

Chapter 6

CENTRAL TYLER CREEK SUBWATERSHED

6.1.1 Subwatershed Location

Central Tyler Creek is a subwatershed located in the northern portion of the Tyler Creek Watershed. This subwatershed has an area of 5,194 acres, or 8.1 square miles. The boundary of the Central Tyler Creek subwatershed is shown in Figure 6.1. The subwatershed is located mostly within eastern Rutland Township, with a small portion in Dundee Township. The subwatershed is roughly bordered, by Big Timber Road on the south, Powers Road on the west, Freeman & Binnie Road on the north, and Randall Road on the east.

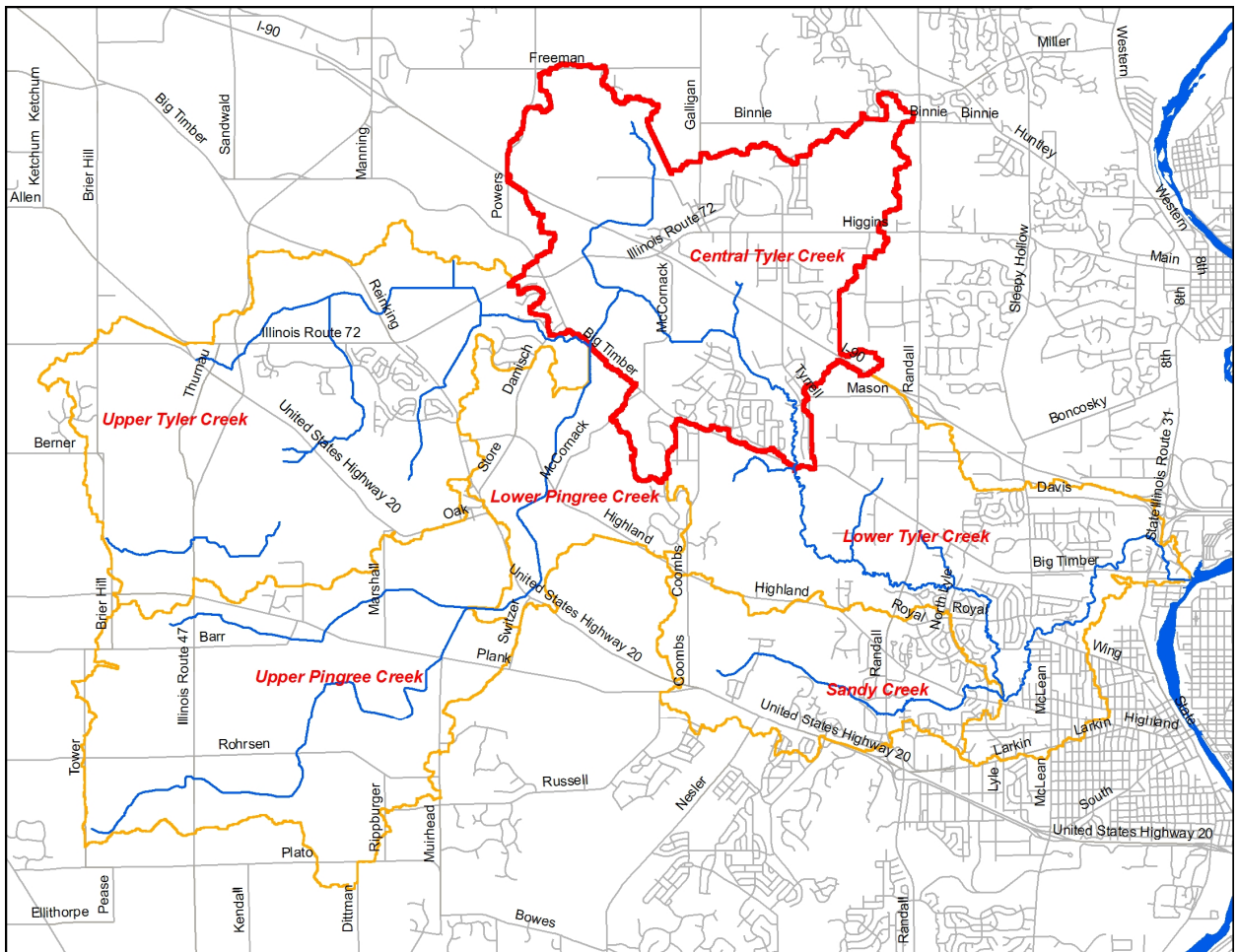


Figure 6.1. Subwatersheds in the Tyler Creek Watershed

6.1.2 Topography & Geology

The topography of the Central Tyler subwatershed is highly variable, from the flat, broad expanses along the Tyler Creek stream corridor to the hilly terrain created by glacial kames in the northwestern portion of the subwatershed. The maximum elevation in the subwatershed is 948 feet above sea level near Freeman and Powers Road. The lowest elevation is 862 feet, where Tyler Creek leaves the subwatershed at Big Timber Road.

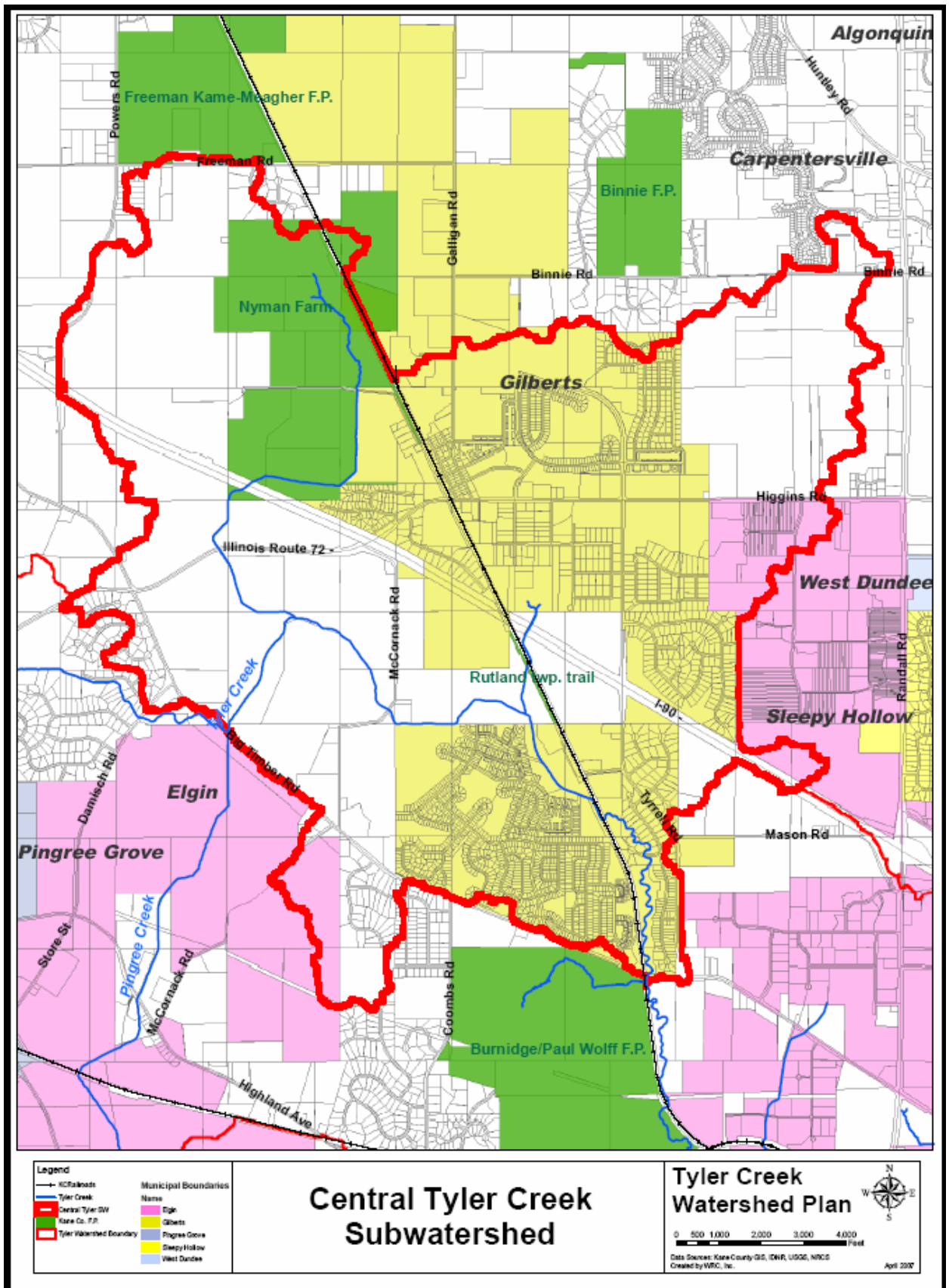


Figure 6.2. Subwatershed Map

6.1.3 Soil Conditions

The glacial advances result in a wide variety of soil map units. The soils in the Central Tyler subwatershed consist of mainly silt loams soil units on 0% - 2% slopes. Each major grouping of soil map units has potential impact on current and future land uses within the subwatershed. For example, hydric (wetland) soils constitute 2,201 acres, or 42% of the 5,194 acre subwatershed, and indicate those areas that contain functional wetlands, or former / degraded wetland areas that could be restored or enhanced.

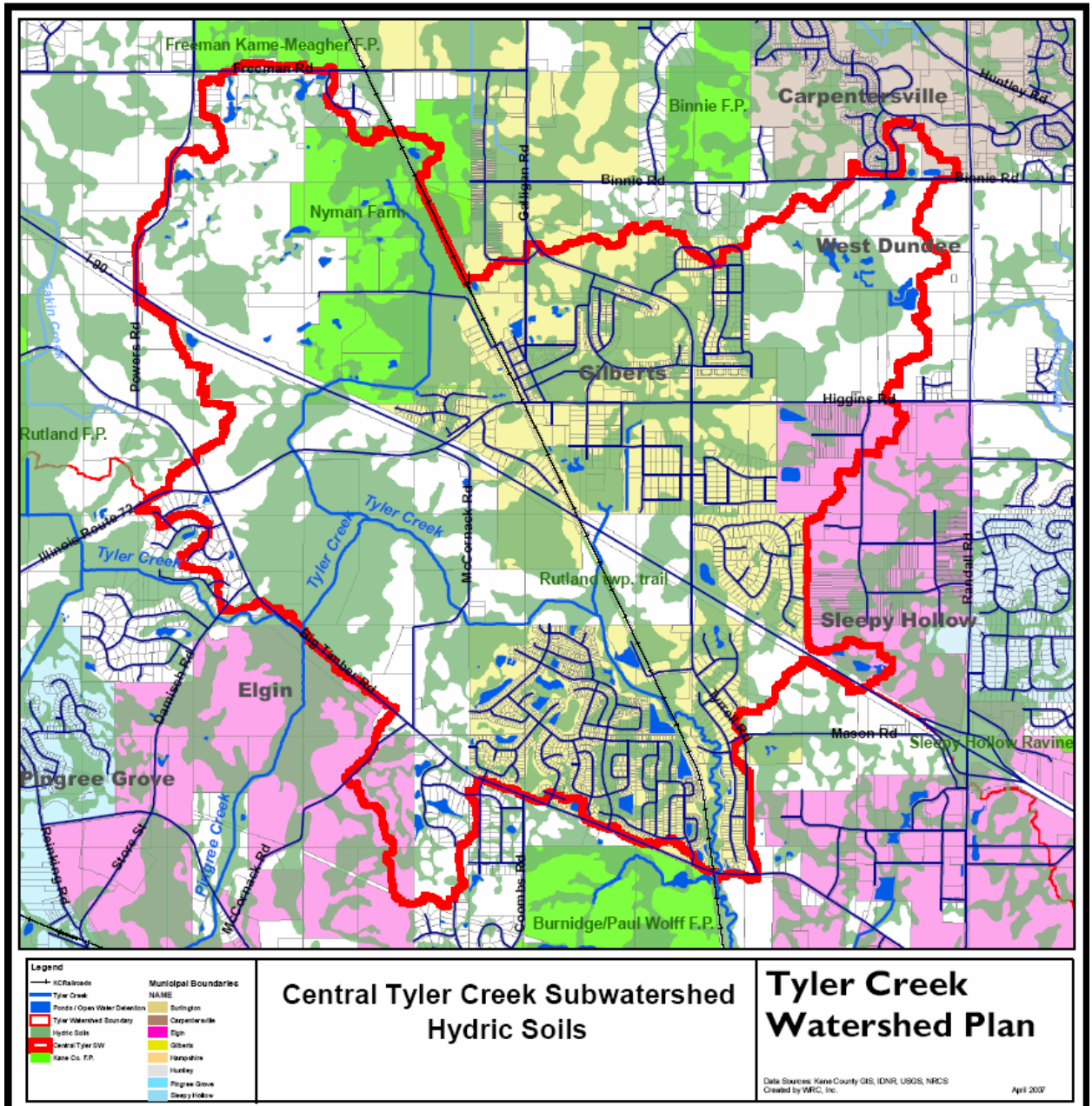


Figure 6.3: Hydric Soils

6.1.4 Subwatershed Drainage Features

Streams

The Central Tyler subwatershed features one main stream, Tyler Creek, and 2 tributary streams; Tyler Creek Tributary #4 and Tyler Creek Tributary #5.

Within this subwatershed, Tyler Creek has two very different characteristics. The first mile of Tyler Creek in this subwatershed (Big Timber Road north to the Union Pacific Railroad Bridge) is in very good condition. This section of Tyler Creek has no channelization and has a sufficient stream corridor buffer consisting of floodplain forest. The stream channel has good habitat (sand & gravel) and fairly stable, low-lying, vegetated streambanks.

The remaining 3.7 miles (80%) of Tyler Creek, upstream of the Union Pacific bridge, has been extensively channelized and its stream corridor has been heavily encroached upon by the historic agricultural landuses that have dominated the landscape for more than 100 years. This upstream section of Tyler Creek is bordered by a 50 to 75 foot wide swath of deciduous tree canopy, comprised of low quality and invasive tree species, such as Box Elder. The stream channel is deeply incised into the landscape, confining flood flows to the channel, and making flood flows more erosive.

Urban Drainage Systems

Analysis of land uses and aerial photography indicates that about 700 acres of the subwatershed is drained via storm sewer system networks. All of the land estimated to be served by storm sewer is within the jurisdiction of the Village of Gilberts. There are approximately 34 stormwater detention facilities constructed with the subwatershed, all under the jurisdiction of the Village of Gilberts.

Agricultural Tile Systems

Given the soils and gentle slopes of the agricultural land that dominates the western half of the subwatershed, it is estimated that about 35% (1,800 acres) of the Central Tyler subwatershed has been modified with the installation of agricultural drain tile systems. Identifying agricultural drain tile networks is important in watershed planning because current local flooding and drainage problems can often be linked to damage or age-related failure of drain tile systems. From a watershed preservation / restoration perspective, it is important to identify functional drain tile systems to determine opportunities for their removal or reconfiguration for the purposes of restoring valuable wetland habitat. It is probable that many of the depressional and low lying areas in the subwatershed that are now drained by tile systems were once wetland and wet prairie ecosystems that supported very diverse habitats.

6.1.5 Population

The use and analysis of population data in watershed planning is critical because of there is a direct correlation between the number of people residing in a watershed and the degree of impacts to the quality and quantity of the watershed's natural resources. According to the 2000 US Census, the

population in the subwatershed was about 1,580 people, or about 195 persons per square mile.

6.1.6 Landuse / Landcover

Land cover data for the Tyler Creek Watershed is available from the Illinois Department of Natural Resources using LANDSAT data collected between 1998 and 1999. The dominant land cover, according to this data, was row crop agriculture, which accounted for roughly 41% of the subwatershed area. Rural grasslands accounted for another 21%, while wooded areas and wetlands account for an additional 14% of the subwatershed. Urban land cover, including urban grassland comprised the remaining 24% of the subwatershed.

Land Cover Description	Total Acres	Percent of Subwatershed
Barren & Exposed Land	8.8	0.17%
Corn, Soybeans, Other Small Grains & Hay (row crop agriculture)	2,119.9	40.82%
Winter Wheat	0	0.00%
Rural Grassland	1,074.5	20.69%
Low Density Urban	232.4	4.47%
Medium Density Urban	274.7	5.29%
High Density Urban	43.3	0.83%
Urban Grassland	679.8	13.09%
Shallow Marsh – Emergent Wetland	106.0	2.04%
Shallow Water Wetland	0.9	0.02%
Partial Forest /Savannah Upland	195.9	3.77%
Upland Forest	435.5	8.39%
Floodplain Forest	3.5	0.07%
Coniferous Forest	0	0.00%
Deep Marsh / Emergent Wetland	2.0	0.04%
Open Water	16.4	0.32%
TOTAL	5,193.6	100.00%

Table 6.1

6.1.7 Existing Watershed Development

Development in the subwatershed has occurred principally through municipal annexation of agricultural land for new residential, commercial, and office / light industrial developments. The 1999 Landcover data indicates the subwatershed had about 1,230 acres of development through 1999 (24%). New development since then has added about another 630 acres of residential development, bring the total developed area to about 1,860 acres, or 36% of the subwatershed.

Municipality	Area (acres)	Percent of Subwatershed
Carpentersville	25.0	0.5%
Elgin	240.0	4.6%
West Dundee	300.3	5.8%
Gilberts	2030.0	39.1%
Unincorporated	2,599.0	50.0%

Table 6.2

There are 42 miles of roads in the subwatershed, which equates to about 142 acres of impervious cover (roadway pavement only – excluding parking lots, sidewalks, and driveways).

6.1.7.1 Point Source Discharges

There is one permitted point source discharge in the subwatershed, according to IEPA NPDES data. The Gilberts WWTP has a NPDES permit (IL0068764) to discharge up to treated waste water effluent into Tyler Creek. It is reported that this WWTP has an average discharge of 300,000 to 400,000 gallons per day.

6.1.8 Natural Resources

Kane County Forest Preserve Properties

There is one Kane County Forest Preserve District (KCFPD) in the subwatershed and parts of two other properties, totaling about 427 acres, or 8.2% of the Central Tyler subwatershed area.

Name	Area (acres)
Freeman Kame – Meagher F.P.	2.4
Rutland Township Trail	2.8
Nyman Farm F.P. (Oury Preserve)	421.8
Total	427.0

Table 6.3

Nyman Farm Forest Preserve is a 508 acre property that is one of many geologic gems in Rutland Township owned by the KCFPD. Rolling kettle and kame terrain is testament to the ancient glacial forces that shaped the region. Of exceptional interest to the botanically minded are the kettle wetlands, in the center of the **Oury** preserve, that harbor dozens of rare wetland plants. A very diverse mix of wetland types remain across the Oury preserve. In addition to the wetlands are the vistas afforded atop grassy knobs and knolls topped with ancient oaks. This set of preserves is likely to be a popular picnic and hiking destination in the future.

Other Publicly Protected Land

The Village of Gilberts owns 66 parcels totaling 236.6 acres within the Central Tyler subwatershed. 42 of these parcels, totaling 212.7 acres, protect portions of the Tyler Creek stream corridor, a few natural wetland complexes, and stormwater management areas (detention basins) in some developments. The remaining 24 parcels are public lands not containing any natural features (Village Hall, pump stations, etc.)

Wetlands

Kane County completed an Advanced Identification (ADID) Wetland Study in 2004. This study identified a total of 104 wetlands, totaling 974.4 acres, or 18.8% of the Central Tyler subwatershed. Of these, 43 wetlands, totaling 830.6 acres (85%) were determined to be of High Quality or High Functional Value, the highest rating under the ADID classification system.

ADID Code	Wetland Type	Number of Wetlands	Total Area (acres)
HFV	High Functional Value	36	472.9
HHQ	High Habitat Quality	7	357.7
APH	Artificial Pond in Hydric Soils	15	20.6
APN	Artificial Pond in Non-hydric Soils	0	0
LWF	Linear Water Feature	4	24.9
NOW	Natural Open Water	1	0.4
R	Fox River	0	0
W	Other Wetlands (lower quality)	41	97.9
TOTAL		104	974.4

Table 6.4

All but one of the ADID wetlands classified as High Habitat Quality are located either within or immediately west of the Nyman Farm Forest Preserve. There is one ADID wetland classified as High Habitat Quality, located on the east side of the railroad tracks from the Gilberts WWTP. According to the ADID field notes, the high quality portion of this wetland is much less than 11.2 acres reported as wetland.

Threatened & Endangered Species

The Kane County ADID Wetland Study indicates that there are Threatened and Endangered species located in Wetland #404 (138 acre marsh / sedge meadow wetland) between Nyman Farm F.P. and Powers Road, south of Freeman Road. No data was provided on the specific species and whether the T&E designation was state or federal.

A mussel survey completed in June 2001 by EA Engineering (found in the 2004 Huff & Huff, Inc. study of Tyler Creek) found numerous specimens of the Illinois State Threatened Slippershell Mussel in Tyler Creek, between Big Timber Road and upstream of Tyler Creek Tributary #4 (northeast side of Timber Trails subdivision). This coincides with the reasonably undisturbed character of Tyler Creek in this reach, which is well preserved in a heavily wooded stream corridor that averages about 200 feet in width.

Common Name	Scientific Name	Type	Status
Slippershell Mussel	<i>Alasmidonta viridis</i>	Mussel	IL Threatened

Table 6.5 Source: Nov. 2004 Huff & Huff Report prepared for the Village of Gilberts

Existing Greenways

There are no formal greenways established in the Central Tyler subwatershed, however, the Village of Gilberts received ownership of the parcels adjacent to the Woodland Meadows and Timber trails subdivisions through which the Tyler

Creek flows. The 1.75 miles of Tyler Creek that flow through these parcels are by far the highest quality sections of Tyler Creek in the subwatershed. Upstream of the Timber Trails subdivision, there are no other publicly protected lands adjacent to Tyler Creek to buffer it from agricultural encroachment or future development. The upper 60% of Tyler Creek Tributary #5 (upstream of Interstate 90) is also protected as it flows within the Nyman Farm Forest Preserve.

6.2 Analysis of Subwatershed Data and Problem Identification

6.2.1 Water Quality Data

The EPA is tasked with assessing the quality of the surface water resources of Illinois. The IEPA has determined Tyler Creek’s designated uses are:

- Aquatic Life
- Fish Consumption
- Primary Contact
- Secondary Contact
- Aesthetic Quality

The IEPA periodically produces a [303\(d\) list](#), which identifies waterways that are not achieving certain designated uses. In the 2006 IEPA 303(d) list, Tyler Creek is identified as being in Full Support of its Aquatic Life Designated Use, which is notable for a stream in northeastern Illinois.

However, Tyler Creek was also determined to be Non-supporting of its Primary Contact Designated Use, due to excessive levels of fecal coliform. This pollutant, associated with human and animal waste, was listed as coming from urban runoff, storm sewers, and runoff from forest / grassland / parklands. The IEPA also identified fish consumption, secondary contact and aesthetic quality as designated uses for Tyler Creek, although the ratings for these uses were classified as “not assessed”.

The IEPA maintains three water quality sampling stations in the watershed, although none are in the Central Tyler subwatershed. They are listed in the table below:

Station	Stream	Location
DTZP01	Tyler Cr.	Tyler Creek at Illinois Route 31 Bridge
DTZP02	Tyler Cr.	Tyler Creek below stone bridge at Tyler Creek Forest Preserve
DTZP04	Tyler Cr.	Tyler Creek at Randall Road

Table 6.6

The FRWMN, administered by the not-for-profit group, *Friends of the Fox River*, maintains ten volunteer stream monitoring sites on Tyler Creek, two of which are located in the Central Tyler Subwatershed. FRWMN Site #50 is located on Tyler Creek at the pedestrian bridge just downstream of the Gilberts WWTP. FRWMN Site #18 is located on Tyler Creek downstream of McCornack Road. During 2005 & 2006 monitoring periods, the 2 FRWMN sites in the subwatershed reported water quality index values (based on macroinvertebrate sampling) as Fair to Poor. Many of the “Poor” classifications occurred during 2005 when the

watershed experienced a severe drought, which likely impacted the number and distribution of macroinvertebrates in the stream channel at the sampling sites.

In 2004, Huff & Huff, Inc, completed a biological and water quality assessment of Tyler Creek between McCornack Road and Randall Road (Central Tyler Subwatershed & Lower Tyler Subwatershed). This study, prepared for the Village of Gilberts relating to expansion of their wastewater treatment plant, collected data on fish species, mussels, macroinvertebrates, and some water quality parameters (dissolved oxygen, phosphorus, nitrogen, and ammonia). The report indicated that during August 2004, dissolved oxygen levels dropped below 5 mg/L between McCornack Road and just downstream of the Gilberts WWTP. Dissolved oxygen in the higher quality sections of Tyler Creek (from Big Timber Road extending downstream to Randall Road) did not drop below the minimum 5 mg/L limit.

This is in part due to the changes in stream channel gradient. Upstream of the Gilberts WWTP, the stream channel descends roughly four feet in elevation per mile, while downstream; the stream channel descends almost 24 feet per mile. The low gradient, and somewhat sluggish current in the upper reach, can contribute to warmer water temperatures and lower dissolved oxygen levels. In contrast, the much steeper channel gradient in the downstream reach provides opportunities for oxygenation of the water column, and the more heavily shaded stream corridor helps keep water temperatures lower.

6.2.2 Flooding Problems

There are no known flooding problems in the Central Tyler watershed in which dwellings are subjected to flood damages. The 100-year floodplain along the mainstem of Tyler Creek in the Central Tyler Subwatershed has been calculated, and floodplain elevations have been established. The floodplain for Tyler Creek Tributary #4 has also been determined as far north as Interstate 90, but remains an unnumbered "A" Zone north of that point where the stream originates (near the business park south of Illinois Route 72). The floodplain for Tyler Creek Tributary #5 has been determined only as far as Illinois Route 72, or less than 255 of its length. North of Illinois Route 72, the floodplain for this tributary is listed as an unnumbered "A" Zone floodplain, in which the floodplain area is only estimated. The map suggests that there is substantial floodplain storage in the existing agricultural land between Illinois Route 72 and Interstate 90.

6.2.3 Projected Development & Growth

In 1999, development occupied about 1,230 acres, or 23% of the subwatershed. Between 1999 and 2006, development increased to more than 1,840 acres, or 35% of the subwatershed. More than 85% of this new development occurred under the jurisdiction of the Village of Gilberts. Within the Central Tyler subwatershed, the Village of Gilberts Comprehensive Plan (dated 06/09/03) suggests that Gilberts may add an additional 1,200+ acres of residential, commercial, and office / business park development in the future.

All totaled, the developed land in the Central Tyler Subwatershed will increase from 1,840 acres (35%) to more than 3,060 acres (59%). The Village of Gilbert's population is projected to increase from 1,297 in 2000 to more than 14,000

residents by the year 2030. As much as 40% of those 14,000 Gilbert residents will live in the portion of Gilberts that lies within the Central Tyler Creek Subwatershed.

If not carefully planned and designed, the proposed land use changes in the subwatershed will result in profoundly negative impacts on water quality, total runoff, stream stability, and the ecological integrity of this portion of Tyler Creek.

6.2.4 Estimated Pollutant Loading

Water quality concerns in the watershed are closely tied to land uses. Pollutant load estimates in the Central Tyler Creek subwatershed were estimated under existing and future condition land uses. Nutrient loads are expected to decrease significantly as agricultural uses decline. Future pollutant estimates assumed low density development. Higher density or commercial development will may results in significant increases in pollutant loads. In addition, if urbanization replaces agriculture, additional pollutants associated with urban land uses will be generated. Strategies for reducing existing sediment, nutrient and fecal coliform loadings are discussed in Chapters 3 and 4 .

Pollutant	Existing Condition	Future Condition
	Lbs	Lbs
Total N	22,864	18,532
Total P	1,661	1,002
Sediment (tons)	1183	1089
Runoff (acre-ft)	1,617	1,875
Fecal Coliform (FC)	32,304	32,726

Table 6.7

6.2.5 Natural Area Protection Problems

Forest Preserve Sites

The Nyman Farm Forest Preserve requires on-going management to rid the site of Reed Canary Grass and Purple Loosestrife.

ADID Wetland Sites

In the CTCSW, only 974 acres of wetland remain, compared to an estimated 2,200 acres that existed before settlement. That means that about 55% of the wetland have already been lost and can no longer provide their valuable functions. Therefore, it is critical that the remaining wetland resources in the subwatershed be protected and managed so that stakeholders can benefit from the functions these wetlands provide.

There are six High Habitat Quality wetlands and one High Functional Value wetland comprising almost 500 acres of wetlands north of Interstate 90 between Powers Road and Galligan Road. These wetlands are critical ecosystem components that provide significant habitat benefits, as well as groundwater recharge. About 40% of these wetlands are located on private properties.

ADID Wetland #521 is a high functional value wetland located along the Tyler Creek stream corridor between Hennessy Court and the Union Pacific railroad bridge to the north. This wetland is part of the highest quality section of stream corridor in the subwatershed and is contiguous with the extremely high quality reach of Tyler Creek between Big Timber Road and Randall Road. This particular wetland is bordered upstream and downstream by publicly protected stream corridor, but remains in private ownership. Aerial photography and ADID field notes indicate that this stream corridor wetland is impaired by turf grass encroachment to the edge of the stream bank in many places and lack of vegetative management to control exotic/invasive species.

6.3 Subwatershed-specific Recommendations to Protect Watershed Resources

The following is a summary list of recommendations for the Central Tyler Creek subwatershed to help stakeholders and decision makers meet the Goals and Objectives set forth for Tyler Creek. Background information regarding how each type of recommendation addresses watershed concerns and/or impairments (existing or future) can be found in Section 2.5. Note that there are several general, or watershed-wide recommendations contained in Chapter 3, Watershed Plan Recommendations.

Type: Education/Outreach; Regulatory; Natural Habitat Restoration; Monitoring; Permanent Habitat Protection, Water Quality, Flood Control

Target Goals: Which watershed plan goals the recommendation is intended to address.

Initial Cost: the initial cost, in 2007 dollars to initiate the recommended action, if applicable.

Annual Cost: the long term expected annual cost (in 2007 dollars) to successfully implementation of the recommendation

Responsible Party: Identifies the LEAD agency, entity, or landowner who will ultimately have to execute the recommendation. SUPPORTING parties, such as government agencies, grant sources, etc. may also be identified here.

Priority: A ranking of High, Medium, or Low, where High is represents a recommendation of utmost importance to be pursued immediately and Low represents those recommendations which may take more time and are less critical in terms their impact on meeting the watershed plan goals.

The project cost estimates contained in this report should be considered preliminary, and are only presented to identify the potential magnitude of cost, from a watershed scale perspective. No site-specific investigation, analysis, or design of any recommended project, from which accurate cost information could be obtained, was completed as part of the preparation of the 2007 Tyler Creek Watershed Plan.

If a watershed stakeholder decides to apply for grant funding assistance to implement any of the recommended projects presented in this report, they should first undertake any additional studies / research needed to determine an updated /accurate project cost. They should not solely rely on the cost estimates presented in the TCWP report as the basis for their grant request.

A map of Central Tyler Creek Subwatershed Recommendations can be found at the end of this section, Figure 6.6

Ordinance/Planning Recommendations

Recommendation 2-1

Require high-intensity land developments between Interstate 90 and Tyler Creek implement water quality BMPs in their stormwater management system to maximize pollutant removal prior to discharge to Tyler Creek.

Type: Regulatory / Water Quality

Target Goals: Goal 2, Objectives 1, 2 and 3; Goal 3 Objective 1

Initial Cost: unknown (municipal staff & elected official time)

Annual Cost: unknown (municipal staff & elected official time)

Responsible Party: Village of Gilberts

Priority: High

Recommendation 2-2

Accurately map existing 100 year floodplain on Tyler Creek Tributary #5 between IL Route 72 and Interstate 90 and preserve area as regional flood storage. Consider de-channelizing and recreating wetland habitat as part of new development proposed for the properties. Implement water quality BMPs as part of any proposed development.

Type: Regulatory / Water Quality

Target Goals: Goal 1, Objective 2; Goal 2, Objective 3; Goal 3 Objective 1

Initial Cost: \$50,000 (for floodplain mapping)

Annual Cost: none

Responsible Party: Village of Gilberts with support from Kane County Dept of Building & Environmental Management

Priority: High

Natural Area Restoration Projects

The recommendations in this section are site-specific natural area restoration projects that should be implemented to increase natural habitat quality and diversity along the Tyler Creek stream corridor. Restoration projects not only serve to increase critical native habitats, they also provide many indirect water quality benefits as well. Removing non-native vegetation and installing native, deep – rooted vegetation on slopes and stream banks decreases erosion and the resulting sediment that is washed into the stream. Thinning out invasive and nuisance species along stream corridors also serves to reduce current and potential debris jams, which create artificial, stagnant areas along the stream (resulting in low dissolved oxygen) and also increases the net amount of nutrient inputs to the stream as the debris breaks down in the channel.

Estimating costs for restoration projects can range from \$100 to more than \$3,000 per acre of woodland, wetland, or prairie habitat restored. The upper range reflects the unit cost for restoration work contracted out to a private contracting company. Costs (especially annual costs) could be significantly reduced if the work is performed by agency staff or local volunteers.

Annual costs are estimated to be roughly 10% of the initial cost on cover items such as herbicide applications, brush removal, and controlled burns.

Recommendation 2-3

Protect portions of high-quality ADID Wetland #487 (near Tyrell Road and Gilberts WWTP driveway) that is on private property, by working with landowners to secure conservation easements and providing wetland management assistance maintain plant diversity.

Type: Natural Habitat Restoration / Permanent Habitat Protection

Target Goals: Goal 1, Objectives 1 & 3.

Initial Cost: unknown

Annual Cost: unknown

Responsible Party: Local Not-for-profit Land Trust Organization

Priority: Medium

Recommendation 2-6

Protect and restore portions of Tyler Creek stream corridor on private properties between Hennessy Court and UP/C&NW Railroad right of way. Work with landowners to secure conservation easements and providing stream corridor restoration assistance.

Type: Natural Habitat Restoration / Permanent Habitat Protection

Target Goals: Goal 1, Objectives 1 & 3.

Initial Cost: \$40,000

Annual Cost: \$3,500 (could be substantially reduced if management is done by property owners)

Responsible Party: Private Landowners / support from Local Not-for-profit Land Trust Organization

Priority: Medium

Water Quality Projects

Recommendations 2-1 and 2-2 in the Regulatory Section are intended to facilitate the construction of naturalized stormwater management and recreated wetland features which will improve water quality released to Tyler Creek from adjacent future developments.

Recommendation 2-5:

Investigate feasibility of re-configuring existing wetland to maximize water quality treatment functions to improve runoff from upstream high-intensity urban area.

Type: Water Quality

Target Goals: Goal 1, Objective 1

Initial Cost: Study - \$30,000; Construction - \$250,000

Annual Cost: Post-Construction Maintenance: \$5000

Responsible Party: Village of Gilberts / private landowners

Priority: Low

Recommendation 2-7

Retrofit dry bottom detention basin with native vegetation and micro-topography to increase water quality treatment functions for low flows.

Type: Water Quality

Target Goals: Goal 1, Objective 1

Initial Cost: \$5000

Annual Cost: \$350

Responsible Party: Triple Oaks Farm HOA / support from Kane Co Water Resources Department

Priority: Low

Permanent Habitat Protection Recommendations

Recommendation 2-4:

Contact private landowners along Freeman and Powers Road and encourage them to provide permanent protection of the high quality wetlands through conservation easement. (ADID wetlands #404, #385, and #386 along south side of Freeman Road and east side of Powers Road).

Type: Permanent Habitat Protection / Site Restoration

Target Goals: Goal 1, Objective 1

Initial Cost: unknown

Annual Cost: unknown

Responsible Party: Private Landowners / Local Not-for-profit Land Trust Organization

Priority: Low

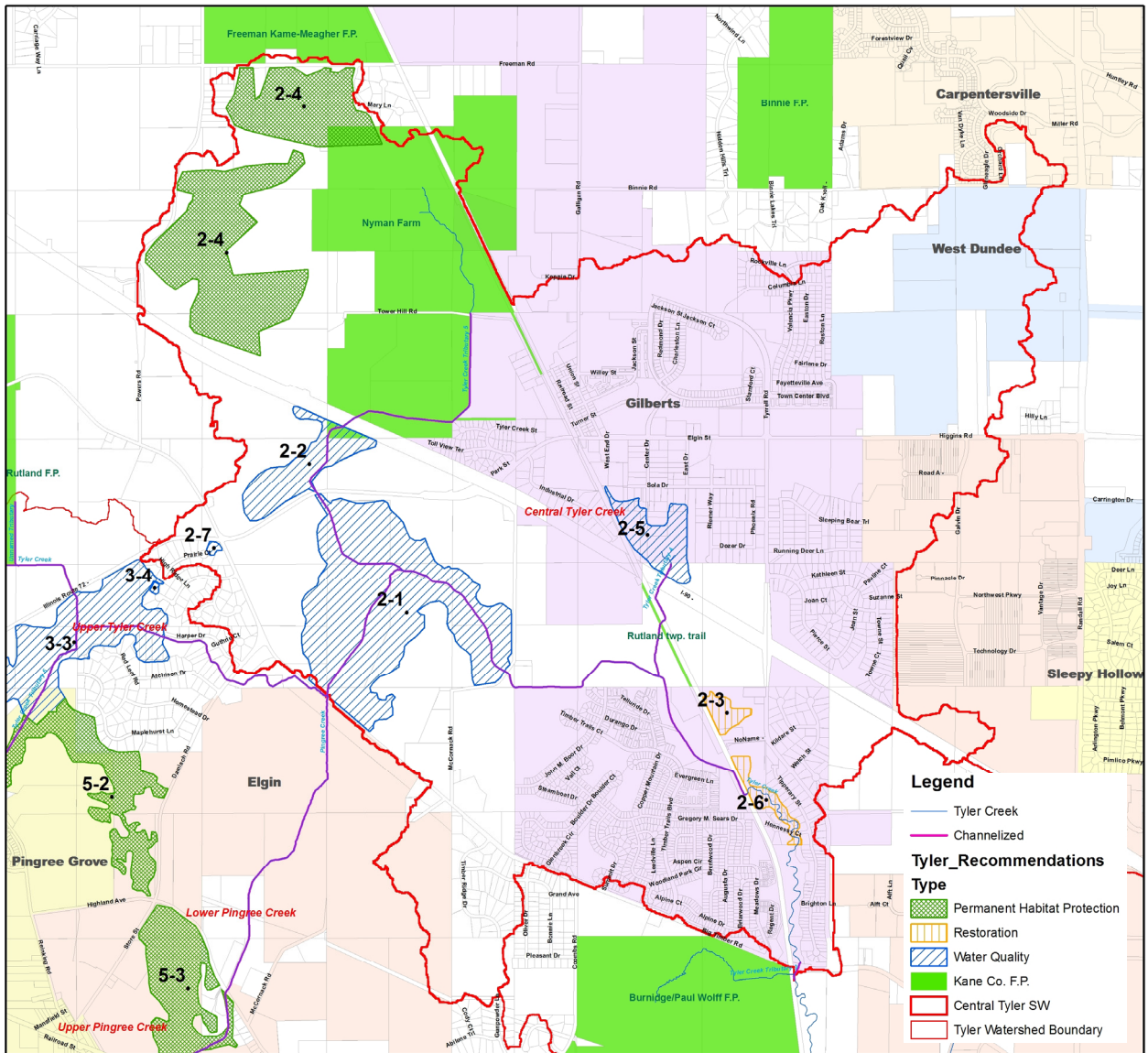


Figure 6.6 Site-specific recommendations location map

REC NUMBER	REC TYPE	DESCRIPTION	RESPONSIBLE PARTY	INITIAL COST	ANNUAL COST	PRIORITY
2-1	Water Quality	Proactive Water Quality BMP and Green Infrastructure planning for future developments	Village of Gilberts	\$0	\$0	High
2-2	Water Quality	Preserve existing flood storage. Map floodplain. Implement proactive Water Quality BMP and Green Infrastructure planning for future developments	Village of Gilberts	\$50,000	\$0	High
2-3	Permanent Habitat Protection	Protect and restore high quality ADID Wetland 487	Private Landowners / NP Land Trust Org support	\$0	\$0	Medium
2-4	Permanent Habitat Protection	Permanently protect high quality ADID Wetland 404	Private Landowners / NP Land Trust Org support	\$0	\$0	Medium
2-4	Permanent Habitat Protection	Permanently protect high quality ADID Wetlands 385 and 386	Private Landowners / NP Land Trust Org support	\$0	\$0	Medium
2-5	Water Quality	Investigate feasibility of reconfiguring existing wetland to maximize water quality treatment functions for upstream urban runoff	Village of Gilberts / private landowners	\$30,000	\$0	Low
2-6	Natural Habitat Restoration	Protect and restore Tyler Creek stream corridor on private property	Private Landowners / NP Land Trust Org support	\$40,000	\$3,500	Medium
2-7	Water Quality	Retrofit dry bottom detention basin	Triple Oaks Farm HOA	\$5,000	\$350	Low

Table 6.8 Summary of recommended BMPs for the Central Tyler Creek Subwatershed

The recommended BMPs, projected load reductions and costs for the Central Tyler Creek subwatershed are summarized in Table 6.9. The watershed is about 36% developed. Dominant sources of pollutants remain however agricultural. The Gilberts WWTP is a minor discharger contributing to pollutant loads at low flows. Future expansion of the WWTP may increase low-flows substantially. Increases of nutrient and BOD loads may also occur. It is recommended that the progress of water quality conditions be tracked so that the contribution of various sources is known. The recommended BMPs will reduce pollutant loads by 24 to 50 per cent.

Table 6.9 Recommended BMPs for the Central Tyler Creek Subwatershed

BMP	Type of BMP	Project Locations ²	BMP		Removal Efficiency**			Total Cost (\$)	Pollutant Load Reduction (lbs/year)			Percentage Reduction (%)		
			Size	Unit	TN	TP	TSS		TN	TP	TSS	TN	TP	TSS
Natural Habitat Restoration	Site-specific	2-6,	14	acres	30%	35%	60%	\$40,000	92	8	10	0.4	0.5	0.8
Permanent Habitat Protection	Site-specific	2-3, 2-4	263	acres	53%	51%	88%	0	3,068	214	264	13.4	12.9	22.3
Conservation Development Practices	Site-specific	2-1, 2-2	50	acres	52%	58%	64%	\$50,000	572	46	36	2.5	2.8	3.1
Regulatory	Watershed-Specific	Subwatershed wide	1	lump sum	-	-	-	\$10,000	1,143	83	59	5.0	5.0	5.0
Nutrient Management	Watershed-specific	Subwatershed wide – agricultural parcels	500	acres	70%	28%	-	\$50,000	7,704	224	-	33.7	13.5	-
Detention Basin Retrofit	Site Specific	2-7	1	lump sum	32%	55%	68%	\$5,000	244	26	13	1.1	1.6	1.1
Wetland Restoration	Sub-watershed	2-5	1	lump sum	53%	51%	88%	\$30,000	12	1	1	0.1	0.0	0.1
Total								\$185,000	12,835	602	383	56.1	36.3	32.4

² Project locations and details are described in Section 6.3, Table 6.8 and in Figure 6.6

** TN = total Nitrogen; TP = total Phosphate; TSS = total Suspended Solids or Sediment.