine County Immunization Coalition	Racine County Youth Coalition	Children’s Collaborative for Mental Health
Safe Kids Racine County Coalition (disbanded 1/1/19)	Higher Expectations Kindergarten Readiness Network	Higher Expectations 0-3 Alignment Team	Racine Care Transitions Coalition	Children’s Community Options Program (CCOP)

 CHIP Priority Strategy

Medication Collection Boxes

CRCHD actively promotes use of medication collection boxes as a valuable tool in preventing drug misuse and abuse by providing a mechanism for people to dispose of unwanted medications from their medicine cabinets. Also, medications flushed down the drain or thrown in the trash can accumulate in the water supply and landfills, endangering the environment. Eleven medication collection boxes have been established throughout the county to offer year-round disposal of medications to residents. For the most current list go to: <https://doseofrealitywi.gov/drug-takeback/find-a-take-back-location/>.

 CHIP Priority Strategy

2018 Outcome Measures

- Helped dispose of unwanted medications at a west-end medication event (297 lbs.) and at 11 boxes (4535 lbs.).
- Partnered with City of Racine Health Department and law enforcement to promote box use.

DEVELOP POLICIES AND PLANS THAT SUPPORT INDIVIDUAL AND COMMUNITY HEALTH EFFORTS

CRCHD provides leadership to drive the development of public health plans and policies that are consistent throughout the state but that address local needs. This aligns with Wisconsin Statutes 250 and 251 and Administrative Code DHS 140.

CRCHD Strategic Plan 2016-2020

At the end of 2018, CRCHD completed two and a half years of work on its Strategic Plan. As previously noted, the Strategic Priorities include: 1) Achieve National Public Health Accreditation; 2) Enhance External Communication and Partnerships; 3) Focus Workforce Development on Performance; 4) Align Organizational Programs and Services; and 5) Assure Financial Viability.

2018 Outcome Measures

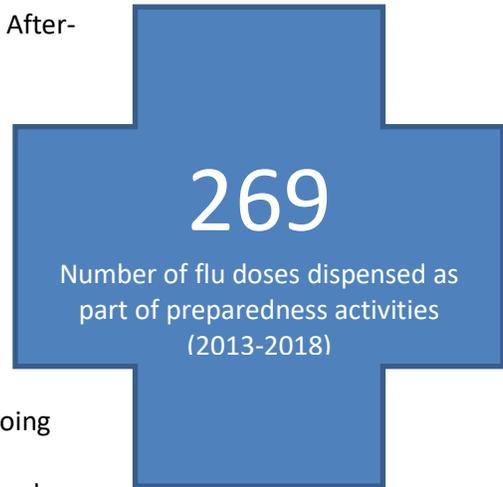
- Completed all 2018 goals for Priority 1: Completed PHAB document submission; updated CRCHD's Quality Improvement (QI) Plan; and updated CRCHD's Performance Management (PM) system.
- Completed all 2018 goals for Priority 2: Implemented a health department branding strategy; implemented a new website to improve awareness of health department priorities and programs; provided outreach and education to the public, operators and policy makers; and began to align community partners working on CHIP priorities.
- Completed all 2018 goals for Priority 3: Revised employee orientation materials; implemented employee Core Competency Assessments; hired staff who are flexible and able to work in change systems; hired staff with ability to meet diversity of needs in service population; assured all staff receive and acknowledge receipt of administrative and programmatic policies as outlined in orientation policies and procedures
- Completed all 2018 goals for Priority 4: Identified efficiencies and areas to streamline work; identified role delineation and duty segregation; updated organizational chart to create responsive, flexible organizational model.
- Completed all 2018 goals for Priority 5: Educated policy makers on need for increased state funding; participated in meetings and policy initiatives promoting public health priorities; sent resolutions and letters to BOH for approval to advance select public health initiatives; advocated for state and federal grants that do not come in silos; identified emerging health concerns such as opioids; and obtained staff and community input to identify mechanisms to pay for emerging health concerns.

Emergency Preparedness

CRCHD strives to ensure that staff can respond effectively to public health emergencies, lessen the negative impact of the emergency, and save lives. A public health emergency may be the result of a bioterrorist act; a biological disease (e.g. influenza, Ebola); a hazmat incident; an adverse weather condition; a long-term power outage; or a contaminated food or water supply. The work performed as part of our emergency preparedness program strengthens our capacity to respond and be prepared. In 2018, CRCHD was required to complete objectives related to emergency public information and warning, information sharing, medical countermeasure dispensing and administration, public health surveillance and epidemiological investigation, community risk planning, and threats spanning chemical, biological, radiological, nuclear, and explosive (CBRNE) events. In fulfillment of these required objectives CRCHD participated in planning meetings and exercises with local, regional and state partner agencies.

2018 Outcome Measures

- Ran a *Fall 2018 Immunization Clinic Exercise* and wrote an After-Action Report/Improvement Plan (AAR/IP).
- Participated in the Milwaukee Metropolitan Statistical Area Exercise Design Team to test public health emergency plans at a regional level.
- Reinforced emergency preparedness concepts and plans among CRCHD staff via the dissemination and completion of monthly emergency preparedness training exercises.
- Tested plans related to internal/external communication, health alerts, volunteer management, and Incident Command structure through a variety of ongoing drills.
- Completed a Hazard Vulnerability Assessment to identify and prepare for potential biological, environmental, and other risks that may impact our jurisdiction.
- Performed an annual review and revision of our emergency preparedness plans i.e. Public Health Emergency Plan (PHEP) and Mass Clinic Plan (MCP).
- Participated in a Racine County Public Information Officer (PIO) workgroup.
- Increased engagement with local, private partners for our closed Point of Dispensing (POD) network.
- Provided contractual emergency preparedness services to City of Racine Health Department.



From CDC.gov

ENFORCE LAWS AND REGULATIONS THAT PROTECT HEALTH AND ENSURE SAFETY

CRCHD works to efficiently and effectively enforce state and local laws and regulations that protect and promote the public’s health. This work aligns with Wisconsin Statutes 250, 251, 254, 255 and Administrative Code DHS 140, 192 and ATCP 72, 73, 75, 76, 78, 79, and SPS 221, 390.

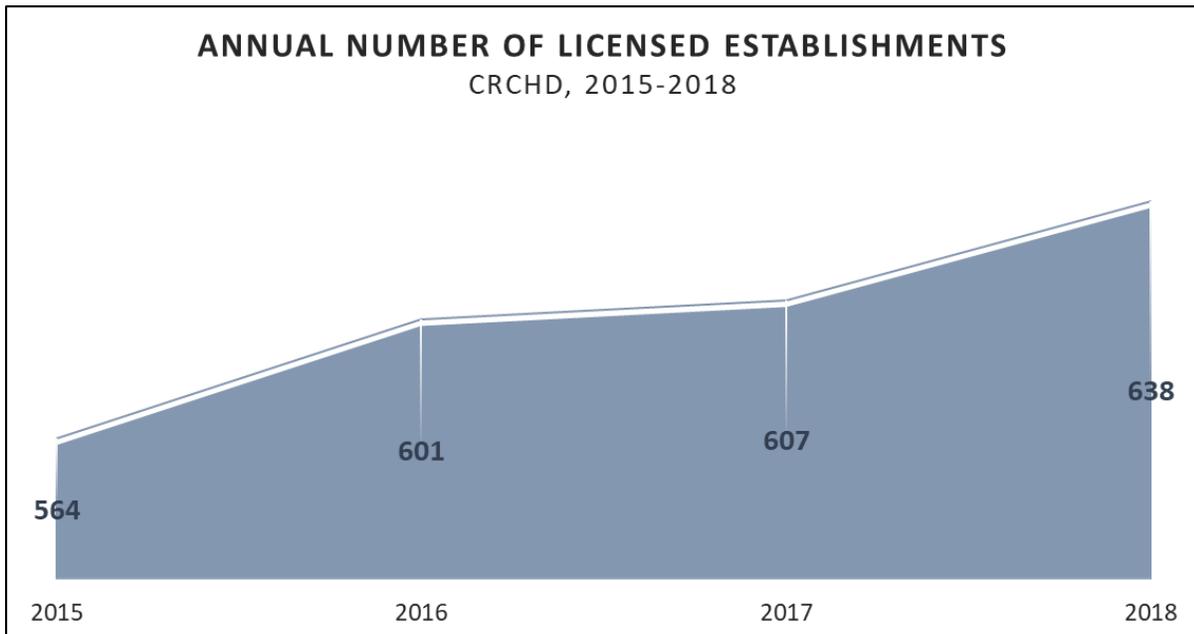
Environmental Health Licensing and Inspections

CRCHD is an agent for the Department of Agriculture, Trade and Consumer Protection (DATCP) and the Department of Safety and Professional Services (DPS). Environmental health staff provide licenses and inspections to the listed establishments. Staff also provide free food safety training classes.

Establishment Type	Total Licenses
	2017-2018
<i>Body Art</i>	5
<i>Campground</i>	5
<i>Restaurant</i>	297
<i>Retail Food</i>	163
<i>Other Food Establishments</i>	8
<i>Hotels/Motels</i>	19
<i>Pools</i>	59
<i>Schools</i>	31
<i>Temporary Restaurants</i>	50
<i>Summer Camps</i>	1
TOTAL	638

2018 Outcome Measures (2017-2018 License Period)

- Licensed 638 establishments.
- Completed a total of 1,277 inspections.
 - Completed 884 routine inspections (includes 124 transient vendor inspections)
 - Completed 69 pre-inspections (includes pre-inspection follow-ups)
 - Completed 224 follow-up inspections and re-inspections
 - Completed 36 on-site inspections for complaints and followed up on 100% of complaints
 - Completed 64 other on-site inspections
- Implemented an online food safety course available on the CRCHD website.



The number of licensed establishments has increase 13% over the past four years.

CRCHD ensures enforcement of local ordinances and state law.

Establishment	Follow-Up Inspections		Trend	Re-inspection (charged)		Trend
	2017-2018	2016-2017		2017-2018	2016-2017	
All Types	201	236	▼	23	15	▲

Excellence Award for Food Facilities

In 2017, Central Racine County Health Department developed a concept to acknowledge food facilities that regularly meet a high standard of food safety by issuing an annual award to these facilities. This award is supported by local food industry committee members as well as the CRCHD Board of Health. Facilities that qualify are licensed as a *moderate complexity restaurant, high complexity restaurant, large potentially hazardous food retail store or small potentially hazardous food retail store*. Certificates are issued after the end of the license year for the previous license year. Facilities meeting the criteria for the award: receive a certificate that they can post at their facility; have their facility posted on the CRCHD website; and receive notice of the CRCHD press release. The stringent award criteria are available at CRCHD. **This award is working as the number of facilities receiving the award doubled from the 2016-2017 license period.** Excellence Award winners for the 2017-2018 license year include:

2017-2018 Excellence Award Winners			
Facility	Location	Facility	Location
A&W*	Caledonia	McKenzie Food Service #2*	Raymond
Arbys*	Caledonia	Milaegers*	8717 Durand Ave., Sturtevant
Burlington HS	Burlington	Noodles & Company	Mount Pleasant
Cooper Elementary	Burlington	North Cape School	Raymond
Evergreen Elementary School	Waterford	Round Table*	2720 W 7-Mile Rd., Raymond
Fountain Hall	Sturtevant	Route 20 Outhouse	Yorkville
Fox River Middle School	Waterford	Skoops	Caledonia
Gifford Elementary School	Caledonia	Speedway	Caledonia
Jellystone Park	Caledonia	Starbucks*	Washington Ave., Mt Pleasant
Kwik Trip*	Durand Ave., Mt. Pleasant	Taco Bell	Mount Pleasant
Kwik Trip	SE Frontage Rd., Mt. Pleasant		

*Repeat winner

Food Safety Classes

In 2017 CRCHD Environmental Health staff developed six video presentations to provide basic food safety information for people and groups who serve food to the public on a limited basis. This includes volunteers of non-profit organizations such as religious, fraternal, youth, or patriotic ones. Operators of temporary food establishments find this information useful as well. People watch all six videos and complete a quiz and provide feedback when done. These videos make food safety available to many more people who serve food to the public.

 CHIP Priority Strategy

2018 Outcome Measures:

- 13 individuals took the online food safety course.
- 2 food safety classes were held at CRCHD.

DNR Well Water Program

In 2013, CRCHD began work as Department of Natural Resources (DNR) agents for public transient non-community well testing in Racine County. *A transient non-community water system is defined as a water system that serves at least 25 people at least 60 days of the year but does not serve the same 25 people over 6 months of the year.* The program requires annual testing for bacteria and nitrate, annual site assessment, and a sanitary survey every 5 years.

2018 Outcome Measures:

- Tested 150 wells for bacteria, nitrate and nitrite.
- Completed 120 annual site assessments.
- Completed 32 sanitary surveys.
- Addressed 30 wells with deficiencies.

Animal Bite/Rabies Investigations

CRCHD continues to investigate all animal bites to ensure the animal is not rabid and the bite victim has not been exposed to rabies. Rabies investigations take a large amount of time with many phone calls and detailed follow-up required to complete an investigation.

2018 Outcome Measures:

- Conducted 184 rabies investigations, down 7% from 2017.

Investigation	Bat	Cat	Dog	Raccoon	Skunk	Other	Total
Number	6	53	112	2	0	11	184
Percentage	3%	29%	61%	1%	0%	6%	100%

Beach Water Monitoring

Beaches monitored in the CRCHD jurisdiction include Bohners Lake (Aukes, Leach and Public Beaches), Fischer Park Beach, North Bay Parkway Beach, and Quarry Lake Park Beach. CRCHD works with partner agencies who ensure the water is tested at these beaches on a regular basis. Results are then posted on the CRCHD website as well as at the beaches. Beach water quality testing is done to advise swimmers when conditions exist that may lead to illness. Pollution in beach water may be higher during and immediately after rainstorms because surface water draining into the beach may include run-off from the areas surrounding the beach. For this reason, swimmers should always use caution after a rain event. Beach water is tested for the presence of E. coli.

2018 Outcome Measures:

- Posted “Good” signage when the beach water samples met the guidelines from the Environmental Protection Agency (EPA) for safe beach water quality. The water was safe to swim in.
- Posted “Caution” signage when the levels of E. coli in the beach water samples were elevated above the EPA’s “Good” level but not high enough to close the beach to swimming. If the “Caution” sign was posted, swimmers were instructed to make sure that they and their children followed these precautions: 1) Don’t swallow the lake water; 2) Shower after swimming; and 3) Wash hands before eating.
- Posted “Closed” signage when the levels of E. coli in the beach water samples exceeded the EPA’s guidelines for safe swimming water. The water was not safe to swim in.
- Posted **9 Caution** and **5 Closed** signs throughout the 2018 beach season.

LINK PEOPLE TO NEEDED HEALTH SERVICES AND ASSURE THE PROVISION OF HEALTHCARE WHEN OTHERWISE UNAVAILABLE

CRCHD provides education and outreach as well as referrals, care coordination, and other services that promote health. Staff assist people to better use public health and health care services to which they have access, and ensure culturally and linguistically appropriate services are provided. This aligns with Wisconsin Statutes 250, 251, 253 and 255 and Administrative Code DHS 140, 142, 144, 145, 146.

Healthy Families America (HFA) Model Home Visiting Programs

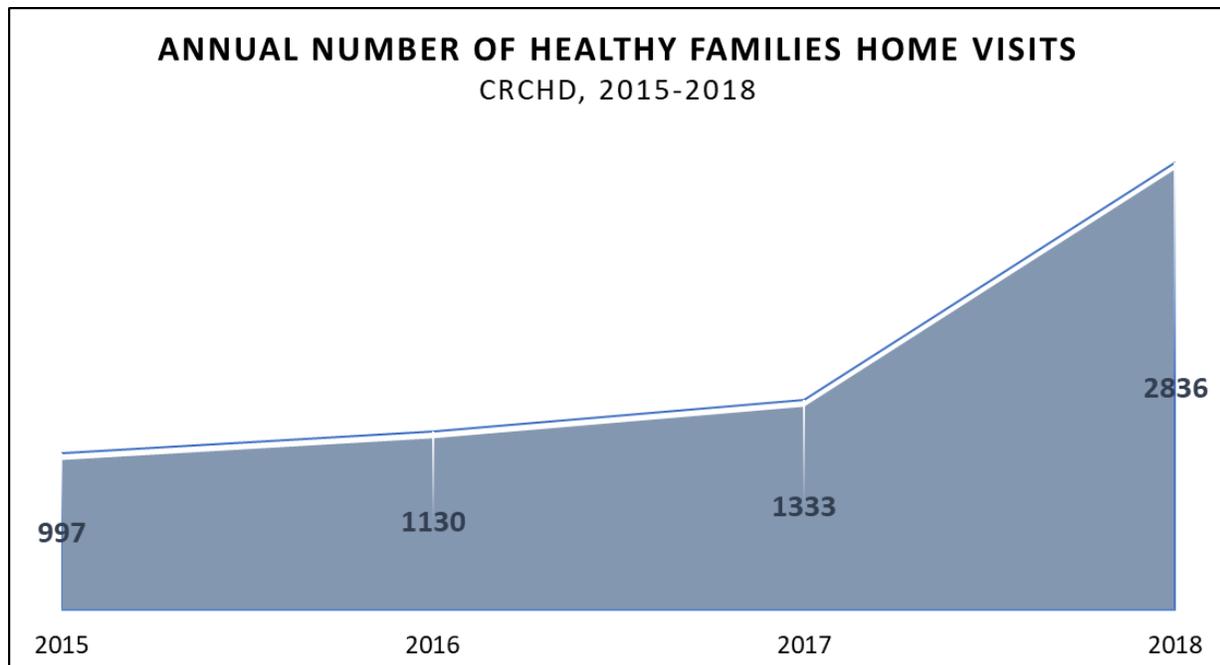
CRCHD receives several grants to provide comprehensive home visitation programs using Healthy Families America (HFA) evidence-based model and Growing Great Kids curriculum. Of importance, CRCHD is a nationally accredited HFA home visiting program, the first public health department in the state to become one. HFA is a signature program of Prevent Child Abuse America that has been providing home visiting services for more than 20 years. Expectant and new parents have common questions about their child's development and HFA staff connects with families to find the answers to their questions and set meaningful goals while meeting within the familiarity and convenience of the family's own home. HFA is an accessible, voluntary and well received service.  **CHIP Priority Strategy**

Family Foundations Home Visiting (FFHV)

Open to all Racine County residents, Family Foundations Home Visiting is a partnership between CRCHD and Racine County Human Services Department. Program goals include: improving birth outcomes and maternal health; providing service coordination and referrals; and improving child safety, health and development.

2018 Outcome Measures (2017-2018 grant cycle)

- Provided 2202 home visits (up 150% from 2017) for 179 families (up 43% from 2016/2017).
- Funded by Wisconsin Department of Children and Families with Racine County Human Services Department as lead agency.



Racine Healthy Babies (RHB)

RHB program supports home visits for pregnant or parenting women who have had a previous preterm birth, low birth weight birth, fetal loss or infant death and pregnant or parenting African American women who have not had a previous loss. Goals include: utilizing innovative approaches to reduce poor outcomes; improving maternal health and family functioning; and promoting child health, safety and growth.

2018 Outcome Measures (2017-2018 grant cycle);

- Provided 634 home visits (up 40% from 2017) for 59 families.
- Funded through Wis. Stats. 253.16 with Racine County Human Services Department as lead agency.

Family Connects Model Home Visiting Program

Family Connects Racine County

In 2017 *Family Connects Racine County* was implemented as a new, community-wide nurse home visiting program. Program services are for all parents of newborns in Racine County and visits are tailored to meet each family's needs. Nurses provide between one and three home visits to families with a newborn beginning at about three weeks of age, regardless of income or demographics. Having a new baby affects many areas of a family's life. Family Connects nurses are trained to answer all kinds of questions and are knowledgeable about the wealth of resources in the community. Nurse home visitors offer supportive guidance, respond to family questions about newborn care, and help bridge the gap between parent needs and community resources. Family Connects Racine County supports parents by bringing health providers, community resources and families together. Participation is voluntary and at no charge, and open to all Racine County families who have just given birth.  **CHIP Priority Strategy**

2018 Outcome Measures:

- Provided home visits for 474 families.
- Funded by United Way of Racine County and Racine County Human Services Department.

School and Daycare Immunization Compliance Program

CRCHD staff work closely with school districts and daycare centers to assure school age children are in compliance with the Wisconsin State Immunization Law.

2018 Outcome Measures:

- Tracked school and daycare compliance rates for all schools (N=39) and daycares (N=55) in the jurisdiction.

Population-Based Immunization Compliance Program

Funded by state grant dollars, this program works to increase immunization rates of all children in the jurisdiction, regardless of provider.

2018 Outcome Measures:

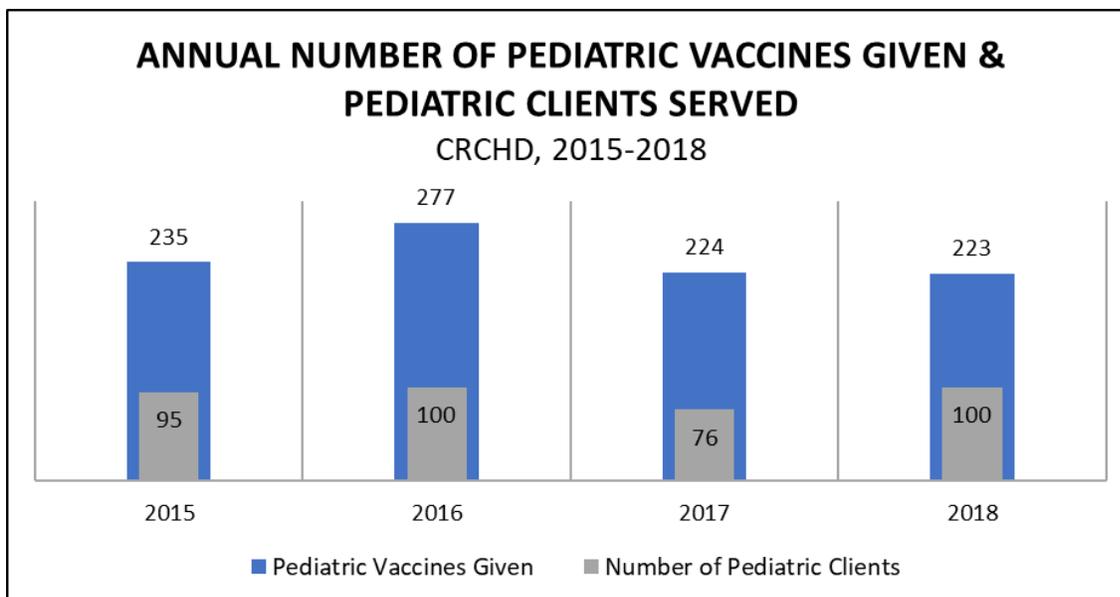
- Helped ensure that 78% of children residing in Racine County who turned 24 months of age during the year were up-to-date on their immunizations; coordinated immunization surveillance by sending 741 reminder/recall letters to residents.
- Provided immunization information to 616 families in a new baby packet.

Childhood Immunization Program

Through the federal Vaccines for Children Program (VFC), CRCHD receives free childhood vaccines to ensure that children receive and remain up to date on vaccinations. Since 2012, health departments may only use VFC vaccine for those who are underinsured, uninsured, or on Medicaid/Badgercare.

2018 Outcome Measures:

- Provided 223 pediatric vaccines to 100 pediatric clients (up 32% from 2017) (includes 73 pediatric influenza shots).
- Monitored clinic utilization as well as overall vaccine coverage rates.



Adult Services Program

CRCHD provides an Adult Services Program which includes blood pressure screenings, administration and reading of tuberculin skin tests, and some adult vaccinations.

2018 Outcome Measures:

- Provided 19 adult vaccinations (down 32% from 2017), excluding seasonal influenza, for 10 clients (down 55% from 2017).
- Tdap vaccine accounted for 47% of adult vaccinations given.
- Provided 83 adult seasonal influenza vaccinations through private vaccine purchase.
- Administered 70 tuberculin skin tests (down 16% from 2017) and provided blood pressure checks as needed.

Welcome Baby Packets

CRCHD mails Welcome Baby Packets to all families in the jurisdiction with a newborn child to provide education and ensure linkages to resources and healthcare.

2018 Outcome Measures:

- Mailed 616 Welcome Baby Packets that included information on lead poisoning, immunizations, home visiting, child safety, books, and a quick list of resources for families.

ASSURE COMPETENT PUBLIC AND PERSONAL HEALTH CARE WORKFORCE

CRCHD supports efforts to improve the quality, quantity and diversity of health professionals. We promote the development of professional education strategies and programs that address local health needs. Cultural and public health competencies are hallmarks of our training. This work aligns with Wisconsin Statutes 250, 251 and 252 and Administrative Code DHS 139 and 140.

Workforce Development Plan

CRCHD's Workforce Development Plan works to ensure a systematic process is in place for CRCHD professional staff to identify individual competency strengths and areas for improvement and to institute actions to fulfill improvements. This ensures that employees are using a continuous quality improvement process to enhance their skill sets. The Plan supports employee training, flexibility, and recognition. Components of the Plan are enumerated below.

Public Health Core Competency Development and Training

CRCHD utilizes the Council on Linkages Core Competencies for Public Health Professionals as the benchmark for basic skills required of all CRCHD professional employees. The Core Competencies address the following key dimensions of public health practice:

1. Analytic/Assessment
2. Policy Development & Program Planning
3. Communication
4. Cultural Competency
5. Community Dimensions of Practice
6. Public Health Sciences
7. Financial Planning and Management
8. Leadership and Systems Thinking

Professional Development

CRCHD supports the continued growth and development of its workforce to ensure competent employees who can meet the needs of its ever-changing work environment. Outlined below are opportunities for professional development at CRCHD:

- Conferences sponsored by professional organizations.
- Continuing education related to maintaining professional licensure/certification.
- Training opportunities for employees related to nationally recognized core competencies.
- Serving as a clinical site for employees pursuing higher education.

Work/Life Balance

CRCHD leadership strives to create a positive and supportive work environment that is conducive to work/life balance. This is accomplished by:

- Implementation of a flexible scheduling policy for home visiting employees, which allows employees to propose non-traditional work schedules.
- Allowing casual Fridays throughout the year.
- Support for breastfeeding moms.

Employee Recognition

CRCHD has an Employee Recognition Policy and Procedure that serves to encourage and recognize outstanding job performance.

Qualified Health Professionals

CRCHD employees must meet job and statutory requirements, and all licensed professional are required to provide a copy of their Wisconsin State Licenses. Information is verified with the state at the time of hire and thereafter. CRCHD employs an array of qualified staff (listed below and not mutually exclusive).

2018 Outcome Measures:

- 3 Master's prepared managers (MPH, MS, MSN).
- 2 Bachelor's prepared and credentialed managers (RS and BBA).
- 3 Registered Sanitarians (RS).
- 14 Registered Nurses (RN).
- 2 Epidemiologists (MPH).
- 2 Certified Health Education Specialists (CHES).
- 29 Bachelor's prepared staff.
- All staff completed 7 required trainings.
- 31 staff attended 101 trainings as required by their positions and/or a grant (~3/person).

Linkages with Academia

CRCHD has strong linkages with numerous institutions of higher education and serves as a site for student placement, observation, practice experience and internship.

2018 Outcome Measures:

- Maintained agreements with local universities and hosted a UWM graduate student.
- Worked with University of Wisconsin Milwaukee academic partners for technical assistance and evaluation.



Linkages with Healthcare

CRCHD maintains strong relationships with local healthcare systems to provide quality staff, programs, and services. Through partnerships, CRCHD identified education and training needs as well as opportunities for developing core public health competencies.

2018 Outcome Measures:

- Maintained Dr. Mark DeCheck as Medical Advisor for the CRCHD.
- Member of Advocate Aurora Health Community Steering Councils.
- Collaborated with Ascension All Saints for home visiting services and program evaluation.

Linkages with School Systems

CRCHD has strong relationships with local school systems, including administrators, school nurses, social workers and other professional staff, to provide collaborative programs and services.

EVALUATE EFFECTIVENESS, ACCESSIBILITY AND QUALITY OF INDIVIDUAL AND POPULATION BASED HEALTH SERVICES

CRCHD regularly evaluates our performance, processes and outcomes to provide information necessary to define accountability, allocate resources, and reshape policies and services. We see performance management and quality improvement as methods to explore and address more effectively the root causes of issues. This aligns with Wisconsin Statutes 250 and 251 and Administrative Code DHS 140.

Performance Management Plan

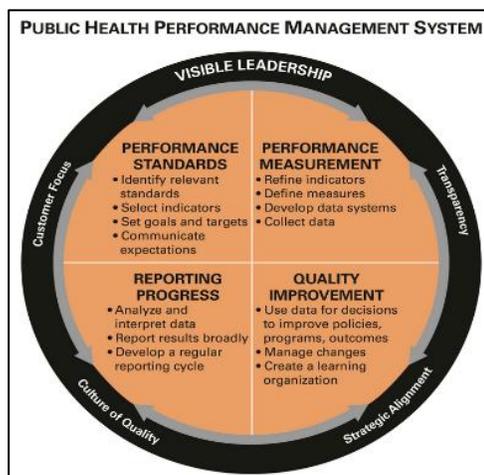
Performance management identifies actual results against planned or intended results. A performance management system ensures that progress is being made toward department goals by systematically collecting and analyzing data, tracking results, and identifying opportunities for improvement. This system is rooted in the mission of CRCHD. In the spirit of accountability and continuous quality improvement, CRCHD has chosen to develop a comprehensive Performance Management System to systematize and institutionalize all planning, monitoring, measurement, and improvement efforts.

The programmatic areas which are individual components of the Performance Management System include:

- Community Health Program
- Home Visiting
- Environmental Health
- Administration
- Emergency Preparedness

The CRCHD Performance Management System:

- Assesses progress toward meeting strategic priorities.
- Assesses progress toward meeting CHIP priorities.
- Assesses progress toward meeting program goals and objectives.



Quality Improvement Plan

Quality improvement is an element of performance management that uses processes to address specific targets. The purpose of the CRCHD Quality Improvement Plan is to improve the health of the communities we serve by understanding and improving the efficiency, effectiveness and reliability of public health processes and practices. Quality Improvement principles are integrated throughout programs and services provided by CRCHD.

2018 Outcome Measures:

- 10 QI projects worked on in 2018 (2 Administration, 1 Environmental Health, 2 Community Health, and 5 Home Visiting).

RESEARCH FOR NEW INSIGHTS AND INNOVATIVE SOLUTIONS TO HEALTH PROBLEMS

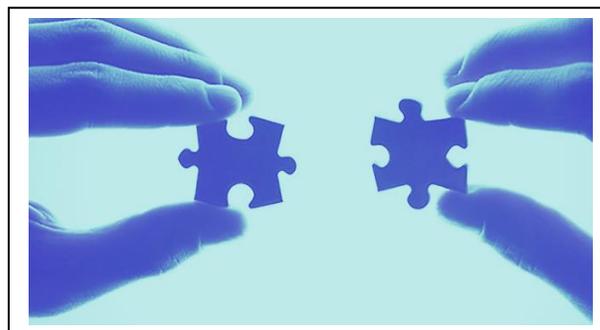
CRCHD develops partnerships with institutions, colleges, vocational/technical schools, and universities to broaden the range of public health research. We work to conduct scientific analysis of public health issues and engage in testing of innovative solutions at the local level. This aligns with Wisconsin Statutes 250, 251, and 252 and Administrative Code DHS 139 and 140.

Partnerships for Research and Innovation

CRCHD partners with many agencies and programs to further public health innovation and research in the jurisdiction and the state. While many of these partnerships have already been enumerated in the previous Essential Services, they are important enough to the health of the community to recount here. Partnerships and innovations include, but are not limited to the following:

2018 Outcome Measures:

- Partnered with schools, long-term care facilities, daycares, and healthcare systems.
- Collaborated with Ascension All Saints regarding home visiting services.
- Initiated collaboration with Advocate Aurora Health regarding home visiting services.
- Collaborated with City of Racine Health Department and Racine Unified School District for consistent communicable disease messaging to students, families and staff.
- Worked with school districts and daycare centers to assure immunizations for children.
- Provided contracted services for City of Racine Health Department for emergency preparedness, cities readiness initiative, and fetal, infant and child death review (FICDR) services.
- Participated in the Home Visiting Collaborative Improvement and Innovation Network (HVCollIN) in an advisory capacity.
- Participated in state emergency preparedness work groups.
- Developed a new Racine County Overdose Fatality Review team comprised of multi-sectoral agencies.
- Partnered with government, hospital and other agencies to grow the Racine County Home Visiting Network and support an ongoing system of healthcare linkages for home visitation.
- Led the Racine County FICDR team comprised of multi-sectoral agencies.
- Worked with United Way of Racine County and Racine County Human Services Department to implemented *Family Connects Racine County (FCRC)*, an evidence-based, short-term home visiting program.
- Implemented a trauma screening protocol called T-SBIRT, developed by UWM academic partners.
- Collaborated with many agencies to promote medication collection boxes and events.
- Contracted with DATCP and DSPS for licensing and inspections and DNR for well testing.
- Contracted with WI DHS for immunization, maternal child health, emergency preparedness, cities readiness initiative, prevention, and lead grant work.
- Collaborated with local law enforcement on animal control/rabies investigations.
- Participated on many collaboratives and coalitions.

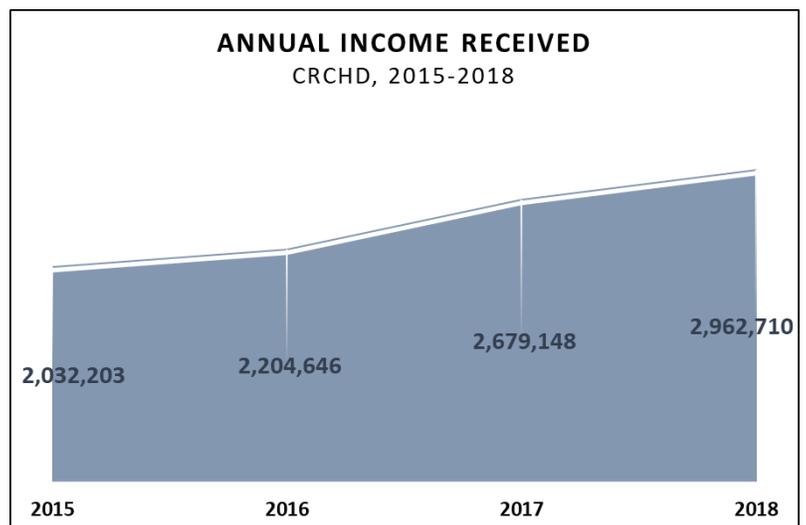
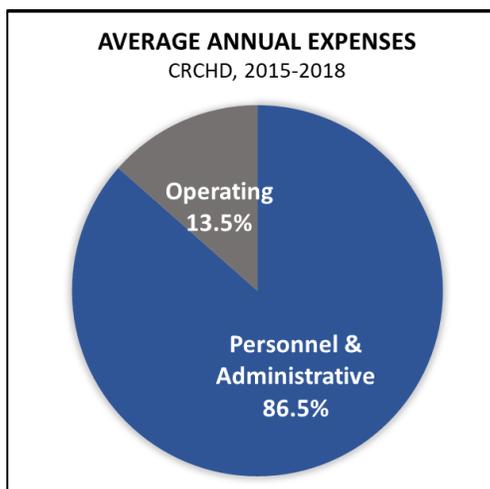
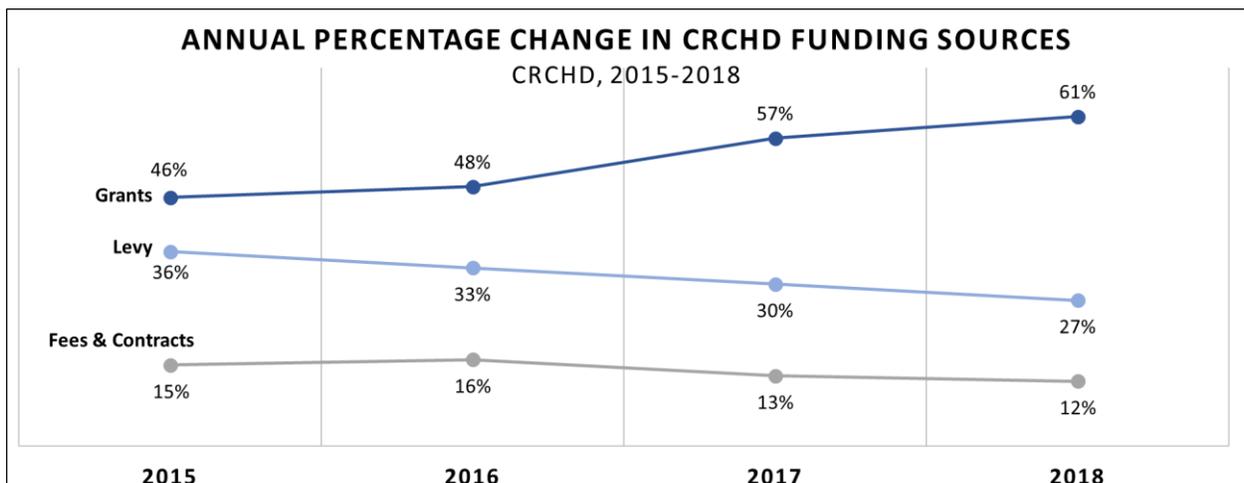


2018 BUDGET SUMMARY

CRCHD staff presented a balanced budget to Board of Health in August of 2017. The goal for the budget was to keep the municipal levy contribution as low as possible without harming delivery of programs and services. **Each year CRCHD has one of the lowest levels of per capita municipal funding in the state, about half the state average for a local health department.** In addition, the proportion of the budget made up of levy funding has decreased 25% from 2015-2018.

2018 Outcome Measures:

- Revenues increased by 11%, with 96% of the increase from additional grant funding, service fees and contracted services. The remaining increases were due to population changes in the jurisdiction and average new growth of 1.25 percent. The levy contribution was \$7.13 per capita.
- Total revenue (unaudited) amounted to \$2,962,710.
- Eighty-nine percent (89%) of 2018 budgeted expenses were for personnel-related expenditures.



ASSURE COMPETENT WORKFORCE

Workforce Development Plan

- Identified workforce competencies and strengths

Qualified Public Health (PH) Professionals

- 3 Master's prepared managers (MPH, MS, MSN)
- 2 Bachelor's prepared and credentialed managers (RS and BBA)
- 3 Registered Sanitarians (RS)
- 14 Registered Nurses (RN)
- 2 Epidemiologists (MPH)
- 2 Certified Health Education Specialists (CHES)
- 29 Bachelor's prepared staff
- All staff completed 7 required trainings
- 31 staff attended 101 trainings as required by their positions and/or a grant (~3/person)

Linkages with Academia, Healthcare & Schools

- Maintained MOUs with Wisconsin colleges and universities to precept students
- Maintained Dr. Mark DeCheck as Medical Advisor
- Continued a system of healthcare linkages
- Partnered with 2 hospital systems
- Maintained strong relationships with local schools

EVALUATE EFFECTIVENESS

Performance Management & Quality Improvement

- Implemented performance measures for all programs
- Implemented 10 Quality Improvement projects

RESEARCH NEW SOLUTIONS

CRCHD partners with many agencies and programs ranging from healthcare, schools, and businesses to municipalities, coalitions, colleges and universities in order to further public health innovation and research

2018 BUDGET SUMMARY

- Came in on budget in 2018
- Developed a budget at \$7.13 per capita levy
- Received revenues of \$2,962,710 (27% levy, 12% fees and contracts, and 61% grants)
- 89% of budgeted expenses were for personnel
- One of least-funded local health departments in WI

Central Racine County
Health Department
10005 Northwestern Ave
Franksville, WI 53126
Phone: (262) 898-4460
Fax: (262) 898-4490

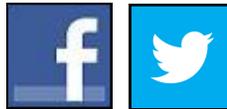
Office Hours:
Monday — Friday
8:00 AM — 4:30 PM

STAFF Health Officer

Community Health Director
Assoc. Community Health Director
Public Health Nurse
Public Health Educator
Epidemiologists
Community Health Supervisor
Home Visiting Supervisors
Public Health Nurses—Home Visitors
Public Health Educators—Home Visitors

Environmental Health Director
Registered Sanitarians
Public Health Specialist

Fiscal Director
Senior Public Health Technician
Public Health Technician
Contract staff



Central Racine County
Health Department

www.crchd.com



2018 ANNUAL REPORT HIGHLIGHTS

Central Racine County
Health Department

Serving Caledonia, Dover,
Mount Pleasant, North Bay, Norway,
Raymond, Rochester, Sturtevant,
Union Grove, Yorkville,
Town and Village of Waterford,
Town and City of Burlington

YEAR IN REVIEW

In 2018 CRCHD maintained a laser focus on our core functions of assurance, assessment and policy development while concurrently pursuing national public health accreditation and ensuring delivery of required and novel programs and services. Highlights for 2018 include:

- Developed the *CRCHD Community Health Improvement Plan 2018* (CHIP) in conjunction with community partners to identify priority health issues. This process identified mental health, substance abuse, chronic disease and healthcare access as significant community concerns and areas for community improvement.
- Submitted 550+ documents to the Public Health Accreditation Board (PHAB) in advance of a 2019 site visit, as examples of CRCHD work meeting national public health standards.
- Became part of the *Kenosha/Racine Lead-Free Communities Partnership*, with Kenosha County as lead agency to implement a lead hazard reduction grant from the U.S. Department of HUD.
- Convened a workgroup to look at an increase in childhood drownings in Racine County; held 2 community listening sessions and provided for free swimming lessons at the new S C Johnson Community Aquatic Center and the Burlington Community Aquatic Center.
- Received a new Overdose Fatality Review team grant to better identify the underpinnings of overdose deaths and translate findings from the review process into prevention recommendations and strategies.
- Ran a *Fall 2018 Immunization Clinic Exercise* to ensure we are prepared for any public health emergency.
- Continued to provide innovative, population-based and directed programs for new families in Racine County.
- Created a new organizational chart to enhance alignment with programs and services.
- Continued work on *CRCHD 2016-2020 Strategic Plan*.
- Implemented all work related to our required and value-added programming and services.

CRCHD work continues to focus on the health of entire communities because health and health inequities are driven primarily by where people live, work, learn and play. Public health is a community endeavor, so many thanks to the great CRCHD staff, a supportive and strong Board of Health, and all our government and community partners, for your hard work, collaboration and support.

MONITOR HEALTH STATUS

Systematic Data Collection, Analysis and Dissemination

- Developed *CRCHD Community Health Improvement Plan 2018* with community partners, utilizing *CRCHD 2017 Community Health Assessment* data.

INVESTIGATE HEALTH PROBLEMS

Communicable Disease (CD) and Sexually Transmitted Disease (STD) Control

- Conducted 406 investigations (22%↑) of confirmed/probable CDs and 402 investigations of suspect CDs
- Conducted 360 investigations of confirmed/probable STDs (2%↑) and 6 investigations of suspect STDs

Disease Outbreak Investigations

- Responded to 26 CD outbreaks (8%↑)

Mosquito Surveillance

- Helped provide surveillance for the invasive tiger mosquito and potential Zika vector, *Aedes albopictus*

Human Health Hazards (HHH) Investigations

- Conducted 188 HHH investigation interventions (18%↓)

Lead Hazard Investigations

- Identified/tracked 1,217 child blood lead tests (14%↑)
- Contacted 16 kids with lead levels ≥ 5 ug/dL; no children had lead levels requiring a lead hazard investigation

INFORM PEOPLE OF HEALTH ISSUES

Car Seat Education and Installation

- Evaluated 162 car seats for proper installation (72%↑)

Cribs for Kids and Safe Kids & Safe Sleep Education

- Provided 110 (36%↑) low-cost cribs to families
- Educated 986 community members on safe sleep

Radon Testing

- Sold 209 radon test kits to residents (16%↓)

Well Water Testing

- Provided 31 well water test kits to residents

Community Information and Public Outreach

- Provided 436 targeted communications to media, healthcare providers, policy makers, and residents via newsletters, press releases, website updates, Facebook, healthcare provider distributions, and ads
- Presented at community events and education sessions
- Provided regular public health updates to Board of Health

MOBILIZE COMMUNITIES

Fetal, Infant & Child Death Review

- Led the team to identify prevention efforts

Overdose Fatality Review

- Wrote for and received a new grant for a review team

Medication Collection

- Collected 4832 lbs. at medication boxes and events

PLAN TO SUPPORT HEALTH

CRCHD Strategic Plan 2016-2020

- Completed 2018 goals for all 5 strategic priorities

Emergency Preparedness (EP)

- Revised public health EP plans
- All staff completed monthly EP training exercises
- Ran a Fall Immunization Exercise

ENFORCE PUBLIC HEALTH LAWS

Environmental Health Licensing and Inspections

- Completed 1,277 inspections, which included 638 licensed establishments and 124 transient vendors
- Saw 100%↑ in Food Facility Excellence Award winners
- Provided in-person and online food safety training

DNR Well Water Program

- Tested 150 wells, conducted 120 annual site reviews, and 32 sanitary surveys for DNR well program

Animal Control/Rabies Investigations

- Conducted 184 rabies investigations

Beach Water Monitoring

- Ensured beach and website signage for public beaches

LINK PEOPLE TO HEALTH SERVICES

Home Visitation Programs

- Completed 3,310 home visits (128%↑) for 712 families (133%↑) using HFA model programs
- Provided home visits for 474 families as part of the postpartum *Family Connects Racine County* program

Immunization Program & Immunization Compliance

- Provided 223 vaccines to 100 (32%↑) pediatric clients
- Tracked school (n=39) and daycare compliance (n=55)

Adult Services Program

- Provided 102 adult vaccinations
- Administered 70 tuberculin skin tests (16%↓)



COMMITTEE OF THE WHOLE

ITEM NUMBER 4B

DATE: March 19, 2019

SUBJECT: PRESENTATION - A presentation from the Burlington Area Chamber of Commerce regarding their Annual Report.

SUBMITTED BY: Diahnn Halbach, City Clerk

BACKGROUND/HISTORY:

Jeff Koenen and Jan Ludtke of the Burlington Area Chamber of Commerce will be in attendance to present the Room Tax Report, 2018 Year in Review, and goals for 2019.

BUDGET/FISCAL IMPACT:

n/a

RECOMMENDATION:

This item for discussion only.

TIMING/IMPLEMENTATION:

This item is for discussion at the March 19, 2019 Committee of the Whole meeting.



DATE: March 19, 2019

SUBJECT: RESOLUTION 4940(42) - To approve Change Order Number 1 for Well #11 Radium Compliance Improvements.

SUBMITTED BY: Peter Riggs, Director of Public Works

BACKGROUND/HISTORY:

The City of Burlington took action to remediate radium compliance issues at Well #11 through construction of a water softening system. This work was awarded to Butters Fetting Co, Inc. in February of 2017 for a cost of \$847,500. Baxter & Woodman served as the City's engineering consultant and project manager for this project. Construction began in June 2017 and the well was placed back into service in April of 2018. All aspects of the project have been completed. Water quality sampling complete thus far are compliant with regulations and the treatment is effective.

Change Order #1 contains work tasks in excess of the provisions of the contract with Butters Fetting that were completed. These items include additional paving, additional pipe and interior painting, and electrical modifications for the treatment system and piping. The total cost of Change Order #1 is \$19,928.70. These changes were necessary for the use, protection, and effective operation of the Well and the softening system.

BUDGET/FISCAL IMPACT:

The City was awarded a Safe Drinking Water Loan in the amount of \$1,054,675.00 to fund this project. The project came in under the expected bid amount at \$847,500.00. The total cost to complete the project, including Change Order Number 1, is \$867,428.70. The remaining Safe Drinking Water Loan dollars will reduce the debt versus being able to expend the remaining dollars on another project. Dollars from the Safe Drinking Water Loan are unable to be reallocated.

RECOMMENDATION:

Baxter & Woodman and City staff negotiated with Butters Fetting regarding the items included in Change Order Number 1. Change Order Number 1 is a compromise from the initial contractor request and is agreeable to the contractor and staff. Staff and Baxter & Woodman recommend approval of Change Order Number 1.

TIMING/IMPLEMENTATION:

This item is scheduled for discussion at the March 19, 2019 Committee of the Whole Meeting and due to timing requirements for the Safe Drinking Water Loan close out, is scheduled for final consideration at this evening's Common Council Meeting .

Attachments

RES 4940(42) Change Order #1 for Well 11
Change Order Number 1

**A RESOLUTION APPROVING CONTRACT CHANGE ORDER NUMBER ONE
WITH BUTTERS FETTING CO, INC. FOR AN INCREASE IN THE CONTRACT IN
THE AMOUNT OF \$19,928.70**

WHEREAS, Resolution 4833(52) approved the award of the bid to Butters Fetting Co, Inc. for the Well #11 Radium Compliance Improvement Project for the Lump Sum Bid of \$847,500; and,

WHEREAS, the City of Burlington entered into a contract with Butters Fetting Co, Inc. for said improvements; and,

WHEREAS, during the course of work it was determined that a change was necessary to the planned asphalt paving portion of the project, expanded painting of pipes and well house interior, modifications to electrical plan, and cash allowance differential; and,

WHEREAS, said Change Order Number One for an amount of \$19,928.70 has been recommended for approval by the Engineer (Baxter & Woodman, Inc.) and the Director of Public Works; and,

NOW, THEREFORE, BE IT RESOLVED by the Common Council of the City of Burlington that Change Order Number One is hereby approved for an increase in the amount of \$19,928.70.

BE IT FURTHER RESOLVED that the City Administrator is hereby authorized and directed to execute Change Order Number One on behalf of the City.

Introduced: March 19, 2019
Adopted:

Jeannie Hefty, Mayor

Attest:

Diahn Halbach, City Clerk

CHANGE ORDER NO. 1

PROJECT: Well 11 Radium Compliance Improvements

DATE OF ISSUANCE: January 31, 2019

OWNER: City of Burlington
300 N. Pine Street
Burlington, WI 53105

ENGINEER: Baxter & Woodman, Inc.
256 South Pine Street
Burlington, WI 53105

CONTRACTOR: Butters-Fettig Co. Inc.
1669 S. 1st Street,
Milwaukee, WI 53204-2999

ENGINEER's Project No. 140318.60

Description: See the attached summary.

CHANGE IN CONTRACT PRICE:

Original Contract Price: \$847,500.00

Previous Change Orders:
No. - to No. - \$0.00

Current Contract Price: \$847,500.00

Net Increase of this Change Order: 19,928.70

Contract Price with this Change Order: \$867,428.70

CHANGE IN CONTRACT TIME:

Original Contract Time:
Substantial Completion: February 25, 2018
Completion: March 27, 2018

Change from previous Change Orders: None

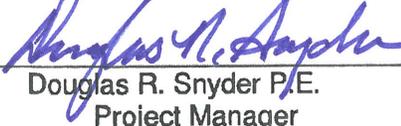
Current Contract Time:
Substantial Completion: February 25, 2018
Completion: March 27, 2018

Net increase of this Change Order: None

Contract Time with this Change Order:
Substantial Completion: February 25, 2018
Completion: March 27, 2018

PREPARED BY:

Baxter & Woodman, Inc

By 
Douglas R. Snyder P.E.
Project Manager

APPROVED:

City of Burlington, WI

By _____
Jeanie Hefty
Mayor

ACCEPTED:

Butters-Fettig Co., Inc.

By 
Edward L. Tonn, Jr.
President

Change Order No. 1 Summary
City of Burlington
Well 11 Radium Compliance Improvements
January 30,2019

Item #	Attachment	Description	Proposed Cost	Bid Amount
		Cash Allowances		
1	Yes	Submittal Exchange	\$2,195.00	\$2,500.00
2	Yes	Water Sampling Station	\$5,261.76	\$5,000.00
3	Yes	SCADA Integration	\$30,436.00	\$30,000.00
		Subtotal =	\$37,892.76	\$37,500.00
		5% Mark-up on the Difference =	\$19.64	
		Non Cash Allowances		
4	Yes	Driveway Addition 373 SY *\$22/SY + 5% Markup - See Work Directive 1/Sketch	\$8,616.30	
5	Yes	Additional Painting -- Building Interior - 6 man days plus markup	\$4,800.00	
6	Yes	Additional Painting - Existing Piping - 6 man days plus markup	\$4,800.00	
7	Yes	Electrical Modifications - Connection to the Meter	\$1,300.00	
Totals =			\$57,428.70	\$37,500.00
Change Order Amount			\$19,928.70	



DATE: March 19, 2019

SUBJECT: **RESOLUTION 4941(43)** - To approve a Work Order with Baxter & Woodman, Inc. for the Preparation of an Adaptive Management Plan.

SUBMITTED BY: Peter Riggs, Director of Public Works

BACKGROUND/HISTORY:

The City of Burlington is permitted by the Wisconsin Department of Natural Resources (WDNR) through the Wisconsin Pollution Discharge Elimination System (WPDES) to own and operate the wastewater treatment plant. Part of this permitting requires compliance with limits on the effluent discharged from the plant, specifically phosphorous. WDNR requires a series of reports to show permit holders are evaluating how to become complaint with phosphorous limits, and then ultimately requires that they choose a path to achieve compliance as part of permit renewal. WDNR will then monitor progress towards compliance throughout the permit term. Baxter & Woodman has assisted the City with these reports and is in the process of preparing the Final Compliance Alternatives Plan and WPDES permit renewal. The alternative identified in these reports as the most viable solution for the City will be included in the new WPDES permit. The permit will commit the City to a method for achieving compliance with phosphorous discharge requirements for the term of the permit. The City's options are as follows:

OPTION 1:

Generally, the most expensive, and therefore least desirable, option would be a treatment plant upgrade. A plant upgrade is estimated to cost between \$8.1 and \$15.2 million depending on the treatment process. In addition these upgrades carry \$275,000 in increased annual operating costs. If this option were to be selected a consultant would be needed to prepare plans for the project. Those costs would be accounted for in the 2020 Budget. Throughout the evaluation process, staff and Baxter & Woodman have sought to find options other than a construction solution.

OPTION 2:

The most likely alternatives to a plant upgrade initially included the Mutli-Discharger Variance (MDV) and Adaptive Management. MDV allows permit holders that meet certain criteria to pay a per pound fee for the phosphorous they discharge. MDV is an attractive option because the costs are significantly less than a plant upgrade and it is a simple program to administer. Unfortunately, it has been determined by Baxter & Woodman and WDNR that the City is not eligible for MDV.

OPTION 3:

Adaptive Management allows point source dischargers to perform water quality improvement projects in their discharge watershed instead of only focusing on treating effluent. This allows permit holders to find less costly ways to keep phosphorous out of waterways. These projects can take many forms, but all are focused on keeping phosphorous out of the watershed. Typical projects could include shoreline stabilization, vegetative buffers, and cover crop installation.

These projects occur within the watershed and are not confined to municipal boundaries or publicly owned lands. This can be a difficult concept for Wastewater Utilities and local governments to embrace as it involves investment of wastewater rate payer funds to perform projects outside of the sanitary service area and municipal boundaries. These concerns are offset by often dramatic cost savings by not having to construct a treatment plant upgrade.

The Burlington Wastewater Utility is eligible for Adaptive Management. Staff along with Baxter and Woodman met with representatives from WDNR to discuss the viability of Adaptive Management in our discharge watershed. The requirements of the permit are attainable and there are ample projects, including some within the municipal limits on publicly owned property. In addition, significant work has already been performed to establish

relationships with partnering agencies including County and State offices, regional watershed groups, and members of the regional agricultural community. Other permit holders that have pursued Adaptive Management include: Fort McCoy, Tomah WWTF, City of Plymouth, Oconomowoc WWTF, Dane-Iowa WWTF, Madison Metropolitan Sewerage District, Blue Mounds WWTF, and Deerfield WWTF.

The timing of selecting Adaptive Management is different than a treatment plant upgrade. If Adaptive Management is selected as the compliance method an Adaptive Management Plan (AMP) must be submitted with the WPDES permit renewal. Unfortunately our permit renewal deadline and Final Alternatives Compliance Plan have the same submittal deadline. This creates a challenge in that we must submit the AMP, a finished, formal plan, at the same time that we submit the report stating our findings and intent to create an AMP.

BUDGET/FISCAL IMPACT:

The cost of the work order is \$23,170. During the creation of the 2019 Budget it was not anticipated that City would be eligible to perform Adaptive Management as part of phosphorous compliance efforts. During budget creation the outcome of the Final Compliance Alternatives Plan for Phosphorous was assumed to be either a Multi-Discharger Variance or treatment plant upgrade. Both of these options would have implications for the 2020 Budget, but not necessarily the 2019 Budget. As such, we did not include funding for the preparation of the AMP in the 2019 Budget. To ensure expenses do not exceed the appropriations of the 2019 Budget, Staff has recommended foregoing the implementation of the Phosphorous Analyzer Integration Project until 2020. The analyzer integration project serves an important role in our phosphorous compliance strategy but it can be deferred a year without jeopardizing compliance. This deferment would free up \$40,000, which would more than cover the expense of the AMP preparation.

While the exact costs for compliance through Adaptive Management are unknown, it is extremely unlikely to be comparable to costs of the construction alternative. According to the Preliminary Compliance Alternatives Report the lowest cost construction solution is \$8.1 million and would require \$278,000 in annual operating expenses. Projects identified in the Adaptive Management Plan would need to be funded by the utility in future budgets. These costs will be estimated in the Adaptive Management Plan but exact costs would not be known until each project is designed. It is reasonable to assume that the annual costs to perform these projects will be significantly less than the debt service and operating costs associated with a construction solution. It is therefore the least expensive route to phosphorous compliance.

RECOMMENDATION:

Staff and Baxter and Woodman recommend Option 3. Adaptive Management, as the most efficient, lowest cost, attainable option to achieve compliance with WDNR and WPDES permit requirements for phosphorous.

Staff recommends approval of the work order for Baxter & Woodman to prepare the Adaptive Management Plan.

TIMING/IMPLEMENTATION:

This item is scheduled for discussion at the March 19, 2019 Committee of the Whole Meeting and due to a timing concern, has been scheduled for final consideration at the same evening Common Council Meeting.

Attachments

RES 4941(43) AMP Baxter and Woodman
Task Order Adaptive Management Plan
Preliminary Compliance Alternatives

**A RESOLUTION APPROVING A WORK ORDER FOR BAXTER & WOODMAN, INC.
TO PREPARE AN ADAPTIVE MANAGEMENT PLAN
FOR THE NOT-TO-EXCEED AMOUNT OF \$23,170.00**

WHEREAS, the Wisconsin Department of Natural Resources (WDNR) requires the City to submit reports and plans as part of our Wisconsin Pollution Discharge Elimination System (WPDES) permit; and,

WHEREAS, the Final Compliance Alternatives Plan for Phosphorous is due to WDNR by June 30, 2019 as required in the City of Burlington WPDES permit; and,

WHEREAS, the findings of the Final Compliance Alternatives Plan for Phosphorous will be that an Adaptive Management Plan is the preferred approach for achieving phosphorous compliance; and,

WHEREAS, the City must submit WPDES permit renewal application to WDNR by June 30, 2019; and,

WHEREAS, an Adaptive Management Plan must be submitted along with WPDES permit renewal application; and,

WHEREAS, the City entered into an Engineering Services Agreement with Baxter & Woodman, Inc. on February 7, 2014; and,

WHEREAS, the City has executed work orders with Baxter & Woodman, Inc. for engineering services related to phosphorus discharge compliance and assistance with WPDES permit application under the Engineering Services Agreement; and,

WHEREAS, the Director of Public Works and the Wastewater Foreman recommend approval of the work order for Baxter & Woodman, hereto attached, for the not-to-exceed amount of \$23,170.00.

NOW, THEREFORE, BE IT RESOLVED by the Common Council of the City of Burlington that the City of Burlington shall approve the work order for Baxter & Woodman, Inc., hereto attached, for the not-to-exceed amount of \$23,170.00.

BE IT FURTHER RESOLVED that the City Administrator is hereby authorized and directed to execute this work order on behalf of the City.

Introduced: March 19, 2019
Adopted:

Jeannie Hefty, Mayor

Attest:

Diahn Halbach, City Clerk

**CITY OF BURLINGTON, WISCONSIN
ADAPTIVE MANAGEMENT PLAN
ENGINEERING SERVICES
WORK ORDER**

ENGINEERS' PROJECT NO. 190063.30

Project Description:

The Project consists of assisting the City with preparing the Adaptive Management Plan, due June 30, 2019, in accordance with the Modified January 1, 2018 Wisconsin Pollution Elimination Discharge System (WPDES) permit.

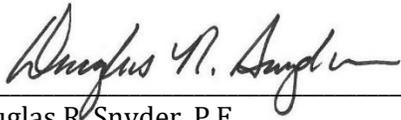
Engineering Services:

The general provisions of this contract are enumerated in the Engineering Services Agreement between the City and Engineers dated February 7, 2014. The scope of services for this Project are listed in Attachment A of this Work Order.

Compensation:

Compensation for the services to be provided under this Work Order will be in accordance with the Engineering Services Agreement dated February 7, 2014. The Owner shall pay the Engineer for the services performed or furnished under Attachment A, based on the Engineer's standard hourly billing rates for actual work time performed plus a reimbursement of out-of-pocket expenses including travel, which in total will not exceed \$23,170.

Submitted by: **BAXTER & WOODMAN, INC.**

By: 
Douglas R. Snyder, P.E.

Title: Regional Manager

Date: March 4, 2019

Approved: **CITY OF BURLINGTON, WI**

By: _____
Jeannie Hefty

Title: Mayor

Date: _____

Attest: _____
Diahn Halbach, City Clerk

Additional Comments and Conditions: None.

SCOPE OF SERVICES

1. PROJECT ADMINISTRATION AND MEETINGS – Confer with City staff and project team to ensure that the goals of the Project are achieved, and to clarify and define the general scope, extent, and character of the Project. Submit a draft of the Adaptive Management Plan to City staff for review and incorporate City’s comments into the final report. Attend meetings to present information to the City regarding the Plans.
2. IDENTIFY PARTNERS – Identify key potential partners that will assist with the adaptive management plan implementation, plan development, and outreach & education. The City will determine the role of the partners and develop a communication strategy for the partners.
3. DESCRIBE THE WATERSHED AND SET THE LOAD REDUCTIONS GOALS – Collect the watershed boundaries and watershed area. Define the action area that adaptive management activities will occur. Describe water quality characteristics of the receiving water. Calculate the target load reduction. The City will collect phosphorus and flow data for the most downstream point of the action area.
4. CONDUCT A WATERSHED INVENTORY – Coordinate local county (Land and Water Conservation Department) LWCD and Wisconsin Department of Natural Resources (WDNR). Nonpoint Source coordinator to collect current and historic land use data. Obtain web soil survey through the local County LWCD or Natural Resources Conservation Service (NRCS) website. The City will provide the future land use map, determine how land uses may change in the future and key land uses categories.
5. IDENTIFY WHERE REDUCTIONS WILL OCCUR – Evaluate data collected by the City. Identification of critical source areas. The City will contact the County LWCD, NRCS, WDNR local nonpoint source coordinator and others to assist with determining where the critical source areas are located within the watershed. The City will also perform a windshield survey to validate existing land uses, identify opportunities for conservation practices, determine typical cropping rotations, and approximate the animal density in the watershed.
6. DESCRIBE MANAGEMENT MEASURES – Describe the general management measures planned to be used for each source reduction category. The City will communicate with partners to confirm that management measure identified in the step are reasonable, acceptable, and effective.
7. ESTIMATE LOAD REDUCTIONS EXPECTED BY PERMIT TERM – Quantify the phosphorus reduction needed from point and nonpoint sources to meet water quality goals. Approximate the phosphorus reductions expected from nonpoint source management measure by permits term. Detailed modelling will only be done as needed once a management measure has been selected.

8. MEASURING SUCCESS – The City will collect and analyze phosphorus and flow data. The collection point will be the furthest point downstream of the adaptive management action area. The City will also collect and analyze phosphorus and flow data of tributaries as needed to determine effectiveness and quantify water quality improvements made in the watershed.
9. FINANCIAL SECURITY – The City will evaluate the adaptive management implementation costs, consider any cost sharing opportunities, and provide a written statement that the costs are feasible.
10. IMPLEMENTATION SCHEDULE WITH MILESTONES – The management measures will be prioritized. Provide compliance dates for adaptive management interim limits and water quality milestones.
11. ADAPTIVE MANAGEMENT REPORT – Prepare an Adaptive Management Plan using the general format of the scope items described above. Incorporate comments from the WDNR during their review period.

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Preliminary Compliance Alternatives City of Burlington



December 2018

City of Burlington, Wisconsin Preliminary Compliance Alternatives

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1. INTRODUCTION	
1.1 Purpose and Scope	5
1.2 Wastewater Treatment Plant History	5
1.3 WPDES Permit Provisions.....	6
2. EXISTING FACILITIES REVIEW	
2.1 Current Design	7
2.2 Wastewater Treatment Processes	8
2.3 Wastewater Flows.....	11
2.4 Influent Waste Loadings	11
2.5 Effluent Water Quality	12
2.6 Sludge Production, Processing, Disposal, and Quality.....	12
3. PHOSPHORUS REMOVAL EVALUATION	
3.1 Background	15
3.2 Current Phosphorus Removal Performance.....	15
3.3 Sources of Phosphorus	16
3.4 Chemical Phosphorus Removal Optimization.....	16
4. ALTERNATIVES EVALUATION	
4.1 Overview.....	17
4.2 Alternatives for Compliance with Final Phosphorus Limit	17
4.2.1 Accept the Limit and Construct Facilities	17
4.2.2 Adaptive Management.....	18
4.2.3 Trading.....	20
4.2.4 Eliminate Surface Water Discharge.....	20
4.2.5 Site Specific Limit.....	20
4.2.6 Variance (Use Attainability Analysis).....	21
4.2.7 Multi-Discharge Variance - Wisconsin	21
5. CONCLUSIONS AND RECOMMENDATIONS	
5.1 Conclusions.....	23
5.2 Recommendations.....	23

LIST OF TABLES

<u>Table</u>	<u>Page No.</u>
1 WPDES Permit Effluent Limits.....	6
2 WWTP Design Criteria.....	8
3 Influent Flows	11
4 Influent Waste Loading.....	11
5 Effluent Phosphorus Concentrations – 2012-2017	12
6 Biosolids Disposal Summary 2012-2017.....	13
7 Biosolids Disposal Quality 2012-2017	14
8 Baseline Year 2017 Phosphorus Removal.....	15
9 Equipment Costs	18
10 Economic Impact of Phosphorus Reductions	22

LIST OF FIGURES

<u>Figure</u>	
1 Existing Wastewater Treatment Plant Site Map.....	7
2 Process Schematic.....	9

LIST OF APPENDICES

Appendix

- A Stipulation Agreement / WPDES Permit
- B Operational Evaluation of Phosphorus Removal

LIST OF ABBREVIATIONS

ADF	-	average daily flow
avg	-	average
BOD ₅	-	five-day biochemical oxygen demand
BPR	-	biological phosphorus removal
BNR	-	biological nutrient removal
DMR	-	daily monitoring report
DO	-	dissolved oxygen
EPA	-	Environmental Protection Agency
Fe	-	iron
GBT	-	gravity belt thickener
gcd	-	gallons per capita per day
gpd	-	gallons per day
gpm	-	gallons per minute
lbs	-	pounds
max	-	maximum
MDF	-	maximum design flow
MG	-	million gallons (or mil gal)
MGD	-	million gallons per day
mg/L	-	milligrams per liter (parts per million in dilute solutions)
min	-	minimum
ML	-	mixed liquor
NH ₃ N	-	ammonia nitrogen
ORP	-	oxidation-reduction potential
P	-	phosphorus
PE	-	population equivalent
ppd	-	pounds per day (or lb/day)
RAS	-	return activated sludge
TKN	-	total Kjeldahl nitrogen
TN	-	total nitrogen
TP	-	total phosphorous
TSS	-	total suspended solids (or SS)
VFA	-	volatile fatty acid
VFD	-	variable frequency drive
WAS	-	waste activated sludge
WDNR	-	Wisconsin Department of Natural Resources
WWTP	-	wastewater treatment plant
WPDES	-	Wisconsin Pollutant Discharge Elimination System
WQBEL	-	water quality based effluent limit

1. INTRODUCTION

1.1 Purpose and Scope

The City of Burlington is permitted by the Wisconsin Department of Natural Resources (WDNR) to own and operate their wastewater treatment plant (WWTP). The existing WWTP is regulated under the requirements contained in WPDES Permit No. WI-0022926-09-1.

When the permit was re-issued in 2014, it included more stringent limits on the levels of phosphorus allowed to be discharged to the Fox River. The permit contained a water quality based effluent limitation (WQBEL) and compliance schedule. Compliance with the terms of the permit would have required the construction of advanced treatment units unless alternative compliance measures that achieve the water quality in the discharge stream contemplated by the WDNR. The City challenged the phosphorus WQBEL and the associated compliance schedule in a petition filed in February 2015. This permit is for the requirement to submit a Preliminary Compliance Alternatives report by December 31, 2018.

This report serves as the basis for future efforts with a focus on phosphorus compliance. Topics in this report include:

- Existing treatment facilities.
- Current conditions including wastewater flows and waste loads, effluent water quality, and sludge handling practices.
- Adequacy and performance of the current facilities.
- Ability of the existing treatment facilities to meet the interim and future phosphorus limits, whether the current operations can be modified to further enhance phosphorus removal, and what alternatives may exist for the City to ultimately achieve compliance.
- Current and future sludge production, processing, disposal, and quality alternatives.

1.2 Wastewater Treatment Plant History

The City of Burlington underwent a major upgrade in the early 1990s to serve an increased population equivalent (PE) of approximately 40,000 with an average daily flow (ADF) of 3.5 million gallons per day (MGD) and a peak design flow (MDF) of 16.5 MGD. A new influent pumping station and screening building were located at the existing wastewater treatment plant. At a new site, a two-stage process (trickling filtration followed by activated sludge) was constructed. The new site includes an administration building, forward flow treatment including UV disinfection, solids handling facilities including gravity belt thickening, anaerobic digestion, and liquid sludge storage.

1.3 WPDES Permit Provisions

Table 1 summarizes the effluent limits contained in the current Burlington WPDES permit and the draft stipulation agreement and modified WPDES permit. The limits of phosphorus are more stringent than required under previous permits. The interim limit of 1 mg/L total phosphorus is currently in-force; the ultimate limit of 0.100 mg/L will potentially be enforceable under a future permit. An evaluation of the existing facilities' capability to meet both the interim and ultimate phosphorus limits is presented later in this report.

TABLE 1
WPDES Permit Effluent Limits

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Continuous	Continuous	
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	October Only
Fecal Coliforms	Geometric Mean	400#/ 100 mL	Weekly	Grab	May-September Only
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	Interim Limit
Mercury, Total Recoverable	Daily Max	3.1 ng/L	Quarterly	24-Hour Flow Prop Comp	Interim Limit
Acute WET		TU _a	Per Occurrence	24-Hour Flow Prop Comp	
Chronic WET		rTU _c	Per Occurrence	24-Hour Flow Prop Comp	

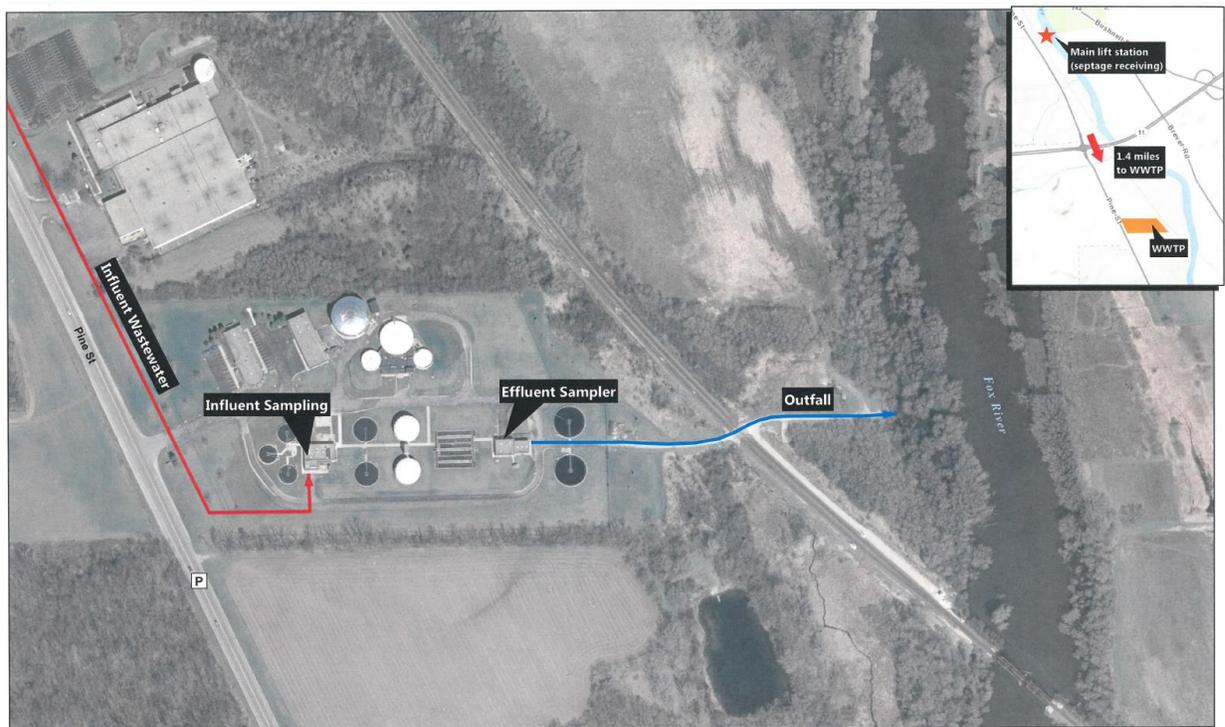
2. EXISTING FACILITIES REVIEW

2.1 Current Design

The Burlington WWTP provides treatment for domestic wastewater generated within the Burlington Sewer Service Area (SSA), Browns Lake Sanitary District, and Bohner's Lake Sanitary District and accepts a significant amount of hauled waste. The facility also treats wastewater from several industries including Nestle, Echo Lake Packaging, and Ardagh Glass. The existing Burlington WWTP site including the pumping station is shown on Figure 1.

FIGURE 1

Existing Wastewater Treatment Plant Site Map



The existing facility is designed to serve a population of 70,000 PE based on a typical per capita value for BOD₅ of 0.17 pcd. The plant is designed to treat the wastewater flows and waste loads outlined in Table 2.

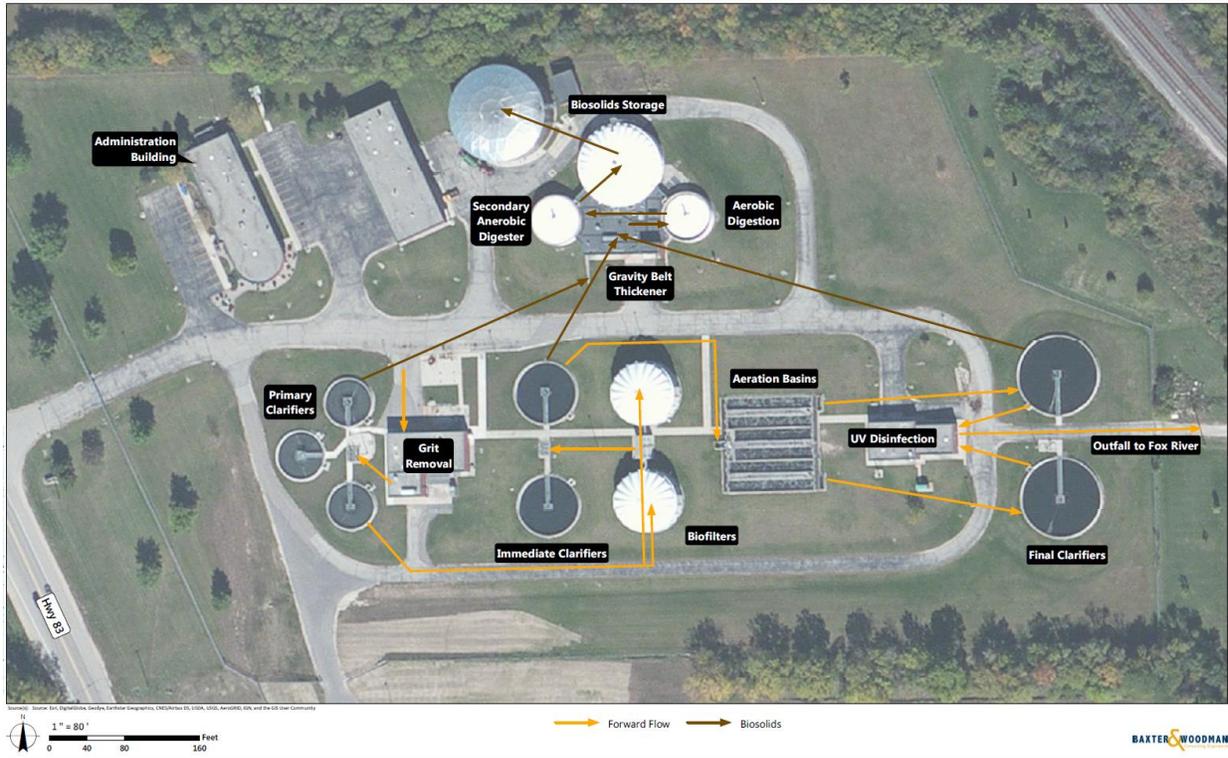
TABLE 2
WWTP Design Criteria

Parameter	Design Value
Average Daily Flow	3.5 MGD
Maximum Design Flow	8.75 MGD
Biochemical Oxygen Demand (BOD ₅)	10,500 lb/day
Total Suspended Solids (TSS)	16,500 lb/day
Ammonia Nitrogen (NH ₃ -N)	830 lb/day
Phosphorus (P)	380 lb/day

2.2 Wastewater Treatment Processes

The Burlington WWTP utilizes a two-stage process for the treatment of wastewater. The first stage (synthetic media tower) is designed to remove most of the BOD₅. The second stage process removes the remainder of the BOD₅ and converts ammonia to nitrate for compliance with ammonia limits. Ferrous chloride is also added in this second stage process for phosphorus removal. Screening is provided at the raw sewage pumping station (site of old wastewater treatment plant). At the facility, the influent wastewater receives grit removal and primary sedimentation prior to flowing to the trickling filter tower. The current operation routes 25% of the primary effluent to the second stage nitrification tanks to improve overall process performance. The flow proceeds from the second stage process to secondary clarifiers where biological and phosphorus removal solids are settled out. The effluent from the second stage process is disinfected using UV (May 1 to September 30) and then discharged to the Fox River. Primary and waste activated sludges are thickened using a gravity belt thickener. These sludges are then anaerobically digested, thickened, and stored in a liquid form for beneficial reuse. Burlington contracts with a sludge hauler for the disposal of the thickened liquid sludge. Figure 2 is a process schematic for the existing facility.

FIGURE 2
Process Schematic



Each process is further described below.

Raw Sewage Pumping Station and Screening – The Raw Sewage Pumping Station is located at the site of the abandoned City Wastewater Treatment Plant. This station provides screening.

Influent Flow Meter – The treatment plant influent flow is measured and totalized downstream of the screens with a Parshall flume/ultrasonic transducer metering system.

Septage Receiving Station – Septage, holding tank wastes, and other wastes are delivered to this station via trucks. The station includes mixing and pumps to pump the wastes to grit removal.

Grit Removal – A vortex-type grit removal vessel is utilized to remove abrasive grit consisting of sand, gravel, cinders, and other heavy solid materials from the plant influent flow. Grit removal protects mechanical equipment from abrasion and reduces the formation of heavy deposits in pipelines.

Primary Clarifiers – Flow is routed to one of three primary clarifiers where solids are removed and pumped to anaerobic digestion.

Biofilters – Currently, 75% of the primary effluent is pumped to the biotowers for BOD₅ removal with the remaining 25% flowing to the aeration basins. This is the maximum amount of flow that can be routed to the aeration basins.

Intermediate Clarifiers – Effluent from the biotowers flows to the intermediate clarifiers. The effluent from the intermediate clarifiers plus the 25% of the primary effluent flows to the aeration tank-mixing box where ferrous sulfate is added for chemical phosphorus removal.

Aeration Tanks – Biological treatment is accomplished in the aeration tanks through the action of the microorganisms in the activated sludge mixed liquor. These organisms feed on the organic matter in the sewage. Blowers provide the oxygen through a fine-bubble diffuser system. This provides the oxygen required by the microorganisms. Adequate numbers of microorganisms for effective treatment are maintained by recirculating settled sludge from the secondary clarifiers to the aeration tanks. Excess sludge (waste activated sludge) is sent for thickening prior to anaerobic digestion.

Final Clarifiers – The final clarifiers allow separation of sludge from the aeration tank mixed liquor. The sludge is removed from the clarifiers through collector arms that skim the bottom of the tanks, and is pumped back to the aeration tanks. Effluent from both clarifiers is conveyed to UV Disinfection.

UV Disinfection and Effluent Flow Metering – Effluent is disinfected with UV disinfection from May 1 to September 30. Following disinfection, the effluent is metered by a Parshall Flume and then discharged to the Fox River.

RAS/WAS Pumping Station – Three return activated sludge pumps are used to pump settled sludge from final clarifiers back to the aeration tanks. Three waste activated sludge pumps are used to pump waste activated sludge to the Gravity Belt Thickener. Magnetic flow meters measure and totalize the RAS and WAS flows.

Gravity Belt Thickener – A mechanical thickener is provided to thicken sludge by removing excess water. The excess water from the thickening process is returned to the head of the treatment plant. The gravity belt thickener is used to thicken WAS as well as digested sludge prior to sludge storage.

Anaerobic Digesters – Anaerobic digesters are provided to stabilize both the primary, intermediate, and waste activated sludges.

Sludge Storage Tank – Thickened digested liquid sludge from the anaerobic digesters is pumped to the sludge storage tank. The tank is mixed with three submersible mixers.

2.3 Wastewater Flows

Wastewater flows treated at the Burlington WWTP include City flows, flows from Browns Lake Sanitary District, Bohner's Lake Sanitary District, several industries, and hauled waste. Peak monthly flows typically occur as a result of high river stages in the Fox River. Dry weather conditions in 2012 resulted in lower wastewater flows. High levels of rain in the region resulted in a spike of influent flows in July of 2017. Table 3 summarizes the wastewater flows at the treatment plant over the past six years as reported on the daily monitoring reports (DMRs). The highest maximum day flow occurred in 2017 (11.070 MGD). The data throughout this report includes 2018 through October.

TABLE 3
Influent Flows

	2012	2013	2014	2015	2016	2017	2018	Average
Average Daily Flow (MGD)	2.402	2.730	2.516	2.521	2.680	3.214	3.063	2.732
Maximum Month Flow (MGD)	2.791	4.193	2.763	3.171	3.188	5.582	4.899	5.224
Maximum Weekly Flow (MGD)	3.029	6.039	2.903	3.326	3.399	9.495	4.643	4.693
Maximum Daily Flow (MGD)	3.227	7.186	2.988	3.693	3.506	11.070	3.776	3.638

2.4 Influent Waste Loadings

The wastewater contains many pollutants and solids that influence the operation and performance of the treatment process which are monitored per the Burlington WPDES permit. Table 4 summarizes the annual average wastewater loadings at the treatment plant over the past five years as reported on the DMRs.

TABLE 4
Influent Waste Loadings

Loading (lbs/d)	2012	2013	2014	2015	2016	2017	2018	Average
BOD	6,325	5,759	5,646	5,821	6,250	7,179	6,471	5,886
TSS	6,923	8,204	7,693	7,807	8,214	9,015	8,862	7,752
Total Phosphorus	86	91	72	74	77			80

2.5 Effluent Water Quality

The Burlington WWTP discharges a high quality effluent, which consistently exceeds the requirements of the WPDES permit. Table 5 summarizes the effluent phosphorus concentrations and loadings at the treatment plant over the past six years as reported on the DMRs.

TABLE 5
Effluent Phosphorus Concentrations - 2012-2017

	2012	2013	2014	2015	2016	2017	2018
January	0.74	0.60	0.75	0.75	0.62	0.68	0.53
February	0.64	0.74	0.49	0.75	0.56	0.40	0.68
March	0.55	0.48	0.66	0.69	0.71	0.38	0.56
April	0.57	0.47	0.77	0.71	0.65	0.49	0.52
May	0.76	0.49	0.61	0.67	0.56	0.65	0.48
June	0.83	0.54	0.65	0.65	0.72	0.54	0.37
July	0.91	0.70	0.64	0.81	0.81	0.36	0.32
August	0.72	0.70	0.56	0.51	0.62	0.43	0.44
September	0.70	0.63	0.68	0.57	0.67	0.29	0.41
October	0.61	0.79	0.66	0.54	0.66	0.34	0.54
November	0.66	0.68	0.61	0.53	0.60	0.46	
December	0.66	0.63	0.55	0.54	0.58	0.36	
Annual	0.70	0.62	0.64	0.64	0.65	0.45	0.48
Flow (MGD)	2.40	2.73	2.52	2.52	2.68	3.21	3.06
Total P (lbs/day)	13.94	14.12	13.33	13.51	14.43	12.03	10.34

The Burlington WWTP has historically been quite capable of meeting the current interim limit on phosphorus of 1.0 mg/L. The new WPDES permit includes an ultimate WQBEL limit of 0.100 mg/L, which has a compliance date of January 1, 2024. The existing facility is capable of reliably meeting the interim limit throughout the term of the current permit, but is not capable of meeting the WQBEL for phosphorus without constructing major improvements.

2.6 Sludge Production, Processing, Disposal, and Quality

The volume of sludge produced at the Burlington WWTP is a function of the influent BOD₅ and total phosphorus loading. Sludge disposal costs are also significantly impacted by the degree of sludge thickening that is achieved.

Currently, all primary and nitrification processed sludge is thickened and pumped to anaerobic digestion. Following anaerobic digestion, the digested solids are thickened and then stored in a liquid sludge storage tank. The digested solids (biosolids) are hauled and land-spread by a private sludge-hauling contractor. The City currently spends approximately \$80,000 per year to dispose of liquid sludge.

Table 6 shows the quantity of sludge hauled and the effective yield over the past six years.

TABLE 6
Biosolids Disposal Summary 2012-2017

	2012	2013	2014	2015	2016	2017
Sludge Hauled, Cubic Feet (MGallons)	2,004	1,886	2,170	2,351	2,098	2,327
Biosolids Concentration (%)	6.3%	6.0%	7.2%	6.2%	5.9%	6.0%
BOD Loading (lbs/day)	6,325	5,759	5,646	5,821	6,250	7,179
Biosolids (lbs/day)	2,308	2,464	3,360	3,312	2,831	6,861
Effective Yield (lbs TSS/lb BOD)	0.36	0.43	0.60	0.57	0.48	

The sludge produced at the Burlington WWTP has consistently met the high quality metals limits contained in NR 214 of the Wisconsin Administrative Code. Table 7 summarizes the sludge quality over the past six years.

TABLE 7
Biosolids Disposal Quality-2012 - 2017

	2012	2013	2014	2015	2016	2017	2018	Avg	NR 214
Solids, Total, %	6.3	6.0	7.2	6.2	5.9	6.0	6.2	6.3	
Arsenic, Dry Wt, mg/kg	4.7	4.7	5.9	4.5	3.3	3.9	3.0	4.28	41
Cadmium, Dry Wt, mg/kg	1.5	1.9	2.2	2.1	1.5	1.3	1.4	1.75	39
Copper, Dry Wt, mg/kg	915	965	780	862.5	850	712.5	683	824	1500
Lead, Dry Wt, mg/kg	45.5	55.8	48.0	46.3	44.8	38.3	39.3	45.4	300
Mercury, Dry Wt, mg/kg	1.90	0.82	0.47	0.92	0.85	0.85	0.70	0.93	17
Molybdenum, Dry Wt, mg/kg	22.7	23	19.7	20.5	19.5	17.2	18.3	20.1	75
Nickel, Dry Wt, mg/kg	37.5	55.2	41.75	45	54.5	42.5	50.3	46.7	420
Nitrogen, Ammonium Total, %	1.5	1.5	1.0	1.5	1.6	2.1	1.2	1.5	
Nitrogen, Total Kjeldahl, %	5.5	4.8	4.1					4.8	
Phosphorus, Total, %	2.45	2.20	1.90	1.95	1.85	1.78	1.80	1.99	
Potassium, Total Recoverable, %	0.17%	0.00	0.16	0.17	0.17	0.15	0.13	0.14	
Radium 226, pCi/g				14.34	10.50	12.76	6.80	11.10	
Selenium, Dry Wt, mg/kg	5.88	7.90	5.00	5.15	5.63	4.23	5.90	5.67	100
Zinc, Dry Wt, mg/kg	1063	1125	918	965	920	830	820	949	2800

3. PHOSPHORUS REMOVAL EVALUATION

3.1 Background

This section summarizes the review of the existing phosphorus removal process conducted as part of the Operational Evaluation and Alternatives plan in June of 2018.

3.2 Current Phosphorus Removal Performance

Influent phosphorus loads and phosphorus levels in the plant effluent were previously presented and discussed in Section 2. The current facility uses chemical phosphorus removal to meet the monthly average effluent total phosphorus limit. Table 8 outlines the phosphorus removal performance for the year 2017.

TABLE 8
Baseline Year 2017-Phosphorus Removal

	Average Daily Influent Flow (MGD)	Influent		Effluent		
		Total Phosphorus (mg/L)	Total Phosphorus (lbs/day)	Total Phosphorus (mg/L)	Total Phosphorus (lbs/day)	% Removal
January	2.659	2.80	61.9	0.68	18.30	70%
February	2.631	2.65	58.0	0.40	10.74	81%
March	2.780	3.00	69.3	0.38	10.12	85%
April	3.380	2.80	78.7	0.49	13.05	83%
May	3.429	4.00	114.0	0.65	17.44	85%
June	3.056	3.60	91.5	0.54	14.47	84%
July	5.582	4.10	190.3	0.36	9.75	95%
August	3.607	3.60	108.0	0.43	11.57	89%
September	2.993	3.60	89.6	0.29	7.82	91%
October	2.913	3.60	87.2	0.34	9.02	90%
November	2.814	3.80	88.9	0.46	12.40	86%
December	2.648	3.60	79.3	0.36	9.65	88%
Annual	3.208	3.43	76.03	0.65	14.42	86%

The Burlington WWTP consistently and reliably meets the current effluent limit on phosphorus of 1 mg/L. Influent and effluent data indicates that for the baseline year of 2017, an average of 86 percent of the influent phosphorus was removed.

The performance of the chemical phosphorus removal process was evaluated using the baseline year of 2015. A 12.5% solution of ferrous sulfate is currently the chemical being used for phosphorus removal. The facility uses 32,000 gallons of ferrous sulfate annually or about 87 gallons daily. The annual costs for ferrous sulfate is approximately \$16,500. Due to significant industrial loadings, the influent total phosphorus concentration is about 3.4 mg/L compared to a normal domestic wastewater concentration of 5 to 6 mg/L. The two-stage process provides better overall process performance since phosphorus would potentially be somewhat limiting in a single stage process which could contribute to filamentous growth.

The City has recently begun using ferric chloride and monitoring its impacts.

3.3 Sources of Phosphorus

The level of phosphorus in the City influent flow is less than that of a domestic wastewater. The typical influent total phosphorus averages about 3.4 mg/L. This is lower than a typical residential total phosphorus concentration of about 4.0 mg/L. The major industries contribute significantly lower amounts of phosphorus than typical domestic wastewater based on their organic loading.

The City of Burlington's drinking water system currently uses HMO to remove radium but is in the process of converting treatment to ion exchange to address potential strontium limits. Well 11 will be provided with ion exchange softening and phosphorus will be used for corrosion control at an approximate concentration of about 1 mg/L. Based on an estimated contribution of Well 11 to the City water supply (20%), this would potentially raise the influent total phosphorus by about 0.1 mg/L. As additional wells are converted to ion exchange from the current HMO removal process this value will continue to increase. The overall impact if 100% of the water supply converted to ion exchange would increase the influent total phosphorus to about 4 mg/L.

3.4 Chemical Phosphorus Removal Optimization

History has shown that the Burlington WWTP is capable of complying with the interim monthly average total phosphorus limit of 1 mg/L without the addition of effluent filtration. The current chemical feed system uses approximately 8,000 gallons of ferrous sulfate per quarter, or 87 gallons per day. The City has begun to use alternative chemicals for phosphorus removal and has installed an on-line phosphorus analyzer to measure the real-time effluent phosphorus concentration and pace the chemical feed pumps with this output to maintain a consistent phosphorus concentration in the effluent. This allows the City to optimize its use of phosphorus removal chemical to prevent over or under feeding chemicals. Any phosphorus limit lower than about 0.6 mg/L will potentially require filtration and enhanced chemical addition to ensure the limit is met consistently.

4. ALTERNATIVES EVALUATION

4.1 Overview

There are a variety of options available to communities for compliance with a total phosphorus 6-month average limit of 0.100 mg/L. The available options and potential applicability of each option are presented below.

4.2 Alternatives for Compliance with Final Phosphorus Limit

4.2.1 Accept the Limit and Construct Facilities

The technology generally required to meet the proposed final phosphorus 6-month average limit of 0.100 mg/L would most likely be a single stage filtration process. A target effluent phosphorus concentration of 0.08 mg/L would need to be maintained to provide assurance that the 6-month average limit would be met. Extended pilot testing using the Burlington effluent is strongly recommended prior to implementation, to determine and verify if the target 0.08 mg/L phosphorus concentration could consistently and reliably be achieved. Burlington should also run several samples to determine the influent soluble non-reactive phosphorus concentration since an elevated level of this type of phosphorus may limit a filtration process' ability to meet a 0.100 mg/L limit.

Available options for the City to consider in meeting this limit would include using magnetite, high rate clarification, disc filters and cloth filters. A preliminary design and cost, based on these technologies, is shown in Table 9.

TABLE 9
Equipment Costs

Item	CoMag	Actiflo	Discfilter	Aquadisk
Equipment	\$1,275,000	\$3,255,000	\$1,620,000	\$1,150,000
Installation	\$320,000	\$1,139,000	\$567,000	\$403,000
Building	\$1,068,000	\$966,000	\$783,000	\$1,230,000
Pumping Station	\$500,000	\$500,000	\$500,000	\$500,000
Electrical	\$791,000	\$1,465,000	\$868,000	\$821,000
Piping	\$475,000	\$879,000	\$521,000	\$492,000
HVAC	\$158,000	\$293,000	\$174,000	\$164,000
Sitework	\$158,000	\$293,000	\$174,000	\$164,000
General Conditions	\$380,000	\$703,000	\$416,000	\$394,000
Contractor Overhead and Profit	\$769,000	\$1,424,000	\$843,000	\$798,000
Contingencies and Technical Services	\$2,206,000	\$4,367,000	\$2,586,000	\$2,446,000
Total Project Costs	\$8,100,000	\$15,284,000	\$9,052,000	\$8,562,000
Debt Service Costs	\$529,000	\$1,047,000	\$620,000	\$586,000
Annual Operating Costs	\$278,000	\$276,000	\$284,000	\$278,000
Annual Additional Costs	\$807,000	\$1,323,000	\$904,000	\$864,000

Table 10 shows a summary of equipment costs and the impact on current user rates. The least expensive option has an opinion of probable project cost of \$8,100,000 (2018 dollars) with annual operating costs of \$278,000.

4.2.2 Adaptive Management

One of the compliance pathways included in the Wisconsin Administrative Code NR 217 (which established the water quality based effluent limits for phosphorus) is Adaptive Management. According to NR 217.18, dischargers may qualify for Adaptive Management if the point source contribution is less than 50 percent of the total phosphorus contribution or a demonstration is made that the criteria cannot be met without control of non-point sources of phosphorus.

The Burlington WWTP discharges to the Fox River. Point Sources account for about 43 percent of the total phosphorus load. Potentially, Burlington would be eligible for Adaptive Management.

If Adaptive Management would be feasible, a key consideration exists:

Monitoring is required to demonstrate progress toward and compliance with the applicable criterion. The applicable criterion for the Fox River is 0.100 mg/L total phosphorus. If by the end of three permit terms, the applicable criterion is not met, the Wisconsin DNR shall require compliance with a water quality based effluent limit based on the applicable criteria.

In other words, if the streams still exhibit phosphorus levels above criteria, the adaptive management measures would be deemed insufficient and compliance by treatment would be required anyway. One unique adaptive management option for Burlington would be to allow the upstream dischargers to implement fully criteria based limits. Sussex and Brookfield are currently considering effluent filtration to lower their total phosphorus concentrations to meet their limit of 0.075 mg/L. Waukesha is currently treating to about a level of 0.004 mg/L but eventually would reroute all of the Lake Michigan water it will receive through the Great Lakes Compact. This would represent about 75 percent of the total flow currently discharged to the Fox River.

The City has been collecting data on the Fox River since 2013. In addition, the Wisconsin DNR has been sampling on a monthly basis since about 2014. Figure 1 shows the total and dissolved phosphorus concentrations (median value for May to October) based on values contained in the DNR surface water data viewer. The Fox River has been compliant with the criteria in both 2014 and 2016 and the median value for the summer months (May to October) over those years was 0.086 mg/L. Since the criteria has been met in 2014 and 2016, use of Adaptive Management would not be applicable in those years since the river meets criteria.

Since the Water Quality Based Effluent Limit for total phosphorus in the WPDES (0.1 mg/L) equals the total phosphorus criterion for Rivers (0.1 mg/L), Burlington would be eligible for Adaptive Management.

Future steps towards adaptive management would include looking within the HUC12 to determine where eligible projects could be conducted. The City would benefit from adaptive management due to the size of the facility, and the Fox River being close to criteria. The City is also currently partnered with the Southeastern Wisconsin Fox River Commission, which works to develop and implement plans for waterways.

If adaptive management is a potential option, the City would have to submit a Watershed Adaptive Management Request along with this report. In addition they would need to begin to form an Adaptive Management Plan, which would be required at a future time after the submittal of the preliminary request.

4.2.3 Trading

Given the current level of total phosphorus in the Fox River and the potential for a reduction in total phosphorus from upstream dischargers there is no need for Burlington to consider trading since the Fox River is potentially currently meeting criteria. Trading is a potential option that could be utilized if the Adaptive Management option is unsuccessful.

4.2.4 Eliminate Surface Water Discharge

Compliance with all WPDES effluent limit requirements could be met by simply eliminating the surface water discharge from the Burlington WWTP. This could be accomplished in one of two ways:

- Abandon the existing plant and pump wastewater to another community for treatment (regionalization), or
- Implement a land disposal system.

Regionalization does not appear to be a feasible solution since Burlington is already the major treatment facility for the region. Other dischargers could consider regionalization with Burlington depending on the available capacity at Burlington and the costs for those communities to pump their wastewater to Burlington. Currently Burlington serves the Browns Lake Sanitary District in addition to the Bohner's Lake Sanitary District.

Land disposal would require the City to acquire a significant amount of land. We estimate that approximately 80 acres of infiltrative surface would be required for an infiltration type system, if suitable soils for infiltration can be found. More than 7000 acres of land would be required for spray irrigation operation application. Additional land would be required to construct approximately 270 days of storage since spray irrigation can only occur when the soil is not saturated or frozen. Both options would be subject to the provisions of NR 140 of the Wisconsin Administrative Code, which could potentially limit the nitrogen and chloride concentrations to values of 10 mg/L or less for nitrogen and 125 mg/L for chlorides. The current facility would not be able to meet either the total nitrogen limit or chlorides without significant modifications. Land disposal is not a feasible alternative for Burlington.

4.2.5 Site Specific Limit

A site-specific limit requires a demonstration that the body of water where Burlington discharges will meet its designated use even if the total phosphorus exceeds the statewide criteria (0.1 mg/L for the Fox River at Burlington). Currently this option is only available through specific rule making which is not a feasible alternative for Burlington. The Wisconsin DNR is in the process of developing rules that would allow for a site-specific limit but these rules are currently delayed. The proposed rules would provide little or no relief to the 0.100 mg/L criteria for the Fox River at Burlington. The Fox River is attaining its biological metrics (fish and macroinvertebrates) but would not attain the proposed phosphorus response criteria and as such would not be eligible for a site-specific criteria. Even if the Fox River were eligible for a revised criteria, the criteria would be set at ambient criteria

and not provide any usable assimilative capacity for Burlington. Based on the current and proposed rules and statutes, a site-specific limit is not a feasible alternative.

4.2.6 Variance (Use Attainability Analysis)

If the discharge water body is not attaining its designated use due to factors other than the total phosphorus concentrations, then a variance may be obtained. Burlington will need to demonstrate by the greater weight of credible evidence that one of the following factors is causing the non-attainment:

- Naturally occurring pollutant
- Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the designated use
- Human caused conditions
- Hydrologic modifications
- Physical conditions

For Burlington, the most likely reasons for non-attainment would be hydrologic modifications (e.g. impoundments) and human-caused conditions (tile draining).

The variance request will require the development of watershed specific data to provide the necessary demonstration. This could include stream surveys, phosphorus sampling, a review of past activities in the watershed and other options necessary to demonstrate that granting a variance would be warranted. A variance, however, would need to be requested with each WPDES permit renewal. Based on the current level of total phosphorus in the Fox River, the River meets the 0.100 mg/L criteria and no variance should be required.

4.2.7 Multi-Discharge Variance - Wisconsin

Wisconsin Act 378 passed in 2014 established the framework for a Phosphorus Multi-Discharger Variance. Wisconsin DNR has complied with the economic impact assessment. US EPA approved the multi-discharger variance on February 6, 2017. The variance is set to expire on February 5, 2027, unless the Wisconsin DNR submits justification to US EPA for its continuance. Communities that select this option would pay \$51.10 per pound for phosphorus discharged above the target limit of 0.1 mg/L of total phosphorus. Interim limits will be set at 0.8 mg/L for the first permit term, 0.6 mg/L for the second permit term and 0.5 mg/L for the third permit term. Burlington may be able to meet these limits at least on an annual average basis. This money would be paid to counties in the HUC 8 region where Burlington is located. This includes Walworth, Kenosha, Racine, and Milwaukee counties. After the third permit term, if criteria were not met, the limit would still be set at criteria.

Burlington would qualify for this variance if the sewer user charges would exceed 1 percent of MHI since Racine County has a secondary indicator score of 5, which exceeds the required 2 for a 1 percent exceedance of MHI. Table 10 summarizes the potential for Burlington to obtain a multi-discharger variance. Since the projected rate versus MHI is 0.85%, Burlington is not eligible for the multi-discharger variance.

TABLE 10
Economic Impact of Phosphorus Reductions

	CoMag	Actiflo	Discfilter	Aquadisk
Current User Fee	\$346.00	\$346.00	\$346.00	\$346.00
MHI-DNR 2018	\$52,822	\$52,822	\$52,822	\$52,822
Current WWTP Budget	\$3,419,310	\$3,419,310	\$3,419,310	\$3,419,310
Debt Retirement- Phosphorus	\$529,000	\$1,047,000	\$620,000	\$586,000
Operating Cost- Phosphorus	\$278,086	\$276,009	\$283,539	\$278,086
Proposed Budget	\$4,226,396	\$4,742,319	\$4,322,849	\$4,283,396
Rate Increase	24%	39%	26%	25%
Revised Annual Rates	\$427.67	\$479.88	\$437.43	\$433.44
Revised Annual Cost/MHI	0.81%	0.91%	0.83%	0.82%

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The existing Burlington WWTP discharges a high quality effluent that consistently meets the requirements of the WPDES permit. The facility is currently just below 75% of its hydraulic capacity and about 80% of its loading capacity. However, the proposed final phosphorus 6-month average limit of 0.100 mg/L will require action to comply with the requirements of the WPDES permit.

The current sludge handling and disposal process consistently produces sludge that meets the high quality metals limits contained in NR 214 of the Wisconsin Administrative Code.

5.2 Recommendations

In order to address the proposed phosphorus limits, we recommend that the City consider Adaptive Management through the actions of Sussex, Brookfield, and Waukesha in reducing their total phosphorus effluent loadings to the Fox River. The City should also consider construction of an effluent filtration facility to provide protection for a limit less than 0.5 mg/L. The timing for implementing effluent filtration will depend on the permit terms that the Wisconsin DNR will provide to Burlington to assess the impacts of load reductions made at Sussex, Brookfield, and Waukesha.

For the phosphorus optimization process, the following steps are recommended:

1. Continue to evaluate the potential for alternative coagulants including ferric chloride, alum, and polyaluminum chloride to potentially lower total phosphorus concentrations at a cost similar to the current \$16,500 annually for chemicals.
2. Submit a Preliminary Compliance Alternatives Plan with the Wisconsin DNR outlining evaluation of different chemicals and level of performance for phosphorus removal. This submittal is due December 31, 2018.
3. Continue to evaluate the Fox River total phosphorus concentrations and assess the potential impact on the reduction in the Fox River total phosphorus because of reductions in loadings from Sussex, Brookfield, and Waukesha.
4. Review long-term capital spending for the Wastewater Utility to determine if additional capital projects will be required and result in an increase in the existing annual charge for a residential user of \$346.
5. Submit adaptive management form and begin to make a plan which would be submitted with the Final Compliance Alternatives plan in June of 2019.

APPENDIX A
STIPULATION AGREEMENT / WPDES PERMIT

SETTLEMENT AGREEMENT

This Settlement Agreement (“Agreement”) is made as between the Wisconsin Department of Natural Resources (“WDNR”) and the City of Burlington (“Burlington”) to resolve a pending contested case hearing petition brought by Burlington.

BACKGROUND

WHEREAS, WDNR issued a Wisconsin Pollution Discharge Elimination System (“WPDES”) permit (“Permit”) to Burlington that contains a water quality based effluent limitation (“WQBEL”) for phosphorus, the effective date for which is after the expiration date of WPDES Permit No. WI-0022926-09-0;

WHEREAS, section 3.2.1 of the Permit contains an interim phosphorus limit of 1.0 mg/L (“Interim Limit”) and section 3.2.1.4 of the Permit contains a final phosphorus effluent limit of 0.1 mg/L, six-month average (May-October, November-April) and 0.3 mg/L monthly average, and 3.0 lbs/day annual average effective January 1, 2024, unless certain conditions are met (“Final WQBEL”);

WHEREAS, Burlington challenged the Final WQBEL and associated compliance schedule in the Permit in a Wis. Stat. § 283.63 petition filed on February 9, 2015;

WHEREAS, section 5.2 of the Permit specifies interim compliance dates to be met prior to attaining the Final WQBEL for phosphorus on January 1, 2024; and

WHEREAS, Burlington and WDNR have reached an agreement regarding the issues raised in the petition regarding the Final WQBEL for phosphorus and the associated compliance schedule and all other issues raised in the petition;

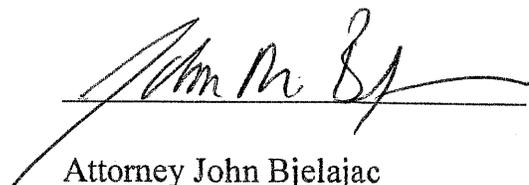
IT IS HEREBY STIPULATED AND AGREED BETWEEN WDNR AND BURLINGTON:

1. No later than thirty (30) days following the execution of this agreement, WDNR shall public notice a proposed modification of the Permit, to modify the interim compliance

schedule for phosphorus, in accordance with the terms and conditions set forth in Attachment A ("Permit Modification").

2. If the Permit is modified according to the terms of Attachment A on or before January 1, 2018, Burlington shall withdraw the Petition for Review and Request for Contested Case Hearing filed on February 9, 2015.
3. If the Permit is modified according to the terms of Attachment A on or before January 1, 2018, Burlington agrees they will comply with the interim compliance schedule for phosphorus specified in Attachment A and will not seek review of the Permit Modification pursuant to Wis. Stat. §§ 283.63 or 227.42. Burlington also agrees not to seek judicial review of this Stipulation under Wis. Stat. § 227.52.
4. Prior to the expiration date of the current Permit and before the effective date of the Final WQBEL for phosphorus, WDNR shall re-evaluate and replace the Final WQBEL with a New Final WQBEL for phosphorus.
5. The Department's reevaluation of the phosphorus WQBEL shall be included as part of a proposed reissuance, or revocation and reissuance, of WPDES Permit No. WI-0022926-09-0.
6. WDNR's reevaluation of the phosphorus WQBEL at the next reissuance could result in a calculated WQBEL that is higher, lower, or the same numeric value as the final limit in the current permit, but in any case will be a new decision by WDNR regarding the final value of the WQBEL at the time of reissuance.

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WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
**PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE
ELIMINATION SYSTEM**

Burlington Water Pollution Control

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility
located at
2100 S. Pine Street
to
Fox (IL) River in Racine County

in accordance with the effluent limitations, monitoring requirements and other conditions set
forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By _____
Bryan Hartsook
Wastewater Field Supervisor

Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - January 01, 2015

EXPIRATION DATE - December 31, 2019

PERMIT MODIFICATION EFFECTIVE DATE – January 01, 2018

TABLE OF CONTENTS

1 INFLUENT REQUIREMENTS	1
1.1 SAMPLING POINT(S)	1
1.2 MONITORING REQUIREMENTS	1
1.2.1 <i>Sampling Point 701 - INFLUENT TO PLANT</i>	1
2 IN-PLANT REQUIREMENTS	2
2.1 SAMPLING POINT(S)	2
2.2 MONITORING REQUIREMENTS AND LIMITATIONS	2
2.2.1 <i>Sampling Point 103 - Mercury Effluent Blanks</i>	2
3 SURFACE WATER REQUIREMENTS	3
3.1 SAMPLING POINT(S)	3
3.2 MONITORING REQUIREMENTS AND EFFLUENT LIMITATIONS	3
3.2.1 <i>Sampling Point (Outfall) 001 - EFFLUENT</i>	3
4 LAND APPLICATION REQUIREMENTS	7
4.1 SAMPLING POINT(S)	7
4.2 MONITORING REQUIREMENTS AND LIMITATIONS	7
4.2.1 <i>Sampling Point (Outfall) 004 - Liquid Sludge</i>	7
5 SCHEDULES	12
5.1 MERCURY POLLUTANT MINIMIZATION PROGRAM	12
5.2 WATER QUALITY BASED EFFLUENT LIMITS (WQBELS) FOR TOTAL PHOSPHORUS	12
5.3 CMOM (CAPACITY, MANAGEMENT, OPERATION AND MAINTENANCE) PROGRAM DEVELOPMENT	14
6 STANDARD REQUIREMENTS	15
6.1 REPORTING AND MONITORING REQUIREMENTS	15
6.1.1 <i>Monitoring Results</i>	15
6.1.2 <i>Sampling and Testing Procedures</i>	15
6.1.3 <i>Recording of Results</i>	15
6.1.4 <i>Reporting of Monitoring Results</i>	15
6.1.5 <i>Compliance Maintenance Annual Reports</i>	16
6.1.6 <i>Records Retention</i>	16
6.1.7 <i>Other Information</i>	16
6.2 SYSTEM OPERATING REQUIREMENTS	16
6.2.1 <i>Noncompliance Reporting</i>	17
6.2.2 <i>Flow Meters</i>	17
6.2.3 <i>Raw Grit and Screenings</i>	17
6.2.4 <i>Sludge Management</i>	17
6.2.5 <i>Prohibited Wastes</i>	17
6.2.6 <i>Bypass</i>	18
6.2.7 <i>Scheduled Bypass</i>	18
6.2.8 <i>Controlled Diversions</i>	18
6.2.9 <i>Proper Operation and Maintenance</i>	19
6.3 SEWAGE COLLECTION SYSTEMS	19
6.3.1 <i>Sanitary Sewage Overflows and Sewage Treatment Facility Overflows</i>	19
6.3.2 <i>Capacity, Management, Operation and Maintenance (CMOM) Program</i>	20
6.3.3 <i>Sewer Cleaning Debris and Materials</i>	21
6.4 SURFACE WATER REQUIREMENTS	21
6.4.1 <i>Permittee-Determined Limit of Quantitation Incorporated into this Permit</i>	21
6.4.2 <i>Appropriate Formulas for Effluent Calculations</i>	21
6.4.3 <i>Effluent Temperature Requirements</i>	22
6.4.4 <i>Visible Foam or Floating Solids</i>	22

6.4.5 Surface Water Uses and Criteria	22
6.4.6 Percent Removal	22
6.4.7 Fecal Coliforms	23
6.4.8 Seasonal Disinfection	23
6.4.9 Whole Effluent Toxicity (WET) Monitoring Requirements	23
6.4.10 Whole Effluent Toxicity (WET) Identification and Reduction	23
6.5 LAND APPLICATION REQUIREMENTS	23
6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations	24
6.5.2 General Sludge Management Information	24
6.5.3 Sludge Samples	24
6.5.4 Land Application Characteristic Report	24
6.5.5 Calculation of Water Extractable Phosphorus	24
6.5.6 Monitoring and Calculating PCB Concentrations in Sludge	24
6.5.7 Annual Land Application Report	25
6.5.8 Other Methods of Disposal or Distribution Report	25
6.5.9 Approval to Land Apply	25
6.5.10 Soil Analysis Requirements	25
6.5.11 Land Application Site Evaluation	26
6.5.12 Class B Sludge: Fecal Coliform Limitation	26
6.5.13 Vector Control: Volatile Solids Reduction	26
6.5.14 Class B Sludge - Vector Control: Injection	27
6.5.15 Land Application of Sludge Which Contains Elevated Levels of Radium-226	27
7 SUMMARY OF REPORTS DUE	28

1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)
701	Influent: 24-hour flow proportional composite sampler intake located after grit removal and before primary clarification - includes side stream flows.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	

1.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

2 In-Plant Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
103	Mercury field blanks shall be collected using standard sample handling procedures.

2.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point 103 - Mercury Effluent Blanks

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See Mercury footnote

2.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3 Surface Water Requirements

3.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
001	Effluent: 24-hour composite sampler intake located after the ultraviolet (UV) disinfection light system, just before Parshall flume. Grab samples shall be collected at the effluent trough, after the UV disinfection.

3.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 001 - EFFLUENT

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October only. Monitoring required year round.
Nitrogen, Ammonia (NH ₃ -N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	Report Ammonia effluent value on DMR.
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	Calculated	Report calculated variable Ammonia limit on DMR. See Maximum Ammonia Limits Table below.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim limit. See phosphorus footnotes below for final limits.
Phosphorus, Total		lbs/day	3/Week	Calculated	See phosphorus footnotes below for final mass limit.
Fecal Coliform	Geometric Mean	400 #/100 ml	Weekly	Grab	May-September only

Monitoring Requirements and Effluent Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable	Daily Max	3.1 ng/L	Quarterly	Grab	See mercury footnote below.
Nitrogen, Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Acute WET		TU _a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing footnote below.
Chronic WET		rTU _c	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing footnote below.

3.2.1.1 Average Annual Design Flow

The average annual design flow of the permittee's wastewater treatment facility is 3.5 MGD.

3.2.1.2 Daily Maximum Variable Limits for Nitrogen, Ammonia (NH₃-N) Total

Effluent pH - s.u.	NH ₃ -N Limit - mg/L	Effluent pH - s.u.	NH ₃ -N Limit - mg/L
pH ≤ 7.5	No Limit	8.2 < pH ≤ 8.3	9.4
7.5 < pH ≤ 7.6	34*	8.3 < pH ≤ 8.4	7.8
7.6 < pH ≤ 7.7	29*	8.4 < pH ≤ 8.5	6.4
7.7 < pH ≤ 7.8	24*	8.5 < pH ≤ 8.6	5.3
7.8 < pH ≤ 7.9	20*	8.6 < pH ≤ 8.7	4.4
7.9 < pH ≤ 8.0	17	8.7 < pH ≤ 8.8	3.7
8.0 < pH ≤ 8.1	14	8.8 < pH ≤ 8.9	3.1
8.1 < pH ≤ 8.2	11	8.9 < pH ≤ 9.0	2.6

* During the months of May through October if the pH is less than or equal to 7.9 there is no daily maximum limit for NH₃-N. Limits shown in the table above with an asterisk* apply from November through April only.

Report > 34 mg/L as the daily maximum variable limit when pH is ≤ 7.5 s.u. During May-October report > 20 mg/L as the daily maximum value when pH is ≤ 7.9 s.u.

3.2.1.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3.2.1.4 Phosphorus Water Quality Based Effluent Limitation(s)

The final water quality based effluent limits for phosphorus are 0.1 mg/L six-month average (May-October, November-April), and 0.3 mg/L monthly average, and 3.0 lbs/day annual average effective January 1, 2024 unless:

- (A) As part of the application for the next reissuance, or prior to filing the application, the permittee submits either: 1.) a watershed adaptive management plan and a completed Watershed Adaptive Management Request Form 3200-139; or 2.) an application for water quality trading; or 3.) an application for a variance; or 4.) new information or additional data that supports a recalculation of the numeric limitation; and
- (B) The Department modifies, revokes and reissues, or reissues the permit to incorporate a revised limitation before the expiration of the compliance schedule*.
- (C) Final limits may be revised based on possible future Fox (IL) River TMDL evaluations.

Note: The permittee may also submit an application for a variance within 60 days of this permit reissuance, as noted in the permit cover letter, in accordance with s. 283.15, Stats.

If Adaptive Management or Water Quality Trading is approved as part of the permit application for the next reissuance or as part of an application for a modification or revocation and reissuance, the plan and specifications submittal, construction, and final effective dates for compliance with the total phosphorus WQBEL may change in the reissued or modified permit. In addition, the numeric value of the water quality based effluent limit may change based on new information (e.g. a TMDL) or additional data. If a variance is approved for the next reissuance, interim limits and conditions will be imposed in the reissued permit in accordance with s. 283.15, Stats., and applicable regulations. A permittee may apply for a variance to the phosphorus WQBEL at the next reissuance even if the permittee did not apply for a phosphorus variance as part of this permit reissuance.

Additional Requirements: If a water quality based effluent limit has taken effect in a permit, any increase in the limit is subject to s. NR 102.05(1) and ch. NR 207, Wis. Adm. Code. When a six-month average effluent limit is specified for Total Phosphorus the applicable averaging periods are May through October and November through April.

*Note: The Department will prioritize reissuances and revocations, modifications, and reissuances of permits to allow permittees the opportunity to implement adaptive management or nutrient trading in a timely and effective manner.

3.2.1.5 Alternative Approaches to Phosphorus WQBEL Compliance

Rather than upgrading its wastewater treatment facility to comply with WQBELs for total phosphorus, the permittee may use Water Quality Trading or the Watershed Adaptive Management Option, to achieve compliance under ch. NR 217, Wis. Adm. Code, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. The permittee may also implement an upgrade to its wastewater treatment facility in combination with Water Quality Trading or the Watershed Adaptive Management Option to achieve compliance, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. If the Final Compliance Alternatives Plan concludes that a variance will be pursued, the Plan shall provide information regarding the basis for the variance.

3.2.1.6 Submittal of Permit Application for Next Reissuance and Adaptive Management or Pollutant Trading Plan or Variance Application

The permittee shall submit the permit application for the next reissuance at least 6 months prior to expiration of this permit. If the permittee intends to pursue adaptive management to achieve compliance with the phosphorus water quality based effluent limitation, the permittee shall submit with the application for the next reissuance: a completed Watershed Adaptive Management Request Form 3200-139, the completed Adaptive Management Plan and final plans for any system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the permittee intends to pursue pollutant trading to achieve compliance, the permittee shall submit an application for water quality trading with the application for the next reissuance. If system upgrades will be used in combination with pollutant trading to achieve compliance with the final water quality-based limit, the reissued permit will specify a schedule for

the necessary upgrades. If the permittee intends to seek a variance, the permittee shall submit an application for a variance with the application for the next reissuance.

3.2.1.7 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Fox River upstream/out of the influence of the mixing zone and any other known discharge.

Instream Waste Concentration (IWC): 33%

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.
- **Chronic:** 100, 75, 50, 25, 12.5% (IWC >30%) and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once each year, in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Acute:** Apr-June 2015; Oct-Dec 2016; Jan-Mar 2017; July-Sep 2018; Jan-Mar 2019

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the fourth calendar year of this permit. For example, the next test would be required in (July – Sept 2020).

Chronic tests shall be conducted once each year, in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Chronic:** Apr-June 2015; Oct-Dec 2016; Jan-Mar 2017; July-Sep 2018; Jan-Mar 2019

Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the fourth calendar year of this permit. For example, the next test would be required in (July – Sept 2020).

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: If $LC_{50} \geq 100$, then $TU_a = 1.0$. If LC_{50} is < 100 , then $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Relative Toxic Unit - Chronic (rTU_c) is greater than 1.0 for either species. The rTU_c shall be calculated as follows: If $IC_{25} \geq IWC$, then $rTU_c = 1.0$. If $IC_{25} < IWC$, then $rTU_c = IWC \div IC_{25}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90 day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

4 Land Application Requirements

4.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
004	Anaerobically digested liquid sludge, thickened by gravity belt. Samples shall be taken from the storage tank (with adequate prior mixing) or at the outlet pipe of storage tank during truck loading.

4.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

4.2.1 Sampling Point (Outfall) 004 - Liquid Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Quarterly	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	Quarterly	Composite	
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Radium 226 Dry Wt		pCi/g	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2016
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2016

Other Sludge Requirements	
Sludge Requirements	Sample Frequency
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	Quarterly
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	Quarterly

4.2.1.1 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

4.2.1.2 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

4.2.1.3 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

4.2.1.4 Sludge Which Exceeds the High Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high quality limit for any parameter. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. The formula to be used for calculating cumulative loading is as follows:

$$[(\text{Pollutant concentration (mg/kg)} \times \text{dry tons applied/ac}) \div 500] + \text{previous loading (lbs/acre)} = \text{cumulative lbs pollutant per acre}$$

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

4.2.1.5 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2016**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4.2.1.6 Lists 1, 2, 3, and 4

List 1 TOTAL SOLIDS AND METALS
See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)
Radium-226, pCi/g (dry weight)

List 2 NUTRIENTS
See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3

PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion		Air Drying
Anaerobic Digestion		Composting
Alkaline Stabilization		PSRP Equivalent Process

* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.

List 4

VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O ₂ /hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

4.2.1.7 Daily Land Application Log

Daily Land Application Log		
Discharge Monitoring Requirements and Limitations		
<p>The permittee shall maintain a daily land application log for biosolids land applied each day when land application occurs. The following minimum records must be kept, in addition to all analytical results for the biosolids land applied. The log book records shall form the basis for the annual land application report requirements.</p>		
Parameters	Units	Sample Frequency
DNR Site Number(s)	Number	Daily as used
Outfall number applied	Number	Daily as used
Acres applied	Acres	Daily as used
Amount applied	As appropriate * /day	Daily as used
Application rate per acre	unit */acre	Daily as used
Nitrogen applied per acre	lb/acre	Daily as used
Method of Application	Injection, Incorporation, or surface applied	Daily as used

*gallons, cubic yards, dry US Tons or dry Metric Tons

5 Schedules

5.1 Mercury Pollutant Minimization Program

The permittee shall implement or continue to implement a pollutant minimization program as defined in s. NR 106.145(7), Wis. Adm. Code.

Required Action	Due Date
Implement the Mercury Pollutant Minimization Program: The permittee shall continue to implement the PMP as approved by the Department.	
Submit Annual Status Reports: The permittee shall submit to the Department an annual status report on the progress of the PMP as required by s. NR 106.145(7), Wis. Adm. Code. Submittal of the first annual status report is required by the Date Due.	06/30/2015
Submit Annual Status Report #2: Submit second annual status report.	06/30/2016
Submit Annual Status Report #3: Submit third annual status report.	06/30/2017
Submit Annual Status Report #4: Submit fourth annual status report.	06/30/2018
Submit Final Status Report: Submit the final status report documenting the success of the Mercury PMP. Note: If the permittee wishes to apply for an alternative mercury effluent limitation, that application is due with the application for permit reissuance by 6 months prior to permit expiration. The permittee should submit or reference the PMP plan as updated by the Annual Status Report or more recent developments as part of that application.	06/30/2019

5.2 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 30 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by December 31, 2018 . The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than December 31, 2018 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report. If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by December 31, 2018 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet	06/30/2018

<p>WQBELs', 'Complete Construction', 'Achieve Compliance').</p> <p>STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than January 1, 2024.</p>	
<p>Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs.</p>	12/31/2016
<p>Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design report.</p> <p>If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan.</p> <p>If water quality trading will be undertaken, the plan must state that trading will be pursued.</p>	12/31/2018
<p>Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code.</p> <p>If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code.</p> <p>If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	06/30/2019
<p>Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	06/30/2020
<p>Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final</p>	12/31/2020

<p>construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.)</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	
<p>Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	06/30/2021
<p>Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	06/30/2022
<p>Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	04/01/2023
<p>Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	12/01/2023
<p>Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	01/01/2024

5.3 CMOM (Capacity, Management, Operation and Maintenance) Program Development

Required Action	Due Date
<p>Complete Program Development: Complete development of CMOM Program by August 1, 2016. See CMOM requirements in the Standard Requirements section.</p>	08/01/2016

6 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

6.1 Reporting and Monitoring Requirements

6.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a principal executive officer, a ranking elected official or other duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

6.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

6.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

6.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD₅ and Total Suspended Solids shall be considered to be limits of quantitation
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

6.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

A separate CMAR certification document, that is not part of the electronic report form, shall be mailed to the Department at the time of electronic submittal of the CMAR. The CMAR certification shall be signed and submitted by an authorized representative of the permittee. The certification shall be submitted by mail. The certification shall verify the electronic report is complete, accurate and contains information from the owner's treatment works.

6.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

6.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

6.2 System Operating Requirements

6.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.

The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from an unscheduled bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

6.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

6.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-536, Wis. Adm. Code.

6.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

6.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;

- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

6.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve an unscheduled bypass provided all the following conditions are met:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

6.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for unscheduled bypassing are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

6.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and

- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

6.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. The wastewater treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2), Wis. Adm. Code. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

6.3 Sewage Collection Systems

6.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

6.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

6.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

6.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:

- The date and location of the overflow;
- The surface water to which the discharge occurred, if any;
- The duration of the overflow and an estimate of the volume of the overflow;
- A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
- The estimated date and time when the overflow began and stopped or will be stopped;
- The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
- Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
- A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
- Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
- To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
- The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at <http://dnr.wi.gov/topic/wastewater/SSOreport.html>. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

6.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

6.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall by August 1, 2016 submit to the Department verification that a CMOM program for the sewage collection system has been developed which is consistent with the requirements of NR 210.23, Wis. Adm. Code.
- The permittee shall develop and maintain written documentation of the CMOM program components, and shall verify each year with the submittal of the Compliance Maintenance Annual Report required under the 'Compliance Maintenance Annual Reports' section of this permit that the CMOM program documentation is current and meets the requirements in NR 210.23, Wis. Adm. Code.
- The permittee shall implement a CMOM program consistent with the permittee's program documentation and with the requirements of NR 210.23, Wis. Adm. Code.
- The permittee shall annually conduct a self-audit of activities to ensure the CMOM program is being implemented as necessary to meet the requirements contained in the CMOM program documentation.
- The permittee shall make available CMOM program documentation, a record of implementation activities and the results of the self-audit to the Department on request.

6.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

6.4 Surface Water Requirements

6.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

6.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

6.4.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. ‘Cold Shock’ means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

6.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

6.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

- a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.
- b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.
- c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.
- d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

6.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD₅ and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

6.4.7 Fecal Coliforms

The limit for fecal coliforms shall be expressed as a monthly geometric mean.

6.4.8 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitation for fecal coliforms apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

6.4.9 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition"* (PUB-WT-797, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

6.4.10 Whole Effluent Toxicity (WET) Identification and Reduction

This standard requirement applies only to acute or chronic WET monitoring that is not accompanied by a WET limit. Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including some or all of the following actions:
 - (a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
 - (b) Identify the compound(s) causing toxicity
 - (c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
 - (d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)
- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

6.5 Land Application Requirements

6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

6.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

6.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

6.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

6.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:

$$\text{Water Extractable Phosphorus (\% of Total P)} = \frac{[\text{Water Extractable Phosphorus (mg/kg, dry wt)} \div \text{Total Phosphorus (mg/kg, dry wt)}] \times 100$$

6.5.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

- EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note:** It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.

- EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003 mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

3620C – Florisil
 3640A - Gel Permeation
 3630C - Silica Gel

3611B - Alumina
 3660B - Sulfur Clean Up (using copper shot instead of powder)
 3665A - Sulfuric Acid Clean Up

6.5.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

6.5.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

6.5.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6.5.12 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

$$\text{Geometric Mean} = (X_1 \times X_2 \times X_3 \dots \times X_n)^{1/n}$$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

$$\text{Geometric Mean} = \text{antilog}[(X_1 + X_2 + X_3 \dots + X_n) \div n]$$

Where X = log₁₀ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	log ₁₀
1	6.0 x 10 ⁵	5.78
2	4.2 x 10 ⁶	6.62
3	1.6 x 10 ⁶	6.20
4	9.0 x 10 ⁵	5.95
5	4.0 x 10 ⁵	5.60
6	1.0 x 10 ⁶	6.00
7	5.1 x 10 ⁵	5.71

The geometric mean for the seven samples is determined by averaging the log₁₀ values of the coliform density and taking the antilog of that value.

$$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$$

$$\text{The antilog of } 5.98 = 9.5 \times 10^5$$

6.5.13 Vector Control: Volatile Solids Reduction

The mass of volatile solids in the sludge shall be reduced by a minimum of 38% between the time the sludge enters the digestion process and the time it either exits the digester or a storage facility. For calculation of volatile solids reduction, the permittee shall use the Van Kleeck equation or one of the other methods described in "Determination of Volatile Solids Reduction in Digestion" by J.B. Farrell, which is Appendix C of EPA's *Control of Pathogens in Municipal Wastewater Sludge* (EPA/625/R-92/013). The Van Kleeck equation is:

$$\text{VSR}\% = \frac{\text{VS}_{\text{IN}} - \text{VS}_{\text{OUT}}}{\text{VS}_{\text{IN}}} \times 100$$

$$VS_{IN} - (VS_{OUT} \times VS_{IN})$$

Where: VS_{IN} = Volatile Solids in Feed Sludge (g VS/g TS)

VS_{OUT} = Volatile Solids in Final Sludge (g VS/g TS)

VSR% = Volatile Solids Reduction, (Percent)

6.5.14 Class B Sludge - Vector Control: Injection

No significant amount of the sewage sludge shall be present on the land surface within one hour after the sludge is injected.

6.5.15 Land Application of Sludge Which Contains Elevated Levels of Radium-226

When contributory water supplies exceed 2 pci per liter of Radium 226, monitoring for Radium 226 in sludge is required. Sludge containing Radium 226 shall be land applied in accordance with the requirements in s. NR 204.07(3)(n), Wis. Adm. Code.

7 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Mercury Pollutant Minimization Program -Implement the Mercury Pollutant Minimization Program	See Permit	12
Mercury Pollutant Minimization Program -Submit Annual Status Reports	June 30, 2015	12
Mercury Pollutant Minimization Program -Submit Annual Status Report #2	June 30, 2016	12
Mercury Pollutant Minimization Program -Submit Annual Status Report #3	June 30, 2017	12
Mercury Pollutant Minimization Program -Submit Annual Status Report #4	June 30, 2018	12
Mercury Pollutant Minimization Program -Submit Final Status Report	June 30, 2019	12
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Operational Evaluation Report	June 30, 2018	12
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Compliance Alternatives, Source Reduction, Improvements and Modifications Status	December 31, 2016	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Preliminary Compliance Alternatives Plan	December 31, 2018	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Compliance Alternatives Plan	June 30, 2019	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Progress Report on Plans & Specifications	June 30, 2020	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Plans and Specifications	December 31, 2020	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Treatment Plant Upgrade to Meet WQBELs	June 30, 2021	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Construction Upgrade Progress Report #1	June 30, 2022	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Construction Upgrade Progress Report #2	April 1, 2023	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Complete Construction	December 1, 2023	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Achieve Compliance	January 1, 2024	14
CMOM (Capacity, Management, Operation and Maintenance) Program Development -Complete Program Development	August 1, 2016	14
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	16
General Sludge Management Form 3400-48	prior to any significant sludge	24

	management changes	
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	24
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	25
Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	25
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	15

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
Southeast Region, 2300 N Dr ML King Drive, Milwaukee, WI 53212

APPENDIX B
OPERATIONAL EVALUATION OF PHOSPHORUS REMOVAL

PHOSPHORUS OPERATIONAL EVALUATION REPORT

FACILITY NAME: CITY OF BURLINGTON
WPDES PERMIT NUMBER: WI-002296-09

Background

This report summarizes the review of the existing phosphorus removal process for Burlington in accordance with the provisions of the Operational Evaluation Report requirement contained in the City's current WPDES permit. The Operational Evaluation Report needs to be submitted in accordance with the modified permit schedule contained in the contested case stipulation agreement. Figure 1 shows the overall site plan and Figure 2 shows the process schematic for the Burlington WWTP.

FIGURE 1

Existing Wastewater Treatment Plant Site Map

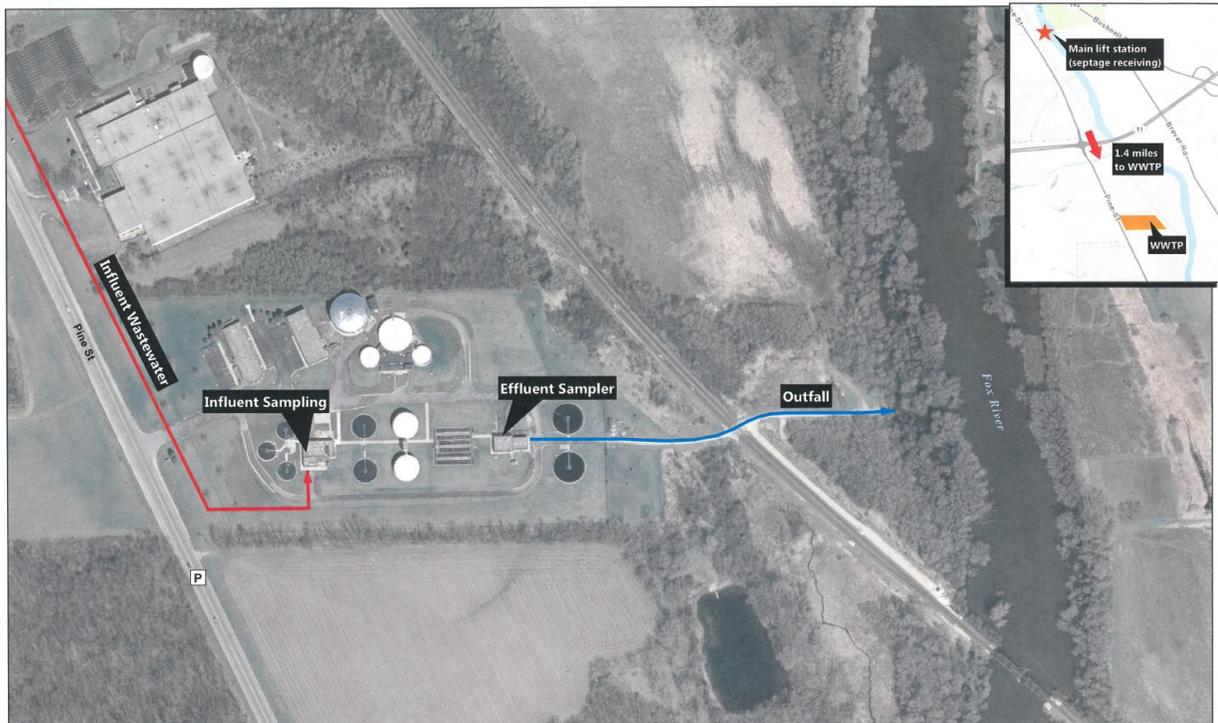
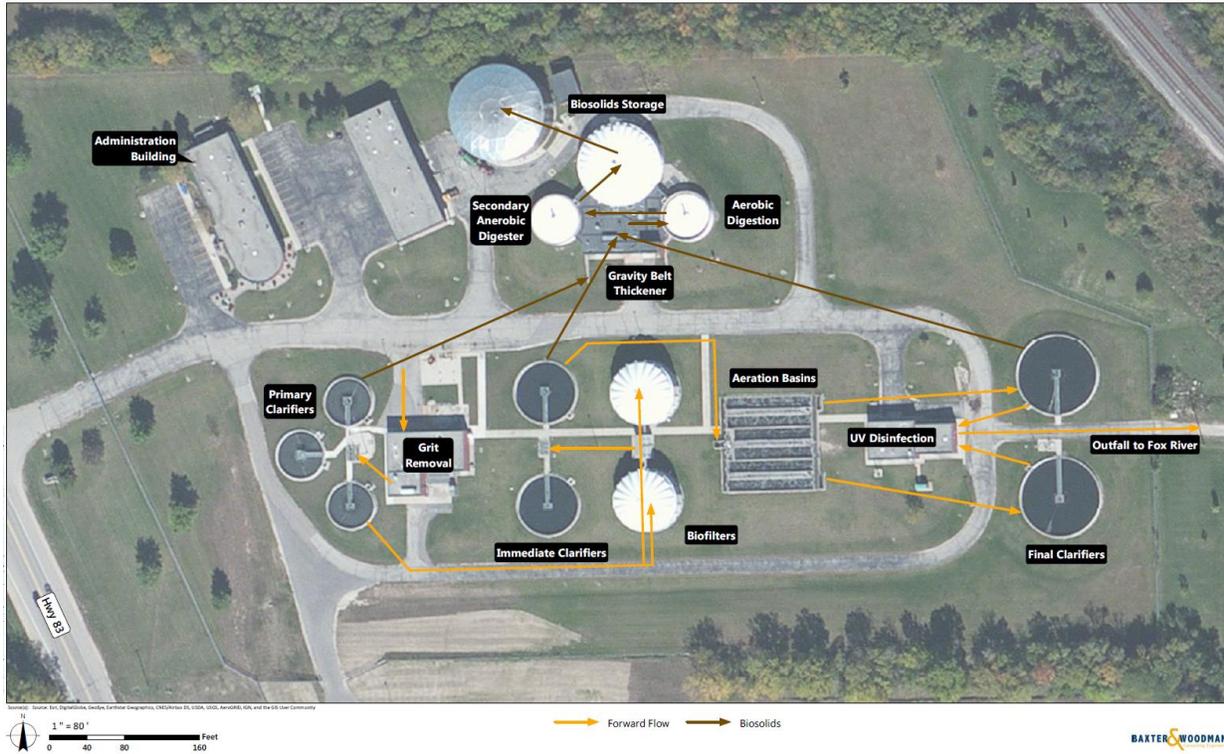


FIGURE 2
Process Schematic



Process Performance and Source Reduction

Table 1 summarizes the overall influent total phosphorus and effluent total phosphorus concentrations for the baseline year 2017. The values presented in this table are averages for the indicated month.

Table 1

City of Burlington Phosphorus Removal Performance (2017)

	Average Daily Influent Flow (MGD)	Influent		Effluent		% Removal
		Total Phosphorus (mg/L)	Total Phosphorus (lbs/day)	Total Phosphorus (mg/L)	Total Phosphorus (lbs/day)	
January	2.659	3.08	68.30	0.68	15.15	78%
February	2.631	3.03	66.49	0.40	8.80	87%
March	2.780	3.20	74.19	0.38	8.76	88%
April	3.380	2.69	75.83	0.49	13.73	82%
May	3.429	2.82	80.65	0.65	18.62	77%
June	3.056	3.01	76.72	0.54	13.76	82%
July	5.582	2.17	101.02	0.36	16.95	83%
August	3.607	2.79	83.93	0.43	13.00	85%
September	2.993	3.22	80.38	0.29	7.29	91%
October	2.913	2.98	72.40	0.34	8.19	89%
November	2.814	4.59	107.72	0.46	10.87	90%
December	2.648	5.14	113.51	0.36	7.95	93%
Annual	3.21	3.23	83.43	0.45	11.92	85%

The level of phosphorus in the City influent flow is more dilute than typical influent due to the impacts of industrial dischargers. The typical influent total phosphorus averages about 3.2 mg/L. The two stage process (trickling filter followed by separate stage nitrification) removes sufficient BOD so that filaments are not a problem. At the present time, about 25% of the forward flow is diverted around the trickling filter to provide improved settling in the nitrification process.

The current phosphorus removal system uses ferrous sulfate at a dose rate of 87 gpd with an active iron in the range of 11% to 14%. The costs are currently \$0.47/gallon. The annual costs for chemicals for phosphorus removal is approximately \$16,500 annually. The effective dose rate for Burlington is about 1 mole of iron per mole of phosphorus removed. This is slightly lower than the typical 1.5 moles iron to phosphorus for facilities using chemicals for phosphorus removal.

The City currently uses a phosphate additive for corrosion control in their water supply system only at the Well 11 treatment facility since it is an ion-exchange process and not the HMO (Hydrous Manganese Oxide) process used at other City wells.

Enhanced Phosphorus Removal with Chemical Addition

The interim limit of 1 mg/L on a monthly average basis remains a reasonable target for Burlington without filtration. The current system adds ferrous sulfate to the activated sludge portion of the process. Potential optimization steps for the chemical addition to reduce costs and potentially lower effluent total phosphorus are discussed below under the optimization of chemical phosphorus removal. Biological phosphorus removal is generally not a viable option with a two-stage process since there is insufficient carbon available to drive biological phosphorus removal.

Compliance with the Water Quality Based Effluent Limitations

Since the City will only be able to meet a 0.60 mg/L monthly average limit consistently without filtration, the lower water quality based effluent limit of 0.100 mg/L six-month average will not be attainable. In addition, compliance with this effluent limit will likely require enhanced filtration (e.g. two stage filters or ballasted sand filtration).

Optimization of Chemical Phosphorus Removal

The current phosphorus removal system uses ferrous sulfate to remove phosphorus. The City should consider the following options to optimize chemical phosphorus removal:

1. Purchase an on-line phosphorus analyzer to pace the addition of a phosphorus removal chemical. This is particularly important if the City continues to use ferrous sulfate that tends to not have a uniform concentration of iron throughout the storage tank.
2. Evaluate other potential coagulants including alum, polyaluminum chloride, and ferric chloride to determine if additional removal of phosphorus would be possible at a similar cost to the current operations. Historically, ferrous sulfate or ferrous chloride were used in Wisconsin due to its low cost but the costs for ferrous sulfate have increased and the costs for ferric chloride and alum are now more competitive. Ferric chloride at a 38% active iron concentration costs about \$1.30/gallon versus the current \$0.47/gallon for ferrous sulfate. Assuming 12.5% iron for the ferrous sulfate and 38% active for the ferric chloride the annual costs for ferric chloride would be about \$14,000 or slightly lower than the current costs. Ferric chloride, however, is a uniform product throughout the tank volume. Jar testing could be done to confirm the appropriate levels of ferric chloride, alum, or polyaluminum chloride (PAC) to add to meet a target total phosphorus limit. These compounds could also be tested using larger totes as a part of a pilot study at the facility.
3. Sample the recycle stream from the Gravity Thickener operation for total phosphorus.

Submitted for Approval by: (signed) _____ Date of Submittal: 12/26/18

(printed) Donald T. Hefty
Authorized Permit Representative



DATE: March 19, 2019

SUBJECT: ORDINANCE 2046(12) - To amend Chapter 104-8(C) and 234-2(B) of the City of Burlington Municipal Code to Allow Dogs in City Parks.

SUBMITTED BY: Peter Riggs, Director of Public Works

BACKGROUND/HISTORY:

Chapter 234-2(B) and 104-8(C) of the City of Burlington Municipal Code regulate the presence of dogs in parks. At the February 20, 2019 Committee of the Whole meeting staff was directed to present a change to the code that would allow dogs in City parks. Attached is an ordinance to amend these sections of the municipal code.

BUDGET/FISCAL IMPACT:

Allowing dogs in parks will require installation of dog waste collection stations and new signage reflecting current rules. The purchase and installation of these items is estimated at \$8,700, excluding labor costs.

Additional labor will be needed to empty these collection stations throughout the year. It is estimated approximately 2 hours per week will be needed for a total annual cost of \$7,100 based on average DPW labor rates and fleet costs.

Nether of these expenses were specifically allocated in the 2019 budget. Staff could absorb these costs in the operating budget with minimal impact to other services.

RECOMMENDATION:

The Park Board does not support changing the ordinance. At the 1/17/19 meeting of the Park Board a motion to recommend a change to the ordinance failed to pass on a vote of 2 in favor and 4 opposed.

Staff does not have a strong recommendation in support or in opposition. Operationally, allowing dogs in parks would require additional financial and labor resources. Based solely on these additional resource needs, staff would not recommend changing the ordinance.

TIMING/IMPLEMENTATION:

This item is presented for discussion at the March 19, 2019 Committee of the Whole meeting and is scheduled for final consideration at the April 3, 2019 Common Council meeting.

Attachments

Ord 2046(12) Dogs in Parks
Correspondence regarding dogs in the park

**AN ORDINANCE TO AMEND SECTION 104-8(C), DOGS AND CATS RUNNING AT LARGE,
AND 234-2(B)(1), PARK REGULATIONS, OF THE CITY OF BURLINGTON MUNICIPAL
CODE TO ALLOW DOGS IN PARKS**

The Common Council of the City of Burlington do ordain as follows:

Section 1. Section 104-8(C), Dogs and cats running at large, is hereby deleted.

Section 2. Section 234-2(B)(1), Dogs in Parks, is hereby deleted, and in its place the following new Section 234-2(B)(1):

- (1) Any person who brings a dog into any City of Burlington park and/or multiuse path shall keep said dog on leash and under their control at all times. Any person who brings a dog into any City of Burlington park and/or multiuse path shall immediately remove any dog exhibiting aggressive behavior; shall be liable for injury caused by said dog; shall be responsible for the immediate repair of damage caused by said dog; shall be responsible for immediately cleaning and removing any defecation of said dog; and shall comply with all animal control ordinances as set forth in Chapter 104.

Section 3. This ordinance shall take effect and be in full force after its passage and publication as required by law.

Introduced: March 19, 2019
Adopted:

Jeannie Hefty, Mayor

Attest:

Diahn Halbach, City Clerk

Megan Watkins

From: Hoffman Patricia <phoffman308@gmail.com>
Sent: Monday, March 11, 2019 9:57 PM
To: Mayor; Bob Grandi; Susan Kott; Tom Preusker; Jon Schultz; Ryan Heft; Steve Rauch; Todd Bauman; Theresa Meyer; Carina Walters
Cc: HOFFMAN Pat
Subject: Dogs in City Parks

Dear Mayor Hefty and Aldermen/women,

I am writing to express my support for a change in the City Ordinance to allow dogs in our parks. I appreciate the enormous amount of time that has been devoted to this subject over the past several years and especially your willingness to rethink the issue.

I believe that the marketing and branding committees that worked for so many months to bring revitalization ideas to the City Council have the right idea on this issue—we want to attract new, young families and they come with dogs, dogs who are considered part of the family. I myself am a dog owner and lover—and yes, I realize not everyone is and I respect that. I feel that a well crafted ordinance that requires reasonable limits such as leashes and clean up of dog waste will be easier in the long run to enforce than the sweeping current law that our police do not have the person power to enforce. The current situation leaves too many dogs in parks with no rules to govern their presence.

As I stated at the Park Board Meeting a few months ago—the issue of animal waste is an empty argument from my perspective. The geese cause a far greater amount of animal waste and we have no way of getting them to clean up after themselves. Frankly, animal waste from rabbits, squirrels, birds, and all manner of creepy crawly things is everywhere and cannot be controlled. A well written ordinance can at least go a long way towards the clean up of dog waste. Of course there will be people who violate—there are already people who feel no compunction about walking away from the deposits their dogs make or who let their cats run feral. Nothing we can do will change some people but we can make every effort to attract new residents who value our community and our parks and who want them to remain pleasant for all our citizens.

I am hopeful that a new ordinance can be enacted in the very near future. Thank you for your consideration.

Patricia Hoffman
308 S Oakland Ave
phoffman308@gmail.com

Diahnn Halbach

From: Melissa Grandi <melissaestatz@gmail.com>
Sent: Tuesday, March 5, 2019 6:24 PM
To: Mayor; Bob Grandi; Susan Kott; Tom Preusker; Jon Schultz; Ryan Heft; Steve Rauch; Todd Bauman; Theresa Meyer; Carina Walters
Subject: Dogs in City Parks

Good evening,

This email is to express our family's support of allowing dogs in all of our city's parks. As a young family with small children, we feel no apprehension or concern with having leashed dogs enjoying the parks along with us. We moved to Burlington from Chicago, where dogs were frequently welcomed in not only parks, but also many stores and restaurant patios. This is becoming common in many communities as dogs have become such an integral part of families, both young and old. It seems unfair to restrict people from enjoying our wonderful community parks with them. We hope you'll take this into consideration.

Thank you for your time,
Melissa and Andrew Statz and family

Megan Watkins

From: Suzanne Nelson <gregsuznelson@gmail.com>
Sent: Saturday, March 9, 2019 11:21 AM
To: Mayor; bgrand@burlington-wi.gov; Susan Kott; tpreusker@bujlrongton-wi.gov; Jon Schultz; rheft@burlington-wi.gov; srauch@burlington-wi.gov; tbauman@burlington-wi.gov; Theresa Meyer; cwalters@burlington-wi.gov
Subject: Dogs in City Parks

Hello,

We are sending this message in support of allowing leashed dogs in all our city parks. We encourage you to allow families and individuals with dog pets to be welcomed in our parks. Dogs have become important members of families. It is becoming a trend all over the country to allow dogs with leashes in parks. I know of families who have not chosen to live in certain cities because dogs were not allowed to be with them when they recreate. We have traveled the United States and have not seen any problem with dogs being with families in parks or other public areas. Let's be proactive and show that we are welcoming to families and their dogs.

Thank You for taking time to hear our opinions.
Greg and Suzanne Nelson

Megan Watkins

From: Burlington Flowers <burlingtonflowers@sbcglobal.net>
Sent: Monday, March 11, 2019 1:46 PM
To: Mayor
Subject: Dogs and Parks

Dear Ms. Mayor,

I'm writing to express my concern regarding dogs in city parks. I don't believe that adding another ordinance to the books makes any sense. People need to take responsibility. I do believe that dog owners have the right to walk dogs leashed and under control in the parks. Why make another ordinance when we can't keep up with the ones we have. I do believe a great solution would be to put the responsibility where it belongs. The Owner!

Increase the fine so high they understand facieses won't be tolerated on any city property. No new ordinance just increasing the current fines! I would be willing to bet the problem would be solved or we will have an monetary increase to the City. I'm sure advertising and people to remind others that it could cost them a large fine \$100.00 will also help. I have had much success using this tactic on parking violators.

Respectfully,
Kevin M. O'Brien

Megan Watkins

From: noreply@civicplus.com
Sent: Friday, March 1, 2019 8:51 AM
To: Mayor; Susan Kott; Theresa Meyer; Ryan Heft; Steve Rauch; Jon Schultz; Tom Preusker; Todd Bauman; Bob Grandi; Carina Walters; Megan Watkins
Subject: Online Form Submittal: Correspondence to Mayor & Aldermen

If you are having problems viewing this HTML email, click to view a [Text version](#).

Correspondence to Mayor & Aldermen

Describe your concern:	
Description/Concern*	
I would like you to maintain the current no-dogs ordinance in the city parks, due to safety and nuisance behaviors.	
Photograph:	[]
Your Information	
Name:	Margaret L Epping
Street Number and Name:	516 WESTRIDGE AVE
Address Line 2:	
City:	BURLINGTON
State:	WI
Zip Code:	53105-1141
Phone Number:	2622102968
Fax Number:	
Email Address:	margaret.epping@gmail.com
Preferred Contact Method:*	[Email V]

* indicates required fields.

View any uploaded files by [signing in](#) and then proceeding to the link below:
<http://www.burlington-wi.gov/Admin/FormHistory.aspx?SID=483>

The following form was submitted via your website: Correspondence to Mayor & Aldermen

Description/Concern: I would like you to maintain the current no-dogs ordinance in the city parks, due to safety and nuisance behaviors.

Photograph:: No file was uploaded

Name:: Margaret L Epping

Street Number and Name:: 516 WESTRIDGE AVE

Address Line 2::

City:: BURLINGTON

State:: WI

Megan Watkins

From: William Milatz <wwmbhs66@gmail.com>
Sent: Saturday, March 2, 2019 3:02 PM
To: Mayor; Susan Kott; Bob Grandi; srauch@burlington-i.gov; Todd Bauman
Subject: Park Ordinance Change-Dogs
Attachments: Park Ordinance Dogs.xlsx

Attached find my letter of concern regarding the possible ordinance change for allowing dogs in our parks. I am strongly against the change.

William W. Milatz, wwmbhs66@gmail.com or 262/492-7684

TO : Ms. Jenny Amborn, Park Board President

4-Mar-19

Susan Kott, First District Alderman, Bob Grandi, Second District Alderman

Steve Rauch, Third District Alderman, Todd Bauman, Fourth District Alderman

Jeannie Hefty, Mayor

FROM : William W. Mialtz, Burlington Women's Recreational Softball League Administrator

156 North Kendrick Avenue

Burlington, WI 53105/0513

RE : Ordinance Not Allowing Dogs in our Parks

I am a former City of Burlington Volunteer Firefighter, Retired. I was appointed to the Burlington Park Board during Jeannie Hefty's first mayoral term in 1992, serving the the Park Board for 15 years until 2007, serving as Park Board President for 9 years, and lastly an appointed member of the Planning Commission for 9 years.

Currently, I have been the administrator for the Burlington Women's Recreational Softball League for 5 or 6 years during the summer using the Congress Street Softball Park for the games, and a former amateur baseball umpire and for 30 years I was a certified WIAA softball and baseball umpire.

I have a real concern and love for all our parks regarding the possible ordinance change which would allow dogs in any of our parks. I am completely against this change for a number of reasons, the same which was voted 4 to 2 from the Park Board to not change the ordinance. I am in agreement with their safety, nuisance, and sanitation concerns and I place on the league schedule that no one should bring a dog to the Congress Street Diamond on game nights and I strictly enforce the ordinance in a forceful manner due to children roaming the park during each game day.

The city does have a park specifically for dogs on the south side of the city for exercise and play. I do strongly feel that the ordinance should not be changed for the concerns that I stated, for the safety of children that are in our beautiful parks year round and I support the Park Board's 4 to 2 vote.

Respectfully submitted,

William W. Milatz

Diahnn Halbach

From: Bil <bils@att.net>
Sent: Thursday, March 7, 2019 4:56 PM
To: Jeannie Hefty; Susan Kott; tmeyer@burlington-wi.gov; Bob Grandi; rhefy@burlington-wi.gov; Shultz, JonExtFrwr; Steve Rauch; Tom Preusker; Todd Bauman; Peter Riggs; Carina Walters; Alan Babe; Anderson, Mark; Zmudzinski, Brian; Gregory Guidry
Cc: enadolski@standardpress.com
Subject: Dogs in Parks

Good Afternoon

Thank you for all the time and dedication all of you put in for the City of Burlington.

I was reading the article in the local paper about allowing dogs in the parks and just had to respond.

First and foremost, I'm a dog person, I grew up with dogs, and like dogs a lot.

And dogs like me.

But not everyone should be obligated to like dogs.

The idea of bending the rules to allow dogs in all the public parks is just plain goofy.

Is that not why we have a Dog Park?

A park JUST for the dogs.

A park I gave a pretty good chunk of change towards when it was designed and built years ago.

When I take a walk through the community, I often see 'packages' left behind by dogs, or dog owners doing the pretend pick-up. Do we really want that in the public parks as well?

While the concept might seem to make sense, once you open the flood gates, it's difficult to hold the water back.

Dog owners live in dog world, and some dogs are just nasty by nature. Burlington should not have to conform to the dogs.

That does not mean that all dogs should be kept at home. But some places should be free from dogs just because some people love to sit or lie on the grass where no dogs have possibly done their necessities and young

children don't know when a dog approaches them if they are so friendly, just scare them. Not to mention young kids playing on the grass next to where a dog had done their business even if it has been removed, the germs would still be there.

Anyway just to have some places only for people should not be a problem. Should it?

Thank you for your time.
Bil Scherrer

Diahnn Halbach

From: Carina Walters
Sent: Monday, March 11, 2019 11:51 AM
To: Diahnn Halbach
Cc: Megan Watkins
Subject: FW: a request has been modified
Attachments: ATT00001.bin

Diahnn,
Can this be placed in the Council packet.

From: do_not_reply@civicplus.com [mailto:do_not_reply@civicplus.com]
Sent: Monday, March 11, 2019 10:53 AM
To: Peter Riggs <priggs@burlington-wi.gov>; Angela Hansen <ahansen@burlington-wi.gov>; Megan Watkins <Megan@burlington-wi.gov>; Carina Walters <cwalters@burlington-wi.gov>
Subject: a request has been modified

Recent Activity for Your Request

Comment added by *Angela Hansen* on March 11, 2019 10:52 AM

Thank you Mr. Euler for your opinion regarding this matter. We always appreciate feedback from our residents. We also recommend you notify your aldermen (Todd Bauman - tbauman@burlington-wi.gov & Tom Preusker - tpreusker@burlington-wi.gov) regarding your stance on this issue as they along with the other members of the City Council make the final decision regarding whether or not to allow dogs in City parks.

Park -General Inquiry/Request for Service/Complaint Form

#436

934 Crestwood Drive
,

Log In To
Request Tracker

Just my opinion, please: The City considering allowing dogs in public parks must be avoided for sanitary conditions as well as safety issues !! Who wants to step into messes anywhere in a public park?!!!! There is already a dg-park with enough expense as it is. People are animal crazy nowadays. Also, who wants to be accosted by a critter ?!!!! Thanks for reading.



COMMITTEE OF THE WHOLE

ITEM NUMBER 6B

DATE: March 19, 2019

SUBJECT: ORDINANCE 2047(13) - To approve annexing territory located at 1063 Spring Valley Road (51-002-02-19-06-016-000) to the City of Burlington, Racine County, Wisconsin.

SUBMITTED BY: Megan Watkins, Assistant City Administrator | Zoning Administrator

BACKGROUND/HISTORY:

Gary and Heather Kellermeier of 1063 Spring Valley Road have submitted a petition for direct annexation for property located at 1063 Spring Valley Road. This parcel is contiguous and across the street from the Aurora Health Center. The property petitioned for annexation will consist of 0.48 acres and will be permanently zoned Rs-2, Single Family Residential District. The applicant is requesting this annexation in order to have access to municipal water and sewer for their residence. The population of this parcel is four with two electors.

The passage of this ordinance is the final step in the annexation process. The Plan Commission recommended approval of the annexation with permanent zoning of Rs-2, Single-Family Residential District at its March 12, 2019 meeting. Additionally, the Department of Administration has found this annexation in the public interest per Wis.Stat. 66.0217(6), as indicated in the attached letter.

BUDGET/FISCAL IMPACT:

The 2018 Town of Burlington property tax amount for the parcel was \$2,789.89. In the event that this land is annexed to the City, then pursuant to Wis. Stat. ss. 66.1105(4)(gm)1 the City of Burlington pledges to pay the Town of Burlington an amount equal to the property taxes levied on the territory that is being annexed for a term of five years.

RECOMMENDATION:

Staff recommends acceptance of the Unanimous Petition for Direct Annexation from Gary and Heather Kellermeier.

TIMING/IMPLEMENTATION:

This item is for discussion at the March 19, 2019 Committee of the Whole meeting, Public Hearing the same night, and scheduled for final consideration at the April 3, 2019 Common Council meeting.

Attachments

- Ord 2047(13) Kellermeier 1063 Spring Valley Rd annexation
 - Annexation Petition
 - Letter from DOA
 - Map
-

AN ORDINANCE ANNEXING TERRITORY LOCATED AT 1063 SPRING VALLEY ROAD (51-002-02-19-09-002-000) TO THE CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

The Common Council of the City of Burlington, Wisconsin, do ordain as follows:

SECTION 1. Territory Annexed. In accordance with §66.021 of the Wisconsin Statutes and the petition for direct annexation by unanimous approval filed with the City Clerk on the 17th day of January, 2019, the following described territory having a population of four (4) and located in the Town of Burlington, Racine County, Wisconsin, is annexed to the City of Burlington, Wisconsin:

Town of Burlington Tax Key Number: 51-002-02-19-06-016-000
Population Total – 4 (2 electors)

Beginning at the Southwest corner of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of Section 6, Township 2 North, Range 19 East of the 4th P.M., run thence North on the West line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of Section 6, 560.00 feet to a point which marks the place of beginning of a parcel of land hereinafter described; thence continue North on the said West line 105.00 feet to a point; thence East parallel with the South line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of said section, 200.0 feet to a point; thence South parallel with the West line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of said section, 105.00 feet to a point; thence West parallel with the South line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of said section, 200.00 feet to a point and the place of beginning. Said land being in the Town of Burlington, Racine County, Wisconsin. Said land contains 0.48 acres.

SECTION 2. Effect of Annexation. From and after the date of this ordinance, the territory described in Section 1 shall be a part of the City of Burlington for any and all purposes provided by law and all persons coming or residing within such territory shall be subject to all ordinances, rules and regulations governing the City of Burlington.

SECTION 3. Zoning Classification. Upon recommendation of the Planning Commission, the territory annexed to the City of Burlington by this ordinance is zoned Rs-2, Single-Family Residential District.

SECTION 4. Ward Designation. The territory described in Section 1 of this ordinance is hereby made part of the fifth ward of the City of Burlington, subject to the ordinances, rules and regulations of the City of Burlington governing wards. The population of the property is four (two electors).

SECTION 5. Pursuant to section 60-4 of the Code of the City of Burlington, the property set forth in Section 1 shall be added to the official map of the City of Burlington, upon the recommendation of the Plan Commission at its March 12, 2019 meeting and the public hearing held by the Common Council at its March 19, 2019 meeting.

SECTION 6. Payment to Town. Pursuant to Wis. Stat. ss. 66.1105(4)(gm)1, the City of Burlington pledges to pay the Town of Burlington an amount equal to the property taxes levied on the territory that is being annexed for a term of five years.

SECTION 7. Severability. If any provision of this ordinance is invalid or unconstitutional, or if the application of this ordinance to any person or circumstances is invalid or unconstitutional, such invalidity or unconstitutionality shall not affect the other provisions or applications of this ordinance which can be given effect without the invalid or unconstitutional provision or application.

SECTION 8. It is further ordained that the Clerk shall cause this Ordinance to be published as a Class 1 notice. The Clerk shall also perform the filing requirements of Wis. Stat. s. 66.0223(1).

SECTION 9. Effective Date. This ordinance shall take effect upon passage, public hearing and publication as provided by law.

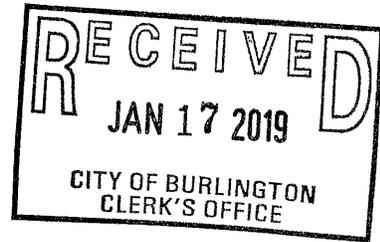
Introduced: March 19, 2019
Adopted:

Jeannie Hefty, Mayor

Attest:

Diahnn Halbach, City Clerk

January 8, 2019



City Clerk Diahnn Halbach
300 N. Pine Street
Burlington, WI 53105

Re: Annexation of 0.488 Acres of Property from the Town of Burlington to
the City of Burlington

Dear Ms. Halbach:

In accordance with Section 66.0225, Wis. Stats., I respectfully submit for your information the enclosed Petition for Direct Annexation by Unanimous Consent filed with the City of Burlington, Racine County by Gary T. Kellermeier and Heather R. Kellermeier to annex real property located in the Town of Burlington to the City of Burlington.

The Petitioner requests to have the property zoned Single Family Residential at the time of annexation.

Per Wis. Stats. copies of this Notice are provided to:

Clerk Town of Burlington
Clerk City of Burlington

If you have any questions in regard to this letter or the enclosed Petition, please call the undersigned at 262-745-7524.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary T. Kellermeier".

Gary T. Kellermeier

Enclosures:

Copy of Request for Annexation Review Application WI DOA
Copy of Petition for Direct Annexation by Unanimous Consent

PETITION FOR DIRECT ANNEXATION BY UNANIMOUS APPROVAL

BY UNANIMOUS CONSENT OF PROPERTY OWNERS OF TERRITORY LOCATED IN THE TOWN OF BURLINGTON RACINE COUNTY WISCONSIN TO THE CITY OF BURLINGTON RACINE COUNTY WISCONSIN PURSUANT TO SECTION 66.0217 WIS STATS.

THIS PETITION of Gary T. Kellermeier and Heather R. Kellermeier, hereinafter referred to as Petitioners as the owners of record of real property known as 1063 Spring Valley Road, Burlington, Wisconsin which is in the territory sought to be annexed, do respectfully state represent and show to the City of Burlington as follows:

1. The Petitioners are the owners of record of the real property in the territory sought to be annexed which property is located contiguous to the City of Burlington in the Town of Burlington Racine County Wisconsin and legally described in Exhibit A herein after Subject Territory.
2. The Petitioners respectfully request all of the Subject Territory contiguous to the City of Burlington Racine County, Wisconsin and currently in the Town of Burlington Racine County, Wisconsin be annexed to the City of Burlington.
3. Attached hereto as Exhibit B and incorporated herein by reference is a scale map of the subject Territory sought to be annexed.
4. There are two electors residing in the Subject Territory sought to be annexed hereunder.
5. The current population of the Subject Territory sought to be annexed hereunder is four.
6. The Subject Territory is presently zoned Residential by the Town of Burlington pursuant to the Town of Burlington and Racine County Ordinance.
7. The Petitioner believes this Petition and the Subject Territory sought to be annexed hereunder meets all legal requirements for annexation and such annexation is in the public interest.

As provided by law this Petition Exhibit A Legal Description of Lands to be Annexed and Exhibit B Scaled Annexation map will be filed with the Clerk of the City of Burlington Racine County Wisconsin and also with the Clerk of the Town of Burlington Racine County Wisconsin.

We, the undersigned, constituting all of the owners of the real property, and all of the electors residing in, the following territory of the Town of Burlington, Racine County, Wisconsin, lying contiguous with the City of Burlington to annex the territory described below and shown on the attached scale map to the City of Burlington, Racine County, Wisconsin.

We, the undersigned, elect that this annexation shall take effect to the full extent consistent with outstanding priorities of other annexation, incorporation or consolidation proceedings, if any.

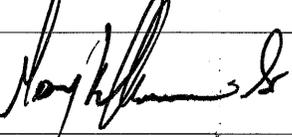
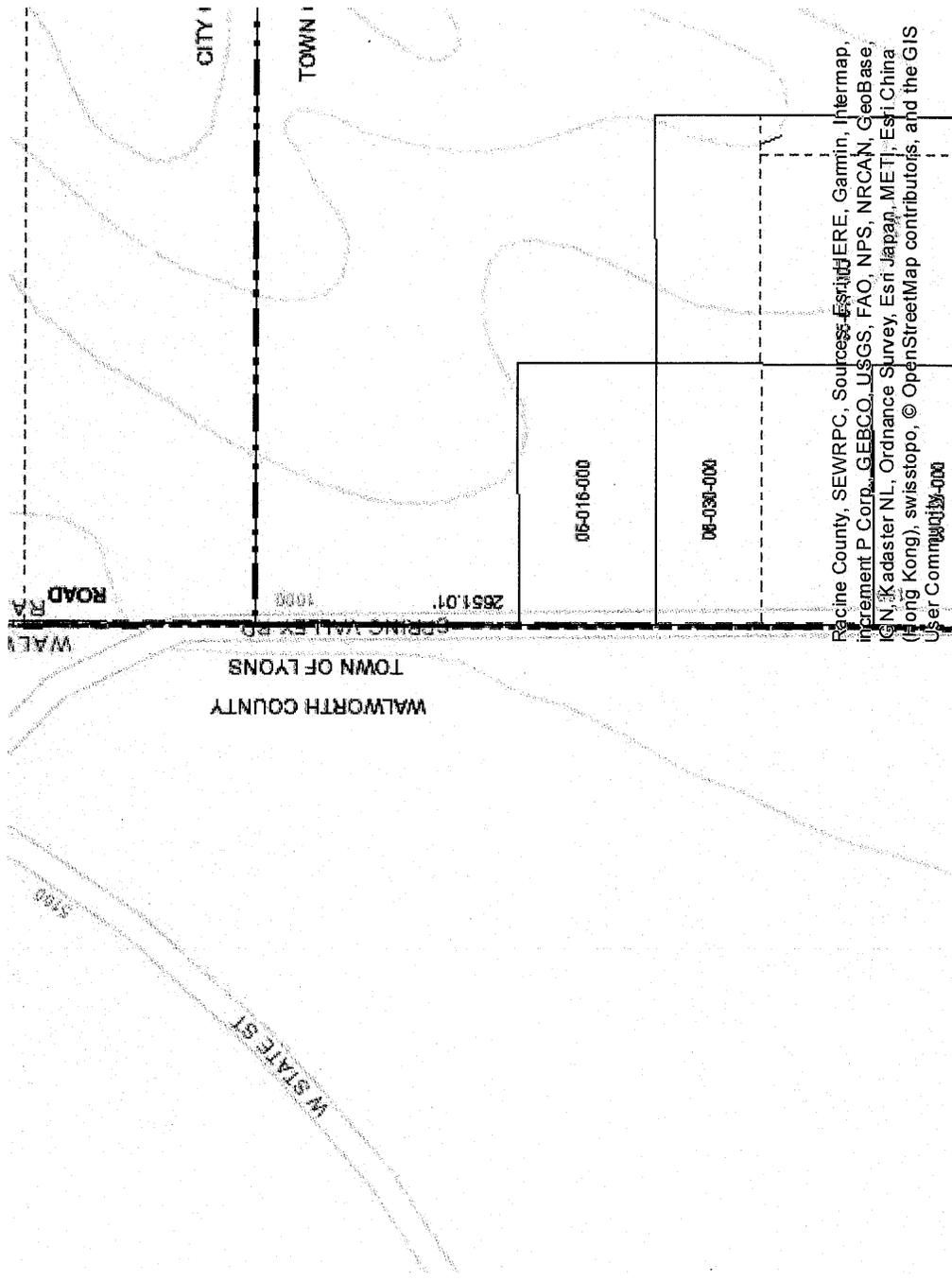
Signature of Petitioner	Date of Signing	Owner/Elector	Address or Description of Property
1. 	1-8-19	Owner	1063 Spring Valley Road Burlington, WI 53105
2. <i>Heather Z. Kellerman</i>	1-8-19	Owner	1063 Spring Valley Road Burlington, WI 53105

EXHIBIT A: LEGAL DESCRIPTION OF LAND TO BE ANNEXED

Beginning at the Southwest corner of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of Section 6, T2N, R19E of the 4th P.M., run thence North on the West line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of Section 6, 560.00 feet to a point which marks the place of beginning of a parcel of land hereinafter described; thence continue North on the said West line 105.00 feet to a point; thence East parallel with the South line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of said section, 200.00 feet to a point; thence South parallel with the West line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of said section, 105.00 feet to a point; thence West parallel with the South line of the Northwest $\frac{1}{4}$ of the Northwest $\frac{1}{4}$ of said section, 200.00 feet to a point and the place of beginning. Said land being in the Town of Burlington, Racine County, Wisconsin.

EXHIBIT B: PLAT OF SURVEY



PLAT OF RESURVEY AND PROPOSED HOUSE LOCATION
FOR

WARD A. McDONALD and MARY L. McDONALD

Description

Beginning at the Southwest corner of the Northwest 1/4 of the Northwest 1/4 of Section 6, T2N., R19E., of the 4th P.M., run thence North on the West line of the Northwest 1/4 of the Northwest 1/4 of Section 6, 560.00 feet to a point which marks the place of beginning of a parcel of land hereinafter described; thence continue North on the said West line 105.00 feet to a point; thence East parallel with the South line of the Northwest 1/4 of the Northwest 1/4 of said section, 200.00 feet to a point; thence South parallel with the West line of the Northwest 1/4 of the Northwest 1/4 of said section, 105.00 feet to a point; thence West parallel with the South line of the Northwest 1/4 of the Northwest 1/4 of said section, 200.00 feet to a point and the place of beginning. Said land being in the Town of Burlington, Racine County, Wisconsin.

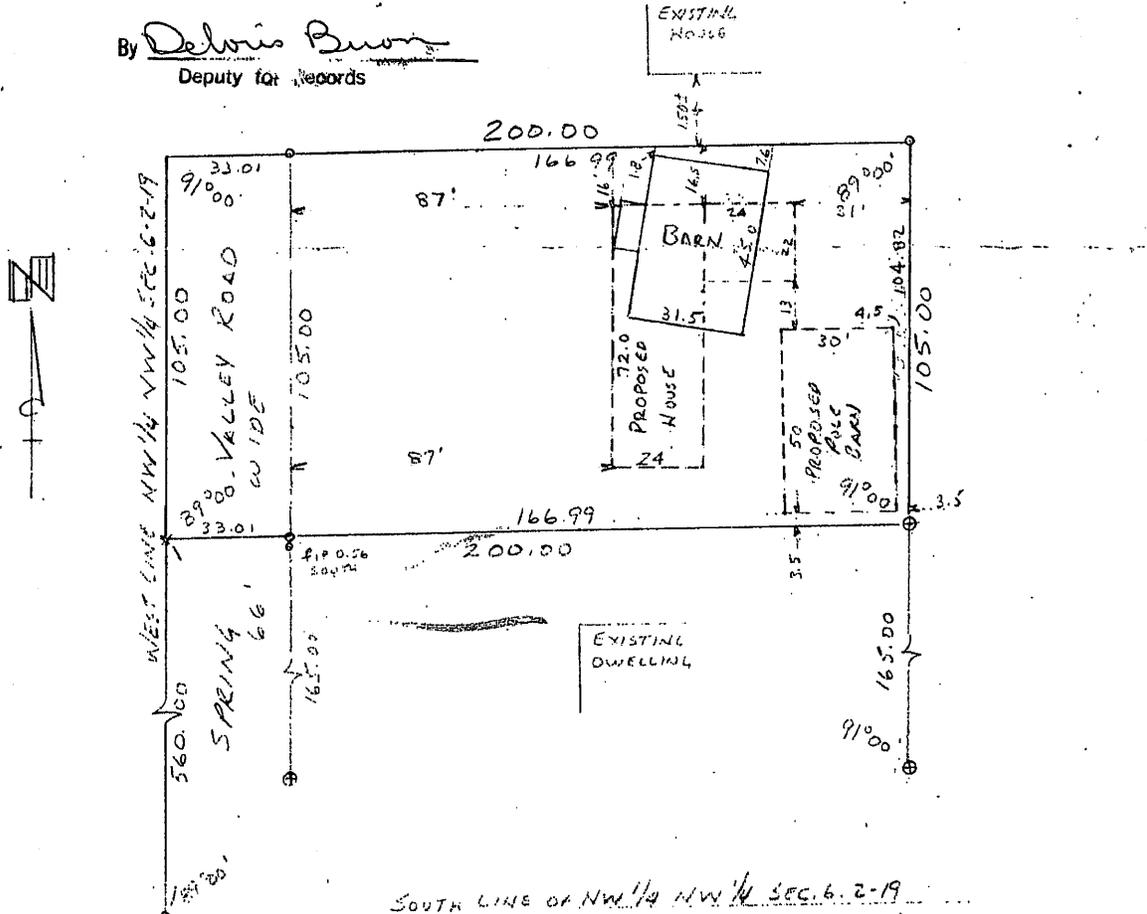
The above description is taken from warranty deed dated April 28, 1972.

002-02-19-06-016-000

Racine County Surveyor File No **2165**
Received by *[Signature]*

JUN 2 1977

By *[Signature: Deloris Buon]*
Deputy for Records



SOUTH LINE OF NW 1/4 NW 1/4 SEC. 6-2-19



- ~ LEGEND ~
- o FOUND IRON PIPE
 - ⊕ FOUND CONC. MONUMENT
 - o SET SPIKE IN PAVEMENT
 - x SET 1"X2" IRON PIPE
- SCALE: 1" = 40'

"I CERTIFY THAT I HAVE SURVEYED THE ABOVE DESCRIBED PROPERTY AND THAT THE ABOVE PLAT IS AN ACCURATE SURVEY AND A TRUE REPRESENTATION THEREOF AND CORRECTLY SHOWS THE EXTERIOR BOUNDARY LINES AND LOCATION OF BUILDINGS AND OTHER IMPROVEMENTS ON SAID PROPERTY AND THE CORRECT MEASUREMENTS THEREOF."

[Signature: Kenneth R. Reesman]
WISCONSIN REGISTERED LAND SURVEYOR

3-29-77 DATE
REVISED 4-25-77

77046

EXHIBIT C: PURPOSE OF ANNEXATION

Petitioner's Name and Address: Gary T. Kellermeier and Heather R. Kellermeier
1063 Spring Valley Road
Burlington, WI 53105

Tax Key Number: 002-02-19-06-016-000

Intent: The intent of this petition is to connect to municipal sewer and water services.

Number of Electors: 2

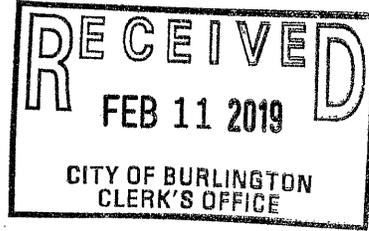
Approximate Value: Land \$24,600 Improvements \$146,000

Present Land Use: Undeveloped _____% Commercial _____%
Industrial _____%

Residential x % Recreational _____%

Anticipated Land Use: Undeveloped _____% Commercial _____%
Industrial _____%

Residential x % Recreational _____%



TONY EVERS
GOVERNOR
JOEL BRENNAN
SECRETARY

Municipal Boundary Review
PO Box 1645, Madison WI 53701
Voice (608) 264-6102 Fax (608) 264-6104
Email: wimunicipalboundaryreview@wi.gov
Web: <http://doa.wi.gov/municipalboundaryreview>

February 07, 2019

PETITION FILE NO. 14187

DIAHNN HALBACH, CLERK
CITY OF BURLINGTON
300 N PINE ST
BURLINGTON, WI 53105-1435

ADELHEID STREIF, CLERK
TOWN OF BURLINGTON
32288 BUSHNELL RD
BURLINGTON, WI 53105-9426

Subject: KELLERMEIER ANNEXATION

The proposed annexation submitted to our office on January 18, 2019, has been reviewed and found to be in the public interest. In determining whether an annexation is in the public interest, s. 66.0217 (6), Wis. Stats. requires the Department to examine "[t]he shape of the proposed annexation and the homogeneity of the territory with the annexing village or city...." so as, to ensure the resulting boundaries are rational and compact. The statute also requires the Department to consider whether the annexing city or village can provide needed municipal services to the territory. The subject petition is for territory that is reasonably shaped and contiguous to the **CITY OF BURLINGTON**, which is able to provide needed municipal services.

Note:

- A graphic scale must be included on the scale map of the territory to be annexed (ref: s. 66.0217 (1) (g) Wis. Stats.).
- The existing municipal boundary must be clearly shown and identified on the scale map of the territory to be annexed (ref: s. 66.0217 (1) (g) Wis. Stats.).
- The metes and bounds description of the territory to be annexed must commence from a monumented Section or Quarter-Section corner of the section in which the territory lies (ref: s. 66.0217 (1) (c), Wis. Stats.).
- The location of the territory to be annexed must be given by reference to the Quarter-Section, Section, Township and Range in the legal description of the territory (ref: 66.0217 (1) (c), Wis. Stats.).

The Department reminds clerks of annexing municipalities of the requirements of s. 66.0217 (9)(a), Wis. Stats., which states:

"The clerk of a city or village which has annexed shall file immediately with the secretary of administration a certified copy of the ordinance, certificate and plat, and shall send one copy to each company that provides any utility service in the area that is annexed. The clerk shall record the ordinance with the register of deeds and file a signed copy of the ordinance with the clerk of any affected school district..."

State and federal aids based on population and equalized value may be significantly affected through failure to file with the Department of Administration. Please file a copy of your annexing ordinance, including a statement certifying the population of the annexed territory. **Please include your MBR number 14187 with your ordinance.** Ordinance filing checklist available at <http://mds.wi.gov/>, click on "Help on How to Submit Municipal Records". Email scanned copy of required materials (color scan maps with color) to mds@wi.gov or mail to: Wisconsin Department of Administration, Municipal Boundary Review, PO Box 1645, Madison WI 53701-1645.

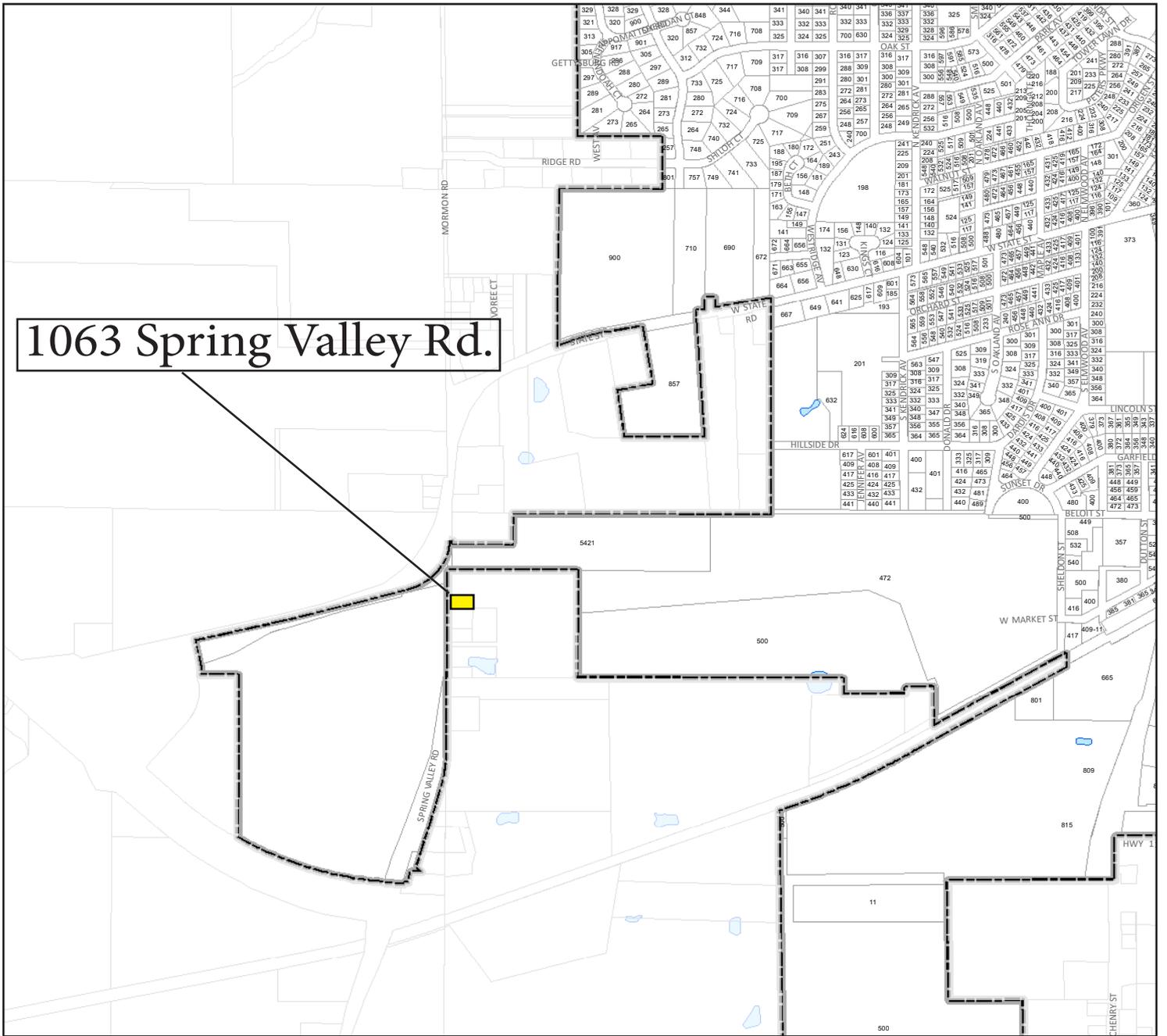
The petition file is available for viewing at: <http://mds.wi.gov/View/Petition?ID=2261>
Please call me at (608) 264-6102, should you have any questions concerning this annexation review.

Sincerely,

A handwritten signature in black ink, appearing to read "Erich Schmidtke". The signature is fluid and cursive, with a large initial "E" and "S".

Erich Schmidtke, Municipal Boundary Review

cc: petitioner



1063 Spring Valley Rd.



DATE: March 19, 2019

SUBJECT: ORDINANCE 2048(14) - To consider approval of a Rezone Map Amendment request at 157 S. Pine Street from B-2 District to Rd-2 District.

SUBMITTED BY: Megan Watkins, Assistant City Administrator | Zoning Administrator

BACKGROUND/HISTORY:

This item is to consider recommending approval of a rezone request from Debra Tupy for property located at 157 S. Pine Street. The applicant is requesting to rezone the property B-2, Central Business District to Rd-2, Two-Family Residential District (as the current zoning designation does not allow for first floor apartments). The applicant proposes to use the property for multi-family housing. The Rd-2 District is directly adjacent to the property.

The Plan Commission granted a variance for this property to Chapter 315-21 that requires a minimum lot size of 11,000 square feet in the Rd-2 District, as the parcel at 155 S. Pine Street is only 7,745 square feet. The Commission further approved a Conditional Use at their March 12, 2019 meeting in order for the applicant to use this property in the Rd-2 District as a four-unit residence.

BUDGET/FISCAL IMPACT:

N/A

RECOMMENDATION:

The Plan Commission and City Staff recommend approval of this rezone map amendment.

TIMING/IMPLEMENTATION:

This item is for discussion at the March 19, 2019 Committee of the Whole meeting, with a Public Hearing scheduled the same evening and is scheduled for final consideration at the April 3, 2019 Common Council meeting.

Attachments

- Ord 2048(14) 157 S. Pine St. Rezone
- 157 S. Pine St. Survey

AN ORDINANCE AMENDING THE OFFICIAL ZONING MAP BY REZONING 157 S. PINE STREET FROM B-2, CENTRAL BUSINESS DISTRICT TO RD-2, TWO-FAMILY RESIDENTIAL DISTRICT

WHEREAS, Debra Tupy, applicant, requests property located at 157 S. Pine Street, as described in Attachment "A" to be rezoned to Rd-2, Two-Family Residential, in order to use the property for multi-family housing; and,

WHEREAS, this request was heard at, and recommended for approval by the Plan Commission at their July 10, 2018 meeting; and,

WHEREAS, a public hearing was held regarding this matter at the Common Council's March 19, 2019 meeting.

NOW THEREFORE BE IT ORDAINED that the Common Council of the City of Burlington, Racine County and Walworth County, State of Wisconsin does as follows:

Section 1. The district map of the City of Burlington, as it is incorporated by reference and made part of the City Zoning Ordinance, is hereby amended and changed in relation to the zoning classification of land more particularly described as follows:

Owner:	DAT Company LLC
Applicant:	Debra Tupy
Location of Request:	157 S. Pine Street
Existing Zoning:	B-2, Central Business District
Proposed Zoning:	Rd-2, Two-Family Residential District
Proposed Use:	To use the property for multi-family housing

Section 2. The district map in all other respects shall remain the same.

Section 3. This ordinance shall take effect upon its passage and publication as provided by law.

NOW THEREFORE BE IT FURTHER ORDAINED that the City Clerk shall provide a copy of this ordinance to Planning and Development Director, Julie Anderson, of Racine County Planning and Development, located at 14200 Washington Ave., Sturtevant, WI 53177.

Introduced: March 19, 2019
Adopted:

Jeannie Hefty, Mayor

Attest:

Diahnn Halbach, City Clerk

ATTACHMENT A

Legal Description

206-03-19-32-540-230

157 S. PINE STREET

LOT 13, BLOCK 2, PERKINS NORTH PARK, ACCORDING TO THE RECORDED PLAT THEREOF. SAID LAND BEING IN THE CITY OF BURLINGTON, COUNTY OF RACINE AND STATE OF WISCONSIN.

ALSO:

PART OF LOT 12, BLOCK 2, PERKINS NORTH PARK, ACCORDING TO THE RECORDED PLAT THEREOF AND MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEING AT THE MOST NORTHERLY CORNER OF SAID LOT 12; RUN THENCE SOUTHEASTERLY ALONG THE WESTERLY LINE OF SOUTH PINE STREET, 3.00 FEET; THENCE SOUTHWESTERLY PARALLEL WITH THE NORTHWESTERLY LINE OF LOT 12, 123.00 FEET THE SOUTHWESTERLY LINE OF LOT 12; THENCE NORTHWESTERLY ALONG THE SOUTHWESTERLY LINE OF LOT 12, 3.00 FEET TO THE MOST WESTERLY CORNER OF LOT 12; THENCE NORTHEASTERLY ALONG THE NORTHWESTERLY LINE OF LOT 12, 123.00 FEET TO THE PLACE OF BEGINNING. SAID LAND BEING IN THE CITY OF BURLINGTON, COUNTY OF RACINE AND STATE FO WISCONSIN.

206031937540230

PLAT OF SURVEY
-OF-

LOT 13, BLOCK 2, PERKINS NORTH PARK, ACCORDING TO THE RECORDED PLAT THEREOF. SAID LAND BEING IN THE CITY OF BURLINGTON, COUNTY OF RACINE AND STATE OF WISCONSIN.

ALSO:

PART OF LOT 12, BLOCK 2, PERKINS NORTH PARK, ACCORDING TO THE RECORDED PLAT THEREOF AND MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEING AT THE MOST NORTHERLY CORNER OF SAID LOT 12; RUN THENCE SOUTHEASTERLY ALONG THE WESTERLY LINE OF SOUTH PINE STREET, 3.00 FEET; THENCE SOUTHWESTERLY PARALLEL WITH THE NORTHWESTERLY LINE OF LOT 12, 123.00 FEET TO THE SOUTHWESTERLY LINE OF LOT 12; THENCE NORTHWESTERLY ALONG THE SOUTHWESTERLY LINE OF LOT 12, 3.00 FEET TO THE MOST WESTERLY CORNER OF LOT 12; THENCE NORTHEASTERLY ALONG THE NORTHWESTERLY LINE OF LOT 12, 123.00 FEET TO THE PLACE OF BEGINNING. SAID LAND BEING IN THE CITY OF BURLINGTON, COUNTY OF RACINE AND STATE OF WISCONSIN.

SURVEY FOR: MARVIN DANIEL

SURVEY LOCATION: 157 S. PINE STREET

BEARINGS HEREON RELATE TO THE SOUTHWESTERLY LINE OF PINE STREET, ASSUMED BEARING SOUTH 32°43'00" EAST.

LEGEND

- ⊙ FOUND CONCRETE MONUMENT
- FOUND IRON PIPE
- ⚡ FOUND IRON BAR
- SET MASONRY NAIL
- () RECORDED AS

GRAPHIC SCALE



SCALE 1" = 20'

"I hereby certify that I have surveyed the above described property and that the above map is a correct representation thereof and shows the site and location of the property, its exterior boundaries, the location of all visible structures and dimensions of all principal buildings thereon, boundary fences, apparent easements, roadways and encroachments, if any."

"This survey is made for the use of the present owners of the property, and those who purchase, mortgage, or guarantee the title thereto within one year from date hereof."



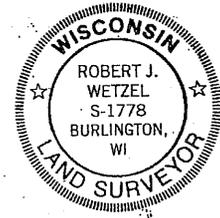
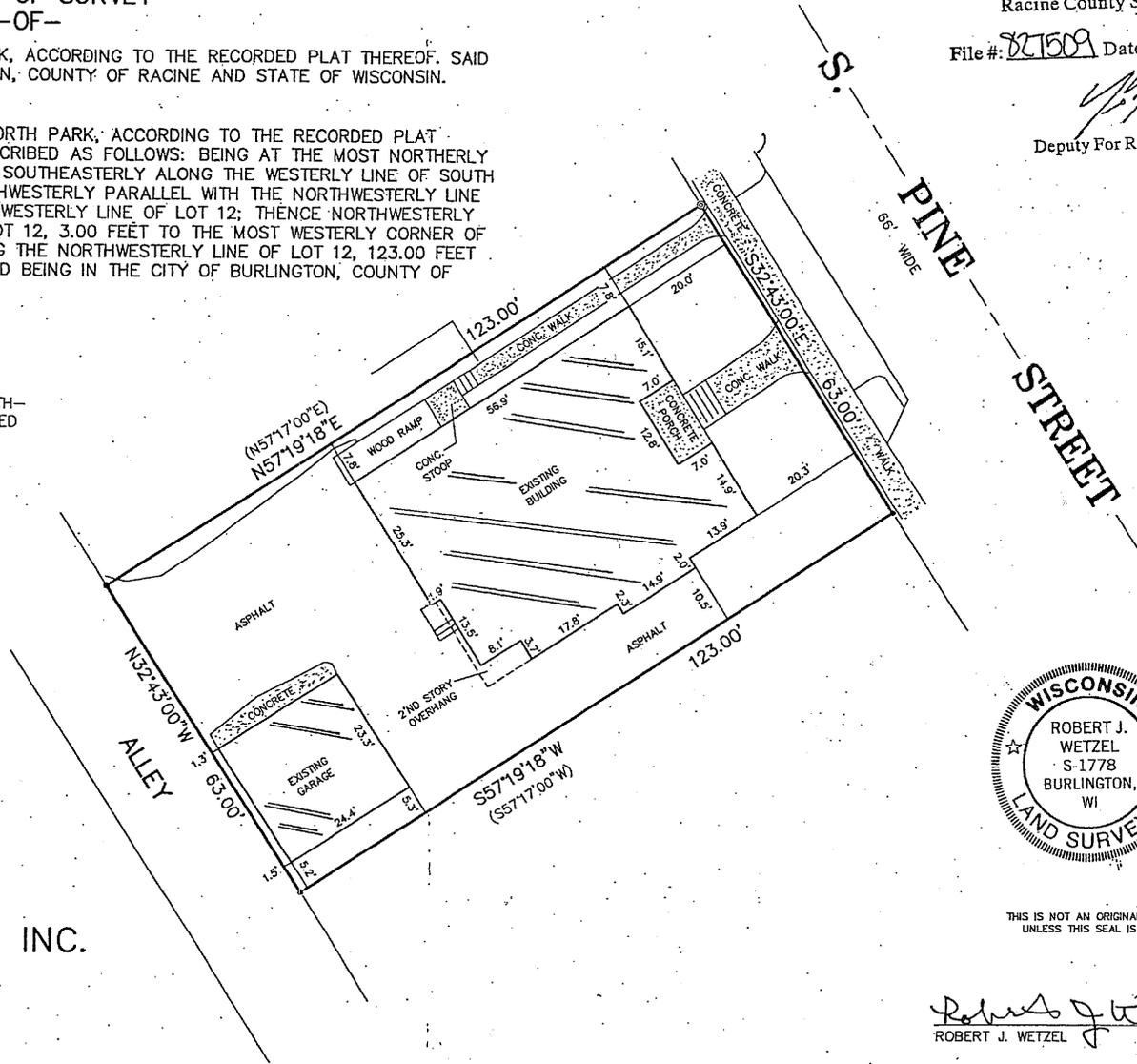
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Robert J. Wetzel
ROBERT J. WETZEL S-1778

JANUARY 24, 2018
DATE

9540
JOB NUMBER



DATE: March 19, 2019

SUBJECT: MOTION 19-924 - To consider approval of the Southeastern Wisconsin Regional Planning Commission (SEWRPC) Stormwater Management Evaluation Study of the industrial area on the southwest side of the City that includes Lavelle Industries, KW Precast, Ardagh Group, WeEnergies, Asphalt Contractors, and Cretex Materials properties.

SUBMITTED BY: Carina Walters, City Administrator

BACKGROUND/HISTORY:

Staff is seeking Common Council approval of the Southeastern Wisconsin Regional Planning Commission (SEWRPC) Stormwater Management Evaluation Study of the industrial area on the southwest side of the City that includes Lavelle Industries, KW Precast, Ardagh Group, WeEnergies, Asphalt Contractors, and Cretex Materials properties. The stormwater evaluation was commissioned by speaker Robin Vos who sought \$50,000 in the state budget to review the flooding that occurs in the City Burlington. The expenditure was approved within the state budget.

Lavelle Industries has had a long history of flooding on their site and as a result of the 2017 Flood, the City and surrounding businesses expressed their concern to Legislators as Lavelle, KW Precast, Ardagh, and Cretex Materials were almost a total loss. Due to the regional impact, a study of the stormwater in the southwestern portion of the City along McHenry Avenue was conducted.

SEWRPC spent approximately one year studying the storm water system in order to identify the stormwater route ultimately leading to the Fox River. The major project tasks completed for the evaluation included:

- Compiling existing conditions data for the storm sewer and contributing drainage areas.
- Conducting site visits to confirm subbasin divides for the drainage area.
- Developing an existing conditions hydrologic and hydrolic model for the storm sewer study route.
- Studied viable alternatives to reduce flooding for the area
- Developed planning-level cost estimates for the alternatives.

This evening Laura Herrick and Karin Hollister of SEWRPC are here to present the report and findings to the Common Council.

BUDGET/FISCAL IMPACT:

As this is a regional effort, SEWRPC will outline the alternatives including the possible budget numbers for various entities.

RECOMMENDATION:

Staff recommends approval of the study.

TIMING/IMPLEMENTATION:

This item is being presented at the March 19, 2019 Committee of the Whole Meeting and based on the discussion with the stakeholders, next steps include implementation of the various alternatives proposed and is scheduled for final consideration at the April 3, 2019 Common Council meeting.

Attachments

SEWRPC Memo

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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SEWRPC Staff Memorandum

BURLINGTON STORMWATER MANAGEMENT EVALUATION

February 11, 2019

INTRODUCTION AND SCOPE

In a meeting with the Southeastern Wisconsin Regional Planning Commission (SEWRPC) staff on September 7, 2017, the Burlington City Administrator requested that SEWRPC staff prepare a stormwater management analysis for a portion of the City's storm sewer system (Map 1). The area of interest, referred to herein as the study site area, is an industrial area on the southwest side of the City that includes the Lavelle Industries, KW Precast, Ardagh Group, WE Energies, Asphalt Contractors, and Cretex Materials properties. The low-lying areas on these properties along the west side of McHenry Street (CTH P), south of the Canadian National Railroad and north of the STH 11 Burlington Bypass, are subject to flooding resulting from high-intensity rainfall events. While the extreme rainfall events of July 2017 created widespread flooding for the study site area and the City, the Lavelle and Ardagh properties have experienced long-standing flooding issues on a frequent basis over the years.

The main objective of this planning-level evaluation is to create a reasonable representation of the existing storm sewer system serving the study site area (herein referred to as the storm sewer study route), and evaluate up to five alternatives to reduce surface flooding for the properties identified above. Major project tasks completed for this evaluation include:

- Compile existing conditions data for the storm sewer network and contributing drainage areas.
- Conduct site visits to confirm subbasin divides for the contributing drainage areas and the drainage system configuration within the study site area.
- Develop an existing conditions hydrologic and hydraulic model for the storm sewer study route and contributing drainage areas.

- Starting from the existing conditions model, evaluate viable alternatives to reduce flooding for the study site area.
- Develop planning-level cost estimates for the viable alternatives.

DESCRIPTION OF STUDY AREA

This evaluation is focused on the areas served by the storm sewer study route and flooding in the study site area, which has repeatedly affected the properties located along the west side of McHenry Street south of Market Street. The storm sewer study route and the subbasins delineated for this evaluation are highlighted on Map 1. The total drainage area considered to contribute runoff to the storm sewer study route is approximately 550 acres. Subbasin areas were determined based on topographic data and the City's storm sewer pipe networks. The delineation performed for the storm sewer study route included 28 subbasins served by City storm sewers, and 12 subbasins within the study site area. For this evaluation, the City's portion of the storm sewer study route will be referred to as the municipal storm sewer.

Map 2 presents the study site area and the 12 associated subbasins in detail. The total study site area is approximately 300 acres with nearly half of the area on the west side comprised of numerous low-lying depressional areas without outlets and thus do not contribute runoff to the storm sewer study route. Table 1 provides a summary of the subbasins that comprise the study site area, including drainage area and outlet information.

The Canadian National (CN) Railroad splits the study site area into two distinct areas that are connected by a 36-inch diameter concrete culvert running underneath the railroad tracks. The lower area, south of the railroad tracks, includes the Lavelle property that has frequently experienced flooding. The upper area, north of the railroad tracks, includes the properties of KW Precast, Cretex Materials, WE Energies, and Asphalt Contractors. Under existing conditions excess rainfall from the upper area becomes stormwater runoff and flows to the Lavelle property through the 36-inch culvert under the railroad tracks. Once on the Lavelle property, runoff enters the onsite storm sewer system from which it discharges into the municipal storm sewer, and flows generally east to the outlet at the Fox River.

The remaining subbasins within the study site area include the Ardagh property which is just north of the STH 11 Burlington Bypass and west of McHenry Street. Runoff from the Ardagh property drains into the municipal storm sewer at two separate locations near the upstream extent of the storm sewer study route along McHenry Street. The Ardagh property experiences flooding and frequently has standing water in the parking lot on the east side of the site. Anecdotal evidence indicates that flooding issues have gotten worse

for the Ardagh property since the construction of the STH 11 Burlington Bypass. The Ardagh property subbasins are self-contained and not hydraulically connected to the Lavelle property; the railroad spur between the two properties is high enough to prevent cross-flow even during the extreme flooding of July 2017.

INPUT DATA SOURCES

The following data sources were used to develop the hydrologic/hydraulic model for the storm sewer study route. All elevations defined in this document are referenced to National Geodetic Vertical Datum of 1929 (NGVD29), and any vertical datum conversions or assumptions are stated below.

Land Data

- 2010 Racine County topographic contour data with 2-foot contours, referenced to NGVD29
- 2015 Racine County digital orthophotography
- 2010 SEWRPC land use inventory
- 2016 Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) hydrologic soil group data

Infrastructure Data

The following information was provided by Kapur & Associates:

- City of Burlington municipal storm sewer system data was provided in a GIS file. The GIS file was used in conjunction with supplemental large-scale system maps to determine pipe lengths, pipe diameters, invert elevations, manhole locations and depths for the storm sewer study route. Elevation data for the municipal storm sewer system are referenced to NGVD29.
- 2007 Stormwater Pollution Prevention Plan (SWPPP) for the KW Precast site (formerly JW Peters) provided data for hydraulic features including site ponds and storage features, pipes, and culverts. Elevation data utilized for the 2007 SWPPP are referenced to an undefined local vertical datum. The following datum relationship was developed based on the topographic data, field measurements and engineering judgement to convert SWPPP elevations to NGVD29.
 - $\text{NGVD29 Elevation} = \text{SWPPP Elevation} + 698 \text{ feet}$
 - This elevation conversion assumption applies to the elevations of the KW Precast drainage features, the area near the railroad tracks at the outlet of the KW Precast pond and the 36-inch diameter culvert running under the railroad tracks.

- Plan drawings from previous Lavelle expansion projects provided information related to the on-site storm sewer system, the existing stormwater pond, and local grade elevations. All elevation data obtained from the following reference materials are assumed to be referenced to NGVD29:
 - 2009 parking lot plan by Kapur & Associates
 - 2011 parking lot surfacing plan by Reesman's Excavating & Grading
 - 2014 site survey performed by Baxter & Woodman
 - 2015 parking lot expansion plan by Lynch & Associates
 - 2017 site improvement plans by Lynch & Associates
 - 2018 conceptual design expansion plans by Peter Scherrer Group
- STH 11 Burlington Bypass and McHenry Street (CTH P) Interchange drawings developed by Kapur & Associates in 2008 provided data related to the Wisconsin Department of Transportation (WisDOT) stormwater pond located near the northeast ramp access for McHenry Street, drainage culverts, and modifications to the municipal storm sewer system under McHenry Street. The vertical datum for this plan set is NGVD29.
- McHenry Street (CTH P) utility improvement plans developed by Kapur & Associates in 2009 provided data related to municipal storm sewer modifications. All elevation data are assumed to be referenced to NGVD29.

Rainfall Data

- National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, Version 2.0
- 2006 SEWRPC rainfall distribution

Fox River Water Level Data

- National Weather Service (NWS) Advanced Hydrologic Prediction Service (AHPS) River Stage Gauging Station: Fox River at Burlington (BRGW3). The datum conversion for river stage height provided on the NWS website is assumed to be equivalent to NGVD29.
- Federal Emergency Management Agency (FEMA) Racine County Flood Insurance Study (FIS) Volume 2, effective date: May 2, 2012

MODEL DEVELOPMENT

The Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) model is a dynamic rainfall-runoff-routing model and was used to represent hydrologic and hydraulic features serving the study site area. EPA SWMM is public domain software, and the model version used for this evaluation is 5.1.012. EPA SWMM simulates rainfall over subbasins and generates runoff hydrographs, which are routed through

various hydraulic features including ponds, culverts and pipes. The model was run using single storm event simulation with dynamic wave flow routing, which allows for the evaluation of pressure flow, reverse flow, and other complicated hydraulics that are not accommodated by other more simplified routing approach methods. The model results include runoff timing, volumes, flow rates, flow depths, and ponded depths for each model component throughout the duration of the simulation.

Hydrologic Features – Subbasin Characterization

Following subbasin delineation, the hydrologic parameters affecting stormwater runoff generation were developed for each subbasin shown on Map 1. Physical subbasin parameters were measured and the longest flow path for each subbasin was identified and used to derive the average slope and the characteristic subbasin width. Parameters representing depression storage and surface roughness for overland flow were established for pervious and impervious surfaces based on standard values provided in the SWMM Hydrology Reference Manual. The NRCS curve number method was utilized to model infiltration, and a composite curve number was developed for each subbasin by overlaying the land use data on soil data. The percent impervious cover was estimated based on the types of land use within each subbasin. The one exception is Subbasin A4, which encompasses the Lavelle building and front loading dock footprint and represents the roof drain system that discharges directly into Lavelle's storm sewer pipe that runs under the building. Subbasin A4 is considered to be 100 percent impervious and is assigned a curve number of 98, consistent with directly connected impervious surfaces. The model routes runoff hydrographs from each subbasin directly to either a stormwater storage feature or to a manhole located on the storm sewer study route.

Hydraulic Features

The existing hydraulic features included in the SWMM model drainage network are discussed below, starting at the downstream end of the drainage network and moving upstream through the system. Figure 1 illustrates the existing conditions model schematic for the hydraulic features in the study site area.

Municipal Storm Sewer Study Route

The municipal portion of the storm sewer study route was modeled using pipe and manhole data provided by Kapur & Associates. The study route consists of one 36-inch diameter circular concrete pipe along McHenry Street, transitioning into one 48-inch diameter circular concrete pipe along Market Street and continuing downstream to the outlet at the Fox River.

When storm sewer pipes receive more runoff than they are designed to carry, the SWMM model stores this excess water until it can be reintroduced into the system as capacity allows. The dynamic wave routing

method allows the modeler to define a surface area over which the ponding would occur above a manhole or pipe junction. Four such ponded areas are provided in the model along the municipal portion of the storm sewer study route to account for sag storage on roadways or low-lying areas adjacent to McHenry Street or Market Street. The ponded areas included in the SWMM model were estimated using topographic contour data at the four discrete locations.

The municipal storm sewer pipe network branches shown on Map 1 feeding into the storm sewer study route were not explicitly represented in the SWMM model for this evaluation; however, the subbasins served by these storm sewer branches are included in the model, and the runoff hydrographs from these subbasins are routed directly into the storm sewer study route. The subbasin delineations for the municipal storm sewers were based on the data received and engineering judgment, employing assumptions for flow split locations at local high points in the storm sewer pipe network. Map 1 also includes several subbasins identified as non-contributing to the storm sewer study route, based on the data received and engineering judgement.

Lavelle Storm Sewer Network and Existing Pond

Stormwater runoff on the Lavelle property enters the municipal storm sewer through a 15-inch diameter concrete storm sewer pipe that runs under their building. Data for the Lavelle storm sewer network was obtained from plan drawings and field measurements/observations. Plan drawings were used define the invert elevations at the upstream and downstream ends of the system, and intermediate invert elevations are assigned assuming a constant slope between known elevations. The Lavelle roof drain system enters the 15-inch pipe under the building, and as there were no details available for the layout of the roof drain system, runoff from the roof drains was modeled to discharge into the 15-inch pipe at one central location under the building. The Lavelle storm sewer network also collects runoff from the parking lot and local area around the Lavelle building and provides an outlet for the existing pond on the property. A backflow prevention valve was installed in September 2017 on the 15-inch diameter Lavelle storm sewer pipe just upstream of the municipal connection. This valve is included in the SWMM model as a flap gate to prevent flow from the municipal storm sewer system from entering the Lavelle storm sewer pipes and pond.

The existing pond just west of the parking lot at Lavelle collects runoff and drains directly into the Lavelle storm sewer network through a 12-inch diameter pipe with a flared end section. The existing pond has an approximate bottom elevation of 779 feet NGVD29 and a top elevation of 782 feet NGVD29, and provides approximately 0.3 acre-feet of stormwater storage. For modeling purposes, the storage curve for the Lavelle pond was extended above the top of the pond up to an elevation of 788 feet NGVD29 using both the 2010

contour data and the 2015 design drawings in order to represent the available flood storage at the Lavelle site beyond the existing pond and estimate the maximum water level at Lavelle during modeled flood events. Figure 2 presents the approximate contours above the top of pond elevation of 782 feet NGVD used to develop the storage curve for the Lavelle site. Localized flooding in the Lavelle parking lot occurs when water levels rise above the catch basin rim elevations, and site flooding becomes more widespread as water levels rise above the existing top of pond elevation of approximately 782 feet NGVD.

Culvert under Railroad and Upstream Storage Area

Runoff from subbasins upstream of the CN Railroad drain onto the Lavelle site through a 36-inch diameter circular concrete culvert that runs under the railroad tracks. The culvert empties into a low-lying area on the south side of the railroad tracks and from there runoff flows overland to the existing Lavelle pond. The invert elevations of the railroad culvert were approximated using data from the KW Precast SWPPP along with data from the 2014 Baxter & Woodman survey. The SWPPP includes a small storage area at the upstream end of the 36-inch culvert, which receives discharge from the upstream KW Precast pond and collects runoff the drains to the low-lying areas along the north side of the CN railroad. The railroad stormwater storage area is located between the CN railroad and the Cretex Materials access road, and is modeled in SWMM using the same storage curve utilized for the KW Precast SWPPP.

Existing KW Precast Pond

The existing KW Precast pond was constructed for water quality control purposes. As a flow-through pond, with the inlet and outlet pipes installed at the same elevation, it does not offer significant stormwater storage capacity. The pond and related hydraulic features were included in the SWMM model based on data provided within the KW Precast SWPPP. The pond storage curve presented in the SWPPP indicates there is approximately 6.5 acre-feet of stormwater storage available between the lowest pond outlet feature and the lowest elevation along the top of the existing pond (approximately 785.4 feet NGVD). For modeling purposes, the existing pond storage curve from the SWPPP was extended to elevation 787 feet NGVD²⁹ using 2010 contour data. The existing KW pond outlet is multi-level with a low-level orifice and an overflow weir that both discharge into the 54-inch diameter concrete outlet pipe running under the Cretex Materials access road to the 36-inch concrete culvert under the CN railroad. An overflow route for this pond is included in the SWMM model to provide a relief route for runoff exceeding the modeled pond storage capacity. The overflow route is based on emergency spillway data from the KW Precast SWPPP and available topography. The overflow route allows excess runoff to flow over the road on the east side of the pond, and is routed to the storage feature described above at the upstream end of the CN railroad culvert.

Design Storm Events

NOAA Atlas 14 was used to obtain rainfall depth and duration data for the study site area in the City of Burlington. The rainfall depth-duration data was used in conjunction with the SEWRPC storm distribution to develop the design storm input. Several design storm events were modeled in SWMM, ranging from the 50-percent-annual-probability (2-year recurrence interval) to the 1-percent-annual-probability (100-year recurrence interval). All events reflect a 24-hour storm duration. Table 2 presents the design storm rainfall data used in this evaluation.

Fox River Water Level

While Fox River flooding presents a serious risk to the City of Burlington, the scope of this analysis is focused on flooding in the study site area on the southwestern side of the City, which results from excess stormwater runoff due to high-intensity rainfall events. While it is recognized that high water levels on the Fox River can inhibit flow from the municipal storm sewer system and create flooding issues for low-lying areas near the river, the Fox River is not the primary source of flooding issues for the study site area. Additionally, the Fox River drainage area above Burlington is approximately 744 square miles and takes several days to reach peak flood levels in the City, while the single storm events considered in this analysis would peak significantly earlier. Therefore, relatively normal river water levels were used for this evaluation and are discussed below.

The water level in the Fox River serves as the downstream boundary condition for the modeled storm sewer study route. The downstream boundary condition was developed based on water level data recorded at the NWS river stage gauge station for the Fox River at Burlington, which is located nearly one mile upstream of the storm sewer study route outlet. Based on NWS gauge data, minor flood stage occurs at 11 feet with the flood action stage established at 9 feet. For this evaluation a river stage of 8 feet at the NWS gauge was used, which is one foot below the flood action stage and corresponds to an approximate elevation of 751.7 feet NGVD29. The water level at the storm sewer study route outlet nearly one mile downstream is estimated to be approximately one foot below the water level at the NWS gauge station, based on the water surface gradient for the Fox River flood profiles presented in the Racine County FIS. Hence, a water surface elevation of 750.7 feet NGVD29 in the Fox River was utilized as the downstream boundary condition for the SWMM model. This elevation corresponds to approximately 2 feet of water above the invert elevation of the municipal storm sewer outlet pipe.

EXISTING CONDITIONS MODEL RESULTS

The existing conditions model developed for this evaluation was run for various design storm events. For each storm event, the model generates stormwater runoff hydrographs and routes runoff through the stormwater ponds and storm sewer study route. The total volume of runoff generated during the 1-percent-annual-probability (100-year recurrence interval) storm event for each subbasin in the study site area is presented in Table 3.

Table 4 presents the SWMM model results for the maximum water level in the existing stormwater ponds at Lavelle and KW Precast for each storm event. The existing conditions model results indicate that the existing stormwater pond at Lavelle is not sufficient to handle the 50-percent-annual-probability (2-year recurrence interval) storm event without flooding, with a maximum water level at the site of nearly 1.5 feet above the top of the pond during this storm event. The existing KW Precast pond has the capacity to store up to the 4-percent-annual-probability (25-year recurrence interval) storm event, but the pond is overtopped (i.e. water levels exceed the top of pond elevation) for larger storm events.

Based on the City's stormwater management ordinance, the municipal storm sewer system should be designed to convey the 10-percent-annual-probability (10-year recurrence interval) storm event with a 24-hour duration. Figure 3 shows the maximum water surface profile along the municipal storm sewer system during the 5-year recurrence interval storm event. The SWMM model indicates that while some pipe capacities are exceeded, the system can convey the 5-year recurrence interval storm event without street flooding along the municipal storm sewer study route. The maximum water surface profile along the municipal storm sewer line during the 10-year recurrence interval storm event, presented in Figure 4, shows minor ponding on Market Street just west of the intersection with Pine Street and further upstream near the intersection with Emerson Street. The current level of service of the municipal storm sewer study route is estimated to be just below the 10-year recurrence interval storm event. Model runs indicate that conveyance improvements to the storm sewer study route, as required to meet the 10-year recurrence interval level of service, would not alleviate flooding in the study site area and would have a negligible impact on water levels at Lavelle.

For storm events with a 10-year recurrence interval and larger, the municipal storm sewer operates under surcharge conditions. This means that modeled water depths create flooding above the top of manholes in the street at several locations along the storm sewer study route. In addition, portions of the study site area where stormwater runoff collects are significantly lower in elevation than the flood elevations in the municipal storm sewer system. Due to this elevation differential, drainage from the study site area is

inhibited as outflow to the municipal storm sewer is temporarily reduced to zero. Hence the stormwater generated over the study site area must be stored until adequate capacity is available in the downstream municipal storm sewer. The backflow prevention valve on the Lavelle storm sewer line prevents reverse flow onto the site from the municipal storm sewer system. The duration over which stormwater from the study site area cannot discharge into the municipal storm sewer under existing conditions is also presented in Table 4.

EVALUATION OF STORMWATER MANAGEMENT ALTERNATIVES

There are two types of issues that contribute to flooding at the study site area on the southwest side of the City of Burlington. The first is the lack of storage available to detain the volume of stormwater runoff generated during rainfall events, and the second issue is the inability to convey stormwater away from the study site area while the municipal storm sewer is surcharged. This analysis considers stormwater management alternatives that address both stormwater storage and conveyance capacity improvements, and evaluates the relative effectiveness of the alternatives at reducing flooding in the study site area. Increasing the stormwater storage capacity in the study site area is necessary to detain and control stormwater. The City stormwater management ordinance requires stormwater storage facilities accommodate up to the 1-percent-annual-probability (100-year recurrence interval) storm event with 24-hour duration. The proposed stormwater storage facilities discussed below are all designed to be drained by gravity, and are intended to drain completely following a rainfall event. In order for the ponds to be dry in between storm events, it is assumed that the study site area groundwater levels are lower than the bottom of the proposed ponds.

Stormwater management alternatives to alleviate flooding in the study site area include both storage alternatives and conveyance improvement alternatives. For this evaluation, the flood protection criteria is established as the top of pond elevation and the level of flood protection is considered to be the storm event that is contained within the proposed pond(s) without overtopping. Various combinations of stormwater management alternatives are evaluated in the following sections.

Alternative 1A: Lavelle Stormwater Storage Pond – Existing Site Layout

The existing conditions SWMM model indicates that the stormwater storage currently available in the study site area is inadequate to contain the 2-year recurrence interval storm event without causing flooding at the Lavelle property. The proposed Lavelle stormwater storage pond represents an expansion of the existing pond and maximizes use of the open space west of the Lavelle building and parking lot. Map 3 shows the proposed 3.1-acre footprint of the Lavelle stormwater pond and the new outlet. The proposed pond will be

excavated to a bottom elevation of 777 feet NGVD29, which is two feet deeper than the existing Lavelle pond. The proposed pond will have a top elevation of 783 feet NGVD29 with 3H:1V side slopes, and the storage capacity below elevation 783 feet NGVD29 is approximately 16.3 acre-feet. An emergency spillway for stormwater runoff exceeding the pond storage capacity is not considered for the proposed new pond at Lavelle, as the pond is located in the lowest-lying area on the property and as such there is no overland relief route available when the pond is overtopped. For the SWMM model, the storage curve was extended above the top of the pond to an elevation of 788 feet NGVD29 using the 2010 topographic contours to characterize the total available storage above grade. The proposed top of pond elevation is established approximately one foot below the personnel entrance to Lavelle from the parking on the west side of the building. Even with the flood protection provided by the proposed pond under conditions during which the pond is not overtopped, there would be minor flooding in low-lying areas of the Lavelle parking lot any time water levels in the pond are higher than the catch basin rim elevations in that lot which could affect vehicles parked in these areas.

A new 18-inch diameter concrete outlet pipe is proposed at the southeast corner of the pond, with a new end section and an invert elevation of 777 feet NGVD29. The new pond outlet pipe will connect to the municipal storm sewer under McHenry Street at the manhole located across from the southern-most driveway access to Lavelle, as shown on Map 3. Upstream of the 18-inch pipe connection with the municipal storm sewer manhole, a structure containing a backflow prevention valve is proposed. The existing Lavelle pond outlet pipe and stormwater system serving the parking lot and building roof drain system will remain unchanged and will be connected to the new pond. This connection is necessary because the existing Lavelle pond also receives runoff from the Lavelle building roof drain system. When the municipal storm sewer is surcharged and cannot accept flow from Lavelle, runoff from the building roof is routed into the 15-inch pipe running beneath the building and is forced to flow in reverse, upstream to the stormwater pond.

Model Runs and Results for Alternative 1A

Several model runs were developed to evaluate the proposed stormwater pond at Lavelle under Alternative 1A. The model runs are described below, and the model results are presented in Table 5.

- The first model run considered only the proposed stormwater pond and outlet at Lavelle, without any other changes to the study site area, and this condition was evaluated for the 1-percent-annual-probability (100-year recurrence interval) storm event. Model results indicate the flooding depth at Lavelle is reduced approximately 1.5 feet compared to existing conditions model results, but the maximum water level is still approximately 2.5 feet above the top of the proposed Alternative 1A pond.

- The second model run was performed for the same 100-year recurrence interval storm event to evaluate the benefit of restricting the KW Precast pond outlet from the existing 54-inch diameter pipe to a 12-inch diameter concrete pipe. Compared to the first model run, restricting the outlet of the existing KW Precast pond produced slightly lower flood levels at Lavelle, with higher water levels in the existing KW Precast pond such that the pond and the adjacent road to the east of the pond are overtopped.
- The proposed Lavelle Alternative 1A stormwater pond alone does not prevent flooding on the Lavelle site during the 100-year recurrence interval storm event. Storm events of smaller magnitudes were evaluated using the SWMM model to determine the maximum level of flood protection for Alternative 1A. Based on the model results, the proposed Alternative 1A pond at Lavelle, when combined with restricting the existing KW Precast pond outlet to the 12-inch diameter pipe, can store the 4-percent-annual-probability (25-year recurrence interval) storm event without overtopping.

Alternative 1B: Lavelle Stormwater Storage Pond – Proposed Site Expansion

Lavelle Industries has announced their intention to expand operations at their Burlington location. The proposed expansion includes building additions extending into the existing parking lot. Additionally, the parking lot footprint will be increased under the proposed site expansion. As with the proposed Lavelle pond evaluated under Alternative 1A, the open space behind Lavelle industries is utilized for a new stormwater storage pond; however, the proposed site expansion reduces the area available for stormwater management. Maximizing the available space under the planned site expansion yields a proposed Alternative 1B stormwater pond with a footprint of approximately 2.0 acres, as illustrated on Map 4. The proposed stormwater pond was modeled with a bottom elevation of 777 feet NGVD29, a top elevation of 783 feet NGVD29, and 3H:1V side slopes. The pond storage capacity below elevation 783 feet NGVD29 is approximately 9.8 acre-feet for Alternative 1B. As previously explained under Alternative 1A, the pond storage curve was extended to elevation 788 feet NGVD for modeling purposes, and the Lavelle parking lot may experience minor flooding even with the proposed stormwater pond.

Similar to Alternative 1A, a new 18-inch diameter concrete outlet pipe was proposed at the southeast corner of the pond, with a new end section and an invert elevation of 777 feet NGVD29. The new pond outlet pipe follows the same route and is proposed to have the same connection and backflow prevention valve described under Alternative 1A. With the proposed parking lot expansion, the existing 12-inch diameter Lavelle pond outlet pipe will be extended west into the proposed Alternative 1B stormwater pond. A new

manhole structure will be provided at the connection with the existing outlet pipe, and a new end section will be provided within the proposed Alternative 1B pond at the pipe inlet.

Model Runs and Results for Alternative 1B

Several model runs were developed to evaluate the proposed stormwater pond at Lavelle under Alternative 1B. The model runs are described below, and the model results are presented in Table 6.

- The 1-percent-annual-probability (100-year recurrence interval) storm event model run considered the proposed Alternative 1B stormwater pond and outlet at Lavelle with the proposed site expansion, in conjunction with the existing KW Precast pond outlet restricted to a 12-inch diameter pipe. The stormwater pond at Lavelle for Alternative 1B is not able to contain the 100-year recurrence interval storm event, and the maximum water surface elevation at Lavelle is nearly one foot higher than the same conditions modeled for Alternative 1A.
- Storm events of smaller magnitudes were evaluated to determine the maximum level of flood protection for the Alternative 1B stormwater pond, with the existing KW Precast pond outlet restricted. Based on the model results provided in Table 6, the proposed Alternative 1B pond at Lavelle under site expansion conditions would be expected to contain the 10-percent-annual-probability (10-year recurrence interval) storm event without overtopping.

Alternative 2: KW Precast Stormwater Storage Pond

Alternative 2 proposes a new stormwater storage pond for the KW Precast site in order to detain runoff generated on that site. The proposed location for the new storage facility is north of the existing KW Precast pond, and is connected to the existing pond through four existing culverts that run beneath the KW Precast entrance road. This configuration allows runoff to be captured from Subbasins A7 and A8 (Map 2) without major modifications to site grading and continues to take advantage of the available stormwater storage in the existing KW Precast pond. Additionally, the existing KW Precast pond discharge will be redirected to the proposed Alternative 2 pond, and will discharge to the municipal storm sewer system through the proposed pond outlet. Map 5 presents the proposed KW Precast stormwater pond with the new pond outlet and an approximate footprint area of 2.8 acres.

The proposed Alternative 2 stormwater pond for KW Precast was modeled with an excavated bottom elevation of 779 feet NGVD29 and a top elevation of 786 feet NGVD29 with 3H:1V side slopes. The storage capacity below elevation 786 feet NGVD29 is approximately 16.8 acre-feet for the proposed Alternative 2 pond only. A new concrete outlet structure is proposed at the southeast corner of the pond, with a low-level orifice and a weir at the top of the concrete structure (similar to the existing pond outlet) and a 24-inch diameter concrete outlet pipe. The proposed outlet pipe will connect to the municipal storm sewer system

at the intersection of Market Street and Sheldon Street. In order to model the Alternative 2 configuration, the storm sewer study route was expanded within SWMM to include the pipe reach along Market Street, extending west from McHenry Street to Sheldon Street. Upstream of the connection with the municipal storm sewer, a manhole structure containing a backflow prevention valve is also proposed. With the proposed installation of a separate Alternative 2 pond outlet to the municipal storm sewer system, the existing 54-inch diameter KW Precast pond outlet was blocked to prevent discharge from the KW Precast pond from being routed through the Lavelle property.

The new Alternative 2 stormwater storage feature on the KW Precast property is modeled as an open pond; however, the cost estimate also includes an option for underground storage. The volume of underground storage required is estimated based on the volume of the proposed Alternative 2 stormwater pond of 16.8 acre-feet, which is equivalent to the maximum volume of storage available for the proposed above ground KW Precast pond. It is important to note that Alternative 2 addresses the KW Precast site stormwater management from a water quantity perspective, but the proposed design does not consider water quality requirements nor does it address modifications to the intended function of the existing KW Precast pond.

Model Runs and Results for Alternative 2

Several model runs were developed to evaluate the proposed Alternative 2 stormwater pond at KW Precast, in conjunction with the proposed Lavelle stormwater ponds highlighted under Alternatives 1A and 1B. The model runs are described below, and model results for Alternative 2 are summarized in Table 7.

- The 1-percent-annual-probability (100-year recurrence interval) storm event was run for the new stormwater pond and outlet at KW Precast along with the proposed stormwater pond Alternative 1A at Lavelle (existing site layout). With the existing KW Precast pond outlet blocked, the combination of storage Alternatives 1A and 2 is sufficient to handle runoff from the 100-year recurrence interval storm event without flooding or overtopping the pond at either site.
- The next set of model runs consider the performance of Alternative 2 in conjunction with the Alternative 1B proposed stormwater pond at Lavelle under site expansion conditions. Results from the 100-year recurrence interval storm event indicate flooding at Lavelle (approximately 1-foot above the top of proposed pond) even with the KW Precast existing pond outlet blocked.
- Storm events of smaller magnitudes were evaluated using the SWMM model to determine the maximum level of flood protection for the Alternative 2 stormwater pond at KW Precast in conjunction with the Alternative 1B proposed stormwater pond at Lavelle under site expansion conditions. Based on the model results provided in Table 7, the combination of storage

Alternatives 1B and 2 is sufficient to handle runoff from the 4-percent-annual-probability (25-year recurrence interval) storm event without flooding or overtopping the pond at either site.

Alternative 3: Municipal Storm Sewer Conveyance Improvements

Alternative 3 considers conveyance capacity improvements for portions of the municipal storm sewer in order to reduce the duration of surcharge when the storm sewer pipe capacity is exceeded following large rainfall events. Alternative 3 was developed for scenarios in which the storage alternatives alone were not sufficient to reduce flooding at the study site area, specifically for the scenarios that include site expansion at Lavelle (e.g. Alternative 1B). The Alternative 3 conveyance improvements do not preclude the need for increased storage capacity in the study site area, rather Alternative 3 is intended to be employed in conjunction with the storage alternatives previously discussed. Additionally, Alternative 3 is not offered as an upgrade of the existing municipal storm sewer system to meet the required 10-year level of service, which would require significantly less extensive modifications than those included in Alternative 3. Municipal storm sewer systems are not typically designed to convey the 100-year recurrence interval storm event, nor does this memorandum recommend meeting a 100-year level of service. Alternative 3 demonstrates the potential benefits of conveyance improvements, however it is recommended that any modification to the municipal storm sewer be evaluated using an expanded model that includes all components of the storm sewer system, rather than the isolated storm sewer study route modeled for this analysis.

For stormwater management Alternative 3, additional storm sewer pipes would be installed under Market Street, running parallel to the existing storm sewer study route. Specifically, a new 48-inch diameter concrete pipe is proposed to extend from the intersection of Market Street and McHenry Street downstream to the CN railroad tracks that run between Pine Street and the Fox River, as highlighted on Map 6. The proposed 48-inch storm sewer pipes were modeled to match the invert elevations of the existing storm sewer, and manhole structures would be provided with cross connections to the existing municipal manholes. The SWMM model for Alternative 3 represents the two parallel 48-inch diameter concrete pipes as a single, equivalent-flow-area, 4-foot by 6-foot reinforced concrete box culvert. This model simplification is deemed acceptable for the purposes of demonstrating the effects of increasing the conveyance capacity of the municipal storm sewer. The upstream and downstream extents of the new sewer would terminate at underground concrete junction boxes, allowing for the dispersal of stormwater between the two parallel pipes. For Alternative 3 the existing downstream end of the storm sewer study route from the railroad to the Fox River would not be modified.

Model Runs and Results for Alternative 3

The 1-percent-annual-probability (100-year recurrence interval) storm event was run for the Alternative 3 storm sewer conveyance improvements, along with the proposed stormwater pond at KW Precast (Alternative 2) and the proposed stormwater pond at Lavelle considering site expansion (Alternative 1B). The conveyance improvements offered by Alternative 3 significantly reduce the duration over which the municipal storm sewer is surcharged and unable to accept flow from the study site area. Based on the model results summarized in Table 8, the combination of Alternative 1B, Alternative 2, and Alternative 3 has the capacity to handle runoff from the 100-year recurrence interval storm event without flooding or overtopping the pond at either site.

To understand the isolated effect of the conveyance improvement alternative, a model run was completed for Alternative 3 in conjunction with the existing stormwater facilities in the study site area for the 1-percent-annual-probability (100-year recurrence interval) storm event. This model run indicated that Alternative 3 conveyance improvements alone do not alleviate flooding problems in the study site area (Table 9). While Alternative 3 employed alone considerably reduces the duration of surcharge in the municipal system, the study site area experiences significant flooding. Compared to the existing conditions model results for the 1-percent-annual-probability (100-year recurrence interval) storm event presented in Table 4, Alternative 3 employed alone reduces water levels in the study site area by 0.4 feet, with a maximum water surface elevation that is still almost 4 feet above the existing top of pond elevation. Based on these model results, it is clear that conveyance improvements to the municipal storm sewer system alone offer limited benefit with respect to flood level reduction within the study site area.

Additional Stormwater Management Considerations

Ardagh Site

The recommendations for stormwater management improvements on the Ardagh property are qualitative as the existing available data was not sufficient to develop meaningful SWMM model simulations for that site. Updated topographic data, expected to be available in 2019, will be useful for characterizing the existing site conditions, rainfall-runoff response, and to identify areas vulnerable to flooding on the property. Additionally, a survey of the existing stormwater drainage network pipes and facilities would allow for expansion of the model hydraulic features onto the Ardagh site, similar to the model representation for Lavelle. The following considerations are recommended for the Ardagh site:

- Backflow prevention valves are recommended for the two subsurface pipe connections to the municipal storm sewer at the Ardagh site. This would prevent stormwater in the municipal storm sewer from backing up into the Ardagh stormwater drainage system under surcharge conditions. When choosing the appropriate backflow prevention valve, the following should be considered:

- The headloss introduced by the valve and the water surface/head differential required to allow flow from the Ardagh drainage system to the municipal storm sewer should be investigated such that the valve would not excessively hinder normal site drainage. Pipes with very flat slopes may have trouble draining entirely.
 - The backflow prevention valve should be rated to withstand the worst-case backpressure on the downstream municipal side of the valve.
- Consider increasing stormwater storage capacity at multiple locations across the Ardagh site. The SWMM model results indicates that the volume of runoff generated on the Ardagh subbasins (A1 and A2, Map 2) is approximately 27 acre-feet for the 1-percent-annual-probability (100-year recurrence interval) storm event. Consider the feasibility of excavating to clean out the existing stormwater pond on the southwest side of the site, which has an approximate 1.2 acre footprint area but has lost storage capacity over the years due to sediment deposition and overgrown vegetation. Also consider constructing additional stormwater storage ponds in open areas along the southeast side of the site and under-utilized areas on the north side of the property.
- Consider modification of the culvert that runs from the Ardagh site into the WisDOT pond located just east of Ardagh, across McHenry Street, discussed in detail below. The culvert invert elevation on the Ardagh property is perched a few feet above the surrounding grade, such that significant ponding on the Ardagh site would be required before the culvert could provide drainage from the site to the WisDOT pond. Instead, the culvert may contribute to excess stormwater to the Ardagh site by allowing stormwater to flow from the WisDOT pond west when pond water levels are elevated. Consider engaging WisDOT to understand whether this culvert pipe may be fit with a backflow prevention device or otherwise blocked without adversely impacting the WisDOT pond function, in order to prevent stormwater from flowing through the culvert onto the Ardagh site.
- If increasing the stormwater storage capacity on the site is not sufficient to prevent flooding at Ardagh, a stormwater lift station could help remove excess stormwater by pumping into the WisDOT pond on the east side of McHenry Street. The lift station could be located along the eastern side of the Ardagh site, and the discharge piping from the pumps could be routed to the WisDOT pond through the existing culvert with modifications to prevent stormwater from flowing back onto the Ardagh site.

WisDOT Pond Utilization

The WisDOT stormwater pond was developed during the construction of the STH 11 Burlington Bypass and is encircled by the bypass, McHenry Street, and the northeast ramp access to McHenry Street as shown in Figure 5. The WisDOT pond collects runoff from the surrounding roadways and the property north of the

pond. The pond is over 20 feet deep, and offers a potential storage capacity of approximately 64 acre-feet between elevations 784 feet NGVD29 and 804 feet NGVD29 based on 2010 topographic contour data; however, the effective stormwater storage capacity of the WisDOT pond is significantly less due to low-level culvert pipes that allow water to flow out of the pond onto adjacent properties. The existing WisDOT pond outlet pipe is located in the southeast corner. Additional information is needed for the hydraulic features downstream of the pond outlet; however, it appears that stormwater discharged from the WisDOT pond would flow through a culvert running southeast under the bypass and eventually discharge into Spring Brook, which flows to the Fox River.

The bottom elevation of the WisDOT pond is too high to offer flood relief for the low-lying areas subject to flooding at the Lavelle and Ardagh sites, and excavating the pond deeper would not allow the pond to drain. SWMM model runs were performed to investigate the benefit of installing a pipe from the upstream-most manhole on the municipal storm sewer study route into the WisDOT pond to provide relief under surcharge conditions. While the WisDOT pond bottom elevation is too high to prevent relief of flooding on the Lavelle property, the model indicates minimal pressure relief on the municipal system and a slight reduction of street ponding in the upstream portion of the municipal storm sewer study route. Additionally, connecting the WisDOT pond to the storm sewer study route would force the pond to outlet to the storm sewer, ultimately increasing the drainage area contributing runoff to the municipal storm sewer system and potentially exacerbating storm sewer capacity issues.

Based on these considerations, it is recommended to continue to utilize the WisDOT stormwater pond for emergency pumping operations, and block the culvert connecting the pond to the Ardagh site as described in the preceding section. Another culvert connects the WisDOT pond with the property directly to the north; however, this culvert has a greater pipe slope and higher invert elevation compared to the Ardagh culvert. The upstream invert elevation of the northern culvert is approximately 790 feet NGVD, and the storage capacity in the pond below 790 feet NGVD is approximately 18 acre-feet. Hence it may be possible to keep the northern culvert operational and achieve stormwater storage relief using the WisDOT pond without negatively impacting water levels and drainage on the property north of the pond. The benefit of pumping into the WisDOT pond under emergency operations is that it is not connected to the municipal storm sewer system, so it would not be contributing to surcharge issues in the system.

Cretex Materials Excavated Storage Feature

In 2017 a pond was excavated on the Cretex Materials property near their entrance in the southeast corner of the site (Subbasin A9, Map 2). At the time of this study, there was no information available to develop a pond storage curve for inclusion in the SWMM model. There is no constructed pond outlet and the storage

capacity is limited by the lowest elevation along the perimeter of the pond; as the pond fills to capacity, stormwater spills over the south side of the excavation onto the access road, where it can either flow along the north side of the access road into the KW Precast pond or flow toward the south along the CN railroad tracks to the 36-inch diameter culvert under the tracks and onto the Lavelle property. A site visit conducted by SEWRPC staff in May 2018 provided insight into recommendations for improvement to this facility, as highlighted below.

- Consider providing additional locations for stormwater to enter the excavated pond on the uphill (north and west) side. At the time of the staff site visit, excavated material from the pond was bermed several feet above existing ground around the perimeter of the pond on the uphill side, preventing runoff from draining directly into the pond. Runoff is directed toward the south along the edge of the excavated material, and is funneled into the pond through erosion-induced pathways near the southern edge of pond.
- Consider providing a defined outlet for this pond toward the east, draining to the existing KW Precast pond. A discharge pipe into the low-lying area east of the pond and north of the access road would allow stormwater from this pond to be routed through the existing KW Precast culvert and drainage swale along the north side of the access road into the KW Precast pond. Note that redirecting flow from Cretex Materials Subbasin A9 to the existing KW Precast pond may slightly impact the SWMM model results for the alternatives discussed herein.
- Consider deploying erosion control to stabilize the area around the perimeter of the pond and at locations of concentrated flow to prevent the erosion observed at locations where runoff flows into or out of the pond.

PLANNING-LEVEL COST ESTIMATES FOR STORMWATER MANAGEMENT ALTERNATIVES

Planning-level cost estimates were developed for the viable stormwater management alternatives modeled for this study. Cost information was compiled from a variety of sources. The Engineering News-Record Construction Cost Index (CCI) was used to convert historical cost data to 2018 dollar values. The cost estimates include major items such as excavation, pipe material, installation and restoration costs, as well as a 35 percent contingency. The 35 percent contingency represents costs such as geotechnical investigation, engineering and detailed design, permitting, and minor construction items.

The estimated construction costs do not include annual operation and maintenance costs for the alternatives as well as the following potential items, which may significantly alter the final construction costs if they are encountered during final design:

- Underground utility conflicts

- Contaminated soils
- Temporary shoring or bracing for pipe trenching
- Land acquisition or easement costs
- Pond lining (to address high groundwater elevations)
- Dewatering during construction
- Security fencing and safety barriers for stormwater ponds

The cost estimates for each evaluated stormwater management alternative are presented in Table 10.

SUMMARY

EPA SWMM model simulations have indicated that no single stormwater management alternative considered for this study would prevent flooding at the study site area on its own. Various combinations of the proposed stormwater management alternatives offer different levels of flood protection, as summarized below and in Table 11. Maps 3 through 6 present each stormwater management alternative.

The new stormwater pond proposed for the existing Lavelle site layout (Alternative 1A) alone provides flood protection for storm events up to the 4-percent-annual-probability (25-year recurrence interval) with an estimated cost of \$1.25 million. Alternative 1A employed in combination with the Alternative 2 stormwater pond proposed for KW Precast provides flood protection for the 1-percent-annual-probability (100-year recurrence interval) storm event with an estimated combined cost of \$2.5 million.

Considering the proposed site expansion at Lavelle, the new stormwater pond proposed under Alternative 1B alone provides flood protection up to the 10-percent-annual-probability (10-year recurrence interval) storm event with an estimated cost of \$830,000. Alternative 1B employed in combination with the Alternative 2 stormwater pond proposed for KW Precast provides flood protection for the 4-percent-annual-probability (25-year recurrence interval) storm event with an estimated combined cost of \$2.1 million. The model indicates that flood protection for the study site area during the 1-percent-annual-probability (100-year recurrence interval) storm event can be achieved with the Alternative 1B stormwater pond at Lavelle when employed in conjunction with the Alternative 2 stormwater pond proposed for KW Precast and the municipal storm sewer conveyance improvement proposed under Alternative 3. The estimated combined cost for these three alternatives is approximately \$6.7 million.

FUTURE WORK

This memorandum summarizes the effort completed by SEWRPC staff to model the existing storm sewer system serving the industrial study site area located on the southwest side of the City of Burlington, and to evaluate potential stormwater management alternatives to reduce surface flooding for that area. Planning-level cost estimates were developed for the viable stormwater management alternatives considered for the Lavelle and KW Precast properties as well as the municipal storm sewer system. Final selection of the preferred alternative will depend on multiple factors including the desired level of service or level of flood protection, individual site constraints, detailed design, and cost.

Due to limitations in the source information available, the planning-level analysis set forth in this memorandum required a number of assumptions to be made regarding the current stormwater drainage conditions. Future studies and detailed engineering design should include additional investigations to validate these assumptions. These additional investigations are set forth below:

- SWMM model assumptions to be confirmed/verified:
 - Perform a field survey for the hydraulic features of the KW Precast pond and 36-inch pipe under the CN railroad to confirm elevations referenced to either NGVD29 or another established vertical datum.
 - Updated topographic data for Racine County is anticipated to become available in 2019, which could be used to refine or validate subbasin delineations and flow paths, and to identify additional storage opportunities.
 - Obtain additional storm sewer network survey data to confirm assumptions regarding non-contributing drainage areas and subbasin divides based on the City storm sewer system.
- For storage Alternatives 1A, 1B, and 2 – perform a geotechnical evaluation to establish groundwater elevations and determine whether groundwater could impact the proposed ponds, either by limiting proposed pond depth or requiring pond lining.
- For the conveyance Alternative 3 – expand the SWMM model developed for this planning-level evaluation to incorporate all of the contributing municipal storm sewers to the storm sewer study route along McHenry and Market Streets. Detailed design of proposed modifications to the municipal storm sewer based upon an expanded model will provide a more accurate representation of system hydraulics and routing, runoff timing, and storage opportunities throughout the system and contributing drainage areas.
- As discussed previously, additional survey and topographic information is needed to define the stormwater storage and hydraulic features on the Ardagh site for incorporation into the model.

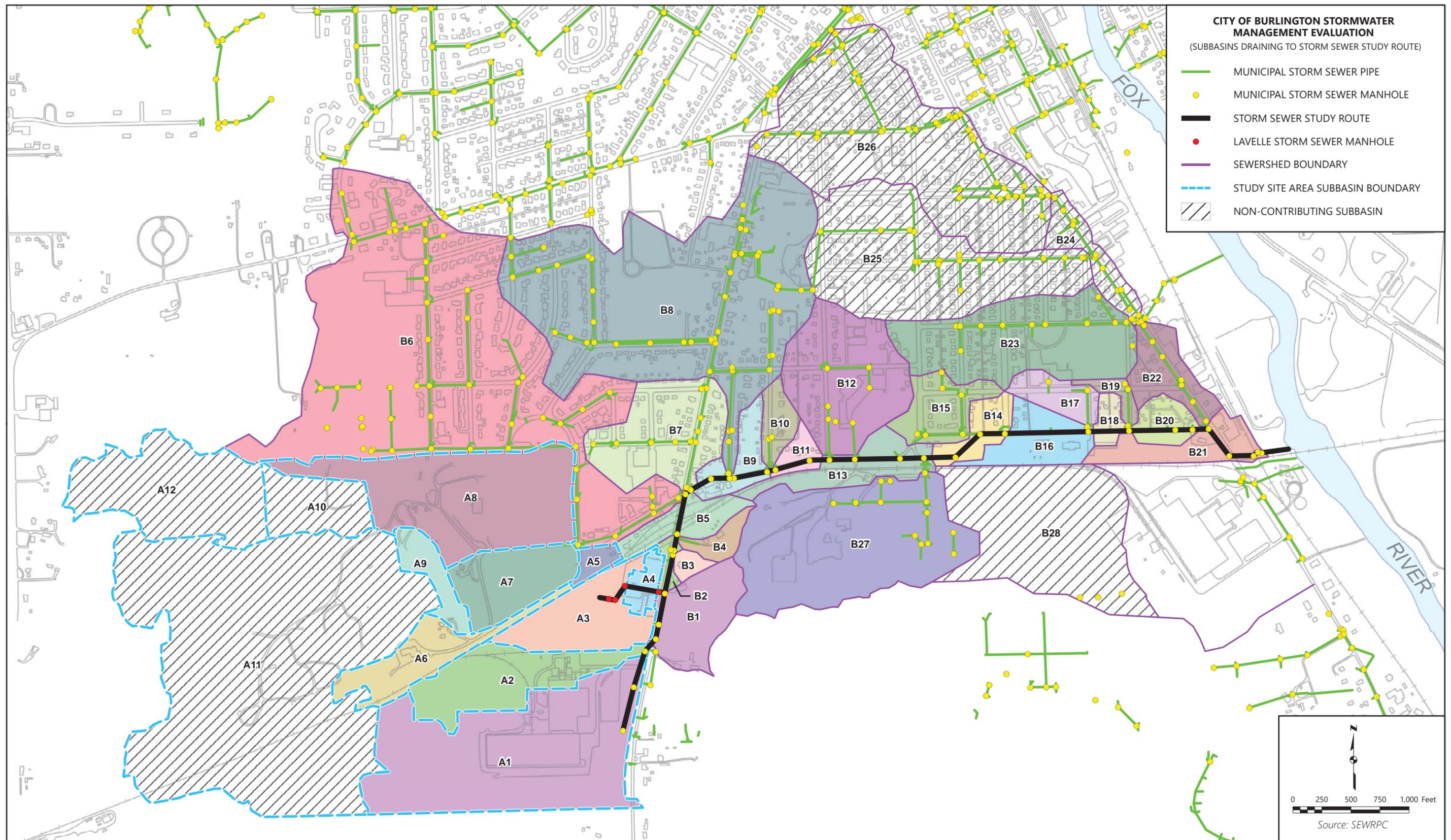
- Where site constraints present challenges for required stormwater management, consider procurement of nearby properties for development of stormwater management facilities (e.g. the property east of Lavelle across McHenry Street, properties near KW Precast on the east side of Sheldon Street, WE Energies properties in the study site area).
- Perform additional investigation for the WisDOT pond features as it relates to options for emergency flood operations, and engage in discussions with WisDOT regarding potential modifications.

Additionally, the City may consider development of a Stormwater Master Plan in order to provide an integrated evaluation of the overall stormwater management features and storm sewer network for the entire city.

BURLINGTON STORMWATER MANAGEMENT EVALUATION

Maps

Map 1
 Burlington Stormwater Management Evaluation – Overall Subbasin Map and Storm Sewer Study Route





Map 3
Alternative 1A: Lavelle Stormwater Pond – Existing Site Layout



Map 4
Alternative 1B: Lavelle Stormwater Pond – Proposed Site Expansion



Map 5
Alternative 2: KW Precast (KWP) Stormwater Pond



Map 6
Alternative 3: Municipal Storm Sewer Conveyance Improvements



BURLINGTON STORMWATER MANAGEMENT EVALUATION

Tables

Table 1
Study Site Area Subbasin Summary

Subbasin	Drainage Area (acres)	Description	Outlet/Downstream Subbasin
A1	50.1	Ardagh (south)	Municipal Storm Sewer
A2	16.9	Ardagh (north)	Municipal Storm Sewer
A3	14.2	Lavelle (site)	Lavelle Pond to Lavelle Storm Sewer to Municipal Storm Sewer
A4	2.7	Lavelle (roof drainage)	Lavelle Storm Sewer to Municipal Storm Sewer
A5	2.0	WE Energies	Railroad Culvert to Lavelle (A3)
A6	11.0	Asphalt Contractors, Inc.	Railroad Culvert to Lavelle (A3)
A7	12.5	KW Precast (southeast)	KW Precast Pond to Railroad Culvert to Lavelle (A3)
A8	35.4	KW Precast (northeast)	KW Precast Pond to Railroad Culvert to Lavelle (A3)
A9	5.3	Cretex Materials (entrance)	Railroad Culvert to Lavelle (A3)
A10	10.2	KW Precast (north)	Cretex Materials (A11 – no outlet)
A11	113.1	Cretex Materials (west)	Closed Basin (no outlet)
A12	26.7	KW Precast (northwest)	Closed Basin (no outlet)

Source: SEWRPC

Table 2
Design Storm Rainfall Data for Study Site Area

Design Storm Event	Recurrence Interval (years)	24-hour Rainfall Depth (inches)
50-percent-annual-probability	2	2.72
20-percent-annual-probability	5	3.33
10-percent-annual-probability	10	3.88
4-percent-annual-probability	25	4.68
2-percent-annual-probability	50	5.35
1-percent-annual-probability	100	6.05

Source: NOAA Atlas 14, Volume 8, Version 2.0 (Coordinates: 42.6651, -88.2863)

Table 3
Study Site Area Subbasin Runoff Volumes for
the 100-year Recurrence Interval Storm Event

Subbasin	Description	Total Runoff Volume (acre-feet)
A1	Ardagh (south)	19.8
A2	Ardagh (north)	7.1
A3	Lavelle (site)	5.8
A4	Lavelle (roof drainage)	1.3
A5	WE Energies	0.7
A6	Asphalt Contractors, Inc.	4.4
A7	KW Precast (southeast)	5.7
A8	KW Precast (northeast)	15.7
A9	Cretex Materials (entrance)	2.1

Note: Total runoff volumes are obtained from the existing conditions SWMM model, and represent the total amount of runoff generated for each subbasin.

Source: SEWRPC

Table 4
Existing Conditions Model Results for Design Storm Events

Design Storm Recurrence Interval	Existing Lavelle Pond^a		Existing KW Precast Pond^b		Duration of Zero Outflow from Study Site Area^c (hours)
	Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	
100-year	[786.3]	21.1	[786.3]	9.5	10.6
50-year	[785.8]	17.2	[785.8]	7.7	8.3
25-year	[785.3]	13.4	785.4	6.4	5.9
10-year	[784.6]	8.5	784.6	5.1	2.1
5-year	[784.0]	5.2	784.2	4.5	0
2-year	[783.3]	2.7	784.0	4.1	0

^a The existing Lavelle top of pond elevation is approximately 782 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^b The existing KW Precast lowest top of pond elevation is approximately 785.4 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^c The duration of zero outflow from the study site area represents the duration over which the municipal storm sewer is surcharged and unable to accept additional flow

Source: SEWRPC

Table 5
Model Results for Alternative 1A

Model Run Description	Design Storm Recurrence Interval	Proposed Lavelle Pond ^a		Existing KW Precast Pond ^b		Duration of Zero Outflow from Study Site Area ^c (hours)
		Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	
Alternative 1A with Existing KWP Pond Outlet	100-year	[785.1]	26.3	785.1	5.9	11.5
Alternative 1A with KWP Pond Outlet Restricted	100-year	[785.0]	25.8	[785.5]	6.9	11.4
Alternative 1A with KWP Pond Outlet Restricted	25-year	782.5	14.7	[785.5]	6.7	6.7

^a The proposed Lavelle top of pond elevation is approximately 783 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^b The existing KW Precast lowest top of pond elevation is approximately 785.4 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^c The duration of zero outflow from the study site area represents the duration over which the municipal storm sewer is surcharged and unable to accept additional flow

Source: SEWRPC

Table 6
Model Results for Alternative 1B

Model Run Description	Design Storm Recurrence Interval	Proposed Lavelle Pond ^a		Existing KW Precast Pond ^b		Duration of Zero Outflow from Study Site Area ^c (hours)
		Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	
Alternative 1B with KWP Pond Outlet Restricted	100-year	[785.8]	24.5	[785.8]	7.5	11.0
Alternative 1B with KWP Pond Outlet Restricted	10-year	782.0	7.8	785.3	6.4	3.2

^a The proposed Lavelle top of pond elevation is approximately 783 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^b The existing KW Precast lowest top of pond elevation is approximately 785.4 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^c The duration of zero outflow from the study site area represents the duration over which the municipal storm sewer is surcharged and unable to accept additional flow

Source: SEWRPC

Table 7
Model Results for Alternative 2

Model Run Description	Design Storm Recurrence Interval	Proposed Lavelle Pond ^a		Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	Maximum Water Surface Elevation (feet NGVD29)	KW Precast Ponds ^b		Duration of Zero Outflow from Study Site Area ^c (hours)
		Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)				Existing Pond Maximum Volume (acre-feet)	Proposed Pond Maximum Volume (acre-feet)	
Alternatives 1A and 2	100-year	781.9	12.8	784.8	5.4	784.8	5.4	13.5	12.1
Alternatives 1B and 2	100-year	[784.0]	12.8	784.8	5.4	784.8	5.4	13.5	12.1
Alternatives 1B and 2	25-year	782.1	8.1	783.3	3.2	783.3	3.2	9.9	6.7

^a The proposed Lavelle top of pond elevation is approximately 783 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^b The proposed KW Precast top of pond elevation is approximately 786 feet NGVD29 and the existing KW Precast lowest top of pond elevation is approximately 785.4 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^c The duration of zero outflow from the study site area represents the duration over which the municipal storm sewer is surcharged and unable to accept additional flow

Source: SEWRPC

**Table 8
Model Results for Alternative 3**

Model Run Description	Design Storm Recurrence Interval	Proposed Lavelle Pond ^a		KW Precast Ponds ^b		Duration of Zero Outflow from Study Site Area ^c (hours)	
		Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	Maximum Water Surface Elevation (feet NGVD29)	Existing Pond Maximum Volume (acre-feet)		Proposed Pond Maximum Volume (acre-feet)
Alternative 3 with Alternatives 1B and 2	100-year	782.4	8.6	784.0	4.2	11.6	2.5

^a The proposed Lavelle top of pond elevation is approximately 783 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^b The proposed KW Precast top of pond elevation is approximately 786 feet NGVD29 and the existing KW Precast lowest top of pond elevation is approximately 785.4 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^c The duration of zero outflow from the study site area represents the duration over which the municipal storm sewer is surcharged and unable to accept additional flow

Source: SEWRPC

**Table 9
Model Results for Alternative 3 with Existing Ponds**

Model Run Description	Design Storm Recurrence Interval	Existing Lavelle Pond ^a		Existing KW Precast Pond ^b		Duration of Zero Outflow from Study Site Area ^c (hours)
		Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	Maximum Water Surface Elevation (feet NGVD29)	Maximum Volume (acre-feet)	
Alternative 3 ^d	100-year	[785.9]	17.6	[785.9]	7.9	2.3

^a The existing Lavelle top of pond elevation is approximately 782 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^b The existing KW Precast lowest top of pond elevation is approximately 785.4 feet NGVD29; water surface elevations within brackets indicate pond overtopping

^c The duration of zero outflow from the study site area represents the duration over which the municipal storm sewer is surcharged and unable to accept additional flow

^d This model run considers isolated effects of Alternative 3 conveyance improvements with the existing stormwater storage ponds at Lavelle and KW Precast; refer to Table 4 for comparison with existing conditions

Source: SEWRPC

Table 10
Cost Estimate Summary for each Stormwater Management Alternative

Alternative	Description	Total 2018 Construction Cost^a (\$ in millions)
Alternative 1A	Proposed Lavelle Pond – Existing Site Layout	1.25
Alternative 1B	Proposed Lavelle Pond – Proposed Site Expansion	0.83
Alternative 2	Proposed KW Precast Pond	1.24
Alternative 2 (UG)	Proposed KW Precast Underground Storage Option	7.50
Alternative 3	Municipal Storm Sewer Conveyance Improvements	4.62

^a Includes 35 percent contingency

Source: SEWRPC

Table 11
Estimated Cost and Level of Protection Summary for Combined Stormwater Management Alternatives

Alternative(s)	Description	Total Combined Cost (\$ in millions)	Level of Flood Protection at Lavelle (storm event recurrence interval)
1A	Proposed Lavelle Pond (Existing Site Layout) with KW Precast Existing Pond Outlet Restricted	1.25	25-year
1B	Proposed Lavelle Pond (Site Expansion) with KW Precast Existing Pond Outlet Restricted	0.83	10-year
1A and 2	Proposed KW Precast Pond with Alternative 1A	2.50	100-year
1B and 2	Proposed KW Precast Pond with Alternative 1B	2.10	25-year
1B and 2 and 3	Proposed Municipal Storm Sewer Conveyance Improvements with Alternatives 1B and 2	6.70	100-year

Note: The level of flood protection for the existing KW Precast pond is estimated at the 25-year recurrence interval storm event, and the proposed Alternative 2 stormwater pond for KW Precast provides flood protection up to the 100-year recurrence interval storm event.

Source: SEWRPC

BURLINGTON STORMWATER MANAGEMENT EVALUATION

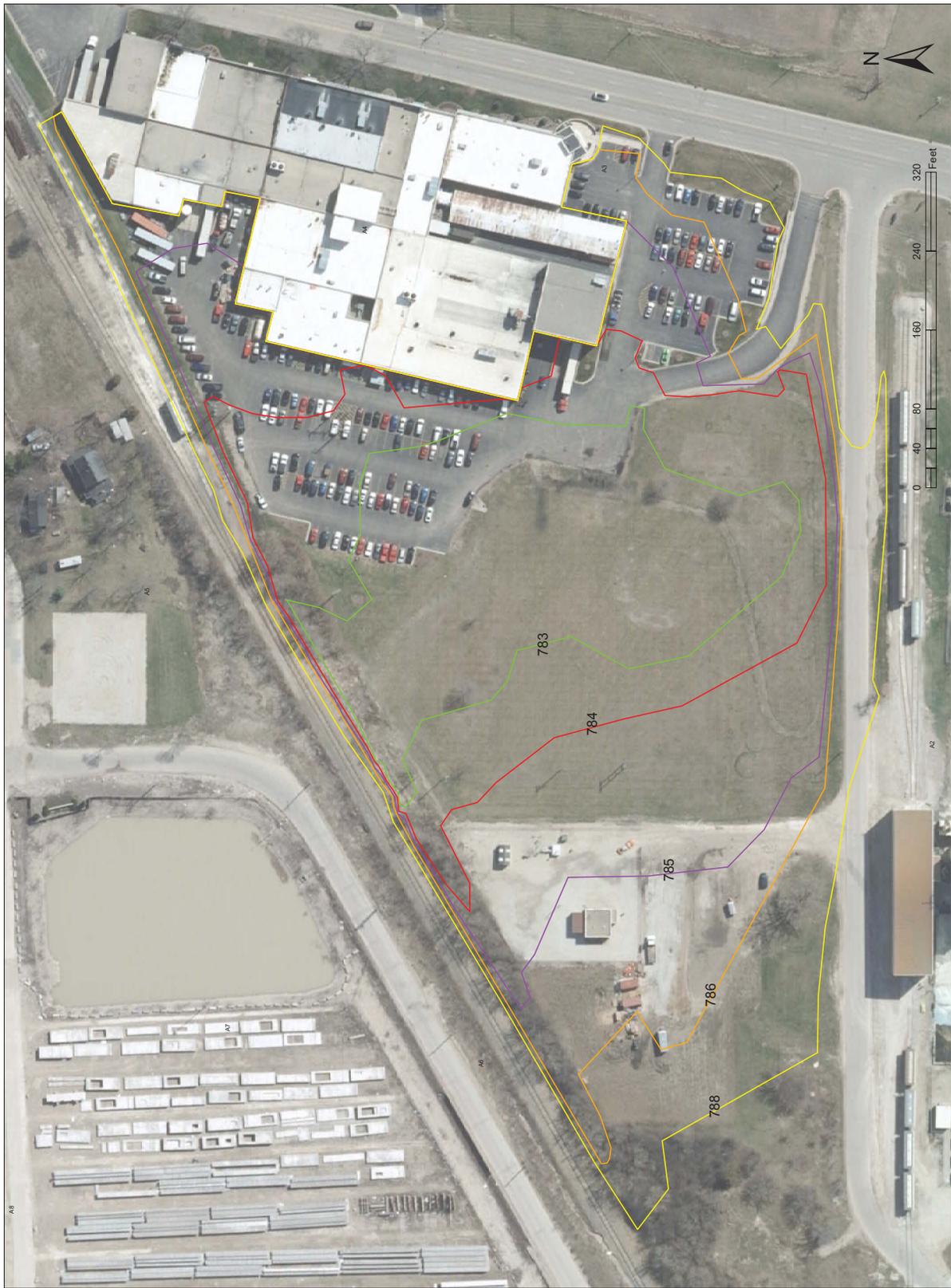
Figures

Figure 1
Existing Conditions Model Schematic – Study Site Area Hydraulic Features



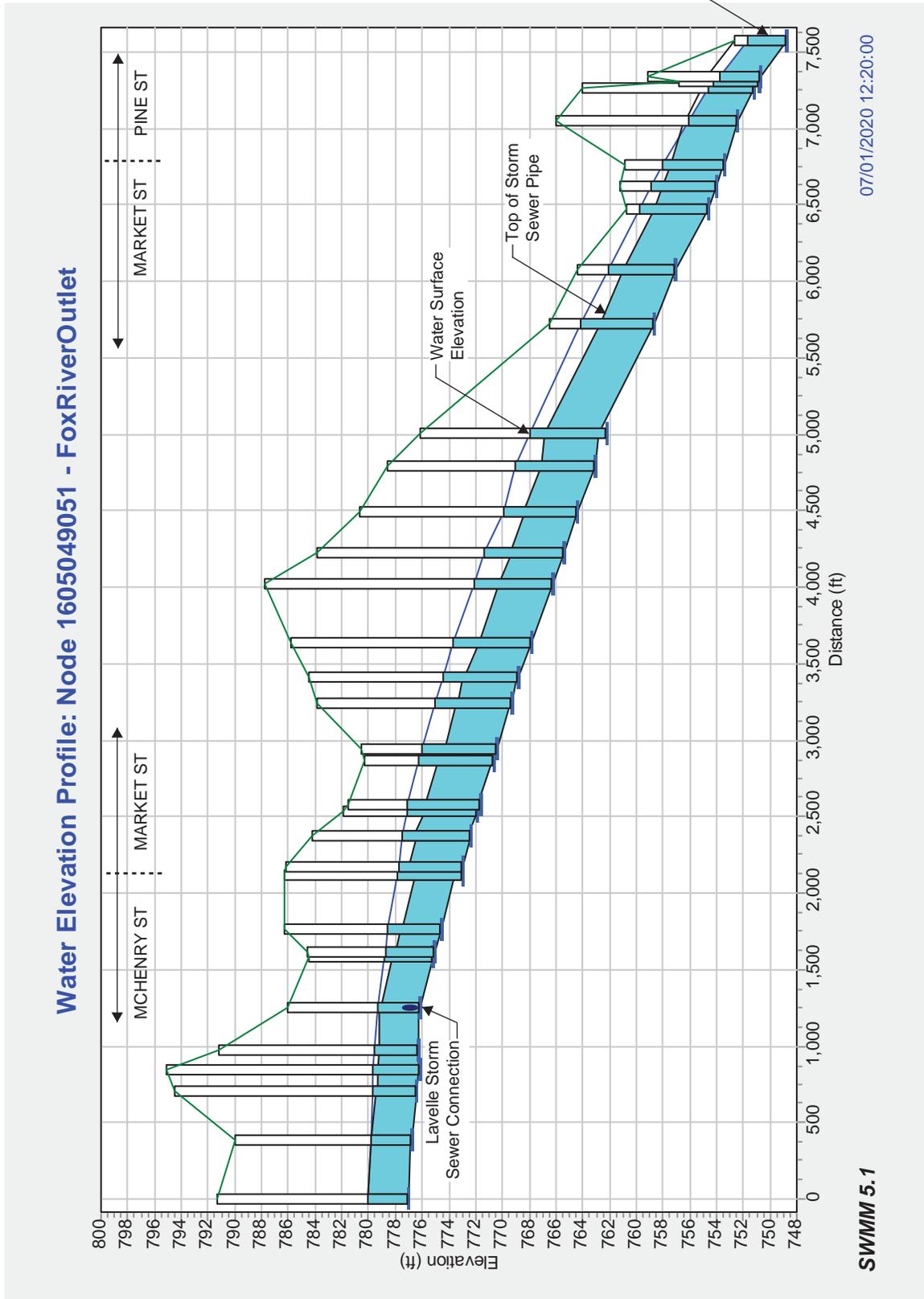
Source: SEWRPC

Figure 2
Approximate Topographic Contours used to Model Stormwater Ponding on the Lavelle Site



Source: SEWRPC and Lavelle Industries Grading Plan (Lynch & Associates, 04/23/2015)

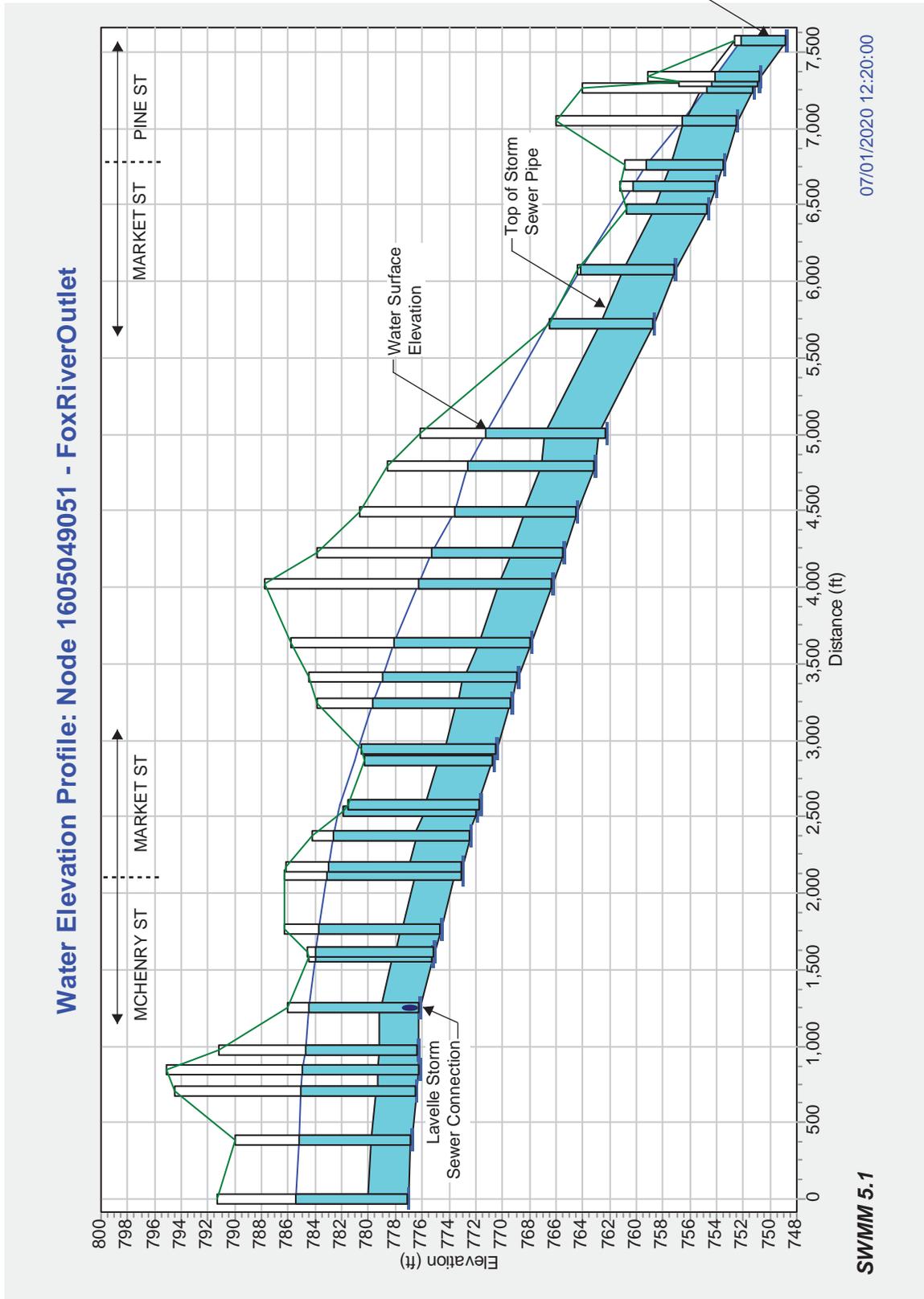
Figure 3
Existing Conditions Model Results: 5-year Recurrence Interval Water Elevation Profile for the Municipal Storm Sewer Study Route



SWMM 5.1

Source: SEWRPC

Figure 4
Existing Conditions Model Results: 10-year Recurrence Interval Water Elevation Profile for the Municipal Storm Sewer Study Route



SWMM 5.1

Source: SEWRPC

