A PRACTICAL PROPOSAL

FOR MOVING FORWARD WITH

WFCA POND RENOVATIONS

Submitted by
Sandy Martin, Ted Boardman, and Lynn Struve
Summer, 2021

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Abstract

With considerable experience and extensive research, three concerned WFCA members recommend WFCA Board reject the proposal to convert Ponds #3 and #4 into a stream channel in favor of renovating ponds #3-#7 by dredging, installing new liners as needed, and addressing the need to mitigate erosion in critical locations. The components of this proposal to the WFCA are as follows:

1. Commit to design priorities:
    a. mitigate flooding of area residential property,
    b. address erosion issues
    c. prove to be financially feasible
    d. avoid the creation of unsightly and/or unhealthy situations (invasive vegetation, standing shallow water, muddy areas during dry periods.)
2. Commit to a long-term budget that creates a separate accounting apart from general reserves, explicitly dedicated to receiving and distributing funds for a "WFCA Pond Project". (Simply stated, funds received for the WFCA Pond Project are not to be co-mingled with other reserve funds.)
3. Commit a minimum of $40,000 from the general reserves to the WFCA Pond Project as an initial investment from the WFCA general reserves.
4. Seek an annual contribution from the two HOA neighborhoods in which the ponds are located: Moss Creek (MC) and Moss Creek Village (MCV) to help alleviate the increased assessments to the remaining WFCA neighborhoods.
5. Commit to a long-term phased-in plan that will renovate each pond AND provide for a long-term maintenance plan to avoid the need for future crisis intervention.
6. Thoughtfully identify a reasonable increase in WFCA annual dues that will balance the concerns of those who do not live close to the ponds with the requirement to maintain the ponds as directed in the governing WFCA CCRs.
7. Design a communication program that will provide WFCA residents with essential information.

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WHAT QUALIFIES THESE PEOPLE TO MAKE A RECOMMENDATION?

After reviewing *A Conceptual Design* submitted to the WFCA Board from Mr. Andrew Knust, P.E of Bledsoe Riggert Cooper and James Land Surveying Civil Engineering GIS, three members met to compile a reaction. While completing this document a thread of somewhat contentious comments was shared through emails. It has been our intent to complete our reaction to the *Conceptual Design* before entering the debate. If you haven't read the *Conceptual Design*, it is available at *http://apracticalproposal.info/wp.* This paper serves to analyze and provide alternatives to that report. *The Conceptual Design* is summarized on page16.

The three members offering the following comments represent considerable knowledge with regards to the ponds and potential resolutions. Ted and Sandy have both served on the WFCA Board and all three have been members of the WFCA Pond Committee, at one time or another. Lynn is recognized as an active and highly involved advocate for her community.

With great regret we announce that Lynn will be moving and though her interest in enhancing WFCA remains, we will greatly miss her direct involvement. Lynn has been able to provide a historical perspective to the progress, or more accurately, the lack of progress to address the pond issues. She has been a constant voice to the WFCA Board, rarely missing a WFCA Board meeting over many years. Her concern for WFCA's ability to maintain a standard of quality has been unquestionable. It is important to note that her assessment of needs to be addressed were never limited to the ponds. She spoke for the entire community. Lynn is a researcher by profession and contributed her investigative skills to this proposal.

Ted Boardman was directly involved with the restoration of ponds #1 and #2. He observed the errors in installing the bank erosion material was a direct result of poor contractor project management and poor selection of the contractor, who did not follow the manufacturer's instructions. As a result, he began the process of investigating of finding a qualified land and water management group, and properly qualified contractors for subsequent projects

Few, if anyone, has done more research with regards to the varying facets of pond maintenance and restoration. Over the years he has established a relationship with a variety of contractors specializing in pond repair and maintenance. Most recently he has researched numerous alternatives to the estimates provided in the *Conceptual Design*. With the combination of having knowledge of the previous pond improvements and his time on the early pond committee he has built a significant foundation of information to accurately review and assess the current Knust recommendations. He has spent hours renewing contacts and collecting additional data. It should be noted that after continued frustration with WFCA management Ted resigned from the WFCA Board in 2017. He is now contributing his services as a concerned resident of WFCA.

Sandy Martin moved to WFCA during the work on ponds #1 and #2 and was soon recruited as a WFCA Board member. Her contributions focused on increasing communications by redesigning the WFCA website, creating newsletters and informational presentations for the WFCA annual general meeting. It was her contention that the WFCA Board should communicate with its residents more effectively. It should be noted that she had included on the website an interactive option to identify all the common areas for which WFCA was responsible. Unfortunately, since her departure from the WFCA Board, this feature is no longer activated. (It had required a small annual fee, for which it is assumed was allowed to expire.) Had this feature been maintained it would serve to answer some of the questions that have evolved in the recent email. Eventually, she joined the pond committee and was responsible for compiling recommendations to the WFCA Board from the pond committee.

Sandy had the opportunity to meet with quite a few contractors to inspect the ponds and discuss various issues and resolutions. These meetings provided considerable information. Additionally, she worked with a resident to

submit a grant proposal to the city for funds to assist with the costs to alleviate some erosion problems. She attended city grant workshop meetings and helped to submit RFPs to over a dozen contractors seeking bids for work on pond #3. She also reviewed other grant opportunities. Prior to retirement, she had considerable experience in both monitoring grants and submitting proposals for funds. After continued frustration with WFCA management Sandy, also, departed the Board in February 2020.

It should be noted that no less than eleven residents have served on the pond committee. There have been concerted efforts by many to address the problems and submit ideas to the WFCA Board. Unfortunately, the WFCA Board experiences such a significant turnover that continuity of interests and efforts have not been maintained.

WHAT ARE THE CRITERIA FOR DECISION-MAKING?

Objective: Identify and recommend a WFCA Pond Improvement Project that will:

a. mitigate flooding of area residential property,
b. address erosion issues
c. prove to be financially feasible
d. avoid the creation of unsightly and/or unhealthy situations (invasive vegetation, standing shallow water, muddy areas during dry periods.)
e. and suggest funding solutions that are sensitive to overall community concerns

The authors of this proposal emphasize our sensitivity to the fiscal issues associated with raising dues, especially for those residents of Winslow Farm Community Association who may not feel the direct impact of the benefits of the ponds.

For those who have little experience with the ponds, it should be noted that not only do the residents in the direct vicinity enjoy the ponds, but a surprising number of residents from a wide area enjoy walking around the ponds. It is especially heartwarming to witness those who bring their children/grandchildren to enjoy the water and waterfowl. Even the local Y uses the area next to the ponds for a running class. Many people know Winslow Farms as the community “with the ponds.”

We want to be clear that our proposal is based upon what we believe are to be overwhelming data. We remain open to information that may be counter to what we present. We can support alternatives, such as the stream channel, if data can provide evidence that it is cost-effective, will not create more problems and can be fiscally supported with reasonable dues increases. However, we submit our proposal after careful consideration of a collection of information. We can provide references upon request.

Regardless of what design plan is implemented, the overriding concerns must assess:

1) What are the costs?
2) How can it be financed?

Any homeowner understands this dilemma. When faced with personal major expense, we research costs, review our budget, and select options based upon the most cost-effective plans that our budget will support. The following is submitted consistent with such an approach.

WHAT ARE FACTORS IMPACTING THE POND IMPROVEMENTS?

TOPOGRAPHY

For those WFCA residents who question their obligation to help support the WFCA ponds, we recognize this frustration. However, the following provides the information that explains the requirement:

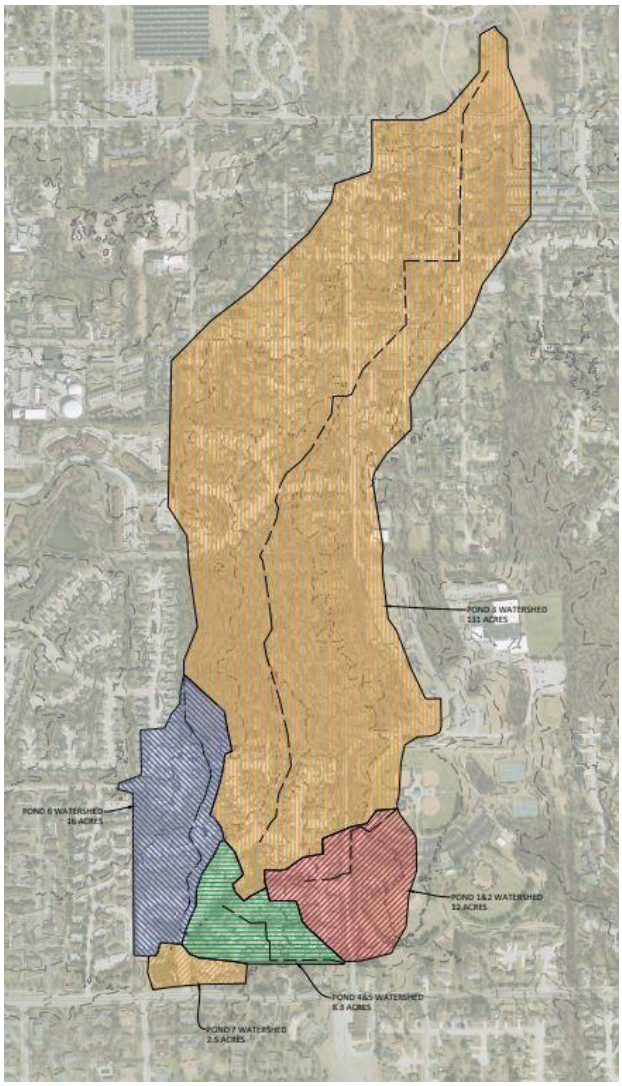
1. The original landscape of the area had a watershed area that drained into a stream system. The primary stream became the foundation for the current set of ponds.

   Mr. Knust in the *Conceptual Design* provided the graphic to the right. It provides a clear overview of the current watershed. The watershed for pond #3 is expansive, accommodating water from approximately 160 acres. Any design changes must avoid causing back-up into the residential areas, including that of Olde Mill and beyond.

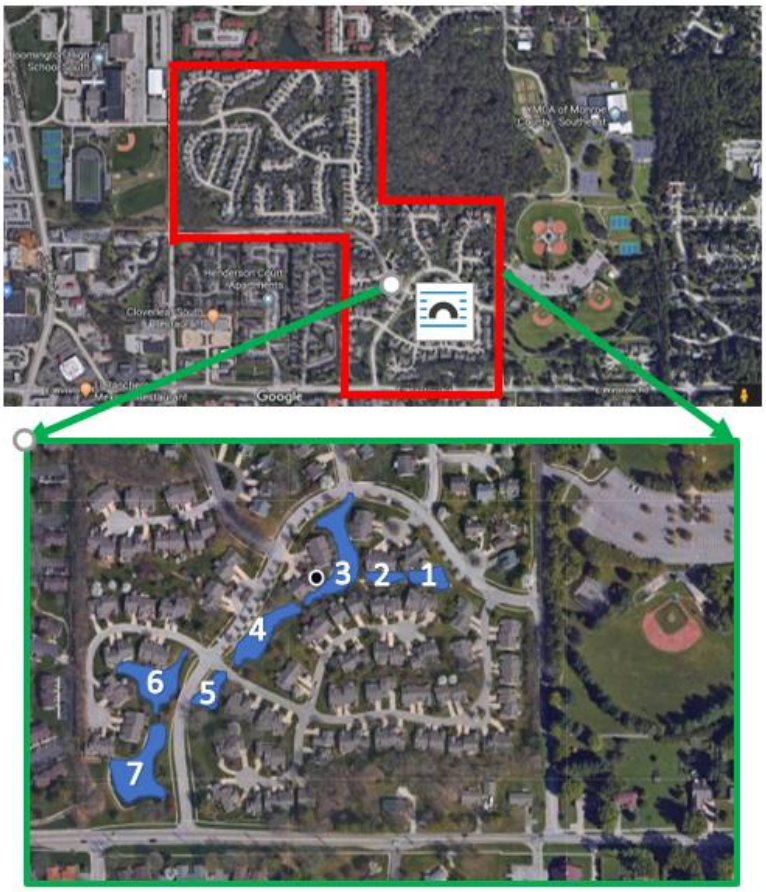
   Note that the watershed into pond #1 includes the run-off from the Winslow Sports Complex. It is important to recognize that since soil is not available to soak up the water, the more the land is covered with streets, parking lots, buildings, etc., the more run-off is created. Additionally, the potential for dirt and other silt build-up is increased.

   For those who may live further away from the ponds, note that the blue area is bordered along Henderson and empties into pond #6. There are underground conduits in many areas that direct the water to P6, making it less obvious as to the function of the ponds.

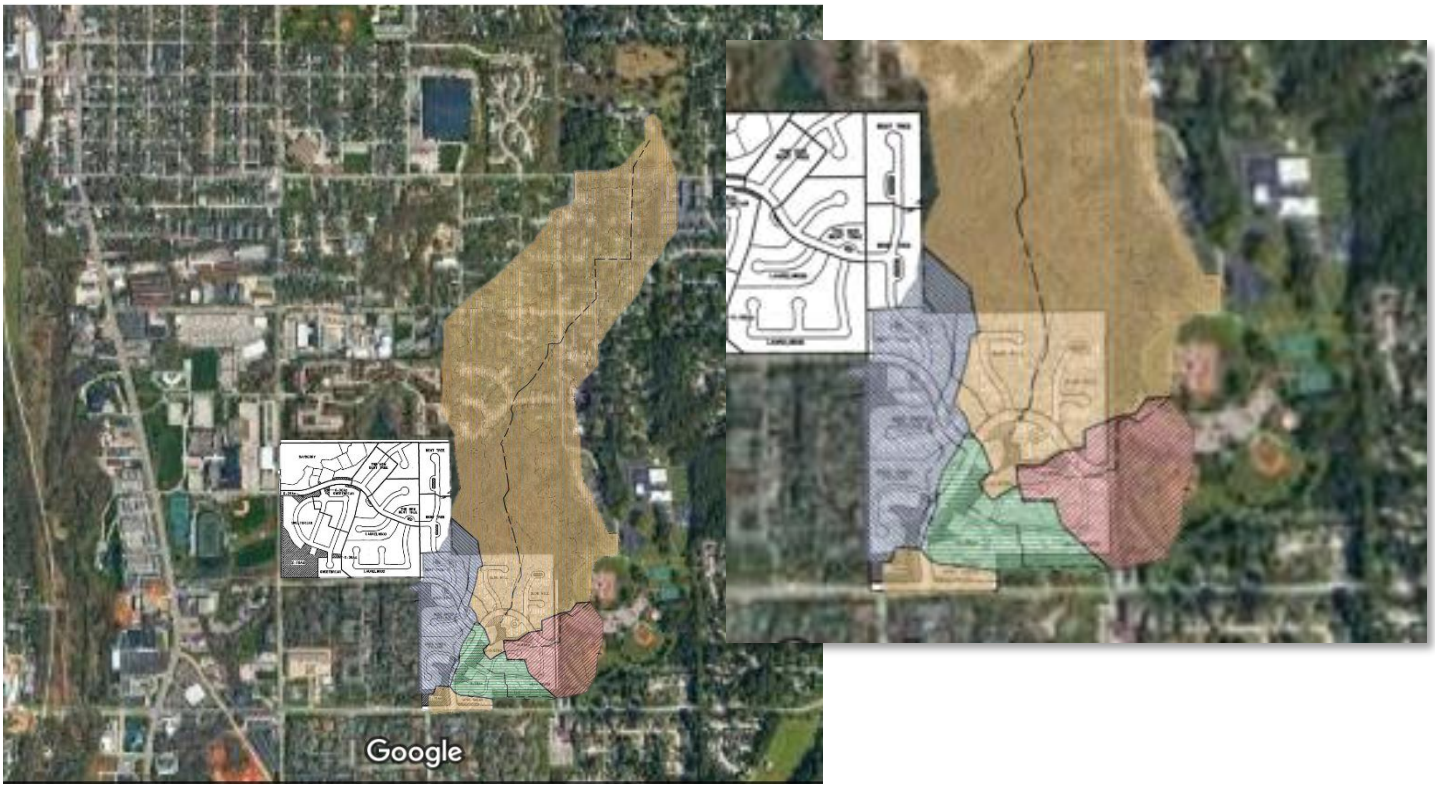
   The water exits at pond #7 and flows into the ditch along side Winslow Road. The city demands that any changes to the WFCA pond system cannot negatively impact that drainage capacity.

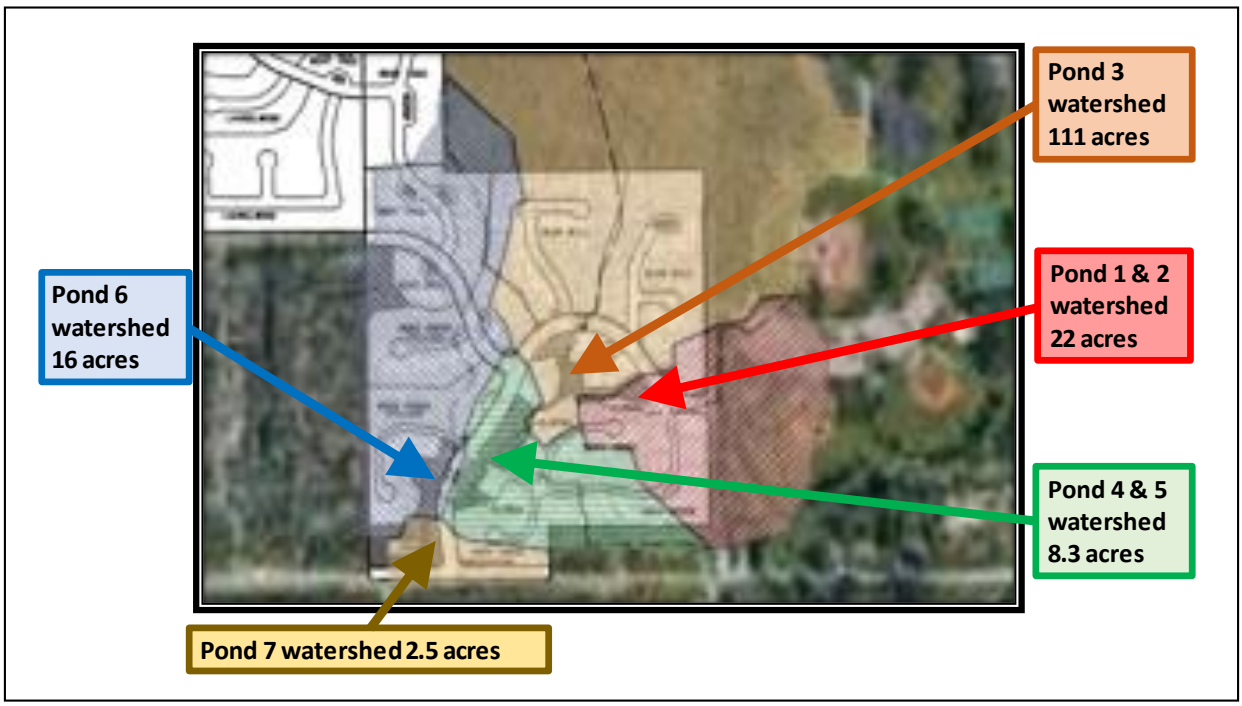


To better understand the impact on the ponds of this extensive watershed area, the above graphic can be superimposed on an aerial view of the community. Note that the WFCA community is highlighted.



Ponds flow from 1 through 7 and into the ditch along East Winslow Farm Road.





WHAT REGULATIONS IMPACT THE POND IMPROVEMENT EFFORTS?

When WFCA was developed, a set of regulations known as the CCRs (*Declaration of Covenants, Conditions and Restrictions*) was instituted. The intent of such CCRs is to maintain a standard of quality in a neighborhood. They serve to ensure the community is maintained to sustain overall property values. The relevant provisions in the CCRs include:

a. WFCA can only expend funds on common areas.
   i. A graphic is available on the website to show the common areas in gray: *https://www.winslowfarmcommunity.com/common-area*

> 1.7. Community Maintenance Area. "Community Maintenance Area" means the Entrance Signage, the ponds and pumping equipment; and the pedestrian walkways to Winslow Woods Park located within Winslow Farm.
>
> 1.8. Community Expenses. "Community Expenses" means the expenses of administration of the Community Association, expenses for the upkeep, maintenance, repair, utilities, pesticide treatment and replacement of the Community Area and all other costs and expenses incurred by the Community Association for the common benefit of all Owners.

   ii. Each neighborhood has its own set of CCRs.

      1. A copy of WFCA and neighborhood CCRs is available at *https://www.winslowfarmcommunity.com/ccrs-bylaws*
      2. Except for the HOAs in Moss Creek, Moss Creek Village and Bayberry, each neighborhood is to establish its own "Architectural Committee" to approve/reject requests for external changes. When no neighborhood committee exists, WFCA is the default approving body. Each neighborhood is encouraged to maintain their own committee.
      3. The HOAs in Moss Creek, Moss Creek Village and Bayberry monitor their own CCRs.

a. It should be noted that the residents of the three HOAs pay MONTHLY assessments beyond their WFCA annual dues. (Note: MC owners pay $220 per month, MCV pay $225 per month and Bayberry pay $____. The fees essentially provide for external maintenance including roofs, and upkeep of HOA common areas to include such items as landscaping, tree removal, sidewalks, snow removal and non-city street repair.
b. Restrictions tend to be more limiting under the HOA's CCRs than what is prescribed in the WFCA CCRs.
c. These communities have responsibility for maintaining their own common areas.
d. WFCA cannot contribute to the upkeep of the HOA designated common areas.

iii. Since WFCA has jurisdiction only over its designated common area, NOT private property, many complaints are NOT subject to WFCA monitoring. Examples included, but are not limited to:
1. Items such as sidewalks are the responsibility of the homeowner in the neighborhoods outside of the three HOAs. (MC, MCV and Bayberry are responsible for sidewalks in their respective neighborhoods.)
2. Complaints about lawn violations, disturbances or nuisances fall under the jurisdiction of the city.
3. WFCA is community association, it is NOT a homeowner's association. The regulations and responsibilities are different.

b. WFCA may assess dues annually to ONLY maintain WFCA common areas
i. All households <u>must</u> be assessed <u>at the same rate</u>.

> 1.20. <u>Regular Assessments</u>. "Regular Assessments" means the total annual budget for the Community Association based on the estimated cash requirement for the Community Expenses in the ensuing year as set forth in said budget, divided by the total number of Residences in Winslow Farms.

ii. A special assessment can be approved.
iii. WFCA must maintain the ponds. The WFCA CCRs clearly state that WFCA is to "keep the waterscape in a first-class condition."

> 8.2. <u>Ponds and Pumping Equipment</u>. The ponds and pumping equipment located within Winslow Farm are Community Areas. The Community Association shall insure, maintain, repair and replace the ponds and pumping equipment to keep the waterscapes in a first-class condition. The Community Association will apply pesticides to the ponds if necessary to eradicate undesirable insects and weeds using commercially accepted treatments. All costs incurred by the Community Association in discharging its duties under this Section will be a Community Expense.

c. However, some legal issues need to be clarified and resolved. These disagreements have led to what can be viewed as procrastination to address pond issues.
i. A recent property survey found that the banks of pond #3 are outside the official WFCA common area boundaries. This is being contested and hopefully through mediation will soon be resolved.
ii. There are historical documents that seem to state that MC and MCV are also responsible for common areas that include "ponds". This has created some confusion and unfortunately has led to debate as to the responsible party for some issues. There are disagreements as to which body should maintain the banks, especially with the installation of the Flexamat in ponds #1 and #2.

d. WFCA CCRs can only be altered with 62% vote of the membership.

e. Homeowners are “Class A members,” but only one person from each unit may vote.

WHAT IS THE CURRENT POND DESIGN?

There are seven (7) ponds. They are numbered as follows:

The area of each pond is as follows:

- ✓ Pond #1 is 0.11 acre
- ✓ Pond #2 is 0.10 acre
- ✓ Pond #3 is 0.32 acre
- ✓ Pond #4 is 0.27 acre
- ✓ Pond #5 is 0.12 acre. A pump located under the large tree is designed to pump fresh well water during periods of drought. However, it is questionable as to whether it is functioning.
- ✓ Pond #6 is 0.32 acre
- ✓ Pond #7 is 0.41 acre is required by the city as a retention pond. Originally a re-circulating pump was located in P7 to pump water up to P1 to cause a stream of water to flow through the system. Due to shallow water and the loss of electrical power the pump is not functioning.

The topography of the area has the water flowing from the highest level at pond #1 to the southwest at pond #7.

- There are weirs between P1-P2, P2-P3 and P3-P4 and a shallow weir between P6-P7. Weirs serve multiple purposes:
    - They act as a dam to back up the water which pools the water to form the pond.
    - They channel the water to the lower level in a manner that avoids erosion.
    - The surrounding retaining walls also serve to prevent erosion as the water is directed through the smaller channel.

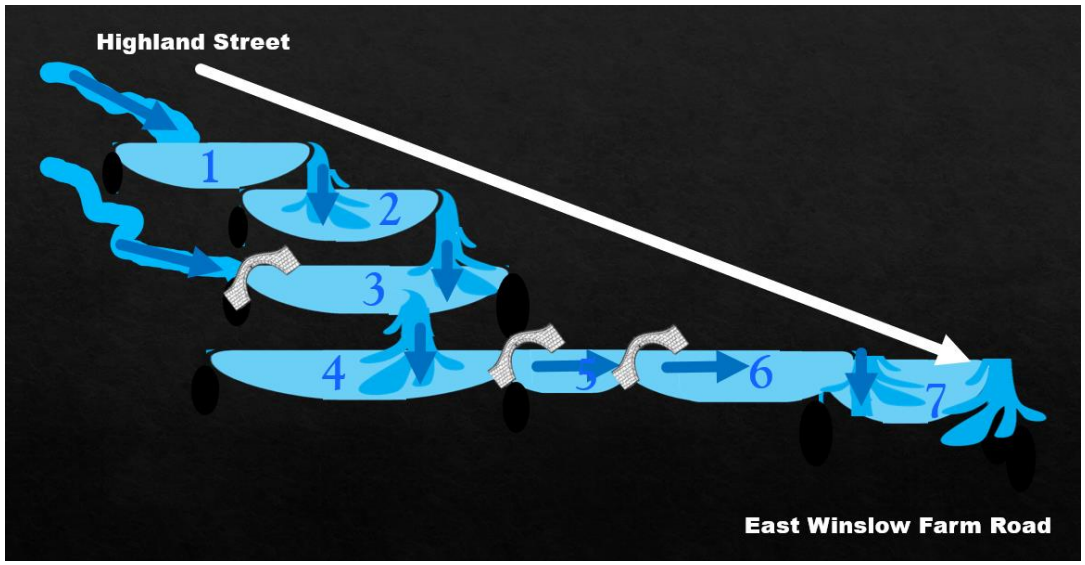
- There are bridges between P4-P5 and P5-P6. The structure of the bridges includes a concrete structure under the water that also serves as a dam to pool the water to form the pond. During rain, the excess water flows over this structure.

  A contractor explained that if we do the stream channel option, the concrete structure under the bridge at P4-P5, would always cause some water to pool in what is now pond #4. To prevent the muddy mess much like what has already been experienced in the north end of pond #3, special attention would be required. He went on to explain that the option to remove this concrete structure would require first removing the bridge, reforming the concrete structure, and then replacing the bridge. This would be a very expensive project.

  However, it remains questionable as to how a stream channel can be created through the area of #4, #5 and #6 that would not have water backflowing or standing in shallow pools. Even Mr. Knust commented, "However, it remains questionable as to how a stream channel can be created through the area of #4, #5 and #6 that would not have water backflowing or standing in shallow pools." He admitted that even in a design that leaves P5, P6 and P7 in their current design, water would probably back up into what is now pond #4. His recommendation was to install a rain garden. This option will be assessed in a later section.

- It is important to understand the topography of the area. There is a definite change in elevation between pond #1 flowing through #2 and #3. However, ponds #4, #5 and #6 all lie on the same plane. A channel can be designed to create an adequate water flow from the north end. However, with the concrete structure under the 4-5 bridge and the absence of a change in elevation, water will pool and create a wetland in #4, #5 and #6. Additionally, the change in elevation from pond #6 to #7 is very slight, making a stream channel from pond #4 to #7 ineffective. Therefore, *Mr. Knust's plan did NOT recommend that ponds #5 and #6 be converted to a stream channel*. Pond #7 is required as a retention pond and a change in its configuration is not included in any of the recommendations.

- The following is a simplified diagram of how the water flows with the change in elevation:



As this diagram demonstrates, water flows from Pond 1 "down" to pond #7. There is a change in elevation between P1, P2, P3 and P4 which is conducive to converting to a stream channel. The areas with the change in elevation provide for an adequate waterflow thereby decreasing the chance for water to pool and become stagnant. But considering the amount of money that has recently been spent to restore ponds #1 and #2 it has NOT been recommended that more money be spent to change either of them to a stream channel.

It is important to note that P4, P5, P6 and basically P7 are all on the same plane and the cost to design an adequate change in elevation is prohibitive. It has been recommended to NOT change P#5, P6 and P7 by both the Conceptual Design and the Davey's report. Accordingly, they will remain as their current configuration of ponds regardless of the final decision for the pond improvement project.

WHAT HAS BEEN ACCOMPLISHED?

Standard maintenance has included the application of chemicals to mitigate algae and lately invasive creeping primrose. Other standard maintenance efforts have included, but not been limited to, repairs to the circulating pump, replacement of two of the concrete street drains, resealing the weirs and fixing a leak in the spillway on pond 7.

A. Starting in the later **2000s** increased sediment build-up became a concern especially in ponds #1, #2, and #3. The shallow ponds were becoming the perfect environment for increased algae growth.

B. **Pond #3** Sediment had accumulated creating what was often referenced as "the mud flats". Weeds and cattails took over the area, creating a very unsightly mess and causing concerns over mosquito breeding areas.
    a. Pond 3 is 0.32 acres. The northern half of this pond is much shallower than the southern portion. The pond receives water from several sources including a weir from pond 2, a stream flowing into the pond from Winslow Woods north of the pond, a street outlet pipe, and several residential stormwater outlets.
        i. Bids were obtained to dredge the area close to the bridge and install a rain garden.
            1. Two bids were submitted: one for $35,000 and another for $88,000.

2. However, a vote to approve the project failed at the WFCA annual general meeting.

b. Until 2019, the project languished for lack of attention, when an excavating contractor was hired to dredge the area for two days at a cost of $5,000.
   i. Some topsoil was saved and was used to fill in a small inlet that captured waterflow preventing it from flowing through the pond.
   ii. However, this attempt removed only about 3 feet of muck in a limited area. During the ensuing winter some of the sediment washed back to the area.
c. In the fall of 2020, another somewhat inconsequential attempt was made to excavate the area. Progress was again limited to the amount of work that could be completed for $5,000.
d. The majority of pond #3 still needs to be dredged.
e. Pond #3 has eroded the bank behind one of the Moss Creek HOA units. There is no room to walk between the unit and the pond. It is even next to impossible for the landscapers to access the area to remove tall weeds. During heavy rains the water flows under the porch, threatening the supports***. This is a serious situation that requires urgent attention***.

C. In **2015** the sediment in **ponds #1 and #2** was vacuumed and trucked away. The old liners were removed, and new liners were installed.
   a. Pond #1: The pond is approximately 0.11 acre. Three aerators were installed in the pond to create adequate mixing for improved dissolved oxygen levels.
   b. Pond #2: This pond is approximately 0.10 acre.
   c. In the fall of 2016, a product called Flexamat was installed around the banks of both ponds to prevent erosion and create an attractive plant barrier around the perimeter. Flexamat is designed for exactly this use. Unfortunately, efforts to seed the Flexamat with grass were not successful. The Davey Resource Group identified the root cause is that fill soil was under the Flexamat and above the liner rather than topsoil. Also, an insufficient amount of depth of soil was placed below the Flexamat on top of the liner. Since then, attempts have been made to seed with wildflowers and to plant "plugs" of flowers. The results remain rather dismal. Some weeds have taken hold, but overall, it is not what was anticipated.
   d. The cost for the two-pond project totaled $97,000 including the installation of the Flexamat. This was more than the WFCA Board had planned because the selected company could not provide an accurate estimate. They did not know how much sediment they would be removing, and how long it would take. No bathymetric study was completed to provide an estimate for the project.
   e. The combined size of the two ponds is 0.21 acres. The combined area of P1 and P2 is less than the area of pond #3 (Pond 3 is 0.32 acres.)

D. June **2017**, after problems with the liner floating in pond #2, all the weirs were examined and resealed to prevent loss of water in the pond system. Resealing the weir corrected the floating liner problem in pond #2.

Davey Resource Group Report

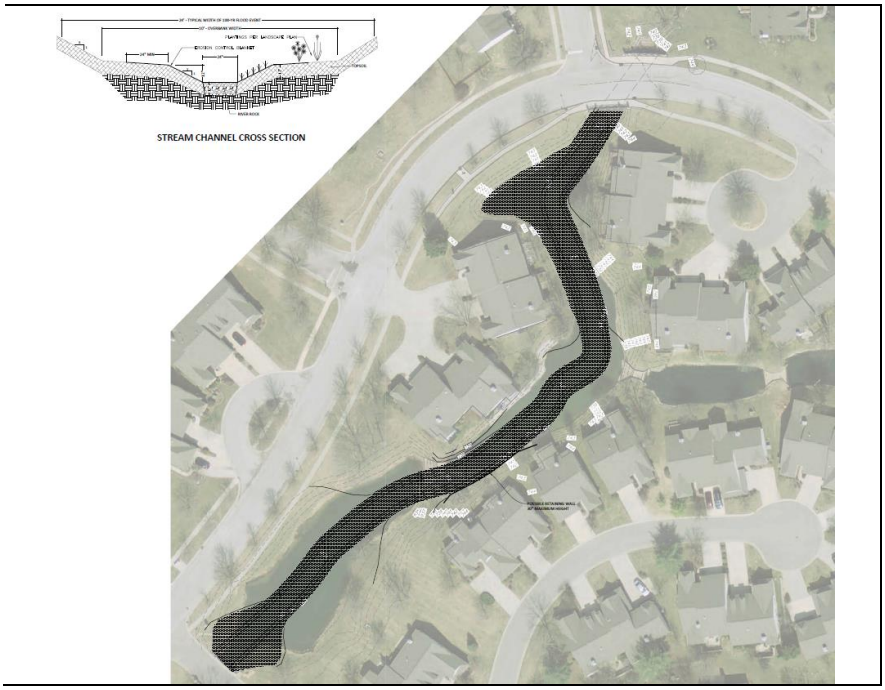
E. In **2018** the WFCA Board contracted with **Davey Resource Group** to create a plan that will "address short-term needs of the system as well as establish a long-term management strategy". That plan is available at: *http://apracticalproposal.info/wp* A summary of the plan is found at Addendum E.

Hydrologic/Hydraulic Study

F. **In 2019** WFCA contracted with Bledsoe Riggert Cooper and James to conduct a **Preliminary Hydrologic/Hydraulic Analysis.** The report is available at *http://apracticalproposal.info/wp* Mr. Andy Knust submitted the report in April.
   a. • 100-year Peak Flow = 333 cubic feet per second
   b. • Drainage Area = .239 square miles."

G. Conceptual Design & Channel Hydraulics Summary

a. A channel would be created between the culverts at Winslow Farm Drive and Moss Creek Drive. The average gradient would be achieved by
   i. removing the concrete control structure *(weir)* at the downstream end of Pond 3,
   ii. and distributing the roughly five feet in vertical grade change over the 650-foot length of the channel



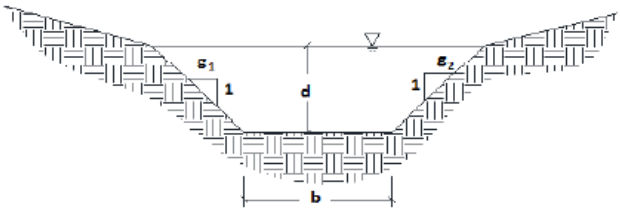
b. To accommodate a 100-year flood, such as what we have recently experienced, a channel with a 10' bottom width and 3:1 side slope would be created in the current P3 area.

Open Channel Flow

Manning's Equation for Open Channel Flow

Project Name:	Winslow Farms - Pond 3 & 4
Project No.	10058
Designed By:	AEK
Date:	2019-04-48
Description:	Channel at 100-yr Capacity

DATA SHEET 1



$$Q = \frac{1.49}{n} A R_h^{2/3} S^{1/2}$$

b =	10.00	ft	*base width of channel*
g_1 =	3.00	ft	*side slope of channel*
g_2 =	3.00	ft	*side slope of channel*
d =	2.50	ft	*depth of channel*
S =	0.77	%	*longitudinal slope of channel*

RECOMMENDATIONS FROM THE HYDROLOGICAL STUDY

Comments from Practical Proposal Authors

H. **Conceptual Grading Plan and Flood Extents:** "Results indicate that it does appear feasible to construct a channel through Ponds 3 and 4 that would avoid flooding of any existing structures (around pond 3 and 4)."

a. While most of the earth moving involved in constructing such a channel would be filling in the existing ponds, the **weir between Ponds 3 and 4 will need significant alteration/removal**.
b. The new channel flow line would be roughly 3.5 feet lower than the existing level of Pond 3 at the weir. As a result, **retaining walls may be required** to shore up the decks and patios at 709/713 Moss Creek Circle, and at 600/604 Winslow Farm Drive.
c. **River cobbles** having maximum diameter of 4 - 5 inches could be used in the flow line of the channel. **Larger material such as boulders or riprap** may be appropriate where steps or drops may occur in the channel profile, or at constrictions, culverts, retaining walls, etc.
d. Other **vegetative erosion control measure** such as willow fascines and live staking may also be applicable.
e. **Channel banks could be stabilized initially** with erosion control blanket (ECB) which will degrade once the vegetation is established. ECB composed of coconut fiber with netting is capable of handling shear stress of up to 2.25 lb/ft2

The study does conclude that the topography and the necessary width between the units make a stream channel feasible. However, note the comments highlighted in bold as there are significant considerations to ensure that the stream channel functions effectively.

I. Recommendations for Further Study

a. **Additional analysis and hydrologic modeling** are recommended to verify the drainage area and peak flow estimated.
b. It should be noted that an additional **topographic survey will be required** to advance this design beyond the conceptual stage.
c. Local **utility** infrastructure should be evaluated, **relocations** may be necessary for the construction of the channel.
d. The **karst geology** should be investigated and evaluated with respect to the existing impermeable liners and whether they should remain in place or be removed with the construction of a stream channel.
e. Geomorphic analysis of the existing channel **upstream** of Winslow Farm Drive will be needed.
f. The ponds and culverts **downstream** of Pond 4 should be evaluated with respect to their capacity to carry the 100-year flow and how backwater effects may impact the channel design.
g. **Permitting** strategy should be discussed with representatives of the U.S. Army Corps of Engineers (USACE) and Indiana Department of Environmental Management (IDEM

Take note of the recommendations for the need for further studies to convert pond 3 and 4 to stream channel. Each study has the potential of costing thousands of dollars. The report makes it clear that this is a preliminary report and additional investigation is required. Of particular interest is the comments that the utilities may need to be relocated, and an analysis is needed to ensure flooding upstream (Olde Mill area) will not occur with this design.

The Conceptual Design Report submitted by Mr. Andrew Knust. P.E

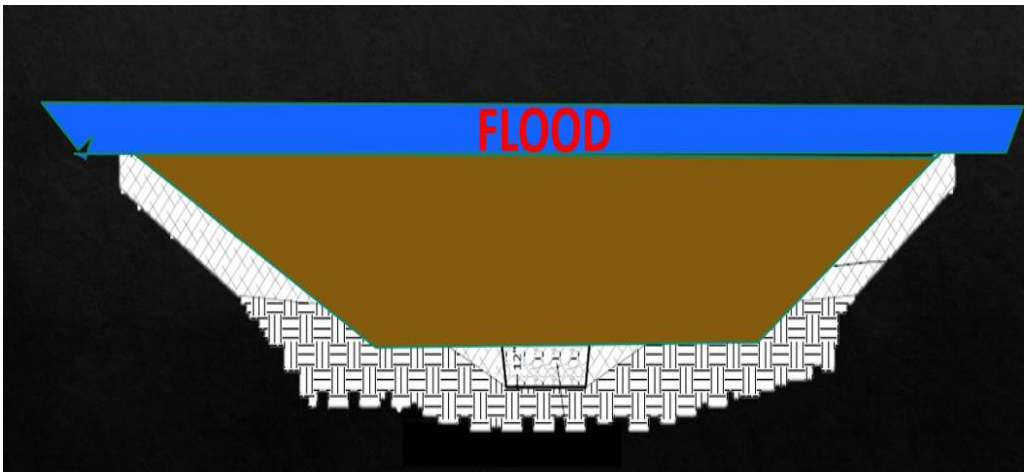
J. In **2020**, the WFCA commissioned Bledsoe Riggert Cooper and James to create a report that would improve pond aesthetics and maintainability, reduce the prevalence of algal blooms and other water quality issues, and control shoreline erosion. The recommendation in this report were specifically aimed at the mainline Ponds 3 - 7 and provided a comparison between two options. **Mr. Andrew Knust, P.E. presented the final Conceptual Design** to the WFCA Board in the Spring of 2021. A copy of the report is available at: *http://apracticalproposal.info/wp*

a. **Conceptual Design Scenario #1: Pond Improvements** would not change the fundamental dimensions of the WFCA pond system:
   i. Little, if any, IDEM/USACE permitting would be required.
   ii. Deepening the ponds below the normal water level would have negligible impact on the overall detention storage volume within the system, so the peak flow performance at the outfall of Pond 7 would not change, and no modification to the outlet controls (*weirs*) should be required.
   iii. However, there may still be some issues to address regarding access to construction areas, private property ownership, and WFCA common areas.
   iv. Prior to proceeding with the work plan described, the depth of accumulated sediment should be measured in all the ponds. Accurate depth measurements will help to estimate the volume of material that needs to be removed from the ponds, significantly impacting the cost.
   v. The construction cost opinion for Scenario 1 assumes that all the ponds would be deepened and have a new liner installed.
   vi. Specifically Ponds 3, 4, 5, 6, & 7:
      a. Drain down and remove sediment by mechanical dredging.
      b. Remove liner and excavate to beneath the pond liner, increasing depth by 2-5 feet.
      c. Stabilize shorelines with geofabric-wrapped soil "shelves" stabilized with soil and plantings.
      d. Install aeration fountains where electrical service is available.
      e. Wherever Ponds are deepened and new liners installed, consider diffused aeration system in lieu of fountains.
      f. Restore impacted access areas.
   vii. Additional work at Pond 3:
      a. Install sediment forebay at north end of Pond 3, lined with pond liner only.
      b. Construct stabilized access area for annual maintenance by vactor truck.
      c. Install valves and piping for alternate recirculation discharge location to Pond 3.
      d. Inspect and reseal spillway structure (*weir).*
   viii. Additional work at Pond 5: Evaluate well & pump system for continued use as supplemental water supply to Pond 5. Repair as needed.
   ix. Additional work at Pond 6: Inspect and reseal spillway structure (*weir*).
   x. Additional Work at Pond 7:
      a. Install new electrical service to Pond 7 recirculation pump.
      b. Evaluate recirculation pump and repair or replace as needed.
      c. Inspect and reseal spillway structure.

b. **Design Scenario 2 - Stream Channel Restoration**: Note that Pond 3 has been eliminated from the Conceptual Design model, replaced by an open channel to Pond 4. Even though Pond 4 will be redesigned to appear as a stream channel, it is still represented as a pond in the model because water would continue to pond up behind the culvert at Moss Creek Drive during large flood events, providing some storage of floodwaters in the former location of Pond 4. During smaller storm events, however, stream flow would be contained within the constructed stream channel with minimal overbank flow. *(Note that possibly with the exception of drought, there will be some standing water in what is now considered to be pond #4.)*
   i. The concrete spillway structure (*weir*) at the south end of Pond 3 would be removed and replaced with a 1.4' high grade control constructed with natural boulders
      a. A restored natural stream channel would be created through the existing locations of Pond 3 and Pond 4.
      b. Pond 5 would be dredged and reconstructed to serve as a sediment forebay, protecting Ponds 6 and 7 from excessive sedimentation.

ii. While it may be possible to continue stream channel construction through Ponds 5 and 6, the cost may be prohibitive.
iii. The existing culvert structure between Pond 5 and 6 *(located under the bridge*) would need to be modified or replaced, and
iv. the spillway connecting Pond 6 to Pond 7 would need to be reconstructed at a lower elevation to create enough vertical gradient for the water to flow from Pond 4 to Pond 7.
v. Potential conflict with existing utilities may result, requiring relocation and/or reconstruction.
vi. ***The recommendation of this study, therefore, is that Ponds 6 and 7 should remain as pond***s.
vii. Overall, it appears that the construction of a stream channel through Ponds 3 and 4 would have a relatively modest effect on peak flow performance and flood elevations in the WFCA pond system. Further analysis and testing of design solutions would likely bring post-project peak flows and flood elevations within acceptable limits through minor modifications to existing culvert and outlet control structures *(weirs).*

WHAT OPTIONS HAVE BEEN CONSIDERED?

OPTION	CONSIDERATIONS/REACTIONS/JUSTIFICATIONS
Do nothing to the ponds and permit nature to take over.	• **Rejected** for concerns for flooding. As the ponds fill with sediment their ability to accommodate heavy rains will lessen. Given the unprecedented occurrence of heavy rains, this becomes a crucial concern. • **Rejected** for expense to control algae and vegetation. As the ponds become shallower the oxygen level in the water decreases, creating the environment for algae (including offensive odors), fish kills and unsightly invasive vegetation. It also becomes more expensive to control this issue. • **Rejected** for legal issues: o WFCA CCRs clearly state the obligation to maintain a high standard of water quality o Erosion issues threaten private property o Property values decrease if ponds are not maintained.
Develop an underground drainage system	• **Rejected** due to extreme costs, which would include tens of thousands for engineering and design plans, extensive federal, state, and local permitting, hundreds of thousands in construction, utility relocation, labor, and materials. Additional maintenance would be required to ensure water was not blocked at any point.
Fill in the ponds	• **Rejected** for flooding issues. If the ponds are filled with soil, there is no method to divert water away from residential property. Even during typical rainfall, flooding would occur. Given the unprecedented occurrence of heavy rains, this becomes a critical concern and therefore is unacceptable. 

This leaves three options that WFCA has explored	
Renew the ponds	• This Practical Proposal contends that this is the most practical, cost saving and attractive option. The justifications are provided in the sections that follows.
Convert all ponds to a Stream Channel	• The Conceptual Design plan, as well as the Davey's report provides several justifications as to why this is not an attractive option based upon cost and the current condition of ponds #1, #2. #6 and #7. Both reports do not support a total conversion. • Additionally, over $90,000 was spent within the last five years to clean ponds #1 and #2. It would be a serious misuse of funds to spend multiple thousands of dollars to redo that work.
Do a hybrid of some ponds and some converted to stream channel	• This is one of the options from the Conceptual Design. The recommendation for a stream channel conversion is limited to Pond #3 and Pond #4. Even the Conceptual Design plan indicates that in most instances there will be standing water in what is Pond #4. The cost to convert #3 and #4 will exceed what it will cost to renew both ponds. Any arguments that there will be long-term cost savings in a stream channel conversion is misguiding as only pond #3 will serve as a stream.

Note: Concerning the issue of biases: It should be noted that during a question and answering session, Mr. Knust remarked that he "prefers stream channel as he enjoys designing them." The city has also indicated that there is a preference for streams rather than ponds. It is understandable, given the many issues associated with bodies of water. It is a logical stance for new developments. But given the expense, the fact that only two ponds are recommended for "restoring to a stream", and given WFCA topographical configuration, it is more fiscally prudent to retain the current design. Having made this argument it is essential that the ponds be maintained on a regular basis and not be allowed to degrade to the condition that they current exhibit.

It would appear the bias of the authors of The Practical Proposal *leans towards restoring the ponds. However, that was NOT initially the case. Sandy Martin initially approached the situation in support of a stream channel. But upon extensive and careful investigation, she has come to the opinion that it is more prudent, less expensive and in the best interest of the community to clean and maintain the waterway system as it is currently designed. All members have indicated that if the facts warranted another option that they would support such a strategy. The details that lead to their recommendation in the ensuing sections.*

WHAT ARE THE ANTICIPATED COSTS ACCORDING TO THE KNUST REPORT?

INITIAL INSTALLATION COST COMPARISONS

Andy Knust's estimates provides two sets of hypothetical figures. At first glance one scenario appears less expensive than the other. They are summarized below:

COMPARISON OF THE TWO OPTIONS FROM THE KNUST REPORT

SCENARIO #1: *POND RENEWAL*			SCENARIO #2: *STREAM CHANNEL*		
POND	**ACTION**	**ESTIMATED COST**	**POND**	**ACTION**	**ESTIMATED COST**
Pond #3	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install sediment forebay in north end	$121,000*	Pond #3, 4, & 5 as one project	Acquire engineer and necessary permits. Convert 3 & 4 to streams by cutting thru weir between ponds 3 & 4. Redesign to create deep channel, reinforce banks for erosion control, landscape channel sides, install sediment forebay in pond #5	Unknown costs but estimate to be in "tens of thousands" $221,000 $67,000*
Pond #4	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$85,000			
Pond #5	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$61,000			
Pond #6	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$95,000	Pond #6	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$68,000
Pond #7	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install water recirculating equipment	$127,000	Pond #7	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install water recirculating equipment	$65,000
	Total	**$489,000**		**Total**	**$421,000**

**$10,000 maintenance expense was included in the original estimate and has been removed for more accurate comparison of installation costs*

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These figures need to be scrutinized for possible savings. Note that the work to be done in ponds #6 and #7 is less in Knust's plan for Scenario #2 than in Scenario #1. When questioned he indicated it is appropriate to "pick and choose" from the items listed. Using his figures for P6 and P7 listed in Scenario #2 a new option can be configured. For the purposes of *The Practical Proposal*, this new configuration is entitled **OPTION B: POND RENEWAL.** The chart below demonstrates **OPTION B: POND RENEWAL will cost less than the stream channel option.**

COMPARISON OF PRACTICAL PROPOSAL OPTION B WITH THE KNUST ESTIMATE

Comparison of Practical Proposal OPTION B with the Knust Estimate

PRACTICAL PROPOSAL RECOMMENDATION *OPTION B: POND RENEWAL*			KNUST REPORT ESTIMATE FOR SCENARIO #2: *STREAM CHANNEL*		
POND	**ACTION**	**ESTIMATED COST**	**POND**	**ACTION**	**ESTIMATED COST**
Pond #3	Same as estimate for Knust Pond Renewal. Though there is evidence to believe this estimate is high.	$121,000*	Pond #3, 4, & 5 as one project	Acquire engineer and necessary permits. Convert 3 & 4 to streams by cutting thru weir between ponds 3 & 4. Redesign to create deep channel, reinforce banks for erosion control, landscape channel sides, install sediment forebay in pond #5	Unknown costs but estimate to be in "tens of thousands" $221,000 $67,000*
Pond #4	Same as estimate for Knust Pond Renewal	$85,000			
Pond #5	Same as estimate for Knust Pond Renewal	$61,000			
Pond #6	Difference: Knust report Scenario #1 uses hydraulic vacuum and digs deeper. *($95,000)*	$68,000 Not $95,000	Pond #6	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$68,000
Pond #7	Difference: Knust report Scenario #1 uses hydraulic vacuum and digs deeper and requires the removal of riprap. *($127,000)*	$65,000 Not $127,000	Pond #7	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install water recirculating equipment	$65,000
	Total:	**$400,000**		**Total**	**$421,000**

**$10,000 maintenance expense was included in the original estimate and has been removed for more accurate comparison of installation costs.*

In reality, documents from previous WFCA projects would indicate that less expensive options may actually be available. See Appendix B. Any current estimate is **hypothetical**. But for the sake of discussion, the figures from the Knust report are used as a foundation for this proposal. Specifically, **the estimates for OPTION B: POND RENEWAL are being employed to illustrate our recommendations,** acknowledging that any cost may be adjusted given more detailed information.

We are recommending **OPTION B: POND RENEWAL** (henceforth referenced as "**OPTION B**" to renovate Ponds 3–7, one-by-one over a period of what could be seven years. Though we think the cost estimates therein for dredging are higher than from other contractors, our proposal *is* informed by much of the valuable information in the report from Mr. Knust. Actual dredging estimates are needed for more accurate budget planning. Ted Boardman is currently waiting on some estimates from another contractor.

Preliminary research has unearthed concerns about ancillary expenses for the stream channel option that were not included in the Knust report. These items are addressed later.

Aside from the fiscal savings to adopt Option B, we submit the following arguments:

COMPARISON OF OPTION B POND RENEWAL TO STREAM CHANNEL CONVERSION

COMPARISON OPTION B POND RENEWAL
V
STREAM CHANNEL CONVERSION

IN ADVOCATING FOR OPTION B POND RENEWAL, WE REJECT STREAM CHANNEL CONVERSION, which calls for the creation of a stream channel ONLY through what are now Ponds 3 and 4. Six major factors have been considered. Details and arguments are provided in the ensuing sections:

A. FLOOD AND EROSION CONTROL: A drainage system is required to accommodate the watershed from a large area within and around WFCA. Any design must meet city guidelines, prevent property flooding, mitigate existing erosion problems, and avoid creating future erosion issues. The ponds cannot be "filled in" without violating these requirements.

B. **FISCAL COSTS OF INSTALLATION:** As previously stated, the installation costs associated with Option B Pond Renewal is less expensive than listed for Scenario #2.

C. **ANCILLARY COSTS OF INSTALLATION:** There are significant ancillary expenses that have NOT been included in the report, making the projected costs of stream channel Scenario#2 much more expensive in comparison to even Scenario #1.

D. **LONG-TERM MAINTENANCE:** There is little evidence to support the premise that potential long-term maintenance savings will warrant converting the two ponds. Only two of the seven ponds will be converted, requiring the regular dredging of the other five ponds. The possible savings from not needing to dredge what is now pond #3 will be negligible.

E. **TIMEFRAME**: The fact that ponds #3, 4 and 5 must be completed simultaneously will force a long delay to accumulate the necessary funds from ***reasonable*** dues increases. The fact that pond #3 needs immediate attention is a serious concern. WFCA/MC HOA may be facing impending legal action due to a serious erosion issue threatening personal property. A legal decision against WFCA has serious ramifications for assessments across all the WFCA neighborhoods. Action to rectify this situation is needed sooner than later. It does not make sense to spend funds to temporarily rectify this singular situation if it can be done during major renovations. However, the erosion issue requires immediate mitigation and can not be put off for several years.

F. **AESTHETICS:** The stream channel conversion does not guarantee that undesirable aesthetics will be avoided.

Each of the Six factors are discussed in greater detail below:

FLOOD AND EROSION CONTROL

The *Conceptual Design* limits the conversion only ponds #3 and #4 to a stream channel. Every other body of water remains a pond. Therefore, the "stream channel" concept is a misnomer in that most of the ponds will remain as their current design. It is in effect, a hybrid alternative. The recommendation requires a design of a significant channel in what is now pond #3. It will have a change in elevation to cause water to flow readily from the "high end" of what is now the weir between pond #2 and #3 to a lower point entering pond #4. The weir between P3 and P4 would be removed/significantly altered.

Conceptual Design clearly states the stream channel will not improve nor impair the ability to mitigate flooding. Based upon the criteria of preventing flooding, we contend that conceptually the conversion to a stream channel is unnecessary. The pond system, as it was established, is basically sound. Repeatedly it has proven its ability to handle extreme rain events, most recently in the "100-year flood" of Feb. 2019, when it still performed exactly as designed despite being heavily sedimented after decades of neglect.

The stream-channel plan would do nothing to reduce the already low chance of flooding; rather, it would introduce uncertainties in that regard. The report advised studies to be undertaken prior to creating the stream channel to ensure that the stream running from Olde Mill into what is currently Pond #3 would not backup and flood the private residents. During the flood of 2019 there was considerable flooding that prompted the homeowners to install riprap as a precaution to prevent further damage. Additionally, without careful planning to the downstream redesign of pond #4, the potential of flooding East Winslow Drive exists. It, too, has experienced some flooding in recent rainfalls. Careful consideration needs to be directed towards making sure any new design will not create additional problems.

Some shortcomings have come to light in the original design of the ponds—failure to anticipate especially heavy silting of Pond 3, provide access for dredging of that pond, the less-than-optimal method used for attaching the liners to the banks and along with the ability to abate erosion. But these are all shortcomings that can be gradually corrected and mitigated during the dredging and renewal process.

A sediment forebay is recommended for the Option B Pond Renewal proposal. The forebay is to be installed in the north end of P3 next to the bridge to capture a significant amount of sediment coming from the Olde Mill neighborhood before it enters the pond system.

FISCAL COSTS OF INSTALLATION

With the stream-channel scenario, Ponds 3, 4, and 5 need to be reconfigured all at the same time. The estimated price tag of $221,000 is only for the work included in the basic estimate. It is already an upfront cost well beyond what WFCA could afford without levying an ***unacceptable*** assessment on WFCA residents for work to be accomplished anytime soon. There is recognizable resistance to increasing WFCA dues a significant amount. This *Practical Proposal* is grounded in the concept to keep increases to a minimum over a more time to allow the overall renovations to be completed over multiple years.

Addressing the pond issues have been delayed for far too long. Long-term residents can provide stories as to this fact. These problems are NOT going to disappear. The cost to repair them will only increase over time with inflation and continued degradation. The damage that can ensue in the meantime could be significant.

ANCILLARY COSTS OF INSTALLATION

The Knust estimate does NOT include **substantial** ancillary costs. Mr. Knust conceded that the costs could amount "in the tens of thousands". Ted and Lynn have contacted specialists to obtain estimates that could include, but not be limited to:

- The Conceptual Design Report, as well as the Davey's Report, both discuss the need for **required preliminary studies** to include sediment assessment, bathymetric studies, topographic studies. Engineering plans will be required before permits can be requested. Lynn investigated some of these issues to indicate such preliminary work could run $33,000–$40,000.

- Federal and state **permit**ting can be complicated and it is advisable hire a specialist to handle the application process. Lynn has discovered that permitting costs could run $5,000–$6,000. This did not include the cost to hire a project manager.

- **Legal services** for property adjustments (An official property line survey conducted by Deckard Land Survey in 2017 "…found that a significant portion of Pond 3 lies outside of the WFCA common area…" This issue will need to be officially resolved, especially if a stream channel is reformed in the existing area. An estimate of $1800-$2,000 may be low.

- Relocating present **utility lin**es buried around east sides of Ponds 3 and 4 will be necessary. The estimates for such were not available, at the time of this writing.

- One unusual requirement is that a multi-year natural **wildlife study** must be conducted to determine how redesigning the waterway impacts wildlife. Lynn was able to get an estimate of $7,000.

- Given the complexity of the project and miscommunications that occurred in the past, it is advisable to hire a part-time experienced **project manager** for such a complex undertaking. Such costs are undetermined.

- Even though some **landscaping costs** are included in the report estimates, Mr Knust admitted that additional landscaping would be needed to include the creation of a rain garden in what is now portions of pond #4. A few years ago, WFCA explored the idea of creating a rain garden just in the smaller northern section of Pond 3 and found that the cheaper plan would cost over $35,000 (the other bid, from EcoLogic was well over $88,000). Considering that the area in question is much larger and inflation has increased costs, estimates could run close to $100,000. Additionally, the new landscaping will need more attention in the first few years to ensure that invasive unsightly vegetation does not take over. This, in turn, will requires additional maintenance funds.

- **The ancillary costs to convert Ponds 3 and 4 to a stream channel could be approximately $154,000, Added to the estimate of $221,000 to create the actual stream bed and install minimal landscaping, the total to redesign Ponds #3 and #4 could instead be closer to $375,000.** (This does not include the identified costs associated with alterations to pond #5 that are to be done simultaneously with P3 and P4.)

- **Assuming these details to be somewhat accurate this brings the total to complete the entire Scenario #2 to approximately $575,000.** The following chart provides the details.

COMPARISON OF
OPTION B POND RENEWAL EXPENSES
V
STREAM CHANNEL EXPENSES WITH ESTIMATED ANCILLARY EXPENSES

OPTION B POND RENEWAL:			SCENARIO #2: STREAM CHANNEL		
POND	**ACTION**	**ESTIMATED COST**	**POND**	**ACTION**	**ESTIMATED COST**
Pond #3	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install sediment forebay in north end	$121,000*	Pond #3, 4, & 5 as one project	Acquire, surveys, engineer report and necessary permits.	Ancillary costs estimate to be $154,000
Pond #4	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$85,000		Convert 3 & 4 to streams by cutting thru weir between ponds 3 & 4. Redesign to create deep channel, reinforce banks for erosion control, landscape channel sides,	$221,00
Pond #5	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$61,000		Dredge and install sediment forebay in pond #5	$67,000*
Pond #6	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	68,000	Pond #6	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks	$68,000
Pond #7	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install water recirculating equipment	$65,000	Pond #7	Dredge & deepen, install new liner, reinforce eroded banks, landscape banks, install water recirculating equipment	$65,000
	Total	**$400,000**		**Total**	**$575,000**

**$10,000 maintenance was included in the original estimate and has been removed for more accurate comparison purposes.*

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LONG-TERM MAINTENANCE:

It is important to focus on the issue of long-term maintenance costs. Obviously, the stream-channel scenario entails much greater upfront expenditures, but the argument has been made that it would bring worthwhile long-term savings by reducing the need for pond dredging. On examination, this argument can be challenged.

Regular maintenance costs to periodically clean sediment from the ponds run into the tens of thousands, depending upon the type of removal and the size of the pond. The chief argument in favor of the stream-channel idea is supported by the belief that by eliminating the need to remove sediment in the ponds that long term savings can be achieved. It has been assumed that the cost to maintain the stream channel banks, even with more frequent maintenance, would be less than the pond cleaning.

This may have been true if six of the ponds (Pond #7 is required by the city as a retention pond) were converted to a stream channel. Given that only ponds #3 and #4 are converted, the savings are minimal, at best.

- Since almost $100,000 have been spent to renovate Ponds #1 and #2 it has long been acknowledged that it is not advisable to convert them.
- Additionally, the Knust report identified that ponds #4, #5. #6 and essentially #7 exist on the same topographical plane, making it more difficult, if not impossible, to cost-effectively create the necessary change in grade to force adequate water flow in a continuous stream channel. Therefore, they should not be converted.

Moreover, the stream-channel scenario would entail far greater landscape maintenance than would be the case in just maintaining the bank vegetation of the existing ponds. Sediment will collect requiring maintenance even in the stream channel. The other five would still need to be dredged. Hardly a big saving.

Of note, Ted Boardman has researched alternative methods to keep the ponds clear that are less expensive than the current chemicals and could delay the need for future dredging. The committee during 2019 experimented using enzymes rather than chemicals to clear ponds #1and #2. A review should be undertaken to determine if the enzymes were introduced in 2020 and are currently being utilized, while examining the results for effectiveness. Additionally, Sandy Martin during the city workshop, was made aware of a species of fish that the city recommends for keeping algae at bay. These and other alternatives need to be explored.

Both Scenarios require the installation of a sediment forebay that will require regular clean out. There is no saving or extra cost to either scenario due to this fact. Option B would have a forebay in pond #3. Scenario #2 (stream channel) would have a forebay in pond #5. Mr. Knust estimates that it would cost $10,000 to vacuum each forebay. The long-term cost of periodically clearing each forebay would be the same in both scenarios. Hence, no saving in the stream-channel plan.

TIMEFRAME

The longer it takes to make any repairs to the ponds, the more the repairs will cost due to inflation and further degradation. Hindsight highlights the fact that had the ponds been regularly maintained, the current crisis would not exist today. A comparison to a leaky roof is fitting. The longer the leak is ignored, the more damage it creates, and the more expensive it gets. WFCA is at the point that it needs to "fix the roof". The problems can no longer be ignored. It should be noted that legal action may be taken if some of the erosion issues are not addressed. The erosion issue, alone, cannot be ignored.

While some residents believe that the best way to accomplish all this pressing work is to charge a single (or a few) large assessment(s), the counter argument is to request more reasonable smaller increases and phase in the work over multiple years. It is understandable that WFCA residents who do not live close to the ponds would not vote for sizable increases, even if it is over a fewer number of years. It will take 51% of those attending the WFCA Annual General Meeting to approve any significant change in the due's assessments. It becomes a simple matter of math to gauge the impact of the assessments on the timeframe to complete the project. See the chart below:

Given a WFCA contribution of $40,000 towards the $400,000 total, What would be the assessment for a specific timeframe for 410* (of the 417) households to fund the remaining $360,000?

Number of years to completion	Increase in Dues	Number of years to completion	Increase in Dues
1 year	$878.05	6 years	$146.34
2 years	$439.02	7 years	$125.44
3 years	$292.68	8 years	$109.76
4 years	$219.51	9 years	$97.56
5 years	$175.61	10 years	$87.80

*This assumes a few homes are delinquent in paying for a variety of reasons. It provides a little cushion for budgeting purposes

This Practical Proposal balances these two factors with a multi-year approach with a phased in plan that allows for a gradual accumulation of funds. Please reference the chart on page 25 and the section on how to finance the project for details as to funding recommendations that start the project sooner while keeping the increase at or under $100.

Note: Recently a resident *(NOT the WFCA Board)* suggested that WFCA increase dues by $180.00 to finance the Stream Channel Option. *This Practical Proposal* includes a recommendation that WFCA transfer $40,000 from reserves to start the process. Even with that contribution it would take just over SEVEN years to accrue the total of $535,000 ($575,00-$40,000) needed for the entire project. Over the seven years that it would take to collect the necessary funds, each homeowner would have contributed a total of $1,304.88. That recommendation failed to identify how many years the recommended increase of $180 would need to be in assessed. ($535,000 divided by 410 households divided by 7 years is an assessment increase of $186.42 per year.)

Be sure to review the option presented in *The Practical Proposal* on page 25.

AESTHETICS

Mr. Knust acknowledged that water could backup on what is now pond #4 and recommended the installation of a rain garden to mitigate the unsightly buildup of mud and invasive weeds. WFCA has already seen the problem of such in the north end of pond #3. Why would WFCA want such an unsightly mess moved to pond #4? There is a structure under the bridge between pond #4 and #5 that cannot be removed. Sediment could accumulate in the standing water and provide the perfect condition for invasive unsightly vegetation. (Current rains have already left such a buildup and weeds have sprouted in this area.) Such environments are breeding areas for mosquitoes. Without attention and effective landscaping, the area could become as unsightly as has occurred in the north end of pond #3. (Pond #6 at the north inlet is also experiencing significant buildup that given a dry period may well develop the same problem. The area frequently becomes covered with a “scum” that produces a serious offensive odor.)
The newly landscaped areas created in the stream-channel design would need to be conscientiously maintained, especially by regular weeding. Who would do this maintenance? As we know, disagreements between WFCA and the Moss Creek HOA over maintenance of pond-bank vegetation has been unresolved for several years, resulting in great unsightliness of the ponds especially during the growing season. The stream-channel scenario would compound this conflict several times over.

The issue of aesthetics may be of least interest to those who do not live in close proximity to the ponds. But most complaints about the ponds, typically focus on this issue, even from those who do not live next to the ponds. It is an issue that does eventually translate into fiscal issues. The cost to eradicate algae and vegetation increase as the ponds degrade. Property values are impacted, even if the residence is not directly located on a pond. Stories are available of how the unsightly condition of the north end of pond #3 did curtail the ability of a unit next to that area to be sold.

For those who do not live close by, it is critical to note that not only can the ponds be an eye-sore, but the odor coming from the algae can be quite offensive and can produce noxious allergens. The muddy shallow weed patches become breeding grounds for mosquitoes. It is truly more than just an issue of being “unattractive”.

Although Pond 3 is primarily visible to the residents who live on its banks, Pond 4 is iconic of the whole neighborhood. Eliminating it as a pond would especially have an adverse effect on the image of the total community. The Davey’s report even suggested ideas to make the ponds more inviting to all residents, such as adding a couple of benches. A recent Bent Tree resident even suggested that a bench would be a nice addition beside pond #4 to allow older residents to rest on their walks. The ponds are available to all WFCA residents and suggestions as to how to make them more welcoming would be appreciated.

Some WFCA residents indicate they do not avail themselves to the ponds, but it is amazing how many area neighbors walk with their children and/or dogs to enjoy the water and wildlife. The people who enjoy the area are not limited to those who live adjacent to the ponds. There is a considerable traffic of walkers and bikers that come from the outlying neighborhoods. In addition to the essential function of providing drainage for the watershed, the ponds are a notable asset to the overall neighborhood. Many people recognize Winslow Farms as the community "with the ponds".

It is essential to note without attention, the ponds will continue to degrade.

- Sediment buildup will continue to create more shallow ponds which, in turn:
  - Decreases the ability of the waterway to accommodate flooding.
  - Creates the optimum environment for the growth of algae, invasive plants. and weeds.
  - Increases on-going maintenance costs for algae abatement, weed control and general repairs to related structures.
  - Becomes breeding areas for mosquitoes and noxious allergens.
  - Produces fish kill and inhibits the fish population which are needed to maintain good water quality.
  - Prevents recirculating the water throughout the waterway, which in turn, leads to more sediment build-up.
- Erosion will expand to continue to threaten property.
- Liners become exposed to sunlight along the shoreline they are graduating giving away. There are obvious tears and ripped liners. Loosing liner integrity will permit water leakage, further decreasing the water level and exacerbating the problems. This also creates access for burrowing wildlife such as turtles and muskrats that further weaken the shoreline and the liners.
- Contributes to the appearance of disrepair and neglect to the overall community.
- Negatively impacts property values.

SEE ADDENDUM B FOR A DETAILED EXPLAINATION OFA MULTI YEAR PLAN

HOW CAN THE COSTS BE FINANCED?

HOW CAN THE COSTS BE FINANCED?

FINANCING OPTIONS

- **Loan:** Lynn's research revealed that WFCA is not eligible for a bank loan as it holds no collateral. Recent comments suggest that private residents could offer their homes for collateral. At first glance this would seem to be extremely unadvisable. A change in management/WFCA board composition could possibly jeopardize repayment. Given the constant turnover of the WFCA Board membership this could create some serious legal ramifications.

  Additionally, the math would indicate that dues would still have to be increased to provide for the loan repayment on top of the standard operating expenses. The only advantage of a loan would be the possibility of completing a larger portion of the project at an earlier date.

- **Grants:** To date no grants have been discovered that will assist in this project. Two attempts have failed to acquire funds from the city in 2019. From historical experience, potential grants may be of

such a small amount as not to be a significant benefit. Even the city water/sewer grants would be too small to be of assistance. Other grants are targeted to larger waterways such as Lake Monroe and our ponds not eligible. Other philanthropic organizations offer funds for special wildlife conservation efforts. Again, WFCA does not qualify.

Should anyone discover a feasible program and would be willing to assist with the process it would be welcomed. However, it is often difficult to adhere to the timeframes to submit a grant, wait for approval and then to expend the funds within the grantor's requirements. Likewise waiting for any **legislative solutions** will only delay what has become a crisis. It is a commendable idea that communities with urban waterways should unite to seek relief. WFCA is not alone with these problems. In fact, it seems apparent from the comments from the city representatives that there is a movement away from developing urban ponds for many reasons. However, that does not dismiss the fact that we have ponds and the obligation to our homeowners to explore the most cost-effective methods to deal with our problems.

Additionally, a former WFCA Board member did reach out for assistance from the **IU SPEA** group. It is another admirable idea, but it requires the devotion of a WFCA liaison to continue the relationship. Unfortunately, the member moved away before anything fruitful evolved. Again, volunteers to assist in such an endeavor would be appreciated.

- **Membership Dues:**

  An increase in dues appears to be the only recourse for a reliable stream of financing. It appears that a recent recommendation from a homeowner for a dues-increase of and additional $180.00 was probably higher than the WFCA membership would approve in a community vote. Major budget changes will need to be approved by the residents of WFCA. The next WFCA Annual General Meeting is scheduled for the fall of 2021. Pending such approval, additional funds would not start to accrue until January of 2022. Pending such approval, additional funds would not start to accrue until January of 2022. Under this proposal, it would take two years to accrue enough funds to renew pond #3. Work would be delayed until 2023.

- Should a request to support a pond improvement fail at the 2021 annual meeting, major work would yet again be postponed. Unless a special meeting is called, the next opportunity to garner support for any pond project would be up for a vote at the 2022 WFCA Annual General Meeting in the fall. Even if approved at that time, a plan could not be implemented until the summer/fall of 2024!

RECOMMENATIONS FROM PRACTICAL PROPOSAL

RECOMMENDATIONS TO ACCRUE THE NECESSARY FUNDS:

1. **Dedicated Pond Improvement Budget:** A separate budget in a targeted reserve account must be created specifically for pond improvement projects. This should serve to assure residents that increases in dues will be dedicated specifically to pond improvement, while affirming that general

and reserve funds will continue to support other common area needs. Continued basic pond maintenance such as algae control should remain in the reserve budget.

2. **Transfer from WFCA reserves**: A minimum of $40,000 should be initially transferred from the WFCA reserve budget to the Pond Improvement Budget as a good faith initiative to start the accumulation of the necessary funds. This would leave over $50,000 in the general reserves to address issues in the common areas throughout WFCA.

3. **Contributions from Moss Creek and Moss Creek Village:** Since the two HOAs, Moss Creek and Moss Creek Village, are most noticeably impacted by the status of the ponds, they should be asked to contribute directly to the Pond Improvement Budget. Since WFCA cannot assess these residents at a different rate, the two HOAs could make the contribution designated to be used only for pond improvement efforts. To avoid tapping their reserves, this contribution could come from small increases to the members' monthly HOA dues:

    i. A simple increase of $10 per Moss Creek resident would contribute $120 per resident in addition to their WFCA dues. There are 70 units. The targeted contribution from MC could total an additional $8,400 per year. This is just a suggested amount and the amount could vary.
    ii. A simple increase of $5 per Moss Creek resident would contribute $60 per resident in addition to their WFCA dues. There are 34 units. The targeted contribution from MCV could total an additional $2,040 per year. This is just a suggested amount and the amount could vary.

4. **Approval from WFCA membership:** WFCA should submit a detailed Pond Improvement Budget for approval at the WFCA Annual Meeting, presenting a multi-year proposal for dues and specified expenses. The issue is much to complicated to ask membership to make the choices between Scenario #1 and Scenario #2 in the Conceptual Design submitted by Andy Knust. The Board has the obligation to sort through the details and select a choice to take to the membership for a vote.

5. **Multi-year Plan:** While some residents believe that the best way to accomplish all the pressing work is to charge a single (or a few) large assessment(s), the counter argument is to request more reasonable increases and phase in the work over multiple years. It is understandable that WFCA residents who do not live close to the ponds would not want to vote for sizable increases, even if it is over fewer years. Given a quorum, it will take 51% of those attending the WFCA Annual General Meeting to approve any significant change in the due's assessments. It becomes a simple matter of math to gauge the impact of expenses on assessments. The simple chart below is based upon WFCA contributing $40,000 towards the *hypothetical* cost of $400,000 and demonstrates the number of years it would take to accumulate final $360,000 to complete the project with assessments from 410 of the 417 households. (The 410 of the possible 417 figure assumes that some households will be delinquent and provides a cushion for the budget planning.)

Given a WFCA contribution of $40,000 towards the $400,000 total, What would be the assessment for a specific timeframe for 410* (of the 417) households to fund the remaining $360,000?			
Number of years to completion	**Increase in Dues**	**Number of years to completion**	**Increase in Dues**
1 year	$878.05	6 years	$146.34
2 years	$439.02	7 years	$125.44
3 years	$292.68	8 years	$109.76
4 years	$219.51	9 years	$97.56
5 years	$175.61	10 years	$87.80

It is immediately obvious that it is necessary to create a balance between increasing dues against the time it takes to accrue enough funds to complete the project. As has been explained, a phased-in approach can allow for the gradual accumulation of the required funds. The following worksheet provides a suggested budget that balances the increase in dues and the time factor. The method to create a reserve budget, as presented in the "Current Assessment Funding Model" submitted by Reserve Design Advantage last year, was emulated utilizing the figures from *Option B Pond Renewal* on page 15. The interactive worksheet is available to any WFCA member who would like to explore the options.

Note that the following chart:

- Assumes that WFCA will transfer $40,000 to start the Pond Improvement Budget.
- Assumes that Moss Creek and Moss Creek Villages will agree to contribute to the dedicated Pond Improvement Budget.
- Does not preclude WFCA from continuing to dredge pond #3 and/or reinforcing the bank behind 604 E Winslow Farm Drive during the summer/fall of 2021.

A Summary Comparison of OPTION B v the Stream Channel Option Based upon the Hypothetical Estimates Provided in The Conceptual Design		
Item	**Option B Pond Renewal**	**Scenario #2 Stream Channel**
1. Overall costs using estimates from Knust Report	**$400,000**	**$421,000 installation** *(+ potential $154,000 ancillary costs Total: $575,000)*
2. Additional Costs	Technical reports to obtain construction bids	Engineering design, technical reports for bids, permits, landscaping consultants, possible legal services related to property easements, long term habitat survey. Approximate $154,000
3. Pond Dredging every 10 years	Seven ponds	Five Ponds, plus cleaning of what is now Pond #4
4. Sediment Forebay clean-out	Pond #3	Pond #5
5. New Landscaping	Status quo With estimates for some shoreline stabilization	Concerns with regards as to which organization will be responsible for bank maintenance for areas #3 High maintenance first few years until vegetation is established
6. The time necessary to accrue funds for the first phase of the project	**Year 2023** for Pond #3	**Year 2025** for ponds #3, #4 and #5
7. The year the last phase of the project is to be completed	**Year 2028** for Pond #7	**Year 2032** for Pond #7
8. For WFCA residents outside Moss Creek and Moss Creek Village HOAs, the total increase of $100 for the duration of the project.	**$700** For seven years, 2022-2028	**$1100** For eleven years, 2022-2029
9. For Moss Creek residents with $10/mo increase in HOA fees, their total combined increases for the duration of the project	**$1,540** For seven years, 2022-2028	**$2,420** For eleven years, 2022-2029
10. For Moss Creek Village residents with $5/mo increase in HOA fees, their total combined increases for the duration of the project	**$1,120** For seven years 2022-2028	**$1,760** For eleven years 2022-2028

TIME AND FINANCE CHART FOR WFCA OPTION B POND RENEWAL

Year	Balance Brought Forward	WFCA dues increase over current	Total from WFCA Dues (410 units)	MC Monthly Dues Inc	MC Total Contribution (71 units)	MCV Monthly Dues Increase	MCV Total Contribution (34 units)	Grand Total Contribution For Year	Project For Year	Estimated Expense For Year	End of year Balance
2021	$0	$0	$0	$0	$0	$0	$0	$0	more dredging of pond #3 & obtain approval from membership		$0
2022	$40,000	$100	$41,000	$10	$8,520	$5	$2,040	$91,560	Establish separate pond budget		$91,560
2023	$91,560	$100	$41,000	$10	$8,520	$5	$2,040	$143,120	complete pond #3	$121,000	$22,120
2024	$22,120	$100	$41,000	$10	$8,520	$5	$2,040	$73,680	none	$0	$73,680
2025	$73,680	$100	$41,000	$10	$8,520	$5	$2,040	$125,240	pond #5	$61,000	$64,240
2026	$64,240	$100	$41,000	$10	$8,520	$5	$2,040	$115,800	pond #4	$85,000	$30,800
2027	$30,800	$100	$41,000	$10	$8,520	$5	$2,040	$82,360	pond #6	$68,000	$14,360
2028	$14,360	$100	$41,000	$10	$8,520	$5	$2,040	$65,920	pond #7	$65,000	$920

The chart is summarized as follows:

- Pond #3 could be dredged, and a new liner installed the summer/fall of 2023.
- The pond renewal project would be addressed over time and be completed by the summer/fall of 2028.
- Over the seven-year life of the project:
  - WFCA residents would pay an additional $100 in dues each year for 7 years, totaling $700.
  - To help assuage the concern of those who do not reside close to the ponds, *The Practical Proposal* recommends that those residents who live closest to the ponds make larger contributions toward maintaining the quality of the ponds. Since WFCA is not permitted to charge select members more dues, MC HOA and MCV HOA could each make annual contributions. In the example/suggestion above this could be accomplished without tapping into their reserves by increasing HOA monthly dues by $10/month for MC and $5/month for MCV. The money would be dedicated for use ONLY in the specified pond improvement account/budget, not to be co-mingled with WFCA general reserve funds. This approach provides that:
    - MC HOA residents would pay $700 from their WFCA dues and $840 from their MCHOA dues, for a total of $1,540 over the seven years.
    - MCV HOA residents would pay $700 from their WFCA dues and $420 from their MCVHOA dues, for a total of $1,120 over the seven years.

MULTI-YEAR IMPLEMENTATION PLAN

STEPS FOR RENEWAL OF THE POND SYSTEM

We recommend going pond-by-pond until the renewal is complete, after which routine maintenance would ensue on a regular schedule. Building upon the recommendations from *The Conceptual Design* and the Davey's report a multi-year phased-in approach would be similar to the following:

a. The overall configuration would not change the fundamental dimensions of the WFCA pond system:
b. Little, if any, IDEM/USACE permitting would be required.
c. Deepening the ponds below the normal water level would have negligible impact on the overall detention storage volume within the system, so the peak flow performance at the outfall of Pond 7 would not change, and no modification to the outlet controls (*weirs*) should be required.
d. However, there may still be some issues to address regarding access to construction areas, private property ownership, and WFCA common areas.
e. Prior to proceeding with the work plan described, the depth of accumulated sediment should be measured in all the ponds. Accurate depth measurements will help to estimate the volume of material that needs to be removed from the ponds, significantly impacting the cost.

1. Overall Considerations as each pond is addressed:

1. Obtain services of an experienced project manager to:
   a. Oversee permitting requirements, detailed dredging plan, and necessary surveys
   b. Participate in the selection of a contractor(s).
   c. Serve as liaison between WFCA Board/management and contractors
   d. Monitor quality of contractor work
   e. Obtain Better Estimates of Dredging Costs –see section **"**Estimating Future Dredging Based on Prior Actuals"
   f. Compare and provide advice concerning liner installation. (Research has revealed that though RPE liners have an indefinite lifespan, However, a UV-protected one with some sediment coverage will certainly last much longer than the non-UVC protected PVC liners that were originally installed. Such UV-protected liners are ranked more effective against punctures and are used at the bottoms of landfills to prevent material from seeping into the ground for at least 100 years. Some sediment coverages on the bottom would be helpful. If such liners were installed, the pond would never need to be dredged again.)
2. Drain down and remove sediment by mechanical dredging.
3. Restore eroded shorelines
4. Stabilize shorelines with geofabric-wrapped soil "shelves" stabilized with soil and plantings (Per discussion with a contractor there are options to line the shoreline in a manner to allow mowing up to the edge. Discussions have also leaned towards the agreement that the shoreline "fringe" does not deter the geese population and the elimination of the current weeds would be welcomed.)
5. Wherever the ponds are deepened, and new liners installed, install diffused aeration system in lieu of fountains.
6. Inspect and reseal spillway structures as needed. (*weirs*).
7. Restore access areas to be able to conveniently maintain with mowing, etc.

8. Use natural enzyme treatment to keep water quality good and muck from building up. (Clean Flo, a company that has been in business for 50 years provides a natural enzyme product line that breaks up muck much like Dawn breaks up grease. This product costs $70 every month the temperature is above 50 degrees. That is, three pounds of product for a pond the size of pond 3 and less for smaller ponds.)
9. Continue invasive species treatments to include primrose, as needed.
10. Stock with fish which the city recommends will improve water quality.
11. Set and maintain schedule to remove sediment from the foray to reduce the need for maintenance in the ponds downstream from Pond #3.
12. Reduce maintenance costs for water treatments by monitoring deeper water levels, reducing phosphorus from lawn fertilizers, and keeping the water recirculating system functioning.

2. Phased-in Approach:

Year 1 (2023) Pond 3:

1. Obtain a bid to install a sediment forebay.
2. Obtain a bathymetric survey and a dredge plan for pond 3 (A bid for this in 2018 was $2,800)
3. Solicit and obtain bids from pond dredging specialists to dredge pond 3, without trying to preserve the existing liner, and digging 2-3 feet deeper, in the manner outlined by Knust.
4. Engage experienced service providers to complete work of dredging, bank repair, new liner installation, erosion control at specific points, and reseeding
5. Remove liner and excavate to beneath the pond liner, increasing depth by 2-3 feet.
6. Install new liner.
7. Reinforce banks as needed to prevent erosion.
8. Install sediment forebay at north end of Pond 3
9. Install valves and piping for alternate recirculation discharge location to Pond 3.
10. Construct stabilized access area for annual maintenance by vactor truck.

Year 2 (2024)

1. Allow funds to accrue
2. Obtain bathymetric study, engineering plans, etc.
3. Seed or vegetative plugs on Pond 3

Year 3 (2025) Pond 5: Follow the same steps 2-7 listed for pond 3

1. Evaluate well & pump system for continued use as supplemental water supply
2. Repair as needed

Year 4 (2026) Pond 4: Follow the same steps 2-7 listed for pond 3.

Year 5 (2027) Pond 6: Follow the same steps 2-7 listed for pond 3

Year 6 (2028) Pond 7: Follow the same steps 2-7.

1. Restore electrical service (or explore the option of solar power for the pump.)
2. Reinstall pump and aerators

3. **On-going Maintenance Recommendations. Please refer to Addendum D "Estimating Future Dredging Based on Prior Actuals" for additional information concerning on-going dredging expenses."**

   a) **Invasive Vegetation and Algae Treatments**: Vegetation and algae treatments will be on-going for the life of the pond to maintain aesthetic character of the pond system.

   b) **Water Level**: Water levels should be monitored to ensure an adequate supply of water is found within the pond system. Ground water may be pumped into Pond 5 during periods of drought. Water levels should be compared to the elevation of the outlet structure—do not compare the water level to the top of bank along the shoreline.

   c) **Aerators, Fountains, and Water Pumps.** Companies such as Aquatic Control can be used to maintain this equipment. These companies will pull fountains out of the water during winter months for maintenance. They can be used as an on-call service provider for pumps and aeration services

   d) **Wildlife Control:** Waterfowl (ducks and geese) can be deterred on an as needed basis. Decoys and other devises may be purchased. Maintaining a fringe of vegetation around the shoreline discourages their population.

   e) **Enhancements** within the common areas could include public seating and native plantings. Potential landscape element opportunities may be in areas with pedestrian access through nearby sidewalks. Allowing places for residence that do not live directly on a pond will increase the overall community's ties with the success of the pond system. Residents could look out on the improved aesthetic appeal the pond system has once much of this plan is implemented.

COMMUNICATIONS

A well-designed system to inform and educate WFCA memberships should be created. Thoughtfully designed communications should be sent by mail and made available electronically. Additionally, small group meetings should be made available to respond to concerns prior to the Annual General Meeting. It is even suggested that a special meeting be called prior to the annual meeting for a question-and-answer opportunity.

SUMMARY OF PRACTICAL PROPOSAL RECOMMENDATIONS

SUMMARY OF RECOMMENDATIONS:

1. Acknowledge that along with other considerations, the most feasible plan in terms of finances, is to renew the ponds as outlined in **OPTION B POND RENEWAL.**

2. Establish a **DEDICATED POND IMPROVEMENT BUDGET and establish an accounting system apart from the general reserves**.

3. WFCA should **transfer** a minimum of **$40,000** from the WFCA reserves to the Dedicated Pond Improvement Budget.

4. Until more specific financial details are available, assume that Option B Pond Renewal provides the foundation for **BUDGET PLANNING**.

5. Seek a mutually agreeable **partnership** with **MOSS CREEK AND MOSS CREEK VILLAGE** that eases the conflict regarding on-going maintenance and financial contributions. *(It would be advisable for WFCA to agree to assume more of the bank maintenance in return for financial contributions from MC and MCV.)*

6. Provide **information** through emails, website, small group meetings and well-designed print communications.

ADDENDUM A: COST COMPARISON OVERTIME

Using the identical dues increases and Mr. Knust's hypothetical cost estimates the two options are compared below:

Option B Pond Renewal

Year	Balance Brought Forward	WFCA dues increase over current	Total from WFCA Dues (410 units)	MC Monthly Dues Inc	MC Total Contribution (71 units)	MCV Monthly Dues Increase	MCV Total Contribution (34 units)	Grand Total Contribution For Year	Project For Year	Estimated Expense For Year	End of year Balance
2021	$0	$0	$0	$0	$0	$0	$0	$0	more dredging of pond #3 & obtain approval from membership		$0
2022	$40,000	$100	$41,000	$10	$8,520	$5	$2,040	$91,560	Establish separate pond budget		$91,560
2023	$91,560	$100	$41,000	$10	$8,520	$5	$2,040	$143,120	complete pond #3	$121,000	$22,120
2024	$22,120	$100	$41,000	$10	$8,520	$5	$2,040	$73,680	none	$0	$73,680
2025	$73,680	$100	$41,000	$10	$8,520	$5	$2,040	$125,240	pond #5	$61,000	$64,240
2026	$64,240	$100	$41,000	$10	$8,520	$5	$2,040	$115,800	pond #4	$85,000	$30,800
2027	$30,800	$100	$41,000	$10	$8,520	$5	$2,040	$82,360	pond #6	$68,000	$14,360
2028	$14,360	$100	$41,000	$10	$8,520	$5	$2,040	$65,920	pond #7	$65,000	$920

Scenario #2 Stream Channel

Year	Balance Brought Forward	WFCA dues increase over current	Total from WFCA Dues (410 units)	MC Monthly Dues Inc	MC Total Contribution (71 units)	MCV Monthly Dues Increase	MCV Total Contribution (34 units)	Grand Total Contribution For Year	Project For Year	Estimated Expense For Year	End of year Balance
2021	$0	$0	$0	$0	$0	$0	$0	$0	aquire approval at WFCA Annual General Meeting		$0
2022	$40,000	$100	$41,000	$10	$8,520	$5	$2,040	$91,560	Establish separate pond budget	$0	$91,560
2023	$91,560	$100	$41,000	$10	$8,520	$5	$2,040	$143,120	obtain surveys & permits	$42,000	$101,120
2024	$101,120	$100	$41,000	$10	$8,520	$5	$2,040	$152,680		$0	$152,680
2025	$152,680	$100	$41,000	$10	$8,520	$5	$2,040	$204,240		$0	$204,240
2026	$204,240	$100	$41,000	$10	$8,520	$5	$2,040	$255,800		$0	$255,800
2027	$255,800	$100	$41,000	$10	$8,520	$5	$2,040	$307,360	pond #3, 4 &5	$293,000	$14,360
2028	$14,360	$100	$41,000	$10	$8,520	$5	$2,040	$65,920			$65,920
2029	$65,920	$100	$41,000	$10	$8,520	$5	$2,040	$117,480	rain garden, wildlfe surv	$107,000	$10,480
2030	$10,480	$100	$41,000	$10	$8,520	$5	$2,040	$62,040			$62,040
2031	$62,040	$100	$41,000	$10	$8,520	$5	$2,040	$113,600	pond #6	$68,000	$45,600
2032	$45,600	$100	$41,000	$10	$8,520	$5	$2,040	$97,160	pond #7	$65,000	$32,160

ADDENDUM B FUTURE DREDGING EXPENSES

Estimating Future Dredging Based on Prior Actuals

We know now that future dredging can be done in a more efficient way by professionals who specialize in pond dredging and erosion control. Nonetheless, we do have some data, and we believe it is a better starting point for estimating than are the rough calculations in the Kunst report.

We have learned a lot since the WFCA board undertook the renewal work of Ponds 1 and 2. We started there because of the severely eroding banks encroaching on properties. We also wanted to inspect the liner and determine if a replacement would be needed or if the liner would be fine with the rebuilt and erosion-controlled banks. We used the only company that we were told would work on our ponds and the dredging method they recommended.

Much of the work was done on a time-and-materials basis, rather than a carefully constructed estimate. **No bathymetric work was done, nor was there a constructed cost analysis comparing different methods of dredging based on the amount of material to be removed**.

Using the worksheet "Ponds 1 & 2 Costs 11.8.16.xls", which showed estimated and actual spent amounts, it is possible to see how much it cost to dredge the ponds and replace the liners.

Together, ponds 1 and 2 are approximately 0.21 acres. Pond 3 is approximately 0.27 acres.

The dredging method used was to vacuum and haul away material in badger trucks, while carefully rinsing and exposing the existing liner. That method was selected because one of the project goals was to inspect the liner and determine if the replacement was necessary.

The amount WFCA paid to do this to ponds 1 and 2 was $64,729. This excludes costs specific to ponds 1 and 2, including weir repair, piping, and Flexamat materials and labor.

While this cannot be used to precisely forecast the amount it would cost to finish dredging and renewing Pond 3, it is a data point based on our experience.

There is good reason to expect the cost to finish dredging, relining, and bank repair of Pond 3 would be less than this amount for the following reasons:

1. The dredging method would not require exposing and inspecting the liner. Rather it would be to remove a certain amount of earth from Pond 3, dig it 2-3 feet deeper, and emplace a new liner.
2. Vacuum dredging took a lot of hours by several workers for many days. Mechanical excavation would be faster and more cost-efficient.
3. The expense of a badger truck would not be needed; material can be pushed onto a flatbed truck.
4. Using a company that specializes in pond dredging and erosion control would be more efficient, and the results would be predictable, backed by prior work and testimonials.
5. Some material has already been dredged from Pond 3 in the last two years.

ADDENDUM C: DETAILS OF P1 AND P2 DREDGING

Relevant items to include in a projection for Pond 1 & 2 renewal:

ITEM	EXPENSE
Measurements	$70
Pump water out of ponds	540
Evergreen labor	13,186
Badger truck	18,220
Disposal of pond debris at Good Earth	500
Bank repair (earthmoving)	9,420
9 loads clay fill dirt and 1 load topsoil	3,860
Additional dirt	2,080
Liners (1 & 2)	10,215
Liner installation labor	3,750
Bank repair seed and straw	1,714
T-bars to anchor liners to weirs	1,074
Set sprinklers and maintain for 1 week	100
Total for above items	**$64,729**

A relatively small amount of riprap, pond border plantings, and a forebay could conceivably cost an additional **$15,000, making the projection $79,729.** This seems like a reasonable projection of the maximum cost to renew Pond 3.

ADDENDUM D: DETAILS OF P1 AND P2 RENEWAL

Below is a list of actuals (except as noted estimates are unknown) that are **not relevant to a Pond 3 renewal project**.

ITEM	EXPENSE
Weir repair	$1,260
Aqua Block	1,335
Check valve and arms installation	1,984
Check valve and arms	1,625
Flexamat	11,010
Labor to install Flexamat	5,600
Sand and Straw banks	153
Rebars to anchor Flexamat	1,620
Fill dirt for seeding Flexamat	540
Heat gun (purchased and retained)	361
Welding boot to liner	180
Silt basin	1,950
Water rental	
Straw	
Sand	
Haul and store Aqua Block (Estimated)	120
Rinse mud, debris walks (Estimated)	140
Remove tree & vegetate Flexamat	500
Remove/reinstall no trespassing sign (Estimated cost)	50
Remove/replace check valve and arms	458
Extend water inlets to match bank	120
Repair corner Weir 2	350
Total NOT included for Pond 3 extrapolated estimate of a dredge, renew	$26,548

ADDENDUM E: SUMMARY OF DAVEY'S REPORT

Year 1 (2020)

- WFCA should take necessary steps to ensure the ponds are not mowed directly to the water's edge. This simple change can help protect the remaining shorelines within the pond system. *(Landscapers were advised to do so.)*
- Invasive primrose should be added to the list of species chemically to be treated. (*Primrose was added to the list of items to be controlled.)*
- Expansion joints in the weirs between ponds 3-4 and 6-7 should be repaired. *(All weirs were examined and resealed as needed.)*
- Investigate the need for dredged soil removal or fill material placement permitting within the pond system from USACE and IDEM.

Years 2-3 (2021)

Ponds 1 and 2 Test soil below Flexamat for the potential to grow vegetation.

Ponds 3 and 5

- Conduct detailed dredging plan.
- Decide appropriate course of action (dredging or rain garden/wetland installation) for Ponds 3 and 5 to meet WFCA's goals, budget, and permitting requirements. (Too many questions currently exist for Davey Resource Group to provide a specific recommendation for Ponds 3 and 5. Completely dredging each pond is possible but could be prohibited by cost and permitting requirements. Emergent vegetation installation is a low-cost option but will eliminate open water within the system. A dredging plan will address these concerns and decide the appropriate course of action.)
- Continue invasive species treatment on primrose. Seed or vegetative plugs may be installed on Year 3 if control of the species is achieved, and dredging will not be performed. *(Primrose was continued to be abated. Some dredging was done on pond #3 in 2019 and 2020.)*
- Address any damaged stormwater conveyance concrete structures. *(Street drains were replaced and rip-rap was installed in ponds #4 and #5.)*

Pond 4

- Conduct a detailed dredging plan
- Dredging in this pond is not an immediate concern; however, it will be required in the next 5-10 years. Davey Resource Group recommends shoreline restoration occur simultaneously with dredging. A detailed dredging plan will address this further. Davey Resource Group recommends performing these activities by Year 3 to achieve desired aesthetics and functionality in Pond 4. *(A buffer of invasive grass and weeds has been maintained.)*

Ponds 6-7

- Placement of topsoil (fill material) along exposed liner on shoreline, seed with native shoreline seed mix, and installation of stone edge. Dredging is not currently a concern with Ponds 6-7 and the lining appears to be in good shape. Shoreline restoration will provide protection to exposed liners and should occur soon.
- Check for permitting requirements from USACE and IDEM prior to performing this activity.
- A buffer should be maintained without constant mowing along the shoreline. The buffer may be 2-5 feet in width. *(A buffer of invasive grass and weeds has been maintained.)*

c. **Year 4-5 (2022-2023)** Ponds 1 and 2: Address unvegetated Flexamat. Reinstallation could be required.

d. **On-going Maintenance Recommendations**

- **Invasive Vegetation and Algae Treatments**: Vegetation and algae treatments will be on-going for the life of the pond to maintain aesthetic character of the pond system.
    - Primrose control may require a few years of treatment before adequately accomplished.
    - The aquatic treatment contractor should maintain (any) rain garden area for invasive vegetation following installation. A shallower rain garden is a perfect area for cattail and other invasive species to over-populate and out-compete planted materials. Treatment of these species for on-going eradication will be required. Contractors should be instructed to treat any additional invasive species within the pond system and (any) rain garden/wetland areas.

- **Water Level**: Water levels should be monitored to ensure an adequate supply of water is found within the pond system. Ground water may be pumped into Pond 5 during periods of drought. Water levels should be compared to the elevation of the outlet structure—do not compare the water level to the top of bank along the shoreline. Excessive erosion has occurred in much of the pond system making the water levels appear low when much of the area is preforming as designed.

- **Aerators, Fountains, and Water Pumps** The current maintenance strategy for maintaining aerators, fountains and pumps is working well for WFCA. Companies such as Aquatic Control can be used to maintain this equipment. These companies will pull fountains out of the water during winter months for maintenance. They can be used as an on-call service provider for pumps and aeration services. (*Note: Since this report, no pumps or fountains are currently activated due to the following:*
    - *The electric line is not functioning and needs to be replaced.*
    - *When the pump in pond #7 had electricity, it could not function properly due to the shallowness of the water.)*

- **Wildlife Control:** Waterfowl (ducks and geese) can be deterred on an as needed basis. Decoys and other devises may be purchased. Maintaining a fringe of vegetation around the shoreline discourages their population. *(A buffer of invasive grass and weeds has been maintained.)*

- **Enhancements** within the common areas could include public seating and native plantings. Potential landscape element opportunities may be in areas with pedestrian access through nearby sidewalks. Allowing places for residence that do not live directly on a pond will increase the overall community's ties with the success of the pond system. Residents could look out on the improved aesthetic appeal the pond system has once much of this plan is implemented.