# THE CITY OF THE VILLAGE OF DOUGLAS
# PARKS AND RECREATION AD HOC COMMITTEE

**TUESDAY, AUGUST 15, 2023 AT 1:00 PM**
**86 W CENTER ST., DOUGLAS MI**

## WORKSHOP MEETING AGENDA

1. **ROLL CALL**

2. **INFORMATIONAL ITEMS**

   **A.** Municipal Park Property
   **B.** Parks and Recreation Master Plans
   **C.** Waterfront Master Plan

3. **PARK TOUR**

4. **ADJOURNMENT**

**Please Note – The City of the Village of Douglas (the "City") is subject to the requirements of the Americans with Disabilities Act of 1990. Individuals with disabilities who plan to attend this meeting and who require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding the accessibility of this meeting or the facilities, are requested to contact Laura Kasper, Interim City Clerk, at (269) 857-1438, or clerk@douglasmi.gov to allow the City to make reasonable accommodations for those persons. CITY OF THE VILLAGE OF DOUGLAS, ALLEGAN COUNTY, MICHIGAN**

# MEMORANDUM

**Workshop**
**August 15, 2023**

**TO: Parks and Recreation Committee**

**FROM: Rich LaBombard, City Manager**

**SUBJECT: Municipal Park Property**

At the workshop, I will provide committee members with a map of municipal park property. This topic came up in discussion at the meeting on July 19, 2023. The map will be beneficial to understand the location of park property and development of the master plan update.

**Information Only**

# MEMORANDUM

**Workshop**
**August 15, 2023**

**TO: Parks and Recreation Committee**

**FROM: Rich LaBombard, City Manager**

**SUBJECT: Parks and Recreation Master Plans**

I've located development plans for a variety of Douglas park property. Attached are plans for:

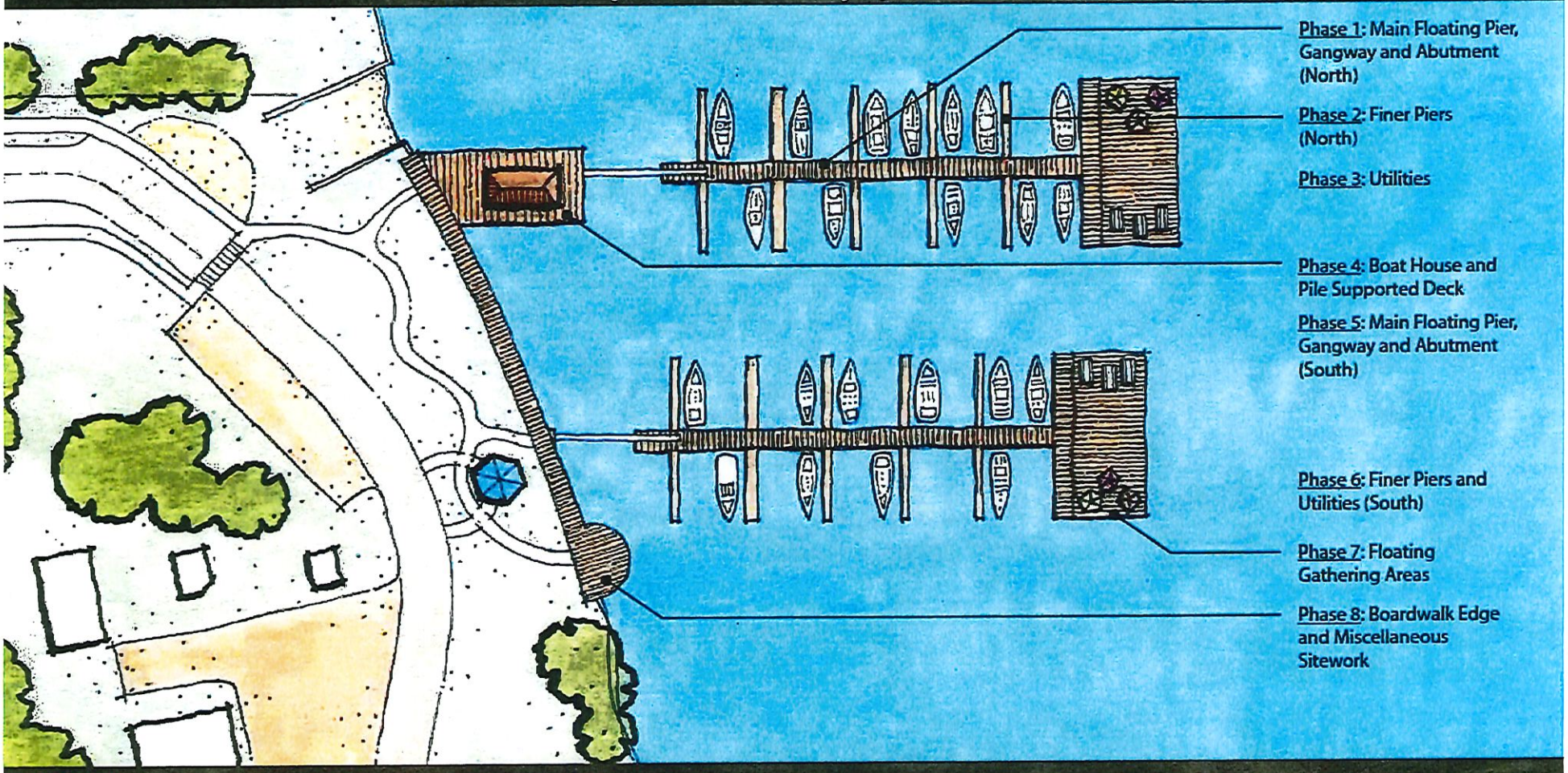
- Wades Bayou Memorial Park Marina – no date
- Beery Field and Wades Bayou – June 21, 2006
- Douglas Marina (formerly Point Pleasant Marina) – January 24, 2022

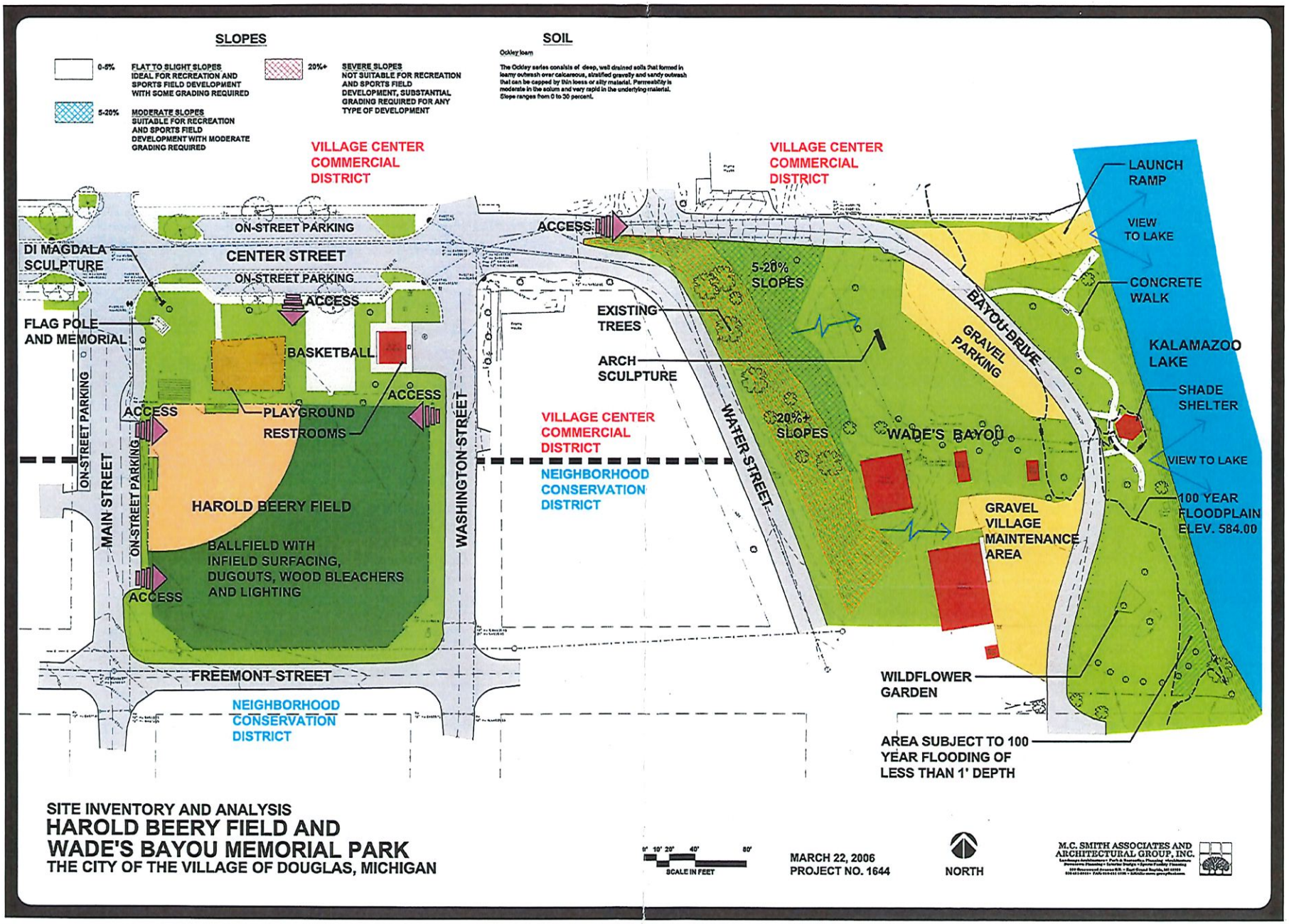
The plans will be helpful for updating the Parks and Recreation Master Plan.

**Information Only**

# Wades Bayou Memorial Park New Marina

- 24 Slips Phase One, 50 Slips Full Build Out
- Construction Cost $1.2M P1, $2.3M FBO $50k/Slip






SITE INVENTORY AND ANALYSIS

# HAROLD BEERY FIELD AND WADE'S BAYOU MEMORIAL PARK

THE CITY OF THE VILLAGE OF DOUGLAS, MICHIGAN

0' 10' 20' 40' 80'
SCALE IN FEET

MARCH 22, 2006
PROJECT NO. 1644

NORTH

M.C. SMITH ASSOCIATES AND ARCHITECTURAL GROUP, INC.

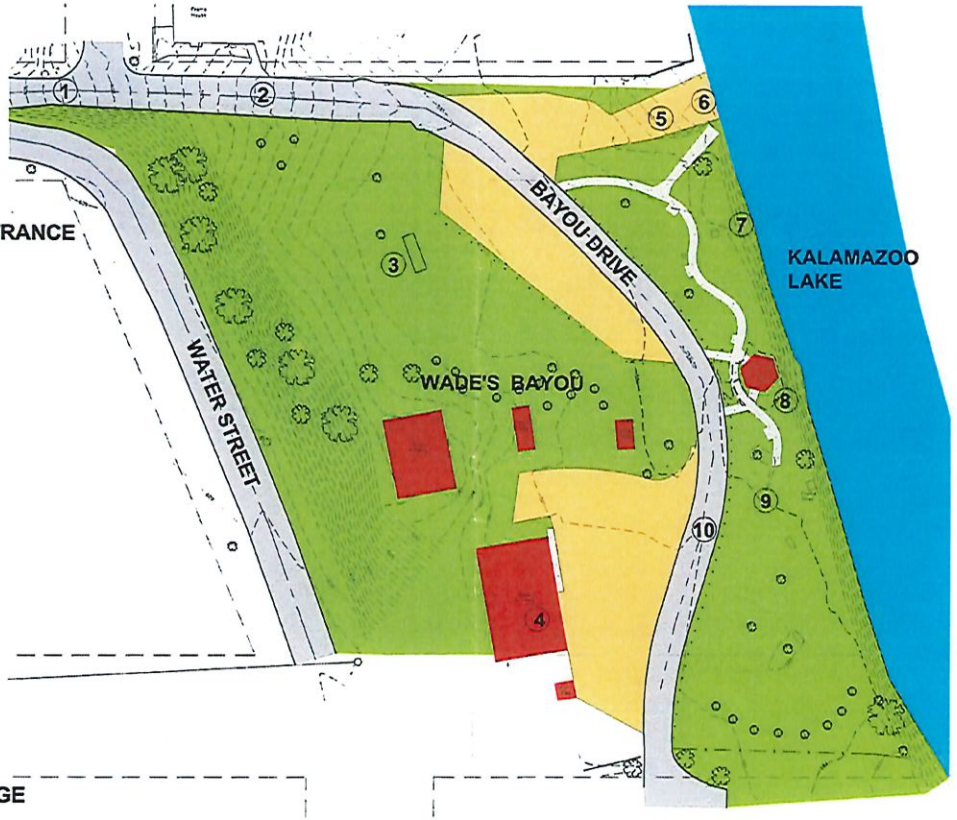
1. ENTRANCE TO WADE'S BAYOU

5. LAUNCH RAMP

6. LAUNCH RAMP

7. VIEW SOUTH ALONG LAKE

2. BAYOU DRIVE FROM PARK ENTRANCE




8. LOOKING SOUTH ALONG LAKE

3. ARCH SCULPTURE

9. VIEW NORTH ALONG LAKE

4. VILLAGE MAINTENANCE GARAGE

10. BAYOU DRIVE

SITE INVENTORY

# WADE'S BAYOU

THE CITY OF THE VILLAGE OF DOUGLAS, MICHIGAN

0' 10' 20' 40' 80'
SCALE IN FEET

MARCH 22, 2006
PROJECT NO. 1644

NORTH

M.C. SMITH ASSOCIATES AND ARCHITECTURAL GROUP, INC.

1. BASKETBALL COURT LOOKING SOUTH

4. VIEW EAST ALONG CENTER ST.

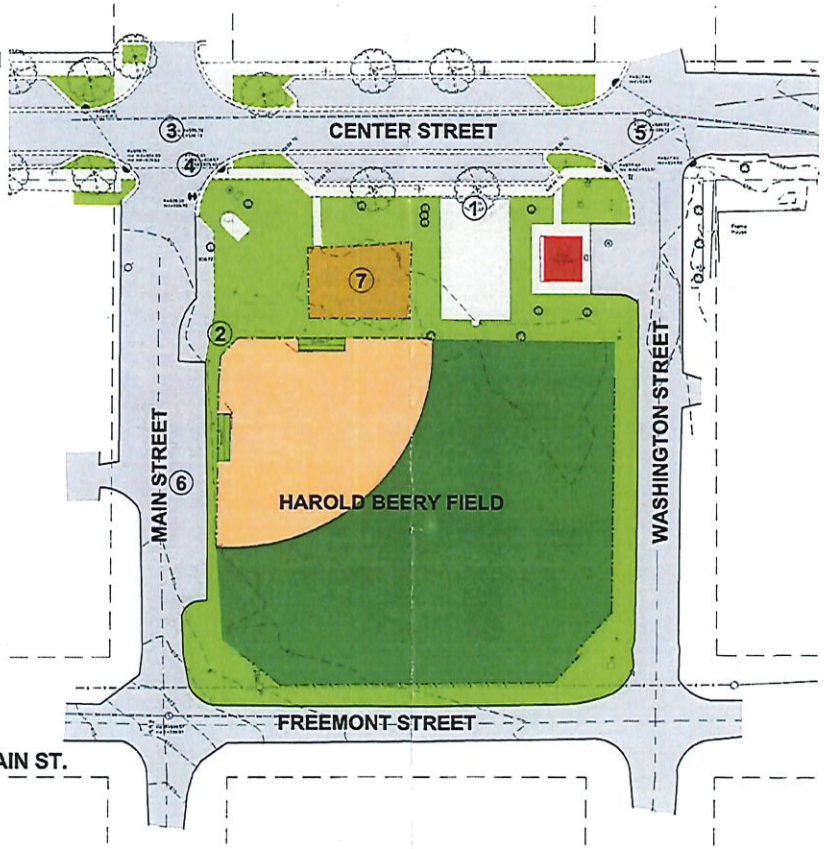
5. INTERSECTION OF CENTER AND WASHINGTON ST.

2. BALLFIELD BLEACHERS/BACKSTOP

6. VIEW SOUTH ON MAIN ST.

3. INTERSECTION OF CENTER ST. AND MAIN ST.

7. BEERY FIELD PLAYGROUND




SITE INVENTORY

# HAROLD BEERY FIELD

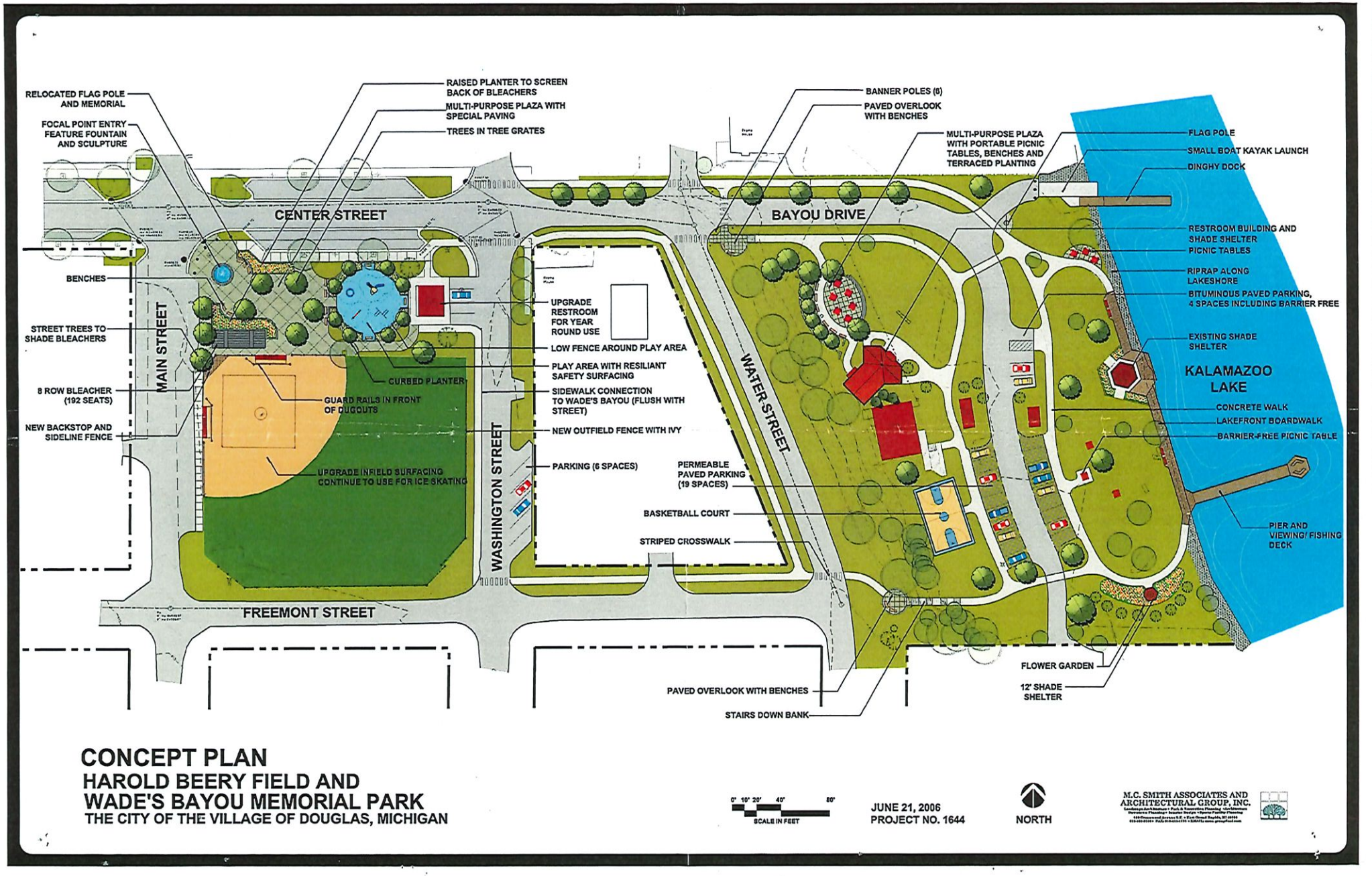
THE CITY OF THE VILLAGE OF DOUGLAS, MICHIGAN

0' 10' 20' 40' 80'
SCALE IN FEET

MARCH 22, 2006
PROJECT NO. 1644

NORTH

M.C. SMITH ASSOCIATES AND ARCHITECTURAL GROUP, INC.




# CONCEPT PLAN
## HAROLD BEERY FIELD AND WADE'S BAYOU MEMORIAL PARK
### THE CITY OF THE VILLAGE OF DOUGLAS, MICHIGAN

0' 10' 20' 40' 80'
SCALE IN FEET

JUNE 21, 2006
PROJECT NO. 1644

NORTH

M.C. SMITH ASSOCIATES AND ARCHITECTURAL GROUP, INC.


## LEGEND

- (A) MARINA EXPANSION
- (B) PAVILION WITH RESTROOMS
- (C) RELOCATED BUILDING
- (D) BOARDWALK
- (E) SOFT WETLAND EDGE
- (F) NATURE PLAYSPACE
- (G) PICNIC TABLES, ADIRONDACK CHAIRS, BENCHES
- (H) BRIDGE UNDERPASS
- (I) EXISTING BOARDWALK
- (J) EXISTING BIKE PATH
- (K) ACCESSIBLE PARKING
- (L) EXPANDED PARKING

$3,375,272

Edgewater resources
518 Broad Street, Suite 200
Saint Joseph, MI 49085
P: 269.932.4502
edgewaterresources.com

PROJECT TITLE:
**POINT PLEASANT PARK**
WASHINGTON STREET
DOUGLAS, MI

SHEET TITLE:
SITE PLAN

| DATE | REVISION |
|---|---|
| | |

ISSUED FOR:
EXHIBIT

DATE: 1/24/22
PROJ NO.: 21-075
NORTH

SCALE: 1" = 30' (AT 24"x36")

DESIGNED BY: GWMD
DRAWN BY: MR
REVIEWED BY: -



SHEET NUMBER:
**L-1.01**

# MEMORANDUM

**Workshop**
**August 15, 2023**

**TO: Parks and Recreation Committee**

**FROM: Rich LaBombard, City Manager**

**SUBJECT: Waterfront Master Plan**

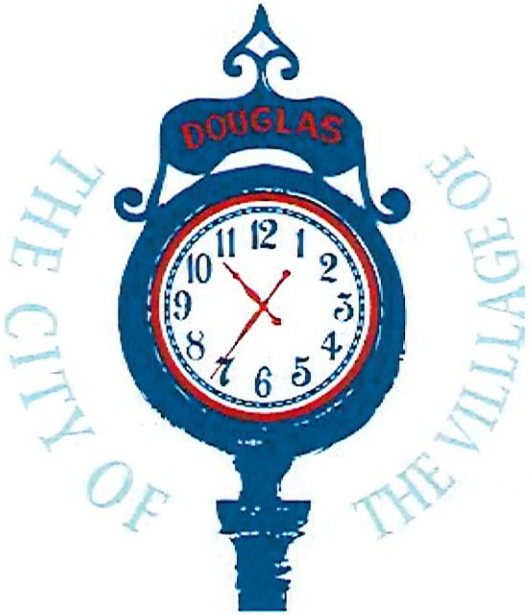
An important element to consider in the updating of the Parks and Recreation Master Plan is the Waterfront Master Plan. I'm providing a copy of the master plan.

**Information Only**

# WATERFRONT MASTER PLAN

June 1, 2016

City of the Village of Douglas, Michigan




Prepared for the City of the Village of Douglas, Michigan

86 West Center Street
Douglas, Michigan 49406

Prepared by:

Edgewater resources
Edgewater Resources, LLC
518 Broad Street, Suite 200
St. Joseph, MI 49085

# acknowledgements

City Council
James Wiley, Mayor
Greg Harvath
Kathryn Mooradian
Bill Japinga
Neil Seabert
Lisa Greenwood
Gerald Schmidt

City Manager
William F. LeFevere

Community & Economic Development Director
Lisa Imus

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# 01/ introduction

# introduction

## PLAN PURPOSE

The City of the Village of Douglas, located in Allegan County, Michigan, boasts nearly three miles of waterfront on Lake Michigan, Kalamazoo Lake, and the Kalamazoo River (also called 'Wade's Bayou' within city limits). Douglas is known as a vibrant and friendly community with high-quality natural areas and parks, linked by pedestrian-friendly sidewalks and trails. The historic downtown shopping district on Center Street attracts visitors year-round, and terminates at the popular Wade's Bayou Memorial Park, which offers boating access and stunning views of a portion of the Douglas waterfront. Boating, both motorized in Kalamazoo Lake, and non-motorized in Wade's Bayou, continues to be a significant aspect of Douglas' identity as a waterfront community.

The Kalamazoo Lake Harbor Authority Harbor Committee, formed in 2008 and consisting of local community leaders and City staff from Douglas and the neighboring City of Saugatuck and Saugatuck Township, was formed to address the issue of low water levels and significant sediment in the Saugatuck-Douglas Harbor, which includes both Kalamazoo Lake and Wade's Bayou. The committee was initially charged with the task of reviewing, evaluating and making recommendations to each of the three municipalities regarding possible harbor dredging and maintenance issues as well as what actions could be taken to fund these activities.

Edgewater Resources has been working with the Harbor Committee since 2011 on identifying cost effective strategies for long term harbor maintenance, and was asked to work with the City of the Village of Douglas to prepare a Waterfront Master Plan for all waterfront properties and key adjacent parcels within the City limits. The project includes community outreach and stakeholder workshops with business owners, residents, permitting agencies, and local interest groups to best understand all elements of the waterfront, and the goals of the community.

The primary purpose of this effort is to work with the community to identify a financially viable strategy to achieve the community's goals of expanded public waterfront, economic enhancement, and a viable long term funding source for harbor maintenance.

## PROJECT LOCATION

The City of the Village of Douglas is located on the Lake Michigan shoreline, is surrounded by Saugatuck Township and is adjacent to the City of Saugatuck, a popular tourist destination, to the north. The population of Douglas is 1,232 full-time residents according to the 2010 census. The City has a tourism-based, seasonal economy and many summer homes not counted as primary residences in census data.

The scope of the Waterfront Master Plan includes the entirety of waterfront property within Douglas city limits, as shown by the dashed blue line below.

# introduction

## GOALS

The goal of the Master Plan is to create a waterfront environment that is authentic to the history and character of the Douglas community and attracts locals and tourists alike through its beauty and unique amenities. The Plan must be economically viable, and outline initiatives that the community will support and regulatory agencies will permit.

The scope of the Plan is to perform a high level assessment of all properties along the waterfront within the City limits to identify potential opportunities for enhancing public access to the waterfront, as well as identifying potential opportunities for mutually beneficial public/private partnerships and/or acquisition. Potential opportunities, among others, include expansion of public waterfront parks and access trails, creation of new watercraft access sites (canoe, kayak, etc), creation and/or acquisition of a municipal marina facility, improved ADA compliance, improved connections between adjacent neighborhoods and the waterfront, and facilitation of the long term harbor planning and dredging efforts.

## OBJECTIVES

- Establish a community-supported vision for the future of the harbor.
- Ensure consensus with permitting agencies.
- Outline the most cost effective strategy for achieving that vision.
- Review funding alternatives for making it happen.

*Tasks to Help Achieve Objectives*

- Prepare an existing conditions analysis of the waterfront.
- Assess existing properties to identify the condition and likely lifespan of site features.
- Develop a land use plan, with written descriptions of uses and building types that will correlate to a future form based code.
- Establish a framework plan outlining alternative potential partnership scenarios.
- Outline a range of potential acquisition scenarios, including high level assessment of value, assessment of economic feasibility, and potential funding and/or grant strategies.
- Develop an illustrative plan of the waterfront on which the future form based code will be based.

Douglas waterfront from Mt. Baldhead (northwest of Douglas)

## RELATED PLANNING EFFORTS

*Tri-Community Comprehensive Plan* (2005)
The first Tri-Community Plan was prepared in 1989. The Plan surveyed area leaders about local opportunities and challenges and administered a public opinion survey. This information helped direct planning decisions for Douglas, Saugatuck, and Saugatuck Township, with the goal of improving quality of life for all citizens. The 2005 update outlined key strategies for preserving the rural character of the area while planning carefully and appropriately for future development and growth.

*Kalamazoo Harbor Master Plan* (2007)
Created by the Kalamazoo Lake Harbor Authority to address sedimentation issues and low water levels in the harbor. Provided Master Plan dredging alternatives. Key points:

- More comprehensive dredging program for recreational use of Kalamazoo Lake.
- Initial Dredging of 1,000,000 cubic yards.
- More incentive for private development, day use of harbor, and economic stimulus for local economy.
- Initial Cost: $35-$45 Million.
- Dredging could be completed in stages.
- Annual maintenance dredging still required.
- "Creating an in-basin CDF is not likely to get MDEQ support, because it will fill existing lake bottom and shallow water habitat."
- Channeling the river with stone structures does not have a substantial track record in Michigan and regulators and resource experts "were skeptical as to its feasibility."

*MDNR Fisheries Division Response* (February 2007)

- Supports development of a master plan.
- Not supportive of extensive dredging of shallow water habitats in Kalamazoo and Douglas Lakes.
- Future marina development and dredging should be limited downstream of Blue Star Highway with exception of maintenance dredging of current facilities.

*Kalamazoo Lake Harbor Long Term Plan, Douglas and Saugatuck* (2015)
The Kalamazoo Lake Harbor Long Term Plan includes two parallel efforts to address the most cost effective strategies for dredging and harbor maintenance. Both the City of Saugatuck and City of the Village of Douglas engaged Edgewater Resources to prepare plans achieving this shared goal, but with separate approaches appropriate to the specific needs of each community in terms of funding and community outreach. The City of Saugatuck plan will be completed in early Summer 2016, and the City of the Village of Douglas plan has been integrated seamlessly within this report as part of the Douglas Waterfront Master Plan.

*Our Douglas Vision Master Plan* (2015)
Our Douglas Vision is the Master Plan for the City, it contains:

- A compelling, achievable and shared community vision.
- Future land use plan.
- Goals, objectives, and strategies for implementation.

*Placemaking Initiative* (2015)
Focus on "appropriate" waterfront development that:

- Stays true to our aesthetic vision.
- Reflects our community's commitment to the arts and to diversity and inclusion.
- Is environmentally sustainable.
- Showcases our natural resources.
- Attracts diverse, year-round, multi-generational residents and visitors.
- Is linked by safe trails.
- Supports locally-owned businesses.

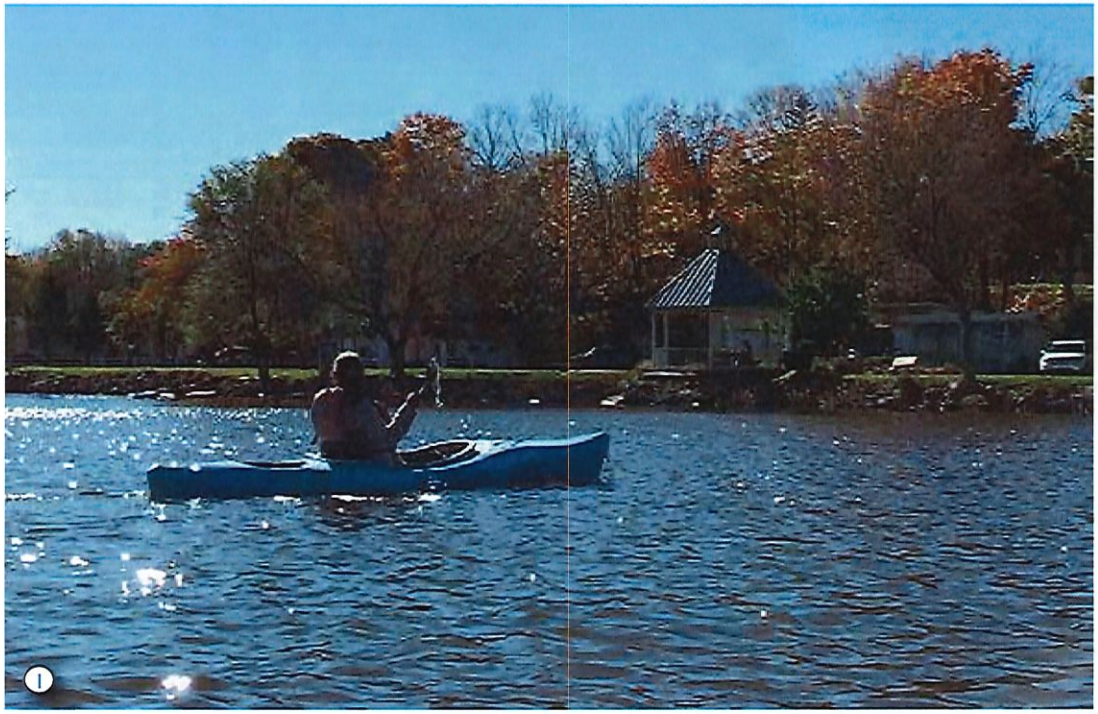
# 02/ site assessment

# site assessment

## SITE INVENTORY

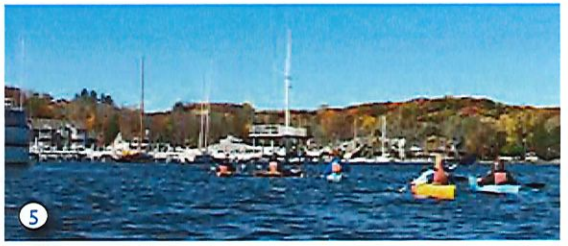
In late October 2014, the planning team conducted a waterfront inventory tour, via kayak, of the entire length of Douglas waterfront properties in Kalamazoo Lake and Wade's Bayou.


1. Wade's Bayou Memorial Park Pavilion
2. Wade's Bayou
3. Private homes south of Blue Star Highway Bridge
4. Red Dock Cafe, Kalamazoo Lake
5. Tower Marine, Kalamazoo Lake









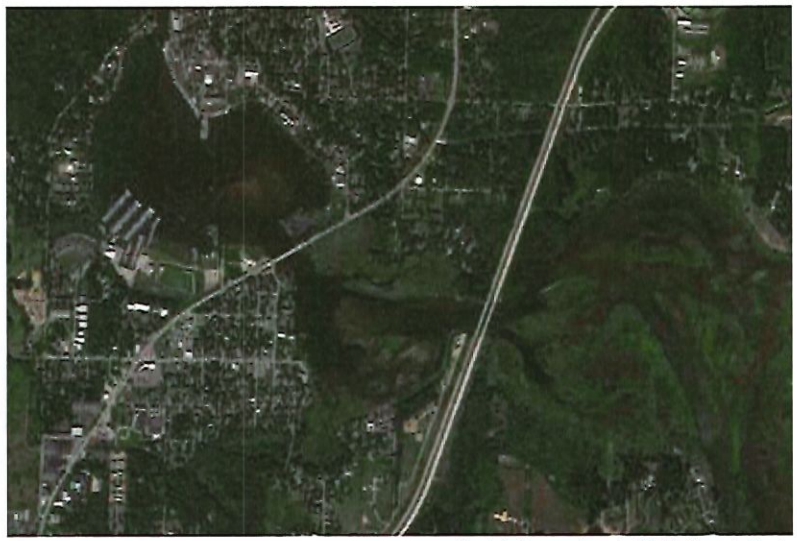
# site assessment

## HARBOR CONDITIONS

The natural condition of the harbor is to function as a wetland and flood zone for the Kalamazoo River. Human intervention created a navigable lake between the 1880s and 1930s, with ongoing maintenance dredging. The western portion of Douglas Harbor was dredged to navigable depths.

Sedimentation occurs at roughly 36,000cy/year (roughly a football field 20' deep). The primary source is erosion from upstream farmlands. The effects of sedimentation are compounded by natural fluctuations in Lake Michigan: when water levels are low, dredging is even more critical.

Aerial photo taken in 1997, GoogleEarth



Aerial photo taken in 2016, GoogleEarth

*"Given the current physical constraints of the Kalamazoo watershed, it is likely that the deposition of sediment will continue to occur throughout Kalamazoo Lake, eventually reducing the lake to nothing more than a narrow river channel."*

Guy A. Meadows, PhD
Professor and Graduate Program Chair, University of Michigan Naval Architecture & Marine Engineering, 3/13/2007 Letter

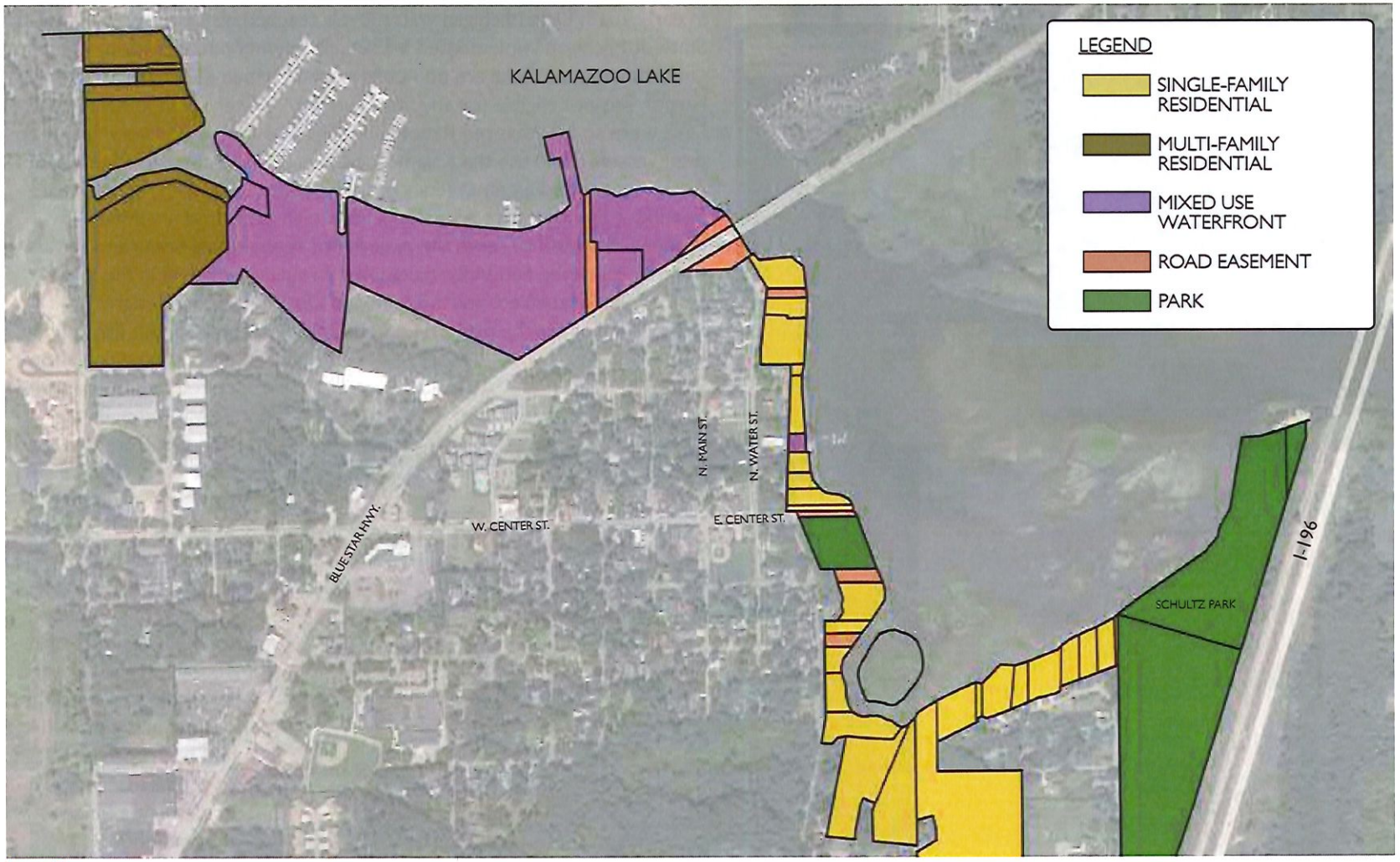
# site assessment

*Past Dredging Solutions*

In early 2013, Lake Michigan water levels reached historic lows, and the State of Michigan implemented a $30 million emergency dredging program. Unfortunately, as there are no public marinas within Kalamazoo Lake, the harbor was not eligible for any State funding. Water levels in Kalamazoo Lake were so low that recreational boating was at risk, and very few deep draft vessels could use the Kalamazoo Lake. The Kalamazoo Lake Harbor Authority created an emergency dredging plan to maintain recreational boating at the lowest cost possible. This plan proposed a number of channels designed to serve the majority of recreational boats and allow them to reach the Federally maintained navigation channel in the river. Permits were received, and a Contained Disposal Facility designed. A lack of funding for the plan prevented its implementation, but fortunately, private dredging efforts to remove the historic Kewatin ship from Red Dock created an 8' deep channel that served Tower Marine, combined with a historic rise in lake levels the following year reduced the urgency to implement the plan. To date, higher water levels have created the opportunity for KLHA and both communities to prepare and implement a longer term solution.

# site assessment

## EXISTING LAND USE



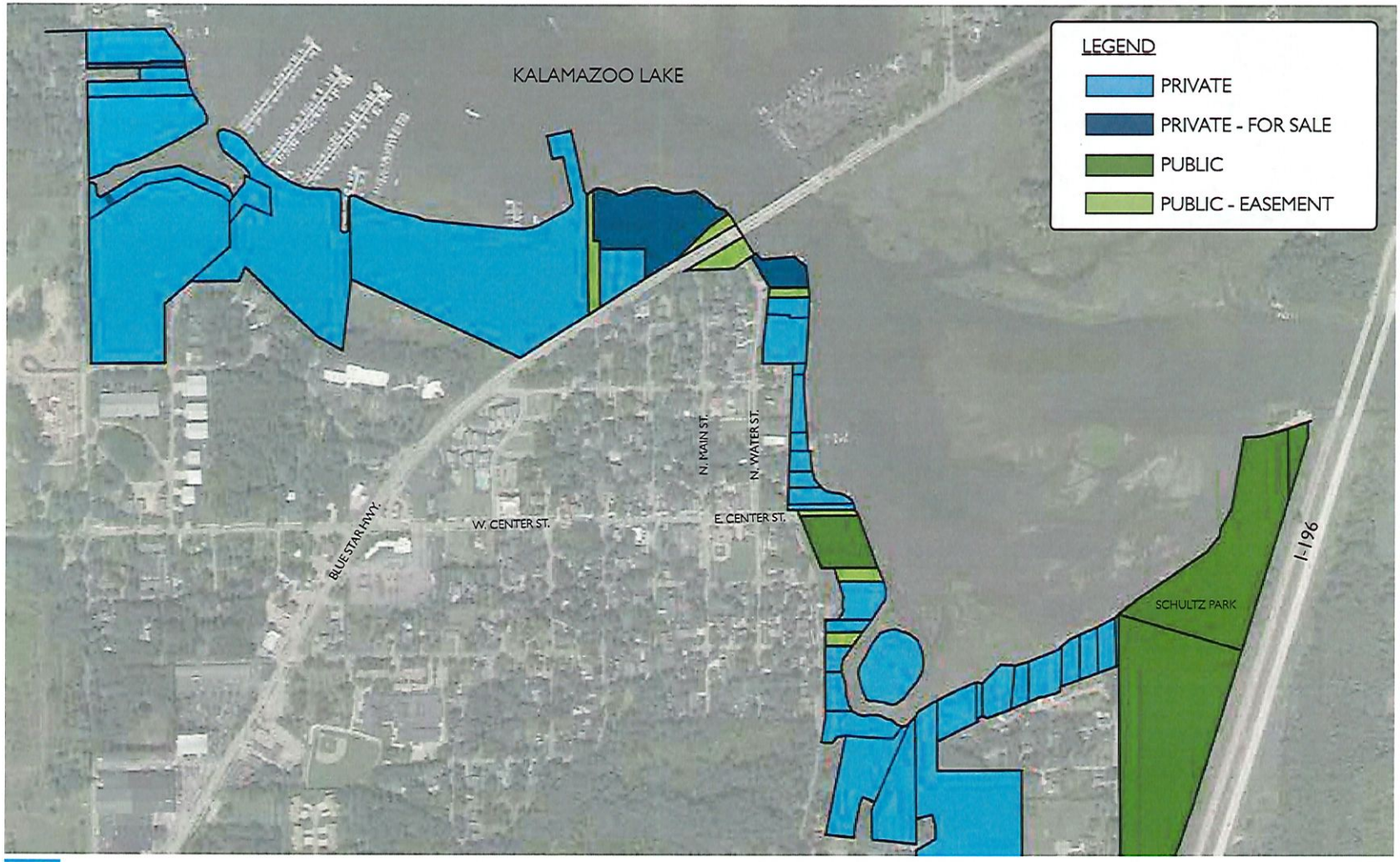

Douglas Waterfront Assessment
Village of Douglas, MI

*Existing Land Use*

0 100 200 400

N

## CURRENT PROPERTY OWNERSHIP



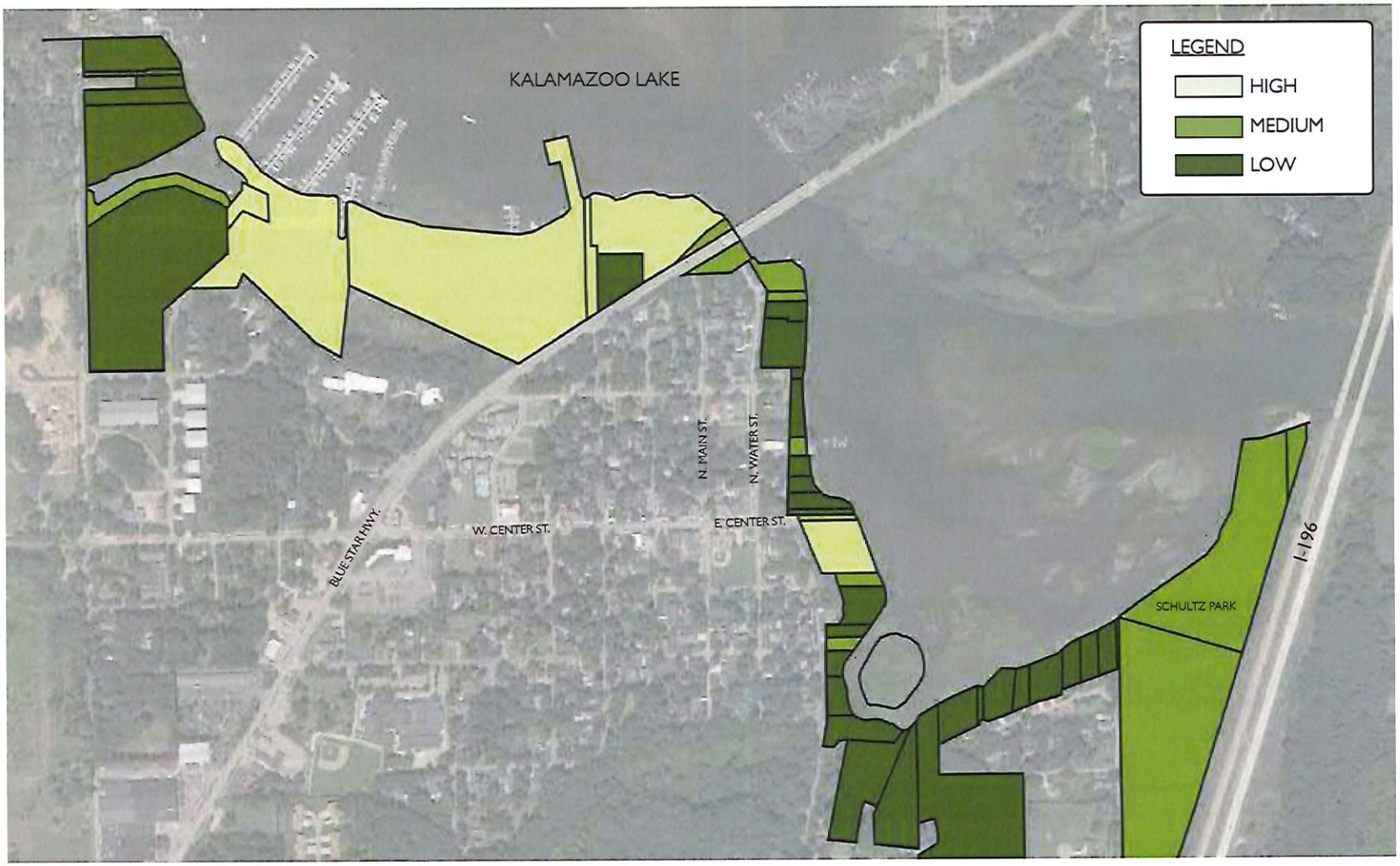

Douglas Waterfront Assessment
Village of Douglas, MI

*Current Property Ownership*

0 100 200 400 N

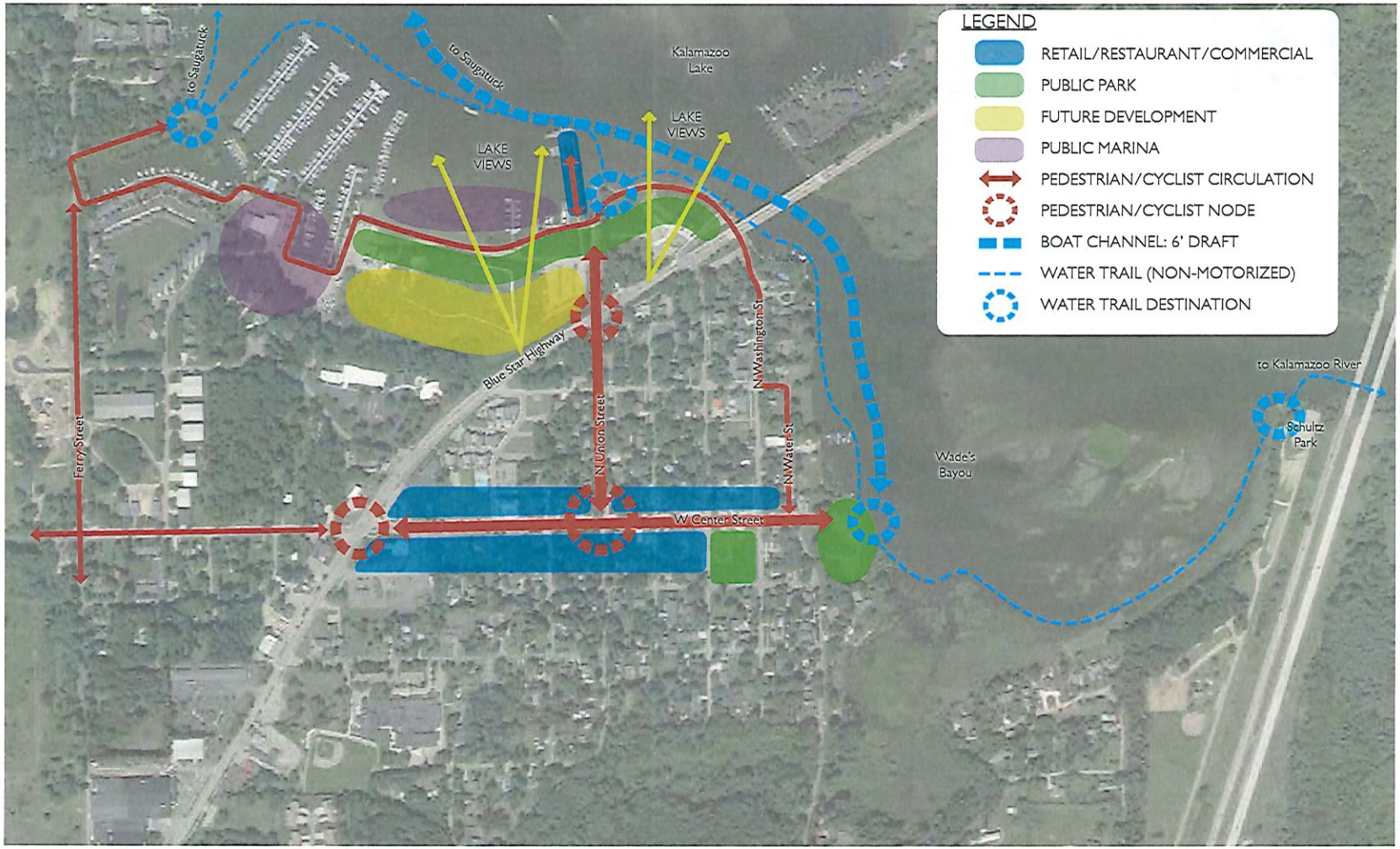
# site assessment

## SUSCEPTIBILITY TO CHANGE



# site assessment

## SITE ANALYSIS




Douglas Waterfront
Village of Douglas, MI

*Proposed Land Use Diagram*

# 03/ community outreach

# community outreach

## PUBLIC INPUT PROCESS

Community Visioning Sessions were held to outline issues and goals of the project. These meetings were planned to obtain feedback on community preference for Master Plan recommendations and to review funding alternatives, including potential impacts on taxes. The ultimate goal of the outreach sessions was to involve the public throughout the planning process in order to create a final Plan with full community support.

*Key Questions to the Douglas Community*

What is the future of our waterfront: Public? Private? Or a thoughtful mix of uses?

Without regular dredging, the harbor will fill with sediment: what does maintaining a navigable harbor mean to our community? What needs to be done to maintain the harbor, and how do we pay for it?

When anticipating development pressure, decisions must be made: who leads? Public or private? What does appropriate development look like, and how do we ensure that it happens?

*Public Sessions*

- Master Plan Community Workshop, January 26, 2015
- Master Plan Open House, March 23, 2015
- MiPlace Workshop, April 14-15, 2015 (Presented by William & Works)
- Community Meeting #1, May 7, 2015 – Overall Harbor Vision and Dredging Goals
- Community Meeting #2, June 11, 2015 – Overall Waterfront Character Vision
- Community Meeting #3, July 9, 2015 – Interactive Planning Charrette (with Legos!)
- Community Meeting #4, November 17, 2015 – Draft Harbor Plan Presentation

# community outreach

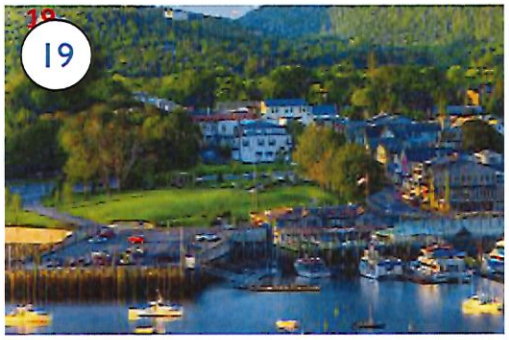
## FEEDBACK

**Community Workshop, January 26, 2015:** Attendees were introduced to the project and asked to add green stickers to images that they felt were appropriate and desirable to the Douglas waterfront. The images below represent the most popular of approximately 50 images. Numbers correspond to number of green stickers.



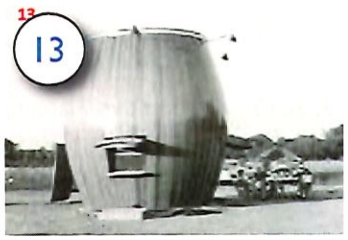













# community outreach

**Open House, March 23, 2015:** In this session, three development alternatives were presented for discussion and comment. Each option showed a different development strategy and density. All options included a hotel. Each alternative included an estimate of potential property tax revenue generated. The goal was to graphically communicate how private development can help fund a public waterfront and other desired amenities.

Feedback received:

- The harbor is the economic engine that fuels our economy, we must protect and enhance it to maintain its value.
- Focus first on needs of residents (current and future), then tourists.
- Harbor is important but seasonal, attracting and maintaining year-round business should be top priority.
- Collaborate with MiPlace Initiative.
- "Yes you are crazy, but you are very nice!!"

# community outreach

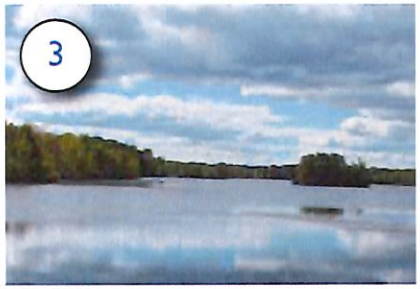
**Community Meeting #1, May 7, 2015:** Feedback from the previous meeting indicated that the community was not yet comfortable discussing higher density development options for the Kalamazoo Lake waterfront, including consideration of a hotel. For this reason, at the May meeting the planning team took a step back to assess the community's overall goals for the Douglas waterfront. The goal was to solidly establish priorities for desired public amenities before revisiting development options that would help fund these amenities. The images below and on the following page represent the most popular images, separated by location of Kalamazoo Lake or Wade's Bayou, which have distinctly unique character. Numbers correspond to number of green stickers.

Most popular images for Kalamazoo Lake:

- Maintain navigable harbor with channel for ferry/smaller cruise ships
- Provide a municipal marina
- Islands should be natural in character
- Include a variety of recreational options for residents and visitors
- Leverage private investment to create long term funding



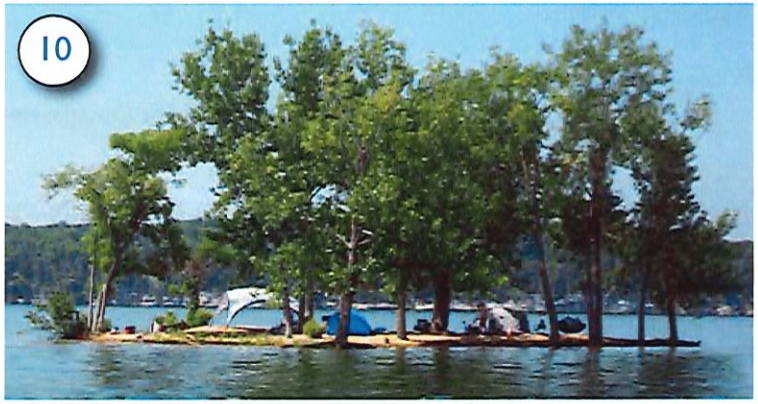





# community outreach

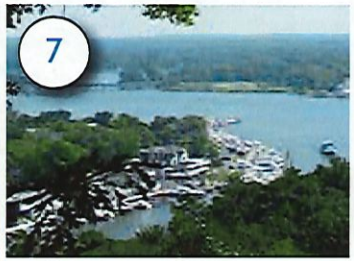
Most popular images for Wade's Bayou:

- Provide navigable channel to Center Street dock, but otherwise keep this side natural in character
- We like harbor as it is, doesn't need extensive engineering
- Any islands should be natural in character
- Include a variety of recreational options for residents and visitors – with a focus on non-motorized watercraft









# community outreach

**Community Meeting #2, June 11, 2015:** This session reviewed the results of the May Visioning Exercise and worked to establish goals for the waterfront vision.

Priorities established:

- Authenticity matters - keep in mind what makes Douglas special, development should feel integrated into the community
- Keep the water's edge public!
- Architectural character matters
- Light up the harbor with activity at night, year-round with winter activities
- Restaurants on the water are desirable
- Development should be sustainable, durable, still beautiful in 50 years
- Careful balance of density (revenue generation) and public space (requires funding)

# community outreach

**Community Meeting #3, July 9, 2015:** For this interactive planning session, the planning team created three models (10' contours accurately depicted with foam core, cotton balls represent existing trees) of the Kalamazoo Lake waterfront. The scale used for the models was such that one 4-post Lego brick = one development unit of approximately 1,200 square feet. Grey bricks represent residential units, red represent retail units. A dollar amount was assigned to each development unit, and a "menu" was provided, to show how many bricks would be required to fund each of the public amenities desired in previous public sessions. The three identical models were spaced around the room and attendees were asked to split into three groups (one group per model), determine which menu items were highest priority, and then use Lego bricks to show the type of development that they determined to be appropriate and acceptable in order to fund those improvements. It is important to note that this exercise is based on general assumptions on current real estate values, and this is a conceptual study.

*What is a unit worth?*

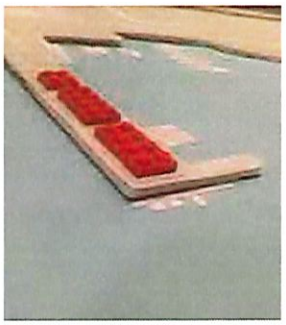
- Each residential unit (grey Lego brick) will fund $100k in improvements through revenue bond funding
- Based on assumed purchase price of $500k
- 1.5% tax rate would generate $7,500
- $7,500/year will fund $100k over 20 years at 3%

*What about other types of development?*

- Restaurant/Retail Units will Fund $200k
- Each Residential Unit will Fund $100k
- Senior/Assisted Living Units will Fund $100k
- Hotel / Resort Units will Fund $100k
- Commercial / Office will Fund $100k





Each of the images above shows how many Lego bricks were required to fund $1 Million in public waterfront improvements. The images were shown to demonstrate various ways to achieve the same funding goals, some lower density with more land impacted, and some higher density with a smaller footprint.

# community outreach

*"Menu" of Desired Alternatives*

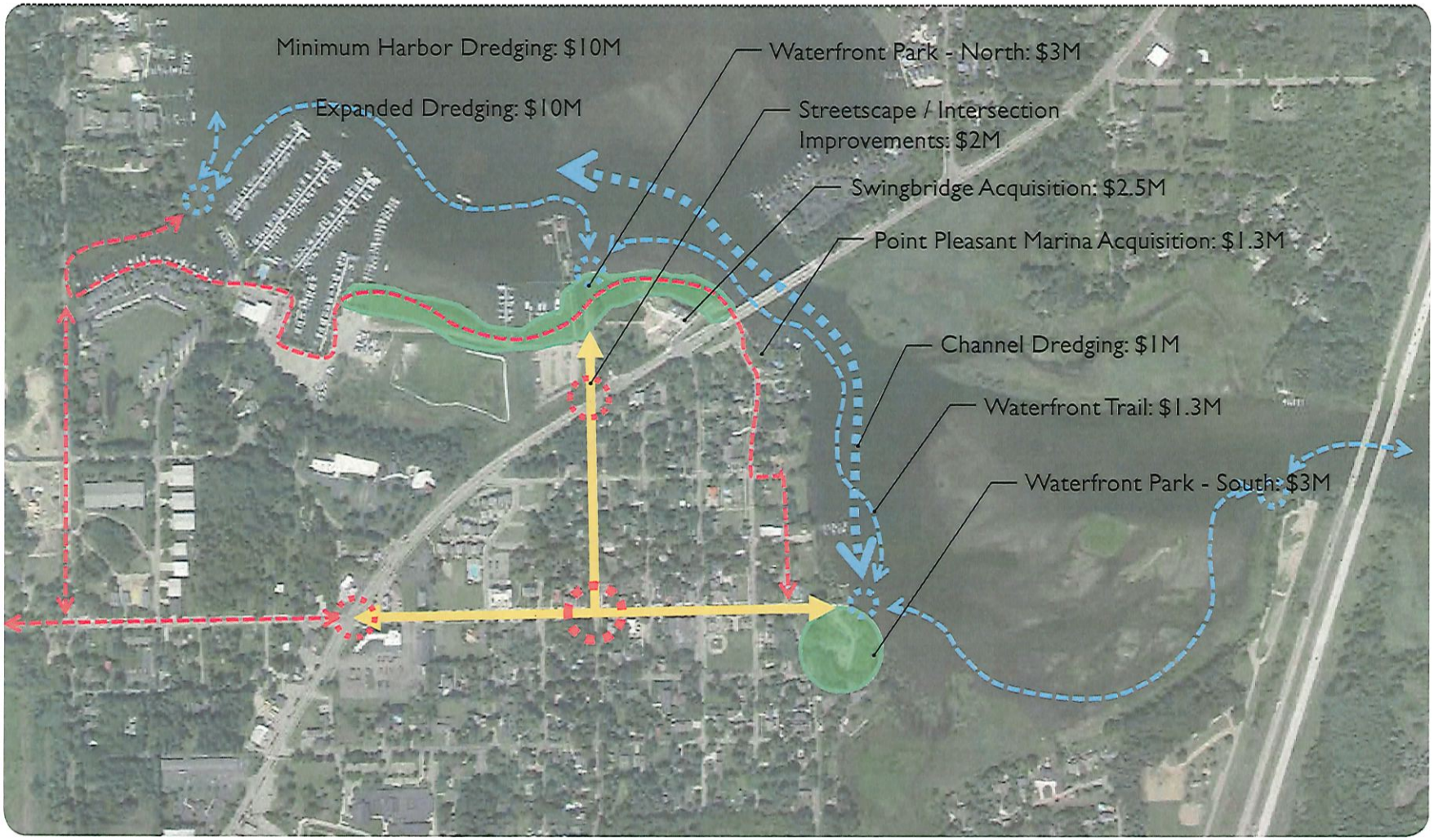
1. Acquisition of Tower Marine
2. Minimum Harbor Dredging
3. Expanded Dredging
4. Waterfront Park North
5. Waterfront Park South
6. Swing Bridge Acquisition
7. Streetscape/Intersection Improvements
8. Point Pleasant Marina Acquisition
9. Waterfront Trail
10. Wade's Bayou Channel Dredging

*Conceptual Level Costs*

| | |
|---|---|
| Minimum Harbor Dredging: | $10 Million |
| Expanded Dredging: | $10 Million |
| Waterfront Park North: | $ 3 Million |
| Waterfront Park South: | $ 3 Million |
| Swing Bridge Acquisition: | $ 2.5 Million |
| Streetscape/Intersection Improvements: | $ 2 Million |
| Point Pleasant Marina Acquisition: | $ 1.3 Million |
| Waterfront Trail: | $ 1.3 Million |
| Wade's Bayou Channel Dredging: | $ 1 Million |

Note: The cost of acquisition of Tower Marine itself will be offset by either the rent paid by an operator, the funds used to purchase the marina if sold, or the revenues received from slip rentals if the City chooses to operate the facility.

# community outreach



# community outreach

*GROUP A*
This group planned minimal development necessary to accomplish harbor dredging. This was achieved with retail units and residential units.

It is important to note that this concept does not provide adequate funding for minimum park improvements, so while the waterfront comes into public ownership, there are no funds to make the space usable by the public.

Total units: 100 ($10M in improvements)

*GROUP B*
This group took a moderate approach. Their 'menu' items included dredging, waterfront trail, waterfront park north, Swing Bridge acquisition, and expanded dredging into Wade's Bayou.

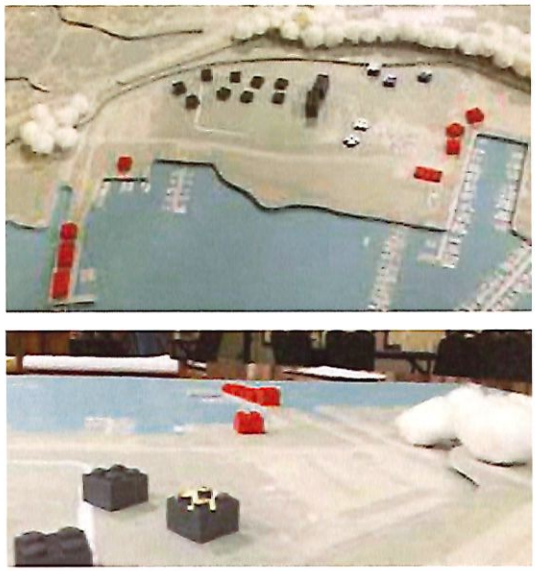
This concept had a generally positive overall response.

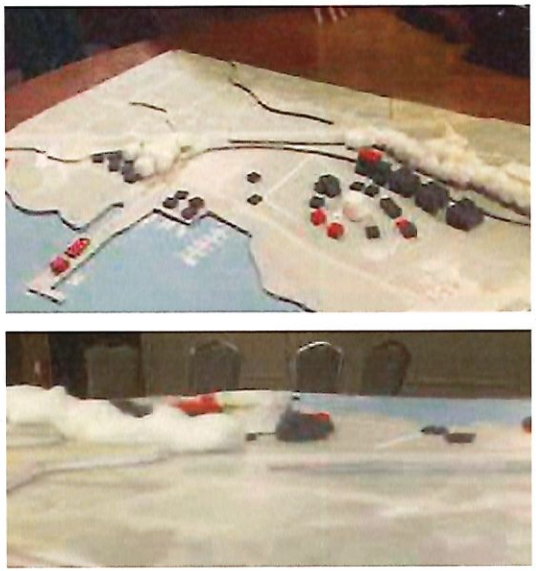
Total units: 178 ($17.8M in improvements)

*GROUP C*
This group wanted the 'full program' of menu items, which includes all of Group B's items plus expanded dredging, streetscape improvements, and waterfront park south.

This is the only concept that achieves/ provides funding for all of the goals desired by the community in earlier input sessions.

Total units: 328 ($32.8M in improvements)



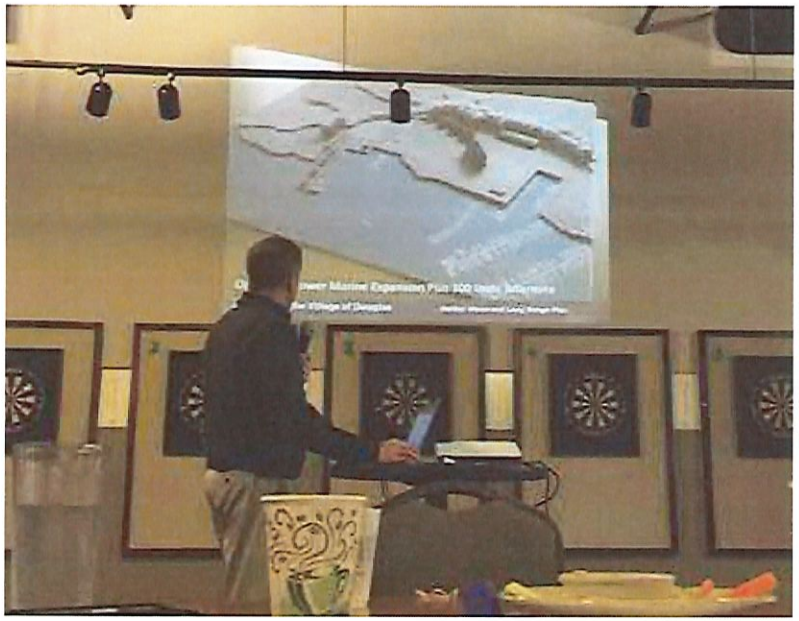


# community outreach

**Community Meeting #4, November 17, 2015:** This session reviewed the results of the interactive Lego planning session, and presented the public with a series of plan graphic options to correspond to the plans developed with the models. Options A-F were presented.

General feedback:

- Douglas channel dredging should be highest priority
- First acquisition step should be purchase of Tower Marine to get that property into public ownership
- Community acknowledged the potential need for design options with more development, or higher-density development - with the caveat that open spaces should be of high quality, preserving views and hiding parking to the extent possible



# 04/ concept alternatives

# concept alternatives

## OPTION A - TOWER MARINE EXPANSION

# concept alternatives

## OPTION B - TOWER MARINE EXPANSION plus 100 units

# concept alternatives

## OPTION C - TOWER MARINE EXPANSION plus 200 units


Option C

1. Tower Marine Site
2. Marina
3. Retail
4. 100 unit residential building or hotel
5. Parking to serve retail and hotel
6. Marina
7. Indoor boat storage
8. Retail/restaurant
9. Retail/restaurant and transient slips
10. Natural area/park
11. Farmer's Market and parking
12. Cruise ship dock and park
13. Waterfront trail
14. Park
15. Intersection improvements with link to downtown
16. Four residential buildings: 25 units each with parking behind

# concept alternatives

## OPTION D - TOWER MARINE EXPANSION plus 200 units

# concept alternatives

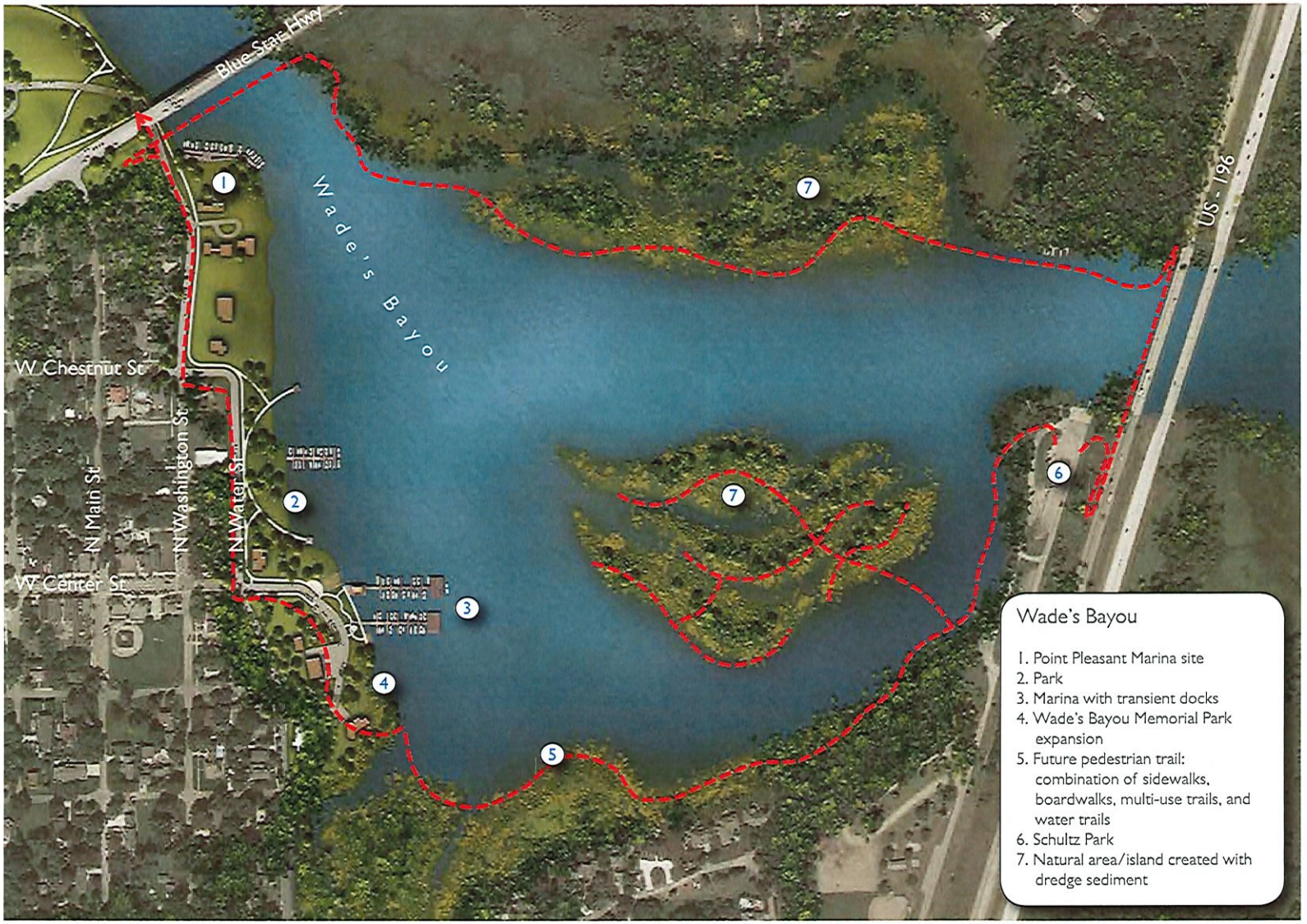
## OPTION E - TOWER MARINE EXPANSION plus 300 units

# concept alternatives

## OPTION F - TOWER MARINE EXPANSION plus 300 units

# concept alternatives

## WADE'S BAYOU



# 05/ consensus plan

# consensus plan

# consensus plan

## PLAN DESCRIPTION

The final consensus plan for the Douglas waterfront is the result of extensive community involvement, and is a financially viable vision that achieves a balance of uses that will significantly enhance public access to the water throughout the Douglas community.

*Public Access to the Waterfront*

The community expressed a clear desire to significantly expand public ownership of the waterfront wherever possible, while still supporting viable waterfront businesses that activate the waterfront and draw visitors to the community. This careful mix of uses includes:

- passive green space with continuous waterfront trails that link as much of the waterfront as possible
- functional green infrastructure that cleans stormwater while creating habitat
- existing and new waterfront restaurants that serve local residents and attract visitors to downtown Douglas businesses
- a flexible covered space that will serve a farmer's market, events, and other community uses
- the existing Tower Marine uses, as well as the potential for significant expansion of wet slips and boater services infrastructure to the east
- Renovated boat launch and boat/trailer parking east of Red Dock
- a new public marina at the east end of Center Street in Wade's Bayou, specifically geared towards providing "shopper docks" for downtown businesses, seasonal and transient slips, and expanded ADA compliant access for kayaks, canoes, and other small craft
- ADA compliant fishing piers
- Water trail access linking Schultz Park to downtown Douglas and Kalamazoo Lake, as well as enhancing Wade's Bayou and the Kalamazoo River as a paddling destination

To achieve these goals, a number of available properties were considered for acquisition by the City of Douglas. The largest of these is Tower Marine, and ongoing conversations between the City of Douglas, State of Michigan, and Tower Marine to achieve a successful transition to public ownership are underway. The next largest parcel is the Swingbridge property, located adjacent to the Blue Star Bridge. The development project on this site is stalled, and the property is currently under bank ownership. The next parcel is the small existing marina known as Point Pleasant, located immediately south of the Blue Star Bridge, and is currently listed for sale. The Consensus Master Plan is predicated on the acquisition of these parcels, or partnership and collaboration with the existing or future owners of these parcels. As other parcels along the waterfront in Douglas become available, the City should consider the value these parcels may add to the overall vision, and acquire them if they contribute to the overall vision. However, the Consensus Master Plan does not rely on the acquisition of any additional parcels.

*Enhancement of Upland Green Spaces*

The residents and visitors of Douglas experience the waterfront in many ways, and one of the key goals of the community is the preservation and enhancement of views of the harbor from the surrounding neighborhoods and from the Blue Star Highway. During the public design charrettes, the community participated in physical modeling exercises that allowed the community to test a range of design configurations and their impacts on views from various points of view around the water's edge.

# consensus plan

The Consensus Master Plan proposes two major moves to improve the views of Kalamazoo Lake from the Blue Star Highway. The first proposal is to reconfigure the existing CDF located on Tower Marine Property into a tiered green space connecting Blue Star Highway to the water's edge. Existing wetlands to the southwest of the existing CDF are relocated and significantly expanded to create a series of wetland water quality ponds that will capture stormwater runoff from Blue Star Highway and surrounding site development to filter all water entering Kalamazoo Lake. This wetland environment will create extensive habitat for plant and wildlife, and a series of public paths and bridges will encourage the community and visitors to explore this new open park space. This area will be preserved in perpetuity, so no future development will block the views of the water created by this new park space.

The second major proposal is the acquisition of the Swingbridge property, and the removal of the existing structures recently constructed. The clear consensus from the community is that the Swingbridge site is too prominent a location, and the views to special to be blocked by condominiums. With the project currently stalled, and the property in bank ownership, the opportunity to reclaim this site for the community is high on their list of priorities. The consensus plan goes farther and recommends the extension of the land area northward into Kalamazoo Lake to create additional public green space and additional shoreline habitat, while also reducing sedimentation within the navigable areas to the west. This proposed extension of land into Kalamazoo Lake will require extensive coordination and collaboration with MDNR and MDEQ, but this area could also serve the function of an "in water" CDF and provide permanent, low cost storage of dredge materials.

The Wade's Bayou shoreline has a different character, with smaller spaces broken up by interspersed privately owned property, but the goals of providing a continuous waterfront trail experience with enhanced views of the waterfront remain. The waterfront trail follows the water where possible, and adjacent streets where necessary. When possible, the waterfront trail extends out into Wade's Bayou to create accessible fishing piers, and arrives at Wade's Bayou Memorial Park at the end of Center Street. The Consensus Master Plan proposes a number of enhancements to Wade's Bayou Memorial Park, including the relocation of the existing Public Works vehicle storage and other operations, expansion of parking, a new public marina, and improved green spaces and public access to the water. A small beach, additional play equipment, and covered shelters are proposed.

The proposed marina is intended to create direct access to the shops of downtown Douglas along Center Street by providing short term "shopper docks" (used for a few hours while boaters have dinner or shop), transient docks (used overnight for a day or week), and a number of seasonal docks (rented for the full season). In addition to providing facilities for recreational boaters, the new marina will expand ADA compliant access to the water for kayaks and other small craft, as well as enhance operational opportunities for existing kayak rental operations. This area would be the key point of access to all of Wade's Bayou, in particular for residents and visitors using canoes and kayaks to explore the quieter waters upstream of Kalamazoo Lake, including the proposed access to the expanded islands within Wade's Bayou.

# consensus plan

The potential for building on the natural processes that have resulted in the accretion of sediments to create the small existing islands within Wade's Bayou as "in-water" CDF's offers the opportunity for the creation of permanent storage of contaminated sediments, while also creating opportunities for new wetland and waterfront habitat for plants, fish, and upland species. The Consensus Plan proposes expansion of these islands as a cost effective dredge material storage option, while creating new public spaces and habitat. The Plan recognizes that in-water CDF's will be more challenging to permit through MDNR and MDEQ, but again, we believe they have a place within a longer term plan created in collaboration with the State of Michigan.

Until the in-water CDF's are permitted, the plan proposed utilizing portions of Schultz Park for CDF facilities. The materials collected will then be utilized to create sound berms between Schultz Park and I-196, as well as other areas needing fill within the park.

*Preservation and Enhancement of Recreational Boating Opportunities*
One of the key views of the community identified in the community outreach process is that the harbor is the economic engine that fuels the Douglas economy, and we must protect and enhance it to maintain its value. The primary threat to the harbor is the ongoing sedimentation process that introduces tons of sediment from upstream sources into Wade's Bayou and Kalamazoo Lake every year, resulting in shallower waters, reduced aquatic habitat, and significant impacts on recreational boating and marina operations. Over the past 100 years, Kalamazoo Lake was created in its current form through extensive and ongoing dredging operations. According to Dr. Guy Meadows, barring significant ongoing human intervention, Kalamazoo Lake will eventually become nothing more than a narrow river channel, as it was when the area was first settled. The Harbor is also part of a Superfund Site contaminated with PCBs, complicating the future planning of long-term sedimentation management.

Throughout all of our community meetings, support for maintaining Kalamazoo Lake for recreational boating with navigable depths of eight to ten feet or more was nearly unanimous. Similarly, the community expressed near unanimous support for maintaining Wade's Bayou for paddling and other small human powered craft, with navigable channels of six to eight feet in depth connecting the boat launch at Schultz Park and the proposed Center Street Marina to Kalamazoo Lake. In order to establish the most viable solution for the long term maintenance of the harbor, the planning team and City of Douglas worked closely with representatives from the State of Michigan, including the Office of the Great Lakes, Department of Natural Resources, and Department of Environmental Quality, as well as local partners, including the City of Saugatuck, Kalamazoo Lake Harbor Authority, and Allegan County.

The Consensus Master Plan proposes to address the long term sedimentation issues as follows:

- The first step in the overall strategy is to begin the process of developing a comprehensive upstream sediment management strategy by working with Federal, State, and Local partners, as well as private landowners, to make significant reductions in the amount of sediment introduced into the Kalamazoo River. This approach is intended to be collaborative, and provide benefits to the individual landowners as well as reducing the cost of maintenance dredging to the Douglas and Saugatuck communities.
- The next step is to establish the most cost effective approach for ongoing maintenance dredging operations. The proposed strategy is to investigate portions of Schultz Park as a

potential location for a contained disposal facility (CDF), and then identify strategies for utilizing the dredge materials for improvements to the park, such as sound berms between the park and I-196, and potentially fill operations where needed throughout the park.

- Preliminary engineering studies for the sediment trap solution and in water CDF will determine the long term financial and physical viability of those strategies, as well as the process required to obtain permits from the State of Michigan.
- The near term dredging strategy is to maintain the navigable channels identified in the 2013 emergency dredging strategy completed by the Kalamazoo Lake Harbor Authority. Over time, in collaboration with the Michigan Department of Environmental Quality and Department of Natural Resources, strategies for maintaining navigable water depths in broader areas of Kalamazoo Lake while balancing habitat needs for threatened and endangered species will be identified.

*Upland Development Strategies*

The fundamental implementation strategy behind the Consensus Master Plan is the recognition that all of the elements proposed by the community have significant price tags attached, and therefore a financially viable funding strategy is required. The funding strategies proposed focus on three primary sources, which are described in detail later in this report. The first strategy is to leverage existing operational assets such as Tower Marine to generate revenues necessary to fund their acquisition. The second strategy is to work with Federal, State, and Local sources to identify grant funding opportunities to help with land acquisition and construction. The third strategy is to leverage public private partnerships to guide private investment in ways acceptable to the community that also generate sufficient revenues to help fund long term improvements and operations.

These strategies were reviewed with the community, and focusing on them as prioritized above was the desired general consensus of the participants of the community outreach process. During the community charrette process, the community identified the plan elements proposed, which are described on Page 20. For planning purposes, concept level cost estimates were generated, resulting in an estimated cost of $30 million for all elements proposed by the community. The funding source priority was to begin with leveraging all revenues from operational elements such as ground leases and taxes. The planning team conservatively estimates that these revenues will be sufficient to service the debt associated with acquiring these properties. Depending on future expansion, it may be possible to fund additional community improvements. The next funding priority is to leverage all possible grant sources, which could range anywhere from zero to millions of dollars. The final funding priority is to leverage private development to generate both revenues from land sales and/or ground leases, but also long term financing based on the taxable values created by new development through Tax Increment Financing. The planning process contemplated scenarios ranging from funding requirements as low as $10 million up to the full $30 million, which for planning purposes was represented by the development of 100-300 units (or a mix of other residential, retail, resort, and/or assisted living program elements).

The community recognizes and supports the notion that Douglas will continue to feel pressure from outside developers, and that the best way to preserve the authentic character of the community is for the City to acquire the most desirable properties and lead the development process rather than the traditional process where the private development community leads the process. Based on community recognition that at least some private development will likely be required to fund the long term maintenance of the harbor

and other goals of the community, the planning process engaged local residents in a planning process with physical models. The result of that effort identified areas where development of various densities is acceptable to the community, and areas where it is not. To be clear, very few residents would like to see 300 new residential units along the waterfront, and a range from 100-200 was considered more acceptable. However, if necessary, the Consensus Master Plan outlines a potential development strategy whereby 300 units could be accommodated in the unlikely event that all other funding sources fail to generate any revenues. While recognizing the desire for $30 Million or more in improvements, the community outlined the following development patterns that respect the character and authenticity of Douglas as follows:

- Preserve the Waterfront For Public Access
- Expand Public Access to the Waterfront Wherever Possible
- Protect Views of the Lake from Blue Star Highway
- Consider Fewer Taller Structures to Preserve More Open Space and Views
- Focus on Uses that Complement and Support Downtown While Extending the 100 Day Season

The primary area identified for upland development is located along the southern edge of the Tower Marine site, below the bluff and adjacent to the existing trees. This area is mostly hidden from view from Blue Star Highway, screens the parking and upland "working waterfront" areas of Tower Marine, and frames the edges of the new wetland park and views of Kalamazoo Lake from Blue Star Highway. Additional opportunities for lower structures are proposed on Red Dock to complement and expand the public dining opportunities there. The final proposed development site is directly south of Red Dock, which would create an edge to the public walkway from Red Dock to Downtown Douglas.

Proposed development types include a mix of waterfront entertainment style restaurants and small ice cream stands, etc; residential multi-family units, resort hotel, condo hotel, incidental retail (not competitive with downtown business), and assisted living and memory care facilities associated with privately owned condominiums. These potential uses are complementary to the business activities of downtown Douglas, and will also create significant new job opportunities for younger residents of the community. The assisted living facilities, if constructed, are particularly strong job creators for higher paying jobs for younger residents.

The final upland development elements are related to the expansion of Tower Marine's operations, and would include a large indoor storage building that will accommodate boats in the winter, and provide covered parking in the summer. Additional marina based waterfront development would include a second lift well and boater service facilities such as restrooms, showers, and an outdoor pool.

## DEVELOPMENT SEQUENCE

The proposed development sequence for the Kalamazoo Lake portion of the Douglas Waterfront Master Plan begins with the acquisition of the Tower Marine and Swingbridge properties, or the establishment of a collaborative public private partnership with the owners of these properties. The removal of the existing CDF and grading of the site to create the new park space would be an early priority, along with the development of a new road connecting Tower Marine to Blue Star Highway at West Chestnut Street.

We recommend the expansion of the existing Tower Marine operations to include a new lift well, up to three new main piers serving 150-200 additional slips, parking, boater services, and winter storage as shown on the plan. In parallel with this effort or in the next phase would be the enhancement of Red Dock to provide additional restaurants and waterfront activities.

Additional Park amenities, such as the proposed enhancements to the Red Dock Boat Launch, trailer parking, Farmer's Market Shelter, and public paths along the waterfront would follow. Removal of the existing structures on the Swingbridge site and restoration of the site to parkland would occur when funding permits, and the extension of the waterfront park into Kalamazoo Lake would occur as part of the overall dredging efforts within the harbor utilizing dredge materials to create the new parkland as an in-water CDF.

The recommended sequence for private development would be market based, and could star with the waterfront resort hotel or an assisted living facility of roughly 100 rooms. Alternatively, or as a second phase, the development of up to 100 condominiums in the four small units proposed could occur. If the resort hotel approach is viable, it may make sense to convert these units to hotel / condo units, which would allow them to become part of the hotel rental pool if the owners desire. The final phase of development, if needed, would occur either to the west of the proposed hotel site or to the east of North Union Street east of Red Dock.

# 06/ implementation

## FUNDING STRATEGIES

As outlined above, the primary funding strategies proposed focus on three primary sources. The first strategy is to leverage existing operational assets such as Tower Marine to generate revenues necessary to fund their acquisition. The second strategy is to work with Federal, State, and Local sources to identify grant funding opportunities to help with land acquisition and construction. The third strategy is to leverage public private partnerships to guide private investment in ways acceptable to the community that also generate sufficient revenues to help fund long term improvements and operations.

*Operational Revenues*

As both the City of Douglas and Tower Marine have expressed a desire to see Tower Marine in public ownership, the revenues needed to fund this acquisition can be offset through the ongoing operational revenues generated by the marina itself. If the City of Douglas were to purchase Tower Marine, they would have multiple possible strategies for operating the facility. The most likely strategy would be to lease the facility to a competent marina operator, which could very well be the existing owners of the marina. In this case the lease payments would be used to service the acquisition costs. Another possibility would be for the City to engage a third party operator to run the facility, and the net revenues achieved from operating the facility after addressing all operational costs would be used to service the acquisition costs. A third possibility would be for the City to operate the facility with qualified City employees, which would eliminate the profit margin of the third party operator and potentially increase the net revenues to the City. Finally, the City could choose to sell the marina specific assets to a private owner to generate funds to acquire the property.

Similar strategies could be applied to any other commercial operations, such as restaurants on Red Dock, and expansion of the marina facilities could significantly increase the revenues generated and potentially help fund community goals.

# implementation

*Grant Funding / Public Partnerships*

There are many State and Federal grant programs that could potentially contribute to funding portions of the Consensus Master Plan through Public Partnerships. At the Federal level, the US Fish and Wildlife Service offers the Boating Infrastructure Grant Program, which is intended to expand transient boating infrastructure for transient vessels 26' and longer. They offer grants up to $1.5 million, which could be used to fund the expansion of Tower Marine or the new marina proposed at Wade Bayou Memorial Park. Another Federal Program being explored is the RCCP program (See memo in Appendix for details) which may help fund coordinated upstream efforts to reduce sedimentation and indirectly help reduce the long-term cost of dredging.

The EPA Brownfield Program may be another source of funds in the redevelopment of the Tower Marine CDF. Michigan's brownfield program has a number of elements that can assist redevelopment of the Tower Marine site. It has both grant and loan opportunities that are generally capped at $1 million. Generally, it is a combination of a grant and loan. This money can be used for remediation activities which could include incorporation of contaminated soil or dredge spoils into the overall redevelopment of the site. For instance, if dredge spoils can be used to balance the site for the future planned uses, the earth-moving and dredging activities could be eligible. The terms of the loan are no interest for the first 5 years and slightly above prime for the next 10 years. Should there be a private development component of the project, the increase in TIF revenues can be used to repay the loan.

With or without a DEQ loan or grant, the power of Michigan's brownfield program comes with the repayment of eligible brownfield activities using TIF revenues. The way this works is that a developer fronts the money for eligible activities and is repaid over time using TIF revenues. This could be a very powerful funding element for the Tower Marine site as eligible activities could include demolition, cleanup, dredging, land balancing and public infrastructure improvements, including a parking deck and storm water management. Generally, waterfront improvements also fall into one of these categories. The approval of eligible activities rests with the Allegan County Brownfield Redevelopment Authority (ACBRA). There is no cap associated with the amount of eligible activities, only that the payback period cannot exceed 30 years. Because the KLHA also has TIF capabilities, there would need to be coordination of the TIF repayment between the ACBRA and the KLHA.

At the State of Michigan level, there are a number of programs that may be complementary to the goals of the Consensus Master Plan. The Michigan Natural Resources Trust Fund (MNRTF) provides grants to acquire and protect public lands in perpetuity. While typically used to acquire properties intended to become public parks and green space, there are some examples where MNRTF funds are being used to transition an operating marina into public ownership. Additionally, MNRTF provides some funding for project development activities to construct improvements on public lands. The Michigan Waterways Commission oversees grants intended to support public recreational boating, and the City of Douglas may become eligible for these funds if Tower Marine is acquired and/or the new marina at Wades Bayou Memorial Park is constructed. The Michigan Economic Development Corporation provides funds through its Community Revitalization Program, which benefits projects associated with mixed use and residential components similar to what is proposed in the Consensus Plan.

There may also be funds available through the state to support additional coordination and regional cooperation with the County to address upstream sedimentation, and additional funds through MDEQ Coastal Zone Management and the Great Lakes Legacy Act may be available, although there may be complications due to the Superfund designation, which unfortunately can limit some funding opportunities.

While generally at the very end of the list, it is also possible to fund dredging or other improvements through general funds, taxes, or special assessment districts. We do not recommend special assessment districts related to docks or boaters, as they are very difficult to collect and/or enforce, and they reinforce the misconception that navigable water depths only benefit boaters, where the truth is that the long term economic viability of the entire community of Douglas relies in large part on an active recreational harbor.

Finally, many communities benefit from significant private and corporate philanthropy, and most communities are happy to recognize donors for their contributions through naming of public facilities in honor of donors. Challenge grants can engage donors at all levels, down to individual donation of trees, benches, or bricks, and philanthropic donations communicate solid public support for projects that can help secure additional grant funding.

*Public / Private Partnerships*

Public / Private Partnerships between local municipalities and private entities have become one of the most effective funding strategies to achieve shared objectives, and we highly recommend that the City lead the waterfront development process to allow the community to determine the future of the Douglas waterfront as described in detail in the development section of this document. One of the most effective ways to leverage this approach in Douglas is to utilize Tax Increment Financing (TIF), whereby the increase in taxable revenues over the existing taxable value (the "increment") is used to directly fund improvements, or service a longer term revenue bond for the improvements that generated the increase in taxable value.

For example, if the City of Douglas purchased Tower Marine, the taxable value of the site would become zero, as City properties are not taxed and the current tax revenues would be offset through operational payments described above. If the marina were subsequently sold and/or expanded, and additional private development occurred, all of the taxable value created would become the "increment". The increment could fund a revenue bond, which is one way municipalities borrow money. Revenue bonds are essentially like a mortgage, and paid off over a period of twenty or thirty years, with current interest rates ranging from 2%-3%, which is very low.

The example used in the planning process to suggest the value of an individual unit was based on a purchase price of $500,000. At 1.5% property tax rate, the yearly taxes would be $7,500. $7,500 would fund $100,000 in public improvements over 20 years at 3%, so 10 units would fund $1 million in public improvements, 100 units $10 million, and 300 units the full $30 million.

Other sources of revenue generation would occur with the land transaction from public ownership back to private ownership. In the past, a developer might purchase the property for a development for 10% of the total value of the finished development. For example, a $10 million development would generally have an upfront payment for land of $1 million. Following the Great Recession, this approach is used far less often, or upfront payments are much lower, in the 3%-

5% range. We recommend an alternative approach where the City defers payment for the land until the unit is sold by the developer to the private owner. At the closing on the property, the City would be paid a percentage of the sale, typically 5%-8% of the sale price, and often on a sliding scale to increase the percentage paid to the City as the price increases. The benefit to this approach for the City is that the public receives a fair portion of the increase in value as the value of the development increases. Another advantage to the City is that this approach eases the financial burden on the developer early in the process, which can encourage higher quality development, or development with additional green infrastructure that might not otherwise be financially feasible. In the end, both the City (public) and the developer win.

In summary, we believe that the Consensus Master Plan as proposed is financially viable, even if outside funding sources provide less funding than anticipated. The plan allows for a phased approach in response to the outcomes of the funding process over time, and the community has established the following set of priorities to guide the process:

## OVERALL DEVELOPMENT STRATEGY

As described above, the community supports a process whereby private development is leveraged to fund community improvements, and the Consensus Master Plan recommends the following strategy to allow the City of Douglas to lead the process to protect the authentic character of the community from inappropriate development. The first step in the process is for the City of Douglas to acquire the relevant parcels of land, or establish a collaborative relationship with the landowner. The City would then build on the process already completed through the creation of this Consensus Master Plan, whereby the community has identified areas where development is acceptable.

The next step in the process would be the development of a form based code to replace the existing zoning code. Form Based Zoning is a different approach to land use zoning that focuses on defining what type of development is desired, where it is to be located, what uses are allowed, and a range of requirements describing how the buildings are to be constructed, including height, setbacks, materials, density, and other characteristics deemed necessary to achieve the community's goals. Whereas traditional zoning simply defines allowable uses, density, and setbacks, Form Based Zoning clearly communicates what is desired and expected. This is a critical difference, and one that gives the City significantly more influence over the end result.

The final step in the process is for the City to issue a Development Request for Proposal (RFP) offering up certain portions of the property for development. The Form Based Code would be included in the RFP as a controlling document, and we recommend that parcels be offered for development in smaller phases rather than as a single large phase. This gives the City more control if the selected developer runs into problems or performs poorly. The inclusion of the Form Based Code provides benefits to both the City and the Developer. For the City, there is a high degree of confidence that the development will be delivered as the community expects. For the Developer, they know that if they follow the requirements of the Form Based Code, their project is essentially entitled. In other words, if they meet the code requirements, their project is approved nearly automatically. This means a significant savings in design and entitlement costs, as well as a meaningful saving of time during the development phase. We recommend this approach as it can truly provide a "win-win" outcome for both the community and the developer.

# implementation

## NEXT STEPS

Following adoption of this Consensus Master Plan, we recommend the following actions be taken to begin implementing the plan:

- Acquire or obtain options to purchase Tower Marine, Swingbridge, and Point Pleasant if possible, and/or establish partnerships with the owners to collaborate in a public private partnership to begin implementing the plan.
    - Establish a viable marina operational strategy through the existing or another operator.
- Work with Local and State partners to begin implementation of the upstream sediment management plan, and begin preparations for dredging and lower cost CDF in Schultz Park
- Work With the State of Michigan on:
    - Broader Sedimentation Issues
    - Regional Sedimentation Strategies
    - Permitting Considerations
    - Functional Considerations
- Proceed with preliminary engineering and construction of the new public marina at Wades Bayou Memorial Park
- Identify all viable grant opportunities and actively pursue them
- Prepare a Form Based Code establishing the following elements through a public process:
    - Allowable Development Areas
    - Required Build-To Lines
    - Allowable Uses – Residential, Hotel, Assisted Living, Restaurants, Marina Uses, etc
    - Three Dimensional Allowable Building Envelopes
    - Allowable Materials
- Issue a Development RFP for an initial development opportunity of 50 – 100 units
    - Release Development Parcels Individually Based on Performance in Previous Phases
    - Hold Land To Encourage Better Developers
    - Consider Temporary Tax Incentive to Increase Absorption Rate

# 07/ sediment management

# sediment management

## SEDIMENTATION MANAGEMENT STRATEGIES

In order to establish the most viable solution for the long term maintenance of the harbor, the planning team and City of Douglas worked closely with representatives from the State of Michigan, including the Office of the Great Lakes, Department of Natural Resources, and Department of Environmental Quality, as well as local partners, including the City of Saugatuck, Kalamazoo Lake Harbor Authority, and Allegan County.

This process studied four potential strategies, including a "do nothing" approach; continuing with the current approach of dredging when necessary; and two more proactive strategies. One of the two proactive strategies includes the construction of sediment trap(s) and supporting confined disposal sites (CDFs). The other strategy includes the use of structures to channelize the flow of the Kalamazoo River, thereby flushing sediment further downstream and eventually into Lake Michigan.

Meetings were held with state officials on in September of 2015 to review these approaches and to solicit feedback regarding these strategies. More specifically, the meeting was intended to assess the likelihood of and the process for permitting each of these approaches. During these meetings, the idea of addressing the regional sediment issues within the Kalamazoo River Watershed was identified as a possibility to help alleviate the high sediment volumes entering Kalamazoo Harbor annually.

*Regional Sediment Discussion*

Regardless of the approach selected, a sediment management plan should be created as a long-term strategy for overall sediment reduction. Regional sedimentation issues, specifically sediment loading from agricultural and urban sediment runoff, should be the focus of the sediment management plan. A MDEQ Staff Report published October 2013 evaluated the sediment sources to the 58 harbors targeted for the Emergency Dredging Program. According to the MDEQ Report, Saugatuck Harbor has been placed in the category with 15 of the total 58 harbors identified as "Harbors that are impacted by shoreline transport of sediment, low water levels and may have significant upland sediment sources." Specifically, the MDEQ Report estimates that approximately 50% of total watershed acreage is identified as agricultural and approximately 81 pounds of sediment per acre of the watershed enter the Kalamazoo River system. It is clear that the process of solving the Kalamazoo Lake sedimentation issues will require a cooperative effort with local and regional communities to address sedimentation issues due to adjacent runoff. This approach has been applied in other nearby watersheds such as the Lake Macatawa watershed, where Project Clarity is improving water quality through collaborative efforts with local public and private partnerships, members of the agricultural community, and local governmental entities.

The Rabbit River watershed is the first upstream watershed and contributes sediment into the Kalamazoo River watershed system. Stakeholders and local residents of the Rabbit River watershed have moved in the direction of addressing the sedimentation including studying the watershed characteristics, developing and eventually implementing long-term strategies. According to the Rabbit River Watershed Management Plan published in 2009, the 187,200-acre Rabbit River watershed is primary categorized as agricultural land use. According to the Rabbit River EPA Watershed Assessment of River Stability and Sediment Supply (WARSSS) published in 2008, recommendations included "encourage environmentally sensitive agricultural practices to reduce the potential for surface erosion and sediment delivery to streams, including conservation tillage and implementation of filter strips/riparian buffers." The report also

# sediment management

suggested implementing a stream monitoring plan to assess the impact of best management practices (BMPs) selected. Data found in existing studies such as the 2009 Rabbit River Watershed Management Plan and 2008 Kalamazoo River Watershed Hydrologic Study will be incorporated into the Sediment Management Plan. Through recent discussions with the MDEQ, the Peach Orchard Creek has been identified as an area that should be targeted for watershed planning.

The development of a sediment management plan will also include cooperative efforts from other Kalamazoo River stakeholders. Stakeholders that need to be included on future discussions are Allegan Conservation District, Kalamazoo River Watershed Council, Allegan County Drain Office, and other regional conservation districts. In a meeting with State of Michigan representatives in February of 2016, the consensus from all MDNR, MDEQ, and State of Michigan representatives present at the meeting concurred with the analysis described above and indicated that an upstream sedimentation management strategy will be one of the most effective strategies to address the sedimentation issues in Kalamazoo Lake, given the following considerations:

- A strategic, collaborative approach to minimizing non-point source pollution and introduction of silt upstream was discussed and identified as a critical first step in managing the long term sediment issues in Kalamazoo Lake and Wade's Bayou
- Multiple programs that may be helpful were identified, including:
    - MAEAP (Michigan Agriculture Environmental Assurance Program) – Certify farms to implement BMPs (Best Management Practices) that will reduce sediment runoff
    - RCPP (Regional Conservation Partnership Program) – A great way to document collaborative effort between communities
        - § Project examples: Tri-State Western Lake Erie Basin Phosphorus Reduction Initiative, Lake Michigan Fruitbelt Conservation Partnership, Saginaw Bay Watershed Conservation Partnership, and St. Joseph River Watershed Conservation Partnership
    - Van Buren County Pilot Program:
        - § Reduction in drain assessments are given to landowners who allow a buffer zone to grow between the drain and the farm field
        - § Everyone wins with this approach because of lower maintenance costs – farmers, drain commissioners, downstream communities
        - § Working with local farmers to implement BMPs – Buffer strips, no mow zones
        - § Tax breaks have been considered
        - § Two stage ditches are in the planning stage
- Potential partners include:
    - State of Michigan
    - Allegan County
        - § Drain Commissioner - Identify potential financial initiatives that can encourage/offset the cost to landowners to implement BMPs to reduce sediment loading
    - Allegan County Conservation District
    - Saugatuck Township
    - Upstream Communities
    - Individual Landowners

# sediment management

*"Do Nothing" Approach*

According to the 2007 Kalamazoo Harbor Master Plan Technical Report, the current rate of sedimentation into Kalamazoo Lake is approximately 36,000 cubic yards per year. If this rate continues without control or dredging, it will eventually lead to the transformation of Kalamazoo Lake into a marshy area with a narrow meandering river channel. The result of this approach will be a loss of the valuable waterfront property within both communities and the loss of the harbor as it exists today. The community clearly and consistently rejected this approach due to the loss of scenic character and recreational boating opportunities.

*Continue Current Approach*

The current approach has been to complete maintenance dredging on an as-needed basis. While navigation depths within the lower Kalamazoo River and river mouth are maintained by the U.S. Army Corps of Engineers, access to the lower river from Kalamazoo Lake is currently left for local government and riparian owners to maintain. Regulatory processes, costs, and lack of available disposal sites make it difficult and expensive to complete dredging. During the recent 14-year period of below average Lake Michigan water levels, the need to dredge within Kalamazoo Lake became urgent. After nearly a year of permit application review, including sediment sampling/testing, surveys, and coordination with local, state, and federal agencies, permits were issued in late 2013 and early 2014 for over 100,000 cubic yards of dredging and a temporary disposal site within Kalamazoo Lake Sewer & Water Authority property (KLSWA). Shortly thereafter however, Lake Michigan water levels rose and the immediate dredging need subsided temporarily. Costs to complete the dredging were estimated to be well over two million dollars and funding for the work was not identified.

This approach is a reactive strategy that is not financially viable for local government and riparian owners over the long-term, without a proactive funding mechanism. In addition, final authorization for temporary disposal on KLSWA property is pending and may not be gained due to environmental liability concerns. In addition, since the KLSWA disposal site is only temporary the material will need to be moved to a permanent location, which has not been identified. Recent feedback from the agencies has indicated that moving the contaminated dredge material is not ideal and will add additional costs. As described above, this approach is slow to react to conditions and could result in the loss of navigability within the harbor for extended periods of time. To implement this approach effectively, a funding mechanism must be put in place and a viable, permanent disposal site must be identified or constructed.

# sediment management

*Sediment Traps*

The 2007 Kalamazoo Harbor Master Plan Technical Report determined that a potential solution to the long-term sedimentation issues facing the Kalamazoo Harbor is the construction of sediment traps along the Kalamazoo River upstream of the Saugatuck/Douglas Harbor area. The sediment traps would be designed to intercept and capture sediment at strategic locations intended to minimize downstream deposition, to separate clean material if possible, and to facilitate straightforward maintenance dredging. The capacity of the traps would be optimized to minimize construction costs and to maximize the length of time between required maintenance dredging cycles. Dredge spoils removed from the traps that contain regulated materials would be placed in confined disposal areas (CDFs). Clean dredge spoils could qualify for beneficial reuse, if they can be efficiently separated from regulated materials.

In a meeting with State of Michigan representatives in February of 2016, the consensus from all MDNR, MDEQ, and State of Michigan representatives present at the meeting concurred with the analysis described below and indicate that sediment traps are a potentially feasible approach to the sedimentation issues in Kalamazoo Lake, given the following considerations:

- Sediment Traps have significantly less impacts than channelization and are considered more potentially viable by the permitting agencies.
- Location quantity, and final design will affect the permit-ability and effectiveness of this approach
- Significant upstream sediment mapping, testing, and modeling will need to be performed
- The effectiveness of sediment traps in capturing silt is dependent on many factors, and will need to be modelled and tested
- The total area/volume of the sediment trap is more important than the length of the sediment trap in capturing sediment

In order to minimize the cost of dredging, a number of strategies were proposed and discussed at the February 2016 meeting, including the following dredge material disposal strategies:

- In-Water Contained Disposal Facilities (CDF)
    - Agencies recommend/prefer CDF facilities be located on lands adjacent to dredge source wherever possible
    - Agencies do not encourage consideration of in-water CDF, but indicated they could potentially be allowed if regulatory issues are addressed.
        - § Primary issues include filling within wetland areas and impacts to fish habitat
- Schultz Park was identified as a potentially viable site for a CDF and long term storage of dredge materials, possibly as a sound barrier along I-196. This proposal was raised in a public meeting with the Douglas Community, and was very well received.

*Channelization*

Another approach identified in the 2007 report and subsequent efforts includes the construction of structures and/or islands to direct flow and channelize the flow of the Kalamazoo River. Channelization of the river is intended to keep the sediments moving through Kalamazoo Lake and eventually into Lake Michigan. Moving sediment through the Kalamazoo Harbor area would be locally beneficial; however, sediment would be flushed downstream into the federal navigation channel and into Lake Michigan. This approach could lead to an increase in the need for dredging downstream and to the deposition of regulated materials within the federal navigation channel and Lake Michigan. The gradient of the river is very shallow and will not likely support the velocity required to keep sediments in suspension. However, if channelization is technically feasible, the following issues regarding contamination of Lake Michigan would need to be addressed.

- If effective, more sediment will be deposited by channelization into the Corps channel downstream of Kalamazoo Lake, which will increase the frequency and cost of maintaining the channel.
- Deposition of additional silty sediments could change the character of the dredge materials in the Corps channel, potentially removing the option of using the dredged materials for beach nourishment and significantly increasing the cost of dredging the channel.
- PCB and arsenic remain above acceptable MDEQ criteria, and could contaminate Lake Michigan beaches, as well as further distribute contaminants into Lake Michigan where future cleanup efforts would be more expensive.
- Prevention of contamination of Lake Michigan and beaches by complete removal of PCB and arsenic contaminated sediments from Kalamazoo Lake is not possible, as additional contaminated sediments continue to enter Kalamazoo Lake from upstream sources. Additionally, the cost of removal of sediments would exceed tens of millions of dollars, and other alternatives of storing contaminated sediments along nearshore areas by relocating bulkhead lines would have significant impacts on adjacent private property owners.
- Channelization would require significant reconfiguration of the Kalamazoo Lake and Wade's Bayou shorelines, and/or construction of islands and/or fixed structures to create the channel. Multiple community meetings held in Douglas throughout 2015 for the Douglas Waterfront Master Plan reviewed the potential visual impacts of such a proposal with the public, and little to no support for this type of reconfiguration was offered by the public.
- While it has been suggested that the USACE Hydraulics section has indicated that channelization may be technically feasible, it is important to note that the Engineering / Hydraulics sections are separate from the Regulatory and Operations sections of USACE. Given the potential impacts described above, in particular permitting concerns certain to be raised by USEPA, we believe it is highly unlikely that the USACE would support or permit channelization.

In a meeting with State of Michigan representatives in February of 2016, the consensus from all MDNR, MDEQ, and State of Michigan representatives present at the meeting concurred with the analysis described above and indicate that channelization is not a feasible approach to the sedimentation issues in Kalamazoo Lake. Further, there is very little support within the community for this approach, in particular the impacts on recreational boating opportunities and the aesthetic character of the Kalamazoo Lake that the necessary structures and/or islands would create. Furthermore, the proposed extension of bulkhead lines and creation of new public lands between existing private lands and the water would create extensive legal challenges. Based on the lack of support of the community and extensive concerns of the State of Michigan and permitting agencies outlined above, the channelization approach has been determined to be infeasible.

# appendix

Edgewater resources

518 Broad Street, Suite 200
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269 932 4502



Meeting Summary

Date: 9/22/2015
To: City of Saugatuck City Council
From: Greg Weykamp
Subject: KLHA Harbor Planning – State Agency Meeting Memo

Distribution: Kirk Harrier, City of Saugatuck Council members, KLHA board members

This memo is intended to summarize the key points discussed during our state agency meeting for the KLHA Harbor Planning Project on 9/15/2015 in Lansing, MI:

- Project background:

  The communities of Saugatuck and Douglas are defined by their access to the navigable waters of Kalamazoo Lake. The Lake is constantly undergoing the natural process of sedimentation, both from upstream sources and from sand of Lake Michigan washing upstream, and requires human intervention to maintain channels with navigable depths. USACE is responsible for dredging only to the mouth of the Kalamazoo River.

- Ongoing upstream projects:

  Kalamazoo River EPA Superfund site and Area of Concern near Otsego and Allegan City due to high levels of PCBs. Calkins Dam and Allegan City Dam are currently undergoing improvements and sediment clean-up. Multiple other dams within Allegan County (Trowbridge, Otsego Township, Otsego City) are currently outdated and due for removal, and these dams are holding back significant amounts of contaminated sediment. If the DNR can fund the dam removal, it is likely the EPA will prioritize clean-up of sediments at these sites. However, these dams are not planned for immediate removal, but sometime in the next 10 years. The superfund clean-up will work downstream, so Kalamazoo Lake is at the tail-end of these efforts.

- Previous planning studies for Kalamazoo Lake:

  Options studied include channelization of Kalamazoo Lake by constructing islands to direct flow, and creating an upstream sediment trap that would limit the area requiring dredging.

  - Channelization discussion:

    *Positives*
    - Channelization would keep sediments moving downstream (as naturally happens with rivers emptying into Lake Michigan) and reduce the need for dredging.
    - Would potentially reduce dredging costs.
    - Dredging spoils could be used to form the islands, reducing need for confined disposal facilities (CDFs).
    - Islands could serve as recreation sites.

    *Negatives*
    - Sediment testing in Kalamazoo Lake continues to show PCB contamination. Although there is evidence to show that levels are falling due to upstream clean-up efforts, contaminated sediments cannot be used for beach nourishment, which could increase the cost of disposal.
    - Moving sediments will shift the burden of removal and clean-up to USACE.

    *General Consensus*
    The State indicated that a highly engineered system to move sediment downstream will be challenging to obtain support/approval, especially from the US Army Corps (USACE). DEQ would not be likely to approve a plan that shifts dredging and clean-up responsibilities and moves contamination into Lake Michigan.

  - Sediment trap discussion:

    *Positives*
    - DEQ acknowledges that a short-term plan for sediment removal is necessary, and dealing with dredging on site is preferable to moving it downstream.
    - This plan would require less disruption of Kalmazoo Lake habitat.
    - A sediment trap and CDF near Schultz Park, upstream of I-196 would be a potentially suitable location. This is where sediments are shown to accumulate historically.

    *Negatives*
    - DEQ mentioned that sediment traps in past projects have seen limited results. More research would be needed.
    - Future CDFs for the sediment dredged from the sediment trap solution were discussed, specifically; CDFs located in water are not an ideal solution. These tend to
    - Who pays for regular dredging of the sediment trap?

    *General Consensus*
    The State indicated that removal of sediment on-site is preferable to shifting the burden elsewhere, so this strategy has merit. It was also indicated that a short-term plan for sediment removal would have better success if paired with a long-term plan for upstream sediment reduction.

- Sediment reduction discussion:

  *Positives*
  - Reduction of sediment upstream would benefit the entire watershed by preserving topsoil, reducing non-point source contamination, and would reduce the need for dredging in the future.
  - State and Federal programs exist that may be able to assist in remediation of the contaminated soil upstream or within the KLHA area.
  - Drain Commissioner implemented tax savings or lower assessments to upstream farmers who implement best management practices (BMPs) to reduce sediment transport into the watershed would encourage participation.
  - The Regional Conservation Partnership Program (RCPP) is a potential funding source to assist efforts in reducing sediment runoff from farms.

  *Negatives*
  - It can be difficult convincing farmers upstream to change behavior.
  - Incentives don't always work if extra paperwork is required.
  - Partnerships would be necessary between various groups, complicating efforts.

  *General Consensus*
  The State indicated that this solution should be paired with short-term sediment removal plans as a more holistic approach. Looking at the big-picture of the entire Kalamazoo River watershed would deal with the source of the problem, instead of dealing with the symptoms.

- Next steps:

1. Initiate discussions with the USACE to obtain feedback of both options
2. Initiate discussions with the EPA regarding the project and potential solution options.
3. Provide letter identifying the potential steps to providing a solution to the sediment issue at Kalamazoo Lake
4. Meet with state agencies at a later date to discuss findings/research
5. Contact Bob Day for Rabbit River data
6. Follow up loop w USACE, both RJ's civil guy and Reg. Start w regulators we talked to back in 2013
7. 3 tease out process to eventually do channels
8. 4 tease out process to do traps and CDF
9. 5 incl cost est's
10. 6 talk to wagner about epa input
11. 7 research BMP - Minnesota/other
12. 8 NECS grant app
13. 9 how much does state and fed fund dredge here
14. 10 how often does corps dredge inner harbor - pull report



15. 11 MI - how do drain commishes handle
16.

- Potential Partnerships:

  *Local*
  1. Kalamazoo River Watershed Council – efforts to deal with PCB contamination at dams
  2. Tower Marine – funding strategies
  3. Fishing organizations
  4. USACE, Center for Contaminated Sediments Department. They likely will not accept a plan that increases their dredging costs/responsibilities, what options would they support?
  5. Allegan County and City of Allegan: currently have two dam improvement projects on K.zoo River, and Trowbrige Dam which requires removal
  6. Otsego Township, City of Otsego – prioritize two dam removals
  7. Holland's 'Project Clarity' group

  *Regional/State*
  8. DNR – dam removal and habitat restoration efforts.
  9. Regional Conservation Partnership Program (RCPP) through the Natural Resources Conservation Service (USDA) – provides conservation assistance, encourages partners to increase restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales. Successful grant obtained for St. Joseph River.
  10. Western Michigan University
  11. Farming organizations
  12. EPA – Michigan Nonpoint Source Program, give them a plan with PCB control component
  13. Nature Conservancy

- Conclusions:

  The best course of action would be to propose a multi-tiered approach with short-term strategies for dredging and disposal, and long-term strategies for overall sediment reduction. It was suggested that the long-term strategy could be in the form of a Sediment Management Plan.

Edgewater resources

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DRAFT

Date: 12/9/2015
To: Kirk Harrier/Bill LeFevere
From: Greg Weykamp
Subject: Draft Report – Strategies for Addressing Sedimentation of Kalamazoo Harbor

Distribution: City of Saugatuck, City of the Village of Douglas, Kameron Jordan

The harbor communities of Saugatuck and Douglas are vibrant waterfront communities that thrive on Kalamazoo Lake. Collectively referred to as Kalamazoo Harbor, both water bodies experience severe sedimentation issues due to the size of the Kalamazoo River watershed. The Harbor is part of the Superfund Site contaminated with PCBs, complicating the future planning of long-term sedimentation management. The communities have invested considerable effort over the last ten years to help create a master plan for the harbors that will lead to a viable long-term solution.

Four primary approaches have been discussed, including a "do nothing" approach; continuing with the current approach of dredging when necessary; and two more proactive strategies. One of the two proactive strategies includes the construction of sediment trap(s) and supporting confined disposal sites (CDFs). The other strategy includes the use of structures to channelize the flow of the Kalamazoo River, thereby flushing sediment further downstream and eventually into Lake Michigan.

A meeting was held with state officials on 9/15/15 to review these approaches and to solicit feedback regarding these strategies. More specifically, the meeting was intended to assess the likelihood of and the process for permitting each of these approaches. During the 9/15/15 meeting, the idea of addressing the regional sediment issues within the Kalamazoo River Watershed was identified as a possibility to help alleviate the high sediment volumes entering Kalamazoo Harbor annually.

## REGIONAL SEDIMENT DISCUSSION

Regardless of the approach selected, a sediment management plan should be created as a long-term strategy for overall sediment reduction. Regional sedimentation issues, specifically sediment loading from agricultural and urban sediment runoff, should be the focus of the sediment management plan. A MDEQ Staff Report published October 2013 evaluated the sediment sources to the 58 harbors targeted for the Emergency Dredging Program. According to the MDEQ Report, Saugatuck Harbor has been placed in the category with 15 of the total 58 harbors identified as "Harbors that are impacted by shoreline transport of sediment, low water levels and may have significant upland sediment sources." Specifically, the MDEQ Report estimates that approximately 50% of total watershed acreage is identified as agricultural and approximately 81 pounds of sediment per acre of the watershed enter the Kalamazoo River system. It is clear that the process of solving the Kalamazoo Lake sedimentation issues will require a cooperative effort with local and regional communities to address sedimentation issues due to adjacent runoff. This approach has been applied in other nearby watersheds such as





the Lake Macatawa watershed, where Project Clarity is improving water quality through collaborative efforts with local public and private partnerships, members of the agricultural community, and local governmental entities.

The Rabbit River watershed is the first upstream watershed and contributes sediment into the Kalamazoo River watershed system. Stakeholders and local residents of the Rabbit River watershed have moved in the direction of addressing the sedimentation including studying the watershed characteristics, developing and eventually implementing long-term strategies. According to the Rabbit River Watershed Management Plan published in 2009, the 187,200-acre Rabbit River watershed is primary categorized as agricultural land use. According to the Rabbit River EPA Watershed Assessment of River Stability and Sediment Supply (WARSSS) published in 2008, recommendations included "encourage environmentally sensitive agricultural practices to reduce the potential for surface erosion and sediment delivery to streams, including conservation tillage and implementation of filter strips/riparian buffers." The report also suggested implementing a stream monitoring plan to assess the impact of best management practices (BMPs) selected. Data found in existing studies such as the 2009 Rabbit River Watershed Management Plan and 2008 Kalamazoo River Watershed Hydrologic Study will be incorporated into the Sediment Management Plan. Through recent discussions with the MDEQ, the Peach Orchard Creek has been identified as an area that should be targeted for watershed planning.

The development of a sediment management plan will also include cooperative efforts from other Kalamazoo River stakeholders. Stakeholders that need to be included on future discussions are Allegan Conservation District, Kalamazoo River Watershed Council, Allegan County Drain Office, and other regional conservation districts.

## I. "DO NOTHING" APPROACH

According to 2007 Kalamazoo Harbor Master Plan Technical Report, the current rate of sedimentation into Kalamazoo Lake is approximately 36,000 cubic yards per year. If this rate continues without control or dredging, it will eventually lead to the transformation of Kalamazoo Lake into a marshy area with a narrow meandering river channel. The result of this approach will be a loss of the valuable waterfront property within both communities and the loss of the harbor as it exists today.

## II. CONTINUE CURRENT APPROACH

The current approach has been to complete maintenance dredging on an as-needed basis. While navigation depths within the lower Kalamazoo River and river mouth are maintained by the U.S. Army Corps of Engineers, access to the lower river from Kalamazoo Lake is currently left for local government and riparian owners to maintain. Regulatory processes, costs, and lack of available disposal sites make it difficult to complete dredging. During the recent 14-year period of below average Lake Michigan water levels, the need to dredge within Kalamazoo Lake became urgent. After nearly a year of permit application review, including sediment sampling/testing, surveys, and coordination with local, state, and federal agencies, permits were issued in late 2013 and early 2014 for over 100,000 cubic yards of dredging and a temporary disposal site within Kalamazoo Lake Sewer & Water Authority property (KLSWA). Shortly thereafter however, Lake Michigan water levels rose and the immediate dredging need subsided temporarily. Costs to complete the dredging were estimated to be well over two million dollars and funding for the work was not identified.

This approach is a reactive strategy that is not financially viable for local government and riparian owners over the long-term, without a proactive funding mechanism. In addition, final authorization for temporary disposal on KLSWA property is pending and may not be gained due to environmental liability concerns. In addition, since the KLSWA disposal site is only temporary the material will need to be moved to a permanent location, which has not been identified. Recent feedback from the agencies has indicated that moving the contaminated dredge material is not ideal and will add additional costs. As described above, this approach is slow to react to conditions and could result in the loss of navigability within the harbor for extended periods of time. To implement this approach effectively, a funding mechanism must be put in place and a viable, permanent disposal site must be identified or constructed.

## III. SEDIMENT TRAP(S)

The 2007 Kalamazoo Harbor Master Plan Technical Report determined that a potential solution to the long-term sedimentation issues facing the Kalamazoo Harbor is the construction of sediment trap(s) along the Kalamazoo River upstream of the Saugatuck/Douglas Harbor area. The sediment traps would be designed to intercept and capture sediment at strategic locations intended to minimize downstream deposition, to separate clean material if possible, and to facilitate straightforward maintenance dredging. The capacity of the trap(s) would be optimized to minimize construction costs and to maximize the length of time between required maintenance dredging cycles. Dredge spoils removed from the trap(s) that contain regulated materials would be placed in confined disposal areas (CDFs). Clean dredge spoils could qualify for beneficial reuse, if they can be efficiently separated from regulated materials.

### *Process*

This approach will require several intermediate steps including planning, studies/surveys, land acquisition, engineering design, and permitting. The following is a general outline of steps from initiation to implementation and the order may change to address comments/obstacles as they arise.

1. *Review Available Data*
   All available data, including the 2007 report, 2013 bathymetric survey, 2013 sediment testing results, and other existing studies such as the Rabbit River Watershed Management Plan would be reviewed to ensure that subsequent efforts maximize the use of previously completed work.

2. *Preliminary Engineering*
   The preliminary engineering study will first identify potential sediment trap & CDF locations. Potential sediment trap locations include areas adjacent to the I-196 bridge or upstream along the Kalamazoo River. Three potential areas for placement of upland confined disposal facilities (CDF) of the "trapped" sediments include City of Saugatuck "airport" site (northeast of Kalamazoo Lake Sewer & Water Authority property), Schultz Park property, and land adjacent to the I-196 Bridge. Another option under consideration is the "in-water CDF" concept, which would require significant additional study and permitting, but could potentially be most cost effective over time.



The result of this step would be several potential sediment trap locations/sizes and several potential CDF locations/sizes.

3. *Community Approvals*
   Planning efforts currently underway are establishing the level of community support for each of the various options. To implement any solution, ongoing community outreach will be required. When the community gets behind one or more approaches, the project can move forward collectively and effectively.

4. *Agency Coordination*
   Before permit applications, the next step would be coordination with the Michigan Department of Environmental Quality (MDEQ), U.S. Corps of Engineers (USACE), Michigan Department of Natural Resources (MDNR), the Environmental Protection Agency (EPA) and local agencies to identify the best available strategy/design and the most likely to be permitted. The Kalamazoo River is a navigable waterway regulated by Section 10 of the Rivers & Harbors Act of 1899 and Section 404 of the Clean Water Act. Coordination with MDEQ/USACE/EPA will be essential to ensure the future success of the project. In addition, a list of permit requirements would be developed, to ensure that all required studies, modeling, and other needs are addressed prior to submittal of a joint application.

5. *Special Studies & Modeling*
   After meeting with the agencies, special studies and modeling would be completed. These special studies might include performing detailed survey(s), sediment sampling/testing, threatened and endangered species studies, modeling, archaeological studies, floodway/floodplain studies, wetland delineation, among others. If needed, some of this task might be completed during preliminary engineering.

6. *Permit Application & Process*
   The next step in the permitting process will include preparing and submitting the Joint Permit Application to the agencies containing project quantities, project vicinity map, existing site plan, proposed plan view and cross-section drawings. Depending upon the final proposed plan and CDF location(s), the MDEQ Water Resources Division will review the permit application with respect to Part 301, Inland Lakes and Streams; Part 303, Wetlands Protection; Part 201, Environmental Remediation; and Floodplain Regulatory Authority found in Part 31, Water Resources Protection. While working with the MDEQ, the USACE will need to issue a 404 permit for the project.

7. *Land Acquisition*
   The trapped contaminated sediment will require dredging on a regular basis and will be placed at the identified CDF(s), which will require additional agency permits/approvals. If selected CDF locations are not on city owned property, acquisition of the land will be required, likely before permits are issued by the MDEQ and USACE. The location of the CDFs may require additional coordination with adjacent landowners, land use covenants, use agreements, or other steps.

8. *Final Design & Bid Set*
   Preparation of the project bid set and final design should be advanced only after permits are received or, in some cases, when the permit process is close to completion. In many cases, the permit process results in modification to the design and when final design is completed prior to permit issuance, there is a risk that redesign could be required.

9. *Construction & Maintenance Plan*
   Once the project has been awarded, construction of the project can occur. By this time, the maintenance plan will have been developed and the mechanisms to ensure the sediment traps are properly monitored and maintained must be implemented, as well.

The project process/approach listed above will occur in parallel with state and federal funding opportunities such as NCRS Farm Bill, MDEQ Coastal Zone Management Program grants, and others mentioned below.

*Challenges*

The complexity and potential impacts of the project will result in challenges. During the review process, the agencies will likely require a number of special studies, as identified above. The special studies required to support the sediment trap approach are relatively straightforward, but will likely need to cover significant geographic areas. For instance, if 3-4 sediment trap locations are identified, each may need to be studied in order to identify the best locations.

The success rate of a sediment trap is difficult to determine without a detailed study of the flow conditions and sediment transport within the region. The Saginaw River was the source of a 2001 USACE study to determine sediment trap efficiencies of varying sizes and locations. In the 2001 study, the USACE proclaimed that the success rate of a sediment trap is based primarily on trap dimensions and incoming grain sizes. The study identified two trap locations, one for capturing coarse and medium silt and the other for capturing sand.

Government financing and bonding of sediment trap construction projects has been identified as a significant obstacle to overcome. Until precise and detailed modeling of the Kalamazoo River is completed, it is difficult to determine if the implementation of sediment traps would be not only successful, but also feasible.

**Estimated Costs - Sediment Trap(s)*

The estimated costs of this project approach are:

| | | |
|---|---|---|
| 1. | Preliminary Engineering | $ 25,000 – 50,000 |
| 2. | Permit Process | $ 75,000 – 100,000+ |
| 3. | Special Studies: | $ 50,000 – 200,000+ |
| | | **$ 150,000 – 350,000+** |
| 4. | Land Acquisition | $ 500,000 – 1,000,000,+ |
| 5. | Construction – Dredging, Disposal, CDF | $ 5,000,000 – 15,000,000+ |
| | | **$ 5,500,000 – 16,000,000+** |



6. Long-term Maintenance Dredging (20 years) $5,000,000-12,000,000+

**Please note that these are conceptual cost estimates for general information only.*

IV. CHANNELIZATION

Another approach identified in the 2007 report and subsequent efforts includes the construction of structures and/or islands to direct flow and channelize the flow of the Kalamazoo River. Channelization of the river is intended to keep the sediments moving through Kalamazoo Lake and eventually into Lake Michigan. Moving sediment through the Kalamazoo Harbor area would be locally beneficial; however, sediment would be flushed downstream into the federal navigation channel and into Lake Michigan. This approach could lead to an increase in the need for dredging downstream and to the deposition of regulated materials within the federal navigation channel and Lake Michigan.

*Process*

Like the sediment trap approach, channelization will require several intermediate steps including planning, studies/surveys, land acquisition, engineering design, and permitting. The following is a general outline of steps from initiation to implementation and the order may change to address comments/obstacles as they arise.

1. *Review Available Data*
   All available data, including the 2007 report, 2013 bathymetric survey, 2013 sediment testing results, and other existing studies such as the Rabbit River Watershed Management Plan would be reviewed to ensure that subsequent efforts maximize the use of previously completed work.

2. *Preliminary Engineering*
   The channelization approach would rely upon accurate, extensive modeling of the Kalamazoo River. Preliminary engineering would include technical studies such as hydraulic computer modeling, hydrologic modeling, and initial geotechnical investigations. The process would allow the preliminary design of several channelization alternatives to maximize flow and minimize cost. Channel structure alternatives would be evaluated to determine which designs would optimize cost, design life, maintenance needs, and function. Due to the potential downstream impacts of channelization, early coordination with the USACE and MDEQ must determine if the approach will be allowable before costly studies and modeling are undertaken.

   This step would result in several channel design alternatives and one recommended plan. Modeling results and reports would serve as valuable background information once permit applications are assembled.

3. *Community Approvals*
   Planning efforts currently underway are establishing the level of community support for each of the various options. To implement any solution, ongoing community outreach will be required. When the community gets behind one or more approaches, the project can move forward collectively and effectively.

4. *Agency Coordination*
   Before permit applications, the next step would be to coordination with the Michigan Department of Environmental Quality (MDEQ), U.S. Corps of Engineers (USACE), Michigan Department of Natural Resources (MDNR), the Environmental Protection Agency (EPA) and local agencies to identify the best available strategy/design and the most likely to be permitted. The Kalamazoo River is a navigable waterway regulated by Section 10 of the Rivers & Harbors Act of 1899 and Section 404 of the Clean Water Act. Coordination with MDEQ/USACE/EPA will be essential to ensure the future success of the project. Because channelization could affect the maintenance of the federal navigation channel, coordination with the USACE is critical to determining if the approach will be viable. In addition, a list of permit requirements would be developed, to ensure that all required studies, modeling, and other needs are addressed prior to submittal of a joint application.

5. *Special Studies & Modeling*
   After meeting with the agencies, special studies and modeling would be completed. These special studies might include performing detailed survey(s), sediment sampling/testing, threatened and endangered species studies, modeling, archaeological studies, floodway/floodplain studies, wetland delineation, among others. While some of this work might be completed during preliminary engineering, it's likely that additional efforts will be identified after agency coordination. Because channelization will modify portions of the Kalamazoo River watershed, fully evaluating all impacts will be required.

6. *Permit Application & Process*
   The next step in the permitting process will include preparing and submitting the Joint Permit Application to the agencies containing project quantities, project vicinity map, existing site plan, proposed plan view and cross-section drawings. Depending on the final proposed plan, the MDEQ Water Resources Division will review the permit application with respect to Part 301, Inland Lakes and Streams; Part 303, Wetlands Protection; Part 201, Environmental Remediation; and Floodplain Regulatory Authority found in Part 31, Water Resources Protection. While working with the MDEQ, the USACE will need to issue a 404 permit for the project.

7. *Land Acquisition*
   While minimal land acquisition is anticipated for channelization, staging areas, bottomland rights, land use covenants, use agreements and other variables will need to be addressed before the project can be implemented.



8. *Final Design & Bid Set*
   Preparation of the project bid set and final design should be advanced only after permits are received or, in some cases, when the permit process is close to completion. In many cases, the permit process results in modification to the design and when final design is completed prior to permit issuance, there is a risk that redesign could be required.

9. *Construction & Maintenance Plan*
   Once the project has been awarded, construction of the project can occur. A maintenance plan for the channelization structures and for access to the channel from shore (dredging) will need to be identified prior to this stage.

*Challenges*

The complexity and potential impacts of the project will result in challenges. During the review process, the agencies will likely require a number of special studies, as identified above. The special studies required to support the channelization approach are complex and will likely need to cover significant geographic areas.

Initial feedback during the September 15, 2015 agency meeting indicated that the USACE and MDEQ might contest the idea of moving contaminated sediment into the navigation channel downstream of Kalamazoo Lake. In addition, while the USACE was not represented at the meeting, channelization would likely result in an increased dredging burden on the agency and therefore, would likely result in opposition. Lastly, by pushing regulated materials downstream into the federal navigation channel, the USACE may need to diverge from its current practice of using dredge spoils as beach nourishment, resulting in additional costs to maintain the channel.

Lastly, after channelization is complete, the communities and riparian owners will still be left to determine how to maintain navigation from the shorelines to the high-flow channel, likely by additional dredging. So, while the approach may solve some problems, the need for dredging will not be completely eliminated.

According to the 2007 Kalamazoo Harbor Master Plan Technical Report, the success of this approach is difficult to determine without a comprehensive sedimentation model. MDEQ initial feedback questions whether channelization through Kalamazoo Lake will be worthwhile as the channel may represent a giant sediment trap, thus requiring significant maintenance dredging. As stated below, the required hydraulic and sedimentation modeling will be a significant cost to determine the effectiveness of the channelization approach. Long-term maintenance dredging of the channel will need to occur to ensure safe navigation within the channel.

As with the sediment trap approach, government financing and bonding of a channelization approach will be a significant obstacle to overcome.

*Anticipated Costs - Channelization*

The estimated costs of this project approach are:

| | | |
|---|---|---|
| 1. | Preliminary Engineering | $ 50,000 – 75,000 |
| 2. | Hydraulic/Hydrologic Modeling | $ 50,000 – 150,000 |
| 3. | Geotechnical Investigation | $ 25,000 – 50,000 |
| 4. | Permit Process | $ 75,000 – 100,000+ |
| 5. | Special Studies: | $ 50,000 – 150,000+ |
| | | **$ 250,000 – 525,000+** |
| 6. | Land Acquisition | $ 100,000 – 500,000+ |
| 7. | Construction | $15,000,000 – 30,000,000+ |
| | | **$15,100,000 –30,500,000+** |
| 8. | Long Term Maintenance Dredging (20 years) | $ 2,000,000 – 5,000,000+ |

**Please note that these are conceptual cost estimates for general information only.*

## FUNDING OPPORTUNITIES

In addition to previously identified sources, the following potential funding sources have been recently identified as funding opportunities:

*Great Lakes Restoration Initiative (GLRI)*

State and Federal grants exist to help with the sediment management efforts. Recently, in an effort assist Saugatuck/Douglas with the sedimentation issue the Delta Institute and Public Sector Consultants (PSC) has applied for a $410,000 grant through the Great Lakes Restoration Initiative to help remediate upstream agricultural runoff. The plan now underway will address the sedimentation issues facing marinas and harbors to implement a policy framework addressing best management practices throughout the regional watershed. According to the Delta Institute, the proposed plan focuses on a mechanism that allocates a small portion of funds to reduce sedimentation at its source, similar to the Federal Moving Ahead of Progress in the 21st Century Act (MAP-21) which allocates funds to "transportation alternatives" such as environmental mitigation, recreational trails, and historic preservation. An infographic published by Delta Institute and PSC indicates that through the implementation of BMPs within several upstream watersheds could reduce the annual sediment by 13.3% in Saugatuck/Douglas Harbor.

*Coastal Zone Management Program (CZM)*

The MDEQ Coastal Zone Management Program (CZM) is offering grants to qualified projects within one of the five focus areas: public access, coastal habitat, coastal hazards, coastal water quality, and coastal community development. According to the CZM Request for Proposals announcement, examples of projects eligible for support include the development of ordinances, policies, and/or plans addressing the management of coastal



nonpoint source pollution. This program is applicable due to the ongoing problem of nonpoint pollution (agriculture and urban runoff) within the Kalamazoo River watershed. CZM grant amounts range from $10K to $100K and require a 1-to-1 non-federal match. The deadline to apply is December 18, 2015 for an anticipated project start date of October 1, 2016.

*USDA Environmental Quality Incentives Program*

The U.S. Department of Agriculture NRCS 2014 Farm Bill offers the Environmental Quality Incentives Program (EQIP), which participants receive financial and technical assistance to implement conservation practices. Another funding source provided by the NCRS is the Regional Conservation Partnership Program (RCPP), which is a cooperative opportunity to identify and address natural resources objectives to benefit soil, water, wildlife and related natural resources locally, regionally, and nationally. The Sediment Management Plan for the Kalamazoo River will implement these programs as an incentive for farmers and other residents within the watershed area to implement BMPs to reduce sediment loads entering the watershed.

*NOAA Great Lakes Regional Habitat Restoration Partnerships*

The National Oceanic and Atmospheric Administration (NOAA) recently released a federal funding opportunity for habitat restoration in Great Lakes Areas of Concern. NOAA seeks to award funding for multi-year Great Lakes Regional Habitat Restoration Partnerships. These Partnerships will result in the implementation of a wide-range of engineering, design, and on the ground implementation of individual habitat restoration projects. The Great Lakes Initiative will provide typical Partnership awards ranging from $1,000,000 to $5,000,000 per year for up to three years. The Kalamazoo River is listed as a Great Lakes Area of Concern, thus projects involving habitat restoration will be eligible for the funding.

Edgewater resources

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Meeting Summary

Date: March 31, 2016
To: Greg Weykamp
From: Lindsey Mathus
Subject: KLHA Harbor Planning – RCPP Discussion Summary

Distribution:

This memo is intended to summarize the key points discussed during the meeting with Allegan Conservation District, MDEQ Representatives, and MDARD representative for the Kalamazoo Lake Harbor project on March 25, 2016 in Allegan, MI:

I. **Allegan Conservation District**
   - Does not have a lot of funding – Ana Hedberg only works part-time (20 hrs/wk)

II. **MAEAP (Michigan Agriculture Environmental Assurance Program)**
   - A voluntary program that helps farms of all commodities voluntarily prevent or minimize agricultural pollution risks
   - MAEAP Technician (Mike Ludlam) at the meeting discussed:
     - Farms get certified by program though the implementation of Best Management Practices (BMPs) such as buffer strips, cover crops, and other environmentally friendly practices
     - MAEAP certified farms can receive discounts on fertilizers, etc.
     - Program employs technicians and could be used to leverage RCPP funding – Need to clarify this

III. **RCPP Program**
   - Federal funds available and awarded annually
   - Requested funds must be matched
   - Funding is not available for administration – Biggest problem
     - Who will put together application without funding?
     - Who will continue the future monitoring and reporting that is required without funding?

IV. **Key Comments/Questions Raised by MDEQ staff:**
   - Need to determine critical areas of watershed to possibly include these in scope of the project
   - Allegan Count y is one of the top agricultural counties in Michigan – should leverage on how much BMPs could impact the Kalamazoo River
   - Contact DNR to ask whether wildlife habitat restoration could be a part of the project
   - Contact Allegan County Drain Commissioner

V. **Next Steps**
   - Lisa Greenwood to setup meeting with Travis from Outdoor Discovery Center to discuss Project Clarity
   - Kirk Harrier to contact Van Buren County to learn about pilot program with communities and the reduction of drain assessments due to the use of BMPs
   - Review the Pre-Proposal submitted for the St. Joseph River Watershed Conservation Partnership that was forwarded by Jack Knorek from MDARD

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Meeting Summary

Date: April 21, 2016
To: Kirk Harrier, Bill LeFevere
From: Greg Weykamp
Subject: KLHA Harbor Planning – Follow-Up State Agency Meeting Memo

Distribution:

This memo is intended to summarize the key points discussed during our state agency meeting for the Kalamazoo Lake Harbor project on February 19, 2016 in Douglas, MI:

I. **Review Draft Report Dated December 9, 2015**
   - Channelization Approach
     - The gradient of the river is very shallow and will not likely support the velocity required to keep sediments in suspension. However, if channelization is technically feasible, the following issues regarding contamination of Lake Michigan would need to be addressed.
     - If effective, more sediment will be deposited by channelization into the Corps channel downstream of Kalamazoo Lake, which will increase the frequency and cost of maintaining the channel.
     - Deposition of additional silty sediments could change the character of the dredge materials in the Corps channel, potentially removing the option of using the dredged materials for beach nourishment and significantly increasing the cost of dredging the channel.
     - PCB and arsenic remain above acceptable MDEQ criteria, and could contaminate Lake Michigan beaches, as well as further distribute contaminants into Lake Michigan where future cleanup efforts would be more expensive.
     - Prevention of contamination of Lake Michigan and beaches by complete removal of PCB and arsenic contaminated sediments from Kalamazoo Lake is not possible, as additional contaminated sediments continue to enter Kalamazoo Lake from upstream sources. Additionally, the cost of removal of sediments would exceed tens of millions of dollars, and other alternatives of storing contaminated sediments along nearshore areas by relocating bulkhead lines would have significant impacts on adjacent private property owners.
     - Channelization would require significant reconfiguration of the Kalamazoo Lake and Wade's Bayou shorelines, and/or construction of islands and/or fixed structures to create the channel. Multiple community meetings held in Douglas throughout 2015 for the Douglas Waterfront Master Plan reviewed the potential visual impacts of such a proposal with the public, and little to no support for this type of reconfiguration was offered by the public.
     - While it has been suggested that the USACE Hydraulics section has indicated that channelization may be technically feasible, it is important to note that the Engineering / Hydraulics sections are separate from the Regulatory and Operations sections of USACE. Given the potential impacts described above, in particular permitting concerns certain to be raised by USEPA, we believe it is highly unlikely that the USACE would support or permit channelization.
     - The consensus from all MDNR, MDEQ, and State of Michigan representatives present at the meeting concurred with the analysis described above and indicate that channelization is not a feasible approach to the sedimentation issues in Kalamazoo Lake.

   - Sediment Trap Approach
     - Sediment Traps have significantly less impacts than channelization and are considered more potentially viable by the permitting agencies.
     - Location quantity, and final design will affect the permit-ability and effectiveness of this approach
     - Significant upstream sediment mapping, testing, and modeling will need to be performed
     - The effectiveness of sediment traps in capturing silt is dependent on many factors, and will need to be modelled and tested
     - The total area/volume of the sediment trap is more important than the length of the sediment trap in capturing sediment

II. **Upstream Sedimentation Mitigation Strategies**

- A strategic, collaborative approach to minimizing non-point source pollution and introduction of silt upstream was discussed and identified as a critical first step in managing the long term sediment issues in Kalamazoo Lake and Wade's Bayou
- Multiple programs that may be helpful were identified, including:
  - MAEAP (Michigan Agriculture Environmental Assurance Program) – Certify farms to implement BMPs (Best Management Practices) that will reduce sediment runoff
  - RCPP (Regional Conservation Partnership Program) – A great way to document collaborative effort between communities
    - Project examples: Tri-State Western Lake Erie Basin Phosphorus Reduction Initiative, Lake Michigan Fruitbelt Conservation Partnership, Saginaw Bay Watershed Conservation Partnership, and St. Joseph River Watershed Conservation Partnership
  - Van Buren County Pilot Program:
    - Reduction in drain assessments are given to landowners who allow a buffer zone to grow between the drain and the farm field
    - Everyone wins with this approach because of lower maintenance costs – farmers, drain commissioners, downstream communities
    - Working with local farmers to implement BMPs – Buffer strips, no mow zones
    - Tax breaks have been considered
    - Two stage ditches are in the planning stage
- Potential partners include:
  - State of Michigan
  - Allegan County
    - Drain Commissioner - Identify potential financial initiatives that can encourage/offset the cost to landowners to implement BMPs to reduce sediment loading
  - Allegan County Conservation District
  - Saugatuck Township
  - Upstream Communities
  - Individual Landowners

III. **Dredge Material Disposal Strategies**

- In-Water Contained Disposal Facilities (CDF)
  - Agencies recommend/prefer CDF facilities be located on lands adjacent to dredge source wherever possible



  - Agencies do not encourage consideration of in-water CDF, but indicated they could potentially be allowed if regulatory issues are addressed.
    - Primary issues include filling within wetland areas and impacts to fish habitat
- Schultz Park was identified as a potentially viable site for a CDF and long term storage of dredge materials, possibly as a sound barrier along I-196.

IV. **Opportunities for Funding/Partnerships**

- A number of potential funding sources were discussed, including:
  - RCCP – Significant funds potentially available through USDA
  - EPA 319 Grants – Less funds potentially available, but is an option to address non-point source pollution (sediment)
  - MAEAP – Michigan Agriculture Environmental Assistance Program
  - Great Lakes Protection Fund

V. **Other Community Issues**

- Why is Saugatuck Douglas Harbor not recognized by DNR Waterways Program?
  - No publicly owned marina exists
  - A publicly owned marina of any size that meets a demonstrated unmet demand for transient boating could potentially qualify the Harbor for additional support from the State of Michigan

VI. **Other Agency Comments**

- Development of a "Roadmap" to assist in gaining regional support and applying for grant funding to address sedimentation issues would be very helpful
- Work with regional agencies such as Allegan County, Allegan County Conservation District, Allegan County Drain Commissioner, Saugatuck Township, and other non-for-profit organizations
- Contact other successful programs within the state to understand how to move forward with a successful collaborative effort

VII. **Next Steps**

- Create "Roadmap" to initiate regional collaborative strategy
- Meet with Allegan County Conservation District
- Obtain feedback regarding GLRI Grant denial – identify reasons why
- Explore beneficial reuses of dredge material and if it is viable
- Identify next steps in upstream sediment testing and mapping of sources


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