Village of Shorewood, Wisconsin

Combined Sewer Service Area Environmental Assessment Report

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Executive Summary

The Village of Shorewood, Wisconsin, experienced basement backups and street flooding during heavy rain events in July of 2010. The study area is the combined sewer service area south of Capitol Drive and east of Oakland Avenue. The current combined sewer system carries wastewater to the Milwaukee Metropolitan Sewerage District (MMSD) system for treatment. The first flush of surface waters from streets and driveways is also currently conveyed through combined sewers to the MMSD system for treatment. A meeting was held with MMSD and the Wisconsin Department of Natural Resources (DNR) to review alternatives. One alternative presented was virtual separation where sewage is conveyed to MMSD for treatment and the first flush of surface water is also discharged to combined sewers for treatment. Restrictors would reduce flows into combined sewers for basement backup protection and a new overflow storm sewer system would convey excess surface water to the Milwaukee River.

The Wisconsin DNR has released the draft Total Maximum Daily Load (TMDL) study for the Milwaukee River. Water quality standards for the Milwaukee River were discussed with Wisconsin DNR. Maintaining low flow diversion of surface water flows to the combined system of up to the equivalent of a 1-inch, 1-hour rain event would send the first flush of runoff pollutants to treatment, and result in an average annual total suspended solids reduction of 57% from the calculated no controls pollutant load. This exceeds the reduction required for maintaining Shorewood's compliance with the required runoff treatment performance standard.

Extensive computer modeling was performed to determine how the existing and proposed systems will operate under a variety of rainstorm events and alternative design solutions. The goal was to provide basement backup protection during a 3-inch, 1-hour rain event, which is a 100-year storm event level of service. Basement backup protection was defined as water levels in the combined sewers of more than six feet below the ground surface. The goal for overland flow in the streets was six inches of depth, coupled with a maximum of nine inches of ponding at low points in the street.

Recommended improvements to provide basement backup protection include virtual separation of the existing combined sewer system, construction of a network of overflow storm sewers with a new outfall to the Milwaukee River, and conversion of a number of homes to overhead / hung plumbing in the basement. Basement backup protection would also include increasing capacity of the combined sewer system along selected streets to remove "bottlenecks". The proposed improvements are designed to still allow the "first flush" to be captured by the combined sewer system and treated at the wastewater treatment plant before being released to the Milwaukee River. This Best Management Practice of treatment of the "first flush" is proposed to maintain Shorewood's compliance with the DNR draft TMDL regulations. Improvements along Edgewood Avenue, under consideration by a separate study, must be implemented in conjunction with the improvements described in this study to provide basement backup protection to the study area during larger rainstorms.

VILLAGE OF SHOREWOOD, WISCONSIN
COMBINED SEWER SERVICE AREA
ENVIRONMENTAL ASSESSMENT REPORT

TABLE OF CONTENTS

Section

VILLAGE OF SHOREWOOD, WISCONSIN
COMBINED SEWER SERVICE AREA
ENVIRONMENTAL ASSESSMENT REPORT

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF EXHIBITS

VILLAGE OF SHOREWOOD, WISCONSIN
COMBINED SEWER SERVICE AREA
ENVIRONMENTAL ASSESSMENT REPORT

TABLE OF CONTENTS

1. Combined Sewer Service Area Environmental Assessment

1.1. Introduction

The Village of Shorewood, Wisconsin, experienced basement backups and street flooding during heavy rain events in July of 2010. On July 15, 2010, 3.56-inches of rain fell over a period of 9 hours. On July 22, 2010, with the ground still saturated from the previous week's event, 8.5-inches of rain inundated the Village of a period of 8 hours. These rain events caused widespread basement backups, street flooding, and property damage throughout the Village. The focus of this study is the combined sewer service area south of Capitol Drive and east of Oakland Avenue. This area is 250-acres in size and contains approximately 980 homes and businesses. The existing combined sewer system collects sewage from homes and businesses which is conveyed to the Milwaukee Metropolitan Sewerage District's (MMSD) treatment facility. Surface waters from streets, driveways, and rooftops as well as ground water from house footings is combined with the sewage in the same pipes and transported to MMSD for treatment.

Two studies have been previously conducted to address basement backup concerns in the study area. The first study entitled "Village of Shorewood Advanced Facility Plan for Storm Sewer Improvements to Achieve Partial Separation in the South Combined Sewer Area" was prepared by Ruekert-Mielke in 2012. The second study entitled "Ad Hoc 110 (Edgewood Drainage Study) Technical Memorandums 1 and 2" was prepared by CDM Smith for MMSD in 2014. The design objective was to provide basement backup protection for rainstorms up to and including an intensity of 3-inches in 1 hour. This rainfall intensity is the equivalent of a 100 year storm or a rainstorm with a 1% chance of occurring in any one year. The studies recommended a number of solutions including downspout disconnection, street inlet restrictors, separate storm sewers discharging to the Milwaukee River, and Best Management Practices (BMP) to address surface water quality and quantity.

There are a number of challenges that must be overcome to advance the previously proposed concepts for mitigating flooding and providing basement backup protection in the study area into design and implementation. This report will detail Local, State and Federal regulatory requirements for proposed improvements, assess potential environmental impacts of improvements, and provide a description of alternatives to mitigate impacts. The report includes an analysis of improvements necessary to meet the design objectives for basement backup protection and addressing street flooding. The report includes the results of extensive computer modeling of the existing sewer system and proposed improvements to verify problem areas and develop solutions. The report details preliminary cost estimates to define the budgetary requirements to meet the design objectives, and provides a schedule for the design and construction of improvements.

1.2. Regulatory Review

The Village of Shorewood is faced with a number of unique and considerable challenges in order to mitigate basement and street flooding, particularly in the combined sewer service area south of Capitol Drive. The alternative concepts previously presented to the Village include elements that will require regulatory review and approval. For this analysis, a review of regulatory requirements to assess how these requirements might impact the feasibility and/or cost of

potential improvement alternatives. In particular, the construction of separate storm sewers to provide basement backup protection could increase the discharge of suspended solids to the Milwaukee River. As such, the additional steps that must be taken to keep the Village in compliance with WPDES storm water permit requirements need to be identified. Since there are very few similar projects in the State, there is no clear precedent set for permitting a project like this. The appropriate agencies were consulted to evaluate the relevant regulatory criteria and how those criteria should be applied to this project.

1.2.1. Regulatory Meetings

Recognizing that there are a number of potentially significant regulatory and environmental issues associated with implementation of improvements, meetings were held with MMSD and the Wisconsin Department of Natural Resources (DNR). Information on proposed improvements was also forwarded to the U.S. Army Corps of Engineers (USACE) for comment. Potential solutions to the basement backup and surface flooding problems in Shorewood's combined sewer area were submitted for regulatory agency consideration. The alternative concepts were reviewed with the regulatory agencies and feedback was solicited regarding the benefits and challenges associated with each alternative.

1.2.1.1. Full Sewer Separation

The first concept presented was a fully separated sewer system wherein wastewater from households and businesses is directed to the MMSD system for treatment. Treatment of separated sewage is provided by the Jones Island sewage treatment plant before discharge to Lake Michigan. Surface waters would be collected in street inlets and conveyed in separate storm sewers to the Milwaukee River. A meeting was held with the Wisconsin DNR, the project team, MMSD, and Village staff to review a fully separated sewer system concept.

Wisconsin DNR staff stated that combined sewer areas, through treatment of stormwater flows, are able to meet current water quality standards. Wisconsin DNR staff explained that a new stormwater outfall to the Milwaukee River will require a Water Quality Certification (WQC) from the Wisconsin DNR. WQCs are required for projects that may impact water quality to make sure the projects will comply with state water quality standards. Wisconsin DNR staff described the State of Wisconsin anti-degradation policy which addresses new or increased discharges to surface waters, and a permittee is required to justify the reasons for new or increased discharges before such discharges can be allowed under Wisconsin's discharge permit program (WPDES). Any increase in loading would constitute degradation of the receiving waters. In order to obtain the WQC, the project must satisfy this anti-degradation policy. The Wisconsin DNR made clear that a full separation of sewer systems would not be able to meet State water quality standards or satisfy anti-degradation regulations without additional treatment at the outfall.

1.2.1.2. Virtual Separation

The second concept presented to the regulatory agencies was an overflow storm sewer system, coined by the Village of Shorewood as "virtual separation". Virtual separation is where wastewater from households and businesses is conveyed through combined sewers to the MMSD system for treatment. Additionally, the first flush of surface waters from streets and driveways is also conveyed through combined sewers to the MMSD system for treatment. Given the availability of combined sewers in this area Wisconsin DNR strongly suggested that some portion of the

stormwater "first flush" or "low flow" runoff from the study area continue to be directed to the MMSD facilities for treatment. In a virtual separation system, street curb inlets would have restrictors to limit the flows into the existing combined sewers for basement backup protection. The inlet restrictors would accept the first flush of surface waters into the combined sewer system and convey it to the MMSD system for treatment. Low flows would continue to discharge to the combined sewer system until the intensity of rain increased to a point where surface water flow was restricted from entering the combined sewer system. For surface waters exceeding the capacity of the existing combined sewer system a new overflow storm sewer system would convey excess surface waters to the Milwaukee River.

1.2.2. Regulatory Findings

Based on meetings and feedback from the regulatory agencies, we have established an effective basis for assessing potential regulatory impacts. The probable permit requirements for the construction of virtual separation improvements are outlined below. A summary of the regulatory requirements can be found in the regulatory review datasheets in Appendix A.

1.2.2.1. Milwaukee Metropolitan Sewerage District

MMSD has a water course connection permit for storm water discharges. Detailed design information is required along with documentation of water surface elevation changes in the river and timing of the peak flows from the outfall storm sewer in relation to the timing of the peak flow of the river.

1.2.2.2. US Army Corps of Engineers

With regard to USACE permits, the project would fall under the terms of a Regional General Permit. The USACE asked to be copied on all permit submittals of the proposed design to the Wisconsin DNR.

1.2.2.3. Wisconsin Department of Natural Resources

The Wisconsin DNR is the primary agency for regulating water quality, impacts to waterways, and impacts to wetlands. Their permit process will require a Chapter 30 permit for this project, which will include a wetland delineation, a determination of the Ordinary High Water Mark, and an analysis of waterway and/or wetland impacts. In addition, a Water Quality Certification will be required, which will take anti-degradation regulations into account. A review of potential impacts to sensitive species (state or federally listed species) and cultural/historical resources would be part of the Wisconsin DNR permitting process.

A Draft Total Maximum Daily Load (TMDL) study has been released by the Wisconsin DNR and is currently under review for the Milwaukee River. The final results of the TMDL study will indicate the future regulatory requirements for discharges of phosphorus, sediment, and pathogens to the Milwaukee River. The TMDL study results will indicate the allowable load of the parameters, and what reductions in the current loading of these parameters will be necessary to meet water quality standards. Regulation of these loads will be implemented through NPDES permits, including the Village's Municipal Separate Storm Sewer System (MS4) permit.

1.3. Environmental Assessment

In addition to the regulatory requirements that will need to be met for construction and operation of a "virtually separated" storm sewer system, Shorewood will need to consider how the project could potentially impact environmental resources. Potential environmental impacts include those associated with short-term (construction) and long-term (operation) actions, and a summary of options for mitigating those impacts. We assume that the proposed project would not impact sensitive species (state or federally listed species) or cultural/historical resources. A summary of the Potential Environmental Impacts and Mitigation Datasheet can be found in Appendix B.

1.3.1. Potential Environmental Impacts

The potential environmental impacts that could be associated with construction and operation of improvements are summarized below along with options for mitigating those impacts. Detailed information on short and long-term impacts are presented in Appendix B.

1.3.1.1. Short-Term (Construction) Impacts

Environmental impacts during project construction could include erosion, temporary water quality degradation, wetlands disturbance, noise, traffic, and constraints on recreational use of parks. These impacts are typically short-term in nature as they are associated with construction activities. Requirements for measures to mitigate these short-term impacts are generally incorporated into the project construction documents and implemented by the contractor responsible for construction of the improvements.

1.3.1.2. Long-Term (Operation) Impacts

The completed project has the potential to impact environmental resources during operation. Potential areas of impact include human health, water quality, river flood stage, aesthetics, streambank/channel, fish, and sensitive habitat. These longer-term impacts are typically associated with the permanent facilities constructed, and the operation of those facilities during wet weather events.

1.4. Alternatives Analysis

Following the regulatory and environmental reviews, the Village requested the continued investigation of several alternatives to provide basement backup protection and alleviate street flooding in the combined sewer area. The subsequent alternatives analysis weighed many factors, including environmental, economic, and physical constraints, to determine the most effective design solution consistent with the Village's performance criteria. The alternatives analysis process is important to understand and evaluate a wide range of the choices available to the Village, and to be able to move forward and be confident that all options have been explored.

1.4.1. Improvement Alternatives

Four possible alternatives are discussed below, with the pros and cons of each outlined and analyzed. The implementation cost, construction constraints, permitting, and environmental factors are all important factors to examine when investigating possible solutions.

1.4.1.1. Full Sewer Separation

The first alternative considered was a fully separated sewer system wherein wastewater from households and businesses is directed to the MMSD system for treatment and surface water is collected and conveyed in separate sewers to the Milwaukee River. Exhibit 1 depicts the full sewer separation alternative. As noted previously, the Wisconsin DNR clearly stated that a full separation of sewer systems would not be able to meet State water quality standards or satisfy anti-degradation regulations without additional treatment at the new stormwater outfall. The cost of a new fully separated collection system would be approximately $35M, including treatment of the first flush/low flows. Limited space is available to accommodate the area needed for a treatment system at Hubbard Park capable of treating flows of up to 34 cubic feet per second. The extreme cost of a treatment system coupled with the cost of a separated collection system would be much higher than any other alternative considered. Therefore this alternative would not be cost-effective.

1.4.1.2. Low Pressure Sewers

Low pressure sewers would require the installation of a grinder pump for each home or business. Sewage would be conveyed under pressure by small diameter pipes in the road right of way to the MMSD system for treatment. For this alternative the existing combined sewer system would be converted to a storm water drainage system with outfall to the Milwaukee River. The impact of this approach on surface drainage would be that the existing combined sewers do not have sufficient capacity to handle flows from the Village's design storm without significant ponding in low areas. As with the full sewer separation system, a low pressure sewer system would not be able to meet State water quality standards for surface water runoff.

1.4.1.3. Overhead / Hung Plumbing

The installation of overhead sewers, also known as hung plumbing, in basements would prevent basement backups from the existing sewer system. As the first floors of homes are above the streets, water would surface in the street before entering the house. The installation of hung plumbing would require disconnecting basement floor drains, washing machines, and bathrooms from the existing house lateral. This plumbing would then be routed to a sanitary sump pit where it would be pumped up to the discharge piping overhead in the basement. Plumbing drains from the first and second floors of homes would discharge to the overhead drains and out to the sewer pipe in the street. See Figure 1 below. The costs to convert homes to overhead sewers can vary widely depending on character of each home. Installation can involve cutting into basement floors in old homes which carries a certain level of risk. In addition, the potential for surface overflows of combined sewage and street flooding would still exist with this alternative once basements are isolated. The cost of installing overhead or hung plumbing for each of the 980 parcels in the study area would total approximately $18M. A detailed opinion of probable cost can be found in Appendix C.

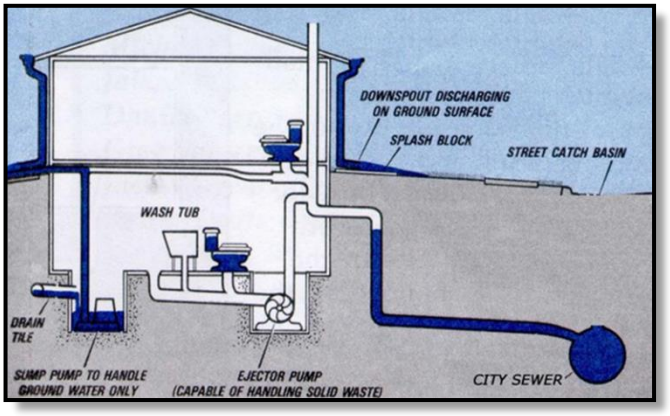


Figure 1: Schematic of a typical a home with overhead sewers / hung plumbing.

1.4.1.4. Virtual Separation

As described previously, virtual separation system would involve a hybrid approach including the construction of overflow storm sewers, the use of inlet restrictors and overland flow routes along streets, and best management practices to address water quality. Wastewater from households and businesses would continue to be collected in the existing combined sewer system which conveys wastewater to MMSD for treatment. This approach optimizes the capacity in the existing combined sewer in conjunction with the proposed overflow storm water drainage system. This alternative is a viable option because it addresses water quality concerns while allowing storm sewer to be built in areas where it is needed the most. The cost of installing a virtual separation system in the study area would be approximately $19M. Proposed improvements for a virtual separation system are shown on Exhibit 2.

1.4.2. Computer Modeling

This project required computer modeling to determine how the existing and proposed systems will operate under a variety of different storm events and alternative design solutions. The Virtual Separation system is modeled using combined and separate storm sewers, overland flow routes, and inlet capacity restriction to accurately represent how the systems will operate with all of the parts working in cooperation with each other.

1.4.2.1. Existing Model

The Village has developed a XPSWMM hydraulic model that has been used for design and planning for quite a few years. The model includes both storm and combined sewer pipes, 6-inches and larger. Figure 2 shows a schematic of the existing sewers in the study area and corresponding computer model layout. The study area is 250 acres in size covering the combined sewer service area south of Capitol Drive and east of Oakland Avenue. The computer model actually covers 717 acres of tributary area. The additional areas within the Village are outside the study area north of Capitol Drive and areas within the City of Milwaukee limits. The model includes all existing combined sewer, and includes all sewer infrastructure improvements that were completed by the Village up to the year 2015. The model also considers the UW Milwaukee green infrastructure

projects and stormwater management improvements which mitigate runoff from areas of impervious surface.

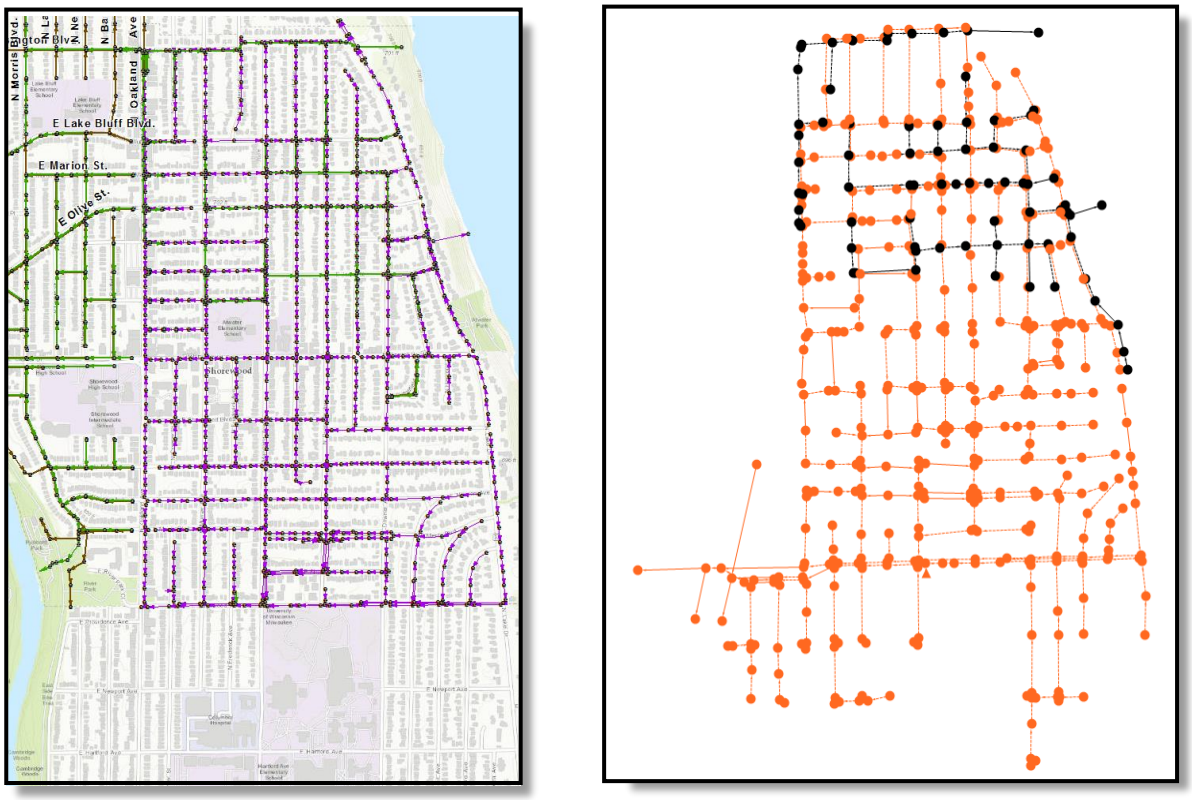


Figure 2: (left) GIS schematic of the Village of Shorewood's existing combined sewer (purple) and existing storm sewer (green) systems. (right) XPSWMM model schematic of the Village of Shorewood's combined sewer area. Combined sewers are orange and storm sewers are black.

The Southeastern Wisconsin Regional Planning Commission's (SEWRPC) 2000 rainfall distributions are used for this analysis. These distributions have been used on past Village projects and are more conservative than the previously used Huff Distributions. It has been found that the SEWRPC 2000 distribution provides more accurate model results for the area. Elevations in the model are referenced to a local MMSD datum. The Milwaukee River was modeled with a backflow elevation of 20, which equates to the Flood Insurance Study (FIS) 10 percent (10-year) annual chance flood elevation. It is common practice to use a 10-year river flood elevation as a tailwater when assessing the 100-year local drainage (storm/combined sewers).

The Village conducted a downspout disconnection program approximately 10-years ago. At that time a substantial number of downspouts were disconnected from the combined sewer system. Based on discussions with Village staff downspout disconnections were modeled as 50% disconnected in the existing computer model. The Village's 2009 Wet Weather Flow Volume and Peak Management Project reports that 1,988 downspouts have been disconnected village-wide, the Village also believes that some of these disconnections have since been reconnected. MMSD has a requirement that all downspouts be disconnected from combined sewers by the year 2025. We have assumed that 50% of the homes (approximately 490 in the study area) are currently disconnected from the combined sewer system. We have also assumed that every home fronting

the proposed overflow or "virtual" storm sewer system (approximately 100) would disconnect their downspouts from the combined sewer system and connect them to the overflow storm sewer and/or terrace drain installed during the construction of improvements. Disconnecting the downspouts of these additional homes increases the overall percentage of disconnected homes within the watershed from 50% to 55%.

The Village's combined sewers discharge to the MMSD system through structures and facilities owned and operated by the MMSD. The Village's combined sewer system connects to the Metropolitan Interceptor Sewer (MIS) System along the Milwaukee River on the west side of the study area via a 39-inch pipe. In the 1980's, the Inline Storage System (ISS) was built to minimize Combined Sewer Overflow (CSO) events. The modeling of these structures were last updated in 2014. The computer modeling of these structures and design is explained in the Ad Hoc 110 Edgewood Drainage Study TM1 Memorandum prepared by CDM Smith in 2014. The ISS, modeled as part of the MMSD-controlled outfall, has two operating modes, gate open and gate closed. The operation of this gate is complex and depends on many factors that are not currently modeled. When the gate to the ISS is closed, flow from the Shorewood combined sewer system cannot enter and is sent to the river via a 72-inch combined sewer overflow. The ISS gate has very minimal impact on the upstream combined system due to the significant difference in elevation at the river and the majority of the Village of Shorewood; the importance of the gate is to determine how much river loading the current system delivers. For the purpose of this preliminary design the gate was assumed open at all times. With the open gate in baseline conditions, the model assumes available capacity in the ISS and shows no CSO events up to the 3-inch storm. The ISS system overflow events happen when multiple connection points are all contributing large inflows into the system.

1.4.2.2. Model Limitations

The model uses EPA SWMM RUNOFF hydrology, which requires a watershed area, impervious area percentage, infiltration rate, and watershed width and slope parameters to be entered into the computer model. After review of these parameters, the infiltration rate in the Village's existing model was found to be uncharacteristically low for the area; in addition, the width and slope parameters in the model provided were found to be arbitrarily set to one (1) foot wide and 1% slope, respectively. Soil Conservation Service (SCS) Hydrology methods were applied to the models watershed for comparison. The current model appears to overestimate runoff in small storm events and underestimate peak flows in large storm events.

The project team discussed the computer model parameters and their implications with the Village representative; who concurred that the original model hydrology setup could potentially lead to inaccurate results. At the same time, the Village representative stated that the resultant flows and flooding in the 3-inch 1-hour event correlated with observed conditions. For the purpose of this analysis, the Village representative stated that the model setup is sufficient. There is concurrence that the Village's model is sufficiently accurate for planning level considerations. The Village should consider flow monitoring to allow for calibration of the model to actual flows prior to its use for design. We recommend that the hydrologic parameters be revised prior to any final design or permit applications.

1.4.2.3. Design Approach

The proposed storm sewer will service approximately 250 acres of area, bounded by Capitol Drive to the north and Edgewood Drive to the south. This includes areas with inlet restrictors where water is designed to flow overland to the overflow storm sewer. The primary design goal is to prevent basement backups in the 3-inch, 1-hour rain event (or approximately a 100-year storm event level of service). Water levels in the combined sewers, also known as the hydraulic grade line (HGL), are used to assess the effectiveness of the proposed improvements. Previous analysis done by the Village determined that the average depth from the surface of the street to an adjacent residential basement is six (6) feet. Therefore, a combined sewer "freeboard" (the distance from the ground surface to the below ground HGL) of six (6) feet or greater is assumed to indicate that adjacent homes are unlikely to experience basement backups. Similarly, a combined sewer freeboard of less than six (6) feet will consider adjacent homes to have potential for basement backups.

Another design criterion considered in this analysis is to limit the depth of overland flows in the street so that they do not exceed six (6) inches in depth for the design storm, which will maintain surface water flows between the curbs of a typical street (or if streets have been overlaid a 6-inch water depth would maintain surface water between the sidewalk's). Ponding in the sag or low point locations is not allowed to exceed nine (9) inches, which should be contained within the typical street right-of-way area. To better represent street pavement flow paths, the overland flow routes in the model were updated from simple 3 feet wide by 0.5 feet deep trapezoids to a 36 feet wide by 0.5 feet deep natural cross-section shape. These street pavement cross-sections better approximate overland flow, depth, and velocity. Low points were included in the model to check ponding depths.

The proposed recommendations are a result of Village feedback and modeling results. The best management practice chosen to meet stormwater quality goals includes the capture of the flow rate equivalent of the first flush, which was designated to be the runoff from the 1-inch, 1-hour storm, in the combined sewer system. Standard practice for surface water runoff quality is to treat up to the 1-inch, 1-hour rainstorm. Inlet restrictors were added to the model to allow the first flush, and continued low flows, to enter the combined sewer system. All runoff in excess of this rate is redirected to the proposed overflow storm sewer via street overland flow routes.

1.4.2.4. Model Results

An array of different rainfalls were modeled to determine how the existing and proposed systems reacted under both large and small rainfall events; including 0.2, 0.4, 0.6, 0.8, 1, 1.5, 2, and 3-inch storms. Each rainfall depth was considered with the 1-hour duration; SEWRPC 2000 rainfall distribution is used for all rainfall events. Peak flows and volumes at the outfalls (River East CSO, MIS, and ISS) were analyzed for both existing and proposed conditions. These results assume that the ISS gate is open for all storm events. With the gate open, the model shows no CSO events up to the 3-inch storm. The ISS system overflows are complicated and depend on many factors outside Village limits. The model is not set up to determine when the ISS gate will open and close, but if the ISS gate does close, the system will likely experience a combined sewer overflow event during the 3-inch 1-hour storm.

Tables 1 & 2 show that the proposed overflow storm sewers (as outlined in Exhibit 2) take pressure off of the existing MMSD MIS and ISS systems. The proposed storm outfall decreases both peak flows and volumes to the existing MMSD systems. These results also show that the majority of low flow runoff, including the first-flush, continues to be captured and routed to the MMSD systems for treatment. When the ISS gate is open, the model shows no overflow event in both the existing and proposed condition. Historically, the MMSD estimates that there are two to six CSO events per year for the MMSD system. The proposed model shows a large reduction of volume going to the existing ISS system, especially in large storm events. This will reduce the likelihood of CSOs for future large storm events. The use of restrictors and installation of overflow storm sewers will also reduce the volume of flow sent to the MMSD treatment facility by diverting stormwater from the combined sewer and directing it to the Milwaukee River.

Table 1: Volumes at the system outlets. Volumes are in cubic feet.

	Existing (cf)			Proposed (cf)			
in/1 hr	**River East CSO**	**MIS**	**ISS**	**River East CSO**	**MIS**	**ISS**	**Storm Outfall**
0.2	0	42,900	363,600	0	41,300	351,200	10,100
0.4	0	68,600	532,300	0	64,900	497,100	34,400
0.6	0	96,400	745,900	0	89,300	680,200	67,600
0.8	0	133,700	975,000	0	118,300	877,900	106,700
1	0	171,800	1,220,600	0	152,500	1,084,200	149,500
1.5	0	264,600	1,885,500	0	229,400	1,559,000	354,400
2	0	348,800	2,601,900	0	285,600	2,006,200	639,600
3	0	531,400	4,109,800	0	380,900	2,882,600	1,308,600

Table 2: Peak flows at the system outlets. Flows are in cubic feet per second.

	Existing (cfs)			Proposed (cfs)			
in/1 hr	**River East CSO**	**MIS**	**ISS**	**River East CSO**	**MIS**	**ISS**	**Storm Outfall**
0.2	0	3.7	42.3	0	3.6	40.5	1.9
0.4	0	8.3	77.1	0	7.7	70.8	6.9
0.6	0	14.5	123.3	0	13.1	110.8	14.4
0.8	0	26.1	173.0	0	21.2	155.6	23.4
1	0	35.2	231.7	0	29.7	206.2	33.8
1.5	0	52.0	406.2	0	44.3	302.0	102.5
2	0	68.9	561.0	0	51.9	409.5	189.0
3	0	81.7	650.2	0	76.6	619.0	301.0

The existing conditions model shows that a large number of homes in the study area are currently vulnerable to basement backups during large storm events. The Basement Backup Hazard Maps (Exhibits 3 through 14) show existing conditions basement backup hazard zones during different size storm events. The exhibits show parcels that are likely to experience basement backups in red and parcels that are relatively safe from basement backups in green. Any combined sewer area where the high water level in the pipe was less than six feet from the ground surface was considered an area likely to experience basement backups; assuming homes have the average basement depth and do not have backflow prevention or overhead (hung) sewers installed. These exhibits also show the likelihood of basement backups during multiple storm events after proposed improvements are completed. Based on the 6-ft freeboard design parameter, the proposed improvements alleviate nearly all potential basement backups in the 1-inch, 2-inch, and 3-inch, 1-hour storms.

A combination of inlet restriction, a proposed overflow storm sewer system, and added combined sewer capacity are proposed to meet the design criteria. Inlet restriction was added to the model to restrict larger storm water flows from entering the combined system. The inlet restriction allows runoff to travel overland to the proposed overflow storm sewer, and maintains the HGL low in the combined sewer system. Proposed improvements were split into phases. Phase 1 and Phase 2 were modeled separately to determine the benefit of each phase of the project. Inlet restriction creates overland flow to the proposed overflow storm sewer; therefore, restrictors must be added to the upstream tributary area in phases as the overflow storm sewer is installed. Inlet restrictors must be installed throughout the full extent of a combined sewer system network to achieve the full level of basement backup protection desired. If improvements are phased and restrictors are not installed on some upstream segments of combined sewer, the amount of runoff getting into the upstream sewers can contribute to overloading of the downstream sewers and associated backups – even if the downstream inlets have restrictors in them.

Inundation maps (See Exhibits 15 and 16) were developed for both the existing and proposed conditions showing ponding and overland flow. Existing ground surface elevations are based on Milwaukee County geographic information system data. The exhibits show conditions during a 3-inch 1-hour storm. The existing conditions exhibit shows surface ponding, while the proposed condition differentiates between surface ponding on low areas and designed street pavement flow. In the existing conditions, dark blue inundation areas imply that the sewer is full and surcharged, and water must pond on the pavement because there is no longer any capacity in the combined sewers. In the existing conditions, when street pavement ponding occurs basement backups are expected.

The proposed conditions exhibit, which is based on the proposed improvements, shows light blue inundation areas which imply that the inlet restrictors are preventing a portion of storm runoff from entering the combined sewer system to keep the combined system from surcharging and causing basement backups. The surface water in proposed conditions is designed to travel along the street pavement to the proposed overflow storm sewer system. In the proposed conditions, street pavement flow means that the inlet restrictors are working to keep stormwater out of the combined sewer system to provide basement backup protection. Residents may see more street flow in the proposed condition, but this increased street flow means that the inlet restrictors are working and excess water is kept out of the combined sewers.

1.4.3. Assessment of Water Quality Mitigation

The proposed improvements change how stormwater is being delivered to the river, therefore an assessment of how the improvements would affect water quality is necessary. An assessment of how the proposed improvements would meet current water quality protection standards and draft TMDL goals for the Milwaukee River was performed, including how best management practices could be used to meet water quality standards.

1.4.3.1. Water Quality Standards and Draft TMDL Goals

Applicable water quality standards for the Milwaukee River were discussed with Wisconsin DNR. From a regulatory perspective, Wisconsin DNR will require treatment of the first flush and low flow diversion of surface runoff. MMSD does not object to continuing the current practice of treating low flows. Determining the amount of surface runoff directed to MMSD facilities vs. the amount of higher flows directed to the Milwaukee River under a virtual separation scenario was necessary to determine the type and level of treatment that would be required for stormwater flows to the river. MMSD is interested in using a 0.045 cfs/acre cutoff for low flow diversion, the point at which their structure IS073 is estimated to overtop to the wet weather conveyance system and ISS. Maintaining a low flow diversion of all flows below or equal to 0.045 cfs/acre to the combined system would always send the first flush of runoff pollutants to treatment. Based on Wisconsin DNR estimates this would result in an average annual TSS reduction of 56.7%. This exceeds the percentage reduction required for maintaining Shorewood's compliance with the NR 151.13 urbanized area performance standard (20% from no controls) as well as the required 40% reduction required for redevelopment projects. Therefore no additional treatment of flows from the conceptual outfall to the river would be necessary at this time. See correspondence from the Wisconsin DNR in Appendix D.

Wisconsin DNR has released a draft TMDL study for the Milwaukee River. Draft allowable loads for phosphorus, sediment (TSS), and pathogens (fecal coliform) have been posted for the Milwaukee River reach downstream of the proposed project area (TMDL Study Reach MI-32), including the allowable load for Municipal Separate Storm Sewer System (MS4) discharges into the reach. MS4 percent reduction goals are presented. The proposed separation project would expand the current MS4 area within the Village draining to the river, changing the baseline conditions used for the TMDL calculations and the percent reductions contained with the draft TMDL report. In coordination with Wisconsin DNR, the proposed MS4 area increase was used to determine an estimated increase in the TMDL percent reduction goals, specifically for TSS. While the separation project would increase the amount of MS4 area draining to the river, the low flow diversion will provide enough load reduction to offset the increase and make it somewhat easier to meet the TMDL load reduction goals Village wide (based on TSS load reductions).

Implementation of the "virtual separation" system will directly benefit water quality in the Milwaukee River by reducing the frequency and volume of combined sewer overflows from the Village's sewer system. Restrictors installed in surface water inlets connected to the combined sewer system will limit inflows, reducing the potential for basement backups and combined sewer overflows to the river while allowing low and "first flush" flows to be directed to the MMSD system for full treatment.

1.4.3.2. Best Management Practices

Treatment of the first flush and continuous low flow of stormwater is the proposed water quality Best Management Practice for the proposed project. The first flush typically contains a larger percentage of the total pollutant load associated with most storm events. Insoluble pollutants, like total suspended solids and other water quality parameters of concern that adhere to solid particles tend to runoff in higher concentrations in the first flush (MMSD Stormwater Monitoring Program Final Report, 2000-2004). It is important that the first flush continue to be captured and sent to the wastewater treatment plant. Although additional water quality treatment is not anticipated to be required at this time, the Wisconsin DNR may require further pollutant reduction in the future.

Implementation of distributed green infrastructure measures throughout the tributary sewershed (rain gardens, rain barrels, bioretention, pervious pavement/permeable pavers, etc.) will provide minor reduction in flows and pollutant loading to the system. The Wisconsin DNR has analyzed the runoff and pollutant loading generated and estimated that every 0.01 cfs/acre of additional control beyond the first flush / low flow diversion amount sent to MMSD for treatment would result in a 4% increase in TSS reduction.

While green infrastructure measures are encouraged, achieving flow and pollutant reductions at the considerable flow rates associated with this major flood control project would take sewershed-wide implementation of green infrastructure stormwater controls beyond simple rain gardens and rain barrel measures. More intensive measures such as widespread pavement / structure replacement would be required that would significantly reduce the amount of impervious surface in the drainage area. The feasibility, cost, and benefit of more intensive green infrastructure measures would need detailed evaluation.

1.5. Recommended Improvements

The recommended improvements consist of several elements. The proposed improvements include a virtual separation system. The Village's combined sewer system is connected to the MMSD system for full treatment of wastewater. The first flush of stormwater runoff from streets and driveways would also continue to be collected by the combined sewer system for treatment by MMSD as the best management practice for water quality. Restrictors would be installed in street curb inlets to reduce the surface water entering the existing combined sewers for basement backup protection. Excess surface waters would flow along streets to a new overflow storm sewer system which would convey water to the Milwaukee River.

1.5.1. Virtual Separation

Many residents within the study area equate water ponding on the street to a basement backup – and rightfully so. In the current conditions, all stormwater and sanitary effluent are directed to the existing combined sewer. This includes flows from:

- Street storm inlet structures
- Roof Downspouts
- Basement Floor Drains
- Residential Sanitary connections

Figure 3: Existing Conditions Portrayal of a Surcharged Combined Sewer System. Basement backups occur when the water level in the combined sewer is higher than the sanitary sewer service and basement.

As flows from all of these contributing entities reach the combined sewer, they mix together and flow by gravity to the treatment plant. The combined sewer is frequently over capacity during rain events (approximately the 5-year 1-hr rain fall event) and surcharges. This surcharge can result in a mixture of stormwater and sanitary effluent pushing up through a basement floor drain and flooding a resident's basement, and/or surface ponding on the roadway. Figure 3 (also included as Exhibit 17) displays this surcharge for a typical home in a combined sewer area. An important point to note is that water finds its own level – when the surface of the street is directly connected to a residential basement in an over-capacitated sewer scenario, the water will surcharge in both the street and the basement; seeking to find its own level. Basement flooding can also be caused for other reasons such as overland flooding.

The proposed virtual sewer separation restricts the storm flow from the combined sewer and directs these flows to a new separate storm sewer. The storm sewer trunk line is proposed to extend throughout the project area to the local low points. All existing combined sewer inlets uphill of these low points will be retrofitted with inlet restrictors that restrict the flow allowed into the inlet and combined sewer to that of the "first flush", or the 1-year 1-hr storm event. Any stormwater in excess of this will not be allowed into the combined sewer and will flow along the street to the separate storm sewers within the local low points. It is imperative to note that within this project area, water on the street will no longer correlate with basement backups – in fact, quite the opposite. Water on the street after implementation of this virtual sewer separation system will correlate with the system functioning as designed and the combined sewers maintaining their capacity – i.e. NO BASEMENT BACKUPS!

Figure 4: Proposed Conditions Portrayal of a Virtually Separated Combined and Storm Sewer System. The flow into the combined sewer is restricted, keeping water levels low inside the sewer, and the overflow is re-routed to the storm sewer.

As the stormwater flows along the street to the local low points, by design, this flow will remain less than six (6) inches in depth. As this stormwater flow reaches the local low points, high capacity inlets will be installed to ensure that the water can get into the proposed separate storm sewer effectively. Prior to stormwater entering the proposed separate storm sewer, a controlled low flow – equivalent to the "first flush" flow rate – will be directed to the combined sewer to be treated for water quality. This design allows for a designed quantity of stormwater to be directed to the combined sewer, and no more, so that the combined sewer can maintain capacity and the combined sewer water level can remain well below the basement foundation; thus mitigating basement backup potential. These improvements are depicted in Figure 4 (Also included as Exhibit 18).

Additionally, roof gutter downspouts will be disconnected from the combined sewer pipe and redirected to splash on grade or connect to the new storm sewer. This will provide a great deal of relief to basement backups. When a combined sewer is at or near capacity and the water level is approaching the basement elevation, stormwater flows from residential roof downspouts will compound the problem and expedite basement backups. The recommended design puts the hydraulic pressure on a surcharged storm sewer and takes the pressure off the combined sewer to keep basements dry. The Village will most likely need to adopt an ordinance stating that downspouts are required to be disconnected from the combined sewer system if a storm sewer is available at the parcel.

1.5.2. Description of Proposed Improvements

The proposed virtual separation system is divided into four stages; Edgewood Avenue Improvements; Interim Improvements; Phase 1 / Phase 2 construction of sewer improvements. The Edgewood Avenue Improvements are currently being investigated by others, but they are critical to the success of the virtual separation system design. A number of homes are recommended for conversion to hung plumbing / overhead sewers in the basement in the early stages of the project.

The proposed improvements include virtual separation of the existing combined sewer system. A network of overflow storm sewers will be constructed with a new outfall to the Milwaukee River. Restrictors will be installed in curb inlet structures to limit the flow into the combined sewer system allowing treatment of the first flush of surface water. In addition to construction of separate overflow storm sewers, the capacity of the existing combined sewer system needs to be augmented along selected streets, is necessary to remove bottlenecks to provide basement backup protection.

The best management practice of treating the first flush of surface waters will maintain the Village's compliance with the water quality regulations. Green infrastructure improvements such as rain gardens, bio-retention basins, oil/grit separators, and permeable pavement would increase runoff water quality and decrease runoff quantity for small rain events. Construction of additional green infrastructure best management practices could be added to the project to address concerns raised but are not necessary at this time. Green infrastructure measures will most likely be required at a future date to meet Wisconsin DNR pollutant reduction targets. The effect of adding best management practices at this time, in addition to capturing and treating the first flush, should be analyzed for their effect on the Village's MS4 permit.

Construction of improvements was split for cost considerations. Phase 1 and Phase 2 include the actual construction and implementation of the virtual separation system as depicted on Exhibits 3 and 4.

1.5.2.1. Edgewood Avenue Improvements

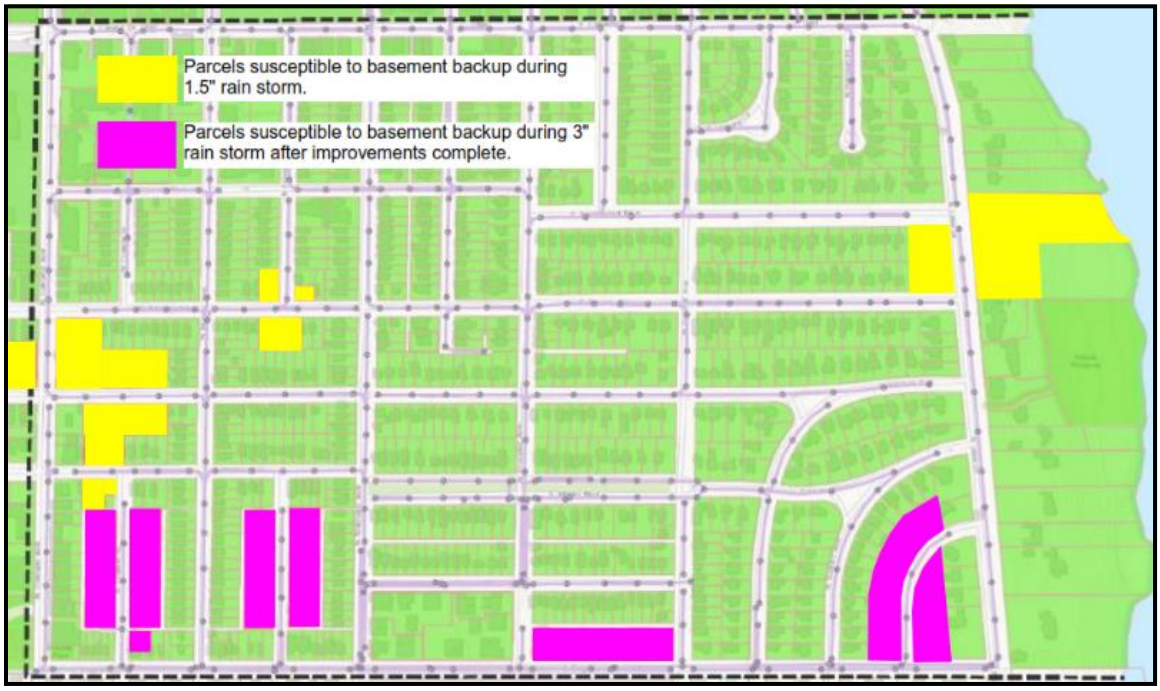
Basement backups in homes and businesses south of Menlo Boulevard, between Oakland Avenue and Downer Avenue are affected by sewers along Edgewood Avenue. The project is currently in the planning stages as a separate project. The proposed project as originally envisioned includes the installation of approximately 1,500 feet of 66-inch combined sewer along Edgewood Avenue to augment sewer system capacity. The project will greatly improve conditions along Edgewood Avenue, the connecting streets to the north, and the Village combined sewer system in general. Whether these improvements are completed first or last, they are key to providing basement backup protection in the combined sewer service area.

1.5.2.2. Interim Improvements

Most of the homes in the study area are currently susceptible to basement backups during a 3-inch rainstorm. Nearly 500 homes are prone to basement backups under current conditions during a 2-inch rain storm and approximately 40 homes are currently susceptible to basement backups during a 1.5-inch rain storm, and are the most vulnerable in the study area. After improvements are complete most of these 40 homes should be removed from the basement

backup hazard area during a 1.5-inch rain storm. However, approximately 80 homes in the study area will still be susceptible to basement backups during a 3-inch rain storm after improvements are completed. The majority of these 80 homes do not appear to be affected during a 1.5-inch rainstorm. The cost to provide basement backup protection for these homes by increasing pipe sizes downstream far exceeds the cost of installing overhead sewers. The recommended solution for these 120 homes will be conversion to overhead / hung plumbing in the basement.

Improvements of this type on private property are generally the responsibility of the homeowner, though they can be administered as a cost sharing or grant program. The Village could provide a set amount or cap of funds available to homeowners. Homeowners would have the work performed by their own plumber, verified by the Village, and apply to the Village for reimbursement. We recommend that any homeowner utilizing these funds also be required to disconnect their downspouts from the combined sewer system. The cost of installing overhead / hung plumbing for the 120 affected parcels in the study area as shown on Exhibit 19 would be approximately $2.2M. See Appendix C for detailed opinions of probable cost.



1.5.2.3. Phase 1 Construction

The first phase of overflow storm sewer construction would begin at the Milwaukee River. Exhibit 20 depicts the extent of the proposed Phase 1 improvements. The outfall could be constructed into the bluff with a viewing platform over the headwall at the river's edge, which would vastly improve aesthetics in the area to hide the outfall pipe. The 72-inch pipe would be tunneled under the old railroad bed / Oak Leaf Trail just north of the car tunnel leading to the lower portion of Hubbard Park. The pipe would be trenched by open cut construction to the corner of Menlo Boulevard and Morris Boulevard.

The pipe would extend along Menlo Boulevard, from Morris Boulevard east to Maryland Avenue. The depth of the proposed pipe in this area would range from 25-feet to 40-feet deep. Open cut construction at these depths would require a trench width extending from right-of-way to right-of-way requiring all utilities and street infrastructure to be replaced, which would be extremely disruptive to the neighborhood and prohibitively expensive. Due to the pipe depths required the new pipe would be tunneled to Maryland Avenue. Soil boring information collected in 2012 showed silty sand and clay in the area. Rock boulders and cobbles can also be found in this area at these depths. Based on the existing soil conditions the tunneling method selected by the contractor would most likely be microtunneling with a pressurized face machine.

Open cut storm sewers with manholes would then extend along Menlo Boulevard from Maryland Avenue to Prospect Avenue; north along Murray Avenue to Beverly; and south along Maryland Avenue to Stratford Court. The portion of the pipe along Menlo Boulevard could also be tunneled to protect trees in the parkway at additional cost. Terrace drains would be installed along the route to pick up water from disconnected downspouts. Restrictors would be installed in existing upstream curb inlets connected to the combined sewer system. New curb inlets would be installed connected directly to the overflow storm sewers. Finally, disturbed lawns and pavement would be restored. Homes and businesses along and north of the pipeline route will benefit from the overflow storm sewer construction. Our Engineer's Opinion of Probable Cost for the Phase 1 improvements is $14M, not including improvements along Edgewood Avenue which are planned as a separate project. The opinion of probable cost includes pipe installation, manholes, terrace drains, curb inlets, inlet restrictors, pavement replacement including curb & gutter, lawn restoration, engineering, and a 20% contingency. Appendix C shows detailed opinions of probable cost.

1.5.2.4. Phase 2 Construction

The next phase of construction would extend overflow storm sewers north along Prospect Avenue to Shorewood Boulevard; along Shorewood Boulevard from Prospect Avenue to Downer Avenue; and north along Downer Avenue, from Shorewood Boulevard to Ridgefield Circle connecting to an existing storm sewer. The overflow storm sewer would also extend east along Beverly Road, from Prospect Avenue to the low point mid-block on Beverly Road. The Phase 2 improvements can be found on Exhibit 21.

In order to provide basement backup protection, the construction of an additional 30-inch combined sewer along Prospect Avenue and Shorewood Boulevard is planned. Replacement of the existing combined sewer with a 30-inch pipe along Capitol Drive, between Downer Avenue and Ridgefield Circle will provide additional basement backup protection for homes in that area. Terrace drains or direct connections to the storm sewer would be installed along the route to pick up water from disconnected downspouts. Restrictors would be installed in existing curb inlets and new curb inlets would be installed connecting to the overflow storm sewers. Disturbed lawns and pavement would be restored.

Our Engineer's Opinion of Probable Cost for the Phase 2 improvements is $5.3M as shown in Appendix C.

1.5.3. Cost Summary

Interim Plan (Overhead / Hung Plumbing):	$2.2M
Phase 1 (Milwaukee River to Menlo Boulevard):	$14.0M
Phase 2 (Menlo Boulevard to Ridgefield Circle):	$5.3M
Total	$21.5M*

* Not including the cost of improvements along Edgewood Avenue under consideration by a separate study.

1.6. Improvement Benefit

Currently basement backups are common throughout the combined sewer study area, especially in the low lying areas along Prospect Avenue and Edgewood Avenue. Exhibits 3-14 show the likelihood of basement backups throughout the study area for existing conditions, Phase 1, and Phase 2 build-out conditions. These exhibits also include basement backup likelihood maps for 1, 1.5, 2, and 3-inch storm events. The baseline model shows that rainfalls of 2-inches in one hour leave about 450 properties vulnerable to basement backups and rainfalls of 3-inches in one hour affect nearly all properties in the study area.

The benefit of the Phase 1 improvements is not as extensive as the full Phase 2 build-out, but the improvements do make an impact, especially in the west side of the study area. For a 2-inch storm, the model results show that Phase 1 will reduce basement backups to roughly 150 properties; a 67% decrease from existing conditions. For a 3-inch storm, basement backup risk will be reduced to approximately 500 properties; a reduction of nearly 50% from the original 980 properties. The occurrence of basement backups will not decrease substantially in the northeast section of the study area until the Phase 2 improvements are completed.

The proposed Phase 2 hydraulic model determined that basement backup risk in the study area for a 2-inch 1-hour rain event will be alleviated for all 450 potentially affected properties. The hydraulic grade line in the combined sewers would drop by two to eight feet during a 2-inch rain event. For a 3-inch storm, the proposed conditions show that basement backup risk will be reduced from nearly all properties to about 80. The hydraulic grade line in the combined sewers would drop by approximately six to ten feet during a 3-inch rain event. This equates to basement backup risk reduction for more than 92% in the study area.

The proposed 66-inch combined sewer relief pipe along Edgewood Avenue is crucial in creating capacity necessary for and making these improvements work. The hydraulic model shows that if the proposed improvements discussed in this report are installed without the new combined sewer along Edgewood Avenue hundreds of homes will still be prone to basement backup risk during a 3-inch rain event. The effect of new combined sewer improvements along Edgewood Avenue on their own, without other improvements in the system, will have little effect on basement backup protection during a 3-inch rain event. The proposed improvements, including improvements along Edgewood Avenue, address the chronic basement backups and address street flooding providing protection for up to 3-inch rain event. Surcharging of combined sewers and basement backup risk will be greatly diminished in the study area after all improvements are completed.

1.7. Project Sequencing and Schedule

The first item to address would be to roll out a cost-sharing program for the construction of overhead sewers / hung plumbing for the most affected homes under existing conditions in the study area. This work could be in progress while design, permitting, and bidding of the first phase of improvements is in progress. Construction of improvements will need to begin at the downstream end of the overflow storm sewer system. The cost-effective approach would be to complete all the tunneling work in the same contract. The first phase of overflow storm sewer construction would extend the large diameter outfall pipe from the Milwaukee River along Menlo Boulevard east to Prospect Avenue. Extensions to the overflow storm sewer would also be completed north along Murray Avenue to Beverly Road and south along Maryland Avenue to Stratford Court.

The next phase would begin with design, permitting, and bidding of improvements. Construction would extend overflow storm sewers north along Prospect Avenue, Beverly Road, Shorewood Boulevard, and Downer Avenue to Ridgefield Circle. Construction would also include installing an additional 30-inch combined sewer along Prospect Avenue and Shorewood Boulevard for increased capacity. Finally, the existing 15-inch combined sewer along Capitol Drive, between Downer Avenue and Ridgefield Circle would be replaced with a 30-inch combined sewer pipe to provide increased capacity for basement backup protection. Figure 6 depicts the proposed project sequence and schedule.

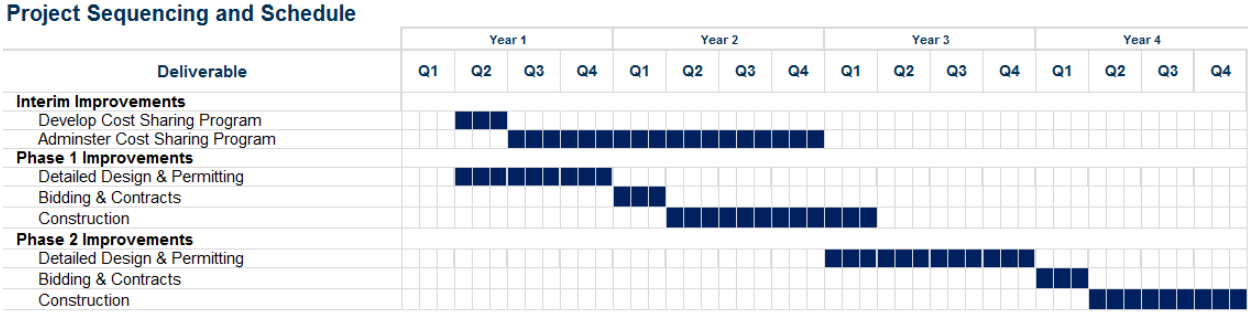


Figure 6: Proposed Project Sequencing and Schedule

1.8. Conclusions

Recommended improvements to provide basement backup protection include virtual separation of the existing combined sewer system, construction of a network of overflow storm sewers with a new outfall to the Milwaukee River, and conversion of a number of homes to overhead / hung plumbing in the basement. Basement backup protection would also include increasing capacity of the combined sewer system along selected streets to remove "bottlenecks". The proposed improvements are designed to still allow the "first flush" to be captured by the combined sewer

system and treated at the wastewater treatment plant before being released to the Milwaukee River. This Best Management Practice of treatment of the "first flush" is proposed to maintain Shorewood's compliance with the DNR draft TMDL regulations. Improvements along Edgewood Avenue, under consideration by a separate study, must be implemented in conjunction with the improvements described in this study to provide basement backup protection to the study area during larger rainstorms.

APPENDIX A

REGULATORY REVIEW DATASHEET

Regulatory Review Datasheet

Title: *Regulatory Review Summary for MMSD*

Client: *Village of Shorewood, WI*

Project: *Combined Sewer Service Area Environmental Assessment*

Agency: Milwaukee Metropolitan Sewerage District (MMSD)
260 West Seeboth Street
Milwaukee, WI 53204

Contact: Debra Jensen
(414) 272-5100
DJensen@mmsd.com

Permits/Reviews Required:
Watercourse Connection Permit
Technical review of new outfall
Technical review of new pipelines

Details:

The Watercourse Connection Permit will need to address the following issues:

- Location and size of outfall.
- Elevation of outfall in relation to the Ordinary High Water Mark for the Milwaukee River.
- Suitable energy dissipation at the discharge location, including calculations for rip rap or other dissipating structures, and any effects to the Milwaukee River.
- Timing of the peak flows from the Village system versus timing of peak flow from the Milwaukee River. This is to document that river capacity will not be diminished. Any change in water surface elevation will also need to be documented.

A Connection Permit from the Village of Whitefish Bay was provided as an example for permit submission.

For technical review of the new outfall, MMSD will review design drawings and capacity calculations, in addition to energy dissipation, as mentioned for the Watercourse Connection Permit.

Technical review of the new pipeline will include design drawings and calculations, similar to other Village submissions, but the nature of this project will focus on changes to flows routed to the MMSD system. The Village combined sewer discharges to MMSD intercepting structure IS073 (low flow) and wet-weather diversions to the NS4 dropshaft for the Inline Storage System. MMSD has the Village watersheds allocated at 0.045 cfs/acre to IS073. MMSD indicated restrictors need to be a minimum 6" in diameter for maintenance purposes. Calculations will be needed to show the actual discharge proposed, taking into account the minimum sizes for flow restrictors. The limit for overtopping the interceptor will also be reviewed.

Regulatory Review Datasheet

Title: *Regulatory Review Summary for Wisconsin DNR*

Client: *Village of Shorewood, WI*

Project: *Combined Sewer Service Area Environmental Assessment*

Agency: Wisconsin Department of Natural Resources
141 NW Barstow St., Room 180
Waukesha, WI 53188

Contact: April Marcangeli
(262) 574-2132
April.Marcangeli@Wisconsin.gov

Permits/Reviews Required:

Studies Required

Wetland Delineation
Ordinary High Water Mark Determination

WPDES Construction Site Stormwater General Permit

Chapter 30 Permit to authorize construction. This includes analysis of:

Impacts to Waterways and Wetlands
Review Floodplain Impacts
Grading Authority
Water Quality Permitting

Details:

Construction and operation of a new stormwater outfall to the Milwaukee River will trigger permitting requirements through the Wisconsin DNR. The DNR is the primary agency for regulating water quality, impacts to waterways, and impacts to wetlands for this project. USACE has stipulated that Section 404 Regional General Permits that may apply to this project are contingent upon DNR Chapter 30 Permit approval. The project team met with representatives from DNR on February 5, 2015 and performed research on the DNR website. A summary of the permitting requirements is included below.

STUDIES REQUIRED

In order to determine potential project impacts to wetlands or waterways, a wetland delineation needs to be performed at the project site and the ordinary high water mark (OHWM) of the Milwaukee River needs to be determined. The Village may hire a qualified consultant to delineate wetlands. DNR will determine the OHWM, at the Village's request.

WPDES CONSTRUCTION SITE STORMWATER GENERAL PERMIT

A Wisconsin Pollution Discharge Elimination System (WPDES) construction site stormwater general permit will be required. This requirement is often passed on to the contractor who will perform the construction.

Regulatory Review Datasheet

CHAPTER 30 PERMIT

Impacts to Waterways and Wetlands

If the proposed project will impact waterways or wetlands, the Village will need to apply for waterway and/or wetland permits through the DNR. As discussed during the February meeting with DNR, if there are any impacts to wetlands, an individual wetland permit will be required because a new stormwater outfall would not qualify for a general wetland permit. If the proposed outfall will have an impact below the OHWM of the Milwaukee River (which seems likely), the Village will need to apply for a waterway permit.

Review Floodplain Impacts

The DNR will review any proposed fill within the floodplain, but regulation of the floodplain will be handled by the local authority (the Village is the local authority in this case).

Grading Authority

The DNR does not have grading authority in Milwaukee County, so the Village will not be required to obtain a separate permit for grading an area greater than 10,000 square feet adjacent to a river.

Water Quality Permitting

WQC. A new stormwater outfall to the Milwaukee River will require a Water Quality Certification (WQC) from the DNR. WQCs are required for projects that may impact water quality to make sure the projects will comply with state water quality standards.

Anti-degradation. The state of Wisconsin has an anti-degradation policy to address new or increased discharges to surface waters, and to require a permittee to justify the reasons for new or increased discharges before such discharges can be allowed under Wisconsin's discharge permit program (WPDES). If the new or increased discharge results in any lowering of water quality, the discharger must demonstrate to DNR that the discharge accommodates important social or economic development. This may include a showing of increased employment, increased production, avoiding reductions in employment, increased efficiency, economic or social benefit to the community (including industrial, commercial, or residential growth), or correcting an environmental or public health problem. In order to obtain the WQC, the project must satisfy this anti-degradation policy.

TMDL. The DNR is conducting a Total Maximum Daily Load (TMDL) study on the Milwaukee River for three contaminants of concern: phosphorus, fecal coliform, and sediment. The TMDL has not yet been completed, and it is not clear how the TMDL loading limits will impact the Village's permit process. However, DNR did indicate that the TMDL will assume zero loading of these contaminants for the combined sewer area under existing conditions, and any increase in loading would constitute degradation of the receiving waters. The DNR considers that combined sewer areas, through treatment of stormwater flows, are able to remove 98.7% of suspended solids from stormwater runoff.

Technically, any changes to the existing system that would result in less than 98.7% overall removal of total suspended solids (TSS) from stormwater would degrade the receiving waters. However, DNR acknowledge that it would be impossible to separate sewers and still achieve an overall 98.7% reduction in TSS for the project watershed. When the TMDL is complete, updated MS4 permits will incorporate the TMDL loading limits. DNR suggested that the TSS removal limit (and the assumed equivalent phosphorus removal, since phosphorus is often associated with particles) requirement would likely be set somewhere between 40% and 98.7%, but they are still working on it.

TSS/P Reduction. Due to the likelihood of the overall TSS reduction requirement being set at no lower than 40%, a full sewer separation project alternative would be unlikely to be able to meet that goal. DNR clearly stated that some portion of the stormwater runoff ("first flush") should be directed to the MMSD system for treatment.

Fecal Coliform. While sediment removal (and the assumed equivalent in phosphorus reduction) is fairly straightforward, reducing fecal coliform concentrations in stormwater runoff is more difficult to model or quantify. During the February 2015 meeting, DNR acknowledged that bacterial counts in stormwater are often inconsistent. DNR is not sure how fecal coliform water quality standards and TMDL limits would be addressed for a new stormwater outfall.

MS4 Permit. In addition, the Village's Municipal Separate Storm Sewer System (MS4) permit explicitly states in Part 3.F.2 that "Permitees may not establish a new MS4 discharge of a pollutant of concern to an impaired waterbody or increase the discharge of a pollutant of concern to an impaired waterbody unless the new or increased discharge causes the receiving water to meet applicable water quality standards." A new stormwater discharge that increases loading of TSS, fecal coliform, and/or phosphorus to the impaired Milwaukee River would technically violate this clause. However, DNR did not indicate that this would hinder the permit process. During the February 2015 meeting, the DNR representatives indicated that the DNR would review the project based on the project's primary goals first (reduce basement back-ups and reduce flooding), and then would consider the water quality concerns in the context of those two primary goals being met.

Additional Treatment. Once DNR sets the TSS reduction limit and modelling results reveal how much stormwater runoff is directed to MMSD facilities for treatment versus how much is directed to the river, options for additional treatment, if required, can be addressed in greater detail (e.g., sediment separators, green infrastructure, etc.).

Regulatory Review Datasheet

Title: *Regulatory Review Summary for Army Corps of Engineers*

Client: *Village of Shorewood, WI*

Project: *Combined Sewer Service Area Environmental Assessment*

Agency: US Army Corps of Engineers (USACE)
250 N. Sunnyslope Rd, Suite 296
Brookfield, WI 53005

Contact: Marie H. Kopka
(651) 290-5733
Marie.H.Kopka@usace.army.mil

Permits/Reviews Required:
GP-002-WI (Issued under USACE Section 404 program)
GP-004-WI (Issued under USACE Section 404 program)

Details:

The US Army Corps of Engineers has indicated the portion of the Milwaukee River in which the proposed outfall would be located is not a Section 10 water of the US and, thus, would be considered under the Section 404 program. Two general permits have been issued under the Section 404 program and may result in the outfall being covered under one or more non-reporting categories of the general permits.

GP-002-WI

Non-Reporting Category 10. Outfall Structures: This activity is authorized under the non-reporting GP provided that the work is regulated and approved by the WDNR under Chapter 30.12 Wisconsin State Statutes. Activities related to construction of outfall structures and associated intake structures where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted, or which are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System program. This GP only authorizes those intake structures that are directly associated with an authorized outfall structure.

Non-Reporting Category 13. Minor Fills: This activity is authorized under the non-reporting GP provided that the work is regulated and approved by the WDNR pursuant to NR 299 and/or Chapter 30/31; or the work is exempt from regulation by the state under Chapter 30.12(1g). Discharges of dredged and/or fill material for a single or complete project that would result in filling, draining, excavating or inundating not more than 400 square feet of waters of the United States, including wetlands.

GP-004-WI

Non-Reporting Category 5. Outfall Structures: Activities related to construction of outfall structures and associated intake structures where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted, or which are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System program. This GP only authorizes those intake structures that are directly associated with an authorized outfall structure.

Non-Reporting Category 3. Piers, docks, wharves, boat shelters and pilings: Lists specific requirements and limitations on such structures.

APPENDIX B

POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION DATASHEET

Potential Environmental Impacts and Mitigation

Title: *Summary of Potential Environmental Impacts and Mitigation Measures*

Client: *Village of Shorewood, WI*

Project: *Combined Sewer Service Area Environmental Assessment*

Phase 2 – Potential Environmental Impacts and Assessment of Mitigation Options

Introduction

The Village of Shorewood (Village) is evaluating conceptual sewer project alternatives for reducing basement backups in its combined sewer service area south of Capitol Drive. Discussions to date suggest that some form of "virtual separation" may be the preferred option. This approach would route "first flush" stormwater runoff through existing combined sewers to Milwaukee Metropolitan Sewerage District (MMSD) facilities for treatment. Street curb inlets would have restrictors to reduce the flows into the existing combined sewers for basement backup protection. Stormwater surface runoff exceeding the capacity of the restricted inlets to the existing combined sewer system would be directed to new storm sewers, and ultimately conveyed to a new outlet to the Milwaukee River. A range of stormwater Best Management Practices (BMPs) will likely be incorporated into the design to contribute to the management peak flows and pollutant loadings.

Construction and operation of the "virtually separated" storm sewer system will require a major program of infrastructure improvements within the Village. The current concept plan includes:

- A new 72-inch diameter storm sewer outfall structure along the east bank of the Milwaukee River near Hubbard Park,
- More than 7,000 feet of new large diameter storm and combined sewer (48-inches to 72-inches in diameter),
- New high capacity storm sewer inlets at low points along the new storm sewer alignment,
- Inlet restrictors installed in existing combined sewer street inlets throughout the project area, and
- Stormwater best management practices implemented within the public right-of-way to reduce the rate of stormwater runoff and reduce pollutant loadings to the new storm sewer system.

Figure 1 shows the configuration of the storm and combined sewer improvements included in one conceptual plan being evaluated.

The construction of these infrastructure improvements will require permits from several agencies and could potentially impact environmental resources if appropriate mitigation measures are not undertaken. A related discussion of permitting requirements - including fact sheet summaries of United States Army Corps of Engineers (USACE), MMSD, and Wisconsin Department of Natural Resources (DNR) permit requirements - was provided in a memorandum to the Village dated March 8, 2016. This report discusses the potential environmental impacts that could be associated with short-term (construction) and long-term (operation) actions, and then summarizes options for mitigating those impacts. The following discussion assumes that the proposed project would not impact sensitive species (state or federally listed species) or cultural/historical resources.

Potential Environmental Impacts and Mitigation

Potential Short-Term (Construction) Impacts

Environmental impacts during construction of new large diameter storm sewer and a new outfall structure to the Milwaukee River could include erosion, water quality degradation, wetlands disturbance, noise, traffic, and constraints on recreational use of parks. These impacts are typically short-term in nature as they are associated with construction activities. Requirements for measures to mitigate these short-term impacts are generally incorporated into the project construction documents and implemented by the contractor responsible for construction of the improvements. Identified short-term impacts and potential mitigation options are summarized in Table 1.

Potential Long-Term (Operation) Impacts

Once completed the conceptual program of sewer and outfall construction proposed could potentially impact environmental resources during operation, including human health, water quality, river flood stage, aesthetics, streambank/channel, fish, and sensitive habitat. These longer-term impacts are typically associated with the permanent facilities constructed, and the operation of those facilities during wet weather events. Recommendations for specific measures to mitigate these impacts will be screened during Phase 3 of the current regulatory and environmental assessment. Detailed designs for mitigation measures will be prepared during the design phase of the project and implemented as part of the overall improvement program. Identified long-term impacts and potential mitigation options are summarized in Table 2.

Potential Environmental Impacts and Mitigation

Table 1 – Potential Short-Term Construction Impacts and Mitigation Options

Type	Impact	Impact Discussion and Mitigation Options
Short Term	Erosion	The sewer and outfall construction efforts will require excavation, which would expose areas along the sewer alignment and at the outfall site to increased risk of erosion. **Mitigation.** Construction of the proposed storm sewer system will be subject to the provisions of an erosion control and storm water management plan. The plan must meet the requirements of Chapter NR 216 of the Wisconsin Administrative Code, and will require that appropriate construction Best Management Practices or BMPs (silt fence, erosion control matting, sediment capture devices) be implemented and maintained during the construction process. Temporary cutoff sheeting, silt fence, and erosion control matting will likely also be required for the outfall construction as part of obtaining the Chapter 30 permit.
	Water Quality	Runoff from disturbed construction areas could potentially impact the receiving waterbody, the Milwaukee River. The primary parameters of concern for the Milwaukee River are total suspended solids (TSS), phosphorus, and fecal coliform. **Mitigation.** Construction-related water quality concerns are primarily correlated with erosion concerns, which will be addressed in the erosion control plan. In addition, the contractor must follow the requirements of a Wisconsin Pollution Discharge Elimination System (WPDES) construction site stormwater general permit.
	Wetlands	The Wisconsin DNR Surface Water Data Viewer shows a thin strip of forested wetland running parallel to the Milwaukee River that would potentially be disturbed by project construction, depending on project location and construction techniques (attached figure). **Mitigation.** A wetland delineation and an ordinary high water mark (OHWM) determination need to be performed. Impacts to wetlands should be avoided or minimized, if possible. If impacts are unavoidable, the extent of the impact and mitigation for the impact, if required, will be addressed through the DNR Chapter 30 permit process. Minor temporary impacts may potentially be addressed by restoring the temporarily disturbed wetland areas. For more significant impacts, mitigation could be addressed by purchasing credits from a mitigation bank, participating in an in-lieu-fee program, or performing a permittee-responsible on-site mitigation project.
	Noise and Traffic	Construction efforts could increase noise and temporarily impact traffic patterns. **Mitigation.** Noise and traffic impacts will be mitigated by following local ordinance, construction permits, and standard contract requirements.
	Recreational Use of Parks	A pipe leading to a new outfall on the Milwaukee River could cross up to three parks: (1) Village of Shorewood's Hubbard Park, (2) Milwaukee County's Oak Leaf Bicycle Trail, and potentially (3) Village of Shorewood's River Park. Open cut construction would temporarily interrupt recreational use of portions of these parks. **Mitigation.** The project should aim to minimize the area and duration of disturbance to parkland. Due to the existing terrain, portions of the proposed new storm sewer and outfall west of Oakland Avenue will most likely be installed by trenchless methods or possibly from a barge on the river. These approaches can be used to manage disruption to the parks and allow the Oak Leaf Trail to remain open during the construction period.

Potential Environmental Impacts and Mitigation

Table 2 – Potential Long-Term Operational Impacts and Mitigation Options

Type	Impact	Impacts Discussion and Mitigation Options
Long-Term Impacts	Human Health	Sewage backing up into the basements of homes can cause a variety of health issues and make a home uninhabitable. Common illnesses associated with contact with sewage include gastrointestinal problems, infections, rashes, hepatitis, and issues associated with exposure to molds. **Mitigation.** Addressing basement backups by construction of the proposed stormwater improvements and installation of restrictors in inlets to the combined sewer system will provide residents of the area relief from human health issues associated with exposure to sewage.
	Water Quality	A new outfall to the Milwaukee River will likely affect loading of some pollutants to the receiving waterbody. The "virtually separated" storm sewer system should decrease the frequency of combined sewer overflow occurrences and provide for effective management of low and "first flush" flows. However, during larger events, the new separate storm sewer will discharge stormwater to the river. Milwaukee River Total Maximum Daily Load (TMDL) analyses are currently being prepared for TSS, phosphorus, and fecal coliform. **Mitigation.** The primary regulatory issue identified to date for the proposed project revolves around impacts to water quality. The intent of the proposed "virtual separation" design concept is to alleviate water quality concerns by routing small storm flows and the "first flush" of large storm events to MMSD facilities for treatment. Opportunities for the effective implementation of BMPs to manage the quality of separate stormwater runoff from the project area will also be identified and analyzed during design of the improvements. Detailed water quality modeling will be required to estimate the impacts of the proposed project on Milwaukee River water quality. Mitigation options for water quality are discussed in more detail below this table.
	River Flood Stage	Additional stormwater being added to the Milwaukee River could potentially increase river stage and result in increased flooding. **Mitigation.** DNR will not provide a permit for a project that increases downstream flooding impacts. The Village will need to provide calculations and/or modelling results confirming previous analyses showing that the river stage will not be increased during flood events due to the presence of the proposed outfall.
	Aesthetics	The installed outfall structure could impact views or aesthetics from the nearby parkland for recreational users. **Mitigation.** Outfall structure aesthetics should be considered during the design process and the Village should communicate with regulatory agencies and stakeholders during the project design phases. A scenic overlook structure could possibly be built over the outfall at the river to conceal it and enhance the park.
	Streambank and Channel	Flows from a large storm event may have the potential to impact the streambank and/or channel in the vicinity of the outfall structure (by scour, for example). **Mitigation.** In accordance with MMSD permit requirements, the Village will need to calculate outfall flows and velocities, and then provide project features that adequately reduce outfall velocities and protect streambanks from scour (e.g., energy dissipaters and riprap aprons)**.**

Potential Environmental Impacts and Mitigation

Type	Impact	Impacts Discussion and Mitigation Options
	Fish	Outfall structures can potentially attract and entrap fish. **Mitigation.** DNR requested that the outfall be designed to minimize fish entrapment. The Village should communicate with DNR during the design process.
	Sensitive Habitat	If there is any aquatic habitat near the proposed outfall structure, such as aquatic vegetation beds, stormwater discharges through the new outfall could disturb the habitat features. **Mitigation.** Conditions at the proposed outfall location will be evaluated during the design process so that efforts can be made to minimize impacts. If aquatic beds or other sensitive habitat areas will be adversely impacted by the project and the impacts cannot be avoided, the Village will need to communicate with DNR to identify acceptable mitigation options (e.g., purchasing credits from a mitigation bank, participating in an in-lieu fee program, or performing on-site mitigation).

Assessment of Water Quality Mitigation Options

There are many potential options for mitigating potential impacts to water quality that could result from the proposed project. At this stage in the design process, however, it is not clear what regulatory limitations will be enforced for a new intermittent outfall to the Milwaukee River. A new outfall will require a Chapter 30 permit and a Water Quality Certification (WQC) from DNR. The new outfall will need to meet the state anti-degradation policy and the Village's Municipal Separate Storm Sewer System (MS4/WPDES) permit. Strictly interpreted, these items establish a very high standard for water quality protection in relation to the construction of a new stormwater discharge. However, DNR representatives have indicated that they would review the project based on the project's primary goals first (reduce basement back-ups and reduce flooding), and then would consider the water quality concerns in the context of those two primary goals being met.

Implementation of the "virtual separation" system will directly benefit water quality in the Milwaukee River by reducing the frequency and volume of combined sewer overflows from the Village's sewer system. Restrictors installed in inlets connected to the combined sewer system will limit inflows, reducing the potential for basement backups and overflows to the river while allowing low and "first flush" flows to be directed to the MMSD system for full treatment. Installation of BMPs along with select adjustments in pavement elevations and installation of the new storm sewer system will provide for the effective capture and management of stormwater runoff.

The DNR is conducting a TMDL study on the Milwaukee River for three contaminants of concern: phosphorus, fecal coliform, and sediment (TSS). The TMDL has not yet been completed, and it is not yet clear how the TMDL loading limits will impact the Village's permit process. Modeling efforts will be required to identify how much TSS and phosphorus reduction the "virtual separation" system would provide by sending the "first flush" to MMSD facilities for treatment. Then, depending on the overall TSS and phosphorus reduction goals set by DNR for the project, additional water quality mitigation measures may be necessary. In addition, the project permit process will help inform if fecal coliform or other water quality parameters will require mitigation measures.

A wide range of stormwater quality BMPs can be considered for incorporation into this project to address potential water quality impacts. For a high level analysis, several stormwater BMPs and treatment measures are summarized in Table 3. The 2007 North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Quality, Stormwater Best Management Practices Manual was used as the primary data source for Table 3. Characteristics that limit the suitability of a BMP for use in the Village are highlighted in pink. BMPs with "high" space requirements, inability to function in poorly drained soils, and poor removal efficiencies for each of the three main water quality parameters of concern are unlikely to be suitable for use. In addition, the two treatment measures were flagged due to their high construction and high maintenance costs. The rows of BMPs that could potentially be suitable for providing water quality mitigation are highlighted green. Screening evaluations for water quality management technologies will be provided as part of Phase 3 of this regulatory and environmental assessment, including conceptual plans and preliminary budgetary estimates for the incorporation of BMPs into the project.

Potential Environmental Impacts and Mitigation

Modeling

Nonpoint source pollutant loadings will need to be quantified during the subsequent detailed design phase of the project to demonstrate compliance with Chapter NR151 of the Wisconsin Administrative Code, needed for a WDNR Chapter 30 permit, by utilizing the SLAMM (Source Loading and Management Model) model. This model determines runoff from a series of rainfall events, calculates the pollutant loading created by the events, and effectiveness of selected BMPs at removing pollutant loads. The USGS maintains a collection of SLAMM parameter files that are required for analyzing sites in the State of Wisconsin including rain for the Milwaukee area, pollutant probability distribution, runoff coefficients, solids concentrations, particulate residue reduction, and street delivery parameters.

If detention ponds, infiltration basins, or swales/buffer strips are selected as BMPs, further water quality simulations may need to be completed using the P8 Urban Catchment Model. Similar to the SLAMM model, the WDNR maintains a list of climate files to be used for analyzing sites in the State of Wisconsin.

While the SLAMM and P8 water quality simulations are separate from the flood reduction hydraulic modeling, some of the parameters such as surface area, catchment delineation and land use will be needed for both efforts.

Conclusions

Plans for the construction of a proposed system of storm sewers and new outfall to the Milwaukee River **will** need to include provisions for mitigation of a range of potential environmental impacts, both during construction and during subsequent wet weather operation. Mitigation measures likely to have the most significant impact on the design and construction of the project include:

- Provisions for long-term management of storm water quality to meet regulatory standards, and
- Provisions for managing river bank and aesthetic impacts associated with construction of a new outfall.

The new outfall is also likely to be primary point of concern for environmental groups focused on the protection of the Milwaukee River. While the project as currently envisioned will not increase the total amount of runoff from the combined sewer area and will certainly reduce the potential for combined sewer overflows to the river, a new 72-inch diameter outfall pipe to the river will likely be perceived by some members of the public as a new source of pollutant loadings to the waterway. In the current absence of clearly defined water quality regulations for such outfalls, the potential exists for different groups to approach the project with widely differing interpretations of its impacts and the required mitigation measures. Detailed hydraulic and pollutant loading analyses coupled with early, frequent, and effective communications will be required to inform concerned parties of the design objectives for the project and the specific actions being taken to protect the quality and character of the river.

Potential Environmental Impacts and Mitigation

Table 3 – High-Level Summary of Stormwater Quality BMPs and Treatment Options

	Type	Removal Efficiency			Space Required	Works in Poorly Drained Soils?	Costs	
		TSS	TP	Fecal			Construction	Maintenance
Stormwater Quality BMPs	Bioretention (parkways, medians)	85%	45%	High	High	Y	Med-High	Med-High
	Stormwater Wetlands	85%	35%	Med	High	Y	Med	Med
	Wet Detention Basin	85%	40%	Med	High	Y	Med	Med
	Sand Filter	85%	45%	High	Med	Y	High	High
	Filter Strip[3]	25-40%	35%	Med	Low	Y	Low	Low
	Grassed Swale	35%	20%	Low	Med	Y	Low	Low
	Infiltration Devices (Trenches or Basins)	85%	35%	High	Low	N	Med-High	Med
	Dry extended detention basin	50%	10%	Med	High	Y	Low	Low-Med
	Permeable Paving	0%	0%	Low	Low	Y	High	Low-Med
	Rooftop Runoff Management (Green Roofs and Cisterns)	0%	0%	Low	Low	Y	High	Med
	Physical Separators[1,4]	Varies	Varies	None	Low-Med	Y	Medium	Low-Med
	Rain Barrels/ Disconnected Downspouts[1]	0%	0%	Low	Low	Y	Low	Low
	Rain Gardens[1,2]	85%	35%	Med	Low	Y	Low	Low
Treatment	Cartridge Filtration[1]	60-70%	65%	Low	Med	Y	High	High
	Disinfection[1]	0%	0%	Very High	Med	Y	High	High

[1] Removal efficiencies and costs were estimated for these BMPs based on vendor data. All other BMP data in Table 3 are based on the 2007 NCDENR, Division of Water Quality, Stormwater Best Management Practices Manual.

[2] Assume removal efficiencies are similar to stormwater wetland, although on a much smaller scale.

[3] A filter strip is vegetated land capable of filtering pollutants from sheet flow.

[4] Physical separators are in-line sewer devices such as inlet inserts, catch basin sediment traps, oil separators, and hydrodynamic separators.

APPENDIX C

DETAILED OPINIONS OF PROBABLE COST

Village of Shorewood, Wisconsin
Combined Sewer Service Area Environmental Assessment

Overhead / Hung Plumbing Conversions - Full Study Area
Preliminary Opinion of Probable Cost

	Description	Quantity	Unit	Unit Cost	Amount
	Hung Plumbing	980	EA	$ 12,500	$ 12,250,000
	30% Contingencies				$ 3,700,000
	15% Engineering				$ 2,390,000
	Overhead / Hung Plumbing Conversions				**$ 18,300,000**

Village of Shorewood, Wisconsin
Combined Sewer Service Area Environmental Assessment

Overhead / Hung Plumbing Conversions
Preliminary Opinion of Probable Cost

	Description	Quantity	Unit	Unit Cost	Amount
	Hung / Overhead Plumbing Conversions	120	EA	$ 12,500	$ 1,500,000
	30% Contingencies				$ 450,000
	15% Engineering				$ 290,000
				Opinion of Probable Cost	**$ 2,200,000**

Village of Shorewood, Wisconsin
Combined Sewer Service Area Environmental Assessment

Phase 1
Overflow Storm Sewer - Milwaukee River to N. Propect Avenue
Preliminary Opinion of Probable Cost

No.	Description	Quantity	Unit	Unit Cost	Amount
Overflow Storm Sewer					
1	Erosion Control - Inlet Protection	25	EA	$ 150	$ 3,750
2	Erosion Control - Bank Stabilization	100	LF	$ 200	$ 20,000
3	48-IN RCP Storm Sewer (Open Cut)	1050	LF	$ 750	$ 787,500
4	66-IN RCP Storm Sewer (Open Cut)	715	LF	$ 900	$ 643,500
4	72-IN RCP Headwall / Overlook	1	EA	$ 50,000	$ 50,000
5	72-IN RCP Storm Sewer (Open Cut)	250	LF	$ 1,000	$ 250,000
6	72-IN RCP Storm Sewer (Jack & Bore)	400	LF	$ 2,500	$ 1,000,000
7	72-IN RCP Storm Sewer (Tunneled)	2000	LF	$ 2,600	$ 5,200,000
8	8-IN Terrace Drains	6000	LF	$ 35	$ 210,000
9	Curb Inlet Structure	28	EA	$ 2,500	$ 70,000
10	Storm Manhole	12	EA	$ 15,000	$ 180,000
11	Tunnel Shaft	120	VF	$ 10,000	$ 1,200,000
12	Inlet Restrictors	180	EA	$ 500	$ 90,000
14	Lawn Restoration	6000	SY	$ 10	$ 60,000
15	Pavement Restoration	7000	SY	$ 50	$ 350,000
	20% Contingencies				$ 2,020,000
	15% Engineering				$ 1,820,000
				Opinion of Probable Cost	**$ 14,000,000**

Village of Shorewood, Wisconsin
Combined Sewer Service Area Environmental Assessment

Phase 2
Overflow Sewer - Prospect Avenue to Ridgefield Circle
Combined Sewer - Prospect Avenue, Shorewood Blvd, and Capitol Drive
Preliminary Opinion of Probable Cost

No.	Description	Quantity	Unit	Unit Cost	Amount
Sewer Construction					
1	Erosion Control - Inlet Protection	100	EA	$ 150	$ 15,000
2	36-IN RCP Storm Sewer (Open Cut)	360	LF	$ 600	$ 216,000
3	48-IN RCP Storm Sewer (Open Cut)	1400	LF	$ 750	$ 1,050,000
4	54-IN RCP Storm Sewer (Open Cut)	760	LF	$ 850	$ 646,000
5	8-IN Terrace Drains	5000	LF	$ 35	$ 175,000
6	Curb Inlet Structure	18	EA	$ 2,500	$ 45,000
7	Storm Manhole	8	EA	$ 15,000	$ 120,000
8	Inlet Restrictors	200	EA	$ 500	$ 100,000
9	30-IN PVC Combined Sewer (Open Cut)	1800	LF	$ 500	$ 900,000
10	Combined Sewer Manhole	6	EA	$ 15,000	$ 90,000
11	Lawn Restoration	6000	SY	$ 10	$ 60,000
12	Pavement Restoration	9000	SY	$ 50	$ 450,000
	20% Contingencies				$ 770,000
	15% Engineering				$ 700,000
				Opinion of Probable Cost	**$ 5,300,000**

APPENDIX D

CORRESPONDENCE

Mark P. Kolczaski

From: Daniel G. Bounds
Sent: Tuesday, November 01, 2016 1:31 PM
To: Mark P. Kolczaski; Matthew J. Moffitt; Emily F. Grimm
Subject: Shorewood - Water Quality

Bryan Hartsook, WDNR, has confirmed our conversation text and provided the additions below (red). I have updated our draft report with these additions, and thanked him.

Dan

Daniel G. Bounds, P.E., D.WRE
Senior Water Resources Engineer

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8678 Ridgefield Rd., Crystal Lake, IL 60012

From: Hartsook, Bryan D - DNR [mailto:Bryan.Hartsook@wisconsin.gov]
Sent: Tuesday, November 1, 2016 1:13 PM
To: Daniel G. Bounds <DBounds@baxterwoodman.com>
Subject: RE: IS Structure Flow Table

Hi Dan,

Thanks for giving me the opportunity to review. Looks okay to me for the most part. I suggested some edits in red text, and attempted to further quantify/project what reductions would be expected from further control as seen through GI implementation.

- - if you assume an infiltration rate of 0.07 in/hr, approx. 6200 sf of effective infiltration area/acre is needed to capture each 0.01cfs/acre increment.

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Bryan Hartsook, P.E.
Office: (262) 574-2129
bryan.hartsook@wisconsin.gov

From: Daniel G. Bounds [mailto:DBounds@baxterwoodman.com]
Sent: Friday, October 28, 2016 10:18 AM
To: Hartsook, Bryan D - DNR
Subject: RE: IS Structure Flow Table

Hi Bryan – I've summarized our call / emails below. We have a meeting with MMSD coming up. This look ok? Edit as you need.

Dan Bounds (B&W) spoke and had email correspondence with Bryan Hartsook, WDNR on October 25, 2016 regarding the sewer separation concept for improving flooding / basement backups in the Village of Shorewood, and what water quality requirements may be applicable. The sewer separation concept includes flow restrictors, continuous diversion of low flows to MMSD's interceptor system, and diversion of higher storm flows to a conceptual outfall to the Milwaukee River. Dan and Bryan discussed what treatment requirements may be applicable to the conceptual outfall to the river.

MMSD had provided data regarding system flows for this project during a previous project meeting with WDNR. MMSD is interested in using a 0.045 cfs/acre cutoff for low flow diversion, the point at which structure IS073 is estimated to overtop to the wet weather conveyance system and Inline Storage System (ISS). This is assuming a tributary sewershed of 660 acres.

Bryan looked at the High Density Residential w/ Alleys standard land use file in WinSLAMM. Maintaining a low flow diversion of all flows below or equal to 0.045 cfs/acre to the combined system would always send the first flush of pollutant runoff to treatment, and result in an average annual TSS reduction of 56.7%. This exceeds the percentage reduction required for maintaining Shorewood's compliance with the NR 151.13 urbanized area performance standard (20% from no controls) as well as the required 40% reduction required for redevelopment projects (if applicable for the project), therefore no additional treatment of flows from the conceptual outfall to the river would be required.

Implementation of distributed green infrastructure measures throughout the tributary sewershed (rain gardens, rain barrels, bioretention, pervious pavement/permeable pavers, etc.) will provide ~~only~~ minor reduction in flows and pollutant loading to the system, but should be considered. It is estimated from analyzing the runoff and pollutant loading generated from the High Density Residential w/Alleys SLU in WinSLAMM that every 0.01 cfs/acre of additional control beyond the 0.045 cfs/acre cutoff for low flow diversion would result in a 4% increase in TSS reduction. This rate is consistent up to about 78% at which point the runoff rate control increases in order to get similar reductions. For comparison purposes, 80% and 90% control levels would require low flow diversions up to 0.1156 cfs/acre and 0.2407 cfs/acre, respectively.

Bryan explained that draft MS4 percent reductions corresponding to waste load allocations (WLA) for Milwaukee River TMDL Reach MI-32 (near Shorewood) are 58.4% for TSS and 23.5% for TP from a no controls condition. Continuing low flow diversion to the combined sewer system will help meet these targets.

Dan explained that a reduction in pathogens (fecal coliform) load to the Milwaukee River could result from the sewer separation, as CSO volume would be reduced due to the diversion of higher flows from the combined sewer system.

End

From: Hartsook, Bryan D - DNR [mailto:Bryan.Hartsook@wisconsin.gov]
Sent: Tuesday, October 25, 2016 1:05 PM
To: Daniel G. Bounds <DBounds@baxterwoodman.com>
Subject: RE: IS Structure Flow Table

Sounds like a plan. Yes, it looks like the 0.045 meets the goals.

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Bryan Hartsook, P.E.

Office: (262) 574-2129
bryan.hartsook@wisconsin.gov

From: Daniel G. Bounds [mailto:DBounds@baxterwoodman.com]
Sent: Tuesday, October 25, 2016 1:04 PM
To: Hartsook, Bryan D - DNR
Subject: RE: IS Structure Flow Table

Thanks Bryan! We will check the assumptions and proposed flows, including maintaining 0.045 cfs/acre into the low flow diversion. This could meet the 40% TSS reduction necessary and potentially even meet the TMDL target reduction.

Dan

Daniel G. Bounds, P.E., D.WRE
Senior Water Resources Engineer

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From: Hartsook, Bryan D - DNR [mailto:Bryan.Hartsook@wisconsin.gov]
Sent: Tuesday, October 25, 2016 12:47 PM
To: Daniel G. Bounds <DBounds@baxterwoodman.com>
Subject: FW: IS Structure Flow Table

Dan,

Great talking with you today. I am forwarding data that was sent to me from MMSD following our first Shorewood sewer separation meeting. MMSD is interesting in using a 0.045 cfs/acre cutoff for low flow diversion, which is the mark where structure IS073 would be estimated to overtop to the wet weather conveyance system and Inline Storage System. This is considering an existing tributary sewershed of 660 acres.

From the High Density Residential w/ alleys standard land use file in WinSLAMM, maintaining a low flow diversion of all flows below or equal to 0.045 cfs to the combined system would result in an average annual TSS reduction of **56.7%.** The WinSLAMM unit hydrograph output with loads is the last attachment.

Draft MS4 percent reductions corresponding to WLAs for MI-32 are **58.4% for TSS** and 23.5% for TP from a no controls condition.

It's nice when things work out like that.

Bryan

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Bryan Hartsook, P.E.
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bryan.hartsook@wisconsin.gov

From: Jensen, Debra [mailto:DJensen@mmsd.com]
Sent: Monday, February 08, 2016 2:02 PM
To: Hartsook, Bryan D - DNR
Subject: FW: IS Structure Flow Table

Bryan
Following up on our conversation last week, attached (in the zip file) are the shapefiles you requested. Included are (1) sewershed boundaries; (2) intercepting structure point locations [and the attributes show the flow rates and tributary sewersheds); and (3) tributary sewersheds boundary (there can be more than one sewershed tributary to an intercepting structure).

I have also included the table with the tabular information.

If you need something more, let me know.
Debra

From: Mitchell, Dylan
Sent: Monday, February 08, 2016 8:35 AM
To: Jensen, Debra
Cc: Champagne, Emily; Seifert, Sarah
Subject: RE: IS Structure Flow Table

Hi Debra,

Attached is the requested intercepting structure layer (shapefile format) capturing the corresponding tributary sewersheds and the flow rate as attributes. It should be noted IS368A is currently not in our system.

Please let me know if you have any questions.

Thanks,

Dylan Mitchell
GIS Technician | Milwaukee Metropolitan Sewerage District (MMSD)
(414) 225-2163 | dmitchell@mmsd.com

Mark P. Kolczaski

From: Kopka, Marie H MVP <Marie.H.Kopka@usace.army.mil>
Sent: Tuesday, January 26, 2016 5:06 PM
To: Mark P. Kolczaski
Cc: M. Chris Swartz (cswartz@villageofshorewood.org); Leeanne Butschlick (lbutschlick@villageofshorewood.org); Joe Johnson
Subject: RE: Shorewood - Combined Sewer Service Area Environmental Assessment (UNCLASSIFIED)
Attachments: GP-004-WI.pdf; GP-002-WI.pdf

CLASSIFICATION: UNCLASSIFIED

Hi Mark,

Thanks very much for contacting me. The portion of the Milwaukee River that is shown on your figure is not a Section 10 water of the U.S. so the project would be considered under our Section 404 program. There are a couple of General Permits for which this project may qualify (see attached GP-002-WI and GP-004-WI). Note that the GP-002-WI will be expiring soon but is expected to be replaced with a newer version.

There are several categories in the GP-002-WI you may want to read to see if your project would qualify (see non reporting category 10, non reporting 13, and reporting category 10). The GP-004-WI may also work (see non reporting category 5 and reporting category 3). Also, please don't forget to identify the wetland area adjacent to the river as your project may also impact wetlands.

At this time, it appears that the Village project could meet a GP so I don't believe a pre-application meeting will be necessary. Please feel free to keep me in the loop as plans progress. Also, for planning purposes, our current turn time for GP evaluations is 85 days.

Please let me know if you have additional questions.

Thanks,
Marie

Marie H. Kopka
Senior Project Manager/Biologist
Covering Milwaukee (interim), Waukesha, Kenosha, and Racine Counties

U.S. Army Corps of Engineers
Regulatory Branch
250 N. Sunnyslope Road, Suite 296
Brookfield, Wisconsin 53005
Phone: 651-290-5733
Fax: 262-641-5618

From: Mark P. Kolczaski [mailto:mkolczaski@baxterwoodman.com]
Sent: Monday, January 18, 2016 1:58 PM

To: Kopka, Marie H MVP <Marie.H.Kopka@usace.army.mil>
Cc: M. Chris Swartz (cswartz@villageofshorewood.org) <cswartz@villageofshorewood.org>; Leeanne Butschlick (lbutschlick@villageofshorewood.org) <lbutschlick@villageofshorewood.org>; Joe Johnson <Joe.Johnson@mwhglobal.com>
Subject: [EXTERNAL] Shorewood - Combined Sewer Service Area Environmental Assessment

Marie, as discussed the Village of Shorewood has been working diligently on addressing basement wastewater backups and street flooding since the major rain events of 2010. A number of improvement projects have been completed in the northern portion of the Village. Two studies have also been conducted to address these concerns in the southeast corner of the Village, which is the combined sewer service area south of Capital Drive. The studies recommended a number of solutions including downspout disconnection, street inlet restrictors, separate storm sewers discharging to the Milwaukee River, and green infrastructure improvements to address surface water quality and quantity.

The attached exhibits illustrate two alternative concepts proposed as solutions to the basement backup problems in Shorewood's combined sewer area. One concept shown in Figure 1 relies upon construction of a new storm sewer system throughout the area to effectively separate most stormwater flows from the combined sewer system, and convey those flows to the Milwaukee River through a new separate storm sewer outfall. I have attached the DNR surface water data viewer wetland map for the area of the outfall for your reference.

The second concept, shown in Figure 2, would involve a hybrid approach including storm sewer construction, the use of inlet restrictors and overland flow routes along streets, and green stormwater infrastructure improvements. This approach would also require a new storm sewer outfall to the Milwaukee River, but flows from smaller, more frequent rainfall events as well as the "first flush" from larger events would continue to drain to the existing combined sewer system for transport to the Milwaukee Metropolitan Sewerage District's treatment facility. The hybrid approach would also reduce the amount of local storm sewer pipe required and allow for optimum utilization of the capacity available in the existing combined sewer network and the proposed storm sewer system.

The Village recognizes that there are a number of potentially significant regulatory and environmental issues associated with each of these options. Prior to proceeding further with implementation efforts, the Village would like to meet with you to review the alternative concepts and solicit feedback regarding the benefits and challenges associated with each.

Mark P. Kolczaski, PE
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256 S. Pine Street, Burlington, WI 53105

CLASSIFICATION: UNCLASSIFIED

US Army Corps
of Engineers
St Paul District

Public Notice

ISSUED: June 1, 2011
EXPIRES: May 31, 2016

REFER TO: GP-002-WI (2010-04712-RMG) **SECTION:404 - Clean Water Act**

ISSUANCE OF REGIONAL GENERAL PERMIT GP-002-WI IN THE STATE OF WISCONSIN EXCEPT WITHIN THE EXTERIOR BOUNDARIES OF INDIAN RESERVATIONS.

1. PURPOSE OF THIS PUBLIC NOTICE

The purpose of this public notice is to announce the issuance of a general permit, GP-002-WI, for the state of Wisconsin (attached).

II. BACKGROUND

On April 17, 2000, the St. Paul District replaced all of the Department of the Army Section 404 nationwide general permits (NWPs) in the state of Wisconsin with a combination of new Section 404 regional general permits (GP) and letter of permission (LOP) evaluation procedures. This integrated package is commonly referred to as GP/LOP-98-WI. GP/LOP-98-WI, originally scheduled to expire on April 16, 2005, was re-authorized for one year and expired April 16, 2006.

On April 17, 2006, the District issued the regional Section 404 GPs as separate and distinct from the LOP procedures identified in GP/LOP-98-WI (MVP administrative record 2005-7181-MTV). This was the first issuance of the GP-002-WI, which expired April 16, 2011. The 2006 version of GP-002-WI was re-authorized April 17, 2011 and expires on May 31, 2011 (MVP administrative record 2011-1076-RMG). The GP-002-WI is currently valid in the State of Wisconsin, except within the exterior boundaries of Indian Reservations.

The St. Paul District proposes to continue to use GP-002-WI in place of the nationwide general permits. Some changes from the 2006 version have been made, partly in response to public comments received, including:

1. Clarification of the activities eligible for authorization pursuant to the Maintenance Activities GP (non-reporting category #1);
2. Clarification of the requirements and categories of activities eligible for the Stream and Wetland Restoration activities GP (non-reporting category #7)
3. An area threshold is proposed for impacts authorized by the Scientific Measurement Devices category (non-reporting category #3);
4. Category #13, Minor Fills, has been revised to authorize discharges of dredged or fill material in waters of the U.S. up to 400 square feet. Previously, this category

was applicable for discharges of up to 500 square feet, but only within those waters regulated by the State pursuant to Chapter 30 Wisconsin Statute.

5. Activities in the City of Superior area subject to the "Superior SAMP" (District permits 199606788 through 199606792) are proposed to be eligible for authorization under the non-reporting GP.
6. Activities within wetlands adjacent to the Kakagon River in Ashland County are no longer proposed to be excluded from the non-reporting GP.
7. The acreage limit for fills associated with the GP for Commercial, Residential, Industrial, Agricultural, Recreational and Public Development (reporting category #10) has been proposed to increase from 0.1 acre (4,356 square feet) to 10,000 square feet (approximately 0.23 acre).
8. Clarification has been provided regarding activities eligible for authorization pursuant to reporting category #6, Completed Enforcement Actions.
9. The content of reporting category #9 (Utility Line Discharges) has been reorganized to provide additional clarity.
10. A reporting category (#12) has been added for Aquatic Habitat Restoration, Establishment, and Enhancement Activities.
11. Finally, the definitions section (3.a.) of GP-002-WI has been expanded from five to ten terms.

III. ADDITIONAL INFORMATION

GP-002-WI is issued according to the provisions of Section 404 of the Clean Water Act and includes consideration of the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

GP-002-WI does not affect any existing or future Department of the Army Section 10 of the Rivers and Harbors Act NWPs, or any other regional GPs in Wisconsin.

GP-002-WI was designed in cooperation with the WDNR to maximize the combined effectiveness of the state and Federal programs.

GP-002-WI may be viewed on the District Internet web site at: http://www.mvp.usace.army.mil/regulatory under the "General Permits and Letters of Permission Procedures" section. Questions may be directed to Mrs. Rebecca Graser in our Waukesha office at (262) 717-9531, extension 3. Inquiries may also be submitted through the website or mailed to: Regulatory Branch, St. Paul District, Corps of Engineers, 180 Fifth Street East, St. Paul, Minnesota, 55101.

FOR THE DISTRICT ENGINEER:

Tamara E. Cameron
Chief, Regulatory Branch

DEPARTMENT OF THE ARMY PERMIT

Permittee: The General Public in Wisconsin

Permit No. GP-002-WI

Issuing Office: St. Paul District United States Army Corps of Engineers

Issuance Date: June 1, 2011

Expiration Date: May 31, 2016

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

GENERAL PERMIT AUTHORIZATIONS: The general public in the state of Wisconsin is authorized to perform work in accordance with the terms and conditions of the general permits (GPs) specified below, after satisfying all applicable permit terms and conditions.

IMPORTANT: Some GP-002-WI authorizations require project proponents to obtain a permit and/or state water quality certification from the Wisconsin Department of Natural Resources (WDNR) before any work is authorized (see permit activities listed in 1.a., 2.a, and Standard Condition 3.b.27). GP-002-WI authorizations are subject to all applicable terms and conditions specified in this permit. In addition, some GP authorizations may be subject to project-specific special conditions that will be specified in the St. Paul District's letter of confirmation. Refer to the appropriate sections of this permit for a description of GP eligible activities, conditions, exclusions and application instructions.

PROJECT DESCRIPTION AND LOCATION: GP-002-WI applies to certain discharges of dredged and/or fill material into waters of the United States, including wetlands, as described herein, in the state of Wisconsin except within the exterior boundaries of Indian Reservations.

Department of the Army General Conditions (applicable to all GP-002-WI authorizations):

1. GP-002-WI expires on May 31, 2016. Unless otherwise specified in the St. Paul District's letter confirming your project complies with the requirements of this GP, the time limit for completing work ends upon the expiration date of GP-002-WI. If you find that you require additional time to complete authorized activities, submit your time extension request to this office for consideration at least three months before the expiration date is reached.

2. You must maintain the activity authorized by GP-002-WI in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity. Should you wish to cease to maintain an activity authorized by the reporting GP (2.a), or abandon it without a good faith transfer; you must obtain a modification of the authorization from this office, which may

require restoration of the area. If you wish to transfer responsibility for completion or maintenance of the project to another, please contact this office so we may provide you with the necessary documentation to transfer the authorization.

3. If you discover any previously unknown historic or archaeological remains while accomplishing any activity authorized by GP-002-WI, you must immediately stop work and notify this office of what you have found. The St. Paul District will initiate the federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. You must allow representatives from this office and the WDNR to inspect the proposed project site and the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of GP-002-WI.

5. If a conditioned water quality certification has been issued for your project by the WDNR, you must comply with the conditions specified in the certification as special conditions to this permit.

6. You must also comply with the other GP-002-WI terms and conditions specified below as well as any project specific conditions imposed by the St. Paul District.

Further Information:

1. Congressional Authorities: Authorization to undertake the activities described above is pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), **only**. Work that also requires authorization under Section 10 of the Rivers and Harbors Act must be authorized separately through other GPs or individual permits.

2. Limits of this Authorization:

a. GP-002-WI does not obviate the need to obtain other federal, state, or local authorizations required by law.

b. GP-002-WI does not grant any property rights or exclusive privileges.

c. GP-002-WI does not authorize any injury to the property or rights of others.

d. GP-002-WI does not authorize interference with any existing or proposed federal project.

3. Limits of Federal Liability. In authorizing work, the Federal Government does not assume any liability, including for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by

or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination by this office that an activity is not contrary to the public interest will be made in reliance on the information provided by the applicant.

5. Reevaluation of Decision. This office may reevaluate its decision on an authorization at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. The applicant fails to comply with the terms and conditions of this general permit.

b. The information provided by the applicant in support of the permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

A reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring the permittee to comply with the terms and conditions of the permit and for the initiation of legal action where appropriate.

6. This office may also reevaluate its decision to issue GP-002-WI at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following: significant new information surfaces which this office did not consider in reaching the original public interest decision. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7.

This GP-002-WI becomes effective when the federal official, designated to act for the Secretary of the Army, has signed below.

for Michael J. Price
Colonel, Corps of Engineers
District Engineer

5/31/11
Date

GP-002-WI ACTIVITIES, PROVISIONS, AND CONDITIONS

This describes the Section 404 general permit authorization procedures implemented by the St. Paul District Corps of Engineers (Corps) in GP-002-WI.

Persons proposing to do work should note that, in ALL cases, GP-002-WI requires that adverse impacts on water and wetland resources be avoided and minimized to the maximum extent practicable. Also, activities that would adversely affect federal endangered plant or animal species or certain cultural or archaeological resources, or that would impair reserved Native American tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights, are not eligible for authorization under GP-002-WI.

1. NON-REPORTING GENERAL PERMIT.

The following discharges, for a single and complete project, that comply with all terms and conditions of GP-002-WI are authorized by this GP. **No application or notification to the Corps is required under this GP. Project proponents may proceed with the described discharges after very carefully making sure that the work will meet all applicable terms and conditions of GP-002-WI.** Project proponents with non-reporting activities should consult the Wisconsin Department of Natural Resources (WDNR) and local governments concerning state and local permit requirements (see Standard Condition: 3.b.27., below).

Note that certain areas and activities are EXCLUDED from this non-reporting GP described in section 1.b., below.

a. ACTIVITIES ELIGIBLE FOR AUTHORIZATION BY THE NON-REPORTING GP:

1. Maintenance Activities.
Discharges of dredged or fill material for the repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill, or any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that they affect not more than ½ acre of waters of the United States, including wetlands. The structure or fill is not to be put to uses differing from those specified in the original authorization or most recently authorized modification. Minor deviations are allowed where necessary to conform to modern construction practices, materials, construction codes, or safety standards. This GP may be used for the replacement of bridge abutments and culverts, side-slope flattening, reconditioning of roadbeds and the temporary placement of mats necessary to conduct maintenance activities. This GP may not be used for the addition of new lanes on roadways. This GP authorizes the minimal impact repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill that does not qualify for the Section 404(f) exemption for maintenance.

2. Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities.
Section 404 discharges for fish and wildlife harvesting devices and activities such as pound nets, crayfish/minnow traps, duck blinds, clam digging; and small fish attraction devices. This GP does not authorize artificial reefs, impoundments, or semi-impoundments of waters of the United States for the culture or holding of motile species.

3. Scientific Measurement Devices.
Section 404 discharges for staff gages, tide gages, water recording devices, water quality testing and improvement devices and similar structures. Small weirs and flumes constructed primarily to record water quantity and velocity are also authorized. The discharge of fill material into waters of the United States must be limited to 150 square feet.

4. Survey Activities.
Section 404 discharges for survey activities including core sampling, seismic exploratory operations, and plugging of seismic shot holes and other exploratory-type bore holes. Drilling and the discharge of excavated material from test wells for oil and gas exploration is not authorized by this GP; the plugging of such wells is authorized. Fill placed for roads, pads and other similar activities is not authorized by this GP. The discharge of drilling mud and cuttings may require a permit under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).

5. Oil Spill/Hazardous Substances Containment/Cleanup.
Activities required for the containment and cleanup of oil and hazardous substances which are subject to the National Oil and Hazardous Substances Pollution Contingency Plan, (40 CFR Part 300), provided that the work is done in accordance with the Spill Control and Countermeasure Plan required by 40 CFR 112.3. In addition, if a Regional Response Team exists in the area, they must concur with the proposed containment and cleanup action plan to be eligible for this GP. Discharges for such containment and cleanup are authorized by this GP; however, all appropriate governmental units, as well as the Corps, shall be informed of any such discharges as soon as practical.

6. Removal of Vessels.
Minor discharges of dredged or fill material required to remove wrecked, abandoned, or disabled vessels, or remove man-made obstructions to navigation. This GP does not authorize the removal of vessels listed or determined eligible for listing on the National Register of Historic Places unless the District Engineer determines that the work would be done in compliance with the "Historic Properties" standard condition (see Standard Condition: 3.b.12., below). This GP does not authorize maintenance dredging, shoal removal, or river bank snagging. Vessel disposal in waters of the United States may need a permit from the United States Environmental Protection Agency (EPA) (see 40 CFR 229.3).

7. Stream and Wetland Restoration Activities.
Stream Restoration projects (under paragraphs (i) through (iii) below) which are subject to regulation under Chapters 30 and/or 31 of Wisconsin State Statute must be approved by the WDNR to qualify for authorization pursuant to this GP.

This GP does not cover any conversion of sedge meadow or forested wetland to other wetland types. This GP covers Section 404 activities in waters of the United States associated with the restoration and enhancement (see definitions: 3.a.6 through 3.a.10, below) of degraded wetlands and riparian areas, the creation of wetlands and riparian areas, and the restoration and enhancement of non-Section 10 streams and open water areas on:

(a) Non-federal public and private lands, in accordance with the terms and conditions of a binding wetland enhancement, restoration or creation agreement between the landowner and the United States Fish and Wildlife Service (USFWS) or the Natural Resources Conservation Service (NRCS); or

(b) Any federal land; or
(c) Any public or private land by a state agency.

This GP cannot be used to authorize activities for the conversion of a natural stream to another aquatic use, such as the creation of waterfowl impoundments. This GP cannot be used to authorize channelization of a stream or the placement of rock rip rap, and does not authorize the conversion of natural wetlands to another aquatic use, such as creation of waterfowl impoundments where a forested wetland previously existed. Projects including the placement of rock rip rap may better qualify for bank stabilization review, category 1.a.11. or reporting GP 2.a.12., below. However, this GP may be used to relocate aquatic habitat types on the project site, provided there are net gains in aquatic resource functions, values, and no net loss of aquatic resource acreage. For example, this GP may authorize the creation of an open water impoundment in an emergent wetland, provided the emergent wetland is replaced by creating that wetland type in the adjacent uplands.

Reversion: For enhancement, restoration and creation projects conducted pursuant to paragraph (b) and (c) above, this GP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its condition prior to the enhancement, restoration, or creation project. In such cases, a separate permit would be required at that time for any reversion. For restoration, enhancement and creation projects conducted as specified in paragraph (a), this GP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or creation activities) within five years after expiration of a limited term wetland restoration or creation agreement (such as Wetland Reserve Program) or permit, even if the discharge occurs after this authorization expires. The five year reversion limit does not apply to agreements specified in paragraph (a) that do not include time limits. The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the federal agency executing the agreement or permit. Prior to any reversion activity, the permittee or the appropriate federal agency must notify the District Engineer and include the documentation of the prior condition. Once an area has reverted back to its prior physical condition, it will be subject to whatever the Corps regulatory requirements will be at that future date. Because projects that would be authorized by this permit are designed to enhance the aquatic environment, mitigation will not be required for the work.

8. Moist Soil Management for Wildlife Maintenance Activities.
Discharges of dredged or fill material for maintenance activities associated with existing moist soil management infrastructure for wildlife performed on non-tidal federal, tribal or state owned or managed properties, for the purpose of continuing ongoing, site-specific, wildlife management activities where soil manipulation is used to manage habitat and feeding areas for wildlife. Such activities include, but are not limited to: the repair, maintenance or replacement of existing water control structures; the repair or maintenance of dikes; and plowing or disking to impede succession, prepare seed beds, or establish fire breaks. Sufficient vegetated buffers must be maintained adjacent to all open waterbodies, streams, etc., to preclude water quality degradation due to erosion and sedimentation. This GP does not authorize the construction of new dikes, roads, water control structures, etc. associated with the management areas. This GP does not authorize converting wetlands to uplands, impoundments or other open waterbodies.

9. Emergency Watershed Protection - Rehabilitation.
Work done or funded by the NRCS qualifying as an "exigency" situation (requiring immediate action) under its Emergency Watershed Protection Program (7 CFR Part 624) and work done or funded by the Forest Service under its Burned-Area Emergency Rehabilitation Handbook (FSH 509.13).

10. Outfall Structures.
This activity is authorized under the non-reporting GP provided that the work is regulated and approved by the WDNR under Chapter 30.12 Wisconsin State Statutes. Activities related to construction of outfall structures and associated intake structures where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted, or which are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System program (Section 402 of the Clean Water Act). This GP only authorizes those intake structures that are directly associated with an authorized outfall structure.

11. Bank Stabilization.
This activity is authorized under the non-reporting GP provided that the work is regulated and approved by the WDNR under Chapter 30.12 Wisconsin State Statutes. Discharges of dredged or fill material for bank stabilization activities necessary for erosion prevention provided that no material is placed in wetlands and the bank stabilization activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark. (Bank stabilization projects that exceed one cubic yard per running foot or that otherwise do not qualify for this non-reporting GP may be eligible for authorization under a different GP, a letter of permission or a standard individual permit).

12. Boat Ramps.
This activity is authorized under the non-reporting GP provided that the work is regulated and approved by the WDNR under Chapter 30.12 Wisconsin State Statutes. Discharges required for the construction of boat ramps provided the discharge into waters of the United States does not exceed 50 cubic yards of concrete, rock, crushed stone, or gravel into forms, or placement of pre-cast concrete planks or slabs (unsuitable material that causes unacceptable chemical pollution or is structurally unstable is not authorized); the boat ramp does not exceed 20 feet in width; the base material is crushed stone, gravel or other suitable material; the excavation is limited to the area necessary for site preparation and all excavated materials are removed to the upland; and no material is placed in special aquatic sites, including wetlands. Dredging to provide access to the boat ramp may be authorized by another GP, letter of permission, or individual permit pursuant to Section 10 if located in navigable waters of the United States.

13. Minor Fills.
This activity is authorized under the non-reporting GP provided that the work is regulated and approved by the WDNR pursuant to NR 299 and/or Chapter 30/31; or the work is exempt from regulation by the state under Chapter 30.12(1g). Discharges of dredged and/or fill material for a single and complete project that would result in filling, draining (including full or partial diversion of flows), excavating or inundating not more than 400 square feet of waters of the United States, including wetlands. This authorization may not be used more than once by a permittee or landowner in a manner that would cumulatively impact more than 400 square feet of waters of the United States for a single and complete project (see definition of a "single and complete project" at 3.a.5., below).

b. AREAS/ACTIVITIES EXCLUDED FROM THE NON-REPORTING GP:

1. Diversions of water. This permit may not be used to authorize all or any portion of a project that would divert more than 10,000 gallons/day of surface water or groundwater into or out of the Great Lakes Basin.

2. In the Pleasant Prairie, Wisconsin, area identified in Corps permit 198700323, only discharges for bank stabilization, limited to one cubic yard per running foot, are eligible for authorization under this part of GP-002-WI.

3. The non-reporting GP does not authorize any activity in:

A. Federal and state Wild and/or Scenic Rivers. All regulated activities in these rivers, including stream and wetland restoration activities by a government agency, require evaluation under a Corps reporting general permit, letter of permission, or standard individual permit procedure.

B. Calcareous fens as identified by WDNR, and wetlands within 300 feet of such fens. All regulated activities in these areas require evaluation under Corps standard individual permit procedures (except oil - hazardous material spill confinement and cleanup described at 1.a.5. above).

C. Coastal wetlands in ridge and swale complexes as identified on WDNR maps, and wetlands adjacent to the Mink River in Door County or the Bad River in Ashland County.

NOTE: Unless otherwise noted, activities excluded above may be eligible for authorization under a reporting GP, a letter of permission, or a standard individual permit.

c. APPLICATION/EVALUATION PROCEDURES UNDER THE NON-REPORTING GP:

An activity authorized by the non-reporting portion of this GP may commence when project proponents have carefully confirmed that the activity will be conducted in compliance with all terms and conditions of GP-002-WI. No application to the Corps is required; however, if requested, the Corps will confirm whether or not proposed work is authorized by the non-reporting GP. Persons proposing to do work should note that conditions of the GP require that adverse impacts on water and wetland resources be avoided and minimized to the maximum extent practicable. Activities that would adversely affect federal endangered plant or animal species or certain cultural/archaeological resources are not authorized by this non-reporting general permit. Information about federal and state endangered species may be obtained by contacting the United States Fish and Wildlife Service at (920) 866-1717 (information on state species may be found by contacting the WDNR at (608) 266-7012). The Corps's website (www.mvp.usace.army.mil/regulatory/) also contains a link to the United States Fish and Wildlife Service list of federal and state endangered species for each Wisconsin county. Information concerning cultural resources may be obtained by contacting the State Historic Preservation Office at (608) 264-6505. Project proponents are encouraged to contact these agencies early in project planning to help avoid violations of federal law and potentially lengthy project delays.

2. REPORTING GENERAL PERMIT.

The following discharge activities, for a single and complete project, that comply with all terms and conditions of GP-002-WI are eligible for authorization under the reporting GP. **Persons proposing to do**

work should note that conditions of GP-002-WI require that adverse impacts on water and wetland resources be avoided and minimized to the maximum extent practicable.

Note that certain areas and activities are EXCLUDED from this reporting GP as described in section 2.b., below.

Applicants for all activities should consult with the WDNR and local governments concerning state and local permit requirements.

a. ACTIVITIES ELIGIBLE FOR AUTHORIZATION BY THE REPORTING GP:

1. Activities excluded from authorization by the non-reporting GP because they are in a coastal wetland area described at 1.b.3.C, above. These proposals must also comply with Standard Condition 3.b. 28, below.

2. United States Coast Guard Approved State or Federally Funded Bridges.
Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided such discharges have been authorized by the United States Coast Guard as part of the bridge permit. Causeway and approach fills are not included.

3. Return Water From Upland Contained Disposal Areas.
Return water from upland, contained dredged material disposal areas. The dredging itself requires a Section 10 permit if located in navigable waters of the United States. The return water from a contained disposal area is administratively defined as a discharge of dredged material by 33 CFR 323.2(d) even though the disposal itself occurs on the upland and thus does not require a Section 404 permit. Authorization under this GP satisfies the technical requirement for a Section 404 permit for the return water where the quality of the return water is controlled by the state through the Section 401 certification procedures.

4. Hydropower Projects.
Discharges of dredged or fill material associated with (a) small hydropower projects at existing reservoirs where the project, which includes the discharge of dredged or fill material, is licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act of 1920, as amended; and has a total generating capacity of not more than 5000 KW; or (b) hydropower projects for which the FERC has granted an exemption from licensing pursuant to Section 408 of the Energy Security Act of 1980 (16 U.S.C. 2705 and 2708) and Section 30 of the Federal Power Act, as amended.

5. Cleanup of Hazardous and Toxic Waste.
Specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. For discharges in special aquatic sites, including wetlands, the application must include a delineation of affected special aquatic sites, including wetlands. Court ordered remedial action plans or related settlements are also authorized by this GP. This GP does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste.

6. Completed Enforcement Actions.

Any discharge of dredged or fill material remaining in place or undertaken for mitigation, restoration, or environmental benefit in compliance with either:

(a) The terms of a signed written Corps non-judicial settlement agreement resolving a violation of Section 404 of the Clean Water Act or the terms of an EPA 309(a) order resolving a violation of Section 404 of the Clean Water Act, provided that:

(i) The unauthorized activity affected no more than 5 acres of waters of the United States;

(ii) The settlement agreement provides for environmental benefits, to an equal or greater degree, than the environmental detriments caused by the unauthorized activity to be authorized by this GP; and

(iii) The District Engineer issues a verification letter authorizing the activity subject to the terms and conditions of this GP. The District Engineer's verification letter shall include a specified completion date and may also include additional conditions not inconsistent with the settlement agreement or 309(a) order; or

(b) The terms of a final federal court decision, consent decree, or settlement agreement resulting from an enforcement action brought by the United States for violation of Section 404 of the Clean Water Act; or

(c) The terms of a final court decision, consent decree, settlement agreement, or non-judicial settlement agreement resulting from a natural resource damage claim brought by a trustee or trustees for natural resources (as defined by the National Contingency Plan at 40 CFR Part 300, Subpart G) under Section 311 of the Clean Water Act, Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act, Section 1002 of the Oil Pollution Act of 1990, or the Park System Resource Protection Act at 16 U.S.C. 19jj, to the extent that a Corps permit is required.

Compliance with the terms of the underlying court decision, consent decree, settlement agreement, non-judicial settlement agreement, or 309(a) order that pertain to the retention, placement, protection or maintenance of the discharges authorized by this permit are conditions of this GP. A violation of this GP occurs if the permittee does not comply with the terms of this GP or the pertinent terms of the underlying court decision, consent decree, judicial/non-judicial settlement agreement, or 309(a) order. This GP does not apply to any discharges occurring after the date of the decision, consent decree, or agreement that are not in compliance with the underlying order or settlement agreement. For purposes of this authorization, the term "violation of Section 404 of the Clean Water Act" includes both violations of Section 404 and violations of Section 301 of the Act involving discharges regulated under Section 404.

7. Temporary Construction, Access and Dewatering.

Temporary structures and discharges, including cofferdams needed for construction activities or access fills or dewatering of construction sites; provided the associated permanent activity was previously authorized by the Corps or the United States Coast Guard, or for bridge construction activities not subject to federal regulation. Appropriate measures must be taken to maintain near-normal downstream flows and to minimize flooding. Fill must consist of appropriate materials and be placed in a manner that will not be eroded by expected high flows. Temporary fill must be entirely removed to upland areas following completion of the construction activity and the affected areas restored to the pre-project conditions. Construction mats may be placed in wetland areas for up to two weeks during the growing season unless otherwise specified in the Corps verification letter. Cofferdams cannot be used to dewater wetlands or other aquatic areas so as to change their use. Structures left in place after cofferdams are removed require a Section 10 permit if located

in navigable waters of the United States (See 33 CFR Part 322). The application for this GP must demonstrate reasonable measures to avoid and minimize impacts to aquatic resources, as well as include a restoration plan describing how the site will be restored to pre-project conditions. The District Engineer will add special conditions to verification letters, where necessary, to ensure that adverse environmental impacts are minimal. Such conditions may include: limiting the temporary work to the minimum necessary; requiring seasonal restrictions; modifying the restoration plan; and requiring alternative construction methods. This GP does not authorize temporary structures or fill associated with mining activities or the construction of marina basins that have not been authorized by the Corps.

8. Structural Discharges.
Discharges of material such as concrete, sand, rock, etc. into tightly sealed forms or cells where the material will be used as a structural member such as a utility pole, bridge support, ramp surface, or retaining wall. This activity does not include building foundations or other structures such as pilings intended for use as building supports.

9. Utility Line Discharges.
Activities required for the construction, maintenance and repair of utility lines (for this GP, a "utility line" is defined below) and associated facilities in waters of the United States as follows:

(a) Utility lines: The construction, maintenance, or repair of utility lines, including outfall and intake structures and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in preconstruction contours. Material resulting from trench excavation may be temporarily side-cast (up to two weeks during the growing season) into waters of the United States, provided that the material is not placed in such a manner that it is dispersed by currents or other forces. In wetlands, the top 6" to 12" of the trench shall be backfilled with topsoil from the trench. Furthermore, the trench cannot be constructed in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). For example, utility line trenches can be backfilled with clay blocks to ensure that the trench does not drain the waters of the United States through which the utility line is installed. Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

(b) Utility line substations: The construction, maintenance, or expansion of a substation facility associated with a power line or utility line in waters of the United States.

(c) Foundations for overhead utility line towers, poles, and anchors: The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and digital messages, and radio and television communication. The term "utility line" does not include activities which drain a water of the United States, such as drainage tile, or french drains; however, it does apply to pipes conveying drainage from another area.

Loss of waters of the United States associated with projects authorized by paragraphs (a) through (c) may not exceed a sum total of 10,000 square feet (see exclusion at 2.b.4., below). For the purposes of this GP, loss of

waters of the United States includes the filled area plus waters of the United States that are adversely affected by flooding, excavation, or drainage as a result of the project. Jurisdictional waters temporarily affected by filling, flooding, excavation, or drainage, where the project area is restored to preconstruction contours, elevation, and wetland type are not included in the 10,000 square foot limitation. Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested wetland to a herbaceous wetland, mitigation may be required to reduce the adverse effects of the project to the minimal level.

This GP may also authorize temporary construction mats (e.g., timber, steel, geotextile) used during construction and removed upon completion of the work. Mechanized land clearing necessary for the construction, maintenance, or repair of utility lines and the construction, maintenance and expansion of utility line substations, and foundations for overhead utility lines is authorized, provided the cleared area is kept to the minimum necessary and preconstruction contours are maintained as near as possible. The area of waters of the United States that is filled, excavated, or flooded must be limited to the minimum necessary to construct the utility line, substations, and foundations. Excess material must be removed to upland areas immediately upon completion of construction.

If using directional-drilling method of utility line installation, the applicant must provide the Corps a detailed narrative describing water supply intake(s) and recapture and disposal methods for used drilling fluids. This plan must describe the correctional steps to be taken in the event of a leak, either through the substrate into the waterbody or waterway, or onto the upland area with possible return to the waterbody or waterway.

10. Commercial, Residential, Industrial, Agricultural, Recreational and Public Development (including roads for these purposes).
Discharges of dredged or fill material for a single and complete project (see 3.a.5., below) that directly and/or indirectly impact by filling, draining, excavating and/or inundating not more than 10,000 square feet of wetland/water area for commercial, residential, industrial or recreational development projects, including associated roads. This reporting GP does NOT include access paths across water or wetland areas to provide upland access to a waterbody for any purpose. It is important for applicants for this GP to include information with their application that clearly shows that an alternatives analysis has been conducted and the proposed work is the least environmentally damaging practical method of accomplishing the project purpose. This will minimize delays in federal and state evaluation procedures and increase the chance that the project will receive prompt and favorable review.

11. Wildlife Ponds.
Discharges of dredged or fill material for the construction of wildlife ponds that impact (see 3.a.1., below) not more than 1 acre of waters of the United States. The wildlife ponds shall be constructed with irregular shorelines, shallow sideslopes (e.g., 8-foot H to 1-foot V), and shall not exceed 5-feet of water depth. Excess fill material not needed for construction of the pond must be removed to an upland location. The primary purpose of this activity must be wildlife habitat improvement. This GP does not authorize the discharge of fill material for the construction of wildlife ponds in forested wetlands, sedge meadows or calcareous fens.

12. Aquatic Habitat Restoration, Establishment, and Enhancement Activities.
This GP does not cover any conversion of sedge meadow or forested wetland to other wetland types. Activities in waters of the United States associated with the restoration, enhancement, and creation (see 3.a.,

below) of wetlands and riparian areas and the restoration and enhancement of streams and other open waters, provided those activities result in net increases in aquatic resource functions and no net acreage loss of waters of the United States.

Activities authorized by this GP may not result in a discharge of dredged or fill material into more than 2 acres of waters of the United States. Activities authorized by this GP include, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms; the installation of current deflectors; the enhancement, restoration, or establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or establish stream meanders; the backfilling of artificial channels and drainage ditches; the removal of existing drainage structures; the construction of small nesting islands; the construction of open water areas; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities.

This GP does not authorize stream channelization. The District Engineer's verification letter may include project specific conditions limiting the placement of riprap. This GP does not authorize the conversion of a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa) or uplands.

This GP does not authorize the conversion of natural wetlands to another aquatic use, such as creation of waterfowl impoundments where a forested or sedge meadow wetland previously existed. However, this GP may be used to relocate aquatic habitat types on the project site, provided there are net gains in aquatic resource functions, values, and no net loss of aquatic acreage. For example, this GP may authorize the creation of an open water impoundment in an emergent wetland, provided the emergent wetland is replaced by creating that wetland type in the adjacent uplands.

This GP can be used to authorize compensatory mitigation projects, including banks and in-lieu fee programs. Once an area has been created, restored, or enhanced, it will be subject to all applicable Corps regulatory requirements. Because projects that would be authorized by this permit are designed to enhance the aquatic environment, mitigation will typically not be required for the work.

b. AREAS/ACTIVITIES EXCLUDED FROM THE REPORTING GP:

1. Diversions of Water. This GP may not be used to authorize all or any portion of a project that would divert more than 10,000 gallons of surface or groundwater into, or out of, the Great Lakes Basin daily.

2. Activities in the City of Superior, Wisconsin, eligible for authorization under a "Superior SAMP" permit are not eligible for authorization under the reporting GP (Corps permits 199606788 through 199606792).

3. The reporting GP does not authorize any activity in calcareous fens as identified by the WDNR, and waters of the United States within 300 feet of such fens. All regulated activities in these areas require evaluation under Corps individual permit procedures.

4. Listed impaired waters. For activities 2.9.b. (utility line substations) and 2.9.c. (foundations for utility

towers), this GP may not be used to authorize projects that involve filling, draining, or inundating more than 0.1 acre of wetland/water in waterbodies, and adjacent wetlands, that are listed on the EPA-approved list of Wisconsin impaired waters pursuant to Section 303(d) of the Clean Water Act. This exclusion applies only to those impaired waters that are listed for one or more of the following reasons: nutrients, dissolved oxygen (DO), ammonia, suspended solids, turbidity, sediment, streambank erosion, flow habitat, hydrological modification, wetland loss, siltation and organic enrichment. Such projects in these areas may be eligible for evaluation under a letter of permission or standard individual permit procedure.

c. APPLICATION/EVALUATION PROCEDURES UNDER THE REPORTING GP:

Applicants must submit a complete application to both the Corps and the WDNR using the joint state-federal application form that is available from the Corps and WDNR offices and on the websites of both agencies. Upon receipt of a permit application, the Corps will commence to review the proposed activity to determine eligibility for the reporting GP. In some cases, the Corps may require a wetland delineation prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual (including applicable Regional Supplement) before the application will be considered complete. The Corps will complete its review as noted below and send the applicant a letter advising of the outcome. If the Corps decision is to issue a reporting GP, the Corps confirmation letter to the applicant will be a reporting GP verification letter. The Corps will simultaneously send a copy of the letter to the WDNR.

ENDANGERED SPECIES AND CULTURAL RESOURCES REVIEW.
The Corps review will include a determination concerning compliance of the project with Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. Projects found not to comply with either or both of these Acts will not be authorized under the GP or any other Corps authorization until actions are taken so that compliance with both acts is assured. The Corps federal endangered species review will consist of Corps staff consulting appropriate reference materials including endangered species information published by the USFWS in informational brochures and on Internet web pages and any other available data, information or specific guidance provided by USFWS. Corps staff will be aware of locations where endangered species are known or likely to be present and of the types of activities that may affect those species. Corps staff will directly consult with USFWS staff concerning proposals which appear to have potential to affect listed species. The review will include Corps and/or USFWS site inspections of specific project sites, and/or formal Section 7 interagency consultation where necessary. In addition, during federal review of reporting GP applications, Corps staff will consult state endangered species information made available by the WDNR. Corps staff will consult with WDNR staff concerning proposals that appear to have potential to affect state listed species.
The Corps federal cultural resources review will be conducted in a manner similar to the endangered species review. The National Register of Historic Places will be consulted to determine the presence or absence of known cultural resources. Corps regulatory staff will be aware of areas that have a high probability to contain important cultural resources and will consult Corps cultural resource staff concerning questionable projects. Corps regulatory or cultural resource staff will consult with the State Historic Preservation Office on appropriate projects. Cultural resource surveys and/or formal consultation with the President's Advisory Council on Historic Preservation will be conducted where necessary.

COMPENSATORY MITIGATION

Complete applications for activities involving a discharge of dredged or fill material into waters of the United States must minimally include a statement regarding compensatory mitigation (33 CFR Part 325.1). This statement must describe how impacts to waters of the United States are to be compensated for, or a statement explaining why compensatory mitigation should not be required for the proposed impacts.

Verification letters issued by the Corps may require compensatory mitigation in accordance with 33 CFR Part 332 for any impacts authorized under a reporting GP if a determination is made that the functions lost or impaired by the proposed project are of high value or otherwise warrant replacement. These determinations are made on a case-by-case basis, however, projects that adversely affect 10,000 square feet or more of waters of the United States routinely require compensation. Applicants whose project requires compensatory mitigation should include a mitigation plan prepared in accordance with 33 CFR Part 332, and may utilize the *Guidelines for Wetland Compensatory Mitigation in Wisconsin.* The plan prepared should describe the measures proposed to ensure that the activity complies with the Section 404(b)(1) guidelines (40 CFR 230). Compensatory mitigation that is proposed to satisfy state or local requirements may, but will not necessarily, satisfy the federal requirement.

Work is authorized under the reporting GP when the project proponent receives confirmation of both a reporting GP verification letter from the Corps AND confirmation from the WDNR that state water quality certification has been granted or waived for the project. Also note Standard Condition 28 concerning the need for Wisconsin Coastal Management Program certification for activities in coastal wetlands in ridge and swale complexes as identified on WDNR maps, and wetlands adjacent to the Mink River in Door County or the Bad River in Ashland County.

3. GP-002-WI PROVISIONS

a. GP-002-WI DEFINITIONS:

1. Calculation of Aquatic Impact Thresholds: For those activities with threshold limits, impacts shall be determined by calculating area of waters of the United States filled plus the impacts to waters of the United States that are excavated, inundated, or drained as a result of the regulated discharge.

2. Fill Material: Fill material, as defined in 33 CFR 323.2, means material placed in waters of the United States where the material has the effect of:

(i) Replacing any portion of a water of the United States with dry land; or

(ii) Changing the bottom elevation of any portion of a water of the United States.

Examples of such fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States. The term fill material does not include trash or garbage.

3. Loss of Waters: This term refers to aquatic resources filled or otherwise permanently adversely affected by flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent above-grade, at-grade, or below-grade fills that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change its use. The loss of streambed includes the linear feet of

streambed that is filled, excavated, or flooded. Waters of the United States temporarily filled, flooded, excavated, or drained but restored to preconstruction contours and elevations after construction are not typically included in the measurement of loss of waters of the United States. However, temporary fill in waters of the United States is regulated by Section 404.

4. Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose.

5. Single and Complete Project: For purposes of GP-002-WI, the term "single and complete project" means the total project proposed by the project proponent. For example, if construction of a residential development or linear project such as a road or utility line affects several different areas of waters of the United States, the cumulative total of all filled areas is the basis for deciding the project's total wetland/water impact. For "phased" developments, each phase may constitute a single and complete project if it has independent utility and would accomplish its intended purpose whether or not other phases were constructed.

6. Wetland Creation: The construction of a wetland in an area that was not wetland in the past.

7. Wetland Restoration: Re-introduction of wetland vegetation AND wetland hydrology to an upland area where these vegetative and hydrologic qualities previously existed (re-establishment of hydric soil may rarely be required). This alteration results in the restoration of previously existing wetland.

8. Wetland Conversion: Alterations to an existing wetland that result in a change in wetland classification (i.e. the conversion of a wet meadow to a shallow marsh, or a forested wetland to wet meadow).

9. Wetland Enhancement: Alterations made to existing wetlands that result in a net increase in wetland function (i.e. vegetation management techniques or changes to the hydrologic regime). Wetland enhancement generally does not include wetland conversion, unless the purpose of the conversion is to return the wetland to known pre-disturbance conditions AND also represents a net increase in wetland function.

10. Stream Restoration and/or Enhancement: Alterations to an existing and/or previously existing stream corridor that result in a naturalization of the corridor, including activities that mimic natural features or return the stream corridor to a pre-disturbance condition. Generally, this includes installation of vortex weirs, current deflectors, small habitat structures, riffle and pool stream structure, and modifications of the stream bed and/or banks to restore stream meanders, selective removal of non-native vegetation, and the backfilling of artificial channels. Stream enhancement and restoration does not generally include significant artificial changes to the stream corridor such as widespread bank armoring with non-biodegradable materials (i.e. riprap) or conversion of adjacent wetlands that would not meet the definition of wetland enhancement (see 3.a.9., above).

b. GP-002-WI STANDARD CONDITIONS:

1. Discretionary Authority.
The Corps retains discretionary authority to require a standard individual permit review of any activity eligible for authorization under GP-002-WI based on concern for the aquatic environment.

2. Federal Trust Responsibility to Indian Tribes.
Projects the Corps finds to have potential to affect tribal interests will be coordinated with the appropriate Indian Tribal governments. The Tribe's views and the federal trust responsibility will be considered in the Corps evaluation. Based on treaty rights, no activity or its operation may impair reserved treaty rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

3. Form and Confirmation of Authorization.
Every GP-002-WI authorization that requires submission of an application will be confirmed in writing by the Corps. Any confirmation issued may include required special conditions.

4. Grandfather Provision.
Activities that were determined to be non-reporting under GP-002-WI prior to May 31, 2011 AND that had commenced prior to that date shall be completed no later than April 16, 2013. Reporting activities previously confirmed by our office in writing as authorized under GP-002-WI (expiration dates April 16, 2011 or May 31, 2011), continue to be authorized under the terms of the Corps project verification letter.

5. Case-by-Case Conditions.
The authorized activity must comply with any special conditions that may have been added by the Corps or by a state, tribe, or the United States Environmental Protection Agency in its Section 401 Water Quality Certification or consistency determination under the Coastal Zone Management Act. Such conditions will be specifically identified in any Corps authorization.

6. Avoidance and Minimization.
Discharges of dredged or fill material into waters of the United States must be avoided and minimized to the maximum extent practicable (please see 3.a.4., above for a definition of practicable).

7. State Water quality Certification and Coastal Zone Management (CZM) Consistency Determination.
Some GP-002-WI authorizations may not be valid unless and until the WDNR has confirmed that the activity complies with state water quality certification and/or CZM consistency determination is obtained from or waived by the Wisconsin Coastal Management Program. If such a condition applies, it will be noted in the Corps authorization letter for the project. Refer to conditions 27 and 28 at the end of this document.

8. Proper Maintenance.
Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

9. Erosion and Siltation Controls.
Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark must be permanently stabilized at the earliest practicable date. Work should be done in accordance with state-approved published practices.

Upon completion of earthwork operations, all exposed slopes, fills, and disturbed areas must be given sufficient protection by appropriate means such as landscaping, or planting and maintaining vegetative cover, to prevent subsequent erosion. Cofferdams shall be constructed and maintained so as to prevent erosion into the water. If earthen material is used for cofferdam construction, sheet piling, riprap or a synthetic cover

must be used to prevent dam erosion. All non-biodegradable erosion controls must be removed within two weeks of site stabilization unless otherwise conditioned in the Corps project confirmation letter.

10. Removal of Temporary Fills.

Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation. The timeframe for completing this removal shall be:

(a) Not later than the timeframe stipulated in the activity description (unless extended in writing by our office);

(b) Not later than the timeframe stipulated in our office's confirmation letter; or

(c) Not longer than two weeks from the date the temporary fill was placed in waters of the United States (condition (c) applies only if a timeframe is not otherwise established by applying (a) or (b) above).

11. Federal Threatened and Endangered Species.

GP-002-WI does not affect the Corps responsibility to insure that all Section 404 authorizations comply with Section 7 of the Federal Endangered Species Act (see 3(b)27a.x.(a) for information regarding Chapter 29.604 Wisconsin State Statute).

(a) No activity is authorized which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA) or which is likely to destroy or adversely modify the critical habitat of such species. Permittees shall notify the Corps if any listed species or critical habitat might be affected or is in the vicinity of the project, and shall not begin work on the activity until notified by the Corps that the requirements of the ESA have been satisfied and that the activity is authorized.

(b) Authorization of an activity under GP-002-WI does not authorize the take of a threatened or endangered species as defined under the federal ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with incidental take provisions, etc.) from the United States Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal takes of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the United States Fish and Wildlife Service and National Marine Fisheries Service, WDNR or their world-wide web pages on the internet.

12. Historic Properties, Cultural Resources.

GP-002-WI does not affect the Corps responsibility to insure that all Section 404 authorizations comply with Section 106 of the National Historic Preservation Act (NHPA). No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places (NRHP) is authorized, until the Corps has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must include notification to the Corps in the permit application if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the NRHP, and shall not begin the activity until notified by the Corps that the requirements of the NHPA have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the NRHP. If cultural, archaeological, or historical resources are unearthed during activities authorized by this permit, work must be stopped immediately and the State Historic Preservation Office must be contacted for further instruction.

13. Spawning Areas.
Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

14. Obstruction of High Flows.
To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

15. Adverse Effects from Impoundments.
If the discharge creates an impoundment of water, adverse effects on the aquatic system due to the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

16. Waterfowl Breeding Areas.
Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

17. Navigation.
No activity may cause more than a minimal adverse effect on navigation.

18. Aquatic Life Movements.
No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.

19. Equipment.
Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

20. Water Quality Standards.
All work or discharges to a watercourse resulting from permitted construction activities, particularly hydraulic dredging, must meet applicable federal, state, and local water quality and effluent standards on a continuing basis.

21. Preventive Measures.
Measures must be adopted to prevent potential pollutants from entering the watercourse. Construction materials and debris, including fuels, oil, and other liquid substances, will not be stored in the construction area in a way that allows them to enter the watercourse as a result of spillage, natural runoff, or flooding.

22. Disposal Sites.
If dredged or excavated material is placed on an upland disposal site (above the ordinary high-water mark), the site must be securely diked or contained by an acceptable method that prevents the return of potentially polluting materials to the watercourse by surface runoff or by leaching. Construction of containment areas, whether bulkhead or upland disposal site, must be complete prior to the placement of any dredged material.

23. Suitable Fill Material.
All fill (including riprap), if authorized under this permit, must consist of suitable material (e.g. no trash,

debris, car bodies, asphalt, etc.,) free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act). In addition, rock or fill material used for activities dependent upon this permit and obtained by excavation must either be obtained from existing quarries or, if a new borrow site is opened up to obtain fill material, the State Historic Preservation Office (SHPO) must be notified prior to the use of the new site. Evidence of this consultation with the SHPO will be forwarded to the Corps.

24. Water Intakes/Activities.
An investigation must be made to identify water intakes or other activities that may be affected by suspended solids and turbidity increases caused by work in the watercourse. Sufficient notice must be given to the owners of property where the activities would take place to allow them to prepare for any changes in water quality.

25. Spill Contingency Plan.
A contingency plan must be formulated that would be effective in the event of a spill. This requirement is particularly applicable in operations involving the handling of petroleum products. If a spill of any potential pollutant should occur, it is the responsibility of the permittee to remove such material, to minimize any contamination resulting from this spill, and to immediately notify the state Emergency Management Duty Officer at 1-800-943-0003 and the National Response Center at telephone number 1-800-424-8802.

26. Other Permit Requirements.
No Corps GP-002-WI authorization eliminates the need for other local, state or Federal authorizations, including but not limited to National Pollutant Discharge Elimination System (NPDES) or State Disposal System (SDS) permits.

27. State Section 401 Certification Conditions and Limitations (dated April 28, 2011):
(a) GENERAL CONDITIONS:

i. The applicant shall allow the WDNR reasonable entry and access to the discharge site to inspect the proposed discharge for compliance with this certification and applicable laws and to inspect permitted discharges for compliance with this certification and applicable laws.

ii. Once wetland work commences, all wetland construction activities must be continuous (on a daily basis) until the project is completed and the site is stabilized.

iii. The removal of vegetative cover and exposure of bare ground must be restricted to the minimum amount mulching, sodding, diversion of surface runoff, installation of straw bales or silt screens, construction of settling basins, or similar methods as soon as possible after removal of the original ground cover as described in the Wisconsin Construction Site Handbook (BMP's).

iv. This permit has been issued with the understanding that any construction equipment used is the right size to do the job, and can be brought to and removed from the project's site without unreasonable harm to vegetative cover or fish or wildlife habitat.

v. Final site stabilization requires the re-establishment of native vegetation and must not contain any exotic species.

vi. Flush all other equipment with hot water of 105° F. to 110° F. for a period of 30 minutes or hot water of 140° F. for a period of 5 minutes; or, instead of flushing equipment, leave the equipment in a sunny location so that it dries completely (at least five full days).

vii. Inspect all equipment surfaces, scrape off any attached mussels, remove any aquatic plant materials (fragments, stems, leaves, or roots), and dispose of removed mussels and plants in a garbage can prior to leaving the water access area.

viii. You must ensure that all equipment used for the project has been adequately de-contaminated for zebra mussels prior to being used in other waters of the state. All equipment that comes in contact with infested waters including, but not limited to, tracked vehicles, barges, boats, turbidity curtain, sheet pile, and pumps must be thoroughly disinfected.

ix. If any conditions of this certification are found to be invalid or unenforceable, certification for all activities to which that condition applies is denied.

x. The following activities are not eligible for certification under this water quality certification action for GP-002-WI:

(a) Activities likely to jeopardize the continued existence of a state designated threatened or endangered species or a species proposed for such designation or which is likely to destroy or adversely modify the habitat of such species.
(b) Activities that result in adverse impacts to fishery spawning habitat or adversely affect avifauna breeding areas or substantially disrupt the movement of those species that normally migrate from open water to upland or vice versa (i.e. amphibians, reptiles and mammals).
(c) Activities detrimental to waters of the state, including wetlands, that would adversely affect designated areas of special natural resource interest as defined in NR 103.04, Wis. Adm. Code.
(d) Activities, individually or cumulatively, detrimental to waters of the state, including wetlands, that would further the substantial degradation of designated impaired waters of the state.

xi. Applicants seeking authorization under this regional general permit (except the non-reporting general permit) shall complete a Joint State/Federal Permit Application and submit two copies of each to the appropriate local COE office and the local WDNR Water Management Permit Intake Specialist. Applications for water quality certification must be complete as determined by the WDNR. Please note an application fee is required for state water quality certification activities identified under Section II below.

(b) WATER QUALITY CERTIFICATION:

i. The WDNR grants water quality certification for the Non-Reporting GP subject to compliance with all applicable conditions in GP-002-WI and compliance with conditions 3.b.27(a)i. through xi. above.

ii. The WDNR grants water quality certification for projects that satisfy all applicable conditions of GP-002-WI under the Reporting GP subject to the General Conditions above, and:

iii. The applicant receives written confirmation from the department that their proposed activity(s) is

consistent with the requirements of NR 299 Water Quality Certification, Wis. Adm. Code, and the Department confirms that the applicant has adequately demonstrated that no other practicable alternative exists which would not adversely impact wetlands and would not result in other significant adverse environmental consequences and the Department confirms that the activity is consistent with the requirements of NR 103.08, Wis. Adm. Code.

iv. Certification for Hydropower Projects under this General Permit is conditionally approved when the applicant has received State Individual Water Quality Certification under the FERC regulatory process.

NOTE: If additional information is needed, or if heavy snow or ice cover prevents WDNR from completing their review, the normal processing time for confirming activities eligible for authorization under this certification may be extended (by written notice from WDNR to the applicant).

(c) NOTICE OF APPEAL RIGHTS:

If you believe that you have a right to challenge this decision, you should know that Wisconsin Statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

To request a contested case hearing pursuant to section 227.42, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources.

This determination becomes final in accordance with the provisions of NR 299.05(7), Wisconsin Administrative Code, and is judicially reviewable when final. For judicial review of a decision pursuant to Sections 227.52 and 227.53, Wisconsin Statutes, you have 30 days after the decision becomes final to file your petition with the appropriate circuit court and to serve the petition on the Secretary of the Department of Natural Resources. The petition must name the Department of Natural Resources as the respondent.

Reasonable accommodation, including the provision of informational material in an alternative format, will be provided for qualified individuals with disabilities upon request. This notice is provided pursuant to section 227.48(2), Stats.

28. Wisconsin Coastal Management Program (WCMP) Conditions.
The WCMP's Federal consistency determination for GP-002-WI provides that no GP-002-WI authorization for an activity taking place in coastal wetlands identified as ridge and swale complexes and/or wetlands adjacent to the Mink River (Door County), and the Kakagon and Bad Rivers (Ashland County) will be valid unless and until a Federal consistency determination is granted or waived by the WCMP. This requirement therefore is incorporated as a permit condition of GP-002-WI. Applicants will be notified of this condition in the Corps's GP reporting authorization for projects in these areas.

US Army Corps
of Engineers
St Paul District

Public Notice

ISSUED: 9-January-2013
EXPIRES: 31-December-2017

AUTHORITIES:
Section 404, Clean Water Act
Section 10, Rivers and Harbors Act

REFER TO: GP-004-WI (2012-01421-DJM)

ISSUANCE OF REGIONAL GENERAL PERMIT GP-004-WI IN THE STATE OF WISCONSIN EXCEPT WITHIN THE EXTERIOR BOUNDARIES OF INDIAN RESERVATIONS

I. PURPOSE OF THIS PUBLIC NOTICE. The purpose of this public notice is to announce the issuance of a general permit, GP-004-WI, for the state of Wisconsin (attached).

II. BACKGROUND. The Corps is issuing GP-004-WI to replace and update the transportation coverage under Section 404 of the Clean Water Act (Section 404) and Section 10 of the Rivers and Harbors Act (Section 10) afforded by GP-001-WI.

GP-001-WI is currently suspended and slated for revocation. GP-001-WI has reporting categories which may be used to authorize the following types of non-transportation projects: activities exempt from state statute under Chapter 30, and other projects authorized under Chapter 30/31 that impact less than 0.5 acre of waters of the United States.

Projects currently authorized by GP-001-WI that do not fit GP-004-WI (transportation projects) may be eligible for GP-003-WI. The suspension of GP-001-WI and issuance of GP-003-WI are addressed in two separate public notices.

The general categories of GP-004-WI are summarized below. Please note that some of the categories represent a change from the draft GP-004-WI publicly noticed on July 2, 2012. These changes between draft and final GP-004-WI have been implemented in part based on public comments received.

Non-reporting section: The following seven categories of activities are eligible for authorization without any requirement to apply to or contact the District, provided that all terms and conditions of GP-004-WI are met. Individual review of non-reporting activities authorized by GP-004-WI would not normally be performed, except when an applicant requests verification that an activity complies with the conditions of GP-004-WI.

a. *Maintenance of Structures & Discharges*: The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, provided that the activity does not affect more than ½ acre of waters of the United States nor more than 250 linear feet (in sum) of watercourse. Temporary impacts necessary to conduct the maintenance activity are also authorized, provided the thresholds described above are not exceeded.

b. *Maintenance Dredging*: Excavation and removal of accumulated sediment to upland areas for maintenance of existing marina basins and boat slips, and access channels to marinas or boat slips to previously authorized depths or controlling depth for ingress or egress (whichever is less). This category also authorizes up to 5,000 square feet of temporary structures, fills, and work necessary to conduct the maintenance dredging.
c. *Piers, Docks, Wharves, Boat Shelters, and Pilings*: Impacts associated with the placement or construction of these projects provided the free movement of water is not impeded and sediment is not trapped. Piers, docks, and wharves may not extend further than 40 feet, into a federal navigational channel, or be constructed in a manner to result in the mooring of vessels within a federal navigational channel.
d. *Bank Stabilization*: Work proposed to provide bank stabilization provided the project does not impact wetlands, impacts less than 500 linear feet of shoreline, and any discharge does not exceed an average of one cubic yard per running foot below the plane of the ordinary high water mark. Temporary impacts are also authorized provided they do not exceed 4,000 square feet of impact.
e. *Outfall Structures*: The construction of outfall structures and associated intakes where the effluent is authorized, exempted, or otherwise in compliance with Section 402 of the Clean Water Act.
f. *Activities in Previously Filled Areas of Navigable Waters*: Activities in areas of navigable waters of the United States that were filled post-enactment of Section 10, provided that the work does not affect the course, location, or condition of the waterbody in such a manner as to impact it's navigable capacity. The work authorized shall not extend or expand the footprint of the previously authorized work or structure under, over, or in any areas of navigable water.
g. *Oil Spill/Hazardous Substances Containment/Cleanup*: Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR part 300) including containment, cleanup, and mitigation efforts.

Reporting activities: the following five activities are eligible for authorization by the reporting GP-004-WI. These GP's require notification to, and written confirmation from, the District prior to commencing work in waters of the U.S.

a. *Structures*: Activities that include temporary, seasonal, or permanent placement of structures are eligible, provided the activity does not: incorporate a discharge regulated under Section 404; does not impact greater than 10,000 square feet of waters of the United States; and is limited to no more than 500 linear feet of waterway impact (in sum).
b. *Dredging*: Removal of material (to be placed in uplands) from up to 0.5 acre below the ordinary high water mark or the mean high water mark of waters of the United States. No wetland impacts (direct or secondary) are authorized, with the exception to allow

dredging of previously dredged wetlands below the ordinary (mean) water mark that are subject to regulation under Section 10.

c. *Discharges of Dredged or Fill Material*: Minor discharges of dredged or fill material (including structural discharges) into all waters of the United States, provided the activity does not impact greater than 10,000 square feet of waters of the United States and the discharge is not placed for the purpose of stream channelization or diversion.

d. *Beach Nourishment*: Work (including temporary impacts) associated with the placement of sand or pea gravel in waters of the United States. This category may not be used to impact greater than 0.5 acre of waters of the United States, and no sand or pea gravel may be placed in wetlands above the ordinary high water mark.

e. *Temporary Construction, Access, and Dewatering*: Temporary structures and discharges, including cofferdams needed for construction activities or access fills or dewatering of construction sites. Notification to the District must demonstrate reasonable measures to avoid and minimized impacts to waters of the U.S. including a restoration plan.

III. ADDITIONAL INFORMATION. GP-004-WI is issued according to the provisions of Section 404 of the Clean Water Act, includes consideration of the public interest (33 CFR 320), the guidelines set forth under Section 404(b)(1) of the Clean Water Act (40 CFR 230), and Section 10 of the Rivers and Harbors Act.

GP-004-WI does not affect any existing or future Department of the Army Section 10 of the Rivers and Harbors Act NWPs, or any other regional GPs in Wisconsin.

GP-004-WI may be viewed on the District Internet web site at:
http://www.mvp.usace.army.mil/regulatory under the "General Permits and Letters of Permission Procedures" section.

Questions may be directed to Mrs. Rebecca Graser in our Waukesha office at (262) 717-9531, extension 3. Inquiries may also be submitted through the website or mailed to: Regulatory Branch, St. Paul District, Corps of Engineers, 180 Fifth Street East, St. Paul, Minnesota, 55101.

FOR THE DISTRICT ENGINEER:

Tamara E. Cameron
Chief, Regulatory

DEPARTMENT OF THE ARMY PERMIT

Permittee: The General Public in Wisconsin

Permit No. GP-004-WI

Issuing Office: St. Paul District, United States Army Corps of Engineers

Issuance Date: January 9, 2013

Expiration Date: December 31, 2017

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate St. Paul District Corps of Engineers.

GENERAL PERMIT AUTHORIZATIONS: The general public in the state of Wisconsin is authorized to perform work in accordance with the terms and conditions of the general permit (GP) categories specified below. In addition, some GP authorizations may be subject to project-specific special conditions that will be specified in the St. Paul District's letter of confirmation. Refer to the appropriate sections of this permit for a description of GP eligible activities, conditions, limitations, exclusions and application/notification and instructions.

PROJECT DESCRIPTION AND LOCATION: GP-004-WI applies to certain activities in waters of the United States, including wetlands, as described herein, in the state of Wisconsin except within the exterior boundaries of federally recognized Indian Reservations. In general, GP-004-WI may be used for activities whose purposes include maintenance, dredging, bank stabilization, hazardous substances containment/cleanup, structures, beach nourishment, temporary construction, and discharges of dredged and fill material in waters of the United States (see GP categories 2.a and 3.a). Unless otherwise noted, GP-004-WI may be used to authorize these activities pursuant to the following authorities:

Section 404 of the Clean Water Act (33 U.S.C. 1344): for discharges of dredged or fill material into waters of the United States; and

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403): for work and structures that are located in, under or over any navigable water of the United States that affect the course, location, condition, or capacity of such waters, or the excavating from or depositing of material in such waters.

Further Information:

1. Bridges over navigable waters of the United States also require authorization from the United States Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899.

2. Limits of the GP-004-WI Authorization:
   (a) This GP does not obviate the need to obtain other federal, state, or local authorizations required by law.
   (b) This GP does not grant any property rights or exclusive privileges.
   (c) This GP does not authorize any injury to the property or rights of others.

(d) This GP does not authorize interference with any existing or proposed federal project.

3. In authorizing work using GP-004-WI, the Federal Government does not assume any liability, including damages to, or due to, the following:

(a) The permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

(b) The permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

(c) To persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

(d) Design or construction deficiencies associated with the permitted work.

(e) Claims associated with any future modification, suspension, or revocation of this permit.

4. The determination by this office that an activity is not contrary to the public interest will be made in reliance on the information provided by the applicant.

5. This office may reevaluate its decision on an authorization at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

(a) The applicant fails to comply with the terms and conditions of this general permit.

(b) The information provided by the applicant proves to have been false, misleading, incomplete, or inaccurate.

(c) Significant new information surfaces which this office did not consider in reaching the original public interest decision.

A reevaluation may result in a determination to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The enforcement procedures provide for the issuance of an administrative order requiring the permittee to comply with the terms and conditions of the permit and for the initiation of legal action where appropriate.

6. This office may also reevaluate its decision to issue GP-004-WI at any time the circumstances warrant. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7.

This general permit becomes effective when the federal official, designated to act for the Secretary of the Army, has signed below.

for Michael J. Price
Colonel, Corps of Engineers
District Engineer

09 Jan 2013
Date

GP-004-WI PROVISIONS AND ACTIVITIES

This document describes the Section 404 Clean Water Act (Section 404) and Section 10 Rivers and Harbors Act of 1899 (Section 10) general permit conditions, activities, and authorization procedures implemented by the St. Paul District Corps of Engineers (Corps) in GP-004-WI.

Persons proposing to do work should note that, in ALL cases, GP-004-WI requires that adverse impacts on water and wetland resources be avoided and minimized to the maximum extent practicable.

1. GP-004-WI PROVISIONS

a. GP-004-WI DEFINITIONS:

1. Calculation of Aquatic Impact Thresholds: Impacts shall be calculated using the units of measure specified in each permitting category (i.e. area, linear footage, and/or volume) of waters of the United States temporarily and permanently occupied by a structure, plus the area (or other measure as required by the category) of waters of the United States temporarily and permanently filled, excavated, inundated, or drained (unless otherwise indicated). Waters of the United States converted to another wetland cover type may be considered a permanent impact. Activities must meet all limitations contained in a permit category (for example: linear and area threshold limits).

2. Compensatory Mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or, in certain circumstances, preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization measures have been incorporated into the project.

3. Currently Serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

4. Discharge: The term discharge (as defined in 33 CFR 323.2) means any discharge of dredged or fill material in waters of the United States.

5. Fill Material: Fill material (as defined in 33 CFR 323.2) means material placed in waters of the United States where the material has the effect of:
   (a) Replacing any portion of a water of the United States with dry land; or
   (b) Changing the bottom elevation of any portion of a water of the United States.
Examples of fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States. The term fill material does not include trash or garbage.

6. Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and

cultural importance to an Indian tribe or Native Hawaiian organization that also meet the National Register criteria (36 CFR 60).

7. Independent Utility: A test to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single, complete projects with independent utility.

8. Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

9. Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose.

10. Single and Complete Project: The sum of waters of the United States proposed to be impacted by the project proponent. For "phased" developments, each phase may constitute a single and complete project if it has independent utility.

11. Structural Discharge: Discharges of material such as concrete, sand, rock, etc. into tightly sealed forms or cells where the material will be used as a structural member such as a utility pole, bridge support, ramp surface, or retaining wall.

13. Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

b. GP-004-WI GENERAL CONDITIONS (applicable to all GP-004-WI authorizations):

1. Duration of Authorization. GP-004-WI expires on December 31, 2017 (unless suspended, revoked or modified). Unless otherwise specified in the Corps confirmation letter, the time limit for completing work authorized by GP-004-WI ends upon the expiration, suspension, or revocation date of this GP-004-WI (2012-01421-DJM). Activities authorized under the non-reporting categories of GP-004-WI where construction has commenced or are under contract to commence construction, will remain authorized provided the activity is completed within 12 months of the date of the GP-004-WI expiration, suspension, or revocation; whichever is sooner. If you find that you require additional time to complete activities authorized, submit your time extension request to this office for consideration at least three months before the expiration date is reached.

2. Special Conditions. The Corps may impose additional conditions on a project authorized pursuant to the reporting categories of GP-004-WI that are determined necessary to avoid or minimize adverse effects on navigation or the environment to ensure that the project is in the public interest. Such conditions will be

specifically identified in any Corps confirmation letter. Failure to comply with all conditions and limitations of the authorization, including special conditions incorporated into the Corps' confirmation letter, constitutes a permit violation and may subject the permittee to criminal, civil or administrative penalties, and appropriate environmental remediation (which could include restoration of the site to its pre-violation condition).

3. Maintenance and Transfer. You must maintain the activity authorized by GP-004-WI in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party. Should you wish to cease to maintain an activity authorized by a reporting category of GP-004-WI, or abandon it without a good faith transfer; you must obtain a modification of the authorization from this office, which may require restoration of the area. If you wish to transfer responsibility for completion or maintenance of the project to another entity, please contact this office so we may document the transfer of the authorization. You are not relieved of your responsibilities under this permit until the transfer has been processed and acknowledged by the Corps of Engineers.

4. Historic Properties, Cultural Resources. Project proponents for reporting GP-004-WI categories shall notify the Corps if any historic properties listed, determined eligible, or which the project proponent has reason to believe may be eligible for listing on the NRHP, might be affected or is in the vicinity of the project. Information concerning the location and existence of cultural resources may be obtained by contacting the State Historic Preservation Officer (SHPO) at (608) 264-6505, the NRHP, and the appropriate tribal government.

(a) No activity which may affect historic properties listed, or eligible for listing, on the NRHP is authorized, until the Corps has complied with the provisions of 33 CFR 325, Appendix C.

(b) If cultural, archaeological, or historical resources are unearthed during activities authorized by this permit, work must be stopped immediately and the Corps, SHPO and/or Tribal Historic Preservation Office (THPO) must be contacted for further instruction. If you discover any previously unknown historic or archaeological remains while accomplishing any activity authorized by GP-004-WI, you must immediately stop work and notify this office of what you have found. The Corps will initiate the coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing on the NRHP.

5. Site Access. You must allow representatives from this office to inspect the proposed project site and the authorized activity at any time deemed necessary to ensure that it is being, or has been, constructed and maintained in accordance with the terms and conditions of GP-004-WI.

6. Navigation. The following conditions are part of all Corps of Engineers permits that provide authorization under Section 10 of the Rivers and Harbors Act:

(a) No activity may cause more than a minimal adverse effect on navigation and there shall be no unreasonable interference with navigation by use of the activity authorized herein.

(b) Any safety lights and signals prescribed by the United States Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of

Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

7. Discretionary Authority. The Corps retains discretionary authority to require a standard individual permit review of any activity eligible for authorization under GP-004-WI based on concern for navigation, the aquatic environment, or any public interest factor.

8. Federal Responsibility to Indian Tribes. Projects the Corps finds to have potential to affect tribal interests will be coordinated with the appropriate Indian Tribal governments and the Bureau of Indian Affairs as appropriate. The Tribe's views will be considered in the Corps evaluation of the project. Based on treaty rights, no activity or its operation may impair reserved treaty rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. Form and Confirmation of Authorization. Every reporting GP-004-WI authorization will be confirmed in writing by the Corps. Any confirmation issued may include special conditions which are part of this permit as it pertains to that project being authorized.

10. Avoidance and Minimization. Impacts to waters of the United States must be avoided and minimized to the maximum extent practicable (please see 1.a.9., above for a definition of practicable).

11. Water Quality Standards. All work or discharges to a watercourse resulting from GP-004-WI authorized construction activities, particularly hydraulic dredging, must meet applicable federal, state, and local water quality and effluent standards on a continuing basis. Water intakes or other activities that may be affected by suspended solids and turbidity increases caused by work in the watercourse must be identified and sufficient notice must be given to the owners of property where the activities would take place to allow them to prepare for any changes in water quality. Installation of intake structures that are not directly associated with an outfall structure or outfall structures that are not in compliance with regulations issued under the National Pollutant Discharge Elimination System program (Section 402 of the Clean Water Act) are not eligible for authorization under GP-004-WI.

12. Erosion and Siltation Controls. Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark shall be permanently stabilized at the earliest practicable date. Work should be done in accordance with state-approved published practices as described in NR 216 of Wisconsin Administrative Code.
Upon completion of earthwork operations, all exposed slopes, fills, and disturbed areas must be given sufficient protection by appropriate means such as landscaping, or planting and maintaining vegetative cover, to prevent subsequent erosion. Cofferdams shall be constructed and maintained so as to prevent erosion into the water. If earthen material is used for cofferdam construction, sheet piling, riprap or a synthetic cover shall be used to prevent dam erosion. All non-biodegradable erosion controls must be removed within two weeks of site stabilization unless otherwise noted in the Corps GP-004-WI reporting confirmation letter.

13. Removal of Temporary Fills. All temporary fills must be entirely removed and the affected areas returned to their preexisting elevation and hydrology. The timeframe for completing this removal shall be:
(a) Not later than the timeframe stipulated in the activity description (unless modified in writing by our

office);

(b) Not later than the timeframe stipulated in our office's reporting GP-004-WI confirmation letter; or

(c) Not longer than two weeks from the date the temporary fill was placed in waters of the United States (condition (c) applies only if a timeframe is not otherwise established by applying (a) or (b) above).

14. Federal Threatened and Endangered Species. Prospective permittee's for reporting GP-004-WI categories shall notify the Corps if any federal threatened or endangered (protected) species or critical habitat might be affected or is in the vicinity of the project. Information about protected species may be obtained by contacting the United States Fish and Wildlife Service (FWS) at (920) 866-1717. The Corps website (http://www.mvp.usace.army.mil/regulatory/) also contains a link to the FWS list of protected species for each Wisconsin county.

(a) No activity is authorized by GP-004-WI which is likely to jeopardize the continued existence of a protected species or a species proposed for such designation, as identified under the Endangered Species Act (ESA) or which is likely to destroy or adversely modify the critical habitat of such species, unless those activities are determined to comply with the applicable procedures of Section 7 of the ESA.

(b) Authorization of an activity under GP-004-WI does not authorize the take of a protected species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with incidental take provisions, etc.) from the FWS, both lethal and non-lethal takes of protected species are in violation of the ESA.

15. Spawning Areas. Activities, including discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

16. Obstruction of High Flows. To the maximum extent practicable, activities authorized by GP-004-WI shall not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

17. Adverse Effects from Impoundments and Diversions of Water. If the activity authorized creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable. GP-004-WI may not be used to authorize all or any portion of a project that would divert more than 10,000 gallons/day of surface water or groundwater into or out of the Great Lakes Basin.

18. Fills Within 100-Year Floodplains. All Corps GP-004-WI authorizations shall comply with applicable FEMA approved state or local floodplain management requirements.

19. Waterfowl Breeding Areas. Impacts to breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

20. Aquatic Life Movements. No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.

21. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

22. Preventive Measures. Measures must be adopted to prevent potential pollutants from entering waters of the United States. Construction materials and debris, including fuels, oil, and other liquid substances, will not be stored in a way that allows them to enter the watercourse as a result of spillage, natural runoff, or flooding.

23. Disposal Sites. If dredged or excavated material is placed on an upland disposal site (above the ordinary high-water mark), the site must be securely diked or contained by an acceptable method that prevents the return of potentially polluting materials to the watercourse by surface runoff or by leaching. Construction of containment areas, whether bulkhead or upland disposal site, must be complete prior to the placement of any dredged material.

24. Suitable Fill Material. All fill (including riprap), if authorized under this permit, must consist of suitable material (e.g. no trash, debris, car bodies, asphalt, etc.,) free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

25. Spill Contingency Plan. A contingency plan must be formulated that would be effective in the event of a spill. This requirement is particularly applicable in operations involving the handling of petroleum products. If a spill of any potential pollutant should occur, it is the responsibility of the permittee to remove such material, to minimize any contamination resulting from this spill, and to immediately notify the state Emergency Management Duty Officer at 1-800-943-0003 and the National Response Center at the United States Coast Guard at telephone number 1-800-424-8802.

26. Other Permit Requirements. A Corps GP-004-WI authorization does not eliminate the need for other local, state or federal authorizations, including but not limited to National Pollutant Discharge Elimination System (NPDES) or State Disposal System (SDS) permits.

27. State of Wisconsin Section 401 Water Quality Certification. The Wisconsin Department of Natural Resources has denied blanket for water quality certification for GP-004-WI. Therefore all projects authorized by GP-004-WI and involving a discharge of dredged or fill material under Section 404 require the permittee obtain a Section 401 Water Quality Certification or waiver from the WDNR prior to starting work.

28. Wisconsin Coastal Zone Management Program (WCMP) Conditions. The WCMP's Federal consistency determination for GP-004-WI provides that no reporting (category 3.a) GP-004-WI authorization for an activity taking place in coastal wetlands identified as ridge and swale complexes and/or wetlands adjacent to the Mink River (Door County), and the Kakagon and Bad Rivers (Ashland County) will be valid unless and until a Federal consistency determination is granted or waived by the WCMP. This requirement therefore is incorporated as a permit condition of reporting GP-004-WI. Applicants will be notified of this condition in the Corps's GP confirmation letter for projects in these areas.

2. **NON-REPORTING GENERAL PERMIT CATEGORIES**

The following activities, for a single and complete project, that comply with all terms and conditions of GP-004-WI are authorized by this category.

Project proponents with non-reporting activities should consult the Wisconsin Department of Natural Resources (WDNR) and local governments concerning state and local permit requirements. In addition, all permits involving a discharge of dredged or fill material under §404 are provisional and must obtain water

quality certification (or waiver) from the WDNR. See Department of the Army GP-004-WI General Conditions: 1.b.26, 1.b.27, and 1.b.28.

Note that certain areas and activities are EXCLUDED from this non-reporting general permit (GP) as described in section 2.b.

a. CATEGORIES OF ACTIVITIES ELIGIBLE FOR NON-REPORTING AUTHORIZATION:

1. Maintenance.
The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the activity does not impact more than ½ acre of waters of the United States nor more than 250 linear feet (in sum) of watercourse.
The structure or fill is not to be put to uses differing from those specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized so long as the ½ acre limit is not exceeded.
This GP category may be used for the replacement of bridge abutments and culverts, side-slope flattening, and reconditioning of roadbeds. This GP category may not be used for the addition of new lanes or multi-modal paths on roadways. Any impacts to waters of the United States shall be limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill.
This GP category (2.a.1) also authorizes temporary structures, fills, and work necessary to conduct the maintenance activity authorized under this category, provided the sum of temporary and permanent impacts to waters of the United States does not exceed the thresholds described above. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills shall consist of appropriate materials placed in a manner that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevation and hydrology. Exposed soils must be vegetated prior to project completion. This GP category does not authorize projects where the only regulated activity is the temporary structure or fill. Such projects may be authorized under the reporting category for "Temporary Construction, Access, and Dewatering," under 2.a.5, below.
This GP category also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. This GP category does not authorize beach restoration or projects whose basic project purpose requires dredging. This GP category authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

2. Maintenance dredging.
Dredging and removal of accumulated sediment for maintenance of existing marina basins, boat slips, and access channels to marinas or boat slips to previously authorized depths or controlling depths for ingress/egress, whichever is less, provided the dredged material is deposited in uplands and proper siltation controls are used.

This GP category also authorizes temporary structures, fills, and work necessary to conduct maintenance dredging with no more than 5,000 square feet of impact to waters of the United States. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams are necessary for construction activities, access fills or dewatering of construction sites. Temporary fills must consist of appropriate materials placed in a manner that will not be eroded by expected high flows. Temporary fills shall be removed in their entirety and the affected areas returned to pre-construction elevations. Exposed soils must be vegetated prior to project completion.
This GP category does not authorize maintenance dredging for beach restoration, new waterway channelization, stream relocation projects, and may not be used for projects in waters that are impaired by contaminated sediment on the EPA-approved Wisconsin Section 303(d) list of impaired waters. No permanent discharge of fill shall be authorized as part of this GP category. This GP category does not authorize impacts within wetlands.

3. Piers, docks, wharves, boat shelters, and pilings.
Construction of new piers, docks, boat shelters, boat hoists, boat lifts, pilings/piling clusters, and wharves, provided the work meets all of the following:

(a) The activity may not prevent the free movement of water, impede the surface or subsurface flow into or from any wetland, nor cause littoral drift deposits upon the bed of the waterway. In addition, structures containing screens or similar constructs, which would trap or accumulate aquatic plants or other debris, are not authorized under this category.

(b) The maximum distance a pier, dock, or wharf may extend into the water from the shoreline is the greater of (i) or (ii) below, provided the pier, dock or wharf does not exceed 40 feet waterward (perpendicular) from the shoreline, does not extend into a federal navigational channel, and is not designed in a manned to moor vessels within a federal navigational channel.

(i) From the point where the water is 3 feet at its maximum depth, measured at summer low level; or

(ii) To the point where there is adequate depth for mooring a boat or using a boat hoist or lift (for non-fixed keel sailboats this shall be measured with the centerboard or dagger boards raised).

(c) The pier, dock, or wharf may not exceed 6 feet in width. An “L,” “T,” or catwalk may be authorized provided it does not exceed 6 feet in width. A loading platform may exceed 6 feet in width provided the platform area does not exceed 200 square feet.

(d) Piers, docks, and wharves must be floating or constructed on pilings and may not be solid structure or constructed on rock-filled cribs or similar devices serving as a foundation. The structure may not completely enclose any portion of a waterbody.

(e) Boat shelters, boat hoists, and boat lifts be constructed adjacent to a pier, wharf, or shoreline and must be designed and used for the berthing of a single watercraft. Post-construction, no more than 2 boat slips or boat shelters are authorized for the first 50 feet of riparian owner’s shoreline footage. No more than one additional boat slip or boat shelter may be authorized for each additional 50 feet of that same riparian owner’s contiguous shoreline.

(f) Boat shelters may not exceed 12 feet by 24 feet on waters less than 1,000 acres in size. On waters greater than 1,000 acres, the shelter may not exceed 14 feet by 24 feet. Boat shelters may include a roof, but are not eligible if they include walls, sides, or equivalent construction such as canvas side drops. Roofs shall be supported with the minimum vertical components necessary.

(g) Pilings are eligible for authorization under this category (2.a.3) only if the piling is placed for the purposes of deflecting ice to protect an existing or proposed structure, or providing a pivot point for turning watercraft. Pilings may not be placed for the purpose of mooring a boat, except in Lake Michigan, Lake

Superior, or the Mississippi River.

(h) Piling clusters are eligible for authorization under this category (2.a.3) only if the cluster does not exceed 5 individual piles. The individual piles must be placed adjacent to each other and firmly bound together. Any required dredging or deposits of sand, gravel, or stone associated with installation of the pile cluster shall not exceed 2 cubic yards of impact.

4. Bank stabilization.

Work or discharges of dredged or fill material in waters of the United States for bank stabilization activities necessary for erosion prevention provided the activity meets all of the following criteria:

(a) No material is placed in excess of the minimum needed for erosion protection;

(b) The activity is no more than 500 feet in length (sum) along the bank(s);

(c) Material discharged will not exceed an average of one cubic yard per running foot along the bank below the plane of the ordinary high water mark;

(d) The activity does not involve impacts to wetlands;

(e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;

(f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and

(g) All excavation is the minimum needed and is proposed only to provide a stable slope.

This GP category also authorizes temporary structures, fills, and work necessary to construct the bank stabilization activity up to a maximum temporary impact of 4,000 square feet. Appropriate measures shall be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges are necessary for construction activities, access fills or dewatering of construction sites. Temporary fills must consist of appropriate materials placed in a manner that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. Exposed soils must be vegetated prior to project completion. Invasive species shall not be used for bioengineering or vegetative bank stabilization. *Note*: Projects authorized under this GP shall avoid and minimize permanent adverse effects on aquatic resources. In low energy environments, biostabilization (using biodegradable materials such as coir logs, often combined with sloping and planting) is generally adequate erosion protection. Non-biodegradable materials, such as riprap, are generally appropriate in moderate to high energy environments (in lakes where the average straight-line distance across the waterbody is greater than 1 mile and/or near high-wake zones; or in high energy streams), or where there is significant erosion placing existing infrastructure at risk. In moderate energy environments, integrated bank treatment (riprap at toe of the bank combined with biostabilization above the toe) may be appropriate.

5. Outfall structures.

Activities related to construction of outfall structures and associated intake structures where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted, or which are otherwise in compliance with the regulations issued under the National Pollutant Discharge Elimination System program (Section 402 of the Clean Water Act). This GP only authorizes those intake structures directly associated with an authorized outfall structure.

6. Activities in areas of navigable waters of the United States that were filled post-enactment of Section 10 of the Rivers and Harbors Act of 1899.

Modifications to previously authorized work or structures in navigable waters provided the modification does not affect the course, location, or condition of the waterbody in such a manner as to impact its navigable capacity. The modification shall not extend or expand the footprint of the previously authorized work or structure under, over, or in the navigable water. Previously authorized includes:

(a) Structures or work in navigable waters completed before December 18, 1968;

(b) Structures or work in waterbodies over which the District Engineer had not asserted jurisdiction at the time the activity occurred; or

(c) Structures or work authorized by a Department of the Army Section 10 permit.

7. Oil Spill/Hazardous Substances Containment/Cleanup.

Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR part 300) including containment, cleanup, and mitigation efforts, provided that the activities are done under either:

(a) The Spill Control and Countermeasure Plan required by 40 CFR 112.3;

(b) The direction or oversight of the federal on-scene coordinator designated by 40 CFR part 300; or

(c) Any approved existing state, regional, or local contingency plan provided that the Regional Response Team (if one exists in the area) concurs with the proposed response efforts.

This GP category also authorizes activities required for the cleanup of oil releases in waters of the United States from electrical equipment that are governed by the Environmental Protection Agencies (EPA) polychlorinated biphenyl spill response regulations at 40 CFR part 761, as well as Court ordered remedial action plans or related settlements.

This GP category also authorizes the use of temporary structures and fills in waters of the United States for spill response training exercises. This GP category does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of oil, hazardous or toxic waste. All appropriate governmental units, including the Corps, shall be informed of any such activities as soon as practical.

Note: Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA as approved or required by EPA, are not required to obtain permits under Section 404 or Section 10.

b. AREAS/ACTIVITIES EXCLUDED FROM THE NON-REPORTING AUTHORIZATION:

1. The GP-004-WI non-reporting categories do not authorize any activity in:

(a) Calcareous fens as identified by the WDNR, and wetlands within 300 feet of such fens (except hazardous material spill confinement and cleanup described at 2.a.7);

(b) The Pleasant Prairie area identified in Corps permit 198700323 (except bank stabilization described in 2.a.4);

(c) National Wild and Scenic Rivers listed at: http://www.rivers.gov/rivers/site-index.php;

(d) Wild rice waters or wetlands within 300 feet of a wild rice water. Location information for wild rice waters is available on the WDNR's surface water data viewer at: http://dnrmaps.wi.gov/imf/imf.jsp?site=SurfaceWaterViewer;

(e) Trout waters identified on the WDNR's surface water data viewer (link above); and

(f) Coastal wetlands in ridge and swale complexes as identified on WDNR maps, and wetlands adjacent to the Mink River in Door County or the Bad River in Ashland County.

2. Removal of vessels listed or eligible for listing on the National Register of Historic Places are not eligible for authorization under the non-reporting categories of GP-004-WI.

3. Activities that would adversely affect cultural and archaeological resources are not authorized by the non-reporting categories of GP-004-WI. No activities which may affect historic properties listed or eligible for listing, on the NRHP are authorized by the non-reporting categories of GP-004-WI. Information concerning cultural resources may be obtained by contacting the SHPO and appropriate THPO at (608) 264-6505.

4. Activities that fail to obtain any required local, state, tribal, or federal authorization are not eligible for non-reporting GP-004-WI authorization.

5. No activity is authorized by the non-reporting GP-004-WI which is likely to jeopardize the continued existence of a threatened or endangered (protected) species or a species proposed for such designation, as identified under the ESA, or which is likely to destroy or adversely modify the critical habitat of such species. Information about protected species may be obtained by contacting the FWS at (920) 866-1717. The Corps website (http://www.mvp.usace.army.mil/regulatory/) also contains a link to the FWS list of protected species for each Wisconsin county.

NOTE: Activities excluded above may be eligible for authorization under a reporting GP, a letter of permission, or a standard individual permit.

C. APPLICATION/EVALUATION PROCEDURES UNDER THE NON-REPORTING AUTHORIZATION:

An activity authorized by the non-reporting portion of this GP may commence when project proponents have very carefully confirmed that the activity will be conducted in compliance with the terms and conditions of GP-004-WI. The permittee is responsible for insuring that all work is done in accordance with the conditions and limitations of categories 2.a. It is strongly recommended that project proponents retain documentation that all terms and conditions of GP-004-WI have been met by the proposed project. No application to the Corps is required; however, if requested, the Corps will confirm whether or not proposed work is authorized by the non-reporting GP. General Condition 1.b.10 of GP-004-WI requires that impacts on water and wetland resources are avoided and minimized to the maximum extent practicable.

3. REPORTING GENERAL PERMIT CATEGORIES

The following activities, for a single and complete project, that comply with the terms and conditions of GP-004-WI are eligible for authorization under the reporting GP categories below.

Note that certain areas and activities are EXCLUDED from this reporting GP as described in section 3.b.

Applicants for all activities should consult with the WDNR and local governments concerning state and local permit requirements. See Department of the Army GP-004-WI General Conditions: 1.b.26, 1.b.27, and 1.b.28.

a. ACTIVITIES ELIGIBLE FOR REPORTING AUTHORIZATION:

1. Structures.
Activities that include temporary, seasonal, or permanent placement of structures which do not include a

discharge of dredged or fill material into waters of the United States are eligible, provided the activity does not impact greater than 10,000 square feet of waters of the United States. In addition to the area limitation above, this category may not be used to authorize projects which impact more than 500 linear feet along the bank(s) of a watercourse (in sum). Examples of such activities include, but are not limited to piers, wharves, boat houses, boat lifts, and boat docks. This category cannot be utilized for activities requiring authorization under Section 404 of the Clean Water Act. Such activities may be eligible for authorization pursuant to category 3.a.3 below.

2. Dredging.
Dredging of no more than 0.5 acre below the plane of the ordinary high water mark or the mean high water mark in waters of the United States (see exclusion 2.b.3 below), provided all the following conditions are met:

(a) The project will not result in the removal of greater than 5,000 cubic yards of material;

(b) The project will not cause indirect impact or degradation (including through siltation) to reefs, sites that support submerged aquatic vegetation (including sites where submerged aquatic vegetation is documented to exist but may not be present in a given year), fish spawning areas, or wetlands;

(c) The project does not include dredging in reefs or fish spawning areas;

(d) Projects which would have the effect of controlling aquatic vegetation must obtain all necessary permits from the WDNR;

(e) The project may not connect canals or other artificial waterways to navigable waters of the United States;

(f) The project would not channelize or relocate a watercourse;

(g) All dredged material must be deposited in uplands; and

(h) The project will not impact wetlands, except to allow dredging only in those wetlands previously dredged that lie below the ordinary (or mean) high water mark of a federally navigable water of the United States subject to Section 10 authority.

This GP category may also be used to provide Section 404 authorization for return water from upland contained dredged material disposal areas to satisfy the technical requirement for a Section 404 permit for the return water where the quality of the return water is controlled through the Section 401 certification procedure.

3. Discharges of Dredged or Fill Material.
Minor discharges of dredged or fill material (including structural discharges) for a single and complete project in waters of the United States provided the activity does not, in total, permanently or temporarily impact more than 10,000 square feet of waters of the United States and the discharge is not placed for the purpose of a stream channelization or diversion.

Notification to the Corps for use of this GP category must demonstrate that the proposed project is the least environmentally damaging practicable alternative to accomplish the project purpose. This shall be done by documenting alternatives and reasonable measures to avoid and minimize impacts to waters of the United States, including wetlands. If temporary impacts to waters of the United States are proposed, this notification should include a restoration plan describing how these impacts will be restored to pre-project conditions. The Corps will add special conditions to confirmation letters, where necessary, to ensure that adverse environmental impacts are minimal.

4. Beach Nourishment.
Work associated with the placement of sand or pea gravel in waters of the United States, provided that all the

following conditions are met:
(a) No sand or pea gravel is placed in wetlands above the ordinary high water mark;
(b) The project does not exceed 0.5 acre of impact to waters of the U.S. (inclusive of temporary impacts);
(c) The sand or pea gravel is not placed more than 6 inches in depth; and
(d) The sand or pea gravel is not placed further than 10 feet (perpendicular to the shoreline) waterward from the ordinary high water mark.
This GP category may be used to authorize temporary construction impacts, provided the areas impacted are restored to preconstruction hydrology, cover, and elevation. This GP category does not authorize material to be placed in areas of existing emergent vegetation in such a manner as to control aquatic vegetation without first obtaining necessary authorization from the WDNR. This GP category does not authorize placement of sand or gravel in fish spawning areas. This GP category does not authorize the use of a plant barrier or liner.

5. Temporary Construction, Access, and Dewatering.
Temporary structures and discharges, including cofferdams needed for construction activities or access fills or dewatering of construction sites (see exclusion at 2.b.3 below).
Appropriate measures must be taken to maintain near-normal downstream flows and to minimize flooding. Fill must consist of appropriate materials and be placed in a manner that will not be eroded by expected high flows. The use of dredged material may be allowed if the Corps determines that it will not cause more than minimal adverse effects on aquatic resources. Following completion of construction activities (see 3.b.14 for removal timeframes), temporary fill must be entirely removed to upland areas, dredged material must be returned to its original location, and the affected areas restored to the pre-project conditions (elevation, hydrology, and vegetation). Construction mats may be placed in wetland areas for up to two weeks during the growing season unless otherwise specified in the Corps verification letter. Cofferdams cannot be used to dewater wetlands or other aquatic areas so as to change their use. This GP category does not allow retention of new structures or fill to be left in place after cofferdams are removed.
Notification to the Corps for use of this GP category must demonstrate reasonable measures to avoid and minimize impacts to waters of the United States, as well as include a restoration plan describing how the site will be restored to pre-project conditions. The Corps will add special conditions to verification letters, where necessary, to ensure that adverse environmental impacts are minimal. Such conditions may include: limiting the temporary work to the minimum necessary; requiring seasonal restrictions; modifying the restoration plan; and requiring alternative construction methods. This GP category does not authorize temporary structures or fill associated with mining activities.

b. AREAS/ACTIVITIES EXCLUDED FROM REPORTING AUTHORIZATION:

1. The GP-004-WI reporting categories do not authorize any activity in:
(a) Calcareous fens as identified by the WDNR, and wetlands within 300 feet of such fens;
(b) The City of Superior that is eligible for authorization under a "Superior SAMP" permit (Corps permits 199606788 through 199606792; and does not authorize activities which would result in an impact to
(c) Greater than 400 square feet of a National Wild and Scenic River listed at:
http://www.rivers.gov/rivers/site-index.php.

2. Structures attendant to fleeting of barges are not authorized by this GP in any case.

3. Activities that fail to obtain any required local, state, tribal, or federal authorization are not eligible for reporting GP-004-WI authorization.

4. Activities that the Corps determines warrant further Federal evaluation to address the government's trust responsibility to American Indian Tribes.

c. APPLICATION/EVALUATION PROCEDURES UNDER THE REPORTING AUTHORIZATION:

Applicants seeking coverage under the reporting categories of GP-004-WI must provide notification of the proposed project to the Corps for review. A complete application to both the Corps and WDNR is recommended using the joint state-federal application form that is available from the Corps and WDNR offices and on the websites of both agencies. Once notified, the Corps will review the proposed activity to determine eligibility for the reporting GP. If additional information is required to complete the Corps review, the applicant will be notified. In some cases, the Corps may require a wetland delineation prepared in accordance with the Corps of Engineers Wetland Delineation Manual including applicable Regional Supplement before the application will be considered complete. Once sufficient information is received, the Corps will complete its review and send the applicant a letter advising of the outcome. If the Corps decision is to confirm authorization pursuant to one of the reporting GP categories, the Corps notice to the applicant will be a reporting GP-004-WI confirmation letter. The Corps will simultaneously send a copy of the letter to the WDNR.

ENDANGERED SPECIES AND CULTURAL RESOURCES REVIEW.

The Corps review will include a determination concerning compliance of the project with Section 7 of the ESA and Section 106 of the NHPA. In some cases, another federal agency may initiate consultation under one or both of these acts; however, this does not eliminate the Corps responsibility to ensure ESA and NHPA compliance. Projects found not to comply with either or both of these Acts will not be authorized under the reporting categories of GP-004-WI or any other Corps authorization until actions are taken so that compliance with both acts is assured (see 3.b.4 and 3.b.15 below).

The Corps federal endangered species review will consist of Corps staff consulting appropriate reference materials including endangered species information published by the FWS in informational brochures and on Internet web pages and any other available data, information or specific guidance provided by FWS. Corps staff will be aware of locations where endangered species are known or likely to be present and of the types of activities that may affect those species. Corps staff will directly consult with FWS staff concerning proposals which appear to have potential to affect listed species. The review may include Corps and/or FWS site inspections of specific project sites, and/or formal ESA interagency consultation.

The Corps federal cultural resources review will be conducted in a manner similar to the endangered species review. The NRHP will be consulted to determine the presence or absence of known cultural resources. Corps regulatory staff will be aware of areas that have a high probability to contain important cultural resources and will consult Corps cultural resource staff concerning projects they determine may have the potential to affect cultural resources. Corps regulatory or cultural resource staff will consult with the SHPO and THPO on appropriate projects. Cultural archaeological resource surveys and/or formal consultation with the President's Advisory Council on Historic Preservation may be required.

COMPENSATORY MITIGATION

Notification for activities eligible for reporting GP-004-WI authorization that involve a discharge of dredged or fill material into waters of the United States (including jurisdictional wetlands, streams, ponds, and lakes) shall include a statement regarding compensatory mitigation (33 CFR Part 325.1). This statement must

describe how impacts to waters of the United States are to be compensated for, or a statement of the applicant's position explaining why compensatory mitigation should not be required for the proposed impacts. The WDNR Mitigation Summary Sheet may be used for this purpose.
Project proponents seeking reporting GP-004-WI authorization whose proposed projects exceed 10,000 square feet of impact to waters of the United States shall submit a compensatory mitigation plan with their notification. The Corps may determine on a case-by-case basis that projects with impacts to waters of the United States less than 10,000 square feet will require compensatory mitigation and will request a mitigation plan which must be received back from the project proponent before the Corps review can be completed. Compensatory mitigation plans shall be prepared in accordance with 33 CFR Part 332, and may utilize the most recent version of the *Guidelines for Wetland Compensatory Mitigation in Wisconsin.* Compensatory mitigation that is proposed to satisfy state or local requirements may, but will not necessarily, satisfy the federal requirement.

Work is authorized under a reporting GP-004-WI category when the project proponent receives a reporting confirmation letter from the Corps. For GP-004-WI authorizations issued pursuant to Section 404, permittee's must also obtain state water quality certification or waiver from the WDNR for the project. Also note GP-004-WI General Condition 28 concerning the need for Wisconsin Coastal Management Program certification for activities in coastal wetlands in ridge and swale complexes as identified on WDNR maps, and wetlands adjacent to the Mink River in Door County or the Bad River in Ashland County.

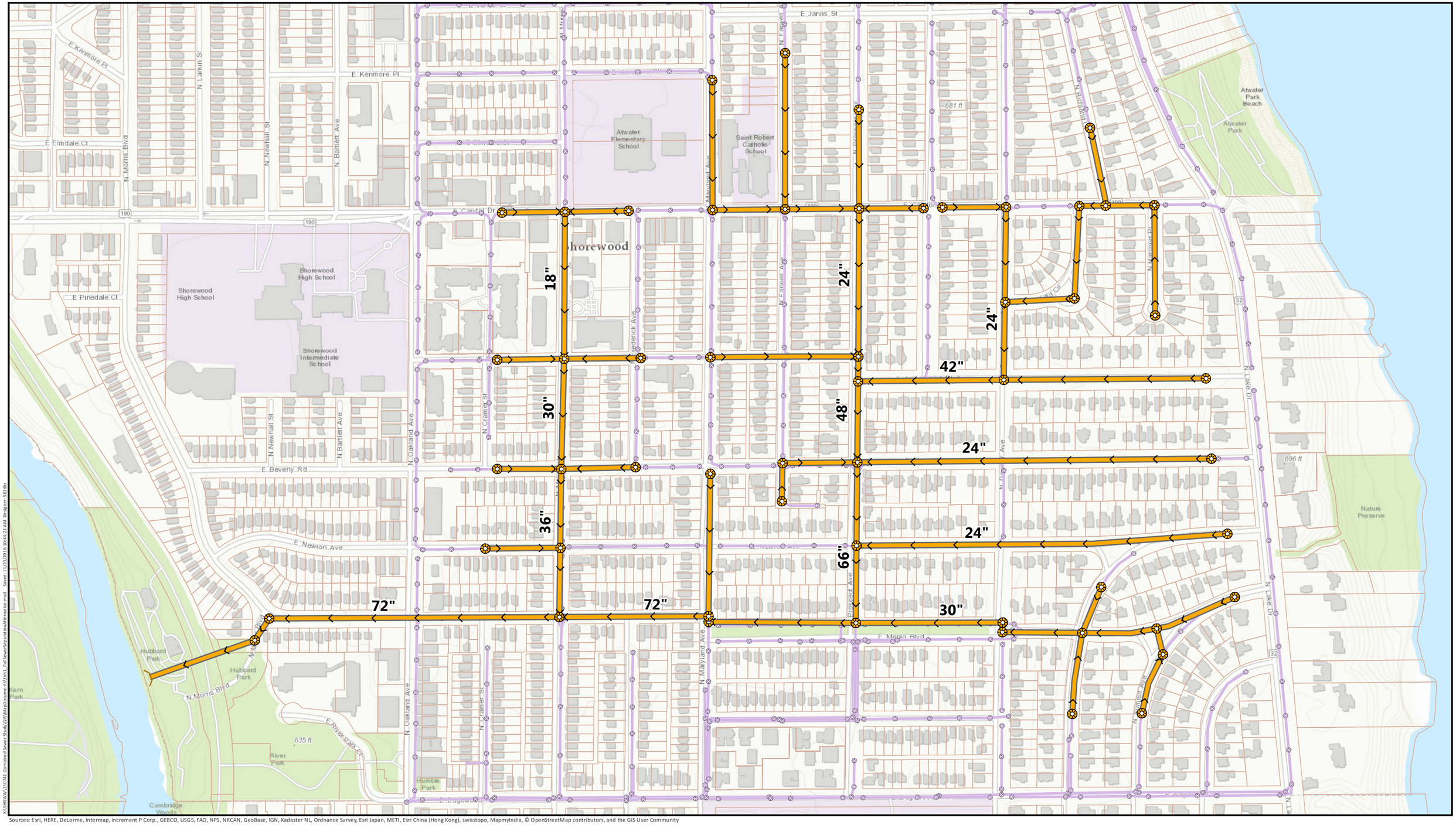
EXHIBITS

IMPROVEMENT ALTERNATIVES

- EXHIBIT 1: FULL SEWER SEPARATION ALTERNATIVE
- EXHIBIT 2: VIRTUAL SEPARATION ALTERNATIVE

EXHIBIT 1

FULL SEWER SEPARATION ALTERNATIVE



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

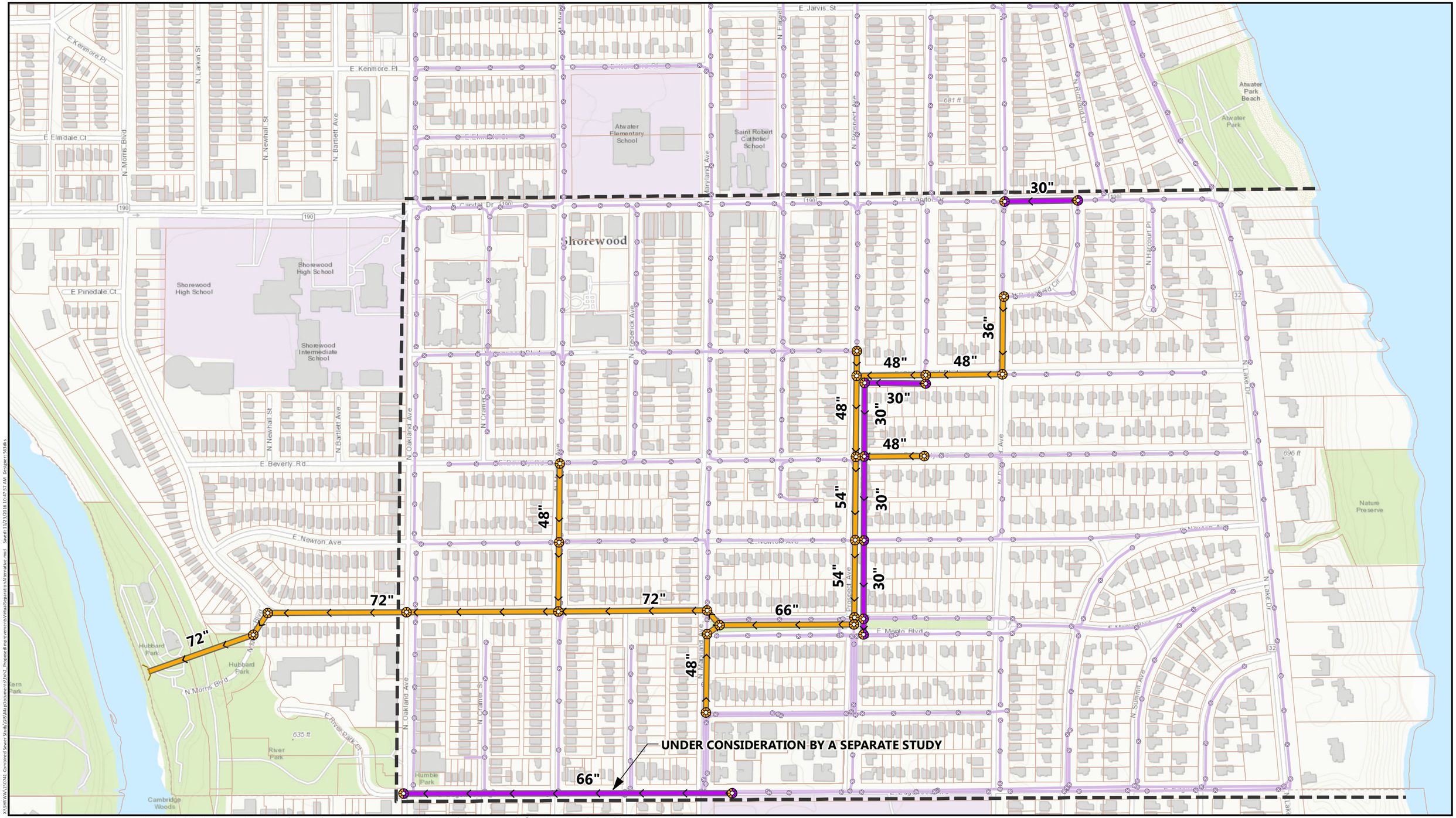
Legend

- Proposed Storm Structure
- Proposed Storm Sewer
- Existing Combined Structure
- Existing Combined Sewer

BAXTER & WOODMAN Consulting Engineers

EXHIBIT 2

PROPOSED IMPROVEMENTS - VIRTUAL SEPARATION ALTERNATIVE



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Legend

- Proposed Overflow Storm Sewer
- Proposed Combined Sewer
- Existing Combined Sewer
- Study Area

BAXTER & WOODMAN Consulting Engineers

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EXHIBITS

BASEMENT BACKUP HAZARD MAPS

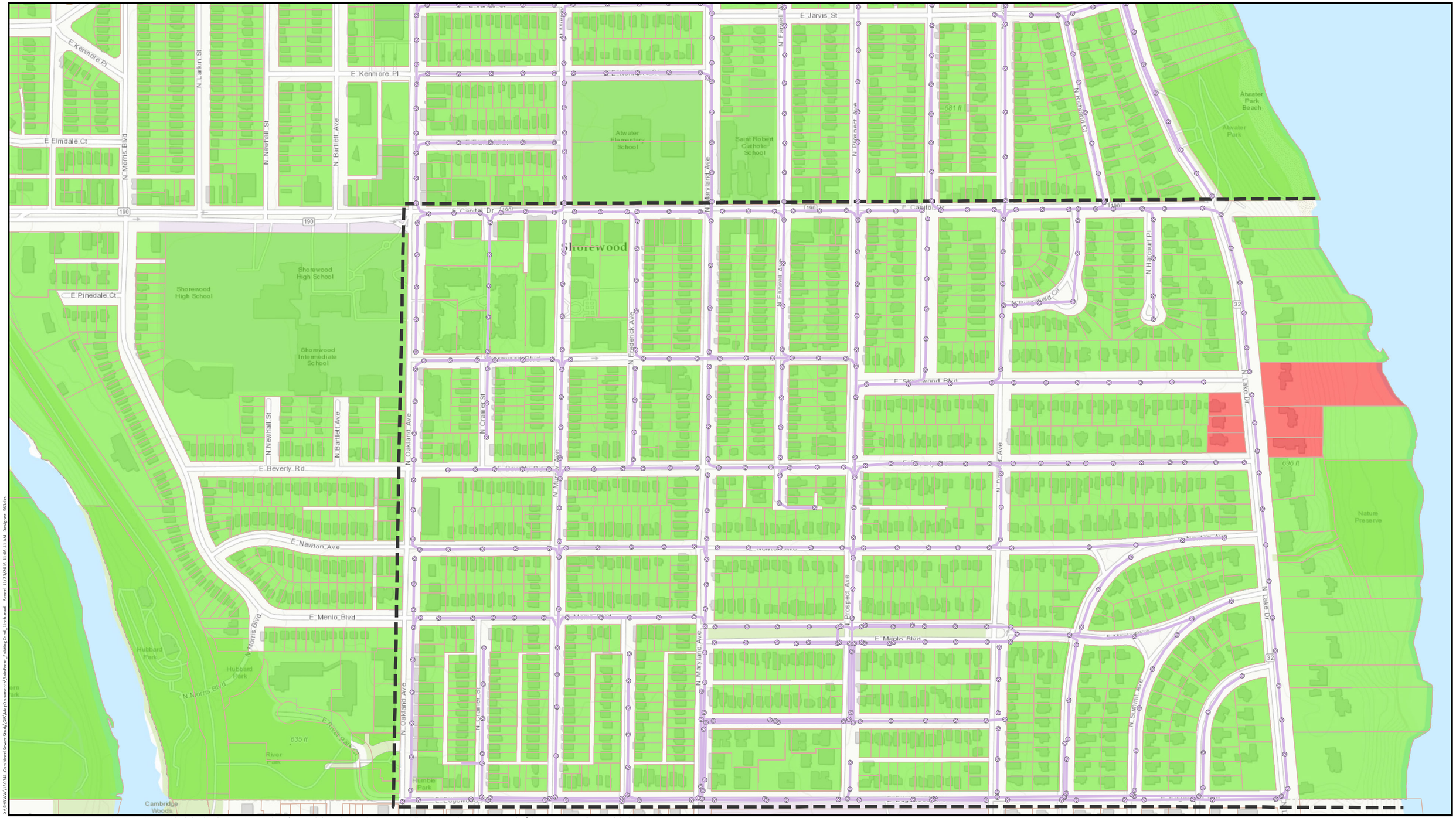
- EXHIBIT 3: EXISTING CONDITIONS – 1 INCH RAIN EVENT
- EXHIBIT 4: EXISTING CONDITIONS – 1.5 INCH RAIN EVENT
- EXHIBIT 5: EXISTING CONDITIONS – 2 INCH RAIN EVENT
- EXHIBIT 6: EXISTING CONDITIONS – 3 INCH RAIN EVENT

- EXHIBIT 7: PROPOSED CONDITIONS – PHASE 1 - 1 INCH RAIN EVENT
- EXHIBIT 8: PROPOSED CONDITIONS – PHASE 1 – 1.5 INCH RAIN EVENT
- EXHIBIT 9: PROPOSED CONDITIONS – PHASE 1 - 2 INCH RAIN EVENT
- EXHIBIT 10: PROPOSED CONDITIONS – PHASE 1 - 3 INCH RAIN EVENT

- EXHIBIT 11: PROPOSED CONDITIONS – PHASE 2 - 1 INCH RAIN EVENT
- EXHIBIT 12: PROPOSED CONDITIONS – PHASE 2 – 1.5 INCH RAIN EVENT
- EXHIBIT 13: PROPOSED CONDITIONS – PHASE 2 - 2 INCH RAIN EVENT
- EXHIBIT 14: PROPOSED CONDITIONS – PHASE 2 - 3 INCH RAIN EVENT

BASEMENT BACKUP HAZARD MAP - EXHIBIT 3

EXISTING CONDITIONS WITH 1-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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1 " = 400 '

0 200 400 800 Feet

Existing Combined Sewer

Study Area

Possible Basement Backup*

No Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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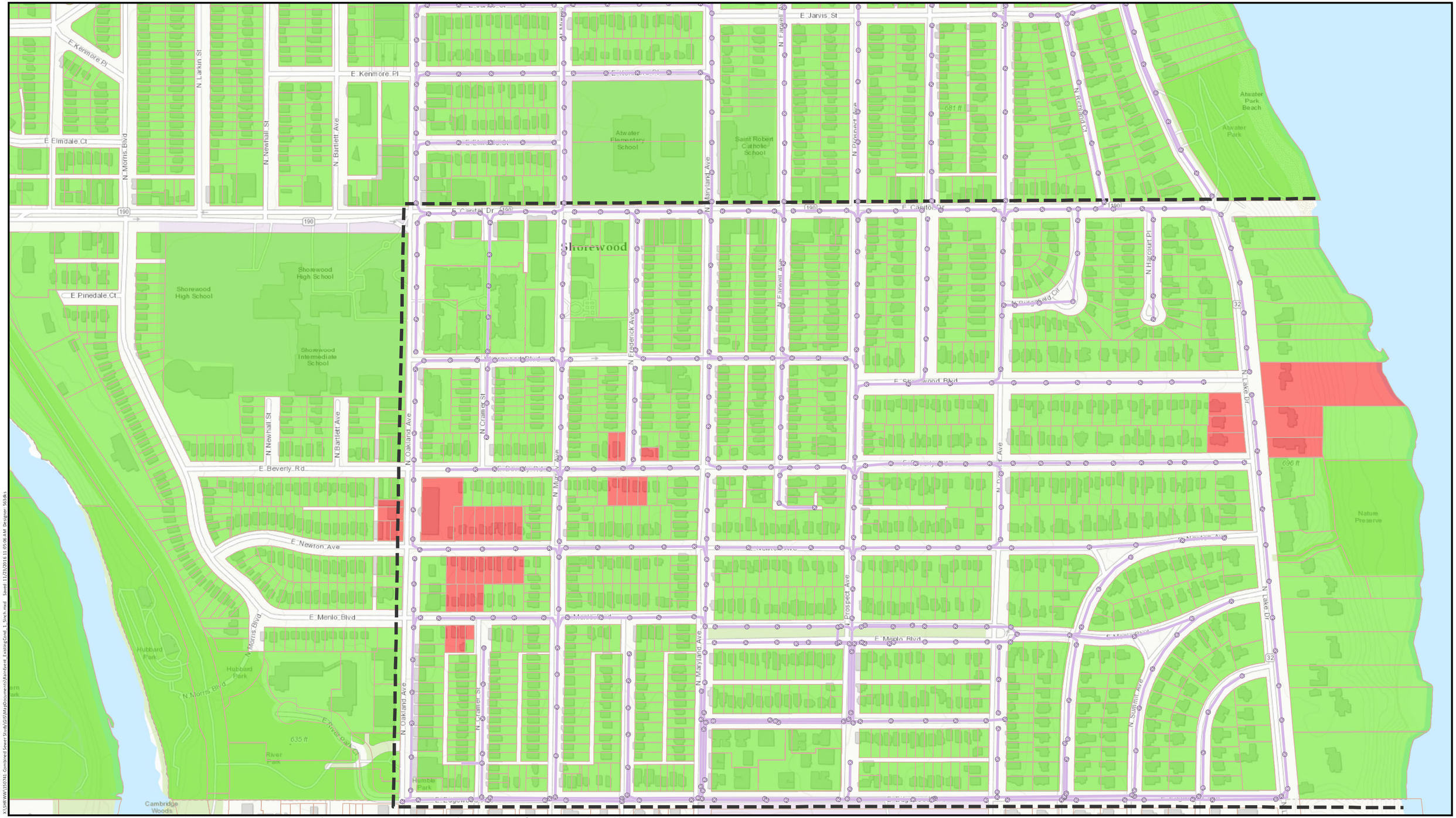
BASEMENT BACKUP HAZARD MAP - EXHIBIT 4

EXISTING CONDITIONS WITH 1.5-INCH RAIN EVENT



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Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Existing Combined Sewer

Study Area

Possible Basement Backup*

No

Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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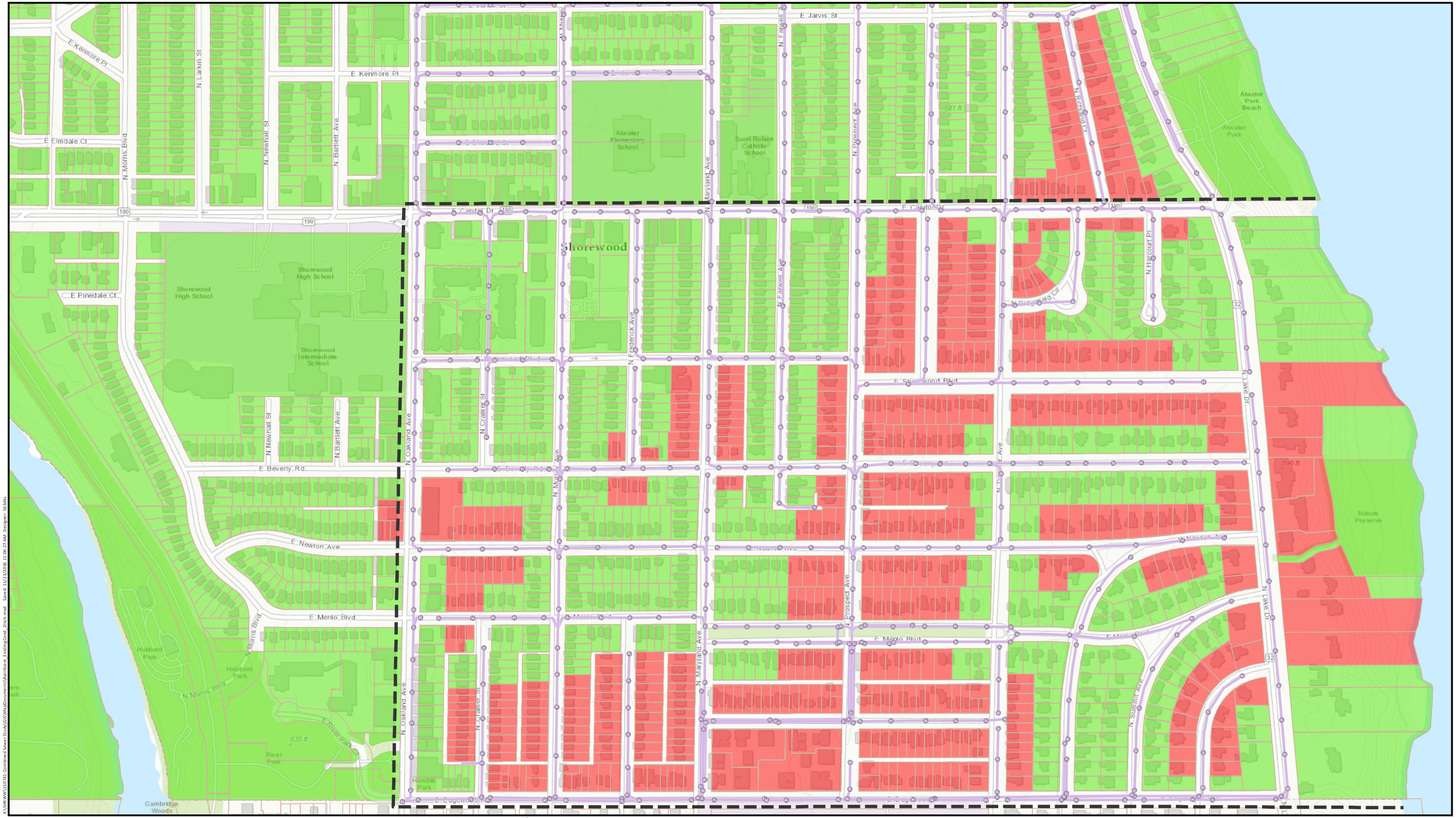
BASEMENT BACKUP HAZARD MAP - EXHIBIT 5

EXISTING CONDITIONS WITH 2-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Existing Combined Sewer

Study Area

Possible Basement Backup*

No

Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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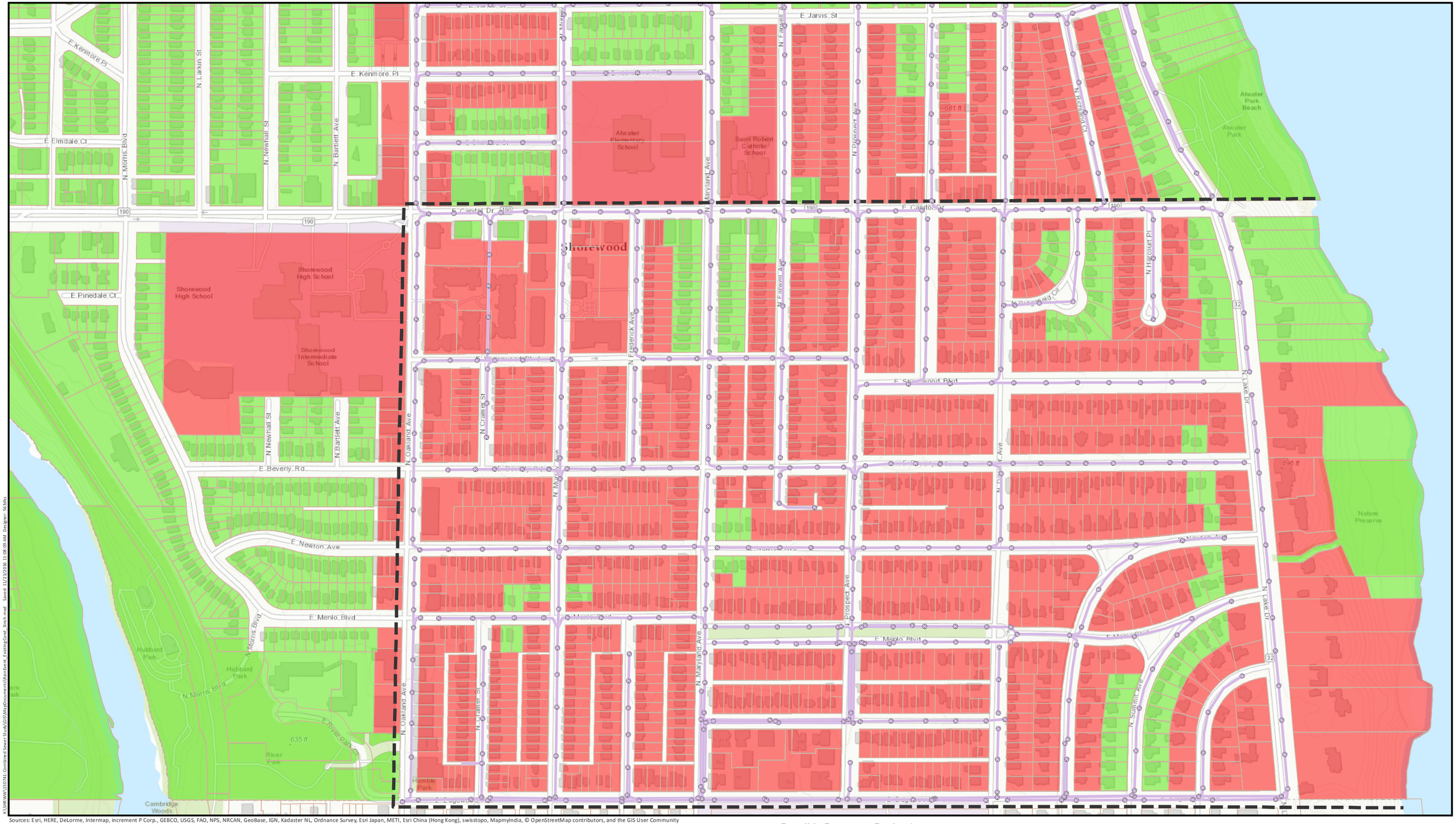
BASEMENT BACKUP HAZARD MAP - EXHIBIT 6

EXISTING CONDITIONS WITH 3-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Existing Combined Sewer

Study Area

Possible Basement Backup*

No Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

BAXTER & WOODMAN Consulting Engineers

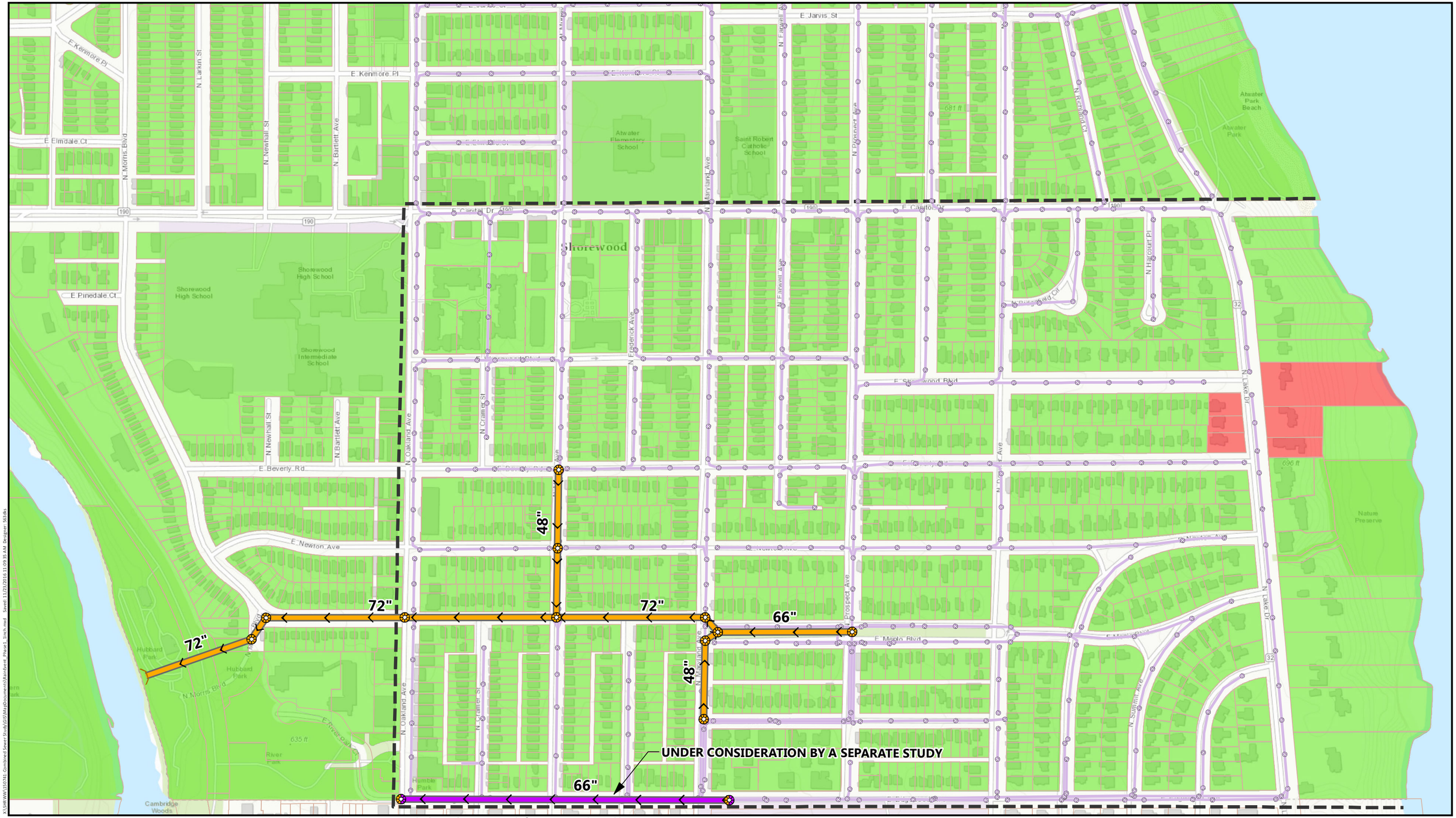
X:\SHR\WW\150741 Combined Sewer\Study\GIS\MapDocuments\Basinbent_ExistingCond_3inch.mxd Saved: 11/23/2016 11:08:09 AM Designer: SKSkis

Combined Sewer Service Area Environmental Assessment

Village of Shorewood, Wisconsin

BASEMENT BACKUP HAZARD MAP - EXHIBIT 7

PHASE 1 WITH 1-INCH RAIN EVENT



X:\SHR\WW\150741-Combined Sewer Study\GIS\MapDocuments\MainDoc\F Phase1_1inch.mxd Saved: 11/23/2016 11:09:35 AM Designer: SGibbs

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Proposed Overflow Storm Sewer

Proposed Combined Sewer

Existing Combined Sewer

Study Area

Possible Basement Backup*

No

Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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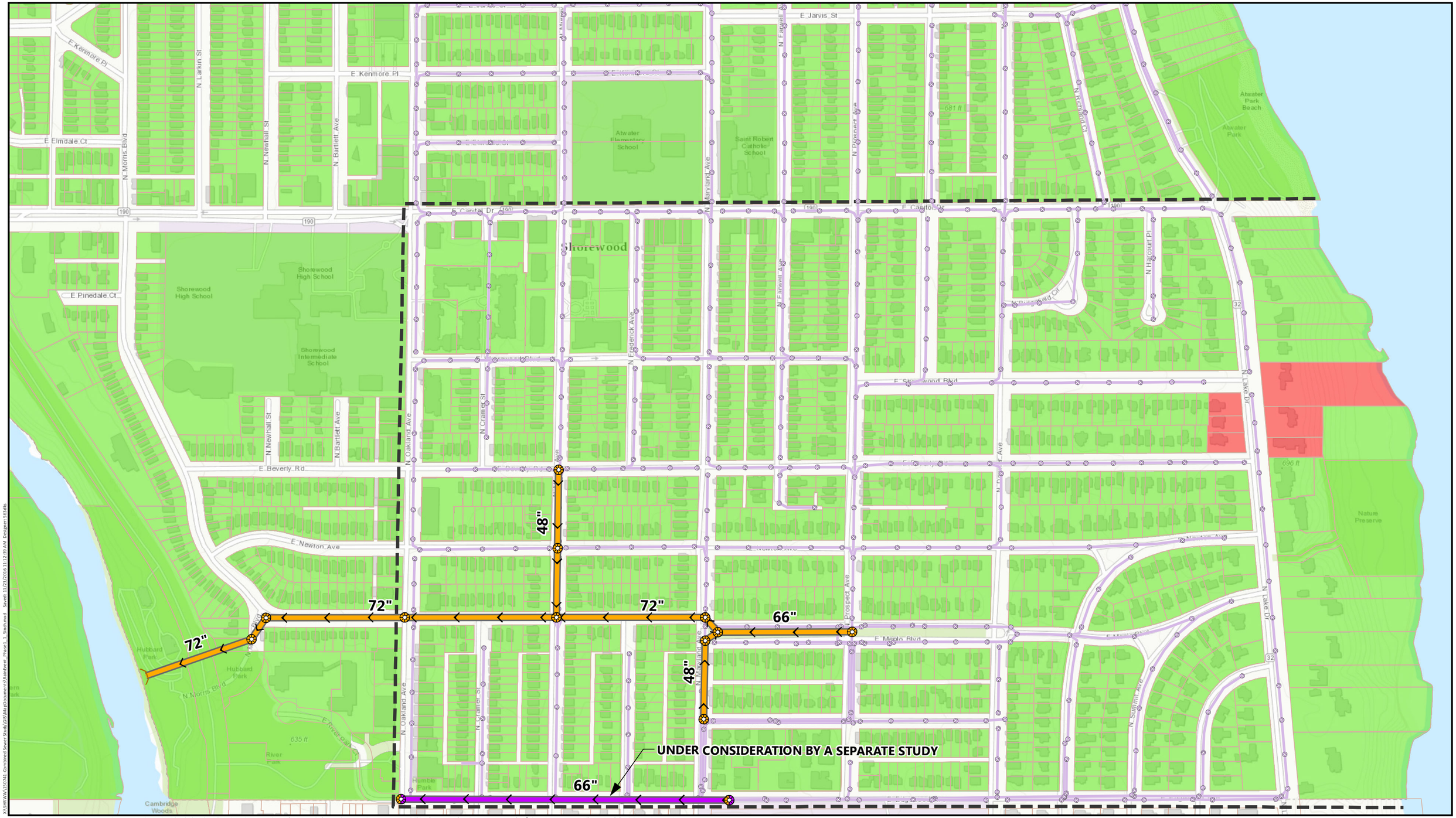
BASEMENT BACKUP HAZARD MAP - EXHIBIT 8

PHASE 1 WITH 1.5-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Proposed Overflow Storm Sewer
Proposed Combined Sewer
Existing Combined Sewer
Study Area

Possible Basement Backup*

No
Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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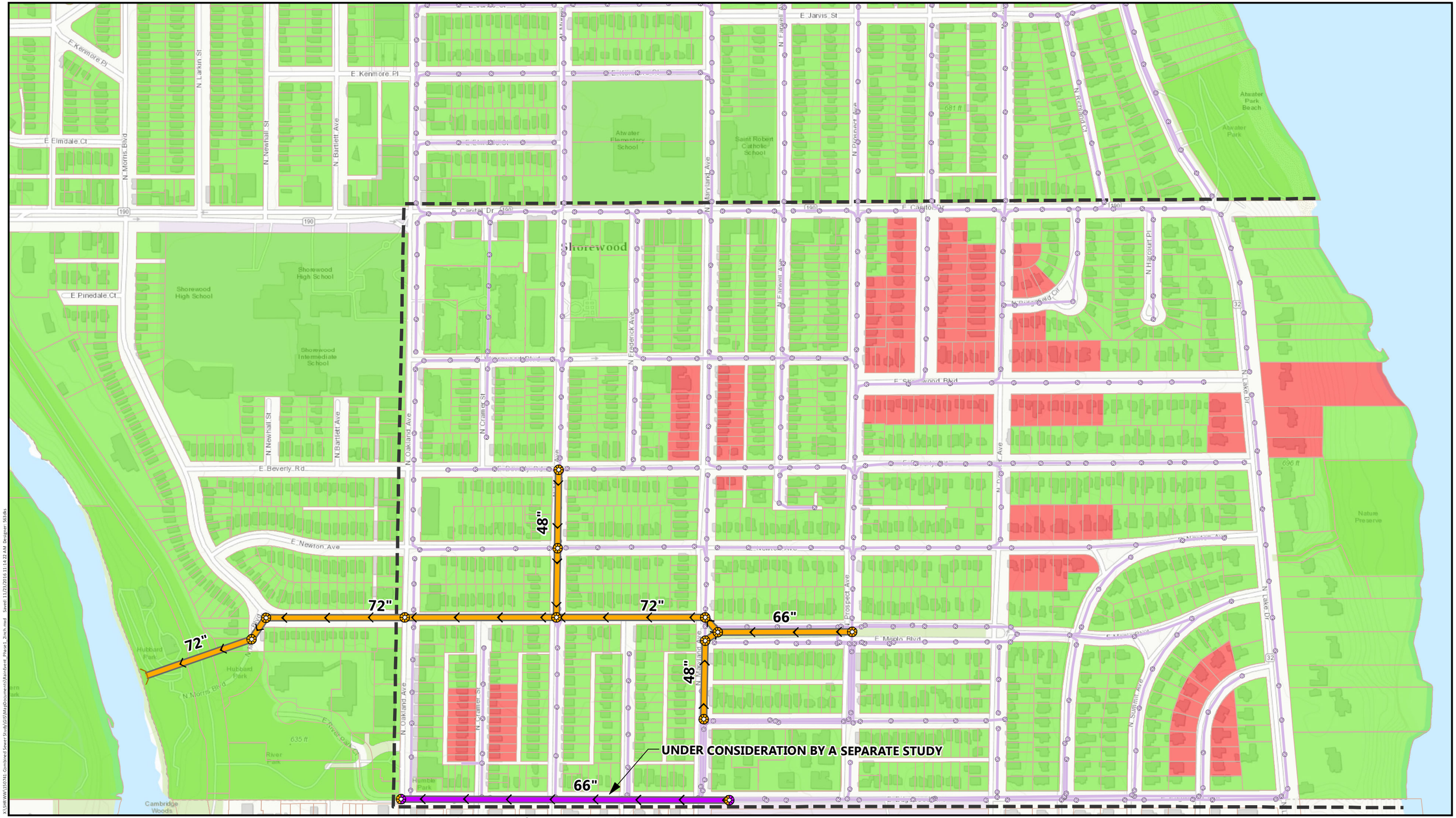
BASEMENT BACKUP HAZARD MAP - EXHIBIT 9

PHASE 1 WITH 2-INCH RAIN EVENT



X:\SHR\WW\150741-Combined Sewer Study\GIS\MapDocuments\MainDoc\E Phase1_2inch.mxd Saved: 11/23/2016 11:14:22 AM Designer: SGibbs

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Proposed Overflow Storm Sewer

Proposed Combined Sewer

Existing Combined Sewer

Study Area

Possible Basement Backup*

No

Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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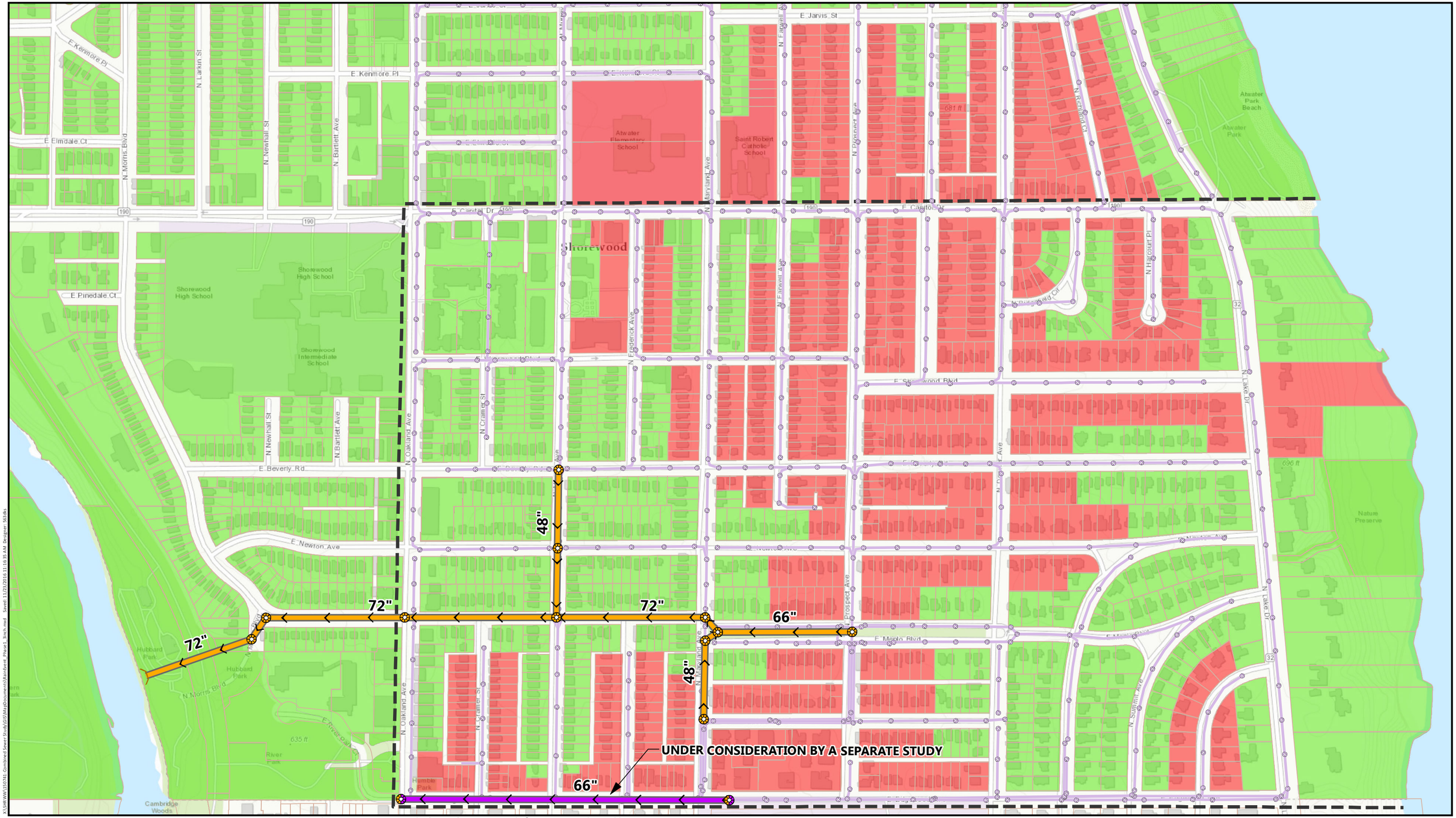
BASEMENT BACKUP HAZARD MAP - EXHIBIT 10

PHASE 1 WITH 3-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Proposed Overflow Storm Sewer
Proposed Combined Sewer
Existing Combined Sewer
Study Area

Possible Basement Backup*

No
Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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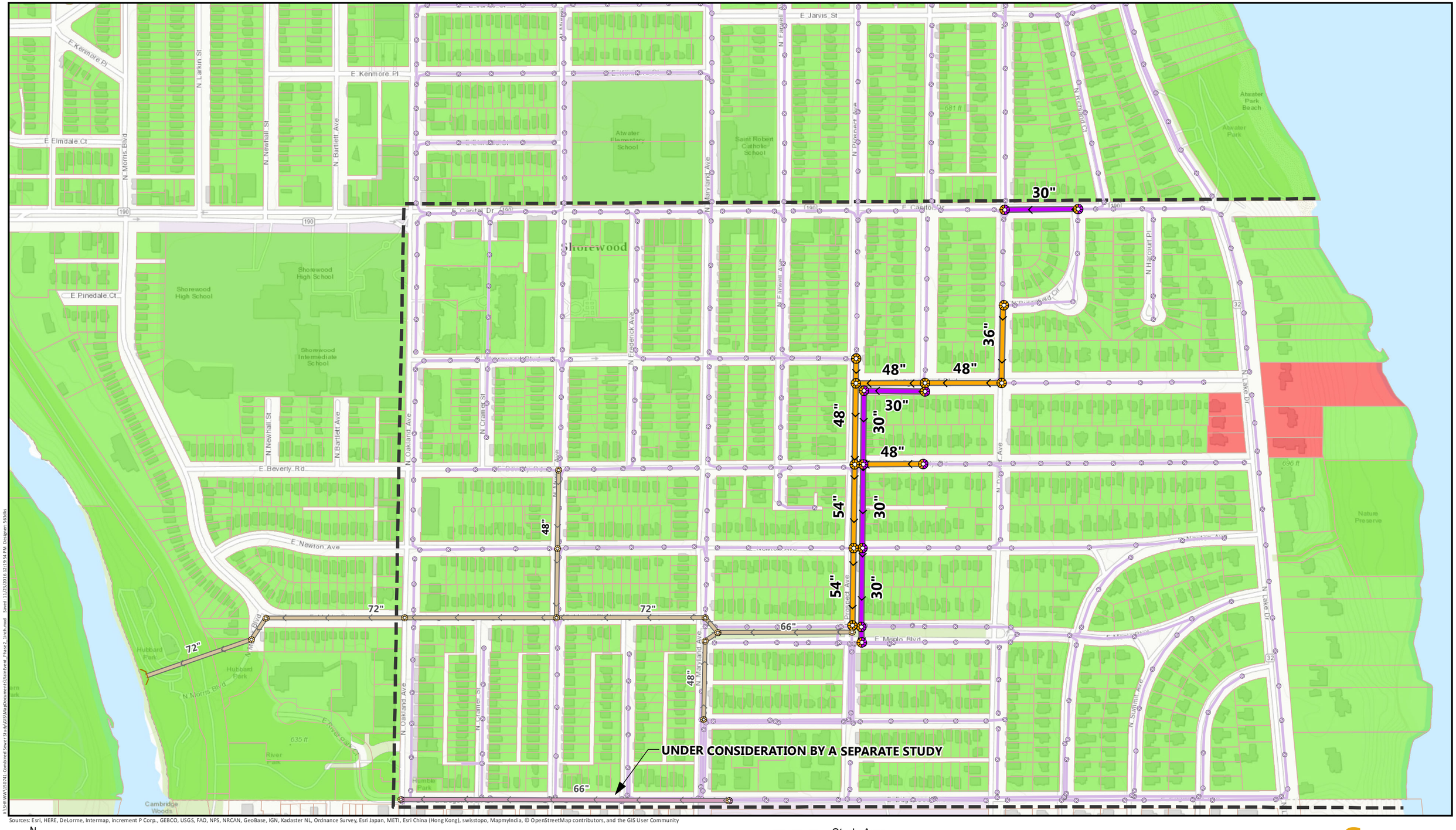
BASEMENT BACKUP HAZARD MAP - EXHIBIT 11

PHASE 2 WITH 1-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Proposed Overflow Storm Sewer
Proposed Combined Sewer
Existing Combined Sewer

Constructed During Previous Phases

Existing Combined Sewer
Existing Overflow Storm Sewer

Study Area

Possible Basement Backup*

No
Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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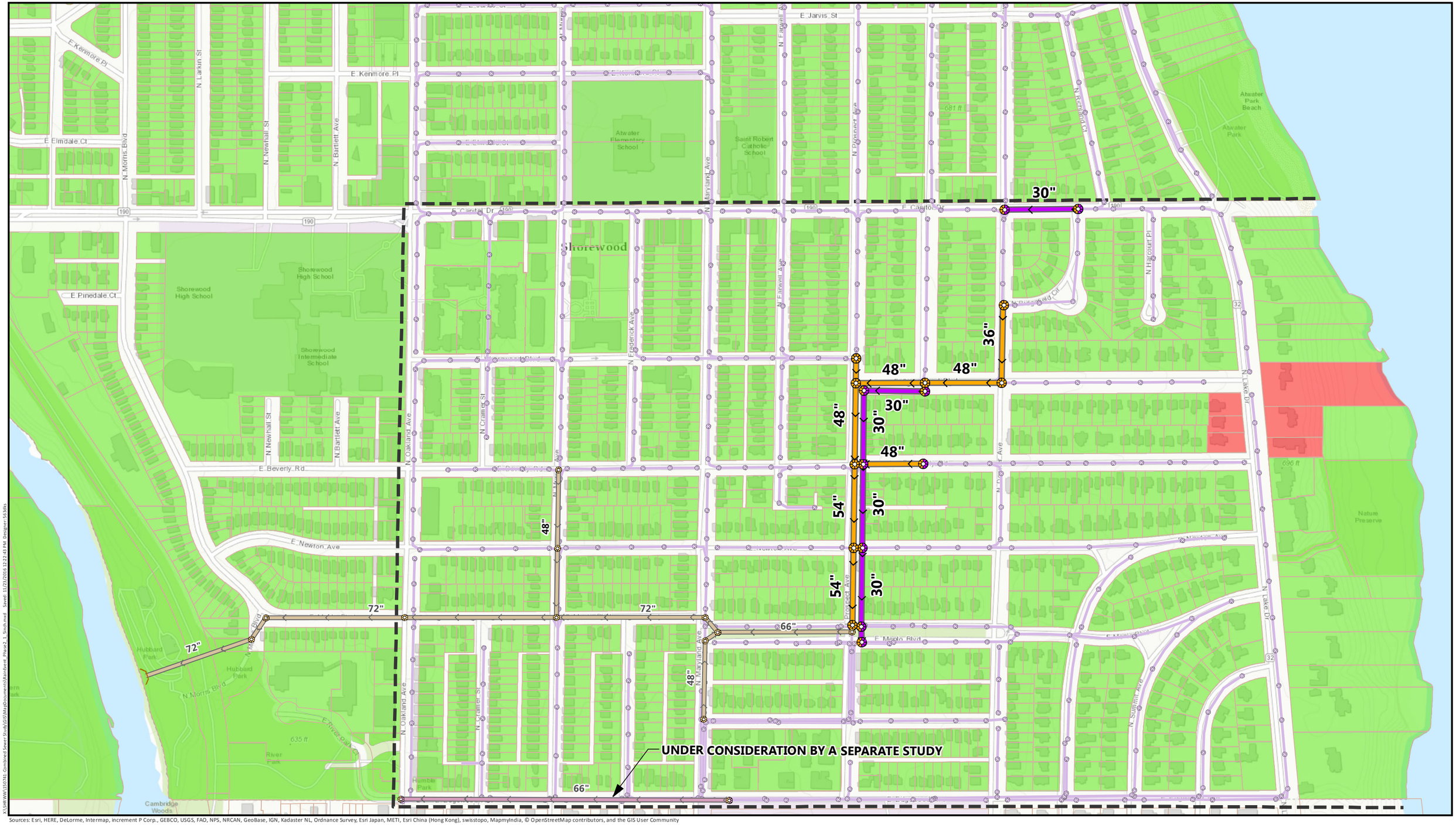
BASEMENT BACKUP HAZARD MAP - EXHIBIT 12

PHASE 2 WITH 1.5-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

- Proposed Overflow Storm Sewer
- Proposed Combined Sewer
- Existing Combined Sewer

Constructed During Previous Phases

- Existing Combined Sewer
- Existing Overflow Storm Sewer

- Study Area

Possible Basement Backup*

- No
- Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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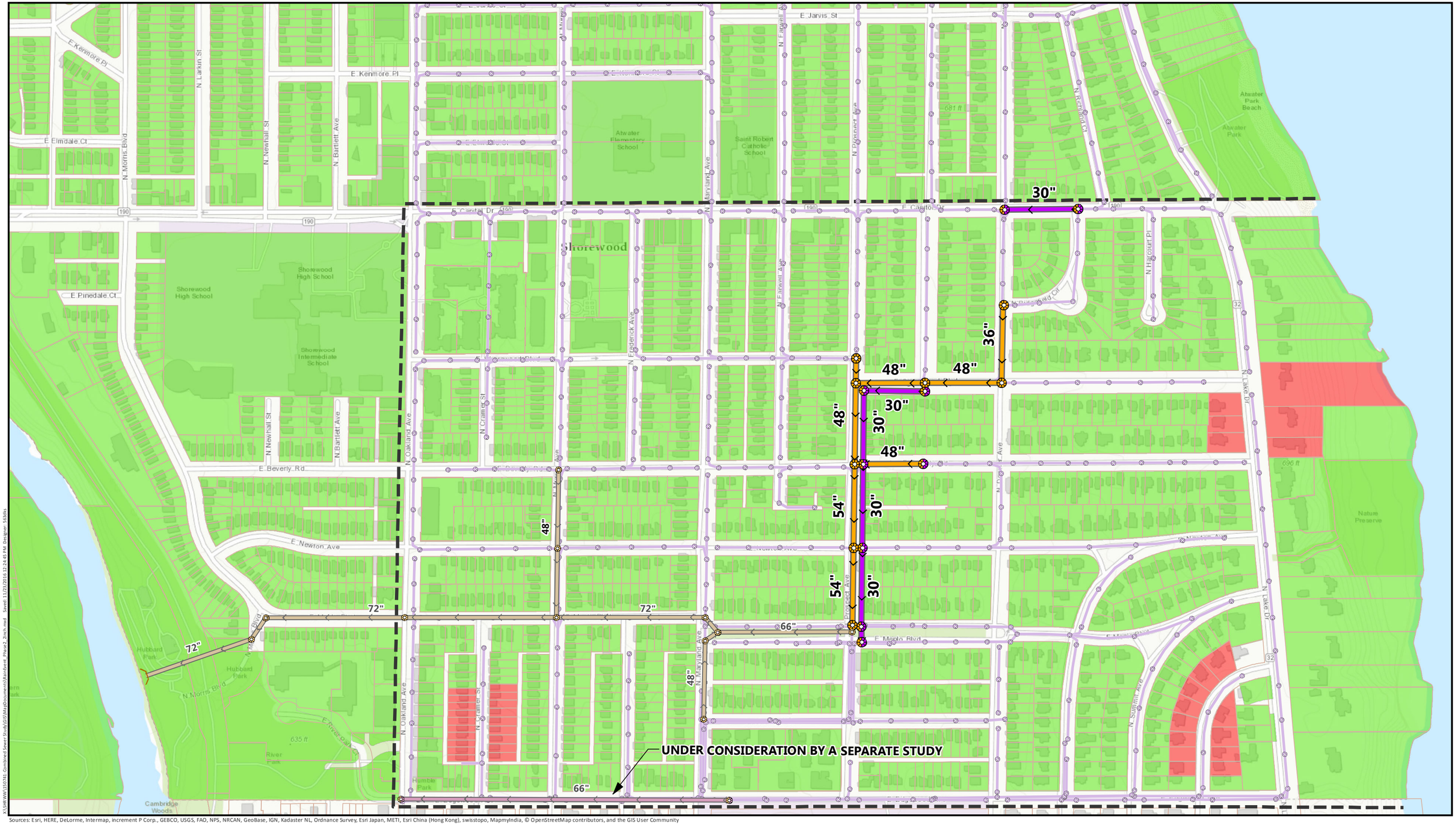
X:\SHR\WW\150741-Combined Sewer Study\GIS\MapDocuments\RainEvent_Phase2_1_5inch.mxd Saved: 11/23/2016 12:22:43 PM Designer: SKlatt

Combined Sewer Service Area Environmental Assessment

Village of Shorewood, Wisconsin

BASEMENT BACKUP HAZARD MAP - EXHIBIT 13

PHASE 2 WITH 2-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

- Proposed Overflow Storm Sewer
- Proposed Combined Sewer
- Existing Combined Sewer

Constructed During Previous Phases

- Existing Combined Sewer
- Existing Overflow Storm Sewer

- Study Area

Possible Basement Backup*

- No
- Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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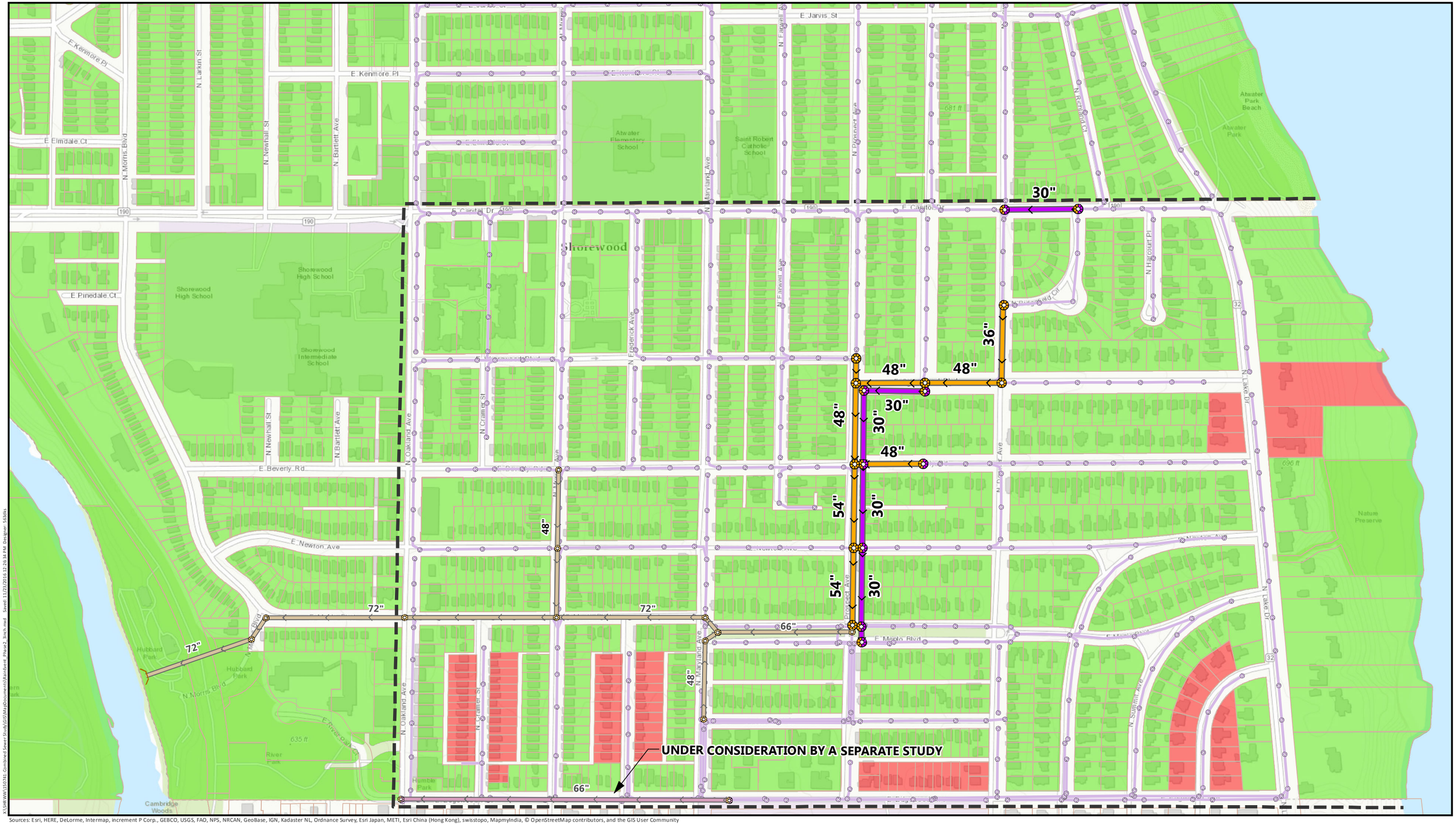
BASEMENT BACKUP HAZARD MAP - EXHIBIT 14

PHASE 2 WITH 3-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

- Proposed Overflow Storm Sewer
- Proposed Combined Sewer
- Existing Combined Sewer

Constructed During Previous Phases

- Existing Combined Sewer
- Existing Overflow Storm Sewer

- Study Area

Possible Basement Backup*

- No
- Yes

*Basement backup locations were determined by looking at combined sewer water levels. If the water levels were shown to be greater than 6 feet below the road surface, it was presumed that basement backups were unlikely in that area.

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X:\SHR\WW\150741-Combined Sewer Study\GIS\MapDocuments\RainEvent_Phase2_3inch.mxd Saved: 11/23/2016 12:26:34 PM Designer: SSkibis

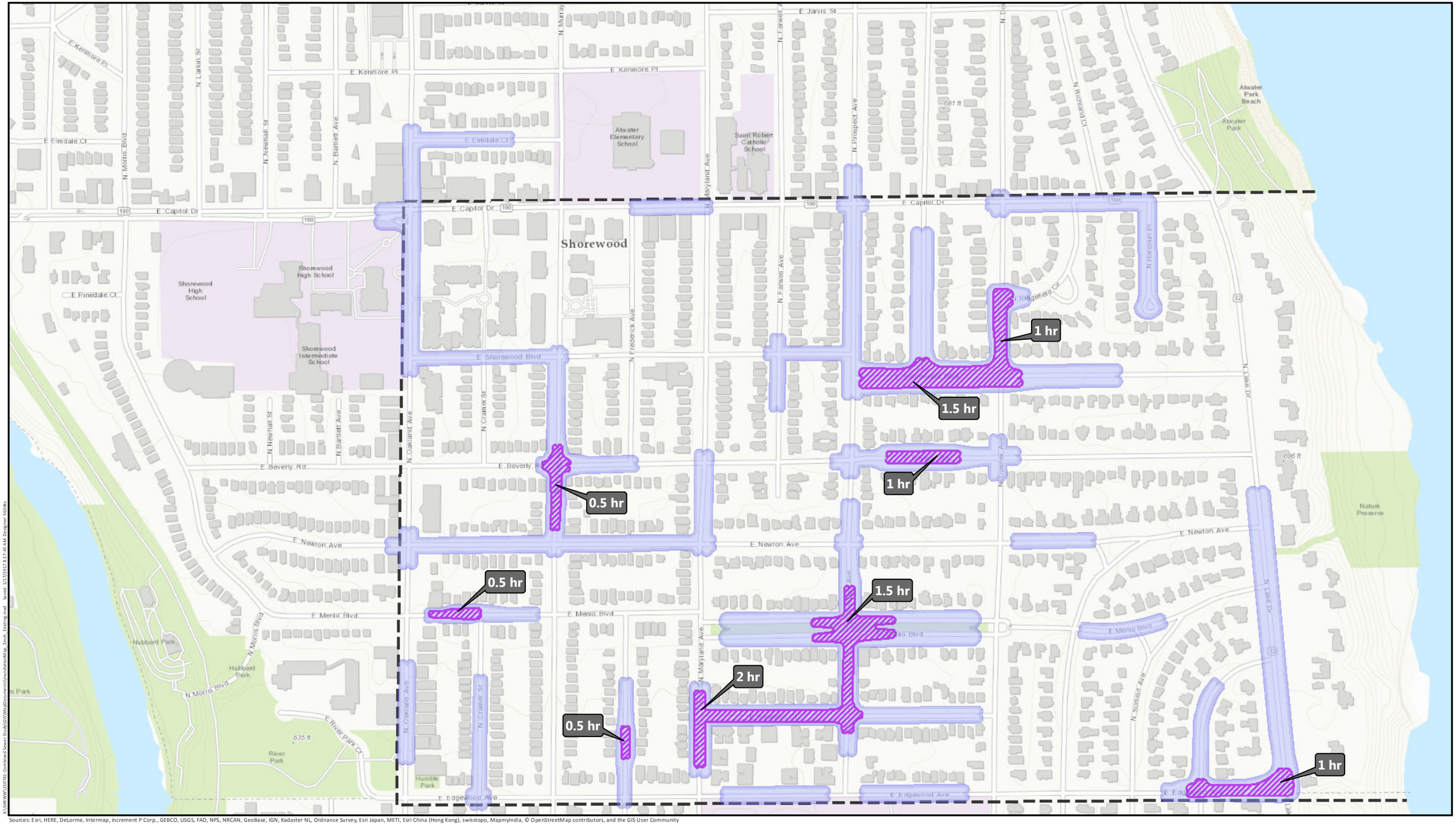
EXHIBITS

INUNDATION MAPS

- EXHIBIT 15: EXISTING CONDITIONS – 3 INCH RAIN EVENT
- EXHIBIT 16: PROPOSED CONDITIONS – 3 INCH RAIN EVENT

EXISTING INUNDATION - EXHIBIT 15

EXISTING CONDITIONS WITH 3-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Legend

Road Ponding (<6 inches)

Sag Ponding (>6 inches)

Study Area

1 hr Flood Duration

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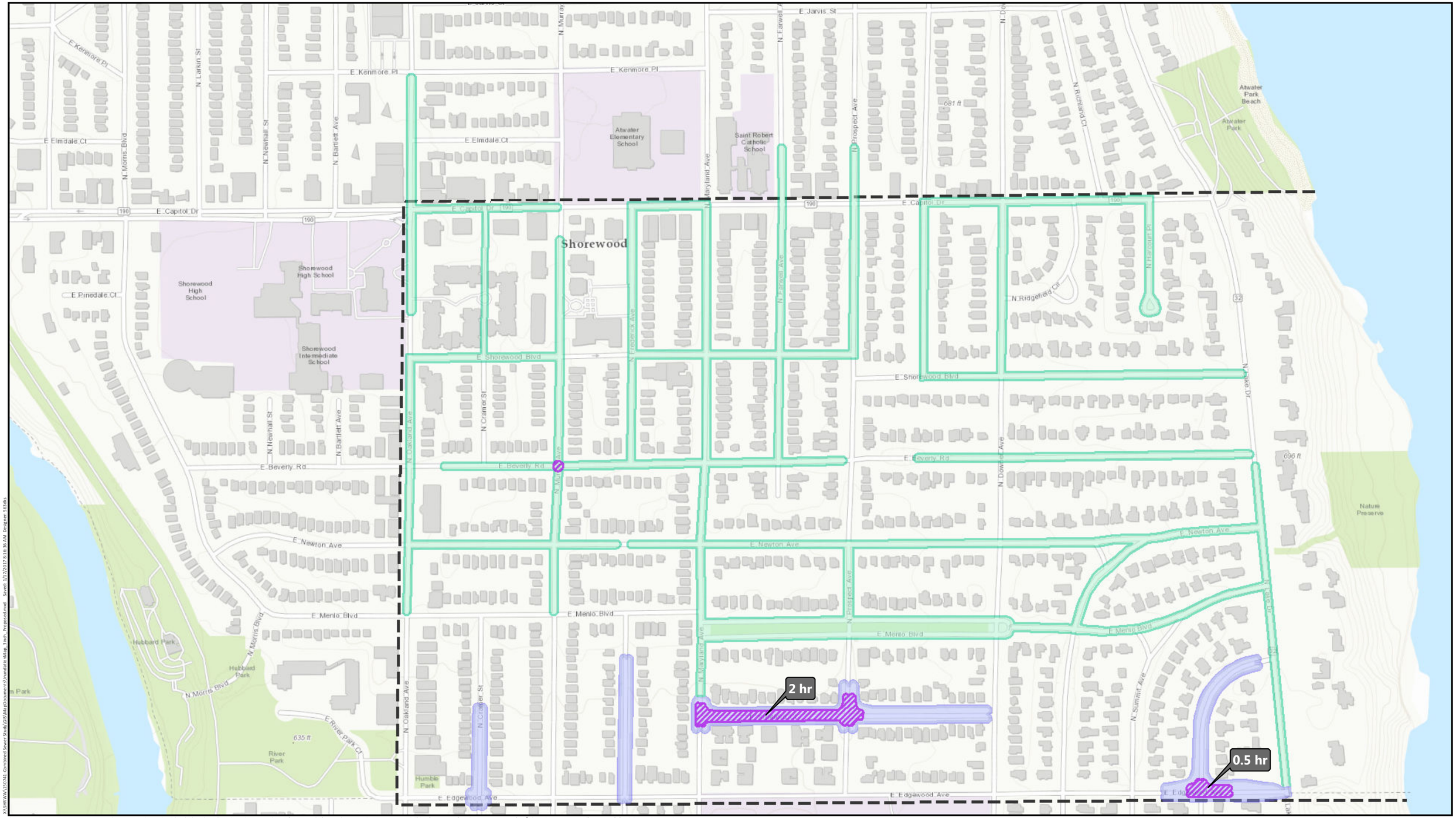
PROPOSED INUNDATION - EXHIBIT 16

PROPOSED CONDITIONS WITH 3-INCH RAIN EVENT



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Legend

- Designed Road Flow (<6 inches)
- Road Ponding (<6 inches)
- Sag Ponding (>6 inches)
- Study Area
- 1 hr Flood Duration

BAXTER & WOODMAN Consulting Engineers

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EXHIBITS

VIRTUAL SEPARATION EXHIBITS

- EXHIBIT 17: EXISTING COMBINED SEWER CONDITIONS
- EXHIBIT 18: PROPOSED RELIEF SEWER CONDITIONS

EXISTING COMBINED SEWER CONDITIONS

Combined Sewer Service Area Environmental Assessment

EXHIBIT 17

The Village of Shorewood

BAXTER & WOODMAN Consulting Engineers

PROPOSED RELIEF STORM SEWER CONDITIONS

EXHIBIT 18

Combined Sewer Service Area Environmental Assessment

The Village of Shorewood

BAXTER & WOODMAN Consulting Engineers

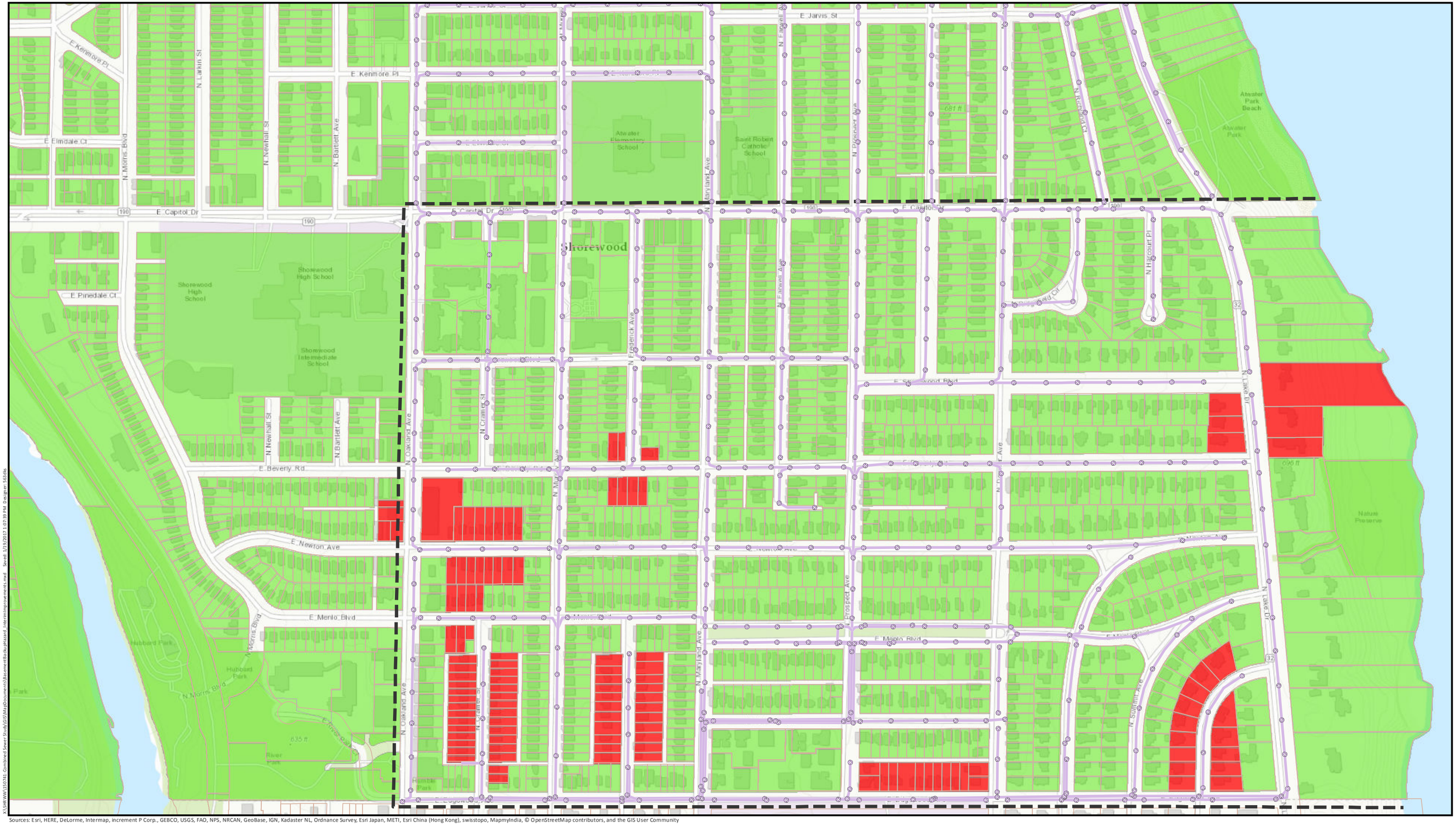
EXHIBITS

PROPOSED IMPROVEMENTS

- EXHIBIT 19: INTERIM IMPROVEMENTS AREA
- EXHIBIT 20: PROPOSED IMPROVEMENTS - PHASE 1
- EXHIBIT 21: PROPOSED IMPROVEMENTS - PHASE 2

EXHIBIT 19

INTERIM IMPROVEMENTS - HUNG PLUMBING/OVERHEAD SEWERS



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Existing Combined Sewer

Study Area

Parcels Scheduled for Interim Improvements

BAXTER & WOODMAN Consulting Engineers

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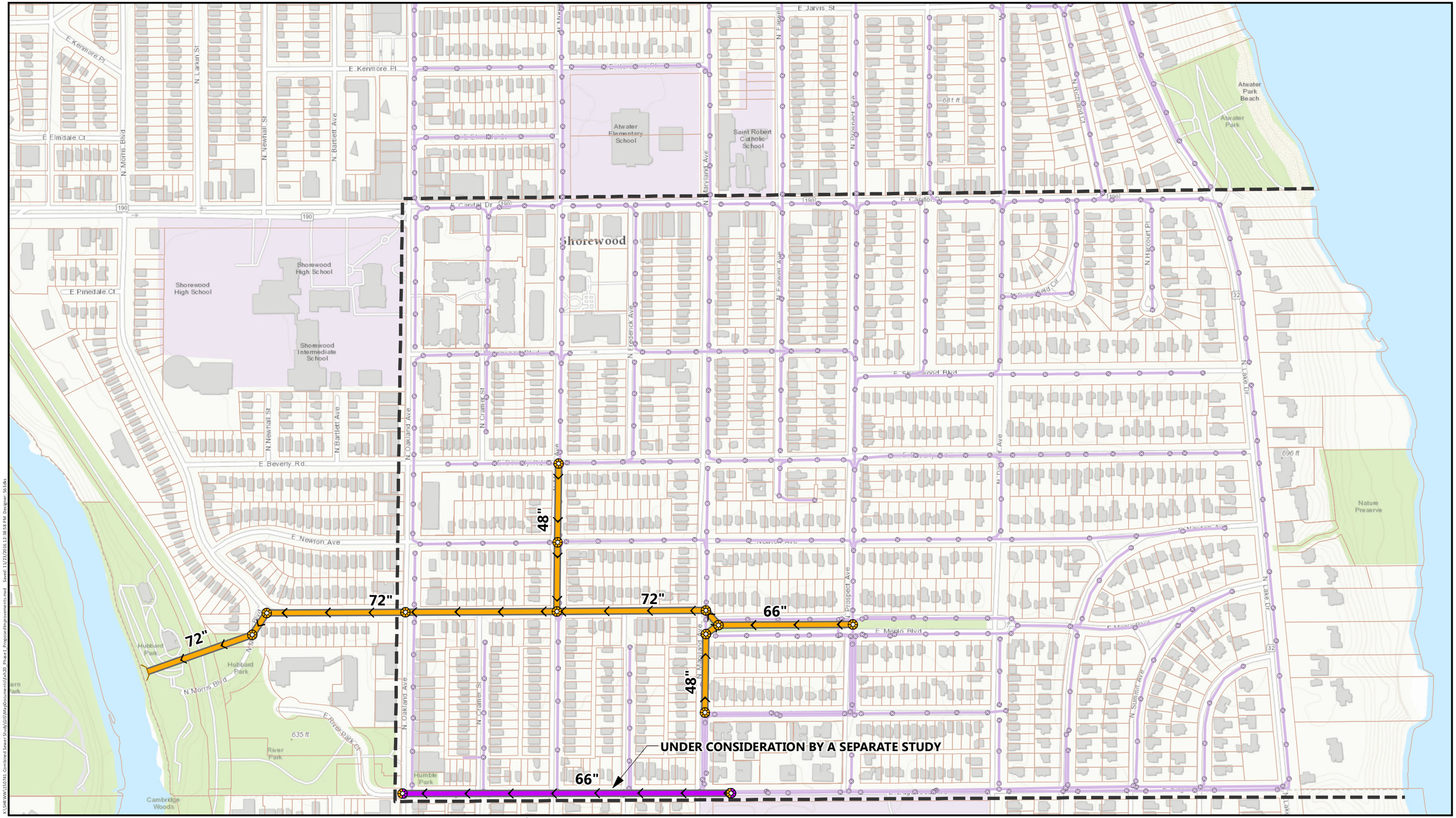
EXHIBIT 20

PROPOSED IMPROVEMENTS - PHASE 1



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Legend

- Proposed Overflow Storm Sewer
- Proposed Combined Sewer
- Existing Combined Sewer
- Study Area

BAXTER & WOODMAN Consulting Engineers

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EXHIBIT 21

PROPOSED IMPROVEMENTS - PHASE 2

30"
48"
48"
36"
48"
30"
48"
30"
54"
30"
54"
30"
72"
72"
72"
66"
48"
48"
66"
UNDER CONSIDERATION BY A SEPARATE STUDY

Shorewood
Shorewood High School
Shorewood Intermediate School
Atwater Elementary School
Saint Robert Catholic School
Atwater Park Beach
Atwater Park
Nature Preserve
Hubbard Park
River Park
Humble Park
Cambridge Woods
E Kenmore Pl
E Elmdale Ct
E Pinedale Ct
E Beverly Rd
E Newton Ave
E Capitol Dr
E Jarvis St
E Maple Blvd
N Morris Blvd
N Larkin St
N Newhall St
N Bartlett Ave
N Oakland Ave
N Frederick Ave
N Maryland Ave
N Cramer St
N Prospect Ave
N Richmond Ct
N Hillcrest Pl
N Lake Dr
N Summit Ave
E River Parkway
681 ft
635 ft
696 ft
190
32

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

N

1 " = 400 '

0 200 400 800 Feet

Legend

- Proposed Overflow Storm Sewer
- Proposed Combined Sewer
- Existing Combined Sewer
- Study Area

Constructed During Previous Phases

- Existing Combined Sewer
- Existing Overflow Storm Sewer

BAXTER & WOODMAN Consulting Engineers