Sewer Service Area Plan

CITY OF MONROE
WISCONSIN

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1 Background

The City of Monroe completed a Comprehensive Plan in August 1996. This Sanitary Sewer Service Area Plan is intended to complement previous planning efforts and provide a framework for guiding future development in the area in order to protect the water quality of the watershed. The Plan takes into account the technical, environmental and growth projections of the City in establishing the sewer service area.

This Plan also identifies and seeks to protect environmentally sensitive areas including, but not limited to, wetlands, floodplains, shorelands, steep slopes, and highly erodible soils from indiscriminate urban growth. These areas are excluded from the sanitary sewer service area.

1.1 Introduction

The federal government enacted the Federal Water Pollution Control Act Amendments (Public Law 92-500) in 1972. This federal law created a process to establish locally developed areawide water quality management plans. These water quality management plans were codified at the state level through the development of NR 121 of the Wisconsin Administrative Code. NR 121 specifies that Areawide Water Quality Management Plans include components that deal specifically with sanitary sewer service areas and projected needs for 20 years into the future. Sewer Service Area Plans and related water quality plans are sometimes referred to as "Section 208" plans due to the original stipulation in Section 208 of the Clean Water Act for Areawide Water Quality Management Plans.

The Wisconsin Department of Natural Resources (DNR) has established the concept and procedural details of sewer service area planning. The DNR reviews these plans as part of the ongoing water quality management planning process to ensure consistency between local water quality plans and plans of the larger drainage basins.

This Sewer Service Area Plan represents the official water quality management plan for the City of Monroe. The study area for this Plan includes the City of Monroe and portions of the surrounding Townships of Monroe and Clarno in Green County.

1.2 Purpose and Scope

1.2.1 Purpose

Sewer service area plans are a key component of the comprehensive long range planning by counties, cities, villages and townships. Sewer service area plans serve as the basis for DNR approval of federal and state grants for the construction of wastewater collection and treatment facilities. They also serve as a basis for DNR approval of locally proposed sanitary sewer extensions and approval of private laterals by the Department of Commerce, Division of Safety and Buildings.

The purpose of the Plan is to provide a policy framework and a set of guidelines to enforce the federal, state and local water quality programs in the City of Monroe and surrounding townships. The purpose of the Plan is to:

1. Address the requirements of NR 121 concerning cost-effective sewer service and the protection of water quality.

2. Establish the geographic boundaries of a sewer service area for the 20-year (Year 2022) period, in conjunction with the City's Comprehensive Plan.

3. Serve as a guideline for government involvement in water quality management of the Sugar-Pecatonica Basin.

4. Establish common goals for developing detailed community plans.

5. Identify environmentally sensitive areas that should be protected from development. Such areas include, but are not limited to, wetlands, shorelands, floodways and floodplains, steep slopes, highly erodible soils and other limiting soil types, groundwater recharge areas, and other physical constraints.

6. Develop a plan for implementing the Sewer Service Area Plan and providing conformance reviews and detailed site inspection requirements, if required, to determine the extent of an environmentally sensitive area.

1.2.2 Scope

The Sewer Service Area Plan identifies existing sewered areas as well as adjacent land area most suitable for new development. The Plan also identifies areas where development should not go: environmentally sensitive areas where development would have an adverse impact on water quality. The Sewer Service Area Plan inventories land use and environmental features in the planning area, projects future population and land use, and develops a proposed boundary to guide the development of public sewer facilities.

The scope of work for this Sanitary Sewer Service Area Plan included the following activities:

1. Organize a Sewer Service Area Advisory Committee and meet periodically throughout the study.

2. Attend a kickoff meeting with the City, DNR and Advisory Committee. The meeting will include reviewing project goals and objectives, review scope of services and schedule, identify key project personnel, obtain background information, and discuss project issues.

3. Assemble and review background information, including the Monroe Comprehensive Plan, Green County Planning Documents, land use maps, aerial photographs, wetlands inventory, soil survey, U.S.G.S. maps, floodplain maps, sewer system maps, and other resource maps.

4. Review policies, plans and programs such as zoning, land division and erosion control ordinances and relevant Wisconsin Administrative Code sections that may affect the planning area or delineation of the sewer service area.

5. Delineate environmentally sensitive areas within the planning area including, but not limited to, wetlands, shorelands, floodways and floodplains, steep slopes, highly erodible soils and other limiting soils types, groundwater recharge areas, and other such physical constraints.

6. Establish a 20-year planning area and develop a base map.

7. Review the existing 20-year population projections in the Monroe Comprehensive Plan, DOA projections, and Green County projections and make any refinements as necessary.

8. Determine the additional land areas needed over the 20-year planning period. This is based on the projected population growth, commercial/industrial development, and population densities. Much of the data from this analysis will be from the Monroe Comprehensive Plan.

9. Identify the sewer service area on the base map taking into account the extension of existing sewers, environmentally sensitive areas previously identified, projected growth areas, and "infill", or vacant areas.

10. Meet with the City, DNR and Advisory Committee to review project progress and answer questions and obtain input and comments on the proposed sewer service area.

11. Prepare a draft report incorporating the findings, conclusions, and recommendations along with the sewer service area with identified environmentally sensitive areas. The report will also include an implementation section and a discussion on amending and updating the Sewer Service Area Plan. Provide the City, DNR, and Advisory Committee members with copies for their review and comment.

12. Meet with the City, DNR and Advisory Committee to discuss the report and solicit comments.

13. Prepare 30 copies of the final report incorporating comments from the City, DNR, and Advisory Committee.

14. Prepare materials, assist in conducting and solicit comments on the Sewer Service Area Plan at a Public Hearing.

1.2.3 Previous Reports and Studies

The Sewer Service Area Plan utilizes information from the following reports and studies:

- City of Monroe, Wisconsin Comprehensive Plan, by Southwestern Regional Planning Commission, August 1996.
- Soil Survey of Green County, Wisconsin by USDA SCS.
- Flood Insurance Rate Maps, FEMA.

2 Goals, Objectives, and Policies

Establishing goals and objectives is critical to the sewer service area planning process. The diversity of community interests and local government bodies involved in urban development activities and sewer extensions require that common goals be established for urban service area planning. Well thought out goals and objectives provide the framework for decision making and eliminate the need to act quickly to unanticipated growth or events.

An Advisory Committee was created to involve the public in local land use planning. The Advisory Committee consisted of representatives from the City of Monroe, Townships of Monroe, Jefferson, Clarno and Sylvester, Green County, UW Extension, Southwestern Regional Planning Commission, and the DNR and met throughout the project. The Committee provided input into the process to ensure that the sewer service area plan goals and objectives were consistent with previous community land use planning efforts.

2.1 Goals

Goals are defined as statements of direction in which the Plan is aimed. For the Monroe Sewer Service Area Plan the following goals were established:

- Promote sound, environmentally sensitive and efficient urban development at the edge of the present urban service area through orderly, sequential, and compatible growth that preserves or enhances the water quality of the surrounding watershed.

- Preserve and enhance the natural features that make Monroe an attractive healthy place to live, visit, and do business while encouraging development in appropriate and suitable areas.

- Provide the infrastructure necessary to serve the future development while continuing to provide environmentally safe, efficient, and cost-effective utilities to the community.

- Maximize the capacity and promote efficient use of the wastewater treatment facilities.

- Coordinate the efforts of local governments (City of Monroe, Town of Monroe, and Town of Clarno) to promote responsible planning and implementation of shared facilities.

2.2 Objectives

Objectives are specific statements of desired results, which are measurable and contribute to the accomplishment of a goal. For the Monroe Sewer Service Area Plan the following objectives were established:

- Identify, map, protect and, if possible, restore in a natural state, the features that make Monroe and the surrounding area a desirable place to live, visit, and do business

- Prepare and implement a Sanitary Sewer Service Area Plan which:

  - Protects environmentally sensitive areas, i.e. those areas that are unsuitable for sewered development because of the potential significant adverse impact upon water quality.
  - Recognizes environmentally limited areas, i.e. those areas that could benefit from protective measures. Environmentally limiting features may include: shallow depth to groundwater or bedrock; physical features which may have a significant local or statewide importance such as woodlands or plant stands of rare or endangered species; rare or endangered animal habitats; or historical or archaeologic sites.
  - Correlates with the development vision and trends outlined in the Monroe Comprehensive Plan.
  - Identifies appropriate development areas.

- Protect environmental resources and groundwater by applying high-quality design standards and an assessment of impacts for all new sewer extensions.

- Encourage infill development of existing City land area and promote sound, environmentally sensitive, and economically efficient urban development on the fringe of the present urbanized area through sequential, orderly, and compatible growth.

- Use advance planning to identify the most desirable locations for new sanitary sewer interceptor sewers and lift stations. Protect these locations through regulation and approval processes.

- Encourage public input and request active participation by adjacent governmental bodies in the development and implementation of plans, studies, and actions that have a common interest.

2.3 Policies

Policies are actions or guidelines that are directed toward achieving objectives that should be followed in day to day decision-making. For the Monroe Sewer Service Area Plan the following policies were established:

- Discourage development of areas within the Environmentally sensitive areas and offer alternatives to development in areas that will have minimal environmental impact.

- The City of Monroe will continue to review plans and specifications for sanitary sewer extensions and will continue to provide periodic observation of construction to verify that the work is being performed in conformance with the approved design and construction standards.

- Eliminate inadequate on-site sewage systems within the service area through cost-effective systems that can be adapted to the conventional City collection system as it is extended to these areas.

- The local governmental bodies will promote preservation or restoration of the identified natural resources by revising codes, policies, rules, and regulations accordingly. The local governmental bodies will promote preservation in the review and approval of development proposals.

- Proposed developments should include areas which set aside open space for recreation, storm water retention, and include natural drainage ways to reduce peak storm water flows by increasing infiltration of storm runoff through the watershed.

- Area-wide water quality will be promoted by the designated planning entity.

- Subdivision designs that do not provide adequate means of protecting future residents from problems associated with drainage and steep slopes will be rejected. Developers will be required to submit detailed plans for adequately managing storm water in these areas.

- The City of Monroe will prepare and periodically update a plan for the general staging of sanitary sewer extensions into the urban fringe. The plan will consider cost, land demand by type, and environmental protection.

- The City of Monroe will ask the Townships of Monroe and Clarno to officially adopt and follow the Sanitary Sewer Service Area Plan as well as other elements of the Comprehensive Plan as they apply to land in the townships.

3 Study Area Description

3.1 Study Area Defined

The Study Area considered in the development of the Monroe Sewer Service Area Plan is shown on Figure 1. The area includes parts of the Town of Monroe and Town of Clarno in Green County, Wisconsin. The planning area is located within the 1.5-mile extraterritorial jurisdictional boundary for the City of Monroe.

The Study Area includes all of the following Sections in Township 2 North, Range 7 East in the Town of Monroe, Green County, Wisconsin: 25 through 36.

The Study Area includes all of the following Sections in Township 1 North, Range 7 East in the Town of Clarno, Green County, Wisconsin: 1 through 4.

3.2 Development and Trends

The existing land use and future development pattern for the City of Monroe are presented in the City's 1996 Comprehensive Plan. Figure 2 depicts the existing land use for the City. Figure 3 shows the proposed development plan for the City.

The City also encourages cooperative planning with surrounding townships to ensure that urban development is guided to areas that can be served by City's sewerage system

3.3 Land Use Plans

The City of Monroe adopted the Comprehensive Plan in August 1996. The Plan addresses the City's key planning issues, and challenges, and articulates the overall objectives, policies, goals, and programs to guide the future development and redevelopment of the City for a 20 to 25 year period. The Sanitary Sewer Service Area Plan incorporates much of the vision of the Comprehensive Plan.

Additionally, Green County and its participating jurisdictions will be applying for a grant in the fall, 2002 in order to begin the Smart Growth Planning Process. The Smart Growth Plan is expected to be completed in winter, 2006. The City of Monroe should strive for consistency with the Smart Growth Plan on such issues as Sanitary Sewer Area boundaries and amendments.

3.4 City Utility Extension Policy

The City of Monroe strongly encourages annexations to occur prior to urban development to ensure that such development is consistent with City plans, zoning and subdivision design standards, and City Utility systems.

3.5 Infill and Existing Development

The City seeks to promote infilling of existing vacant areas and promote sound, environmentally sensitive, and economically efficient urban development on the fringe of the present urbanized area through sequential, orderly, and compatible growth.

3.6 Growth Projections

Population projections are a key element in the forecasting of future growth. The following information is taken from the City's Comprehensive Plan and discussions with representatives from the Wisconsin Department of Administration (DOA).

The Year 2000 population for the City of Monroe was 10,843 persons. The City has experienced a slight increase in population growth in recent years and the DOA projects that this trend will continue through the twenty-year planning period. The DOA population forecasting methodology bases future population projections on the most recent 30-year history with greater weighting placed on the most recent ten years. Using this methodology, the Year 2022 population projection for the City is estimated to be 12,003 persons. Derivation of this estimate is provided in Table 1.

3.7 Sewerage System Capacity

3.7.1 Collection System

The following sections describe the City of Monroe sanitary sewers, interceptor sewers, lift stations and wastewater treatment plant.

3.7.1.1 Sanitary Sewers

The wastewater collection system conveys wastewater from all occupied buildings in the City to the wastewater treatment facility. The City of Monroe sanitary sewer system consists of approximately 314,000 linear feet of sewer ranging in size from 6-inch through 36-inch diameter. A summary of sanitary sewer pipe lengths is presented in Table 2.

3.7.1.2 Interceptor Sewers

There are three interceptor sewers and one relief interceptor that transport wastewater to the treatment plant. These interceptors are described in Table 3 and are shown on Figure 4. The interceptors have sufficient capacity to transport current and projected flows to the wastewater treatment plant.

3.7.1.3 Lift Stations

Five (5) lift stations convey wastewater from areas that cannot be cost-effectively served by gravity sewers. The lift stations are summarized in Table 4 and are shown on Figure 4.

3.7.2 Wastewater Treatment Plant

The City of Monroe owns and operates a wastewater treatment plant, which discharges to the Honey Creek. The existing facility was constructed in 1983 and consists of raw sewage pumping facilities, grit removal, primary clarifiers, aeration tanks, final clarifiers, intermediate screw pumps, sand filters, chlorine disinfection system, and sludge thickening, digestion, dewatering, and storage facilities. Phosphorous removal facilities were added in 1999. The City has undertaken numerous small projects to improve the efficiency of operations over the years.

The plant's stated design capacity and current flows and loadings are:

Criteria	Design Capacity	Current Flow or Loading	Percent Capacity
Average Flow	3.7 mgd	2.0 mgd	54%
Peak Hourly Flow	6.15 mgd	4.0 mgd	65%
BOD	14,000 lb/d[1]	7,510 lb/d	53%
TSS	8,800 lb/d	3,600 lb/d	41%
TKN	1,470 lb/d	400 lb/d	12%
Total P	370 lb/d	200 lb/d	69%

The following paragraphs describe the plant. Detailed design criteria for the processes are presented in Table 5. The WPDES permit limits for the facility are presented in Table 6. Tables 5 and 6 are located at the end of this section.

Preliminary treatment consists of screening and grit removal. Coarse materials are screened out from the raw wastewater in a mechanically cleaned bar screen before discharge into a wet well. The screen is 4 feet wide with 1-inch bar openings, with an average day flow capacity of 4.3 mgd, and a peak hour flow of 6.9 mgd. Four constant speed centrifugal pumps with a capacity of 2,100 gpm per unit serve as raw wastewater lift pumps. From the wet well, the wastewater is pumped to a grit chamber where heavier grit particles are separated from the wastewater. Screenings and grit are disposed of in a landfill.

The wastewater flows through primary clarifiers after grit removal. In the primary clarifier, a portion of the incoming suspended solids along with associated BOD is removed. Two circular primary clarifiers, each 60-feet in diameter with 12-foot side water depths are available.

Primary effluent flows through a splitter structure that can divert flow to an aerated equalization pond or directly to the aeration basins. The pond provides a maximum volume of 3 million gallons. Two blowers supply air to the course bubble membrane diffuser system in the equalization pond. Each blower is rated for 2,050 scfm at 8.25 psi. A manually operated weir gate, adjustable to maintain the required flow rate modulates flow from the equalization pond.

Secondary treatment takes place in three, two-pass rectangular aeration basins. Each pass is 102 feet long and 25 feet wide with a side water depth of 14 feet. The aeration basins were designed for operation in the conventional mode only. The secondary aeration system consists of four blowers rated at 3,100 scfm at 8.5 psi and fine bubble ceramic diffusers.

[1] Capacity based on using aerated holding pond. This is not achievable on a year round basis due to cold weather constraints.

From the aeration basins, the mixed liquor flows to three final clarifiers. Clarifier No. 1 is 40 feet in diameter with a side water depth of 7 feet, Clarifier No. 2 is 53 feet in diameter with a side water depth of 10 feet, and Clarifier No. 3 is 70 feet in diameter with a side water depth of 12-feet.

Screw pumps pump clarified secondary effluent to rapid sand filters. There are four filter cells. Each filter cell is 400 square feet in area and has a bed depth of 30 inches. The filters are equipped with an air-scour backwash system.

Filtered effluent is disinfected prior to discharge. Disinfection is accomplished in a 162,000-gallon chlorine contact tank. Sodium hypochlorite is injected at the inlet of the tank. Dechlorination is accomplished using sulfur dioxide injection. The disinfected effluent is aerated and then flows through a cascade aerator prior to discharge into Honey Creek.

Waste activated sludge is thickened in a dissolved air flotation system before it is combined with primary sludge. The combined sludge is pumped to two primary anaerobic digesters. The primary digesters are 52 feet in diameter with a 21-foot side water depth and 70-feet in diameter with a 21-foot side water depth. From the primary digesters, partially stabilized sludge is transferred to a 52-feet diameter secondary digester with a 21-foot side water depth. Stabilized sludge from the secondary digester is dewatered on a belt filter press before it is transported to a dewatered sludge storage building onsite. The City land applies caked sludge on farm fields. The City also has the ability to haul and land apply liquid sludge.

3.7.2.1 Wastewater Treatment Plant Summary

The City of Monroe Wastewater Treatment Plant is operating at approximately 60 percent of its design rated capacity. The City has done an outstanding job of maintaining the facility to optimize operations and maintain permit compliance. While it appears that the treatment plant has more than sufficient capacity to handle increases in flows and loadings resulting from growth projected for the City in the 20-year planning period, it should be noted that much of the equipment at the plant is aging and will require replacing and/or upgrading during the planning period.

3.7.3 Local Water Quality Assessment

The local water quality assessment includes a review of applicable watershed project reports, basin plans, wastewater facilities plans, as well as local knowledge for pollutant factors. The assessment includes an inventory of point source discharges and non-point sources and discusses the areas contributing to local adverse water quality impacts including industrial, agricultural and other pollutant sources.

3.7.3.1 Point Source Discharges

Point source discharges include municipal and industrial wastewater treatment plants. The only point source discharge within the Study Area, is the City of Monroe Wastewater treatment Plant. The Plant discharges to the Honey Creek as the creek exits the southwest part of the City.

3.7.3.2 Non-point Sources

Non-point sources include run-off from agricultural land as well as erosion from residential and industrial construction sites. Non-point sources may contribute nutrients, sediment, pesticides, herbicides and in more urbanizing areas, heavy metals and other toxic pollutants. Non-point sources can be controlled by on-farm conservation practices such as conservation tillage and streambank buffers as well as through enacting and enforcing erosion control ordinances.

3.7.3.3 Groundwater

Groundwater resources are plentiful in the Study Area at both shallow and deep levels. The shallow dolomite aquifers are likely to be hydraulically linked to certain surface water features. These aquifers are susceptible to contamination from surface and subterranean sources. Most private wells utilize these shallow aquifers. The City of Monroe draws water using five (5) wells ranging from 1,300 feet to 1,800 feet for water supply.

3.7.3.4 Surface Waters

Monroe lies in the Honey and Richland Creeks Watershed in south central Green County. The named streams that will likely be impacted by growth in Monroe and the extended sewer service area lie to the south and west of the city. These include Honey Creek, Hawthorne Creek, and Little Richland Creek. The Monroe wastewater treatment plant discharges to Honey Creek. Little Richland Creek eventually joins Richland Creek, which is an Exceptional Resource Water.

There are several small, scattered steep slope areas (> 12%) along the perimeter of the sewer service area. There are also scattered wetland areas along each of the stream corridors. These areas should be identified as environmentally sensitive areas and protected from development. Many of the streams in the watershed suffer from the effects of non-point source pollution, caused primarily by agricultural runoff. However, growth of the city and the expansion of impermeable surfaces, particularly because it is likely to occur in the headwaters areas of these streams, could affect baseflow as well as peak flows of these streams. Such development could exacerbate the non-point source problems in the region.

Honey Creek is a 16-mile long stream that has its origin in the western portion of Monroe. It is on the state's list of impaired waters due to non-point source and point source pollution. This warm water sport fishery is home to smallmouth bass, northern pike, and numerous forage fish species. The lack of habitat caused by sedimentation is the main limiting factor on this stream.

Hawthorne Creek is a small stream that originates on the south side of the city of Monroe. Its existing and potential uses are as a warm water forage fishery. It has the default codified use of full fish and aquatic life. Habitat in the creek is impaired by stream bank degradation due to grazing.

Little Richland Creek has its origin near the southeast side of Monroe and travels south where it joins Richland Creek near Clarno. It has existing and potential uses as a warm water forage fishery and is codified as a full fish and aquatic life stream. Like other streams in the watershed, it is impaired by agricultural non-point source pollution and habitat modification due to ditching.

4 Sewer Service Area

4.1 Study Area Limits

The Planning Area includes all lands within the City of Monroe as well as adjacent lands where future extension of sanitary sewerage facilities is reasonable. The Planning Area is the Study Area for the Sewer Service Area Plan. Within the Study Area, all environmentally sensitive areas have been defined.

4.2 Environmentally Sensitive Areas

Defining environmentally sensitive areas is one of the most important elements of the Sanitary Sewer Service Area Plan. These areas encompass valuable natural resource features such as lakes, rivers, streams, wetlands, and their associated undeveloped shorelands, floodplains, and soils with steep slopes. Environmentally sensitive areas need to be protected from sewered development to preserve water quality.

The DNR defines environmentally sensitive areas as follows (NR 121.05(1)(g)2.c):

> "Major areas unsuitable for the installation of waste treatment systems because of physical or environmental constraints are to be excluded from the service area. Areas to be considered for exclusion from the sewer service area because of the potential for adverse impacts on the quality of the waters of the state from both point and non-point sources of pollution include, but are not limited to, wetlands, shorelands, floodways and floodplains, steep slopes, highly erodible soils and other limiting soil types, groundwater recharge areas, and other such physical constraints."

4.2.1 Areas Where Development is Prohibited

Development is prohibited in wetlands, floodplains, and in areas with slopes greater than 20 percent. Each of these items is described below.

4.2.1.1 Wetlands

Wetlands are defined in NR 103, Wisconsin Administrative Code, as areas where water is at, near, or above, the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and has soils indicative of wet conditions. Wetlands are important for aquifer recharge, groundwater and surface water quality improvement, and wildlife habitat. Wetlands in the Study Area have been identified and mapped by the DNR and are shown on Figure 5. For purposes of identifying the Sanitary Sewer Service area, a 75 foot buffer has been incorporated around each wetland area. The exact location of wetland boundaries must be located through a field survey by the Army Corps and/or the DNR staff should any questions arise in defining the boundary or the implementation of the Plan.

4.2.1.2 Floodplain

Floodplains are defined in NR 116, Wisconsin Administrative Code as the land calculated to be covered by floodwater during the regional (100-year) flood. The

floodplain includes the floodway and the flood fringe. The floodway is the channel of the river or stream and those portions of the floodplain adjoining the channel required to carry and discharge the flood waters or flood flows associated with the regional flood. Floodplain in the Study Area have been identified and mapped by the Federal Emergency Management Association (FEMA) and are shown on Figure 6. For purposes of identifying the Sanitary Sewer Service Area, a 75 foot buffer has been incorporated around the floodplain boundary.

For areas where floodplains have not been defined (undesignated areas), development is prohibited according to the following schedule:

Navigable Waters-	Ordinary High Water Mark + 75 feet.
Non-navigable Waters-	25 feet from the center of the channel

4.2.1.3 Slopes Greater than 20 Percent

Areas with slopes greater than 20 percent have been identified as developmentally prohibited areas. Construction activities on steep slopes requires more site preparation and earth work, and can result in severe erosion and sedimentation if adequate control measures are not implemented. Erosion deteriorates the water quality and may result in damage to downstream property.

No land disturbance activities are allowed on slopes of 20 percent or greater except for access roads[2] or installations of utilities to building sites having less than a 20 percent slope. In general, slopes equal to or greater than 12 percent, which are within 75 feet of surface waters, should be excluded from sewered development areas. Steep slopes in combination with other environmental features should also be considered for designation as an environmentally sensitive area.

4.2.2 Areas Where Development is Controlled

Development is controlled in shorelands, on soils unsuitable for private septic systems, where local zoning and land use restrictions are in place, on slopes between 12 and 20 percent, in storm water management areas, hydric soils, existing or proposed greenbelts and on other limiting factors. Each of these is described below

4.2.2.1 Shorelands

Shorelands are defined as lands within the following distances above the ordinary high-water mark of navigable waters: 1,000 feet from a lake, pond or flowage and 300 feet from a river or stream to the landward side of the floodplain, whichever is greater. Shorelands represent environmental features, which should be given high priority for protection from development, particularly those shorelands, which coincide with wetlands as identified in the Wisconsin Wetlands Inventory maps. Shorelands located in the Study Area are shown on Figure 7.

[2] Access roads are defined as single lane, no-through roads constructed of gravel and used to access utility structures. Access roads are not intended for public use.

4.2.2.2 Unsuitable Soils for Private Septic Systems

Through existing State and County regulatory agencies, development on soils that are unsuitable for private waste disposal is avoided. This prevents homes from being constructed outside the city limits on unsuitable soils and later requiring annexation for sewer connection due to failing septic systems. These sewer connections are often more expensive because of trying to design in generally unplanned development.

4.2.2.3 Local Zoning Uses/Restrictions

Local zoning ordinances attempt to regulate uncontrolled growth; however, public needs may significantly influence final land use. Local zoning may be altered if the change is warranted and authorized by the local governing agency.

4.2.2.4 Slopes of 12 to 20 Percent

This Plan calls for the City of Monroe to review and approve erosion and sedimentation control plans for an entire developing site or plat when slopes of greater than 12 percent exist. Development in these lands should comply with erosion control; minimum lot size/building area, vegetation, and specific grading plan requirements. In general, slopes equal to or greater than 12 percent, which are within 75 feet of surface waters, should be excluded from sewered development. Steep slopes (> 12%) are identified in the Green County Soil Survey and are shown in Figure 8. For purposes of identifying the Sanitary Sewer Surface Area, a 75 foot buffer has been incorporated around the identified steep slopes boundary.

4.2.2.5 Storm Water Management Areas

The City of Monroe has created several storm water retention ponds (See Appendix B). Any future development proposed for the SSA should be reviewed to ensure compliance with the storm water management needs for the city.

4.2.2.6 Hydric Soils

A high water table exhibiting a saturated condition at or near the ground surface characterizes hydric soils. Saturated soil conditions may restrict the installation of building foundations and subject basements to seasonal wetness and flooding. Development on hydric soils increases the likelihood of surface and groundwater contamination in these areas. The Green County Soil Survey identifies the following hydric soils in the Study Area.

Soil Map Unit	Soil Series or Name
Ac	Adrian muck
Br	Brookston
Co	Colwood
DbA	Dells silt loam
Dc	Dell Rey silt loam
Et	Ettrick silt loam
HeA	Hebron silt loam
Hu	Houghton

Md	Matherton silt loam
Me	Maumee sandy loam
MsB2, MtA, MuA	Muscatine
Na	Navan silt loam
Ot	Ossian silt loam
Ou	Otter silt loam
Pa	Palms muck
Rh	Riverwash
Se	Sebewa silt loam
SfA	Shiffer loam
SsB, StA, SuA	Stonghurst
ThA	Thackery silt loam
Wa	Walkill silt loam

4.2.2.7 Existing and Proposed Greenbelts

Greenbelts provide aesthetic benefits and natural beauty and serve as a cost-effective storm water routing mechanism. Greenbelts convey storm water out of developed areas and can minimize storm sewer construction costs. Properly designed, greenbelts reduce erosion and prevent damage to developed areas. The natural drainageways located in greenbelts can also provide an economical location for interceptor sewers

4.2.2.8 Other Limiting Factors

Other limiting factors that may define an area as environmentally sensitive include any environmental feature that could benefit from protective measures. This definition can include discrete areas of natural resources, and scenic and recreational resource amenities that are critical to maintaining water quality and quantity. These areas also provide habitat and linkages that are essential for protection of biological diversity and are often associated with rivers and streams. These features may include:

- shallow depth to groundwater and/or bedrock (groundwater recharge and discharge areas);
- physical features which may have a significant local or statewide importance such as woodlands or plant stands of rare or endangered species;
- rare or endangered animal habitats;
- historical or archaeologic sites

The State Historical Society and DNR Bureau of Endangered Resources were contacted during the preparation of this Sewer Service Area Plan to determine if any of these features are present in the Study Area. Correspondence with these agencies is included in Appendix A. Areas containing these features are shown in Figure 9.

4.2.3 Areas Where Development is Discouraged

Development is discouraged in agricultural preservation areas and in areas where construction problems may occur. It is always undesirable to remove valuable farmland

from production. Unfortunately, most of the property available for development in the planning area is agricultural land.

This plan encourages development in locations that conform to the overall development plan set for in the City's Comprehensive Planning Program and benefit the overall needs of the community and surrounding area. Accordingly, this Plan encourages infill development within current service limits and development of lands adjacent to existing served areas in order to maximize the cost-effective use of existing services and utilities. The Plan discourages development that does not promote an orderly extension of municipal services along with an orderly and timely conversion of agricultural lands.

Areas where construction problems may occur are generally unsuitable locations for development. These areas are likely to result in undesirable growth patterns for the City

4.2.4 Areas Where Development is Encouraged

Areas where development is encouraged include lands adjacent to existing developed areas that are not within environmentally sensitive areas. Infill development is also encouraged for the City. Infill development maximizes the cost-effective use of existing utilities. Infill development must be balanced against the desire to have some vacant land available for building site selection and housing choice.

4.3 Growth Forecast

In 2000, the City of Monroe encompassed approximately 2,870 acres and a population of 10,843 persons. The 2022 population for the City has been estimated at 12,003 persons, resulting in a population multiplier of 1.11 (12,003 / 10,843). The future land use requirements for the City is determined by multiplying the total land area by the population multiplier. This assumes that future development will occur following the same land use distribution as the current land use pattern, which is consistent with recommendations contained in the Comprehensive Plan.

A "market factor" was applied to the incremental land requirements to provide the City with flexibility to accommodate the real world real estate market when implementing the Plan.[3] The market factor provides the City with a conservative acreage estimate and allows them to anticipate the affect of local development trends. A market factor of 2.0 has been utilized for the City of Monroe. The calculation of the required sewer service area is shown in Table 7, located at the end of this section.

4.4 Year 2022 Sewer Service Area

The Year 2022 Sewer Service Area boundary is shown on Figure 10 and in detail on Figures 10a through 10d (located at the end of this section). The Sewer Service Area for the City of Monroe encompasses approximately 3,507 acres. The Sewer Service Area boundary incorporates comments from the Advisory Committee and reflects detailed field investigations and in depth reviews of the Comprehensive Plan land use projections.

[3] Incremental is the future land requirement less existing acreage.

The Sewer Service Area protects water quality in the area by identifying and protecting environmentally sensitive areas from sewered development.

4.5 Public Participation

An Advisory Committee was established to prepare and refine this Plan. The Committee consisted of representatives from the City of Monroe, Town of Monroe, Town of Clarno, Town of Sylvester, Town of Jefferson, Southwestern Regional Planning Commission (SWRPC), UW Extension, and the DNR and included the following individuals:

Gerald Ellefson	City of Monroe	Wastewater
Nate Klassy	City of Monroe	Public Works
Lester Johnson	City of Monroe	Inspection
Jim Amrhein	DNR	
Ed Boebel	DNR	
Bernie Robertson	DNR	
Todd Jensen	Green County	Conservationist
Diane Updike	Green County	Zoning
Alois Mayer	Monroe Township	Chairman
Don Timm	Clarno Township	Chairman
Anna Anderson	Sylvester Township	Chairman
Ron Albright	Sylvester Township	Supervisor
Harvey Mandel	Jefferson Township	Chairman
Larry Ward	SWRPC	Director
Sarah Burget	UW- Extension	CRD Educator

A series of public meetings were held to define and shape the Plan. These meetings were held at the Monroe City Hall. The meeting dates and general summary of the meetings is provided below:

- November 29, 2001, 9:00 AM
  - Project kick-off meeting
  - Introduction of Advisory Committee members
  - Review of SSAP process
  - Project schedule

- March 28, 2002, 9:00 AM
  - Review DOA Population projections and methodology
  - Present report outlines for SSAP
  - Present and discuss Goals and Objectives of SSAP
  - Discuss Project Schedule

- June 6, 2002, 9:00 AM
  - Present Refined Sewer Service Area map
  - Distribute Draft Report for review and comment
  - Discuss project schedule through completion

- August 12, 2002, 4:30 PM
  - Present Report to Board of public Works

- August 20, 2002, 7:30 PM
  - Present Report to City Council

5 Implementation

5.1 General

The City of Monroe will be responsible for implementing this Sewer Service Area Plan. Implementing the Plan includes establishing the SSA Planning Committee and designating the Administrative Agent for the Plan. The Plan must be approved by the DNR and detailed procedures need to be established for proposed sanitary sewer extensions within the Service Area, amendments to the Plan, and updates to the Plan. Each of these items is discussed in the following sections.

5.2 SSA Planning Committee

The SSA Planning Committee may consist of representatives from the City Plan Commission, City Engineer, Wastewater Department, Town of Monroe and Town of Clarno Plan Commissions, Green County Planning and Development Department, and Southwestern Regional Planning Commission (SWRPC).

5.3 Administrative Agent

The Superintendent of the Monroe Wastewater Department or his/her designee will act as the Administrative Agent. The Administrative Agent will be responsible for:

- Calling meetings of the required review and approval committees, boards, commissions, and/or agencies as necessary.
- Directing the preparation of conformance review documents in accord with applicable regulations.
- Coordinating review of sanitary sewer extensions by City staff for conformance with the Sanitary Sewer Service Area Plan.
- Providing written notification of conformance or non-conformance of sanitary sewer extensions submitted for approval within thirty (30) working days of receiving the written request for approval.
- Directing the presentation of technical information to the Public Works Committee regarding sanitary sewer extension requests, plan amendments, and package treatment proposals within the planning area.

5.4 Plan Development and Update Process

The City of Monroe Wastewater Department prepares plan updates with the assistance of the SSA Plan Advisory Committee, which consists of the townships of Monroe and Clarno, the SWRPC and Green County, and the City Engineering Department. (See Figure 11).

The City Wastewater Department then reviews the draft updates or amendments for consistency with the Plan's policies and guidelines and for adequate capacity at the wastewater treatment facility. If adequate capacity does not exist for the projected growth, the City Wastewater Department will initiate work on facilities planning or will make a recommendation back to the SSA Advisory Committee to scale back the planned growth areas. Once the plan is ready, the Department will make a formal

recommendation to the Monroe City Council on whether to pass a resolution in support of the plan. The meetings for review and recommendation shall be public noticed and conducted as public informational hearings. If the City Council supports the plan, it will pass a resolution and forward the plan to the Department of Natural Resources for administrative decision.

The Department of Natural Resources reviews the plan for administrative decision under NR 121. If the DNR approves the plan, the city, town, and county agencies will be required to incorporate changes to the sanitary sewer service area on their respective development plans.

5.5 Procedures For Sanitary Sewer Extensions

Procedures for sanitary sewer extensions are outlined below and shown on Figure 12.

1. The applicant submits preliminary plans and specifications to the City of Monroe Wastewater Department. Plans shall include the proposed sewer extension and approximate 20-year service area along with a copy of DNR Form 3400-105, "Sanitary Sewer Extension Submittal" for the proposed extension. This submittal shall be made early in the planning process, prior to completing detailed plans and specifications for the project. Submitting these preliminary plans early in the process will ensure that local review is made prior to submitting final plans to the DNR, where costly detailed sewer design proposals prepared for areas not conforming to the sewer service area plan will be denied.

2. The applicant petitions the City for Annexation, if required.

3. The City Engineering Department, Building Inspector, Water and Wastewater Utilities, and City Clerk[4] all review the submittals. All review comments are forwarded to the City's Plan Commission and evaluated prior to its recommendation to the City Council for approval. The City Council directs the Administrative Agent to notify the applicant in writing within 30 days of receipt of the plans on approval or denial. Notification will be through a letter of conformance or non-conformance.

4. If the applicant receives a letter of conformance, the applicant submits this letter along with the standardized submittal forms to the DNR.

5. The applicant will receive a letter of non-conformance within 30 working days that the proposed sewer extension is not in conformance with the Plan if the proposed extension is determined to be in non-conformance either through a conflict with an environmentally sensitive area (ESA) or by being outside of the sewer service area. The applicant has two options upon receipt of a non-conformance letter:

[4] If annexation is required.

- The applicant can modify the extension (submittal) to bring it into conformance with the Plan, or

- If the applicant may request a Plan amendment to modify the SSA boundary or the delineated environmental corridors so that their extension is no longer in non-conformance with the plan. The Plan amendment process is described in the following section.

5.6 Plan Amendments

Requests for an amendment to the adopted sewer service area and plan map may involve undeveloped or already developed land and could be initiated by one of several sources: property owners, the City of Monroe, or another governmental agency. Four types of amendments are possible. Each is described below.

Type 1: The first kind involves no change in the total sanitary sewer service area. For every acre added, an acre is deleted.

Type 2: The second kind of amendment involves an addition (increase) in the total service area based on a unique facility, which serves the public (airport, school, hospital, etc).

Type 3: The third kind of amendment involves an addition (increase) in the total service area This type of amendment would be approved by the DNR if it were justified by unanticipated growth or density of development that is different than what is projected in this Plan.

Type 4: The fourth type of amendment involves an environmentally sensitive area (ESA) such as steep slope (>12%), wetlands, floodplain, etc.).

A proposed plan amendment will be reviewed based on the following criteria:

- Sanitary sewer service can be provided in a cost- effective manner.
- The sanitary sewers lift station, interceptor sewers, and treatment plant can adequately transport and treat the wastewater from the proposed area.
- The amendment is consistent with the policies and goals of this Plan.
- The amendment conforms to local plans.
- There will be no significant adverse water quality and/or environmental impact associated with providing sewer service to the area.
- The amendment will create a common boundary with the current sewer service area and will not create a void within the service area. Satellite sewer service

may be extended to serve existing development that has failing onsite sewage systems may be an exception to this criteria.

- The amendment provides sufficient detail to be adequately evaluated.
- With the exception of a Type 4 amendment, no modifications to ESA's will be made.

The steps required for plan amendment are outlined below and shown on Figure 13:

1. The applicant develops an amendment request. The applicant shall provide information showing that the proposal is consistent with the above criteria.

2. The amendment request is forwarded to the Wastewater Department Superintendent for review. The application should include: a map of the area to be serviced, existing and anticipated population and wastewater generation from the area, and a description of the type of development that is expected to occur.

3. The city requests a consultation with the DNR. A staff memorandum shall be written to guide the conformance review discussions with the City Council and SSA Planning Committee.

4. The Wastewater Department Superintendent presents the amendment requests to the City Council for consideration.

5. If the City Council approves, amendments are given to the SSA Planning Committee for conformance review. If found to be in conformance with the sanitary sewer service area plan, then a cover letter with the accompanying materials is sent to DNR for an amendment request.

6. If the amendment is found to not be in conformance, a letter is sent back to the applicant stating why it is not in conformance and what alternatives are possible. The applicant can apply directly to DNR for approval of the amendment at this point or modify the plan accordingly. The committee can place conditions on the approval regarding storm water management planning; construction site erosion controls or other water quality related conditions.

5.7 Plan Updates

A comprehensive review and update of the Plan should be completed at least every five-(5) years; however, the Plan should be updated whenever there is an obvious change in community needs. The Plan update will be controlled and directed by using the approval and review process outlined in this Plan. Updates to the plan are intended to address the following components:

- Population and demographic projections for the next 20-year planning period. In accordance with NR 121, the DOA shall generate and/or review and approve of population projections generated for Plan Updates.

- Changes in housing starts, population densities, household size changes, and urban development trends within the Study Area.

- Major land use changes in the Study Area.

- Significant environmental changes.

- Revisions to the goals and objectives of the plan, based on present concepts and needs.

- Social and economic impacts on the area that may affect the area-wide water quality planning efforts.

- Interim amendments to the Plan that have occurred since the last update to the Plan.

- Revisions to the sanitary sewer service area boundary based on 20-year projections.

5.8 Storm Water Management

The City of Monroe enacted a Storm Water Runoff Ordinance on December 4, 2001 to control storm water runoff and improve overall water quality. A copy of the ordinance is included in Appendix B. New development within the sanitary sewer service area will be required to adhere to the provisions of this ordinance. A table listing the existing storm water retention ponds is also included in Appendix B along with other non-point water quality and control measures the city has implemented.

The City should anticipate new federal and state requirements for urban non-point source performance standards and Phase II of the federal Stormwater Rules. Developing areas should meet these requirements as they become enforceable in the Monroe Sewer Service Area. Special attention should be paid to these requirements during the design and submittal of SSA amendments.

5.9 Erosion Control

The City of Monroe enacted an Erosion Control Ordinance in April 1994 to control pollutant discharge from construction sites. New development within the sanitary sewer service area will be required to adhere to the provisions of this ordinance. A copy of this ordinance is included in Appendix C. Development outside of the City's jurisdiction but within the sewer service area will be subject to erosion control regulations from the appropriate governing body.

As indicated in Section 5.8, communities should anticipate new federal and state requirements for urban non-point source performance standards and Phase II of the federal Stormwater Rules. Developing areas should meet these requirements, as they become enforceable in the Monroe Sewer Service Area. Special attention should be paid to these requirements during the design and submittal of SSA amendments.

5.10 Boundary Agreement and Annexation Procedures

The City of Monroe provides wastewater treatment to the Pleasant View Complex, located in the Monroe Township, through an agreement with Green County. The City of Monroe does not have any boundary agreements in place with either the Town of Monroe or the Town of Clarno. The city's utility annexation policy was presented in Section 3.4. The procedures for annexation are outlined below:

- The annexation procedure begins with a petition by the applicant to the Plan Commission. The Plan Commission then discusses the petition and forwards it to the City Council. The Council votes on the annexation. Following annexation to the city, a letter is sent to the Township from which the property detached indicating that the property should be removed from the Town's tax rolls.

Tables

Table 1
Population Projection
City of Monroe, Wisconsin

Year	Population
1970	8,654
1980	10,027
1990	10,241
2000	10,843
Annual Growth Rate 1970-2000 (persons/year)	73
Annual Growth Rate 1980-2000 (persons/year)	41
Annual Growth Rate 1990-2000 (persons/year)	60
Weighted Annual Growth Rate 1970-2000 (persons/yr) [1]	58
20 Year Population Projection	**12,003**

[1] Weighs the 1990-2000 period the highest (3x) followed by 1980-1990 (2x) and 1970-1980 (1x)

Table 2
Existing Collection System
Pipe Length Summary
City of Monroe

Pipe Diameter (in)	Total Length (ft)	Percent of Total Length
6	58,031	18.5%
8	180,227	57.4%
10	26,962	8.6%
12	11,233	3.6%
15	14,144	4.5%
18	10,323	3.3%
21	4,029	1.3%
24	6,859	2.2%
36	2,370	0.8%
Total	314,178	100.0%

Table 3
Existing Interceptor Sewer Summary
City of Monroe

Interceptor Sewer	Description
North Interceptor	This interceptor serves the northern portion of the city. The interceptor begins as a 15-inch diameter pipe at County DR and increases in size to a 24-inch diameter pipe at the 11th Street / 1st Avenue intersection. The interceptor discharges to a 36-inch interceptor that flows to the wastewater treatment facility.
Center Interceptor	This interceptor serves the central portion of the city. The interceptor begins as a 15-inch pipe at the 13th Street / 31st Avenue intersection and increases in size to a 24-inch diameter pipe at the 11th Street / 1st Avenue intersection. The interceptor discharges to a 36-inch interceptor that flows to the wastewater treatment facility.
South Interceptor	This interceptor serves the southern portion of the city. The interceptor sewer begins as an 18-inch pipe at the 17th Avenue / 25th Street intersection and ends at the 11th Street / 4th Avenue West intersection. The pipe size varies throughout. The interceptor discharges to a 36-inch interceptor that flows to the wastewater treatment facility.

Table 4
Lift Station Summary
City of Monroe

Lift Station	Location	Type	No. of Pumps	Firm Pumping Capacity (gpm) (1)
Valley View	2701 2nd Avenue	Submersible	2	100
Rees	1301 30th Street	Wet Well / Dry Well	2	200
East Terrace	3023 16th Street	Grinder	2	15
Lakeside Heights	1813 Lake Drive	Submersible	2	150
Alpine Acres	2802 22nd Avenue	Submersible	2	530

(1) With largest pump out of service.

Table 5
Design Criteria
City of Monroe Wastewater Treatment Plant

RAW SEWAGE PUMPS	
Number/Size:	4 @ 2,100 gpm, constant speed
PRELIMINARY SCREENING	
Type:	Mechanically Cleaned Bar Screen
Capacity:	8.9 mgd peak hour
GRIT REMOVAL	
Type:	Aerated Grit Removal
Grit Tanks:	1@ 18 ft x 18 ft x 14 ft SWD
Volume:	4,536 ft^3 (33, 900 gallons)
Removal Rate:	9 ft^3 / 1,000,000 gallons
PRIMARY CLARIFIERS	
Size	2 @ 60 ft diameter, 12 ft SWD
Surface Area:	5,655 ft^2
Surface Overflow Rate:	
Average Daily	654 gpd/ft^2
Peak Hourly	1,087 gpd/ft^2
Sludge Production:	4,000 gpd @ 3.8% Concentration
BOD Removal (%):	15 %
TSS Removal (%):	30 %
EQUALIZATION POND	
Volume:	3,000,000 gallons
Aeration:	Coarse Bubble
Blowers:	2 @ 2,050 scfm, 8.25 psi
AERATION TANKS	
Number:	6
Shape:	Rectangular
Size:	102 ft x 25 ft x 14 ft SWD, Each
Volume:	1,602,000 gallons total
Process:	Conventional Aeration
HRT (hrs)	
Average Day	10.3 hours
Peak Hour	4.3 hours
Diffusers:	Fine Bubble
Aeration Blowers:	4 @ 3,100 scfm 8.5 psi

Table 5 (cont'd)

FINAL CLARIFIERS	
Size:	3 1 @ 40 ft Diameter, 7 ft SWD 1 @ 53 ft Diameter, 10 ft SWD 1 @ 70 ft Diameter, 12 ft SWD
Surface Area:	7,311 ft^2 (total)
Surface Overflow Rate:	
Average Daily Flow	409 gpd/ft^2
Peak Day	817 gpd/ft^2
SAND FILTRATION	
Number;	4
Size:	20 ft x 20 ft, 30 inch depth
Peak Loading Rate:	13 gpm/ sq. ft
EFFLUENT DISINFECTION	
Chlorination:	Sodium Hypochlorite
De-chlorination:	Sulfur Dioxide
Tanks:	
Number:	2
Size:	133 ft x 6 ft x 14.5 ft SWD
POST AERATION	
Type:	Diffused Air, Fine Bubble
EFFLUENT AERATION	
Type:	Cascade Aerator
PHOSPHOROUS REMOVAL	
Type:	Chemical Feed- Ferric Chloride
PRIMARY ANAEROBIC DIGESTER	
Number	2
Size	52 ft Diameter, 21 ft SWD 70 ft Diameter, 21 ft SWD
Volume	125,400 ft^3 (938,000 gallons), total
Mixing	Pressurized Gas
Cover	Floating
VSS Reduction (%)	50%
Design Operating Temp.	95° F

Table 5 (cont'd)

SECONDARY ANAEROBIC DIGESTER

Number	1
Size	52 ft diameter, 21 ft SWD
Volume	44,600 ft^3 (333,600 gallons)
HRT	22 days
Mixing	Pressurized Gas
Cover	Floating

DISSOLVED AIR FLOATATION THICKENER

Number	1
Type	Dissolved Air Floatation
Size:	90 ft x 20 ft 16 ft SWD
Volume:	202,000 gallons
Design Feed Solids:	0.4%
Design Discharge Solids:	4.0%
Feed Rate:	80 gpm day, 120 gpm evening
Hours of Operation:	24 hours per day, 7 days per week

DIGESTED SLUDGE DEWATERING

Number:	1
Type:	Belt Filter Press
Size:	2 meter
Design Feed Solids:	2.0%
Design Discharge Solids:	16-17%
Hours of Operation	8 hours per day, 3 days per week

BELT PRISS FILTRATE TANK

Number:	1
Volume:	1,500,000 gallons
Aeration:	Fine Bubble Diffused Air

CAKE SLUDGE STORAGE BUILDING

Number:	1
Design Capacity:	180 days
Volume Required:	72,600 ft^3

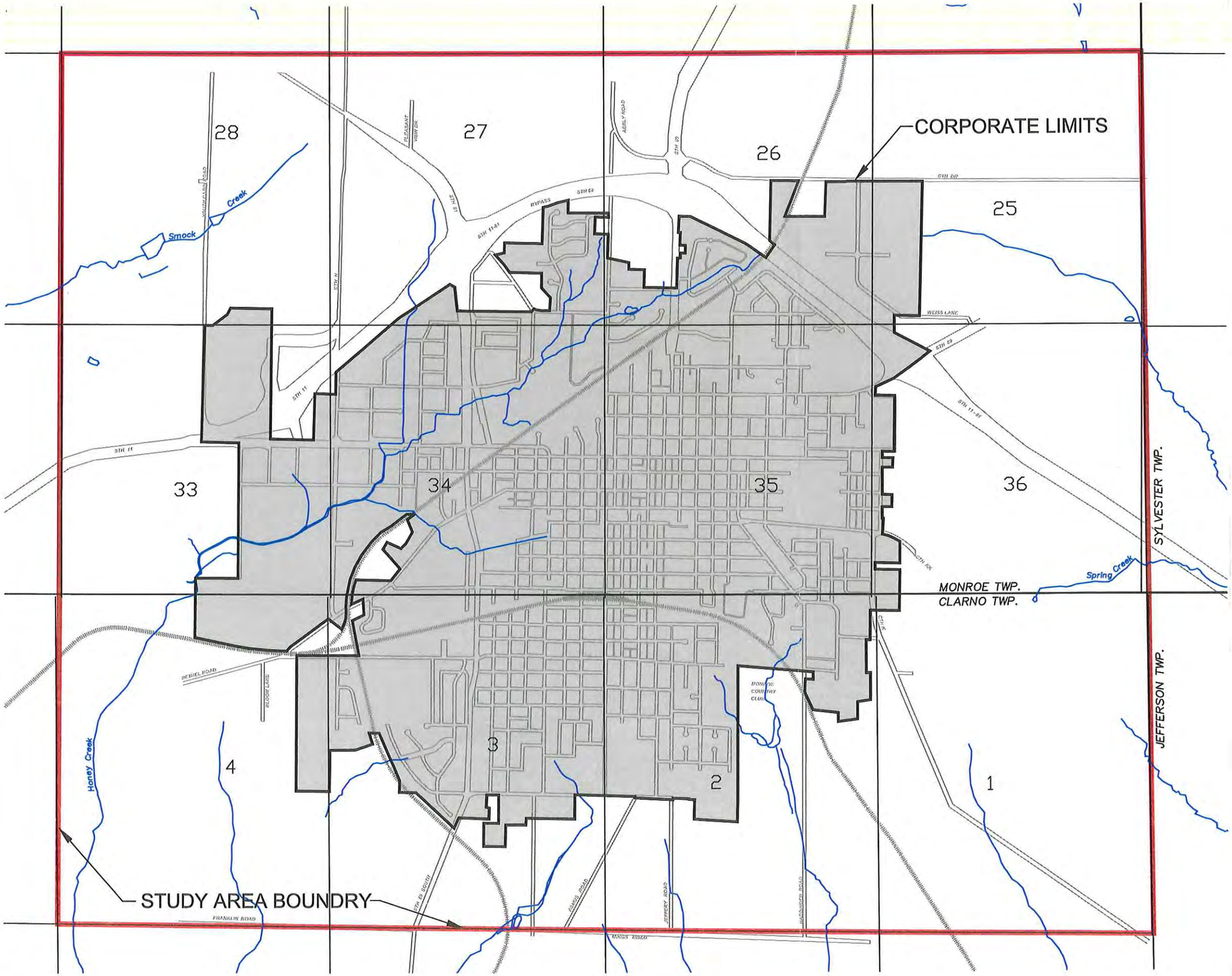
Table 6
WPDES Discharge Limit
Monroe WWTP

Effluent Characteristic	Weekly Average	Monthly Average
Permit flow basis (Ave Day Flow)	3.7 mgd	
BOD_5 (May - October)	10 mg/L 309 lbs/d	10 mg/L
BOD_5 (Nov. - April)	20 mg/L 617 lbs/d	20 mg/L
TSS (May - October)	10 mg/L 309 lbs/d	10 mg/L
TSS (May - October)	20 mg/L 617 lbs/d	20 mg/L
Tot Residual Chlorine	0.009 mg/L 0.28 lbs/d (0.037 daily maximum)	-
Fecal Coliforms	-	400/ 100ml
Disinfection Period	May 1 - September 30	
NH_3-N mg/L (May)	5.0 mg/L 154 lbs/d	-
NH_3-N mg/L (June-Oct)	3.0 mg/L 93 lbs/d	-
NH_3-N mg/L (Nov-April)	10.0 mg/L 309 lbs/d	-
Total Phosphorus	-	1.0 mg/L
Dissolved Oxygen	6.0 mg/L (daily minimum)	

Table 7
Required Sewer Service Area- Year 2022
City of Monroe

2000 Population	10,843
2022 Population Projection	12,003
Ratio Year 2022 to Year 2000 Population	1.11
2000 City of Monroe Land Area (Ac)	2,870
2022 City of Monroe Land Area (Ac)	3,177
Increase in Land Area 2000-2022 (Ac)	307
Suggested Market Factor	2.0
Increase in Sewer Service Area (Ac) w/ Market Facto	614
Actual Increase in Sewer Service Area (Ac)	637
Total 2022 Sewer Service Area (Ac)	**3,507**

Figures



LEGEND

CORPORATE LIMITS

STUDY AREA BOUNDARY

36 SECTION NO.

N

0 1000 2000 3000 4000

SCALE: 1"=2000'

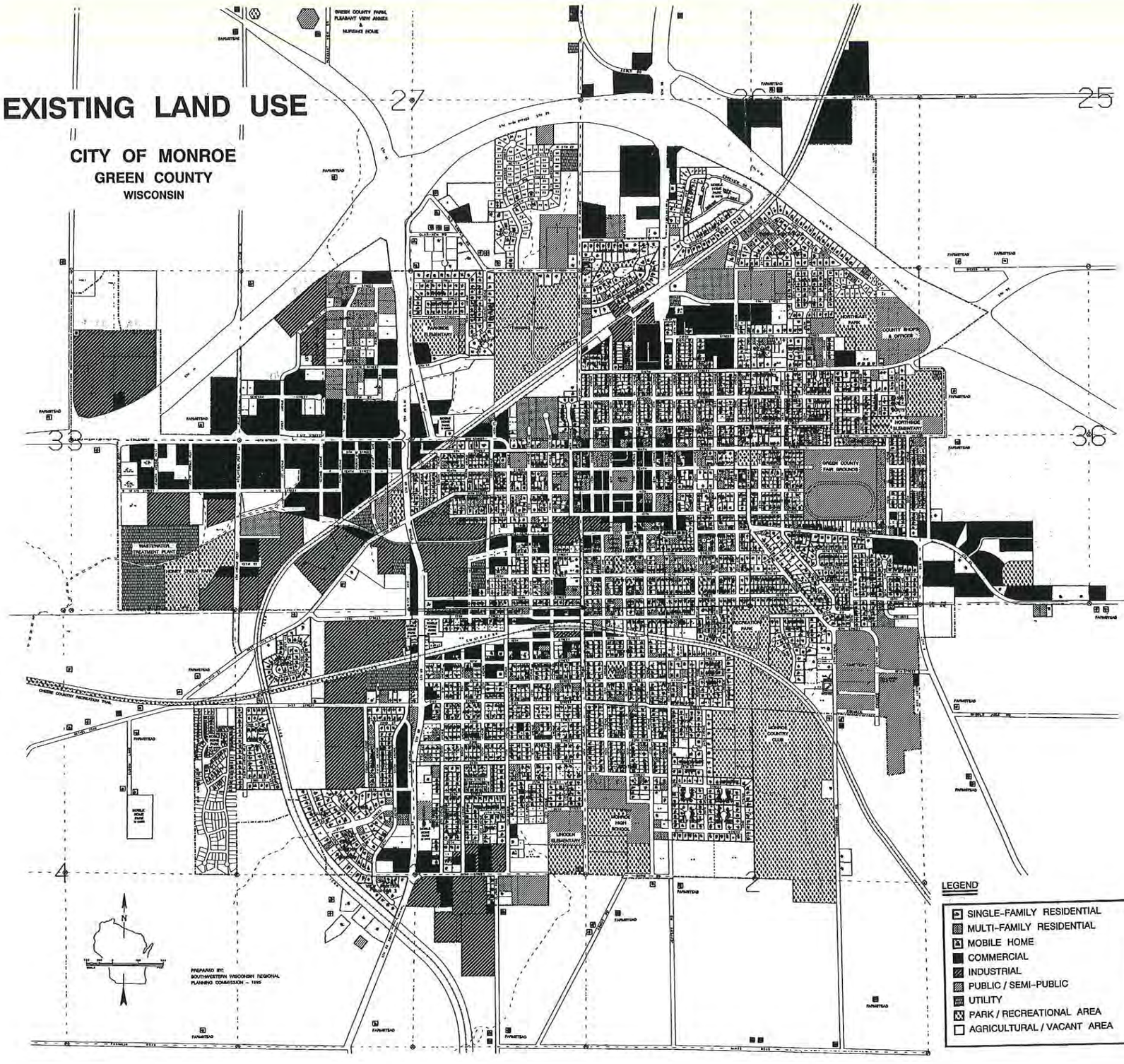
CITY OF MONROE, WISCONSIN

AppliedTechnologies

FIGURE 1
STUDY AREA LOCATION MAP
MONROE SEWER SERVICE AREA PLAN

EXISTING LAND USE

CITY OF MONROE
GREEN COUNTY
WISCONSIN



LEGEND

- SINGLE-FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- MOBILE HOME
- COMMERCIAL
- INDUSTRIAL
- PUBLIC / SEMI-PUBLIC
- UTILITY
- PARK / RECREATIONAL AREA
- AGRICULTURAL / VACANT AREA

FIGURE 2
EXISTING LAND USE
MONROE SEWER SERVICE AREA PL

49 FIGL WG

PROPOSED DEVELOPMENT PLAN

CITY OF MONROE
GREEN COUNTY
WISCONSIN

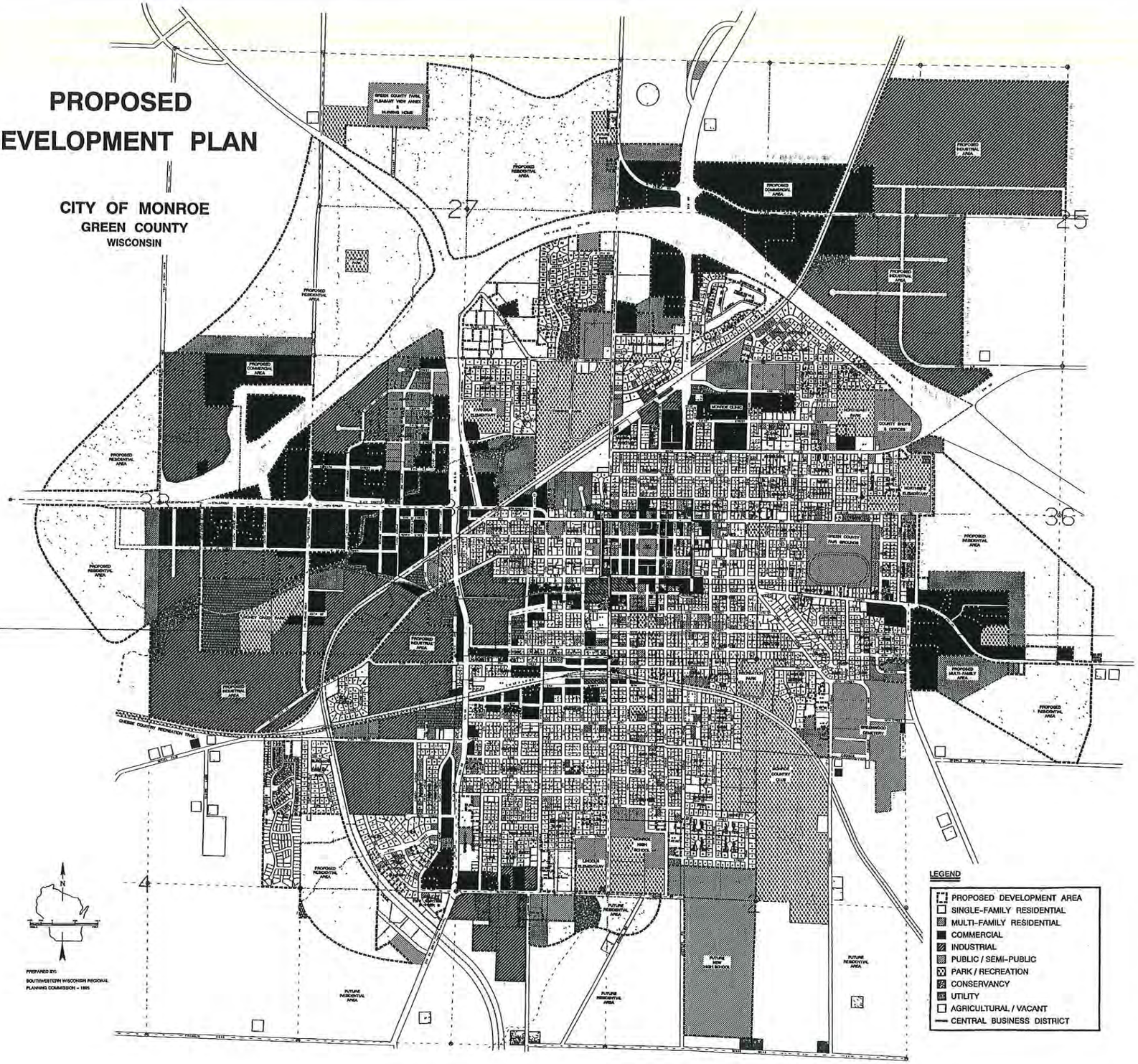


FIGURE 3
PROPOSED LAND USE
MONROE SEWER SERVICE AREA PLAN

J:\s9 FIGURE2&3.DWG

LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- LIFT STATION
- WASTEWATER TREATMENT PLANT
- INTERCEPTOR SEWER

N

0 1000 2000 3000 4000

SCALE: 1"=2000'

NOTE:
COUNTRY CLUB AND ALPINE ACRES LIFT STATIONS WILL BE ABANDONED FOLLOWING CONSTRUCTION OF SOUTHEAST LIFT STATION.

NORTH INTERCEPTOR

CENTER INTERCEPTOR

SOUTH INTERCEPTOR

WWTP

EAST TERRACE

LAKESIDE HEIGHTS

REES

VALLEY VIEW

ALPINE ACRES

Smock Creek

Honey Creek

Spring Creek

MONROE TWP.

CLARNO TWP.

SYLVESTER TWP.

JEFFERSON TWP.

STH 11

STH 69

STH 59

STH 11-61

STH 49

STH 11

STH 55

STH 11-61

STH 11

STH 69 BYPASS

CTH DR

WEISS LANE

PLEASANT VIEW DR.

ABBEY ROAD

SMOCK ROAD

CTH K

BETHEL ROAD

GLOVE LANE

MONROE COUNTRY CLUB

37th St SOUTH

ALPINE ROAD

ABBEY ROAD

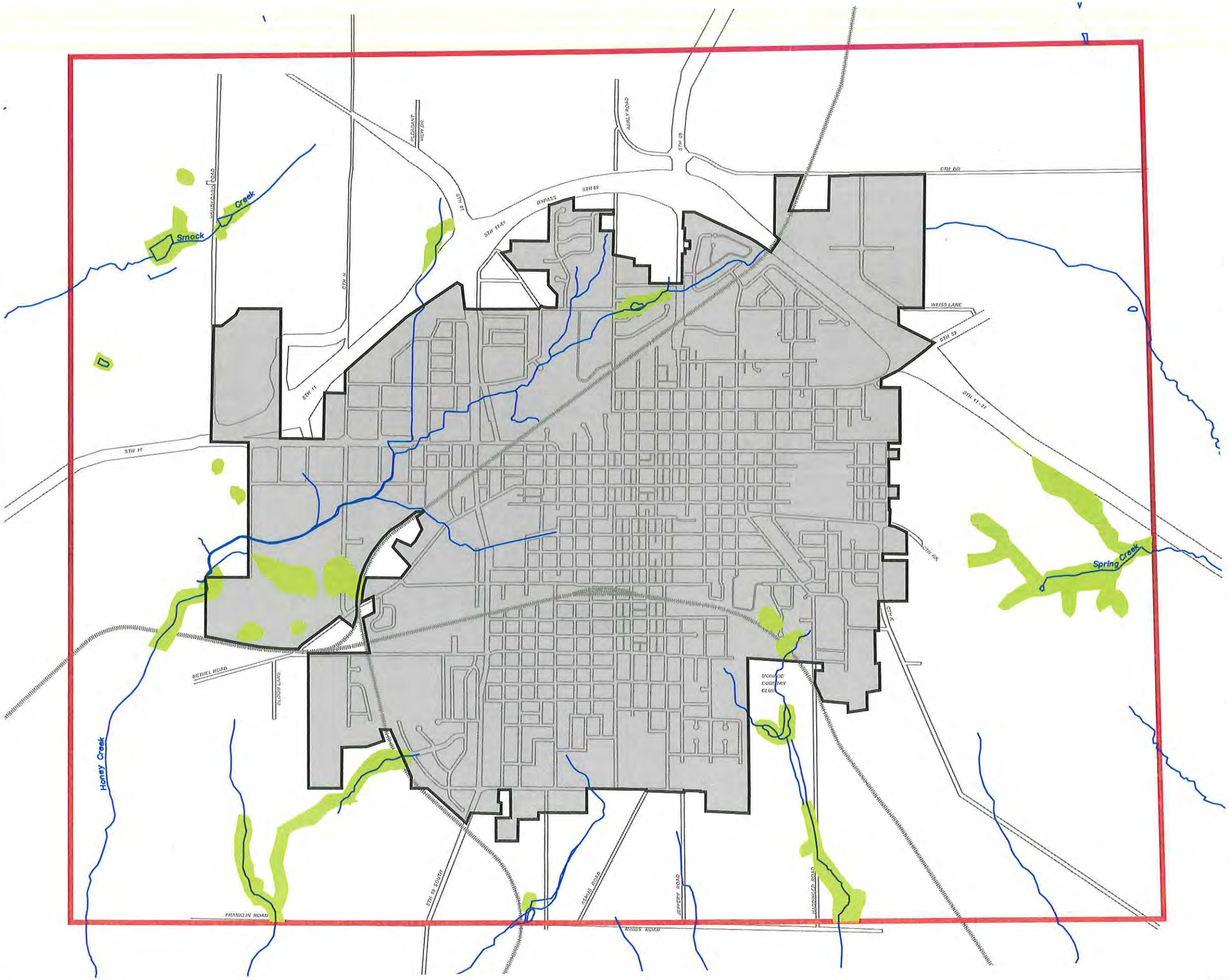
SHANNON ROAD

FRANKLIN ROAD

RINGS ROAD

AppliedTechnologies

FIGURE 4
LIFT STATION - INTERCEPTOR SEWER LOCATION
MONROE SEWER SERVICE AREA PLA



LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- WETLAND AREAS

NOTES:

THE WETLAND AREAS GREATER THAN 5 ACRES ARE GRAPHICAL INTERPRETATIONS BASED UPON THE "WISCONSIN WETLANDS INVENTORY" MAPS AS PREPARED BY THE DEPARTMENT OF NATURAL RESOURCES.

WETLAND AREAS LESS THAN 5 ARES WERE PROVIDED BY GREEN COUNTY CONSERVATION DEPARTMENT.

ALL WETLAND AREAS INCLUDE A 75' WIDE BUFFER.

WETLANDS DEPICTED ON THIS MAP ARE BASED ON BEST AVAILABLE INFORMATION. EXACT LOCATIONS OF WETLANDS SHOULD BE DETERMINED BY FIELD SURVEY.

N

0 1000 2000 3000 4000

SCALE: 1"=2000'

FIGURE 5
WETLANDS
MONROE SEWER SERVICE AREA PLAN

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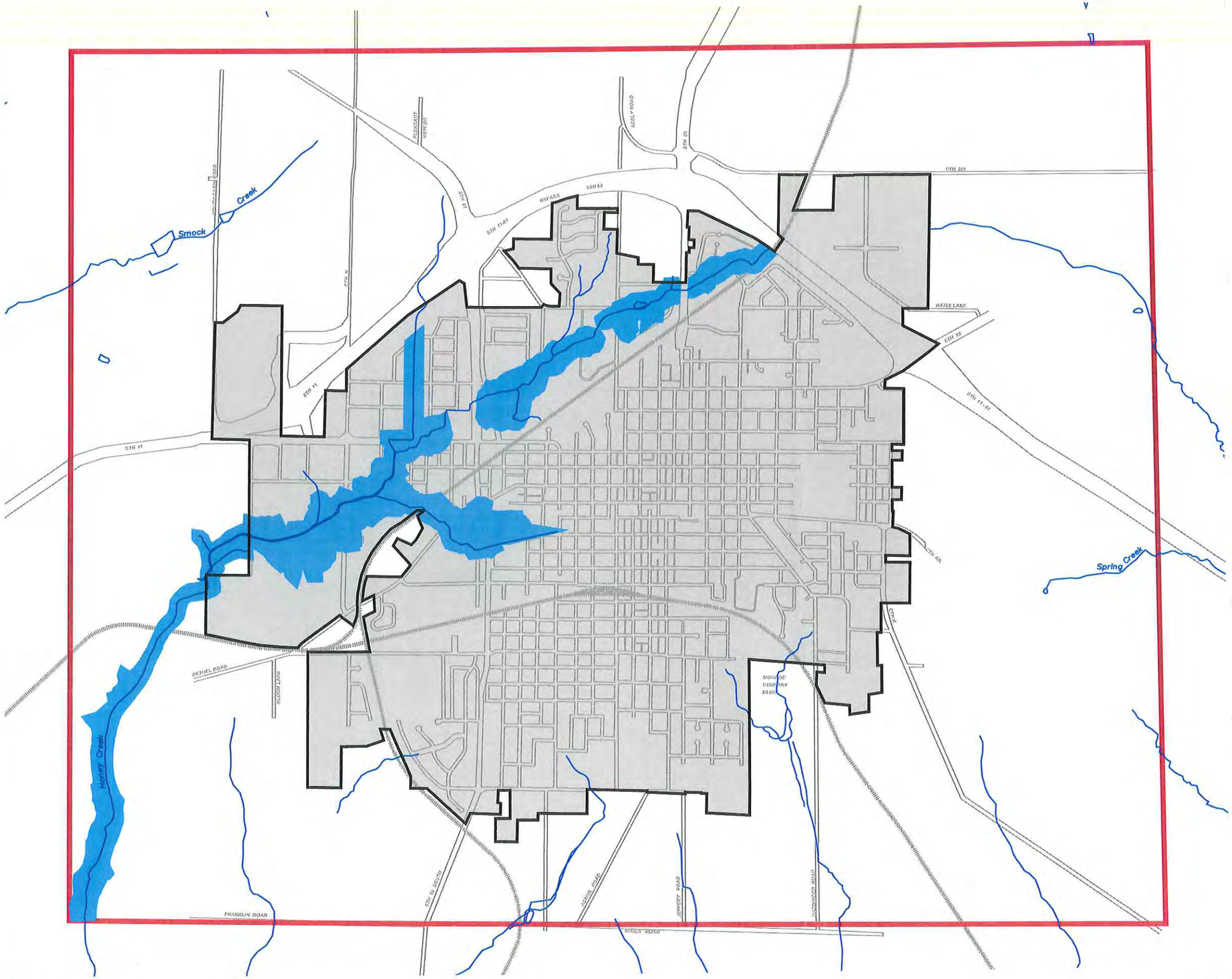

LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- FLOODPLAINS

NOTES:

THE FLOODPLAIN AREAS SHOWN ARE GRAPHICAL INTERPRETATIONS BASED UPON THE "FLOOD INSURANCE RATE MAP" AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

ALL FLOODPLAIN AREAS INCLUDE A 75' WIDE BUFFER.

FLOODPLAIN AREAS DEPICTED ON THIS MAP ARE BASED ON BEST AVAILABLE INFORMATION. EXACT LOCATIONS OF FLOODPLAINS SHOULD BE DETERMINED BY FIELD SURVEY.

FIGURE 6
FLOODPLAINS
MONROE SEWER SERVICE AREA PLAN

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LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- SHORELANDS

NOTES:

THE SHORELAND ZONE IS LOCATED WITHIN 1,000 FEET OF THE ORDINARY HIGH WATER MARK (OHWM) OF A "NAVIGABLE" LAKE, POND, OR FLOWAGE OR WITHIN 300' OF THE OHWM OF A "NAVIGABLE" STREAM OR RIVER OR THE THE LANDWARD SIDE OF THE FLOODPLAIN, WHICH EVER DISTANCE IS GREATER.

THE ORDINARY HIGH WATER MARK IS THE BOUNDARY BETWEEN UPLAND AND LAKE OR RIVERBED. IT IS THE POINT ON THE BANK OR SHORE UP TO WHICH THE PRESENCE AND ACTION OF THE WATER IS SO CONTINUOUS AS TO LEAVE A DISTINCT MARK EITHER BY EROSION, DESTRUCTION OF TERRESTRIAL VEGETATION, OR OTHER EASILY RECOGNIZED CHARACTERISTICS.

A WATERWAY IS NAVIGABLE IF IT HAS A BED AND BANKS AND CAN FLOAT A CANOE AT THE SAME TIME EACH YEAR- EVEN IF ONLY DURING SPRING FLOODS. EVEN SMALL INTERMITTENT STREAMS THAT ARE SEASONALLY DRY MAY MEET THE TEST FOR NAVIGABILITY. NAVIGABLE LAKES AND STREAMS ARE PUBLIC WATERWAYS PROTECTED BY LAW FOR ALL CITIZENS.

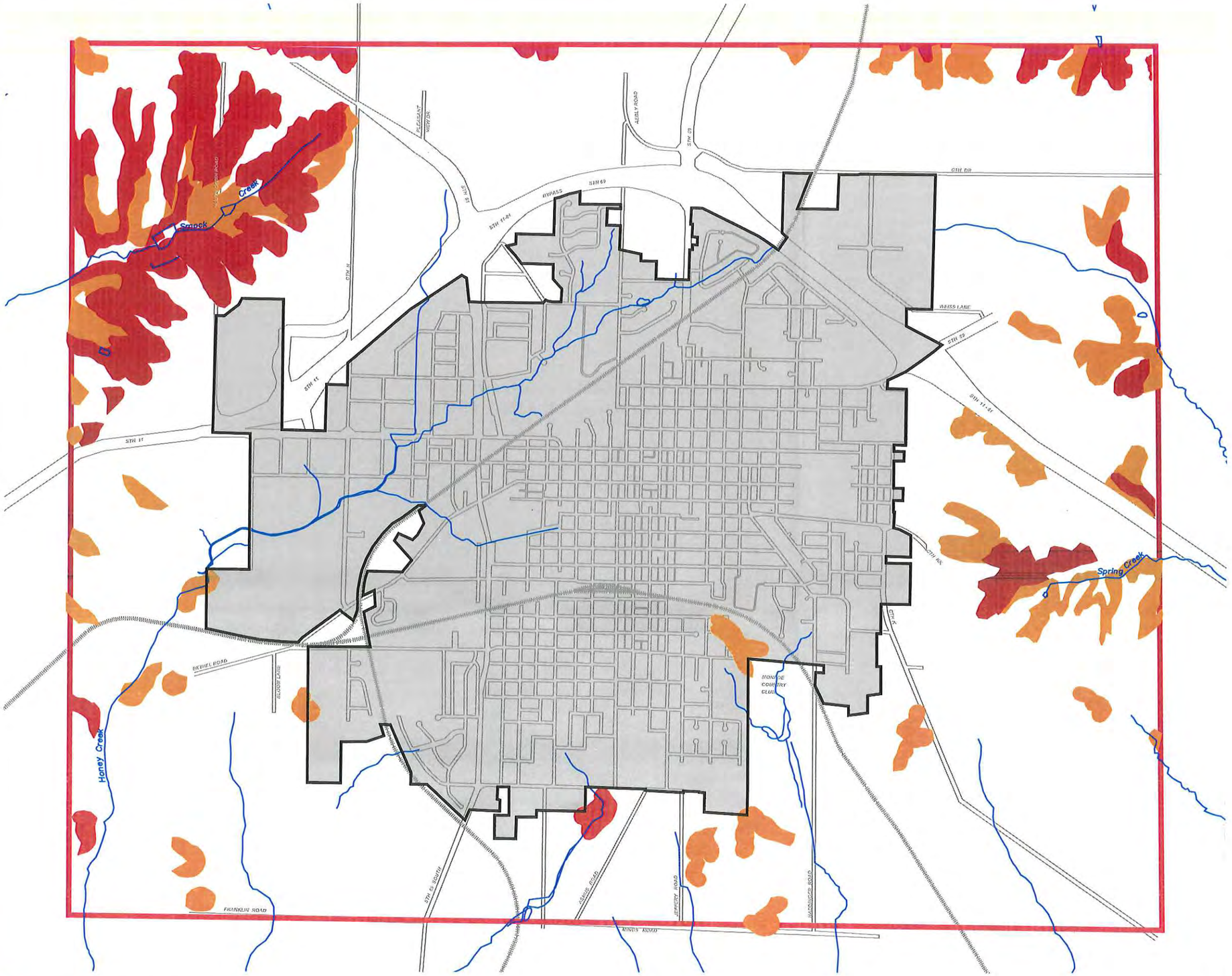
N

0 1000 2000 3000 4000

SCALE: 1"=2000'

FIGURE 7
SHORELANDS
MONROE SEWER SERVICE AREA PLAN

AppliedTechnologies



LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- 12 - 20%
- 20 - 30%

NOTES:

THE STEEP SLOPES ARE BASED UPON U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE AND PROVIDED BY GREEN COUNTY.

ALL STEEP SLOPE AREAS INCLUDE A 75' WIDE BUFFER.

FIGURE 8
STEEP SLOPES
MONROE SEWER SERVICE AREA PLAN

AppliedTechnologies

LEGEND

CORPORATE LIMITS

STUDY AREA BOUNDARY

THE FOLLOWING ENDANGERED RESOURCES HAVE BEEN IDENTIFIED IN THE NATURAL HERITAGE INVENTORY (NHI) FOR T2N R7E:

Diplazium pycnocarpon (glade fern)
Gentiana alba (yellow gentian)
Lithospermum latifolium (American gromwell)
Trillium recurvatum (reflexed trillium)

T2N R7E

T1N R7E

0 1000 2000 3000 4000

SCALE: 1"=2000'

FIGURE 9
OTHER LIMITING FACTORS
MONROE SEWER SERVICE AREA PLAN

AppliedTechnologies

LEGEND

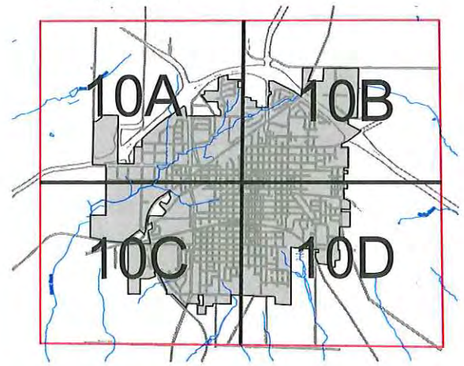
- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- SEWER SERVICE AREA
- ENVIRONMENTALLY SENSITIVE AREAS

N

0 1000 2000 3000 4000

SCALE: 1"=2000'

SEE FIGURES 10A, 10B, 10C, & 10D



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N.T.S.

FIGURE 10

SEWER SERVICE AREA PLAN

MONROE SEWER SERVICE AREA PLAN

AppliedTechnologies

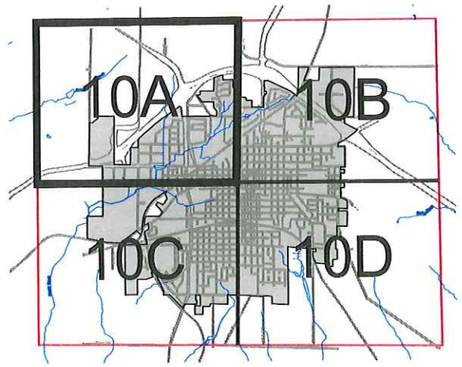
LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- SEWER SERVICE AREA
- ENVIRONMENTALLY SENSITIVE AREAS

N

0 450 900 1350 1800

SCALE: 1"=900'



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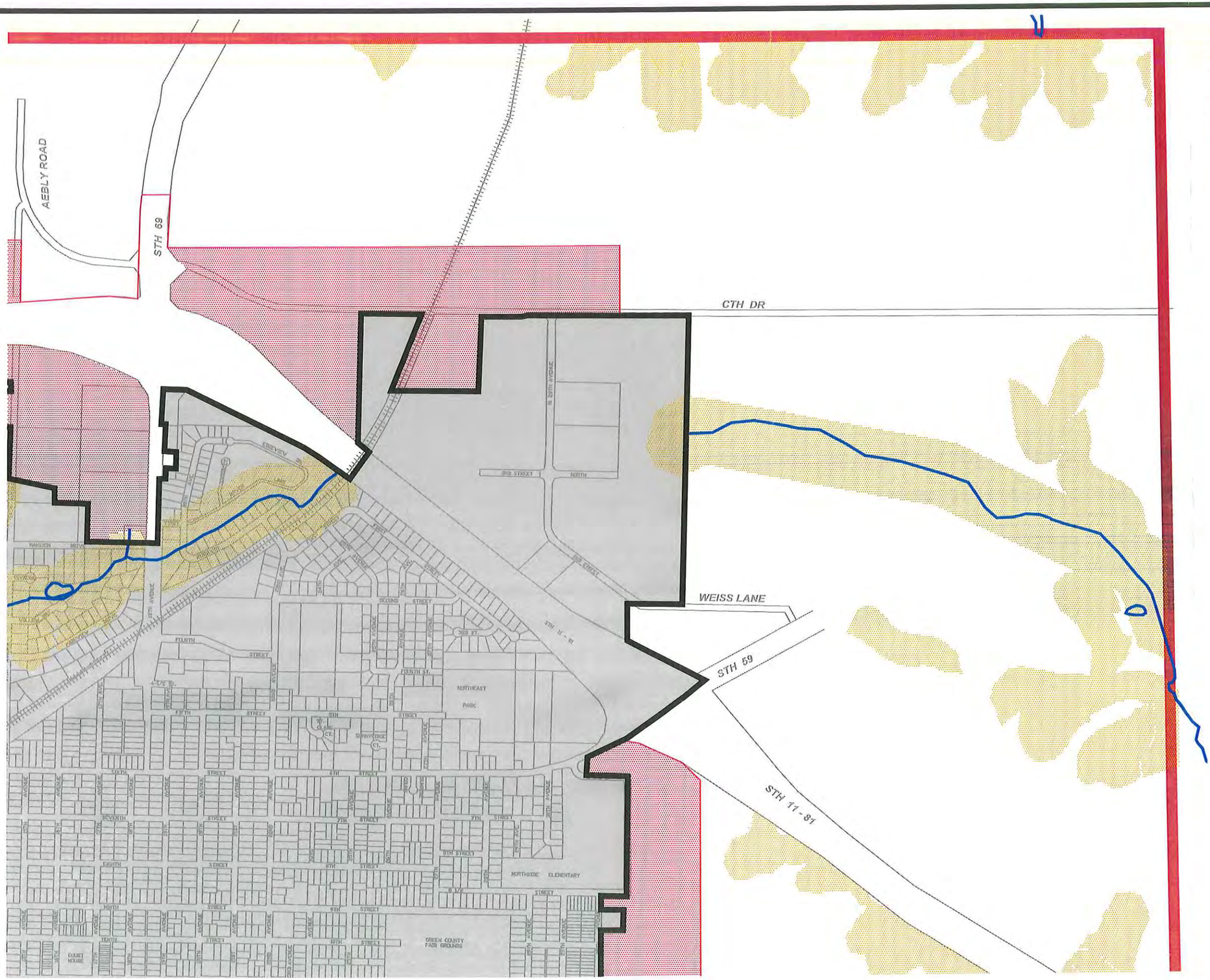
N.T.S.

FIGURE 10A

SEWER SERVICE AREA PLAN

MONROE SEWER SERVICE AREA PLAN

AppliedTechnologies



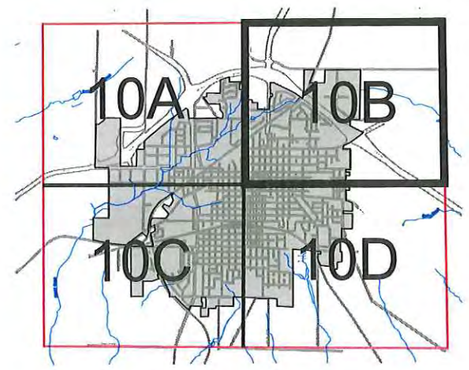
LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- SEWER SERVICE AREA
- ENVIRONMENTALLY SENSITIVE AREAS

N

0 450 900 1350 1800

SCALE: 1"=900'



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N.T.S.

FIGURE 10B

SEWER SERVICE AREA PLAN

MONROE SEWER SERVICE AREA PLAN

AppliedTechnologies

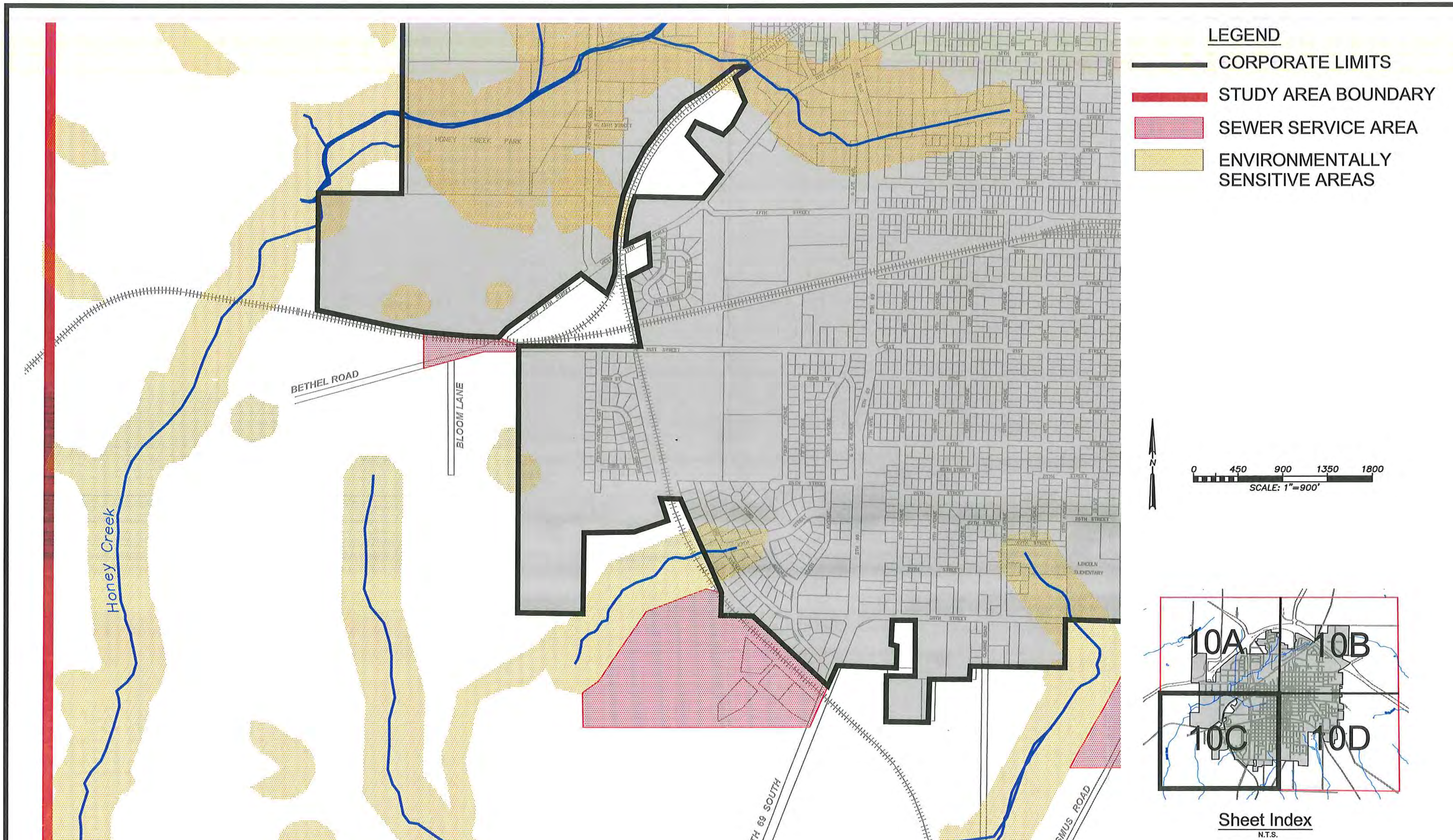


FIGURE 10C
SEWER SERVICE AREA PLAN
MONROE SEWER SERVICE AREA PLAN

LEGEND

- CORPORATE LIMITS
- STUDY AREA BOUNDARY
- SEWER SERVICE AREA
- ENVIRONMENTALLY SENSITIVE AREAS

Spring Creek

MONROE COUNTRY CLUB

JEFFERY ROAD

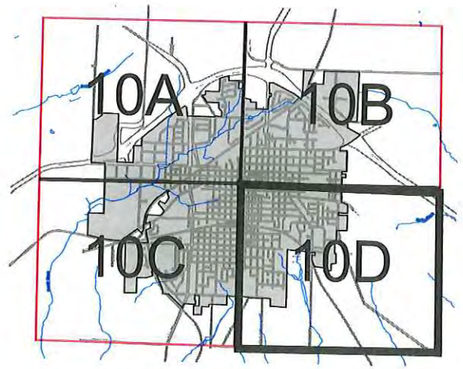
HADDINGER ROAD

MINGS ROAD

N

0 450 900 1350 1800

SCALE: 1"=900'



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N.T.S.

FIGURE 10D

SEWER SERVICE AREA PLAN

MONROE SEWER SERVICE AREA PLAN

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Figure 11
Development and Update Process

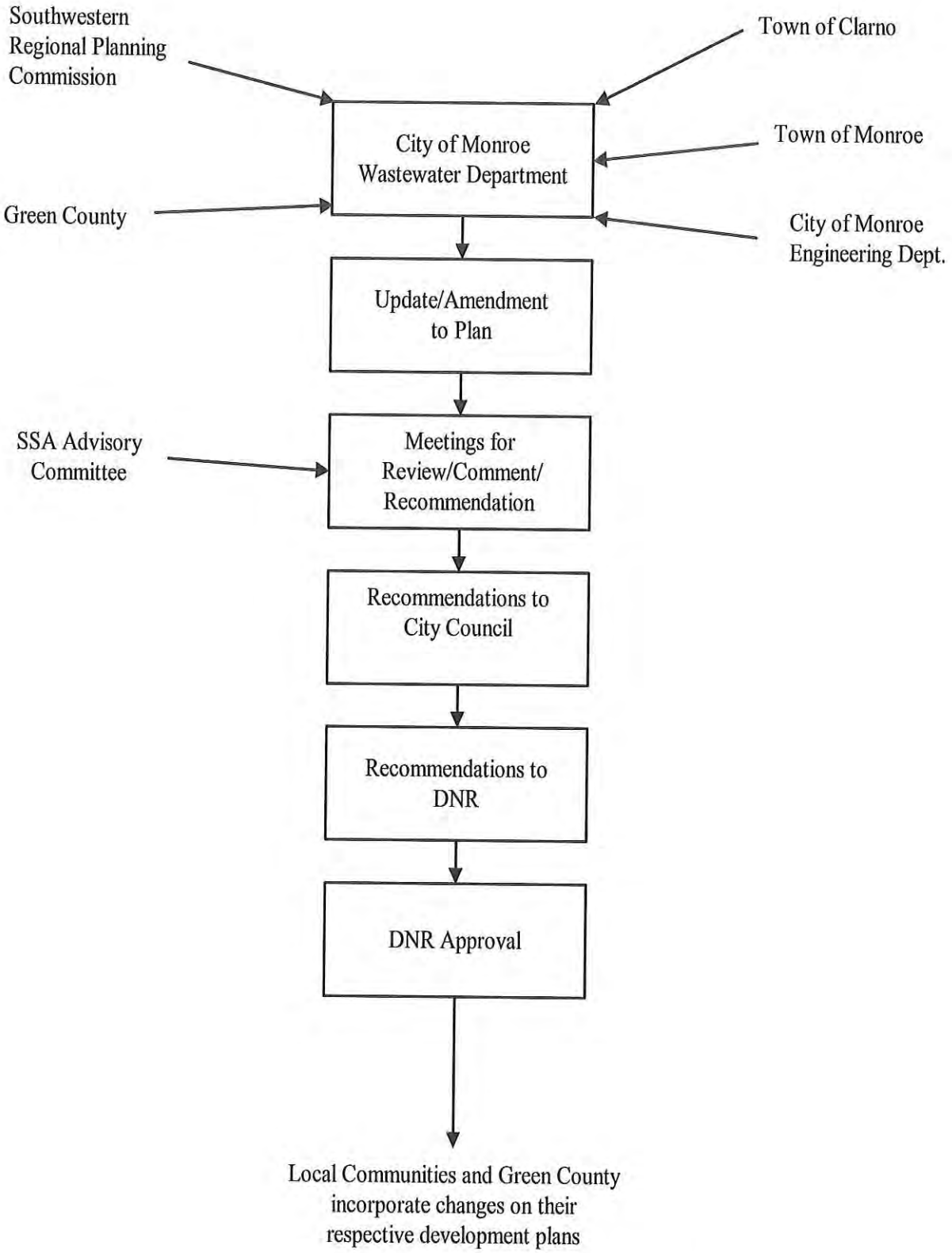
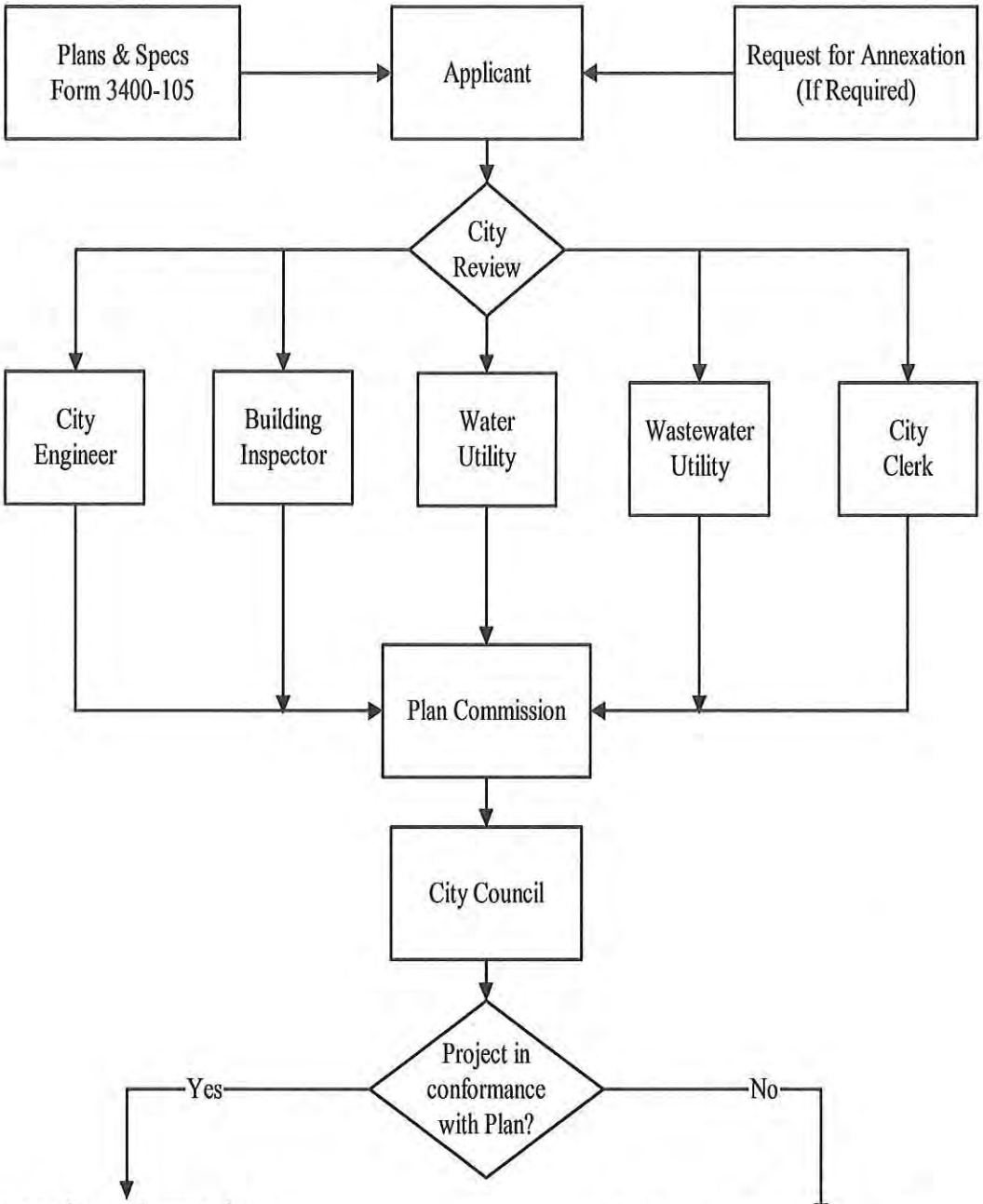


Figure 12
Procedures for
Sanitary Sewer Extensions



Water quality conformance letter issued to applicant.

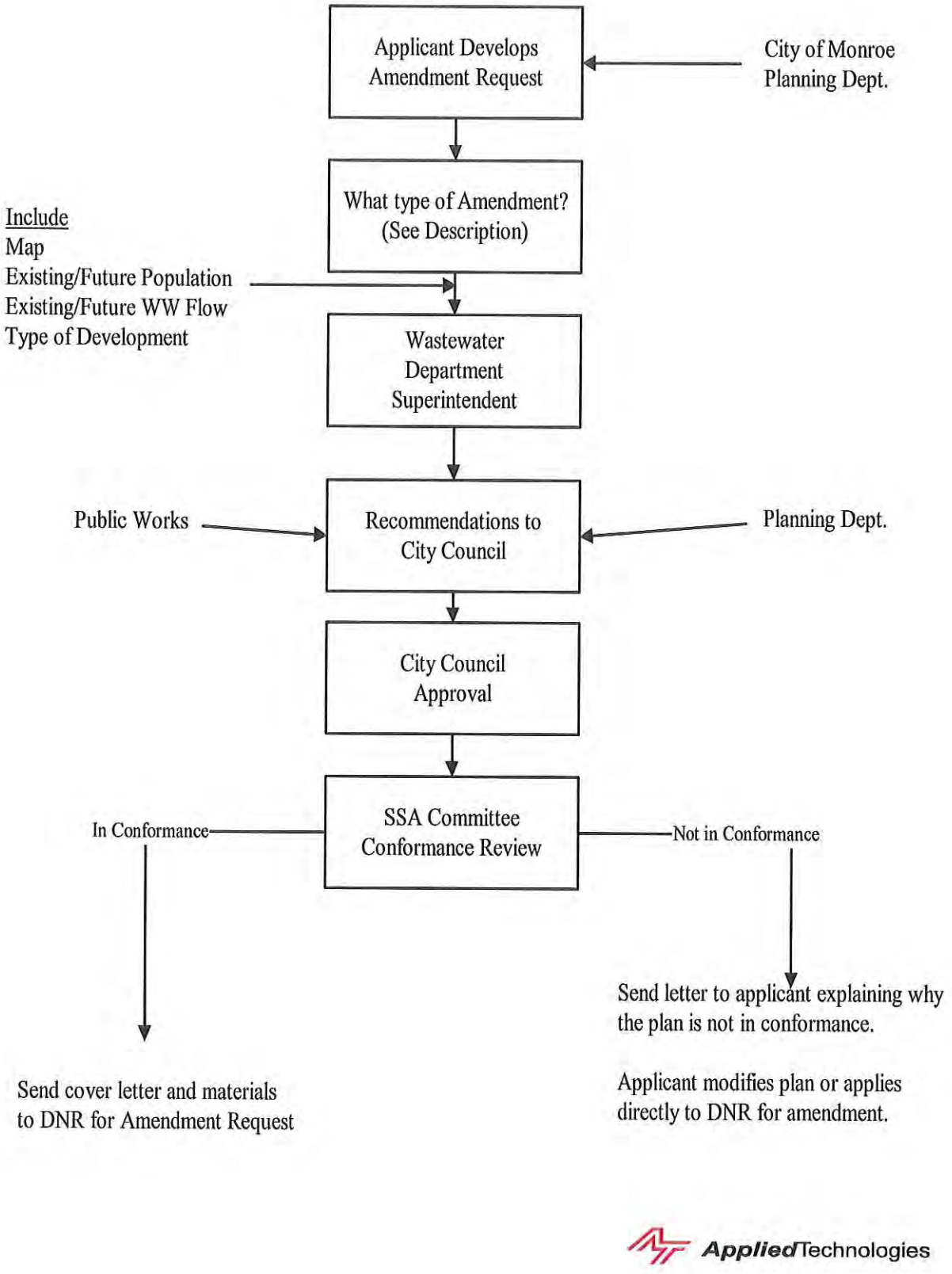
Applicant submits this letter with the standardized submittal forms to DNR.

Applicant notified of non-compliance.

The applicant revises and resubmits proposal, or;

The applicant requests a Plan Amendment.

Figure 13
Plan Amendment Process



AppliedTechnologies

APPENDIX A

CORRESPONDANCE WITH STATE HISTORICAL AND DNR BUREAU OF ENDANGERED RESOURCES

Applied Technologies

Applied Technologies, Inc.
16815 West Wisconsin Avenue
Brookfield, Wisconsin 53005
Fax 262-784-6847
Telephone 262-784-7690

May 20, 2002

Endangered Resources Impact Review
Bureau of Endangered Resources
P.O. Box 7921
Madison, WI 53707-7921

Subject: Sanitary Sewer Service Area Plan
City of Monroe, Wisconsin

Gentlemen:

Our firm is currently preparing a Sanitary Sewer Service Area Plan for the City of Monroe, Wisconsin. Sanitary Sewer Plans provide a framework for guiding future development patterns in a community. Part of the planning process involves identifying limiting features to development of sewered service. One such limiting feature is the presence of rare or endangered habitats.

We are requesting that your office review the enclosed map and advise us of any rare or endangered habitats in the area that we should be aware of. The study area is described as follows:

The Study Area includes all of the following Sections in Township 2 North, Range 7 East in the Town of Monroe, Green County, Wisconsin: 25, 26, 27, 28, 33, 34 35, and 36.

The Study Area includes all of the following Sections in Township 1 North, Range 7 East in the Town of Clarno, Green County, Wisconsin: 1, 2, 3, and 4.

A map of the area is enclosed for your reference. We have also enclosed a completed Wisconsin Natural Heritage inventory Request Form. We appreciate your assistance in this matter. If you have any questions or require additional data, please give me a call.

Sincerely,

Jeffrey D. O'Gorman, P.E.

Attachments

Cc Jerry Ellefson, City of Monroe

Wisconsin Department of Natural Resources

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Wisconsin Natural Heritage Inventory Information Request Form

Completion of this form is voluntary; however, information requested by this form is necessary for obtaining NHI data. Personally identifiable information on this form will be used for no other purpose.

Wisconsin's Natural Heritage Inventory (NHI) consists of a combination of historic records and ongoing survey information on rare plants, animals, and natural communities in an integrated system of computer databases, maps, and paper files. The Bureau of Endangered Resources provides this information, along with project timing and location advice and survey recommendations, to private businesses, developers, land use planners, land managers, and others in an effort to minimize impacts to these resources. To receive NHI information complete this form and send it, along with a map delineating the project area and a letter formally requesting endangered resources information, to:

Endangered Resources Impact Review
Bureau of Endangered Resources
P.O. Box 7921
Madison, WI 53707-7921

1. Applicant requesting Natural Heritage Inventory information.

Name: Jeffrey D. O'Gorman, P.E.

Organization: Applied Technologies, Inc.

Address: 16815 W. Wisconsin Avenue, Brookfield, WI 53005

Phone: (262) 784-7690

2. Individual/organization/agency proposing project (if different from above.)

Name: Gerald V. Ellefson, Superintendent

Organization: City of Monroe

Address: 1224 10th Avenue, West, Monroe, WI 53566

Phone: (608) 329-2595

3. Location of proposed project. Remember! Include a topographic or plat map delineating the project area. See enclosed map.

County(ies): Green County

Town _____ N Range _____ E W Section(s) See cover letter

Town _____ N Range _____ E W Section(s) _____

Town _____ N Range _____ E W Section(s) _____

4. What is the proposed date you intend to begin work on the project?

_____.

5. Briefly describe the project and specify the area of impact. For point source discharges into waterbodies, please indicate the discharge location, and the nature of any increase in discharge.

Preparation of a Sanitary Sewer Service Area Plan in accordance with NR 121 to provide a framework and guideline for future development.

6. Briefly describe current and past land use of the project and surrounding area.

Land use in the area is primarily agricultural and residential with some commercial/industrial interspersed.

7. Has a NHI Information Request Form been submitted for a different phase, portion, or other alternative(s) relating to this project? If so, please describe.

No.

8. What permits, licenses, or regulatory approvals will you be applying for, have you applied for, or have you received as part of this project?

DNR approval of Sanitary Sewer Service Area Plan.

Permit, license, or approval	The contact person for permit, etc.	Their Agency, District, or Bureau
Sign off	Mr. Chip Harry Brown III	State Historical Society

Application status (circle one):

will be applying for have applied for have received

To the best of my knowledge the information above is complete and accurate. I understand that the specific location of endangered resources is sensitive information and will use the material provided solely for analysis and review of the above project. I agree not to include exact locations of endangered resources in any publicly disseminated documents. I agree to contact the Bureau prior to publishing any information provided by the Wisconsin Natural Heritage Inventory and to credit the Bureau of Endangered Resources as the source of the material.

Signature: _____

Date: 5/20/02

I also agree to pay within 30 days of receipt of NHI information the charge accrued by the Department. There is a charge of $20/hour (with a minimum fee of $60) for non-DNR requestors. Refer to Chapter NR 29 Wisconsin Administrative Code, for more information on the fee structure and billing exemptions.

Wisconsin Department of Natural Resources
Form 1700-031
Rev. 10-93

Top of page || Endangered Resources || NHI

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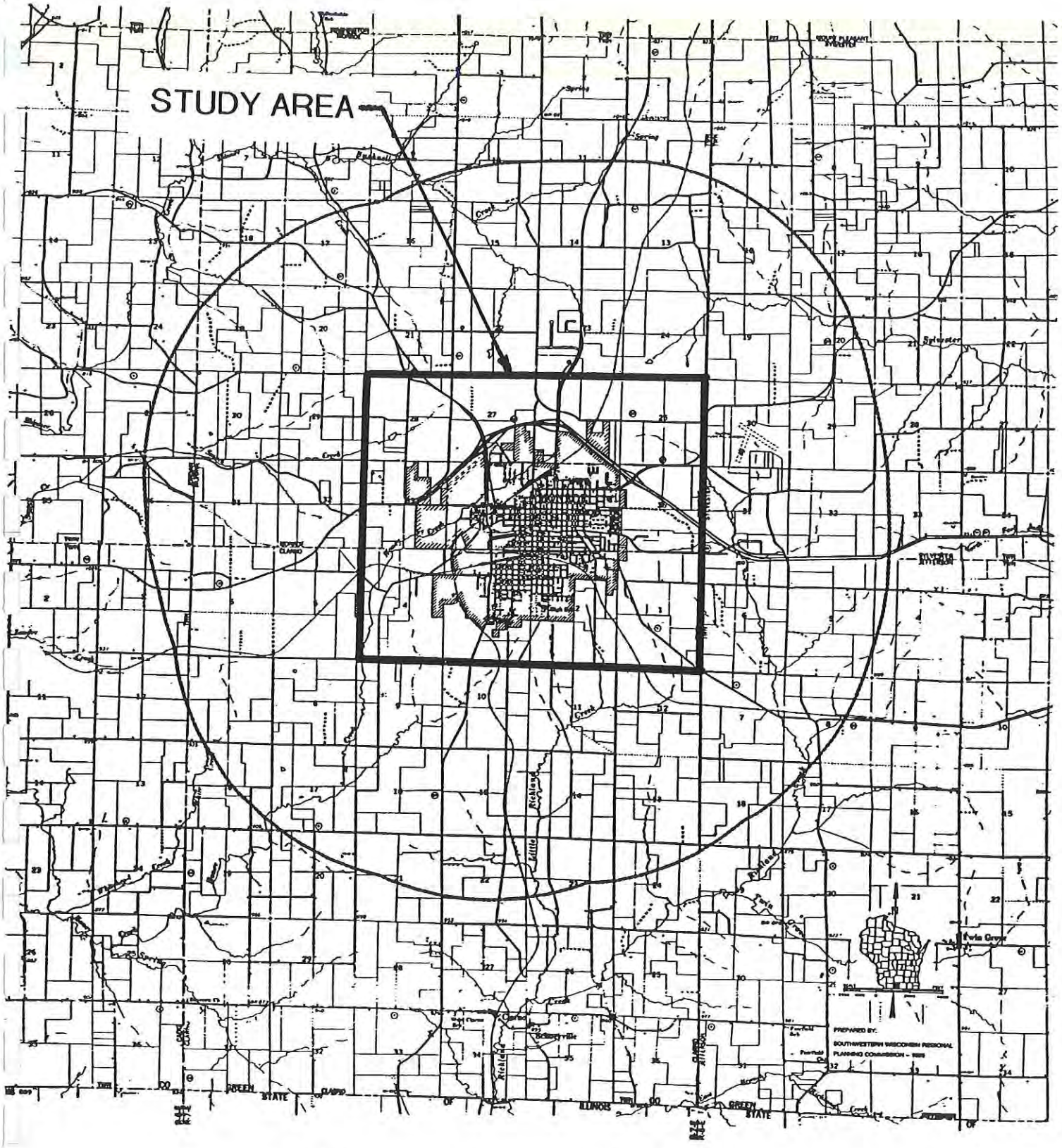


MONROE PLANNING AREA

GREEN COUNTY

WISCONSIN

PLATE 4

AppliedTechnologies

Applied Technologies, Inc.
16815 West Wisconsin Avenue
Brookfield, Wisconsin 53005
Fax 262-784-6847
Telephone 262-784-7690

May 20, 2002

Mr. Chip Harry L. Brown III
SHSW Historic Preservation
816 State Street
Madison, Wisconsin 53706

Subject: Sanitary Sewer Service Area Plan
City of Monroe, Wisconsin

Dear Mr. Brown:

Our firm is currently preparing a Sanitary Sewer Service Area Plan for the City of Monroe, Wisconsin. Sanitary Sewer Plans provide a framework for guiding future development patterns in a community. Part of the planning process involves identifying limiting features to development of sewered service. One such limiting feature is the presence of historical or archaeologic sites.

We are requesting that your office review the enclosed map and advise us of any archaeologically or historically significant sites in the area that we should be aware of. The study area is described as follows:

The Study Area includes all of the following Sections in Township 2 North, Range 7 East in the Town of Monroe, Green County, Wisconsin: 25, 26, 27, 28, 33, 34 35, and 36.

The Study Area includes all of the following Sections in Township 1 North, Range 7 East in the Town of Clarno, Green County, Wisconsin: 1, 2, 3, and 4.

A map of the area is enclosed for your reference. We appreciate your assistance in this matter. If you have any questions or require additional data, please give me a call.

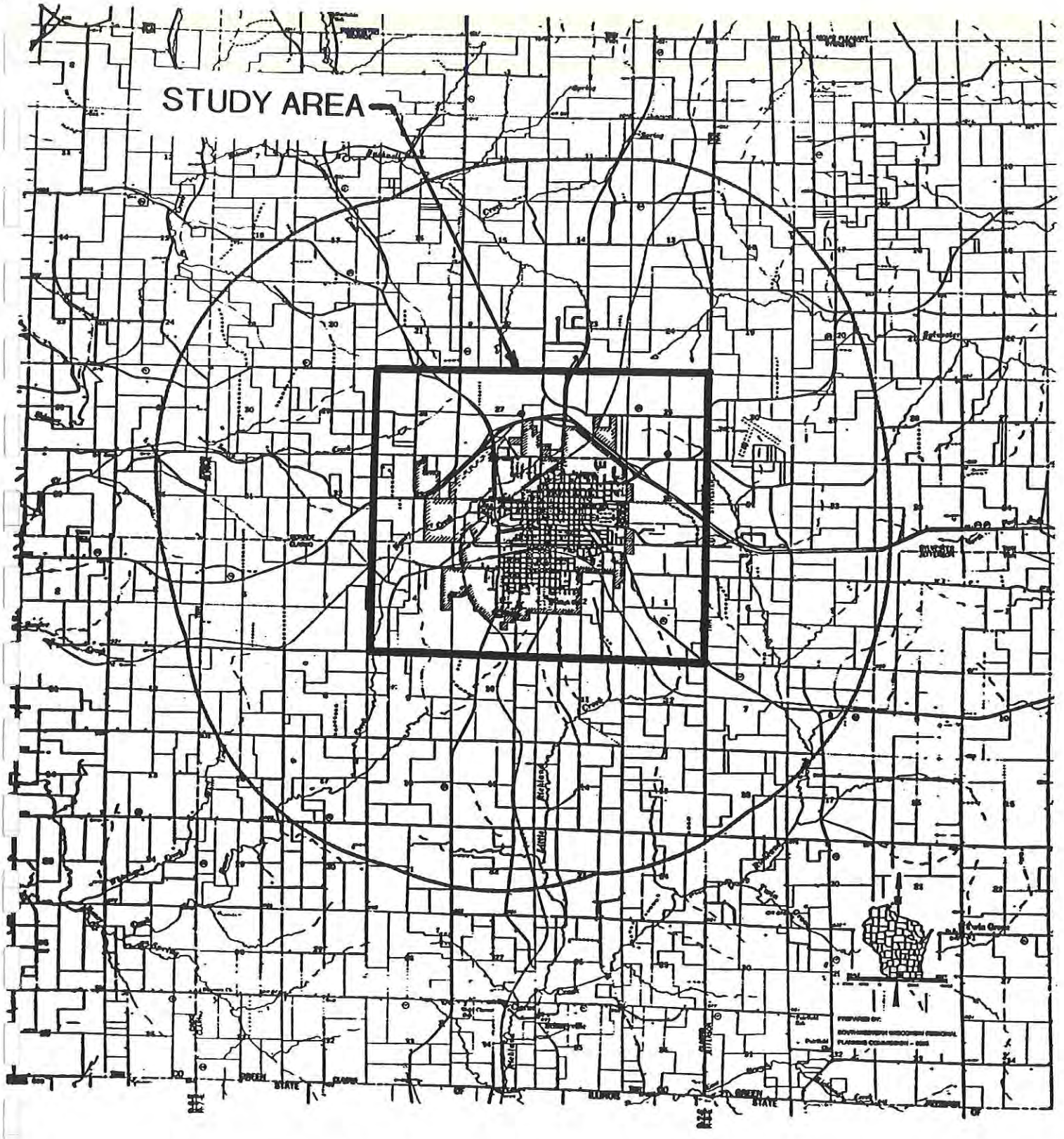
Sincerely,

Jeffrey D. O'Gorman, P.E.

Attachment

Cc Jerry Ellefson, City of Monroe

\\TAZ\PROJECTS\3149\WORDPROC\COMM\CORR_OUT\StateHistoricalSociety.doc



MONROE PLANNING AREA

GREEN COUNTY

WISCONSIN

PLATE 4

APPENDIX B

CITY OF MONROE

STORMWATER MANAGEMENT ORDINANCE

ORDINANCE CREATING CHAPTER 5-18 OF THE MONROE CITY CODE: STORM WATER MANAGEMENT

THE COMMON COUNCIL of the City of Monroe do ordain as follows:

SECTION 1: Chapter 5-18 of the Monroe City Code is hereby created to read as follows:

CHAPTER 18

STORM WATER MANAGEMENT

SECTION:

5-18- 1: Authority
5-18- 2: Findings of Fact
5-18- 3: Purpose and Intent
5-18- 4: Definitions
5-18- 5: Applicability and Jurisdiction
5-18- 6: Design Criteria, Standards and Specifications
5-18- 7: Storm Water Management Standards
5-18- 8: Permitting Requirements, Procedures and Fees
5-18- 9: Storm Water Management Plans
5-18-10: Maintenance Agreement
5-18-11: Financial Guarantee
5-18-12: Fee Schedule
5-18-13: Enforcement and Penalties
5-18-14: Appeals
5-18-15: Severability

5-18-1: **AUTHORITY**:

(A) This Chapter is adopted by the City under the authority granted by the Wisconsin Statutes. This Chapter supersedes all conflicting and contradictory storm water management regulations previously enacted.

(B) The provisions of this Chapter are deemed not to limit any other lawful regulatory powers of the Common Council of the City.

(C) The City hereby designates the Zoning Administrator to administer and enforce the provisions of this Chapter.

(D) The requirements of this Chapter do not preempt more stringent storm water management requirements that may be imposed by WPDES Storm Water Permits.

5-18-2: **FINDINGS OF FACT**: The City finds that uncontrolled Storm Water Runoff from Land Development Activities have a significant impact upon the water resources and upon the health, safety and general welfare of the community, which diminishes the public enjoyment and use of the natural resources. Specifically, uncontrolled Storm Water Runoff can:

(A) Degrade physical stream habitat by increasing stream bank erosion, increasing stream bed scour, diminishing groundwater recharge and diminishing stream base flows.

(B) Diminish the capacity of lakes and streams to support fish, aquatic life, recreation and water supply uses, by the increased loadings of nutrients and other urban pollutants.

(C) Alter Wetland communities by changing Wetland hydrology and increasing pollutant loads.

(D) Reduce the quality of groundwater by increasing pollutant loading.

(E) Threaten public health, safety, property and general welfare by overtaxing storm sewers, drainage ways, and other minor drainage facilities.

(F) Threaten public health, safety, property and general welfare by increasing major flood peaks and volumes.

(G) Undermine floodplain management efforts by increasing the incidence and levels of flooding.

5-18-3: **PURPOSE AND INTENT**:

(A) PURPOSE: The general purpose of this Chapter is to set forth storm water requirements and criteria, which diminish the threats to public health, safety, welfare and the aquatic environment due to Storm Water Runoff from Land Development Activity. Specific purposes are to:

1. Further the maintenance of safe and healthful conditions.

2. Prevent and control the adverse effects of storm water, prevent and control soil erosion, prevent and control water pollution, protect spawning grounds, fish and aquatic life.

3. Control exceedance of the safe capacity of existing drainage facilities and receiving water bodies, prevent undue channel erosion, control increases in the scouring and transportation of particulate matter and prevent conditions that endanger downstream property.

4. Control building sites, placement of structures, and land uses and promote sound economic growth.

(B) INTENT: The intent of this Chapter is to allow the City to manage long term, Post-Construction Storm Water Discharges from Land Development Activities. The City recognizes that the preferred method of achieving the storm water performance standards set forth in this ordinance is through the preparation and implementation of comprehensive, systems-level Storm Water Management Plans that cover hydrologic units, such as watersheds, on a municipal and regional scale. Where such system plans have been developed and approved by the City, it is the intent that all Land Development Activities will include storm water management measures that meet performance standards set forth in those approved plans. Where such Storm Water Management System Plans have not been developed or approved by the City, it is the intent of the City that Land Development Activities apply the generic storm water management standards set forth in Section 5-18-7 of this Chapter, unless otherwise excepted by the City.

5-18-4: **DEFINITIONS**: In this Chapter unless the context otherwise requires, certain words used herein are defined as follows:

AGRICULTURAL ACTIVITY:	The planting, growing, cultivating and harvesting of crops; the growing and tending of gardens and trees; and the harvesting of trees.
BANK:	The land surface abutting the bed of any navigable waterway which, either prior to any project or alteration of land contours or as a result of the proposed project or alteration, slopes or drains without complete interruption into the waterway.
BEST MANAGEMENT PRACTICE:	A structural or non-structural practice, technique or measure, facility, system of practices or device, which is determined to be an effective means of preventing or reducing runoff pollutants.
CEASE AND DESIST ORDER:	A court order issued to halt Land Development Activity that is being conducted without the required permit.
COMMON PLAN OF DEVELOPMENT OR SALE:	All lands included within the boundary of a certified survey or subdivision plat created for the purpose of development or sale of property where multiple separate and distinct Land Development Activities may take place at different times and on different schedules.
DESIGN STORM:	A hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency and total rainfall depth.
DISCHARGE VOLUME:	The quantity of runoff discharged from the land surface as the result of a rainfall event.
EXTRATERRITORIAL:	The unincorporated area within one and one-half miles of the corporate limits of the City. When the City becomes a third class city, this area will be three miles from the corporate limits.
FINANCIAL GUARANTEE:	A performance bond, maintenance bond, surety bond, irrevocable letter of credit or similar guarantee submitted to the City by the permit holder to assure that the requirements of this Chapter are carried out in compliance with the Storm Water Management Plan.
GROSS AGGREGATE AREA:	The total area, in acres, of all land located within the property boundary containing the Land Development Activity.
GROUNDWATER ENFORCEMENT STANDARD:	A numerical value expressing the concentration of a substance in groundwater, which is adopted pursuant to the Wisconsin Statutes.
GROUNDWATER PREVENTIVE ACTION LIMIT:	A numerical value expressing the concentration of a substance in groundwater, which is adopted pursuant to the Wisconsin Statutes.

IMPERVIOUS SURFACE:	A surface that releases the rainfall as surface runoff during a large portion of the design rainfall event. Rooftops, sidewalks, parking lots and street surfaces are examples of Impervious Surfaces.
INFILTRATION:	The process by which rainfall or surface runoff percolates or penetrates into the underlying soil.
LAND DEVELOPMENT ACTIVITY:	Any new construction of buildings, roads, parking lots, paved and unpaved storage areas and similar facilities, but not including Agricultural Activity.
MAINTENANCE AGREEMENT:	A legal document filed with the County Register of Deeds as a property deed restriction, which provides for long-term maintenance of storm water management practices.
MAXIMUM EXTENT PRACTICABLE:	A level of implementing Best Management Practices in order to achieve a performance standard specified in this Chapter which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. Maximum Extent Practicable allows flexibility in how the performance standards are met and may vary based on the performance standard and site conditions.
NON-RESIDENTIAL DEVELOPMENT:	Development of land for the following uses: commercial, industrial, government and institutional, recreation, transportation, communication and utilities.
NON-STRUCTURAL MEASURE:	A practice, technique or measure to reduce the volume, peak flow rate or pollutants in storm water that does not require the design or installation of fixed storm water management facilities.
NRCS:	National Resources Conservation Service, formerly known as the Soils Conservation Service.
OFF-SITE:	Property located outside the boundary described in the permit application for Land Development Activity.
ON-SITE:	Property located within the boundary described in the permit application for the Land Development Activity.
PEAK FLOW DISCHARGE RATE:	Maximum rate at which a unit volume of storm water is discharged.
PERVIOUS SURFACE:	A surface that infiltrates rainfall during a large portion of the design rainfall event. Well-managed lawns, fields and woodlands are examples of Pervious Surfaces.

POST-CONSTRUCTION STORM WATER DISCHARGE:	Any storm water discharged from a site following the completion of land disturbing construction activity and final site stabilization.
POST-DEVELOPMENT CONDITIONS:	The extent and distribution of land cover types, anticipated to occur under conditions of full development, which influence Storm Water Runoff and Infiltration.
PRE-DEVELOPMENT CONDITIONS:	The extent and distribution of land cover present before the initiation of Land Development Activity, assuming that all land uses prior to Land Development Activity are managed in an environmentally sound manner.
PRE-TREATMENT:	The treatment of storm water prior to its discharge to the primary storm water treatment practice in order to reduce pollutant loads to a level compatible with the capability of the primary practice.
RESIDENTIAL DEVELOPMENT:	Land Development Activity that is undertaken to house people, including the residential dwellings as well as all attendant portions of the development including lawns, driveways, sidewalks, garages and access streets. This type of development includes single family, multi-family, apartments and trailer parks.
RUNOFF CURVE NUMBER:	A parameter that combines effects of soils, watershed characteristics and land use to estimate the amount of runoff from land surfaces.
SITE RESTRICTION:	Any physical characteristic, which limits the use of storm water Best Management Practice as prescribed in the Wisconsin Storm Water Manual.
STOP WORK ORDER:	An order issued by the Zoning Administrator that requires all construction activity on the site be stopped.
STORM WATER MANAGEMENT PLAN:	A document that identifies what actions will be taken to reduce storm water quantity and pollutant loads from Land Development Activity to levels meeting the purpose and intent of this Chapter.
STORM WATER MANAGEMENT SYSTEM PLAN:	A comprehensive plan developed to address storm water drainage and nonpoint source pollution control problems on a watershed or sub-watershed basis, and which meets the purpose and intent of this Chapter.
STORM WATER RUNOFF:	That portion of the precipitation falling during a rainfall event, or that portion of snowmelt, that runs off the surface of the land and into the natural or artificial conveyance or drainage network.
STRUCTURAL MEASURE:	Source area practices, conveyance measures and end-of-pipe treatment that are designed to control Storm Water Runoff, pollutant loads, Discharge Volumes and Peak Flow Discharge Rates.

WATERS OF THE STATE:	Those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, and all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, watercourses, drainage systems and other surface water or groundwater, natural or artificial, public or private, within the state or its jurisdiction.
WDNR:	Wisconsin Department of Natural Resources.
WETLANDS:	An area where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions. These Wetlands include natural, mitigation and restored Wetlands.
WETLAND FUNCTIONAL VALUE:	The type, quality and significance of the ecological and cultural benefits provided by Wetland resources, such as: flood storage, water quality protection, groundwater recharge and discharge, shoreline protection, fish and wildlife habitat, floral diversity, aesthetics, recreation and education.
WPDES STORM WATER PERMIT:	A permit issued by the WDNR pursuant to the Wisconsin Statutes that authorizes the point source discharge of storm water to Waters of the State.

5-18-5: **APPLICABILITY AND JURISDICTION:**

(A) APPLICABILITY: This Chapter applies to Land Development Activities, including those Land Development Activities that are smaller than the minimum applicability criteria if such activities are part of a larger Common Plan of Development or Sale, even though multiple, separate and distinct Land Development Activities may take place at different times on different schedules, that meets any of the following applicability criteria:

1. Residential Development with a Gross Aggregate Area of 5.0 acres or more.

2. Residential Development with a Gross Aggregate Area of at least 3.0 acres, but less than 5.0 acres, if there are at least 1.5 acres of Impervious Surfaces.

3. Non-Residential Development with a Gross Aggregate Area of 1.5 acres or more, or any nonresidential land development, which creates an impervious area of 0.5 acres or more.

4. Land Development Activity of any size that is likely to result in Storm Water Runoff which exceeds the safe capacity of the existing drainage facilities or receiving body of water, which causes undue channel erosion, which increases water pollution by scouring or the transportation of particulate matter, or which endangers property or public safety.

5. A site following grading, or other removal of topsoil from the Bank of any navigable stream, lake or other body of navigable water where the area exposed by the grading or removal exceeded 10,000 square feet. (Note: a permit from the WDNR is also required.)

(B) JURISDICTION: This Chapter shall apply to Land Development Activities within the corporate limits of the City, as well as to all Land Development Activities in the Extraterritorial area.

(C) EXEMPTIONS: This Chapter does not apply to Land Development Activities conducted or contracted for by any board, commission, committee, department or officer in the state government or the office of the district attorney.

5-18-6: **DESIGN CRITERIA, STANDARDS AND SPECIFICATIONS**: Unless prior authorization is given by the Zoning Administrator, the following methods shall be used in meeting the requirements of this Chapter.

(A) WATER QUALITY COMPONENTS: The following methods shall be used in designing components of storm water structures needed to meet the water quality standards of this Chapter:

1. Practices shall be designed in accordance with this Chapter, standard engineering practices, WDNR requirements and the City Erosion Control Policy.

2. Runoff volumes and peak flow rates used in designing the water quality components of storm water structures shall be calculated using the methods used in this Chapter, standard engineering practices, WDNR requirements and the City Erosion Control Policy.

(B) WATER QUANTITY COMPONENTS: The following methods shall be used in designing components of storm water structures needed to meet the water quantity standards of this Chapter:

1. Peak flow reducing components of storm water structures shall be designed in accordance with standard engineering practice.

2. Runoff volumes and peak flow rates used in designing the water quantity components of storm water structures shall be based on the principles of the document entitled "Urban Hydrology for Small Watershed" (Technical Release 55: Engineering Division, NRCS, United States Department of Agriculture, June 1992, and version 2.10 dated July 1998).

5-18-7: **STORM WATER MANAGEMENT STANDARDS**:

(A) STORM WATER DISCHARGE QUANTITY: Unless otherwise provided for in this Chapter, all Land Development Activities subject to this Chapter shall establish On-Site management practices to control the peak flow rates of storm water discharged from the site. Infiltration of Storm Water Runoff from driveways, sidewalks, rooftops and landscaped areas shall be incorporated to the Maximum Extent Practical, to provide volume control in addition to control of peak flows. Infiltration of Storm Water Runoff standards shall be in accordance with subsection 5-18-7(B) of this Chapter. On-Site management practices shall be used to meet the following minimum performance standards:

1. The Peak Flow Discharge Rates of Storm Water Runoff from the development shall not exceed those calculated for the series of Design Storms specified in subsection 5-18-7(A)2 and Pre-Development Conditions specified in subsection 5-18-7(A)3. Discharge velocities must be non-erosive to discharge locations, outfall channels and receiving streams.

2. At a minimum, the 2-year/24-hour, the 10-year/24-hour and the 100-year/24-hour Design Storms shall be used in comparing Peak Flow Discharge Rates for Pre-Development and Post-Development Conditions. The 100-year/24-hour post-development design runoff shall be controlled at the 10-year/24-hour pre-development runoff rate.

3. Pre-Development Conditions for Land Development Activities shall assume a "good" level of land management. When the Soil Conservation Service TR-55 Method is used to calculate Peak Flow Discharge Rates and runoff volumes for the Pre-Development Condition, NRCS curve numbers shall not exceed the following for the given soil hydrologic groups. When other methods for computing runoff are used, they shall assume a comparable Pre-Development Condition.

TABLE 1 - Soil Hydrologic Group:	A	B	C	D
NRCS Curve Number for Meadow:	30	58	71	78
NRCS Curve Number for Woodland:	30	55	70	77
NRCS Curve Number for Grain:	55	68	77	80
NRCS Curve Number for Pasture:	39	61	74	80
NRCS Curve Number for Paved Roadways with Open Ditches*:	83	89	92	93
NRCS Curve Number for Commercial/Business Districts*:	89	92	94	95
NRCS Curve Number for Industrial District*:	81	88	91	93

* For use with redevelopment projects only.

4. Increases or decreases in the hydrology of Wetlands shall be minimized to the extent practical. Where such changes are proposed, the impact of the proposal on Wetland Functional Values shall be assessed using a methodology acceptable to the WDNR. Significant degradation of Wetland Functional Values shall be avoided.

(B) INFILTRATION.

1. Except as provided in Subsections 5-18-7(B)4 to 5-18-7 (B)7, Best Management Practices shall be installed and maintained with the design capability to infiltrate runoff, to the Maximum Extent Practicable, in accordance with one of the following methods:

(Note: Best Management Practices may include limiting the amount of impervious surface, directing runoff from rooftops and parking areas to pervious areas such as rain gardens, filter strips, grassed lawns or swales or, where space is limited for infiltration, directing runoff to infiltration devices such as basins or trenches. Infiltration within wellhead protection areas should be accomplished by directing residential roof runoff onto vegetated areas. Infiltration practices are expected to diminish in effectiveness over time. It is better to rely on multiple practices in series as opposed to one practice to maintain long-term infiltration.)

(a) By design, the inches of runoff to be infiltrated, per storm event, shall be equal to or greater than the values given in Table 2. An equivalent volume of runoff in cubic feet to be infiltrated is calculated using the values from Table 2 divided by 12 and multiplied by the total area in square feet of the post-construction site.

	Table 2 – Inches of Runoff to be Infiltrated by Design Per Storm Event	
Hydrologic Soil Group	**One & Two Family Residential Land Use**	**Other Than One & Two Family Residential**
A	0.26	0.40
B	0.23	0.30
C	0.012	0.14

(Note: The values given in Table 2 are based on a post-construction site with 42% connected imperviousness for one and two family residential land use and 90% connected imperviousness for all other land uses. Assuming the infiltration devices were designed with an infiltration rate of no more than 0.4 inches/hour for A soils, 0.2 inches/hour for B soils and 0.05 inches/hour for C soils; a maximum depth of 6 inches for the temporary pool behind the control structure; and a draw down time of 30 hours, the area dedicated to infiltration should not exceed 4% of the site for residential development and 8% of the site for non-residential development. The above infiltration rates are conservative in order to account for reduced infiltration effectiveness over the life of the device.)

(b) By design, the inches of runoff to be infiltrated, per storm event, shall be equal to or greater than the values calculated using the following equation: I = CI x F. "I" is the inches of runoff to be infiltrated. "CI", expressed as a decimal, is the percent of connected imperviousness across the post-construction site. "F" is a factor listed in Table 3. The volume of runoff in cubic feet to be infiltrated is calculated by dividing "I" by 12 and then multiplying by the total area in square feet of the post-construction site.

	Table 3 – "F" Factor	
Hydrologic Soil Group	**One & Two Family Residential Land Use**	**Other Than One & Two Family Residential**
A	0.62	0.44
B	0.55	0.33
C	0.28	0.15

(c) By design, infiltrate sufficient runoff volume so that the post-development average annual infiltration volume shall be at least 90% of the pre-development average annual infiltration volume for one and two family residential development and 70% for all other land uses. (Note: A model that calculates runoff volume, such as SLAMM, P8, or an equivalent methodology may be used.)

2. The infiltration of no more than 0.5 inches of runoff, per storm event, from any particular drainage area within the post-construction site shall count toward meeting the infiltration design standard of par. (a).

3. Before infiltrating runoff, pretreatment shall be required from commercial and industrial parking lots and access roads within the post-construction site. **(Note:** Pretreatment may include, but is not limited to, oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips. It is desirable to infiltrate the cleanest runoff to meet the infiltration standard. To achieve this, the design may propose greater infiltration of runoff from some sources such as roofs, and lesser from dirtier

sources such as parking lots. A 0.5-inch limit has been placed on the amount of credit given for infiltration from any particular drainage area.)

4. No person may use Best Management Practices to implement Subsection 5-18-7 (B) in any of the following:

(a) Areas associated with Tier 1 industrial facilities, as described in the "Industrial Storm Water Discharge Permits" section in the Wisconsin Administrative Code, including storage, loading, rooftop and parking.

(b) Storage and loading areas of Tier 2 industrial facilities, as described in the "Industrial Storm Water Discharge Permits" section in the Wisconsin Administrative Code. (**Note:** Runoff from Tier 2 parking and rooftop areas may be infiltrated but may require pretreatment.)

(c) Fueling and vehicle maintenance areas.

(d) Areas within 1,000 feet up-gradient or within 100 feet down-gradient of karst features.

(e) Areas with less than 5 feet separation distance from groundwater or bedrock.

(f) Areas within 400 feet of a municipal well or within 100 feet of a private well.

(g) Areas within the boundary of a recharge area to a wellhead identified in a wellhead protection plan.

(h) Areas where infiltration would be occurring through contaminants of concern present in the soil as defined in the "Soil Cleanup Standards" section in the Wisconsin Administrative Code.

(i) Areas where the soils are less than 10 percent fines. "Percent fines" means the percentage of a given sample of soil, which passes through a #200 sieve, in accordance with the American Society for Testing and Materials procedure C-117, 1995.

(j) Runoff from commercial and industrial areas that contains chloride de-icers. A pass-through or diversion mechanism may be installed so that the 1-year, 24-hour storm flows away from, or directly through an infiltration device during the months of December through March, or over a longer period of time as necessary, until the level of chlorides within runoff is below the chlorides preventive action limit in the "Groundwater Quality" section in the Wisconsin Administrative Code. If chloride de-icers are not used in these areas, then this exclusion does not apply. (**Note:** The purpose of diverting the runoff away from the infiltration device is to prevent runoff that contains chloride concentrations above the preventive action limit from reaching groundwater.)

5. The following are not required to meet Subsection 5-18-7 (B):

(a) Areas composed of hydrologic soil group D.

(b) Parking areas and access roads less than 5,000 square feet for commercial and industrial development.

(c) Infiltration areas during periods when the soil on the site is frozen.

6. Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternative use shall be given equal credit toward the infiltration volume required by this subsection.

7. Infiltration systems designed in accordance with this subsection shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and maintain compliance with the preventive action limit at a point of standards application in accordance with the "Groundwater Quality" section in the Wisconsin Administrative Code. However, if site-specific information indicates that compliance with a preventive action limit is not achievable, then the infiltration Best Management Practice may not be installed or shall be modified to prevent infiltration to the Maximum Extent Practicable. Discharge from pretreatment Best Management Practices shall remain below the enforcement standard at the point of standards application.

(C) STORM WATER DISCHARGE QUALITY: Unless otherwise provided for in this Chapter, all Land Development Activities subject to this Chapter shall establish On-Site management practices to control the quality of storm water discharged from the site. On-Site management practices shall be used to meet the following minimum standards:

1. TOTAL SUSPENDED SOLIDS. Best Management Practices shall be designed, installed or applied and maintained to control total suspended solids carried in runoff from the post-construction site as follows:

(a) Except as provided in subsection (b), for new development, by design, reduce the average annual total suspended solids load by 80%, as compared to no runoff management controls. "New development" means development resulting from the conversion of previously undeveloped land or agricultural land uses. To achieve this level of control, storm water practices shall be designed to accommodate, at a minimum, the runoff volume resulting from 1.5 inches of rainfall.

(b) If the design does not achieve the applicable total suspended solids reduction specified in subsection (a), the storm water management plan developed under Section 5-18-9 shall include a written and site-specific explanation as to why that level of reduction is not attained and the total suspended solids load shall be reduced to the Maximum Extent Practicable. **(Note:** Pollutant loading models such as SLAMM, P8 or equivalent methodology may be used to evaluate the efficiency of the design in reducing total suspended solids.)

2. Discharge of urban storm water pollutants to Wetlands shall be minimized to the lowest extent practical. Where such discharges are proposed, the impact of the proposed discharge on Wetland Functional Values shall be assessed using a method acceptable to the WDNR. At a minimum, storm water discharges shall be Pre-Treated prior to discharge to Wetlands. Significant degradation of Wetland Functional Values due to storm water pollutant loads shall be avoided.

3. Storm water discharges shall be Pre-Treated prior to Infiltration where necessary to prolong maintenance of the Infiltration practice and to prevent discharge of storm water pollutants at concentrations that will result in exceedances of Groundwater Preventive Action Limits or Groundwater Enforcement Standards established by the WDNR. Storm water shall not be injected

underground through excavations or openings that would violate any provision of the Wisconsin Administrative Code.

4. Storm water ponds and Infiltration devices shall not be located closer to water supply wells than indicated below without first notifying the Zoning Administrator.

(a) 100 feet from a well serving a private water system or a transient, non-community public water system.

(b) 400 feet from a well serving a municipal public water system, a non-municipal public water system or a non-transient non-community public water system.

(c) The boundary of a recharge area to a wellhead identified in a wellhead area protection plan.

(D) BUFFER AREAS.

1. In this subsection, "Buffer Area" means the following:

(a) An area of land that commences at the ordinary high water mark of lakes, at the top of the channel of streams and rivers or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured perpendicularly away from the ordinary high water mark, top of the channel or delineated boundary along the contour of the land:

(1) For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.

(2) For lakes and wetlands, 50 feet.

(3) For drainage areas greater than 130 acres, where a channel of concentrated flow exists, 10 feet.

(b) "Buffer Area" does not include any area of land adjacent to any stream enclosed within a structure, such as a pipe or culvert.

2. This subsection applies to post-construction sites located within a buffer area adjacent to surface waters, except those areas exempted pursuant to par. (e).

3. If construction occurs within a Buffer Area, permanent vegetative cover shall be established and maintained throughout the length of the Buffer Area in which the construction is located. The vegetative cover required under this paragraph shall be sufficient to provide for Bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas. Non-vegetative materials, such as rock riprap, may be employed on the Bank as necessary to prevent erosion such as on steep slopes or where high velocity flows occur. The requirements of this paragraph shall be met to the Maximum Extent Practicable.

4. If less than the minimum width is met, the Storm Water Management Plan shall contain a written site-specific explanation as to why that width cannot be attained. (**Note:** It is recommended that seeding of non-aggressive vegetative cover be used in the Buffer Areas. Other regulations in

the Wisconsin Statutes and Wisconsin Administrative Code may apply in the Buffer Area. Native vegetation is preferable and short-rooted vegetation such as Kentucky blue grass is least desirable.)

5. This subsection is not applicable to:

(a) Structures that cross or access surface waters such as boat landings, bridges and culverts.

(b) Post-construction sites from which runoff does not enter the surface water except to the extent that vegetative ground cover is necessary to maintain Bank stability. (**Note:** A vegetated buffer to filter runoff pollutants from post-construction sites described in paragraph (e)4 is not necessary since runoff is not entering the surface water at that location. Other practices, such as a swale or basin, necessary to meet the requirements of this section will need to be designed and implemented to reduce runoff pollutants before the runoff enters a surface water of the state.)

(E) FUELING AND VEHICLE MAINTENANCE AREAS. Fueling and vehicle maintenance areas shall, to the Maximum Extent Practicable, have Best Management Practice designed, installed or applied and maintained to reduce petroleum within runoff, such that the runoff that enters Waters Of The State contains no visible petroleum sheen. (**Note:** A combination of the following Best Management Practices may be used: oil and grease separators, canopies, petroleum spill cleanup materials or any other structural or non-structural method of preventing or treating petroleum in runoff.)

(F) EXCEPTIONS: The City may establish storm water management requirements either more or less stringent than those set forth in subsection 5-18-7(A) or (B), provided that at least one of the following conditions applies:

1. The Zoning Administrator determines that an added level of protection is needed to protect sensitive resources.

2. The City determines the Land Development Activity is covered by an approved Storm Water Management System Plan that contains management requirements consistent with the purpose and intent of this Chapter.

3. Provisions are made to manage storm water by an Off-Site facility, provided that all of the following conditions for the Off-Site facility are met:

(a) The facility is in place.

(b) The facility is designed and adequately sized to provide a level of storm water control equal to or greater than what would be afforded by On-Site practices meeting the requirements of this Chapter.

(c) The facility has a legally obligated entity responsible for its long-term operation and maintenance.

4. The City finds that meeting the minimum On-Site management requirement of this Chapter is infeasible due to space or Site Restrictions.

(G) FEE IN LIEU OF ON-SITE STORM WATER MANAGEMENT PRACTICES: Where the City waives all or part of the minimum On-Site storm water management requirements under this section, the applicant may be required to pay a fee in an amount determined in negotiation with the City. In setting the fee for land development projects, the City shall consider an equitable distribution of the cost for land, engineering design, construction and maintenance of storm water management practices needed to serve the land development.

(H) GENERAL CONSIDERATIONS FOR ON-SITE AND OFF-SITE STORM WATER MANAGEMENT MEASURES: The following considerations shall be observed in managing Storm Water Runoff:

1. Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this Chapter.

2. Emergency overland flow for all storm water facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.

5-18-8: **PERMITTING REQUIREMENTS, PROCEDURES AND FEES**:

(A) PERMIT REQUIRED: No landowner or land operator may undertake a Land Development Activity subject to this Chapter without receiving a permit from the Zoning Administrator prior to commencing the proposed activity.

(B) PERMIT APPLICATION AND FEE: Unless specifically excluded by this Chapter, any landowner or operator desiring a permit shall submit to the City a permit application made on a form provided by the Zoning Administrator for that purpose.

1. Unless otherwise excepted by this Chapter, in order for the permit application to be considered by the City, a permit application must be accompanied by the following: a Storm Water Management Plan, a Maintenance Agreement and a non-refundable permit administration fee.

2. The Storm Water Management Plan shall be prepared to meet the requirements of Section 5-18-9 of this Chapter, the Maintenance Agreement shall be prepared to meet the requirements of Section 5-18-10 of this Chapter, the Financial Guarantee shall meet the intent of Section 5-18-11 of this Chapter and fees shall be those established by the City as set forth in Section 5-18-12 of this Chapter.

(C) REVIEW AND APPROVAL OF PERMIT APPLICATION: The Zoning Administrator shall review any completed permit application that is submitted with a Storm Water Management Plan, Maintenance Agreement and the required fee. The following approval procedure shall be used:

1. Within 15 business days of the receipt of a completed permit application, including all items as required by subsection 5-18-8(B)1, the Zoning Administrator shall inform the applicant whether the application, Storm Water Management Plan and Maintenance Agreement are approved or disapproved. The Zoning Administrator shall base the decision on requirements set forth in Sections 5-18-7, 5-18-9 and 5-18-10 of this Chapter.

2. If the storm water permit application, the Storm Water Management Plan and the Maintenance Agreement are approved, or if an agreed upon payment of money in lieu of meeting all or part of the

storm water standards or management practices is made, the Zoning Administrator shall issue the Permit.

3. If either the storm water permit application, the Storm Water Management Plan or the Maintenance Agreement are disapproved, the Zoning Administrator shall detail in writing the reasons for such disapproval.

4. The Zoning Administrator may request additional information from the applicant. If additional information is submitted, the City shall have 10 business days from the date the additional information is received to inform the applicant that the Storm Water Management Plan and the Maintenance Agreement are either approved or disapproved.

5. If review by the WDNR is determined to be necessary, the Zoning Administrator shall require that the applicant withdraw the application for permit. The applicant shall be allowed to resubmit the application after written WDNR approval has been received for the proposed Storm Water Management Plan.

(D) PERMIT CONDITIONS:

1. All permits issued under this Chapter shall be subject to the following conditions, and holders of permits issued under this Chapter shall be deemed to have accepted these conditions:

(a) Compliance with the conditions of the permit does not relieve the permit holder of the responsibility to comply with other applicable federal, state and local laws and regulations.

(b) The permit holder shall design and install all Structural Measures and Non-Structural Measures in accordance with the approved Storm Water Management Plan and this Chapter.

(c) The permit holder shall notify the Zoning Administrator at least 5 business days before commencing any work in conjunction with the Storm Water Management Plan, and within 5 business days upon completion of the storm water management practices. If required as a special condition, the permit holder shall make additional notification according to a schedule set forth by the Zoning Administrator so that practice installations can be inspected during construction.

(d) Permits issued under this Chapter may include any special conditions needed to meet the performance standards specified in Section 5-18-7 or a financial guarantee as provided for in Section 5-18-11 of this Chapter.

(e) Practice installations required as part of this Chapter shall be certified as "built" by a licensed professional engineer. Completed storm water management practices must pass a final inspection to determine if they are in accordance with the approved Storm Water Management Plan and this Chapter. The Zoning Administrator shall notify the permit holder in writing of any changes required in such practices to bring them into compliance with the conditions of this Chapter.

(f) The permit holder shall notify the Zoning Administrator of any significant modifications it intends to make to an approved Storm Water Management Plan. The Zoning Administrator may require that the proposed modifications be submitted for approval prior to incorporation into the Storm Water Management Plan and execution.

(g) The permit holder shall maintain all storm water management practices in accordance with the Storm Water Management Plan until the practices are transferred to subsequent private owners as specified in the approved Maintenance Agreement.

(h) Subject to Sections 5-18-13(D) and 5-18-13(K) of this Chapter, the permit holder authorizes the City to perform any work or operations necessary to bring storm water management measures into conformance with the approved Storm Water Management Plan, and consents to a special assessment or charge against the property as authorized by the Wisconsin Statutes, or to charging such costs against the Financial Guarantee posted under Section 5-18-11 of this Chapter.

(i) If so directed by the Zoning Administrator, the permit holder shall repair at the permit holder's own expense all damage to adjoining municipal facilities and drainage ways caused by Storm Water Runoff, where such damage is caused by activities that are not in compliance with the approved Storm Water Management Plan.

(j) The permit holder shall grant the City access to the property to inspect the property for compliance with the approved Storm Water Management Plan and this Chapter.

(k) Where a Storm Water Management Plan involves a change in direction, an increase in peak rate and/or total volume of runoff from a site, the Zoning Administrator may require the permit holder to make appropriate legal arrangements with adjacent property owners concerning the prevention of endangerment to property or public safety.

(l) The permit holder is subject to the enforceable actions detailed in Section 5-18-13 of this Chapter if the permit holder fails to comply with the terms of this Chapter.

2. The Zoning Administrator may suspend or revoke a permit for violation of a permit condition, following written notification of the permit holder. An action by the Zoning Administrator to suspend or revoke a permit may be appealed in accordance with Section 5-18-14 of this Chapter.

(E) PERMIT DURATION: Permits issued are valid from the date of issuance and are permanent for the current land development. Any change to the development will require reapplication for a new permit.

5-18-9: **STORM WATER MANAGEMENT PLANS:**

(A) PLAN REQUIREMENTS: The Storm Water Management Plan required under subsection 5-18-8(B)1 of this Chapter shall contain any information the Zoning Administrator may need to evaluate the environmental characteristics of the area affected by the Land Development Activity, the potential impacts of the proposed development upon the quality and quantity of storm water discharges, the potential impacts upon water resources and drainage utilities and the effectiveness and acceptability of proposed storm water management measures in meeting the performance standards set forth in this Chapter. Unless specified otherwise by this Chapter, Storm Water Management Plans shall contain at a minimum the following information:

1. Name, address and telephone number of the following or their designees: landowner, developer, project engineer for practice design and certification, person(s) responsible for installation of storm water management practices and person(s) responsible for maintenance of storm water management practices prior to the transfer, if any, of maintenance responsibility to another party.

2. A proper legal description of the property proposed to be developed referenced to the U.S. Public Land Survey system or to block and lot numbers within a recorded land subdivision plat.

3. Pre-Development Conditions, including:

(a) One or more site maps at a scale of not less than 1 inch equals 50 feet. The site maps shall show the following: site location and legal property description; predominant soil types and hydrologic soil groups; existing cover type and condition; topographic contours of the site at a scale not to exceed 2 feet; topography and drainage network including enough of the contiguous properties to show runoff patterns onto, through and from the site; watercourses that may affect or be affected by runoff from the site; flow path and direction for all storm water conveyance sections, including time of travel and time of concentration applicable to each; watershed boundaries used in determinations of Peak Flow Discharge Rates and Discharge Volumes from the site; lakes, streams, Wetlands, channels, ditches and other watercourses on and immediately adjacent to the site; limits of the 100-year floodplain; location of wells located within 1,200 feet of storm water detention ponds, Infiltration basins or Infiltration trenches; delineation of wellhead protection areas delineated pursuant to the Wisconsin Administrative Code.

(b) Computations of Peak Flow Discharge Rates and Discharge Volumes for the 2-year/24-hour, 10-year/24-hour and 100-year/24-hour storm events. All major assumptions used in developing input parameters shall be clearly stated. The computations shall be made for each discharge point in the development, and the geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).

4. Post-Development Conditions, including:

(a) Explanation of the provisions to preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and Wetlands.

(b) Explanation of any restrictions on storm water management measures in the development area imposed by wellhead protection plans and ordinances.

(c) One or more site maps at a scale of not less than 1 inch equals 50 feet showing: revised pervious land use including vegetative cover type and condition; impervious land use including all buildings, structures and pavement; revised topographic contours of the site at a scale not to exceed 2 feet; revised drainage network including enough of the contiguous properties to show runoff patterns onto, through and from the site; locations and dimensions of drainage easements; locations of maintenance easements specified in the Maintenance Agreement; flow path and direction for all storm water conveyance sections, including time of travel and time of concentration applicable to each; location and type of all storm water management conveyance and treatment practices, including the On-Site and Off-Site tributary drainage area; location and type of conveyance system that will carry runoff from the drainage and treatment practices to the nearest adequate outlet such as a curbed street, storm and, or natural drainage way; watershed boundaries used in determinations of Peak Flow Discharge Rates and Discharge Volumes; any changes to lakes, streams, Wetlands, channels, ditches and other watercourses on and immediately adjacent to the site.

(d) Computation of the runoff volumes resulting from the 1.5 inch rainfall, and computations of Peak Flow Discharge Rates and Discharge Volumes for the 2-year/24-hour, 10-year/24-hour and 100-year/24-hour storm events. All major assumptions used in developing input parameters shall be clearly stated. The computations shall be made for each discharge point in the development, and the

geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).

(e) Results of investigations of soils and groundwater required for the placement and design of storm water management measures.

(f) Results of impact assessments on Wetland Functional Values.

(g) Design computations and all applicable assumptions for the storm water conveyance (open channel, closed pipe) system.

(h) Design computations and all applicable assumptions for storm water quality practices (sedimentation type, filtration-type, Infiltration-type) as needed to show that practices are appropriately sized to accommodate runoff from the 1.5-inch rainfall. For practice designs that depart from those specified in subsections 5-18-6(A)1 and 5-18-6(A)2, the results of continuous simulation modeling, conducted according to the guidelines established in this Chapter, shall be presented in such a way as to show the reduction in average annual total suspended solids loading from the developed site.

(i) Detailed drawings including cross-sections and profiles of all permanent storm water conveyance and treatment practices.

5. A storm water practice installation schedule.

6. A maintenance plan developed for the life of each storm water management practice including the required maintenance activities and maintenance activity schedule.

7. Cost estimates for the construction, operation and maintenance of each storm water management practice.

8. Other information as needed by the Zoning Administrator to determine compliance of the proposed storm water management measures with the provisions of this Chapter.

9. All site investigations, plans, designs, computations and drawings shall be certified by a licensed professional engineer to be prepared in accordance with accepted engineering practices, the City Erosion Control Policy and WDNR requirements.

(B) EXCEPTIONS: The Zoning Administrator may prescribe alternative submittal requirements for applicants seeking an exception to On-Site storm water management performance standards under subsection 5-18-7(C) of this Chapter.

5-18-10: **MAINTENANCE AGREEMENT:**

(A) MAINTENANCE AGREEMENT REQUIRED: The Maintenance Agreement required for storm water management practices under subsection 5-18-8(B)1 of this Chapter shall be an agreement between the City and the permit holder to provide for maintenance of storm water practices for the duration period of the permit. The agreement or recordable document shall be recorded with the County Register of Deeds so that it is binding upon all subsequent landowners served by the storm water management practices.

(B) AGREEMENT PROVISIONS: The Maintenance Agreement shall contain the following information and provisions:

1. Identification of the storm water facilities and designation of the drainage area served by the facilities.

2. A schedule for regular maintenance of each aspect of the storm water management system consistent with the Storm Water Management Plan.

3. Identification of the landowner(s), organization or municipality responsible for long-term maintenance of the storm water management practices.

4. That the landowner(s), organization or municipality shall remain responsible for long-term maintenance of the storm water management practices.

5. That the City is authorized to access the property to conduct inspections of storm water practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.

6. That the City shall maintain public records of the results of the site inspections, shall inform the landowner responsible for maintenance of the inspection results, and shall specifically indicate any corrective actions required to bring the storm water management practice into proper working condition.

7. That if the City notifies the party designated under the Maintenance Agreement of maintenance problems that require correction, the specified corrective actions shall be taken within a reasonable time frame as set by the City.

8. That the City is authorized to perform the corrective actions identified in the inspection report if the landowner does not make the required corrections within the specified time period and that the City may enter on the tax rolls the amount due from the landowner as a result of the City performing such corrective actions and collect the money as a special assessment against the property pursuant to the Wisconsin Statutes.

5-18-11: **FINANCIAL GUARANTEE:**

(A) ESTABLISHMENT OF THE GUARANTEE: The Zoning Administrator may require the submittal of a Financial Guarantee, the form and type of which shall be acceptable to the City. The Financial Guarantee shall be in an amount determined by the Zoning Administrator to be the estimated cost of construction and the estimated cost of maintenance during the period which the designated party in the Maintenance Agreement has maintenance responsibility. The Financial Guarantee shall give the City the authorization to use the funds to complete the project if the landowner defaults or does not properly implement the approved Storm Water Management Plan.

(B) CONDITIONS FOR RELEASE: Conditions for the release of the Financial Guarantee are as follows:

1. The City shall release the portion of the Financial Guarantee established to assure installation of storm water practices, minus any costs incurred by the City to complete installation of practices, upon submission of "as built plans" by a licensed professional engineer. The City may make

provisions for a partial pro-rata release of the Financial Guarantee based on the completion of various development stages.

2. The City shall release the portion of the Financial Guarantee established to assure maintenance of storm water practices, minus any costs incurred by the City, at such time that the responsibility for practice maintenance is passed on to another entity via an approved Maintenance Agreement.

5-18-12: **FEE SCHEDULE**: The fees referred to in other sections of this Chapter shall be established by the City by resolution and may from time to time be modified by resolution. A schedule of the fees established by the City shall be available for review in the Zoning Administrators office.

5-18-13: **ENFORCEMENT AND PENALTIES**:

(A) Any Land Development Activity initiated after the effective date of this Chapter by any person, firm, association or corporation subject to the provisions of this Chapter shall be deemed a violation, unless conducted in accordance with said provisions.

(B) The Zoning Administrator shall notify the responsible owner or operator by certified mail of any non-complying Land Development Activity. The notice shall describe the nature of the violation, remedial actions needed, a schedule for remedial action and additional enforcement action, which may be taken.

(C) Upon receipt of written notification from the Zoning Administrator, the permit holder shall correct work that does not comply with the Storm Water Management Plan or other provisions of this Chapter. The permit holder shall make corrections as necessary to meet the specifications and schedule set forth by the Zoning Administrator in the notice.

(D) If the violations of this Chapter are likely to result in imminent damage to property, public facilities, or Waters of the State, the City may enter the land and take emergency actions necessary to prevent such damage. The costs incurred by the City, plus interest and legal costs, shall be billed to the owner of title of the property.

(E) The Zoning Administrator is authorized to post a Stop Work Order on all Land Development Activity in violation of this Chapter, or to request the City Attorney to obtain a Cease and Desist Order.

(F) The Zoning Administrator may revoke a permit issued pursuant to this Chapter for noncompliance with the provisions of this Chapter.

(G) Any permit revocation, Stop Work Order or Cease and Desist Order shall remain in effect unless retracted by the Zoning Administrator or by a court of competent jurisdiction.

(H) The Zoning Administrator is authorized to refer any violation of this Chapter, or of a Stop Work Order or Cease and Desist Order issued pursuant to this Chapter, to the City Attorney for the commencement of further legal proceedings.

(I) Any person, firm, association or corporation who does not comply with the provisions of this Chapter shall be subject to a forfeiture of not less than two hundred dollars nor more than five hundred dollars per offense, together with the costs of prosecution. Each day that the violation exists shall constitute a separate offense.

(J) Every violation of this Chapter is a public nuisance. The City may seek an injunction order to enforce compliance with this Chapter. It shall not be necessary to prosecute the forfeiture before resorting to an injunction proceeding.

(K) When the Zoning Administrator determines that the permit holder has either failed to follow the practices or schedules set forth in the Storm Water Management Plan, or has failed to make corrections necessary to meet the specifications and schedule set forth in the notice described in Section 5-18-13(C) of this Chapter, the Zoning Administrator or a party designated by the City may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformance with requirements of the approved plan. The City shall keep a detailed accounting of the costs and expenses of performing this work. These costs and expenses shall be deducted from any Financial Guarantee posted pursuant to Section 5-18-11 of this Chapter. When a Financial Guarantee has not been established, or when a Financial Guarantee is insufficient to cover these costs, the costs and expenses shall be entered on the tax roll as a special assessment against the property and collected with any other taxes levied thereon for the year in which the work is completed.

5-18-14: **APPEALS**:

(A) ZONING BOARD OF APPEALS: The Zoning Board of Appeals shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the Zoning Administrator in administering this Chapter. The Zoning Board of Appeals shall also use the rules, procedures, duties and powers authorized by statute in hearing and deciding appeals. Upon appeal, the Zoning Board of Appeals may authorize variances from the provisions of this Chapter which are not contrary to the public interest, and where owing to special conditions a literal enforcement of this Chapter will result in unnecessary hardship.

(B) WHO MAY APPEAL: Appeals to the Zoning Board of Appeals may be taken by any aggrieved person or by an officer, department, board or bureau of the City affected by any decision of the Zoning Administrator.

5-18-15: **SEVERABILITY**: If any section, clause, provision or portion of this Chapter is judged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this Chapter shall remain in force and not be affected by such judgment.

SECTION 2: This ordinance shall be in full force the day following its passage and official publication.

Dated this 4th day of December, 2001.
Passed this _____ day of _____, 2001.
Published this _____ day of _____, 2001.

William Ross
Mayor

James Myers
City Clerk

5. Storm Water Retention Ponds

I have enclosed a list showing types and location of storm water retention ponds that are in service in our community controlling the quantity and quality of storm water. In addition, I have noted a number of additional ponds that are in the planning stages.

Storm Water Basin	Location	Type
St Clare Friedenshien Apartments	2003-4th St	Dry Bottom Ponds
Twining Valley Apartments	600-8th Ave	Wet Bottom Ponds
City of Monroe	500 block / 17th Ave	UG Piping
City of Monroe	400 block / 18th Ave	Dry Bottom pond
City of Monroe	Ridgeway Road	Dry Bottom Pond
City of Monroe	1300 block / 4th Ave West	Wet Bottom Pond
City of Monroe	8th St / STH 11 West	Wet bottom Pond
City of Monroe	2nd St / Park Place	Dry Bottom Pond
Kutter Harley Davidson	129W-6th St	Dry Bottom Pond
Monroe Middle School	12th St / 16th Ave	Dry Bottom Pond
Greenco Industries	1601-4th Ave West	Dry Bottom Pond
St Victors School	1416-20th Ave	UG piping
Badger State Ethanol	2443 Bethel Road	Dry Bottom Pond
Storm Water Retention Ponds In Planning		
Alpine Acres	22nd Ave / 28th St	Dry Bottom Pond
Villa East	1700 Block / CTH K	Dry Bottom Pond
Monroe Armory	1300 Block / 30th St	Dry Bottom Pond

City of Monroe
Non-Point Source
Water Quality & Quantity Control

1. Street Sweeping Sediment Control

   The City of Monroe sweeps 3,169 miles of streets annually, cleaning up sand, bottles, grass clipping, and general debris. These materials are disposed of in the county landfill.

2. Leaf and Grass pick-Up

   The City of Monroe picks up 127 CY of leaves, 64 CY of grass clipping annually. Those materials are composted, then returned to the homeowners for yard use.

3. Grass Clipping Control

   The City of Monroe enforces a policy on blowing of grass clipping into the city streets. Local residents are urged to control the blowing of grass clipping into the street gutters.

4. Street Catch Basins

   The City of Monroe has 84 storm water street catch basins and 58 junction boxes. These units catch sands, coarse debris, grass clipping, leaves, and general debris from the street runoff. Bi-annually, they are jetted and vacuum cleaned with the debris being buried in the county landfill.

APPENDIX C

EROSION CONTROL ORDINANCE

C I T Y O F M O N R O E

EROSION CONTROL PROVISIONS

The intent of this policy is to require Erosion control practices that will reduce the amount of sediment and other pollutants leaving construction Sites during Construction Activities.

AUTHORITY

These Erosion Control Provisions as approved by the Board of Public Works on Feb. 1994, are made a part of these Contract Documents.

APPLICATIONS

This policy applies to the following types of Construction Activities:

A. The construction of: houses or commercial, industrial or institutional buildings on lots of approved subdivision plats.

B. The construction of: houses or commercial, industrial or institutional buildings on lots of approved certified surveys.

C. Those involving grading, removal of protective ground cover or vegetation, excavation, land filling or other land disturbing activity affecting a surface area of 4000 square feet or more.

D. Those involving excavation or filling or a combination thereof affecting 400 cubic yards or more of dirt, sand or other excavation or fill material.

E. Those involving street, highway, road, or bridge construction enlargement, relocation or reconstruction.

F. Those involving the laying, repairing, replacing or enlarging of an underground pipe or facility for a distance of 300 feet or more.

REFERENCES AND DRAWINGS

Attached and made part of this policy are Figures 1, 2, and 3, and also made part of this policy is the manual titled "Wisconsin Construction Site Best Management Practice Handbook".

DEFINITIONS

Where ever used in this policy the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

City: The City of Monroe, a Wisconsin Municipal Corporation.

Construction Activity: The construction of buildings, roads, parking ots, paved storage areas and similar facilities as well as any man-made change of the land surface including but not limited to removing vegetative cover, excavating, filling and grading.

*** This does not include agricultural land uses for growing and harvesting crops ***

Contractor: Any person operating, leasing, renting, or having made other arrangements with the Landowner by which the Landowner authorizes use of his or her land.

Erosion: The detachment and movement of soil, sediment or rock fragments by water, wind, ice, or gravity.

Erosion Control Measure: An activity, device, or combination of both used to meet the requirements of this policy.

Landowner: Any person holding title to or having an interest in land.

Reference Manual: Wisconsin Construction Site Best Management Practice Handbook .

Runoff: The rainfall, snowmelt, or irrigation water flowing over the ground surface.

Set of One Year Design Storms: The rain intensities and rain volumes or corresponding values specific to this community for the storm durations of 0.5, 1, 2, 3, 6, 12 and 24 hours that occur approximately once per year as follows:

SET OF ONE YEAR DESIGN STORMS		
Storm Duration (hours)	Average Rain Intensity (inches / hour)	Total Rain (inches)
0.5	1.8	0.9
1	1.1	1.1
2	0.7	1.3
3	0.5	1.5
6	0.3	1.7
12	0.2	2.0
24	0.1	2.3

Site: The entire area included in the legal description of the land on which the Construction Activity is proposed in the permit application.

REQUIREMENTS

The following requirements shall be met on all Construction Activity regulated under this policy:

A. Site Dewatering. Water pumped from the Site shall be treated by temporary sedimentation basins, grit chambers, sand filters, upflow chambers, hydro-cyclones, swirl concentrators, or other appropriate controls designed and used to remove particles of 100 microns or greater for the highest dewatering pumping rate. If the water is demonstrated to have no particles greater than 100 microns during dewatering operations, then no control is needed before discharge. Water may not be discharged in a manner that causes Erosion of the Site or receiving channels.

*** Refer to Reference Manual for further information ***

B. Waste and Material Disposal. All waste and unused building materials (including garbage, debris, cleaning wastes, wastewater, toxic materials, or hazardous materials) shall be properly disposed and not allowed to be carried by runoff into a receiving channel or storm system.

C. Tracking. Each Site shall have graveled roads, access drives and parking areas of sufficient width and length to prevent sediment from being tracked onto public or private roadways. Any sediment reaching a public or private road shall be removed by street cleaning (not flushing) before the end of each workday.

D. Drain Inlet Protection. All storm drain inlets shall be protected with straw bales, filter fabric, or equivalent barrier meeting accepted design criteria, standards and specifications.

E. Site Erosion Control. The following criteria apply to Construction Activities that result in runoff leaving the Site.

(1) Sheetflow runoff from adjacent areas greater than 10,000 square feet in area shall be diverted around disturbed areas, unless shown to have resultant runoff velocities of less than 0.5 ft/sec across the disturbed area for the Set of One Year Design Storms. Diverted runoff shall be conveyed in a manner that will not erode the conveyance and receiving channels. Channelized runoff from adjacent areas passing though the Site shall be diverted around disturbed areas, if practical. Otherwise, the channel shall be protected as described below in (3)c..

(2) All activities on the Site shall be conducted in a logical sequence to minimize the area of bare soil exposed at any one time.

(3) Runoff from the entire disturbed area on the Site shall be controlled by meeting either a. and b. or a. and c. below:

a. All disturbed ground left inactive for five (5) or more days shall be stabilized by seeding or sodding (only available prior to September 15) or by mulching or covering, or other equivalent control measure.

b. For Sites with more than 10 acres disturbed at one time, or if a channel originates in the disturbed area, one or more sedimentation basins shall be constructed. Each sedimentation basin shall have a surface area of at least one percent (1%) of the area draining to the basin and at least three (3) feet of depth and constructed in accordance with accepted design specifications. Sediment shall be removed periodically to maintain a depth of three (3) feet. The basin shall be designed to trap sediment greater the 15 microns in size, based on the Set of One Year Design Storms having durations from 0.5 to 24 hours. The basin discharge rate shall also be sufficiently low as to not cause Erosion along the discharge channel or the receiving water.

c. For Sites with less than 10 acres disturbed at one time, filter fences, straw bales, or equivalent Erosion Control Measures shall be placed along all sideslope and downslope sides of the Site. If a channel or area of concentrated runoff passes through the site, filter fences shall be placed along the channel edges to reduce sediment reaching the channel.

(4) Any soil or dirt storage piles containing more than ten cubic yards of material should not be located with a downslope drainage length of less than 25 feet to a roadway or drainage channel. If remaining for more than five (5) days, they shall be stabilized by mulching, vegetative cover, tarps or other means. Erosion from piles which will be in existence for less than five (5) days shall be controlled by placing straw bales or filter fence barriers around the pile.

(5) In-street utility repair, construction soil or dirt storage piles located closer than 25 feet of a roadway or drainage channel must be covered with tarps or suitable alternative control if exposed for more than five (5) days, and the storm drain inlets must be protected with straw bales or other appropriate filtering barriers.

DESIGN CRITERIA, STANDARDS AND SPECIFICATIONS

All Erosion Control Measures required to comply with this policy shall meet the accepted design criteria, standards and specifications as identified by the Reference Manual.

MAINTENANCE OF EROSION CONTROL MEASURES

All sedimentation basins and other Erosion Control Measures necessary to meet the requirements of this policy shall be maintained by the applicant, Contractor or subsequent Landowner during the Construction Activity of the Site in a satisfactory manner to ensure adequate performance and to prevent nuisance conditions.

PERMITS

1. APPLICABILITY No Landowner or Contractor may commence a Construction Activity subject to this policy without receiving a permit from the City. At least one Landowner or Contractor controlling or using the Site and desiring to undertake Construction Activity subject to this ordinance shall submit an application for a permit and pay an application fee to City.

2. CONDITIONS All permits shall require the permittee to:

A. Maintain all Erosion Control Measures, road drainage systems, stormwater drainage systems, and other facilities necessary for compliance with this policy.

B. Repair any siltation or Erosion damage to adjoining surfaces and drainageways resulting from Construction Activities.

C. Inspect the Erosion Control Measures after each significant rain and at least once each week and make needed repairs.

D. Agree to all provisions of this policy.

ENFORCEMENT

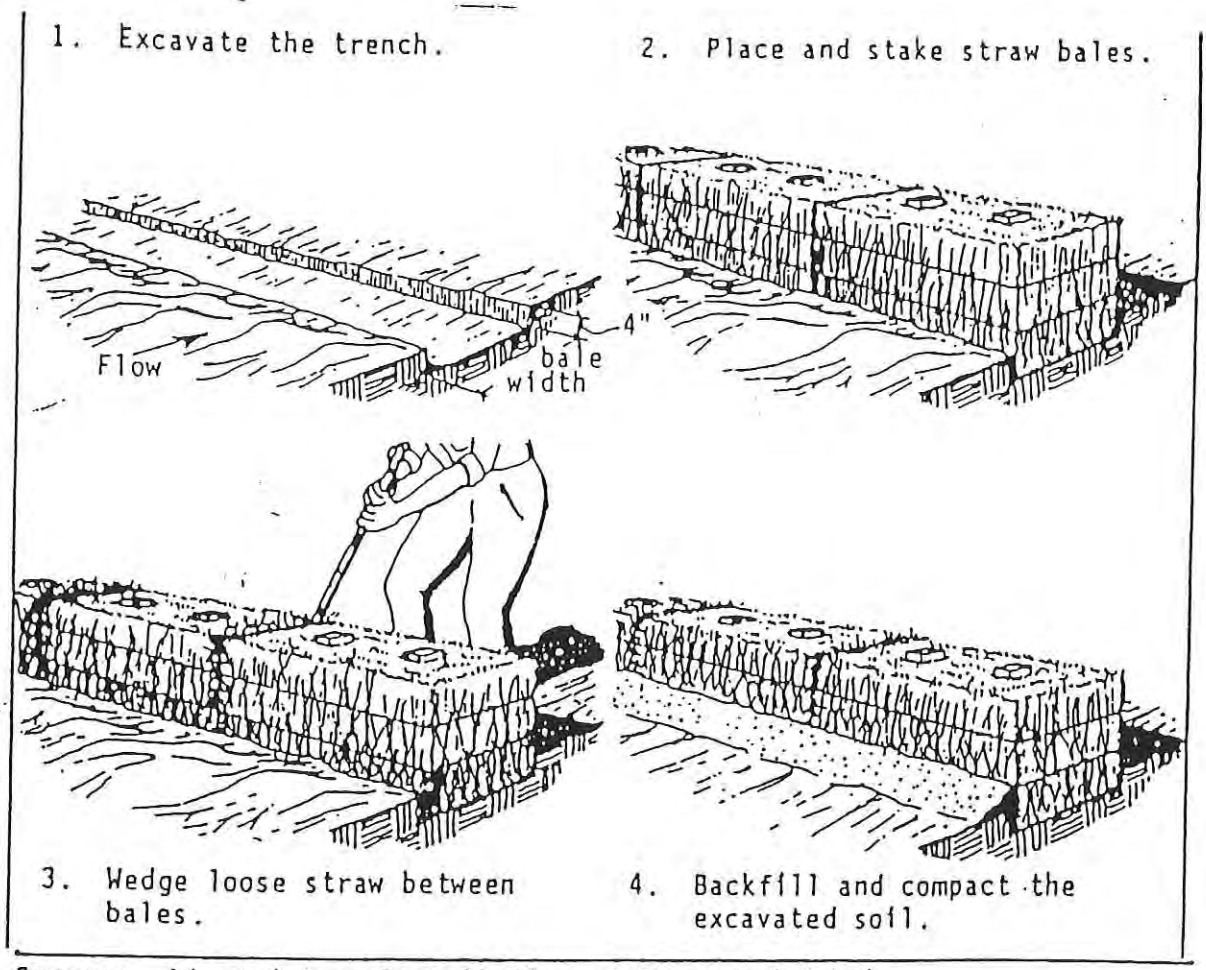
If upon inspection, the City finds non-compliance with the Policy, the City may:

A. Notify permittee of non-compliance and allow five (5) days to take corrective action.

B. Upon five (5) days of notification to permittee of non-compliance; enter the Site to perform any work necessary to bring the site into compliance with this policy.

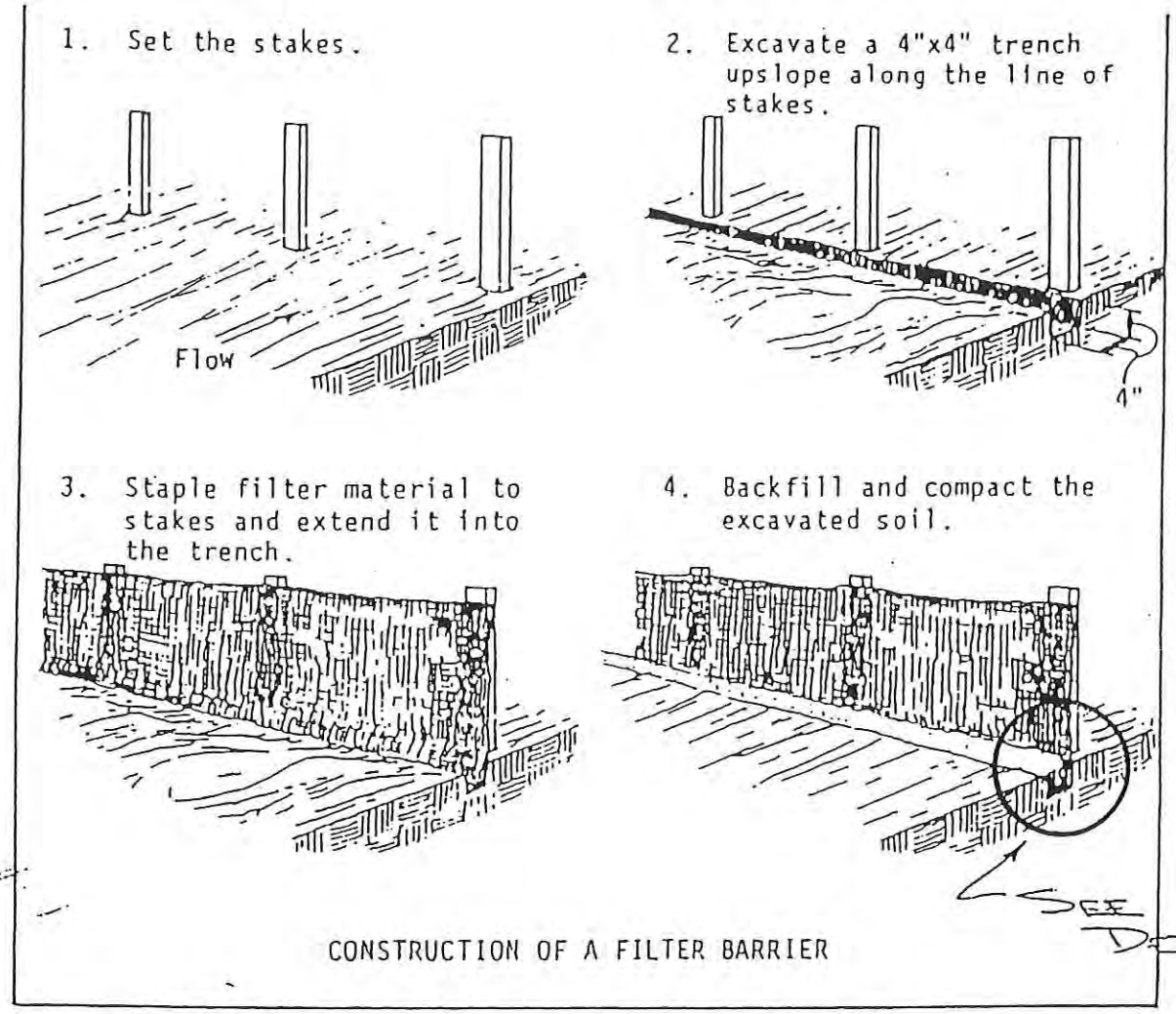
C. Charge the permittee for direct costs for work done to bring Site in compliance.

FIGURE #1



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

FIGURE #2



CONSTRUCTION OF A FILTER BARRIER

Source: Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

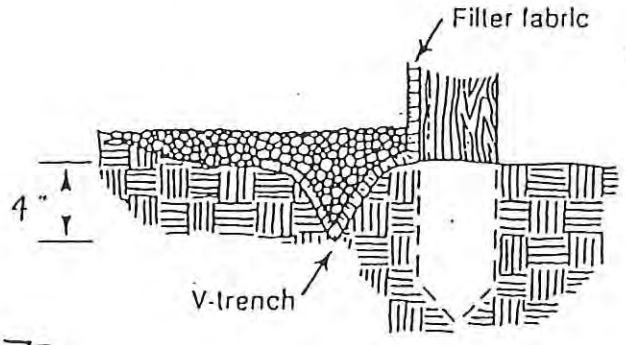
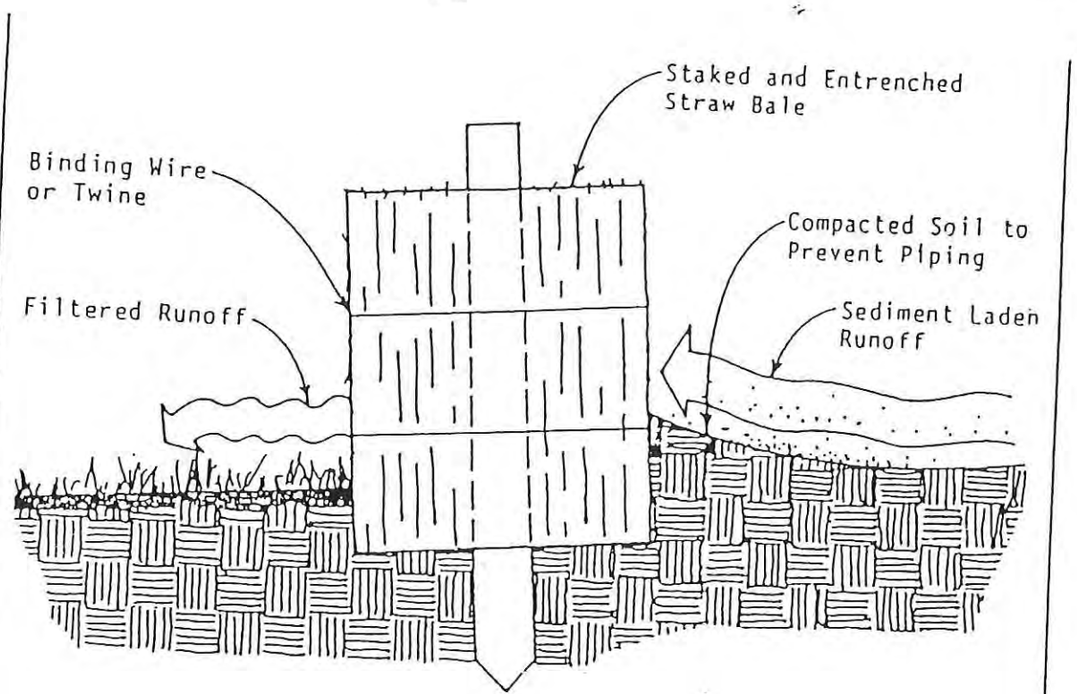


FIGURE #3



CROSS-SECTION OF A PROPERLY INSTALLED STRAW BALE

Source: Michigan Soil Erosion and Sedimentation Control Guidebook, 1975