Impaired Waters – High priority

Issue Statement: Lakes and streams within the Bassett Creek watershed are listed as impaired for recreational and aquatic life functions due to pollutants such as nutrients, chloride, bacteria, and other stressors.

Narrative:

The Minnesota Pollution Control Agency (MPCA) administers the Federal Clean Waters Act (CWA) in Minnesota. In this role, the MPCA identifies and maintains a list of waterbodies that do not meet applicable state water quality standards adopted to promote intended waterbody uses including recreation, consumption of fish, and support of aquatic life. Impaired waters in the BCWMC are shown in (reference map) and include:

- Crane Lake
- Lost Lake
- Parkers Lake
- Medicine Lake
- Northwood Lake
- Spring Lake
- Sweeney Lake
- Wirth Lake
- Bassett Creek (Main Stem)
- Bassett Creek (North Branch)

Impaired waters will also be presented/summarized as a table

For impaired waterbodies, the MPCA or local entities complete a total maximum daily load (TMDL) or equivalent analysis; a TMDL is a threshold calculation of the amount of a pollutant that a waterbody can receive and still meet water quality standards and its intended use(s). Pollutant loading from tributary watersheds must often be reduced to control or reverse water quality degradation in downstream water bodies. TMDLs and associated implementation plans may contain actions for the BCWMC and its member cities. The BCWMC and its partners have completed some actions recommended in TMDLs; these actions have resulted in the delisting of Wirth Lake and Sweeney Lake. Others are incorporated into the Plan implementation schedule.

The sources of water pollution in the watershed are many and varied. Potential pollutant sources include permitted point sources, potentially contaminated sites, leaking above- and below-ground storage tanks, unsealed wells, and non-point sources such as stormwater runoff (reference "what's in my neighborhood" map). For many BCWMC waterbodies, stormwater runoff is the major contributor of pollutants. Pollutants in stormwater runoff include phosphorus and other nutrients, sediment, chlorides, oil, grease, chemicals (including hydrocarbons), metals, litter (e.g., plastics) and pathogens. Chloride loading from runoff carrying road salt applied to roadways, parking lots, sidewalks, and other paved areas throughout the winter months is also a significant pollutant source (reference to chloride issue).

In lakes and wetlands, phosphorous is the pollutant of primary concern. As phosphorus loads increase, water quality degradation often accelerates, resulting in negative impacts such as excess algae growth

or algal blooms (reflected in high chlorophyll a concentrations). Algal blooms and invasive aquatic plants, such as Eurasian watermilfoil, purple loosestrife, and curly-leaf pondweed, can thrive and interfere with ecological function, recreational use, and the aesthetics of waterbodies. Some types of blue-green algae contain neurotoxins that can be harmful to people or pets if consumed. Sediment is also a pollutant of concern. Sediment can carry phosphorus and other pollutants that bind to it. Sediment contributes to poor water clarity that affects vegetation growth and deposits onto stream and lake beds, impacting aquatic habitat.

Tools:

The BCWMC has developed a watershed-wide water quality model to identify areas of high phosphorus and sediment loading ("hot spots"). Pollutant hot spot mapping allows the BCWMC to focus capital improvements and other programs in areas where benefits can be maximized.

The BCWMC implements a monitoring program to collect water quality data for priority waterbodies. The BCWMC reviews its own data and data collected by partners to assess the condition of priority waterbodies and progress made towards BCWMC and/or State water quality goals.

Suggested Tables, Maps, or Figures:

- Map of impaired waters (and monitoring locations, if resolution allows)
- Table of impairments
- Table of state standards (sidebar)?
- Map of monitoring locations?

Measurable 10-year Goals:

1. Achieve applicable State water quality standards for eutrophication parameters (phosphorus, chlorophyll, and transparency) in priority waterbodies or maintain conditions waterbodies that currently meet standards for eutrophication parameters. Goal will Include table with values for priority waterbodies.

2. Maintain or improve the stream macroinvertebrate indices of biological integrity (M-IBI) in priority streams. Goal will Include table with values for priority streams.

3. Incorporate elements to improve in-stream habitat or address stream impairment stressors on all stream-focused BCWMC capital improvement projects.

4. Implement X projects over 10-years to reduce phosphorus loading to priority waterbodies from stormwater runoff by an estimated X lbs/year. Values TBD based on final implementation schedule.

5. Cooperate with member cities to implement projects or programs to reduce bacteria loading to Plymouth Creek and the North Branch of Bassett Creek.

6. Work with cities to reduce or maintain total phosphorus loading to the Mississippi River to 0.35 lb/acre/year. This is a requirement for cities/MS4s stemming from Lake Pepin/Upper Mississippi TMDL; included for PSC consideration.

Chloride Loading – High priority

Issue Statement: High chloride loading from overuse of winter deicers across the Bassett Creek watershed negatively impacts lake and stream water quality.

Narrative:

Chloride is toxic to aquatic life in high concentrations. The State has established surface water standards for chloride of 230 mg/L for chronic (long term) exposure and 860 mg/L for acute (shore term) exposure. Data collected from Twin Cities Metro Area (TCMA) lakes, wetlands, and streams has identified several waterbodies that exceed the State standard including the following BCWMC waterbodies:

- Crane Lake Data will be included as table with most recent WQ data.
- Parkers Lake
- Spring Lake
- Sweeney Lake
- Wirth Lake
- Bassett Creek (Main Stem)
- Plymouth Creek

The use of sodium chloride (salt) as a deicing agent for winter maintenance of impervious surfaces such as sidewalks, parking lots, and roads is a significant source of chloride loading in the Bassett Creek watershed. As it melts snow and ice, chloride dissolves into the melted water and is transported in runoff to lakes, streams and wetlands. Residential water softeners may also be a significant source of chloride. In the BCWMC, chloride from water softeners is transported downstream to municipal wastewater treatment plants (WWTPs) that discharge to the Mississippi River. However, typically wastewater treatment is not effective in removing chloride.

Chloride is extremely persistent in the environment and is considered a “permanent pollutant” because it dissolves in water and there is no practical way to remove it (include graphic showing pollution potential of a teaspoon of salt). Protecting surface waters from excess chloride loading is more effective than restoring impaired surface waters. While only some BCWMC priority waterbodies are currently listed as impaired due to chloride, the BCWMC considers all waterbodies at risk due to chloride loading from the highly impervious land use throughout the watershed.

Tools:

The BCWMC maintains a land use-based chloride loading map to inform project and program decisions. The BCWMC also collects chloride data as part of its water quality monitoring program. Chloride data for BCWMC priority waterbodies is presented in (reference table) but is not complete. The BCWMC has identified a need for additional data to characterize chloride sources and waterbody conditions.

Suggested Tables, Maps, or Figures:

- Table of available chloride data
- Map of chloride loading potential based on land use
- Graphic of pollution potential of one teaspoon of salt

Measurable Goals:

7. Analyze the condition and vulnerability of BCWMC priority waterbodies relative to chloride loading and impairment.

8. Reduce average chloride concentrations by 10% in Bassett Creek at the Watershed Outlet Monitoring Program (WOMP) station.

9. Develop chloride reduction strategies, policies, and requirements for design and maintenance practices in subwatersheds of chloride impaired lakes.

Streambank and Gully Erosion – Medium priority

Issue Statement: Excessive erosion along streambanks and gullies increases sediment and other pollutant loading and impacts stream geomorphology negatively impacting water quality, aquatic habitat, and climate resiliency.

Narrative:

Erosion of streambanks, gullies, ditches and other natural conveyances of runoff is a natural process. Landscape changes often associated with urbanization, however, can significantly accelerate this process. Increased impervious area generates larger runoff volumes and higher peak runoff rates leading to increased erosion. Development activity may result in the loss or degradation of vegetation that provides stability to natural runoff conveyances. More frequent and intense precipitation events resulting from climate can exacerbate channel erosion issues.

Streambank, ravine and gully erosion degrade the appearance, usability, ecological health, and water quality of streams. Possible impacts include, but are not limited to:

- Moving or widening channels can encroach on utilities, trails, roads, and structures resulting in increased maintenance and public health risk.
- Deposited sediment can limit the effectiveness of stormwater infrastructure to limit flood risk and improve water quality.
- Undercutting or sluffing of streambanks results in the loss of riparian canopy that provides pollutant filtration, habitat, and temperature-regulating benefits.
- Sedimentation of the channel bed degrades habitat for complex macroinvertebrate communities.
- Impacts to/loss of pool-riffle stream structure degrades fish and invertebrate habitat.

- Elevated in-stream sediment and pollutant concentrations stress fish populations.
- Increased pollutant loading contributes to downstream water quality issues or impairments.

Add detail based on results of stressor ID study when available.

The extent and severity of streambank, ravine, and gully erosion issues vary across the Bassett Creek watershed. The BCWMC has completed several streambank stabilization projects along various sections of priority streams to address known issues (reference accomplishments, past CIP projects). Opportunities for such projects are limited due to much of the streambanks being located on private land. Additional evaluation is needed to identify and prioritize streambank erosion issues to be addressed via BCWMC and partner programs and projects.

Tools:

The BCWMC monitors macroinvertebrates at several BCWMC priority stream locations to assess overall stream health (reference monitoring section, map of monitoring locations). The BCWMC's *Requirements for Development and Redevelopment Proposals* (Requirements document) requires vegetated buffers be maintained or established adjacent to priority streams for projects triggering BCWMC review (reference project review section and Requirements document).

Suggested Tables, Maps, or Figures:

- Macroinvertebrate IBI scores
- Map showing completed/planned stream restoration projects

Measurable Goals:

10. Assess the condition of streambanks along BCWMC priority streams and prioritize areas for action.

11. Reduce sediment loading to BCWMC priority streams by X tons/year through BCWMC and partner projects.

    Or

    Implement X projects to stabilize banks, limit erosion, and improve ecological health of XXXX feet of priority streams.

Lakeshore Erosion - Medium priority

Issue Statement: Erosion along lake shorelines degrades water quality and negatively impacts lake ecology.

Narrative:

Shoreline erosion occurs when land at the edge of a waterbody is eroded by wave action. Wave action is primarily driven by wind but can also be driven by powered watercraft. Shoreline erosion can result in the loss or degradation of habitat, increased sediment and nutrient loading to lakes, increased

maintenance of recreational facilities, and diminished access. Shoreline erosion problems may be increased by high water, frequent water level fluctuations, and the absence of lakeshore vegetation (i.e., buffers).

Shoreland ordinances adopted by BCWMC member cities include standards to minimize erosion and protect shoreline areas but are often only triggered by significant redevelopment activity. Eroded shorelines are often stabilized using "hard armoring" techniques like riprap that do not provide the water quality filtration or habitat benefits of vegetation or other soft-armoring stabilization methods.

The extent and severity of lakeshore erosion issues within the watershed is not comprehensively known and additional data is needed. Placeholder for locations/issues significant enough to be specifically identified in the Plan? The extent of lake shoreline within private property limits opportunities for BCWMC and its partners to implement practices to address shoreline erosion issues.

Tools:

The BCWMC's Requirements document requires vegetated buffers be maintained or established adjacent to priority lakes for projects triggering BCWMC review (reference project review section and requirements document).

Suggested Tables, Maps, or Figures:

- Map showing private/public shoreline ownership?

Measurable Goals:

12. Assess the condition of shoreline on BCWMC priority lakes and prioritize areas for action.

13. Reduce sediment loading to BCWMC priority streams by X tons/year through BCWMC and partner projects.

    Or

    Implement X projects to stabilize banks, limit erosion, and improve ecological health of XXXX feet of priority streams.

Aquatic Invasive Species (AIS) - Medium priority

Issue Statement: Aquatic invasive species (AIS) present in the Bassett Creek watershed negatively impact water quality, lake and stream ecology, and climate resiliency.

Narrative:

Aquatic invasive species (AIS) is a term given to invasive species that inhabit lakes, wetlands, rivers, or streams and overrun or inhibit the growth of native species. Aquatic invasive species pose a threat to natural resources and local economies that depend on them. The presence of AIS can impair the ecological, aesthetic, and recreational functions of aquatic, wetland, and shoreland areas.

Several waterbodies within the Bassett Creek watershed are known to contain AIS populations (reference table). Some AIS contribute directly to nutrient loading in lakes and streams (e.g., curlyleaf pondweed, carp). Other AIS impact lake ecology by creating less diverse habitats that support fewer species and are less resilient to climate extremes. AIS of particular concern in the Bassett Creek watershed include:

- **Curlyleaf Pondweed** *(Potamogeton crispus)*: This submersed aquatic plant grows vigorously during early spring, outcompeting native species for nutrients. After curlyleaf pondweed dies out in early to mid-summer, decay of the plant releases nutrients and consumes oxygen, creating conditions that can increase sediment release of phosphorus. This process may result in algal blooms during the peak of the recreational use season, which further inhibit native macrophytes by reducing water clarity and blocking sunlight necessary for growth.

- **Zebra mussels** (*Dreissena polymorpha*): Zebra mussels have not been identified in BCWMC waterbodies but are present in several surrounding watersheds. Their huge populations attach to hard surfaces, clog intake pipes for water treatment and power generating plants, encrust boat motors and hulls, may greatly reduce lakefront property values, and their sharp shells cut swimmers feet. Ecologically, they filter enormous quantities of microscopic algae, alter energy flow through aquatic systems, smother and cause extinctions of native bivalves, and promote toxic bluegreen algal blooms through their selective filtration.

- **Common carp**: Carp feeding techniques disrupt shallow-rooted plants, which can reduce water clarity and possibly release phosphorus bound in sediment, leading to increased algal blooms and a decline in native aquatic plants. Common carp are also present in the Mississippi River. Common carp are typically spread between lakes by the accidental inclusion and later release of live bait but can also migrate through natural or built channels as adults.

- **Starry stonewort** (*Nitellopsis obtusa*): Starry stonewort is an invasive green alga that can grow tall and dense, forming mats on the surface that interfere with recreation and potentially displace native plant species (MAISRC, 2017c). The spread of starry stonewort is estimated to be through human movement of fragments from lake to lake. It was first recorded in Minnesota in 2015 and by 2017 was found in 11 lakes.

- **Eurasian watermilfoil** (*Myriophyllum spicatum*): This invasive aquatic plant that reproduces from fragments and seeds. Any fragment of the plant stem that includes a node (whorl of leaves) can produce a new viable plant. Eurasian watermilfoil (EWM) stores carbohydrates which enables the plant to survive over the winter and outcompete native species in the spring. The plants often form a canopy throughout the summer that shades out native plants. EWM is spread most commonly by inadvertent transport by boaters. EWM's fast growth rate, ability to spread rapidly by fragmentation, and its ability to effectively block out sunlight needed for native plant growth often result in monotypic stands. Monotypic stands of EWM provide only a single habitat and threaten the integrity of aquatic communities, including disrupting predator-prey relationships. Dense stands of EWM also inhibit recreational uses like swimming, boating,

and fishing. Cycling of nutrients from sediments to the water column by EWM may lead to deteriorating water quality and algae blooms of infested lakes.

Based on their potential environmental impact and the difficulty of eradication once a waterbody is infested, the BCWMC seeks to prevent the spread of AIS and manage the AIS already present. The BCWMC partners with the Minnesota Department of Natural Resources (MDNR) in AIS management efforts. The MDNR administers a statewide Invasive Species Program. More information is available at: Aquatic Invasive Species - Programs, Reports, and Partners | Minnesota DNR (state.mn.us)

Tools:

The BCWMC developed a *AIS Rapid Response Plan* (BCWMC, 2018) addressing seven BCWMC lakes. The plan seeks to reduce the potential establishment, spread, and harmful impacts of a species when new infestations are detected through coordinated containment and suppression/eradication. The BCWMC monitors for AIS as part of its water quality monitoring program (reference monitoring section).

Suggested Tables, Maps, or Figures:

- Table of waterbodies and AIS present
- Map of known AIS

Measurable Goals:

14. Minimize the spread of AIS in BCWMC priority waterbodies through implementation of the *BCWMC AIS Rapid Response Plan*.

15. Maintain a current evaluation the presence and extent of critical AIS species in BCWMC priority waterbodies.

Wetland Health and Restoration - Medium priority

Issue Statement: The health of wetlands within the Bassett Creek watershed has been impacted by development of the landscape.

Narrative:

Healthy wetlands are critical components of the hydrologic system and positively affect soil systems, groundwater and surface water quality and quantity, wildlife, fisheries, aesthetics, and recreation. Beneficial functions of wetlands include (but are not limited to):

- Maintaining stream baseflow.
- Recharging groundwater.
- Providing flood storage and attenuating peak flows.
- Providing erosion protection.

- Physically filtering particulates (and pollutants attached to particulates) from runoff.
- Providing wildlife habitat.

Healthy wetland functions also contribute to the overall resiliency of the landscape to climate extremes. The ecological benefits of wetland communities are increased when they are physically or functionally connected with other native communities.

Many wetlands within the Bassett Creek watershed have been impacted development and other human activities including draining, filling, altering outlet elevations, reducing drainage area, removing vegetation for access or aesthetics, and diverting stormwater to wetlands. These impacts can diminish the beneficial hydrologic functions of wetlands and tip the ecological balance to benefit invasive plant species, further reducing the benefits to water quality, wildlife, fisheries, amphibians, and humans.

The establishment of vegetated buffers is a common practice to protect existing wetlands. There are also potential opportunities for the BCWMC and its partners to implement additional protection and restoration efforts.

Tools:

BCWMC member cities maintain inventories of wetlands and classify wetlands according to functions and values (reference map). The BCWMC has identified specific wetlands for prioritized protection and potential restoration opportunities based on classification, connectedness to priority waters, and size. Note that MN Rules 8410 require Plan to identify priority wetland areas.

The BCWMC's Requirements document requires vegetated buffers be maintained or established adjacent to wetlands for projects triggering BCWMC review (reference project review section and requirements document).

The BCWMC administers the Wetland Conservation Act (WCA) for the cities of St. Louis Park, Robbinsdale, and Medicine Lake. Other member cities administer WCA within their cities. The WCA provides basic protections to minimize wetland impacts and requires mitigation for those impacts.

Suggested Tables, Maps, or Figures:

- Map showing wetland classifications and priority areas (to be determined)

Measurable Goals:

16. Incorporate elements to restore or enhance wetland health as part of adjacent water quality and/or flood risk reduction projects.

17. Maintain a list of wetland areas prioritized for potential restoration or enhancement opportunities.

Groundwater – Surface Water Interaction - Medium priority

Issue Statement: The flow of water between groundwater and lakes, streams, and wetlands complicates the protection, restoration, and responsible management of natural resources.

Narrative:

Surface water and groundwater are interdependent. Runoff and snowmelt that infiltrate the ground surface may ultimately discharge to streams, lakes, and wetlands or percolate to deeper aquifers. Groundwater levels higher or lower than adjacent surface water features (i.e., gradient) can result in flow to or from those features, respectively. The amount of groundwater-surface water interaction depends on soil and bedrock characteristics and gradient. The temporal and spatial variability of these factors make it difficult to quantify the exchange of water between surface waters and the groundwater.

The interaction of groundwater and surface water can negatively impact both resources. Declines in groundwater levels may result in decreased baseflow to streams, which can in turn result in decreased water quality and ecosystem function. Lower water levels in lakes may limit recreational use, reduce habitat areas, and increase growth of aquatic plants including invasive species. Development of the landscape replaces pervious surfaces with impervious surfaces, limiting recharge to groundwater from runoff. In addition, infiltration of stormwater runoff may carry pollutants that can contaminate vulnerable groundwater supplies (reference groundwater quality issue section).

Interactions between groundwater and surface water resources may be exacerbated by changes in Minnesota's climate. Prolonged periods of drought may result in increase groundwater use, lowering aquifer levels. Extended we periods, conversely, may elevate groundwater levels and alter flow gradients in the surficial aquifer.

Tools:

The BCWMC's Requirements document details circumstances where stormwater infiltration is limited or prohibited for the protection of groundwater resources (consisted with the MPCA Construction Stormwater General Permit) (reference project review section and Requirements document).

Suggested Tables, Maps, or Figures:

- Possible map of groundwater depth? (not currently referenced)

Measurable Goals:

18. Identify areas of significant groundwater-surface water interaction within the BCWMC.

    Or

    Evaluate the groundwater-surface water interaction characteristics of BCWMC priority waterbodies.

Degradation of Riparian Areas - Low priority

Issue Statement: Degraded riparian areas allow excess pollutant loading to lakes and streams and contribute to stream impairments. Impact on stream impairments to be revised following stressor ID study.

Narrative:

Healthy riparian areas provide water quality, hydrologic, and habitat benefits. Vegetation and organic debris present in healthy riparian areas provide soil stability and reduce erosion of lakeshore and streambank areas (add cross reference to issues). Vegetation obstructs the flow of runoff, thereby decreasing water velocities, allowing infiltration, and further reducing the erosion potential of stormwater runoff. Leaf litter from vegetation can also increase the organic content of the soil and increase adsorption and infiltration. Riparian vegetation scatters sunlight and provides shade, reducing water temperature in the summer. Healthy riparian areas also have habitat benefits, providing food and shelter for native wildlife, fish, and amphibians. These areas provide separation and interspersion areas for animals, to reduce competition and maintain populations.

The benefits of healthy riparian areas increase with width and species complexity (reference inset figure). Development of the watershed has disturbed and degraded much of the riparian area along streams and lakes. Diverse riparian vegetation has been removed, thinned, or replaced for residential lawns, recreational access, and aesthetic reasons. Increased stormwater runoff volumes and peak flow rates can also overwhelm established riparian ecosystems leading to their degradation. The amount of riparian area located on private property limits the BCWMC's and its partners' understanding of the scope and severity of degraded riparian areas and also limits opportunities for the BCWMC and its partners to implement improvements (reference land use map).

Tools:

The BCWMC's Requirements document requires vegetated buffers be maintained or established adjacent to priority streams and lakes for projects triggering BCWMC review (reference project review section and requirements document).

Suggested Tables, Maps, or Figures:

- Map showing private/public shoreline ownership
- Inset graphic showing benefits achieved as a function of riparian buffer width (from 2015 Plan development)

Measurable Goals:

19. Incorporate elements to improve riparian areas on all stream-focused and lake-adjacent BCWMC capital improvement projects.

20. Assess the condition of riparian areas on BCWMC priority lakes and prioritize areas for action.

Degradation of Upland Areas – Low Priority

Issue Statement: Natural upland areas may be threatened by development pressure and negative impacts from climate change.

Narrative:

Natural upland areas (i.e., not wetland or shoreline areas) are present throughout the watershed as part of city and county parks and other green space (reference land use map). These areas are enjoyed by watershed residents and visitors for recreational and aesthetic viewing purposes. These areas provide varied environmental benefits from mature vegetation and permeable land that promote infiltration, mitigate urban heat island effects, and provide habitat.

Some natural areas within the BCWMC have been classified as particularly high value. The Minnesota Biological Survey (MBS) classified an area south of Wirth Lake as an area of moderate biodiversity (reference map) due to the presence of rare species and moderately disturbed native plant communities. Natural upland areas provide habitat benefits within a fully developed landscape. The MDNR defined a portion of the BCWMC as a "ecological corridor" based on the connection of habitat areas (reference map).

Protection of natural upland areas is necessary to preserve the recreational, aesthetic, and ecological benefits they provide. Conversion of upland natural areas to other land uses may result in permanent loss. Small losses may result in greater cumulative impacts due to the loss of connectivity. Changes in Minnesota's climate may also negatively impact natural upland areas as native species face pressure from invasive species, extended wet and dry periods, and temperature pressure.

Tools:

None noted.

Suggested Tables, Maps, or Figures:

- Map of land use
- Map showing critical corridor and areas of biodiversity significance

Measurable Goals:

21. Promote the protection and enhancement of natural upland areas through education and outreach.

Groundwater Quality – Low Priority

Issue Statement: Groundwater quality impacts public health as a source of drinking water and may be threatened by infiltration of stormwater and associated pollutants.

Narrative:

Groundwater is the primary source of drinking water in Minnesota. The BCWMC member cities of Plymouth, Robbinsdale, Minnetonka, St. Louis Park, and Medicine Lake obtain municipal drinking water supplies from groundwater aquifers while a small number of residents obtain drinking water from private wells. Maintaining clean, safe groundwater supplies by protecting groundwater from contamination is critical to public health. Once contaminated, groundwater clean-up is expensive and technically complex, even when feasible.

Groundwater quality may be compromised by varied surface and near-surface activities and sources, including commercial and industrial waste disposal, landfills, leaking underground storage tanks, subsurface sewage treatment systems (SSTS), mining operations, accidental spills, feedlots, and fertilizer/pesticide applications. Infiltration of stormwater runoff can also transport chloride and other pollutants into groundwater supplies.

To limit groundwater contamination, the Minnesota Department of Health (MDH) works with public water suppliers to define wellhead protection areas and drinking water supply management areas (DWSMAs) subject to additional protections (see map). Much of the western half of the Bassett Creek watershed is located within DWSMAs of moderate vulnerability. The MPCA limits or prohibits infiltration of stormwater within portions of some DWSMAs (depending on vulnerability), in areas of high groundwater, areas of high infiltration rates, and in karst areas. Stormwater infiltration restrictions can limit treatment opportunities for development and redevelopment projects.

Tools:

The BCWMC's Requirements document details conditions in which infiltration of stormwater is limited or prohibited for the protection of groundwater resources (consisted with the MPCA Construction Stormwater General Permit) (reference project review section and Requirements document).

Suggested Tables, Maps, or Figures:

- Map showing wellhead protection areas and DWMSAs

Measurable Goals:

22. Minimize the potential for contamination of groundwater resources within the BCWMC.