

MINNEHAHA CREEK VISIONING PARTNERSHIP RECOMMENDATIONS

INTRODUCTION

The Minnehaha Creek Visioning Partnership is a joint project by the Minnehaha Creek Watershed District (MCWD) and the United States Army Corps of Engineers (USACE). It is part of a larger watershed-scale planning and design effort for the watershed. The recommended Vision will be considered by both the MCWD and the USACE as they move forward with plans and designs. This Vision is also intended as guidance for other organizations, such as cities and the Minneapolis Park Board, which share creek corridor management responsibilities. The hope is that all organizations can work together toward a common vision for the creek.

THE VISIONING PROCESS

Both public and agency input were solicited for developing the Vision. Public input was obtained through an appointed Citizens Advisory Committee (CAC). Agency input was obtained through a Technical Advisory Committee (TAC). The focus of the CAC was to recommend a Vision, recommend actions and explore the social feasibility of recommendations. The role of the TAC was to assess the technical feasibility of recommendations made by the CAC. Participation for the CAC was requested from the following for a total of 23 participants:

- City of Minneapolis (2)
- City of Edina (2)
- City of St. Louis Park (2)
- City of Hopkins (2)
- City of Minnetonka (2)
- Minneapolis Park Board (2)
- Hennepin County (2)
- Citizens of the Watershed nominated by the MCWD (9)

The process also accommodated additional interested citizens at the various workshops and activities held during the process, and an Open House meeting was held to obtain additional public input on the CAC recommendations. However, only the appointed CAC members “voted” on the final recommendations.

The process used with the CAC consisted of twelve workshops organized into three Phases as follows.

- ◆ Phase 1, called “Where have we been?”, focused on developing a shared understanding of the history of the creek, and involved a workshop to develop a joint history/chronology of the creek and its environment.
- ◆ Phase 2, called “Where are we now?”, focused on determining current conditions of the creek, including current perceptions, desired attributes, and existing visions. Meeting topics included:
 - Watershed management approaches
 - Geomorphology and physical setting of the creek
 - Watershed and land use characteristics
 - Hydrology and hydraulics of the creek
 - Water quality
 - Aquatic biology
 - Current perceptions of the creek

DRAFT

- Existing vision and plans by organizations along the creek corridor
- ◆ Phase 3, called “Where can we be?”, focused on the development of a common vision and management recommendations.

CAC meeting summaries are available upon request.

The TAC met twice during the visioning process. The first meeting focused on introducing the project and the modeling scenarios. The second meeting presented the modeling scenario results and evaluated the technical feasibility of the scenarios. TAC meeting summaries are available upon request.

THE RECOMMENDED VISION

CAC Discussions

The recommended vision was the result of much discussion. Two CAC exercises in particular helped participants identify and discuss the desired condition of the creek and priorities. Results of these exercises are summarized below and followed by the recommended vision statement.

A swarming exercise was completed at the sixth meeting of the CAC. Participants were asked to indicate what the current condition of the creek was and what it should be for various attributes. Results of the exercise are presented in Table 1, where the number represents the number of participants that choose that condition. These results showed that for all attributes participants desired an improved condition.

At a subsequent meeting participants were asked to rank these attributes, and were also asked through an ordinal ranking exercise, to rank a larger list of characteristics. Results of these exercises are presented in Figures 1 and 2. These results show remarkable agreement, with the physical condition/streambank erosion ranked as the highest priority and aquatic life ranked second for each exercise. Most participants agreed with the results, that erosion control should be a top management priority. One participant disagreed, saying that erosion is a natural part of creeks. After discussion, the CAC agreed that the problem was really accelerated erosion. The CAC also agreed that aquatic life and cultural/historic resources were top priorities. They also agreed that what is cultural/historical varies by reach but is comprised of: 1) the whole setting/history and settlement of Minnehaha Creek (e.g., its place in history because of Longfellow’s poem (*The Song of Hiawatha*) as well as the historical park visions of Cleveland and Wirth); and 2) the physical historical features, such as the Grand Rounds, trails, mills, and WPA projects. In discussing open space, the CAC agreed that it is not so much the acreage of open space that is important, but the feeling of being surrounded by the natural environment with limited human encroachment.

When discussing the lower ranked characteristics, the participants agreed that they did not feel that canoeing was a low priority. Rather its lower ranking had to do with its specificity as it is really a subset of recreation. One participant disagreed that fishing should be a lower priority stating that the general public wants more fishing opportunities. Others thought that fishing as a recreational opportunity was not a high priority.

Another important exercise that influenced recommendations was the creation of a systems diagram showing the interrelationships between the following characteristics: flow/hydrology, aesthetics, land-based recreation, water-based recreation, aquatic life, streambank erosion, cultural resources, open space, flooding, aquatic habitat, and water quality. This exercise was done in a small break-out group. For each characteristic the group determined whether it drives (or controls or influences) versus whether it primarily receives, or is influenced by, other characteristics. This exercise led to the following conclusions:

- ◆ Hydrology is the main driver (i.e., primarily influences other characteristics).

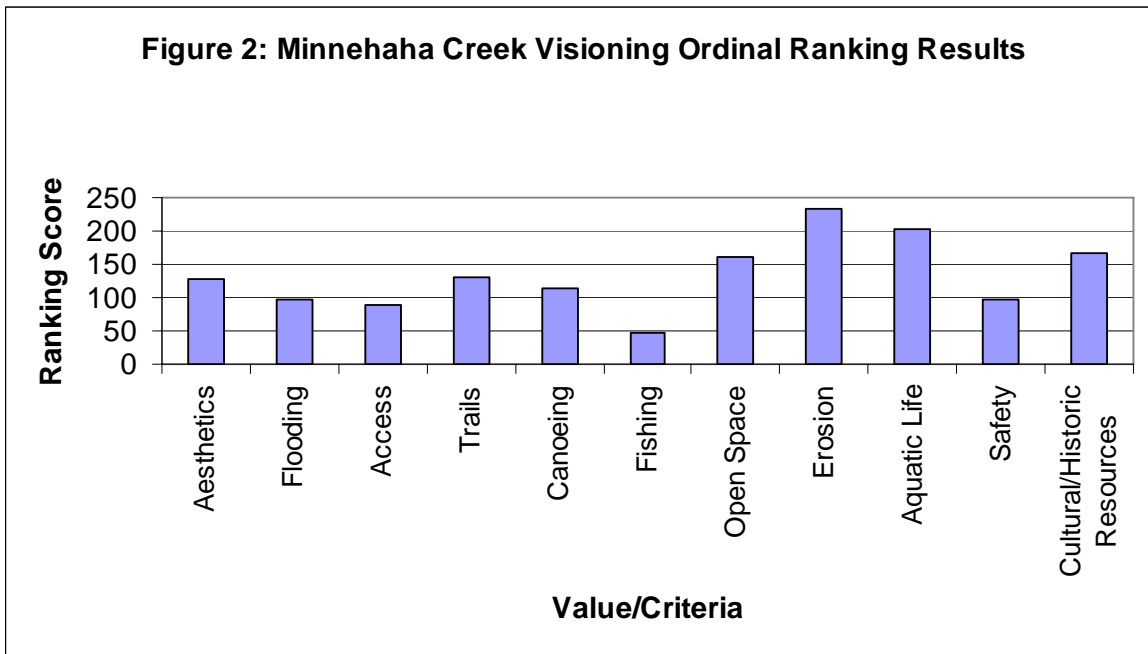
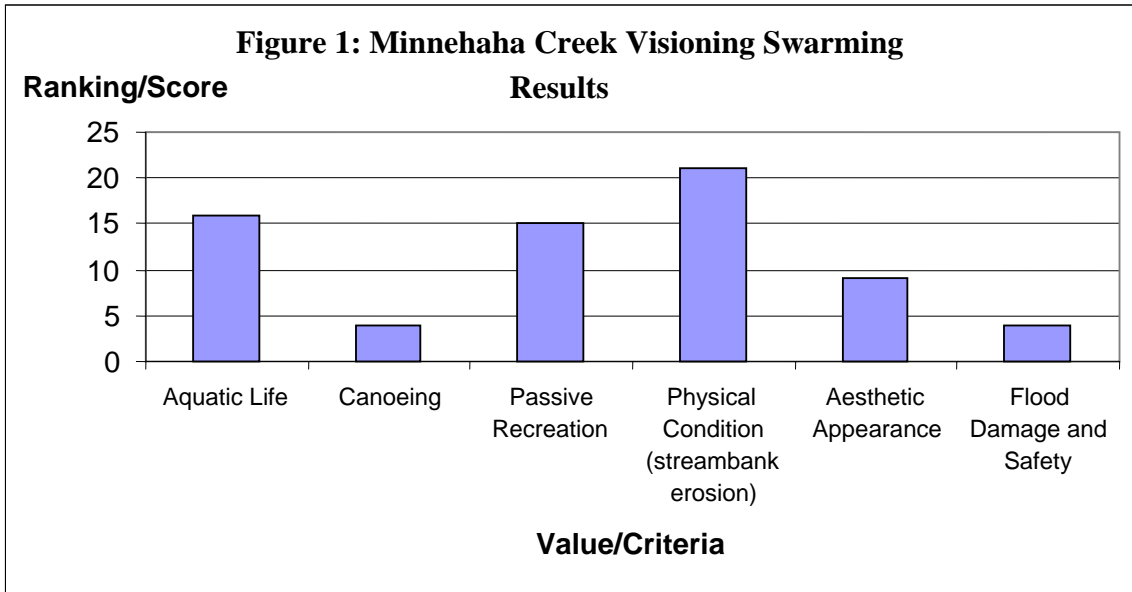
DRAFT

- ◆ Aesthetics is the main receiver (i.e., is primarily influenced by other characteristics).
- ◆ Land-based recreation is largely a receiver, or is influenced by other functions. Aquatic life and water-based recreation were also receivers.
- ◆ Water quality, bank erosion, and aquatic habitat are receivers from physical characteristics like flow, but drive biological characteristics like aquatic life.
- ◆ Cultural resources can be a receiver if influenced by physical characteristics like flow that erode or impact cultural resources, but cultural resources can also drive management of many of the other characteristics from the perspective that they affect how they can be managed.
- ◆ Open space does not have clear linkages. It does, however, drive hydrology/flow by affecting the amount of impervious surface and runoff.
- ◆ Flooding drives a number of other issues, but it is also a receiver from hydrology. It can also be affected by flow inefficiencies created by aquatic habitat (i.e., obstructions caused by woody debris), sediment from bank erosion, as well as how cultural/historic resources were originally constructed.

The CAC also recognized that the vision of a desirable aesthetic for the corridor varies from person to person. For some, a desirable aesthetic means natural/wild vegetation. Others view this as overgrown and want a more manicured look and an open view of the creek. The CAC agreed that an undesirable aesthetic is something that does not fit and appears unnatural or in a deteriorated, non-indigenous condition.

Table 1: MCWD Visioning Meeting 6 Swarming Results (Number represents the number of participants that chose that condition)

Condition	Current Condition	Condition It Should Be
Aquatic Life		
1. Excellent: Diverse communities of fish and macroinvertebrates		9
2. Good: Communities better than typical urban streams	3	20
3. Fair: Communities typical of urban streams	18	1
4. Poor: Communities worse than typical urban streams	7	
Canoeing		
Condition	Current Condition	Condition It Should Be
1. Great: Sufficient flow, good access, and safe	1	16
2. Good	8	11
3. Fair	14	
4. Poor	4	
5. No canoeing possible	1	
Passive (hiking and nature viewing) Recreational Suitability		
Condition	Current Condition	Condition It Should Be
1. Good: Access and trails	4	20
2. Access and trails okay	7	6
3. Access and trails limiting	15	
4. Passive recreation not enjoyable		
Physical Condition (erosion)		
Condition	Current Condition	Condition It Should Be
1. No bank erosion		11
2. Some bank erosion	3	16
3. Definite bank erosion	20	
4. Severe bank erosion	4	
Aesthetic Appearance		
Condition	Current Condition	Condition It Should Be
1. Beautiful		17
2. Minor aesthetic problems	6	10
3. Fair, overgrown, visibility limited, some trash	20	
4. Poor, trash, debris and urban refuse common		
Flood Damage and Safety		
Condition	Current Condition	Condition It Should Be
1. Minor: Overbank flooding, no property damage	6	19
2. Moderate: Road crossing flooding, traffic issue, some property (non-structure) damage	18	3
3. Major: Property damage to structures and safety (loss of life) issue		



Recommended Vision

Recommendations include an overall vision statement and specific management recommendations regarding various creek management issues. These specific management issues include recommendations regarding the CAC's highest priorities: streambank erosion and aquatic life improvement, as well as stream flow recommendations. The CAC also developed recommendations for improving water quality, as well as a number of criteria for decision makers to consider when making site specific decisions regarding dam/weir removal, sediment removal, and when prioritizing specific projects. The CAC recognizes that recommendations vary depending on location, and some recommendations are organized by the stream sections shown in Figure 3.

Overall Vision. The CAC recommends the following overall vision.

The Vision for Minnehaha Creek includes both an existing and desired sense of place. With respect to the existing sense of place, the creek:

- ◆ Is a corridor with various reaches and destinations,
- ◆ Serves as a gathering place for people,
- ◆ Provides recreational opportunities,
- ◆ Is a contemporary cultural resource, yet it also reflects our history, and
- ◆ Provides natural and aesthetic experiences unique to its setting.

Within the creek corridor it is also desired to:

- ◆ Provide balanced opportunities to experience the creek,
- ◆ Improve the natural environment,
- ◆ Improve water quality,
- ◆ Have variation and physical differences, and
- ◆ Be reflective of our history and a priority for our future.

Management Priorities. CAC group exercises discussed above showed that erosion control and aquatic life were the highest ranked priorities for improvement. However, the CAC recognized that priorities and the primary management emphasis varied by location along the creek. Therefore, the CAC was asked to recommend an overall management priority for the creek by section. These recommendations are presented in Table 2. When asked in this fashion, recreation came out as a higher management priority for Sections A and B than erosion and aquatic life. This change reflects the recognition that recreation is the primary use in the corridor, along with the recognition the erosion is less severe in the upper sections than it is in Section C. Earlier results with higher rankings for aquatic life and erosion also reflect the context of that discussion which was based on priorities for improvement. Recreation is already perceived as a well established use, and management to preserve and protect this use is important as can be seen from the results in Table 2. The overall vision emphasizes recreation while improving the natural environment.

Stream Bank Erosion Recommendations

Improvements to streambank erosion were the highest ranked priority overall for the creek, and, as shown in Table 2, was the highest ranked management priority for Section C of the creek. Erosion is not perceived as being as severe in Sections A and B of the creek. For all sections, the CAC prefers streambank stabilization technologies that incorporate vegetation (i.e., bioengineering technologies) over rip-rap, retaining walls, and other forms of artificial stabilization. This preference is due to the habitat benefit from vegetation which complements the CAC's desire for improved aquatic life in the creek. It was also recommended that any storm sewer outfalls to the creek contributing to localized bank erosion be re-worked.

Table 2: Management Priorities by Section

Management Priority	Section A: From Grays Bay to Railroad Crossing Below Interstate 494 Near Plymouth Road	Section B: Railroad Crossing Below Interstate 494 Near Plymouth Road to Browndale Dam	Section C: From Browndale Dam to Mississippi River
1	Recreation, since this area is the launch point for much of the canoeing.	Recreation	Erosion control consistent with aquatic habitat and recreational aesthetics.
2	Aquatic life	Aquatic life	
3	Erosion is a lower priority than the others since there is not much documented in this section, with only minor amounts in the downstream portions of the section.	Erosion with the qualifier that erosion is more important in the downstream portions of the section.	

Aquatic Habitat Management Recommendations

Aquatic life was the second highest ranked priority of the CAC. Presentations by experts showed that the most significant limiting conditions for aquatic life are stream flow, particularly the lack of winter flow in the creek, and poor quality habitat. Flow recommendations presented in the next subsection address the quantity of habitat that occurs at different flows. However, those recommendations do not address the quality of habitat. To address the quality of habitat, recommendations were developed for:

- ◆ In-stream habitat (indirect or direct management)
- ◆ Riparian vegetation management
- ◆ Woody debris management
- ◆ Sediment removal (e.g., dredging)
- ◆ Dam and weir removal

These recommendations are presented for each topic separately below.

In-Stream Habitat. Given the wetland characteristics of Section A, the CAC felt there is little to gain from active management of in-stream habitat. In Sections B and C, the CAC acknowledged the importance of good in-stream habitat for aquatic organisms, but prefers to indirectly manage in-stream habitat by managing riparian vegetation and encouraging the retention of woody debris.

Riparian Vegetation Management. Riparian vegetation management was perceived as an integral part of achieving the CAC’s vision for improving aquatic life in Minnehaha Creek. The CAC recommends a preferred approach to in-stream habitat management that indirectly manages in-stream habitat by managing riparian vegetation and encouraging the retention of woody debris. With this approach, the riparian corridor becomes the primary mechanism for managing in-stream habitat. The CAC spent much time discussing specific recommendations for riparian vegetation management. These discussions resulted in the following overall recommendations:

DRAFT

- ◆ Develop a community and organizational philosophy that values minimal impact approaches for both citizen and public works activities within the riparian corridor by:
 - Establishing a more natural riparian buffer to serve as a source of woody debris, wildlife habitat, and a separation from urban uses;
 - Encouraging the establishment of a natural buffer that enhances streambank stability;
 - Encouraging native plant species; and
 - Controlling invasive plant species.

- ◆ Create incentives for good/positive practices and for the use of native vegetation through tax credits, cost sharing, and availability of free seeds/plants and technical assistance.

- ◆ Use marketing, promotional, public relations, social pressure and education efforts to foster a change in expectations and behavior that embraces a more natural/native riparian environment.

- ◆ Develop and maintain a shared implementation vision for the riparian corridor by:
 - Communicating the vision of the committee to decision makers,
 - Maintaining the investment through on-going maintenance of restoration efforts,
 - Improving inter-government coordination, and
 - Completing periodic progress reviews.

The CAC also developed recommendations and brainstormed implementation ideas for the creek Sections B and C. In general, the CAC felt that riparian conditions in Section A were in pretty good shape. What is most needed is to protect it from encroachment. When asked about the desirability of water level management of the wetland area upstream of I494 to help manage vegetation and exotic species, participants felt that the benefits and management actions for this were not sufficiently understood to give an opinion. Water level management in the wetland is possible because of a stop log structure located where the creek flows under I494.

For Sections B and C, riparian vegetation management needs to be completed as a combination of agency action and encouragement of local property owners. Specific ideas for consideration for Sections B and C are presented in Tables 3 and 4 respectively. The CAC felt that these ideas need more evaluation and decided to include them in this report not as recommendations, but as ideas for further consideration.

Table 3: Section B Riparian Vegetation Brainstorming Ideas

<p style="text-align: center;">Manage Stormwater</p> <ul style="list-style-type: none"> ◆ More high water storage (e.g., ponds and wetlands) ◆ Modify trails to reduce impervious (reducing impermeable surfaces, by replacing cement with wood chips or natural materials on paths (rain gardens)) ◆ Changing of drain design to not let as much debris into creek ◆ Reduction of storm/drains that flow into creek ◆ Storm water outfalls need help...Minnetonka Mills Area. (Use box outfalls, armour outfall areas, reduce flashiness, store water) ◆ Reduce negative inflow (e.g., from storm sewers, lawns) 	<p style="text-align: center;">Incentives</p> <ul style="list-style-type: none"> ◆ Offer incentives ◆ Tax breaks for good stewardship ◆ \$1 million on lake Mtkka (maybe \$100,00 on creek) in taxes/property which you get back if you change your ways ◆ Planting of plants and/or trees that will have positive effect (along banks) 0 to 20 feet back ◆ Create riparian vegetation at parks to encourage participation ◆ Plant trees along Hwy 100 ◆ Create incentives to remove chain link fences, steel walls, wooden barriers, and fake rock from shoreline
<p style="text-align: center;">Erosion Control/Remediation</p> <ul style="list-style-type: none"> ◆ Controlling stormwater ◆ Stormwater volume control ◆ Fix direction of stormwater pipes ◆ Dredging where outfall areas create problems, but not aesthetics like Mill pond – unless private funding. 	<p style="text-align: center;">Education</p> <ul style="list-style-type: none"> ◆ Involve neighbors (e.g. not cutting down to creek – buffer) ◆ Parks as an example ◆ Creek clean up (garbage. etc.) ◆ Education of residents <ul style="list-style-type: none"> ○ Not dumping ground ○ Native/Positive vegetation ○ Lawn care consequence, options ◆ Get information out to general public about what they can do to lessen negative impact habits ◆ Community awareness <ul style="list-style-type: none"> ○ Newsletters ○ Community gatherings in city parks “Minnehaha Creek Days” ◆ Communication plan with cities <ul style="list-style-type: none"> ○ Signs on trails ○ Newsletters ◆ Give recognition for good stewardship ◆ Work with businesses, (proactively) to address creek pollution runoff issues (e.g., Methodist Hosp., Target) ◆ Get cities/other organizations to follow recommendations ◆ Provide planting recommendations and mgmt. guidelines to neighborhoods ◆ Education of property owners <ol style="list-style-type: none"> 1. Financial aid 2. Technical support 3. Physical help 4. “Call for Help” list of agencies ◆ Do small things ◆ Support lower food chain life will support higher food chain life ◆ Support buffers/macroinvertebrates ◆ Talk with city to change practice of cutting grass (maintaining grass) around the creek. City needs to model the behavior.

Table 4: Section C Riparian Vegetation Brainstorming Ideas

<p style="text-align: center;">Stormwater</p> <ul style="list-style-type: none"> ◆ Incorporate stormwater management in re-development and consider in land use planning ◆ Create stormwater marshes, holding areas, and marshes that slow and settle down flow before entering the creek ◆ Create rain gardens on Mpls Park Board Property ◆ Create rainwater garden demonstration sites at parking areas and other large sites ◆ More wetlands in the floodplain ◆ Reduce Street Runoff (trash, pollutants, etc.) 	<p style="text-align: center;">Incentives and Disincentives</p> <ul style="list-style-type: none"> ◆ Provide free (grass or prairie) seed or shoots, Etc. ◆ Provide tax credit for natural vegetation on private property ◆ Provide incentives for landowners for good/positive practices ◆ Have contests for the “wildest” stretch (“adopt-a-stretch”) with awards
<p style="text-align: center;">Physical Management</p> <ul style="list-style-type: none"> ◆ Discourage goat paths ◆ Grade control ◆ Reduce human & mechanical effects (vehicles, construction, mowing, etc.) ◆ Target highly eroded banks for revetments ◆ Manage invasive species ◆ Restore meanders in reaches 7 and 8 ◆ Inventory existing plant species and encourage native plant species in buffer zone ◆ Wood duck nests, wren houses, eagle platforms ◆ Narrow paths and roadways (pavement reduction) ◆ Burn natural vegetation areas ◆ More un-mowed surface near the creek ◆ Leave a 25 ft wide buffer of un-mowed vegetation ◆ Sustainable trail design ◆ Encourage native vegetation 	<p style="text-align: center;">Education (Note: an alternative name for this topic by the group was “Changing the Aesthetic.” This alternative name recognizes that change is the desired outcome and education is a tool to achieve that outcome)</p> <ul style="list-style-type: none"> ◆ Marketing ◆ Publicity ◆ Do model (demonstration) sites, test sites, with signs explaining what is going on ◆ Educate local landowners and users about reducing impacts. (Penalize if necessary) ◆ Signs explaining the value of prairie, etc. ◆ Community outreach to residents regarding downspout direction and direct them to greenspace ◆ Adopt the NWF wildlife program by blocks or neighborhoods ◆ “Naturalize” tolerate natural imperfections. (Don’t try to “over-civilize” the corridor) ◆ Schools adopt a stretch, improve it (science project) ◆ Educate city employees and MPRB on BMP’s and where grass clippings shouldn’t be, where tree sawdust should be, erosion control measures in city projects ◆ Educate park system users on low-impact recreation and educate adjacent landowners on yard maintenance ◆ Local history - Post old pictures of same locations (before, after, now...)
<p style="text-align: center;">Institutional</p> <ul style="list-style-type: none"> ◆ Communicate the vision to decision makers ◆ Deputize local residents to observe, record, report, or intervene in <u>local</u> “problems.” ◆ Post boundaries ◆ More money for management ◆ Ordinance for land-use planning providing more green space for infiltration of stormwater. Provide buffer or alternative to water treatment. ◆ Setting guidance for riparian zone ◆ Survey the segment to evaluate current condition ◆ Improve inter-government coordination ◆ Purchase easements ◆ Maintain investments in restoration projects (educate & train volunteers to manage projects) 	

Woody Debris Management. The recommendations regarding management of woody debris in the creek presented in Table 3 where shaped by the following findings and considerations:

- ◆ One of the limiting factors for aquatic life in Minnehaha Creek is poor habitat quality.
- ◆ Woody debris is a natural component of many streams and adds complexity to aquatic habitat by providing substrate for organisms to colonize, creating refuge areas, and by creating pools.
- ◆ Currently quality habitat created by woody debris is largely missing from Minnehaha Creek.
- ◆ Woody debris can obstruct the creek and create problems for canoeing.
- ◆ Woody debris can become entangled in bridges and culverts affecting flooding.
- ◆ Woody debris can change local flow patterns affecting bank erosion.

Table 3: Recommended Management Approach for Woody Debris

Section A	Section B	Section C
Given the wetland and lake like characteristics of this section woody debris probably was not a significant historic factor. Thus, there is no recommendation to actively encourage woody debris.	Woody debris provides an important habitat benefit and should be encouraged. However, it should be removed/managed where it creates obstructions to canoeing and potentially impacts flooding.	Woody debris provides an important habitat benefit and should be encouraged. However, it should be removed/managed where it creates obstructions to canoeing and potentially impacts flooding.

Sediment Removal. The CAC recommends that sediment removal should not be a generally applied management practice for any of the sections. However, there could be special cases for pools and ponds along the creek. The CAC recognized that if dams are left in place, sediment will accumulate in the pools, and periodic removal of sediment will be necessary to maintain open water aesthetics. In general, however, the CAC felt that money would be better spent reducing sediment loads (i.e., fixing the problem or controlling sediment before it reaches the creek). The CAC also agreed that decisions regarding sediment removal from ponds were site-specific. They developed a list of recommended criteria for decision makers to use when making these types of decisions. These criteria are presented below in the subsection titled Recommended Decision Criteria.

Dam and Weir Removal. Habitat in Sections B and C of the creek is negatively impacted by the presence of dams and weirs. Removing some of these structures provides opportunities to create free-flowing stream channels with habitat conditions restored. This would favor aquatic species adapted to flowing water rather than the lake types of species that currently dominate the creek biota. However, some of these structures have historic/cultural significance, as well as local value. One participant stated that a plan to remove Browndale Avenue Dam would certainly generate significant opposition. Other participants were hesitant to stop discussion of this concept for any of the structures without further study. One participant suggested that the acceptability of this practice would depend on what stream flows could be maintained, and it would not be desirable to trade the pools for a dry stream bed. All participants agreed that decisions regarding dam/weir removal are site specific agreed that further study of the impacts and opportunities would be needed before detailed recommendations could be given. Structures for more study include:

Section B:

- Browndale Avenue Dam
- West 44th Street grade control
- Louisiana Avenue and Meadowbrook Road grade controls

DRAFT

Blake Road and Lake Street NE grade controls
West 34th Street weir
Section C:
54th Street Weir
Hiawatha Avenue Weir

The CAC also developed a list of recommended criteria for decision makers to use when making decisions regarding dams and weirs. These criteria are presented below in the subsection titled Recommended Decision Criteria.

Stream Flow Management Scenarios and Recommendations

The CAC spent much time discussing the flow scenarios, and understood that the scenarios presented represented a first cut at what would happen with changes to the operation of the Grays Bay Dam. They understood that while the operational scenarios modeled did not show large benefits, they did show some benefits, and that there is the potential for an operational scenario that balances upstream and downstream uses. The CAC agreed to the following statement and recommendation:

Targeting a sustained year round minimum flow is an integral part of achieving the vision of improving the aquatic life of Minnehaha Creek, and further study is recommended to find a means to optimize and/or balance year round minimum flows and other uses.

Water Quality Management Recommendations

The CAC developed the following water quality recommendations.

- ◆ Improve Stormwater Management by:
 - Reducing peak stormwater flows;
 - Reducing the discharge of contaminated stormwater using holding areas, wetlands, rainwater gardens and land use planning;
 - Repairing stormwater outfall that are currently causing erosion; and
 - Reducing stormwater contamination through the use of good house keeping types of best management practices, such as fertilizer ordinances and yard care practices that reduce pollutants at their source.
- ◆ Continue water quality monitoring in order to develop a baseline condition, identify problems and trends, and evaluate effectiveness of implementation efforts.
- ◆ Develop a “report card” for Minnehaha Creek to assist with communicating and evaluating the condition of the creek.
- ◆ Incorporate volunteers into monitoring efforts.

Recommended Decision Criteria

The CAC discussed issues with sediment removal from ponds and/or dam removal, and concluded that these are site specific-decisions. There were also remaining questions about where to start and how to prioritize actions, particularly stream bank restorations. The CAC, therefore, developed the following list of criteria for decision makers to use when making these types of decisions.

1. What is the cost?
2. What is the benefit and is there a benefit to aquatic life or streambank erosion reduction?
3. How severe is the problem?

DRAFT

- a. With respect to bank erosion, what is the bank stability rating for the project area?
4. Who benefits and is there a public benefit?
 - a. With respect to a sediment removal project, is the problem an aesthetic, a navigation, or an aquatic life problem?
 - b. With respect to stream bank erosion control, is grade control sufficient?
 - c. Is flow stabilized?
5. What is the cause of the problem, and is it an enforcement or a maintenance action, rather than a public improvement?
6. Will the action contribute to downstream impacts?
7. Will the action correct the source of the problem, or will systemic unresolved issues cause the problem to recur?
 - a. With respect to a sediment removal project, are upstream sources of sediment controlled?
8. Is there public support?
9. Are there additional matching funds from partners and benefited parties?
10. Is the condition contributing to or causing other problems?
11. Can conditions be restored to an acceptable condition?
 - a. With respect to dam removal, will stream flows be maintained so that the trade is not from an open water pond to a dry streambed?
12. Is the effort consistent with the CAC vision with respect to:
 - a. Improving aquatic life,
 - b. Controlling streambank erosion,
 - c. Enhancing recreation, and
 - d. Preserving cultural resources?
13. What is the expected life and what are the maintenance needs of the improvement?

Other Recommendations

Some CAC members were concerned that the goals developed were hard to measure, and the CAC did not define measurable outcomes. However, the CAC also recognized that their charge in this process was to come up with an overall vision, and that measurable outcomes could be developed, but that these would be technical and beyond the charge and background of a citizen group. The CAC, therefore, recommends that the Watershed District develop measurable outcomes for each goal.