4 Challenges and Goals

Sexton-Kilfoil Drain
Beech Daly Road, North of Goddard

Chapter Contents

Through the review of existing data and supplemental field inventory results, the watershed committee developed an understanding of the characteristics and condition of the watershed. With this understanding and knowledge, the ECIC reviewed and developed designated and desired uses for the watershed. After identifying the applicable designated and desired uses for the watershed, the known and suspected causes of impairment and/or threats to these uses were identified. The ECIC then developed goals and objectives for the watershed that are based on restoring and protecting the designated and desired uses and address the priority pollutants, sources, and causes.

4.1 Designated Uses in the Ecorse Creek Watershed

Per the Michigan Department of Environmental Quality, water quality is primarily measured by whether the water body meets the designated uses as defined by the State of Michigan. In Michigan, the goal is to have all waters of the state meet the designated uses that apply to that body of water.

All surface waters of the State of Michigan are designated for and shall be protected for all of the following uses. Those that are applicable to the Ecorse Creek Watershed are in bold:

Designated uses are recognized uses of water established by state and federal water quality programs.

1. **Agriculture**
2. **Industrial water supply**
3. Public water supply
4. Navigation
5. **Warmwater fishery**
6. **Other indigenous aquatic life and wildlife**
7. **Partial body contact recreation**
8. **Total body contact recreation between May 1 and October 31**
9. Coldwater fishery

The following definitions[1] apply:

1. Agriculture - a use of water for agricultural purposes, including livestock watering, irrigation, and crop spraying.
2. Industrial water supply - a water source intended for use in commercial or industrial applications or for noncontact food processing.
3. Public water supply - a surface raw water source that, after conventional treatment, provides a source of safe water for various uses, including human consumption, food processing, cooking, and as a liquid ingredient in foods and beverages.
4. Navigation – a water source suitable for navigation
5. Warmwater fishery - a waterbody that contains fish species which thrive in relatively warm water.
6. Other indigenous aquatic life and wildlife - the use of the surface waters of the state by fish, other aquatic life, and wildlife for any life history stage or activity and the protection of fish for human consumption.
7. Partial body contact recreation - any activities normally involving direct contact of some part of the body with water, but not normally involving immersion of the head or ingesting water, including fishing, wading, hunting, and dry boating.
8. Total body contact recreation between May 1 and October 31 - any activities normally involving direct contact with water to the point of complete submergence, particularly immersion of the head, with considerable risk of ingesting water, including swimming.
9. Coldwater fishery - waterbodies that contain fish species which thrive in relatively cold water.

Public water supply is not applicable since communities in the Ecorse Creek Watershed do not use local surface water as a source for drinking water. Navigation is also not applicable, as the drains and streams within the Ecorse Creek Watershed are not suitable for any significant navigation, with the possible exception of the extreme downstream segment of the Ecorse River, from Biddle Avenue east to the Detroit River. Coldwater fishery is not supported in the Ecorse Creek Watershed and the Ecorse Creek is not designated as a Michigan trout stream (MDNR Fisheries Division).

[1] Administrative Rules Part 4 Water Quality Standards, MDEQ http://www.deq.state.mi.us/documents/ deq-swq-part31-part4.doc

State and local monitoring of the condition of the watershed have determined that some of the designated uses are threatened or impaired. Impaired uses are those uses that are not being met, while threatened uses are those that currently meet water quality standards but might not in the future. Table 4-1 summarizes the designated uses as impaired, threatened, or not applicable. Indigenous aquatic life and wildlife and total body contact recreation uses are impaired within the watershed. The TMDL for Ecorse Creek states that the Ecorse Creek Watershed is not meeting designated uses for other indigenous aquatic life and wildlife, as required. The Watershed is also listed on the Michigan 303(d) list (non-attainment list) for untreated sewage discharges and pathogens. These are likely to be addressed in a separate TMDL at a future date. Historic data reveals very high levels of fecal coliform bacteria. More recent data from the Wayne County Health Department (2000, 2001) indicates that E. coli levels are in excess of state water quality standards for total body contact. This more recent sampling, if representative of current conditions (now that CSOs are eliminated) indicates that partial body contact standards are being met. The warmwater fishery use is threatened due to flashy hydrology, lack of habitat, high suspended solids and sediment deposition. Flashy hydrology and sediment loads also potentially threaten use of the water for agriculture and industrial water.

Table 4-1
Designated Uses in Order of Priority

Designated Use	Impaired	Threatened	N/A	Notes
Other Indigenous Aquatic Life and Wildlife	X			
Partial Body Contact Recreation		X		
Warmwater Fishery		X		
Total Body Contact Recreation (between May and Oct)	X			
Agriculture		*		*Potentially threatened by flashy hydrology and sediment loads, but not likely applicable
Industrial Water Supply		*		*Potentially threatened by flashy hydrology and sediment loads, but not likely applicable
Public Water Supply at Point of Intake			X	
Navigation			X	
Coldwater Fishery			X	

4.2 Desired Uses in the Ecorse Creek Watershed

Desired uses are how communities may want to use the watershed or how they may want it to look and function. The Ecorse Creek Watershed Inter-Municipality Committee (ECIC) members identified desired uses of the watershed based on factors important to the watershed community. Desired uses include restoring and/or protecting all of the applicable designated uses as described above, as well as those presented below. Desired uses may include current or potential natural resource concerns, such as loss of farmland and open space, or preserving unique habitat for wildlife. Many desired uses may not have a direct impact on water quality, but are still included in the watershed planning process.

A **desired use** is how you might want to use your watershed or how you might want it to look.

ECIC members were asked to complete a survey identifying their community's desired uses for the watershed. These survey results were then compiled into a preliminary list and categorized as either impaired or threatened. Uses were determined to be impaired or threatened based on studies previously published by the Michigan Departments of Natural Resources and Environmental Quality or other agencies[2,3,4,5,6,7,8] and upon measurements and observations made by ASTI, OHM, and/or Wade-Trim during their 2004 field investigations. Desired uses that were indicated as neither impaired nor threatened were categorized as unknown. Once compiled, the desired uses were brought before the ECIC members for discussion, finalization, and prioritization. Table 4-2 summarizes the desired uses identified and lists them in order of priority.

[2] Wade-Trim. 1974. Facility Planning Study for Pollution Abatement of Ecorse Creek.

[3] Goodwin, K. 2002. Biological Assessment of the Detroit River Tributaries, Including the Ecorse River, Frank and Poet Drain, and Brownstown Creek Watersheds, Wayne County, Michigan. July-September 2001. Michigan Department of Environmental Quality, Water Division. MDEQ Report #MI/DEQ/SWQ-02/020.

[4] Goodwin, K. 2003. Total Maximum Daily Load for Biota for the Ecorse River Watershed, Wayne County, Michigan. Michigan Department of Environmental Quality, Water Division. July 7, 2003.

[5] Jones, R. 1991. A Biological Survey of County Drains in the Vicinity of Detroit Metropolitan Airport, Wayne County, Michigan, July 12-13, 1990. Michigan Department of Natural Resources, MDEQ Report #MI/DNR/SWQ-91/059.

[6] Oemke, M. 1997. A Survey of the Biological Communities in the Sexton-Kilfoil Drain, Wayne County, Michigan, June 15, 1996. Michigan Department of Environmental Quality, MDEQ Report #MI/DEQ/SWQ-97/066.

[7] Woods, R. and G. Boersen. 1980. Ecorse River Storm Survey: Inter-Office Communication to Paul Zugger, April 14, 1980. Michigan Department of Natural Resources, Environmental Services Division.

[8] WCDOE (Wayne County Department of Environment). 2000/2001. Water Quality Results for Natural Bathing/Recreational Areas. *E. coli* sampling results for Ecorse Creek, June through August 2000 & 2001 spreadsheets. Wayne County Department of Environment, Division of Environmental Health.

Table 4-2
Desired Uses in Order of Priority

Desired Use	Impaired	Threatened
Flood Control	X	
Aesthetics		X
Open Space Preservation		X
Greenway Preservation		X
Wetland Preservation		X
Recreational Areas		X*
Native Vegetation/Unique Habitat/Natural Buffers		X

**Note: Designated as threatened because more areas are desired*

1. **Flood Control**
   Flooding is a primary concern for the communities and entities in the watershed. Over the years, flooding and sewage backup has occurred in homes and businesses during heavy rainfalls, causing significant property damage. There is limited hydraulic capacity within many of the drains, and flooding occurs when large rain events (and sometimes snow melts) occur. Chapter 2 documents the past flooding events. The Ecorse Creek Watershed Committee and their constituents are concerned and interested in preventing flooding.

2. **Aesthetics**
   The ECIC desires that the streams, drains, and riparian corridors provide aesthetic beauty, and encourage people to utilize the riparian areas for recreation as well as maintain property values. A high aesthetic quality increases the general quality of life in the region.

3. **Open Space Preservation**
   Currently, there is approximately 23% open space in the watershed. However, based on SEMCOG Future Land Use projections, by 2030 it is predicted there will be less than 2% open space. Open space is important for a variety of reasons, including habitat, increased potential for storm water infiltration, pollution prevention, aesthetics, and recreational opportunities. Impervious development and associated urban runoff is one of the greatest threats to the watershed. Preserving existing open space will be a critical factor in the health of the watershed.

4. **Greenway Preservation**
   Greenways can be described as connections between people and places to protect and enhance natural resources while providing opportunities for non-motorized recreation and an increased quality of life. Greenways protect open space that is vital to the health of the watershed, provide habitat corridors for wildlife, and have also been documented to enhance property values.

The Downriver Linked Greenways Initiative is already underway to connect the Downriver communities through a network of trails and greenways. Implementing and expanding this initiative in the Ecorse Creek Watershed is desired by the ECIC.

5. **Wetland Preservation**
   Wetlands provide habitat for wildlife, absorption of pollutants, and flood control. As communities develop, wetland areas generally are removed or reduced. Mitigated wetlands often fail. The increase of urban runoff often overburdens remaining wetlands and greatly degrades the quality of the wetland. Preserving existing, natural wetlands will help to maintain the existing benefits wetlands provide, such as enhancing water quality by filtering pollutants and to assist in flood control.

6. **Recreational Areas**
   Currently, there are limited recreation areas in the watershed, particularly along the primary water courses. The ECIC desires passive parks and trails along the riparian corridors for recreational opportunities, as well as to maintain and enhance property values. There also is the potential opportunity for recreation on some of the streams and creeks as well, with activities such as kayaking, fishing, wildlife viewing, and photography. Bringing people closer to the streams and water bodies can also raise the level of awareness and concern for watershed issues.

7. **Native Vegetation/Unique Habitat/Natural Buffers**
   Native vegetation and naturalization of urban areas will help to prevent pollution from reaching the water courses. Native vegetation generally has deeper root systems than non-native species, which allows for greater filtration of pollutants and enhances the amount of storm water that is infiltrated. Native vegetation is beneficial both at the stream corridor and throughout the watershed. Native plants also can improve the aesthetic quality of the area and reduce maintenance.

   Providing unique habitats can improve stream health and invite wildlife not normally seen in an urban environment. Natural buffers allow for storm water infiltration as well as enhanced pollution removal by vegetation from storm water runoff. Natural buffers also slow down storm water runoff velocities, which is important in preventing stream bank erosion.

4.3 Pollutants and Threats to Watershed Health, and their Sources and Causes

After identifying the applicable designated and desired uses for the watershed, the known and suspected causes of impairment and/or threats to these uses were identified. These causes include issues that (may) contribute to the problem.

4.3.1 Pollutants

Pollutants are defined as any substance of such character in such quantities that when it reaches a body of water, soil, or air, it contributes to the degradation or impairment of their usefulness or renders them offensive. Pollutants not only include the traditional types of pollutants – such as sediment and nutrients – but also include such things as increased temperature and increased hydrologic flow[9]. Pollutants and issues were identified for each impaired or threatened use. At a regular ECIC meeting, the committee discussed and prioritized the pollutants for each use. Table 4-3 summarizes the designated and desired uses that are impaired or threatened in the Ecorse Creek Watershed, and the associated pollutants/issues that are known (K) or suspected (S).

Table 4-3
Ecorse Creek Watershed Uses and Pollutants/Issues

Impaired Uses	**Known and Suspected Pollutants/Issues** (in order of priority for each use)
Flood Control	Lack of stable flow/excessive surface runoff (K) Lack of hydraulic capacity (Sedimentation) (K) Inadequate protective measures (K)
Total Body Contact Recreation	E. coli and other pathogens (K) Lack of stable flow (K)
Other indigenous aquatic life/wildlife	Lack of stable flow (K) Sedimentation (K) Low dissolved oxygen (K) Nutrients (K) Lack of habitat (K)
Threatened Uses	**Known and Suspected Pollutants/Issues**
Partial Body Contact Recreation	E. coli and other pathogens (K) Lack of stable flow (K)
Open space preservation Wetland preservation Greenway preservation Native Vegetation/Unique Habitat/Natural Buffers	Inadequate protective measures (K)
Warm Water Fishery	Lack of stable flow (K) Sedimentation (K) Low dissolved oxygen (K) Nutrients (K) Lack of habitat (K)

Note: (K) refers to known pollutants and (S) refers to suspected pollutants

[9] Developing a Watershed Management Plan for Water Quality, MDEQ

The Ecorse Creek Watershed is over 75% developed and includes residential, industrial and commercial land uses. This urban landscape provides many challenges to improving the health of the creek and watershed. As previously noted, urban storm water runoff carries pollutants that degrade the water quality. The following is a description of known and suspected pollutants and causes of the problems within the Ecorse Creek Watershed.

Known Pollutants

Lack of stable flow/excessive surface runoff

Natural base flow (dry weather base flow) in streams is primarily fed by groundwater. After a storm event, rainwater should infiltrate to the groundwater table, which in turn provides constant flow to the streams. Once urbanization occurs, "urban runoff" results as rainwater infiltration is impeded by impervious surfaces. Urban runoff is able to quickly travel to drains and streams, resulting in higher (flashy) peak flows after storm events. In addition, the lack of infiltration results in lower groundwater recharge, and lower resulting stream base flows during dry weather as less groundwater is available to provide a constant source of flow. Higher peak flows can cause stream bank erosion and flooding while lower dry weather flows make it difficult for some aquatic species to survive.

Excessive surface runoff

As described above, the large increase in impervious surface and loss of open space or "green" space within the watershed has greatly reduced the amount of precipitation that is able to infiltrate to the groundwater table. Instead, this water becomes surface runoff and quickly travels to the stream. This results in both higher peak flows and a greater volume of runoff. Excessive surface runoff can cause stream bank erosion, flooding, and an increase in pollutants to the stream.

Sediment

Excessive peak flows can result in stream bank erosion, which in turn result in suspended solids and sediment deposition. Sediment in streams may also be a result of sediment being carried to the stream via urban runoff. As storm water travels across impervious surfaces, it is able to carry pollutants, including sediment. In addition, disturbed soils due to activities such as construction can contribute to the problem.

Suspended solids can result in turbidity, which is harmful to aquatic life. Waters can become warmer as suspended solids absorb heat from sunlight. Less dissolved oxygen can be retained by the warmer waters, which causes oxygen levels to fall. Photosynthesis decreases because less light penetrates the water. Since photosynthesis produces oxygen as a byproduct, this sediment induced drop in photosynthesis also can contribute to lower oxygen levels. Sediment also can clog the gills of fish and settle and deposit in areas necessary for aquatic insects and fish spawning.

Sediment deposition also changes the natural shape of the channel and can reduce the capacity of the stream. This, in turn, can contribute to flooding problems.

Lack of habitat

A lack of habitat results in a poor diversity of aquatic species. Poor habitat can be caused by sediment as it is deposited on substrate necessary for aquatic insects. The absence or downsizing of riparian buffer zones is the biggest cause of lack of habitat. Riparian buffer zones provide shade necessary for preventing heating of stream water. Riparian vegetation also results in woody debris that creates protection for aquatic life. In addition, urban runoff results in a loss of the pool and riffle structure normally found in natural streams. Pools are areas of relatively deep, slow moving water and are important in providing deeper areas for aquatic species. Riffles are relatively shallow areas of fast moving water and are important for aerating the water.

Low dissolved oxygen
Sufficient dissolved oxygen levels are necessary for the survival of aquatic species. As the levels of dissolved oxygen decrease, the diversity of aquatic life also decreases, as sensitive species are no longer able to survive. Oxygen in the water is used as microorganisms break down organic and/or chemical pollutants (biological oxygen demand) and/or through chemical oxidation (chemical oxygen demand), resulting in less oxygen available for aquatic life. These biological pollutants typically include natural sources (leaf debris, grass, animal wastes) and algae blooms. As noted above, excess suspended solids can absorb heat from sunlight and reduce photosynthesis, which also causes oxygen levels to decrease. Urban runoff, which may be heated as it travels across impervious surfaces, also can contribute thermal pollution (warming) of the streams, which decreases dissolved oxygen levels.

Nutrients
Nutrients are considered a known pollutant because it is highly likely that nutrients are discharged to receiving waters based on studies conducted in similar watersheds. However, the severity of nutrients as a pollutant in the Ecorse Creek Watershed is unknown as there is insufficient data to prove or disprove that nutrients are problematic in the Ecorse Creek Watershed. Nutrients can come from several sources within the watershed. Excess fertilizer runoff, animal wastes, failing septic systems, and even permitted discharges can contribute to excessive nutrients in the streams. Fertilizer used by residents, businesses, and agriculture can be carried to the streams by storm water, both in terms of soluble nutrients and attached to sediment (as suspended solids) in the runoff. Animal wastes also contribute to nutrient loading. Excessive geese populations along impoundments that are mowed to the banks can contribute significant loadings. Septic systems that are not maintained or inspected regularly and properly can result in the migration of human wastes that contain nutrients. Permitted discharges, such as those discharges from domestic and/or industrial wastewater treatment plants, also can be a source for nutrients. High nutrient levels result in excessive growth of aquatic plants (often nuisance plants) and algae. Nuisance plants are able to out compete plants that may be more valuable for habitat and water quality. Excessive plant and algae growth also results in lower dissolved oxygen levels when they die and are degraded. The lowered oxygen levels can adversely affect aquatic life.

E. coli, other pathogens
E. coli contamination can harm wildlife as well as impair the use of the creeks for total and partial body contact uses. Sources of E. coli can include urban storm water, illicit connections, failing septic systems, and animal wastes. Urban storm water can collect pathogens from sources such as animal waste as it travels across impervious surfaces. Failing septic systems can leach contaminated water that may find its way to streams, contributing E. coli and other pathogens. Illicit connections in which sanitary sewers carrying human waste are improperly discharged to the storm water system can also be a source for E. coli and pathogen contamination.

Inadequate Protective Measures
Development and land use projections (SEMCOG 2030) indicate that the majority of open space in the Ecorse Creek Watershed will be lost to development. Protection by local regulations can help reduce the amount of open space, natural features, wetlands, greenways, agricultural land, and natural stream buffers that is lost to development.

4.4 Sources and Causes of Pollutants

Sources are where the pollutants originate.

Causes are the conditions that are creating the source of the pollutant.

In order to determine how best to reduce the identified pollutants, the sources contributing those pollutants must be identified. Sources are simply where the pollutants originate. After sources are identified, the next step is to identify possible causes for the pollutants. The cause is the condition that is creating the source of the pollutant. For example, if sediment (pollutant) is resulting from stream bank erosion (source), the cause of the streambank erosion may be unrestricted livestock access[10].

Sources were determined using a variety of methods including a literature review, field observations, and input from the ECIC. Sources were prioritized for each pollutant and causes were prioritized for each source. The committee discussed and prioritized sources and causes at a regular ECIC meeting based on the committee's experience and knowledge of the watershed.

Table 4-4 summarizes the sources and causes of the pollution and problems in the watershed. The table provides more specific information to help explain the factors that face the communities and entities in the watershed. Sources and causes have been categorized as either known or suspected, depending on available supporting data.

[10] Ibid

Table 4-4
Ecorse Creek Watershed Pollutants/Issues, Sources and Causes

Known and Suspected Pollutants/Issues	**Known and Suspected Sources** (in order of priority for each pollutant)	**Known and Suspected Causes** (in order of priority for each source)	**Affected Uses**
Lack of stable flow/excessive surface runoff (K)	Urban storm water (K)	Impervious surfaces (K) Development pre-dating storm water management requirements (K) Inadequate storm water management (K) Loss of floodplain (K) Loss of wetlands (K) Limited capacity of drains (K)	Flood Control Warm Water Fishery Other Indigenous Aquatic Life/Wildlife
	Reduced base flow/groundwater recharge (K)	Impervious surfaces (K) Development pre-dating storm water management requirements (K) Loss of wetlands (K) Inadequate storm water management (K) Loss of floodplain (K)	
Lack of habitat (K)	Sedimentation (K) Erosion (K)	Unstable hydrology/excessive runoff (K) Removal of streambank vegetation (K) Inadequate soil erosion/sedimentation controls (K)	Warm Water Fishery Other Indigenous Aquatic Life/Wildlife
	Reduced base flow/groundwater recharge (K)	Impervious surfaces (K) Development pre-dating storm water management requirements (K) Loss of wetlands (K) Inadequate storm water management (K) Loss of floodplain (K)	
	Limited woody debris (K)	Removal of forested riparian buffer (K) Inadequate protective ordinances (S)	

Note: (K) refers to known pollutants/sources/causes and (S) refers to suspected pollutants/sources/causes

Table 4-4 (cont'd)

Ecorse Creek Watershed Pollutants/Issues. Sources and Causes

Known and Suspected Pollutants/Issues	**Known and Suspected Sources** (in order of priority for each pollutant)	**Known and Suspected Causes** (in order of priority for each source)	**Affected Uses**
Nutrients (K)	Illicit connections (K)	Aging development sanitary sewer infrastructure (K) Insufficient sanitary sewer infrastructure maintenance (S)	Other Indigenous Aquatic Life/Wildlife
	Fertilizer use (S)	Improper usage of fertilizers (S)	
	Permitted discharges (current NPDES Permits) (K)	-	
	Animal waste (S)	Improper management of animal waste (S) Excessive geese, improper management (S)	
	Failing septic systems (S)	Insufficient septic system maintenance (S) Poor soils (K) Inadequate ordinances (S)	
Low dissolved oxygen (K)	Natural sources (leaves, grass, animal wastes) (S)	Inadequate storm water management (K) Inadequate soil erosion/sedimentation controls (K)	Warm Water Fishery Other Indigenous Aquatic Life/Wildlife
	Sediment oxygen demand (S)	Unstable hydrology/excessive runoff (K) Removal of streambank vegetation (K) Inadequate soil erosion/sedimentation controls (K)	
	Elevated water temperature (K)	Limited riparian cover (K) Impervious surfaces (K) Detention basins (S)	

Note: (K) refers to known pollutants/sources/causes and (S) refers to suspected pollutants/sources/causes

Table 4-4 (cont'd)

Ecorse Creek Watershed Pollutants/Issues, Sources and Causes

Known and Suspected Pollutants/Issues	**Known and Suspected Sources** (in order of priority for each pollutant)	**Known and Suspected Causes** (in order of priority for each source)	**Affected Uses**
E. coli, other pathogens (K)	Animal wastes (S)	Improper management of animal waste (S) Excessive geese, improper management (S)	Total Body Contact Recreation Partial Body Contact Recreation
	Illicit connections (K)	Aging development sanitary sewer infrastructure (K) Insufficient sanitary sewer infrastructure maintenance (S)	
	Urban storm water (S)	Impervious surfaces (K) Development pre-dating storm water management requirements (K) Inadequate storm water management (K) Loss of floodplain (K) Loss of wetlands (K) Limited capacity of drains (K)	
	Failing septic systems (S)	Insufficient septic system maintenance (S) Poor soils (K) Insufficient ordinances (S)	
Sediment (K)	Streambank erosion (K)	Removal of streambank vegetation (K) Inadequate soil erosion/sedimentation controls (K)	Flood Control Warm Water Fishery
	Urban runoff (K)	Impervious surfaces (K) Development pre-dating storm water management requirements (K) Inadequate storm water management (K) Loss of floodplain (K) Loss of wetlands (K) Limited capacity of drains (K)	
Inadequate protective measures (K)	Development and land use projections (S)	Inadequate natural features protections in local regulations (S) Inadequate historical public understanding and knowledge (K) Insufficient funding for land acquisition and protection (S)	Open space Preservation Wetland Preservation Greenway Preservation Native Vegetation/Unique Habitat/Natural Buffers

Note: (K) refers to known pollutants/sources/causes and (S) refers to suspected pollutants/sources/causes

4.5 Goals and Objectives

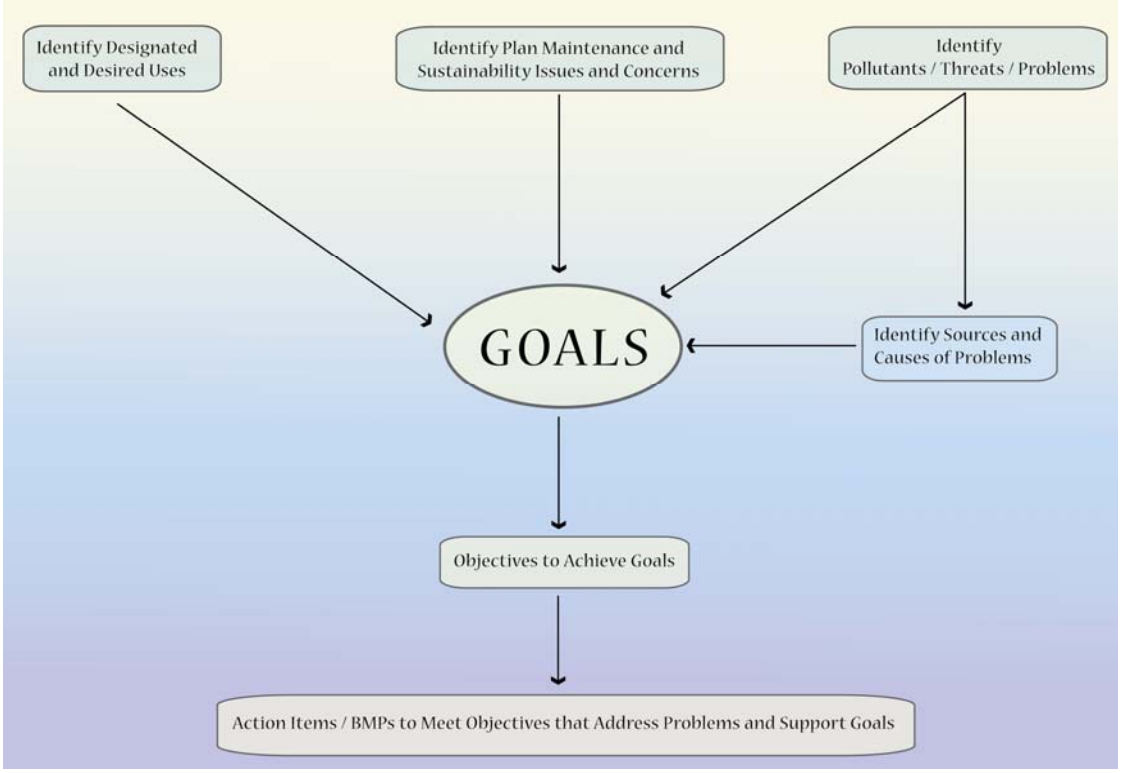
As is detailed in Figure 4-1, the designated and desired uses, plan sustainability, pollutants, threats, sources, and causes in the watershed were the basis for the goals developed. Once the committee came to a consensus on these inputs, they developed long-term goals to address them. Goals are a qualitative description of a desired future condition, purpose or end stated in general terms without criteria of achievement. Prioritization of the goals was done by the ECIC at several committee meetings. The committee discussed each goal and prioritized them based on their experiences in the watershed.

Goals are a qualitative description of a desired future condition, purpose or end stated in general terms without criteria of achievement.

Objectives are actions to reduce pollution from a source to protect or restore a designated or desired use.

In contrast, objectives outline how the goal will be reached. In terms of the Watershed Management Planning process, an objective is how you will reduce pollution from a source to protect or restore a designated or desired use. Finally, action items/BMPs are identified that may be implemented to work toward meeting the objectives that address the problems and support the goals. (Action Items/BMPs are discussed in Chapters 5 and 6)

Figure 4-1
Goal Development Diagram



It should be noted that the overarching goals of the ECIC are to attain compliance with the TMDL allocation and restore and/or protect the designated and desired uses of the watershed. Therefore, the uses addressed by each goal are included. The collective goals, objectives, and associated uses are presented on the following pages. The goals are listed in order of priority, however, it is generally understood and recommended that multiple actions will be occurring simultaneously throughout the implementation of the plan. For example, it is essential that efforts to increase public understanding and participation regarding watershed issues occur on an on-going basis during the life of this plan. Many of the identified goals and long-term (greater than 5 years), and short-term (less than 5 years) objectives must be addressed in concert with one another to accomplish the end result of improved water quality in the Ecorse Creek Watershed.

The long-term goal is identified, under which short- and long-term (or both) objectives have been identified. The objectives address many of the designated and desired uses of the watershed.

1 Goal : Reduce Flooding

Both Short- and Long-Term Objectives:
- Preserve and restore wetlands and open space
- Reduce runoff volume/rate

Long-Term Objective:
- Improve understanding of stream flow volumes and distribution
- Improve drain capacity in streams

Use(s) Addressed:
- Flood Control
- Open Space Preservation
- Wetland Preservation

2 Goal : Reduce Stream Flow Variability

Both Short- and Long-Term Objective:
- Reduce runoff volume/rate
- Preserve and enhance native vegetation/naturalization

Long-Term Objective:
- Preserve and restore wetlands and open space

Use(s) Addressed:
- Flood Control
- Warmwater Fishery
- Other Indigenous Aquatic Life and Wildlife
- Open Space Preservation
- Wetland Preservation
- Natural Vegetation/Unique Habitat/ Natural Buffers
- Partial Body Contact Recreation
- Total Body Contact Recreation

3 Goal : Watershed Management Sustainability

Short-Term Objective:
- Establish institutional relationships to ensure plan implementation

Long-Term Objective:
- Develop long-term funding methodologies
- Develop adaptive and iterative management

Use(s) Addressed:
- All

4 Goal : Improve Water Quality

Short-Term Objective:
- Eliminate/reduce illicit discharges

Both Short- and Long-Term Objective:
- Protect, expand, and restore the riparian corridor
- Improve erosion and sedimentation controls
- Preserve and restore wetlands and open space

Long-Term Objective:
- Meet TMDL mandated 50% total suspended solids reduction
- Reduce directly connected storm water discharges to sanitary systems

Use(s) Addressed:
- Agricultural Water Supply
- Industrial Water Supply
- Warmwater Fishery
- Other Indigenous Aquatic Life and Wildlife
- Partial Body Contact Recreation
- Total Body Contact Recreation
- Open Space Preservation
- Wetland Preservation
- Natural Vegetation/Unique Habitat/ Natural Buffers

5 Goal : Protect, Enhance, and Restore Riparian and In-Stream Habitat

Short-Term Objective:
- Integrate storm water management in planning and land use approval process

Long-Term Objective:
- Restore warmwater fishery
- Restore diverse aquatic community

Use(s) Addressed:
- Warmwater Fishery
- Other Indigenous Aquatic Life and Wildlife
- Natural Vegetation/Unique Habitat/ Natural Buffers

6 Goal : Preserve, Increase, and Enhance Recreational Opportunities

Both Short- and Long-Term Objective:
- Protect and improve riparian corridor aesthetics

Long-Term Objective:
- Obtain land for wetlands and passive parks
- Meet partial body contact requirements
- Increase public access to stream corridors
- Encourage recreation and open space planning in site plan/land use approval process

Use(s) Addressed:
- Recreational Areas
- Open Space Preservation
- Greenway Preservation
- Wetland Preservation
- Natural Vegetation/Unique Habitat/ Natural Buffers
- Partial Body Contact Recreation

7 Goal : Protect Public Health

Both Short- and Long-Term Objective:
- Reduce secondary health concerns related to flooding

Long-Term Objective:
- Meet partial body contact requirements
- Meet total body contact requirements

Use(s) Addressed:
- Partial Body Contact Recreation
- Total Body Contact Recreation

8 Goal : Increase Public Education, Understanding, and Participation Regarding Watershed Issues

Short-Term Objective:
- Improve media coverage
- Create partnerships with institutions, schools, and the private sector
- Foster relationships with the County and neighboring communities
- Manage expectations of the public for an improved watershed

Both Short- and Long-Term Objective:
- Improve education and awareness of watershed successes and failures

Use(s) Addressed:
- All