UTILITIES

11. Utilities

The Utilities Plan is divided into the following sections:

- Section 1: Wastewater Collection and Treatment
- Section 2: Water Distribution and Treatment
- Section 3: Stormwater Utility

Section 1: Wastewater Collection and Treatment

A. Introduction

The main functions of the sanitary sewer system and the wastewater treatment facility is to protect and improve the water quality conditions of the Great Miami River and to ensure public health by properly conveying the wastes to the wastewater treatment facility for treatment. The Ohio Environmental Protection Agency provides governmental oversight of the City's sewer system ensuring compliance with state and federal regulations. Over the past few years, the City has made extensive improvements to the sanitary sewer system and wastewater treatment facility to better serve the citizens of Sidney. As a result the system varies greatly in age, capacity and condition.

The City of Sidney has been aggressively reducing inflow and infiltration (I&I) into the sewer collection system. I&I is defined as clean water intrusion into the sanitary sewers. I&I reduces the capacity of the sewer system; exposes property owners to flooded basements; and increases the operating costs of the wastewater treatment plant. The Utilities Department has prioritized the reduction of I&I as the department's primary goal and has developed plans accordingly. The existing system will be rehabilitated, expanded or replaced as needed. Historically, since 1984, the City has expended over $6.2 million dollars on sewer system rehabilitation to address I&I.

The City continues to require the developer to extend water and sewer mains to proposed development with the City oversizing the utilities to accommodate future growth. Development agreements are generated for new areas that are annexed that specify the utility extensions. In preparation for future growth, the City has developed planning studies on how areas can be served. Those planning studies include:

1. North Sidney Sanitary Sewer Analysis
   The North Sidney Sanitary Sewer Analysis provides a Master Plan of how the areas north and northwest of the City can be served with gravity sewers.

a) North Sanitary Sewer Master Plan: This area encompasses Hoewisher Rd to the south: Lochard Rd to the east; the B&O Railroad to the west and Sharp Rd to the north.
b) Northwest Sanitary Sewer Master Plan: This area encompasses Mason Rd to the north; Russell Rd to the south; Kuther Rd to the east and B&O Railroad to the east.
c) Honda Force Main: As a result of the North Sidney Sanitary Sewer Analysis, the City of Sidney/Honda of American Sanitary Sewer Service Agreement was amended. As a result, the City of Sidney now has the ability to utilize portions of the Honda Force Main for future growth. Additionally, the amended agreement specifies Honda of America's financial commitment to relocating the Mason Rd Pump Station to address deficiencies in the Honda Force Main.

2. Industrial Property Development Report
   The Industrial Property Development report is a Master Plan on providing sanitary sewer services to 23 potential industrial sites in the west and southwest areas of the City. This report was completed as an addendum to the West Sidney Sewer Report completed by Jones & Henry Engineers in 1997.

The City's Wastewater Treatment Plant (WWTP) underwent an expansion in 2002. The expansion increased the dry weather capacity from 5.0 million gallons per day (MGD) to 7.0 MGD. The facility's pumping capacity has been increased to 36 MGD during wet weather events. This extra pumping capacity helps ensure that the south end of the City does not flood and backup into homes during rain events.
Although the wastewater treatment plant (WWTP) upgrade was essential for industrial growth, the expansion did not address the need for solids handling. The byproduct of the wastewater treatment process is called Biosolids

and requires treatment in accordance with state and federal regulations before ultimate disposal. In 2008, the City will select a consultant to perform a Planning Study of future WWTP needs. The study will focus on the future industrial needs of the City; the need for solids treatment and handling; power management; and address future EPA regulations.

B. Planning Issues

1. Sanitary Sewer System Service Area

Currently the City's sanitary sewer service area extends beyond Sidney's corporate boundary. Customers outside the corporate boundary include Honda of America Anna Engine Facility and the Village of Port Jefferson. These two entities are served via special agreements with the City. The City of Sidney requires annexation for services for other properties desiring City services.

The completion of the Master Sewer Plans previously defined depicts the proposed service areas as now twice the present geographic size as the City. Sewer mains support a collection network extending on both sides of the Great Miami River, and west across I-75. Mains also extend northwest along County Rd 25A to the north, via the Honda force main, and to the northeast along SR 47 and north along Sidney-Freyburg Rd.

In 2001, the Village of Port Jefferson installed a new sanitary collection system by which sewage is pumped to the City. The City and the Village have a Management and Treatment Agreement. The Port Jefferson Sewer Rates are evaluated and amended annually. The in-City residential wastewater rates are currently $2.26/100 ft^3 for volume charges, and $0.90 for a base charge ($22.97/month for 250 gallon per day usage). Dating back to 1989, the sewer rates have been reviewed and adjusted annually.

The City of Sidney participates in the Annual Water & Sewer Rate Survey performed by the Village of Oakwood. 63 communities in west central Ohio participate in this survey. The 2008 Rate Survey indicates that Sidney, Ohio is ranked 9th lowest out of the 63 participating communities.

2. Sanitary Sewer System

Over $2.18 million in sewer improvements are proposed for the City's sanitary sewer system for the years 2009 through 2013. These include the continuation of the I&I Reduction Program; multiple sewer rehabilitation projects; and funding for development oversizing. The City's 5-Yr Capital Improvement Plan includes an additional $2.95 million in projects that are unfunded. These projects will be incorporated into the 5-yr Plan if the project becomes a priority or if additional funding becomes available.

a) Wastewater Treatment Plant

In compliance with the previous Sidney 2020 Comprehensive Plan, the City's Wastewater Treatment Plant is in the planning phase to accommodate future growth, continued improvement of equipment and processes, and compliance with current and potential future NPDES requirements.

Currently, the plant has a capacity of 7.0 million gallons per day. The organic treatment capacity is 9,000 lbs BOD/day. The planning study that is currently underway will identify future projects and phasing to accommodate future growth and economic conditions. Additional upgrades and expansions for the wastewater treatment plant should be reviewed annually and implemented as needed.

3. Steering Committee

In the Land Use Plan, the committee envisions a doubling in City population, and a significant increase in commercial/industrial acreage. The growth is displayed in tabular form in Table 11.1.

Sanitary Sewer System

Table 11.1
Water and Wastewater Usage/Requirements

NORTH SANITARY SEWER MASTER PLAN

Proposed Land Use	Acres	# of Units Per Acre	Total # of Density Residential Units	Flow Rate Gallons/Day Per Acre	Flow (MGD)	Total Flow with Peaking Factor (MGD)
Low Density Residential	1,615	2	3,230	480	0.75	2.32
Medium Density Residential	657	4	2.628	660	0.44	1.31
High Density Residential	0	- - -	- - -	- - -	- - -	- - -
Mixed Use Commercial	254	- - -	- - -	1,000	0.26	0.77

NORTHWEST SANITARY SEWER MASTER PLAN

Proposed Land Use	Acres	# of Units Per Acre	Total # of Density Residential Units	Flow Rate Gallons/Day Per Acre	Flow (MGD)	Total Flow with Peaking Factor (MGD)
Low Density Residential	1,136	2	2,272	480	0.54	1.64
Medium Density Residential	1,315	4	5,260	660	0.88	2.60
High Density Residential	454	8	3,632	900	0.41	1.24
Mixed Use Commercial	0	- - -	- - -	- - -	- - -	- - -

C. Existing Conditions

1. Overview

The existing sanitary sewer service area shown on the attached maps, identifies existing sewers of various types and sizes. The system does experience severe inflow/infiltration (clean water intrusion into the sanitary) problems. These inflow/infiltration flows currently add in excess of one million gallons per day (MGD), which is the peak treatment flow at the wastewater treatment plant (WWTP) during wet weather. The Wastewater Plant utilizes 2.0 million gallon capacity equalization basins to retain flows during precipitation events.

The wastewater flows the Wastewater Plant are:

- Design Dry Weather Capacity: 7.0 MGD
- Current Dry Weather Flow: 6.2 MGD
- Design Wet Weather Capacity: 36 MGD (full treatment 13.5 MGD)
- Current Wet Weather Flow: 15+ MGD

2. Equalization Basin

The City should continue utilizing the existing equalization basins during wet weather events, and maximize flows through the Treatment Plant. The City's focus should not be on the expansion of the equalization basins, but should target the aggressive reduction of inflow and infiltration.

3. Recommendations

Sanitary Sewer System

West End – Industrial Development
The City of Sidney has completed the Canal Interceptor Extension across from I-75, and up Vandemark Rd and has eliminated the Fair Rd Lift Station. This new sewer is called the Southwest Interceptor, and has a dry weather capacity of 4.2 million gallons a day. The existing flows from the areas served by the areas tributary to the Southwest Interceptor are primarily industrial and has a dry weather flow of 0.9 million gallons per day. Therefore, it is anticipated that the City would have sufficient capacity to service a larger area in the west end area.

The City should continue to actively pursue state grant funding for the development of industrial parks. The City has already identified over 240 acres of land for a large industrial park south of Millcreek Rd; east of Kuther Rd; north of Schenk Rd and west of Fair Rd and has submitted applications to the state for possible funding for the infrastructure development.

The City has identified 23 locations as potential industrial development. The City should work with the Owner and Developer to develop the area for industrial growth. The majority of the areas will require annexation into the City. The purpose of the study was to evaluate alternatives in providing sewer services for undeveloped property primarily in the Kuther Rd area consisting of Cisco Rd to the north and Schenk Rd to the south. According to the West End Sewer Study, there will be two new Master Sewage Pump Station installed that will service the area. The first pump station will be installed at the intersection of Kuther & Russell Rd. This pump station will provide sewer service to the areas of Kuther Rd from I-75 to the east, Campbell Rd to the south and Cisco Rd to the north. The existing pump station at the intersection of St. Rt. 47 and Kuther Rd will be abandoned when gravity sewers are installed that will flow north on Kuther Rd to the pump station at Russell Rd. The Kuther Rd gravity sewer will carry flows from the Stolle II West Industrial Park.

The Kuther/Russell Pump Station shall pump via a force main to the second pump station located at Kuther & Millcreek. An alternative to this option is to pump the wastewater to the existing 21" interceptor off of Norcold Dr.

The second Pump Station is to be located at the intersection of Kuther & Millcreek Rd. This pump station will provide sewer services to Kuther Rd from the railroad tracks to the north to Schenk Rd to the south. This pump station will discharge via force main to the existing sanitary sewer on Millcreek Rd.

The overall gravity sanitary sewer will be limited by topography to 2,800 feet to the west of Kuther Rd. Any development farther west would necessitate an additional evaluation and development of a master plan.

Honda Force Main Pump Station Relocation
The North Sidney Sewer Analysis Study recommended the relocation of the Mason Rd Pump Station from its current location to the east side of I-75 at Plum Creek. This is the lowest elevation in the area and would permit gravity sewers to be extended to non-served areas while maintaining Honda's contractual sewage flows. The relocation of the pump station also addresses problems with the Honda Force Main as it goes under I-75. With the relocation pump station, a gravity sewer can be extended under I-75 to the intersection Mason Rd and County Rd 25A. This would eliminate the Honda Force Main problems and would open the area of Mason Rd/County Rd 25A for development.

The City has renegotiated its Sewer Services Agreement with Honda of America. As part of the Agreement, Honda has committed to financially contributing for the relocated pump station. Additionally, as part of the amended agreement, the City's service area was expanded further north on County Rd 25A and Honda has

agreed to allow the City to utilize its force main for future development provided that Honda's contractual sewage flows are reserved.

North End – Residential & Mixed Use
As previously defined, the North Sanitary Sewer Master Plan encompasses an area of Hoewisher Rd to the south: Lochard Rd to the east; the B&O Railroad to the west and Sharp Rd to the north. This area has been defined by previous Comprehensive Plans as Low Density Residential; Medium Density Residential and Mixed Use and Commercial Business Areas. This entire area can be served by gravity sewers. The City has completed the North Sewer Interceptor on St. Rt. 47 to Sidney-Freyburg Rd. The interceptor size is 27" and currently terminates on Sidney-Freyburg Rd at Plum Creek. The Honda Force Main currently discharges into this interceptor. This interceptor was designed to handle the capacity of this service area including Honda's wastewater flows.

The North 27" Sewer Interceptor should be extended further north on Sidney-Freyburg Rd as development proceeds. The City should follow the North End Master Sewer Plan for guidance on development issues. The City should continue to require the developer to extend the utilities with the City paying oversize and overdepth.

Northwest End – Residential & Mixed Use
As previously defined, Northwest Sanitary Sewer Master Plan encompasses an area of Mason Rd to the north; Russell Rd to the south; Kuther Rd to the east and B&O Railroad to the east.
This area has been defined by previous Comprehensive Plans as Low Density Residential; Medium Density Residential and High Density Residential. This entire area can be served by gravity sewers.

The Master Plan was established using a maximum gravity sewer depth of approximately 25 ft. Some existing homes and additional areas beyond the gravity system may be included in the service area using pump stations and force main. While most of the sewers can be constructed in or along road rights-of-way, easements from property owners will be needed for proposed construction as it crosses private property.

This area will be served by a Master Sewage Pump Station to be located at the intersection of Kuther Rd and Russell Rd. In preparation for future growth, the City of Sidney has already acquired a two (2) acre tract on the northeast corner of this intersection for the proposed pump station.

Because development often does not follow natural annexation progression by beginning at the lowest point (Kuther and Russell Rd intersection) and working its way to the outer limits of the gravity sewer, temporary pump stations may be needed initially to serve the first several development. These temporary pump stations should be designed to be converted to a gravity sewer in the future.

In addition to the gravity sewer work with the study area, it is feasible to eliminate the Sewage Pump Station at Kuther Rd and St. Rt. 47 by extending gravity sewers north along Kuther Rd to the proposed pump station at Kuther & Russell Rd.

Additionally, the following requirements should be included in future City Planning:

a) Sewer Modeling
The City will need to hire a consultant to perform a model of the sanitary sewer system to identify system capacity deficiencies. This information is useful in determining future capital sewer replacements, and determining key connection points for future development.

b) Inflow/Infiltration Reduction
With continued growth within the community, the City needs to remain active in the reduction of Inflow/Infiltration. The I/I Reduction Program should be considered an Annual Event, and should be budgeted accordingly. The purpose of the I/I Reduction program is three fold:

i. Reduce the amount of clean water going to the City's Wastewater Treatment Plant
ii. Reduce and eliminate sewer backups and flooding in homes
iii. To extend the life of the collection system.

c) Sanitary Sewer Replacements
The City currently utilizes its State Issue II applications for sanitary sewer replacements. These sewer replacement projects rank high on the District priorities. Future replacement projects should be prioritized based on the system age, the amount of I/I and costs.

d) Expanding Sewer System for Future Residential Development
There currently remains a need to provide sewer services to areas predicted for residential growth. The City should identify those areas, and schedule sewer installations, provided existing sewers have sufficient capacity to handle the extensions. In all cases, the City should enforce developer requirements for the utility extensions with the City paying for oversizing and overdepth.

e) Wastewater Treatment Plant Equipment Improvements
Efforts should be made to maintain equipment at the Wastewater Treatment Plant in between expansion activities. It is recommended that funds be established in the operating budgets for motors/pump/feeder replacements similar to what was completed for the Water Treatment Plant.

Wastewater Treatment Plant

Future:

a) Future Wastewater Treatment Plant Expansion: Although the Wastewater Treatment Plant currently meets regulatory compliance standards and provides a high level of treatment, there remains the need for a periodic review of its capacity as it relates to community growth. The solids handling processes were not upgraded as part of the 2000 improvement. The City is currently developing a Master Plan for the Wastewater Treatment Plant to identify current needs and potential future improvements.

b) Class A Biosolids addition was identified in the previous comprehensive plan. The solids handling process is likely to need upgraded in the near future. While Class A biosolids are desirable the City has an abundance of acreage in its Biosolids Program to accommodate significant growth producing a Class B biosolids. Class A should not be the goal of the solids upgrade in the short term but should be incorporated into the expansion of the solids treatment processes if feasible in anticipation of future OEPA regulations requiring biosolids treatment to Class A standards.

c) Utility Efficiency: Electric and Natural Gas suppliers are advising their customers of potential large utility rate increases in the future. With this in mind, future improvements should be made with a focus on efficiency in the areas of utilities, staffing, and maintenance.

4. Preliminary Project Cost for Planning Purposes

Sanitary sewer and lift station project costs include legal, administrative, engineering and construction. These costs are based on the following:

a) Sanitary Sewer Modeling The estimated cost for hiring a consultant to perform modeling of the sanitary sewer system and identification of system capacities and deficiencies is approximately $35,000 based on 2001 dollars.

b) Sanitary Sewers Extension/Replacements
The following are general cost estimates for sanitary sewer extensions:

8 inch = $88 per linear foot on 1997 dollars. The following is a description of how these dollars are allocated.
12 inch = $96 per linear foot
15 inch = $114 per linear foot
24 inch = $158 per linear foot

c) Lift Stations
The following are general cost estimates for sanitary sewer lift stations:

Range = $80,000 to $220,000

Sewer system expansions will result in additional flow at the WWTP, the flow capacity should be evaluated for future uses. Additional operations and maintenance costs will increase for the Utilities Department, and should also be evaluated.

d) Wastewater Treatment Plan Expansion

The Wastewater Treatment Plant is currently developing an updated master plan. This document, scheduled for completion in late 2009, will serve as guidance for future planning to meet regulatory compliance and provide guidance to allow for continued growth in the residential, commercial, and industrial sectors.

e) Inflow/Infiltration Reduction Program
The City should continue the Inflow & Infiltration Reduction Program, and plan for it as an annual event. Cost estimates vary as the system deficiencies are identified. The current allocation for this program is $75,000 per year. The City will need to allocate more funds for this program based on the findings of system deficiencies, inflationary costs and major rehabilitations. The following are typical events that require spending for the I/I Reduction Program.

i. Smoke Testing
ii. Sanitary Sewer Televising
iii. Sanitary Sewer Dye Testing
iv. Flow Monitoring
v. Replacement of manhole casting frames and lids with sealed systems
vi. Installation of Chimney Seals on sewer castings
vii. Manhole rehabilitations or replacements
viii. Grouting of sewer mains
ix. Lining of sewer mains
x. Spot repairs

D. Wastewater System Plan

1. Introduction

The plan focuses on improving and expanding the sewer system to meet the projected outcomes of the Land Use Plan outlined on Table 11.1. This scenario will require a significant expansion of the wastewater treatment plant capacity plus reinforcements to the collection system especially on the west of I-75.

2. Policies

The following summarizes the mission statement, objectives, and strategies that serve as the policy foundation for the wastewater system plan.

a) Mission Statement
The utilities' mission is to *provide water, sewer and stormwater services that meet current needs and future growth.*

b) Objectives
The following are objectives that detail the mission statement for the wastewater system plan. Strategies indicating how the objectives will be satisfied are located in the Implementation Section.

Objective 1 - Clean Water Standards
Maintain compliance with all applicable clean water standards and Ohio EPA anti-degradation policies.

Objective 2 - Inflow/Infiltration
Related to Objective 1, reduce and manage the inflow/infiltration fraction of the incoming wastewater stream.

Objective 3 - Long Term Plan
Develop a financial and technical blueprint to systematically implement wastewater improvements on a timeline consistent with the Land Use Plan.

Objective 4 - Developer Contributions
Upgrade and enforce system expansion policy to ensure that the private sector development interests contribute to the growth picture, especially west of I-75.

Objective 5 – Industrial Park Development
Continue to apply for state and federal grant funds for the development of industrial parks. Systematically address the utility needs for each parcel being considered for development.

3. Standards

The following standards serve as a technical basis for the wastewater system plan.

a) Wastewater Treatment Plant
1) Meet water quality standards at effluent.
2) Peak capacity (build-out) - about 18.2 mgd (5.0 averages plus 4.1 increase time 2.0 peak).
3) Contain I/I at WWTP that cannot be economically removed.

b) Collection System
1) Develop west end sewer service area as required to support industrial development.
2) Reduce infiltration and inflow of clean water into the sanitary sewer system up to 10% per year, which is determined on a cost-benefit basis. This figure is defined as the difference between the incoming wastewater flow at the WWTP during the driest (precipitation) 30-day period compared, to the wettest 30-day period in a calendar year.

4. Wastewater Plan

The Wastewater Plan focuses on maintaining clean water standards, continuing actions to address the City's inflow/infiltration problem, continuing with long term plans to improve the system and ensuring developers continue to pay their fair share of utility improvement costs, including extensions.

E. Implementation

1. Introduction
The following strategies should be aggressively and systematically followed over the planning period in accordance with the Land Use Plan.

2. Strategies
The following is a detail implementation of the wastewater plan. Unlike traffic and transportation issues, the utility system is handicapped by “out of sight, out of mind” attitudes. Wastewater plans should be actively promoted.

Objective 1 - Clean Water Standards

Strategies

1a) Maintaining a high level of awareness in community of critical nature of the wastewater system.
Written and verbal reports on a quarterly basis at City Council meetings should be issued. The City has a substantial investment in its wastewater collection and treatment system. It is important to constantly reinforce both the investment aspect and critical nature of the system in the public arena, with an emphasis on non-crisis issues. Detail flow versus capacity issues are significant indicators of the system. Ohio EPA compliance, and non-compliance standards should also be used as indicators of the system.

Responsibility Party:	*Utilities Director (Lead)*
Timeframe:	*Ongoing - Annual Basis*
Estimated Cost:	*In-House Staff Time*

1b) Issuing annual technical report to the City administration on wastewater system performance versus Land Use Plan.
A key building block of the city's long term Land Use Plan, is the ability of the wastewater management system to keep up with city demands. This will take the form of quality and capacity elements. The City administration should stay current regarding the systems ability to consistently handle the increasing activity.

Responsibility Party:	*Utilities Director (Lead)*
Timeframe:	*Ongoing - Annual Basis*
Estimated Cost:	*In-House Staff Time*

Objective 2 - Inflow/Infiltration

Strategies

2a) Enforcing "clean water ordinances" for inflow/infiltration (I/I) containment on a homeowner basis.
The most vulnerable side of the city's wastewater system is the degree to which I/I detracts from capacity and treatment efficiencies. Considerable effort must be expended to both contain and reduce the I/I problem. I/I containment must begin with the homeowner. The approach to I/I reduction for the typical house will vary from downspout removal (simple) to re-plumbing (expensive). "Corrected" homes must be periodically revisited to insure compliance.

Responsibility Party:	*Utilities Director* (Lead)
Timeframe:	*Ongoing*
Estimated Cost:	*$50 per house to City for inspection (personnel time; potentially several hundred dollars to homeowner). The City also has a residential infiltration elimination program in which the City is committed to contributing $3,000 per house for Flood Abatement work and $1,000 for property owner assistance for I/I deficiencies found on private property.*

2b) Managing and/or eliminating system inflow/infiltration (I/I).
The sanitary sewers and manholes are subject to detrimental I/I influences. The City must balance its residential I/I elimination program with a companion effort for the public mains. The City should continue to administer an aggressive approach in televising all sewer mains.

Responsibility Party:	*Utilities Director* (Lead)
Timeframe:	*Ongoing*
Estimated Cost:	*$75,000+ per year*

Objective 3 - Long Term Plan

Strategies

3a) Supporting the sewer improvement fund through adequate customer fees.
A positive cash flow should be established.

Responsibility Party:	*Utilities Director (Lead), Finance Officer, City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*Increased User Fees*

3b) Expanding the wastewater treatment plant.
The Land Use Plan will necessitate incremental increases in treatment capacity to handle dry weather flows. Ensuring State support is necessary as growth occurs.

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Ongoing; Planning Study Completed 2008*
Estimated Cost:	$3.00 - $4.50 per gallon of sewage flow

3c) Determine fiscal impact of extending utility lines north and west of the City per the land use plan.
The City should evaluate the costs of extending sewer service to this area versus the benefit from increased commercial and residential development. Comparison should be made between the costs of servicing development at existing densities, with the costs of servicing development under a more traditional development pattern.

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Short and Long Term*
Estimated Cost:	$3.00 - $4.50 per gallon of sewage flow

Objective 4 - Developer Contributions

Strategies

4a) Continuing to require developer participation in utility improvements.
The City should continue to require developers to participate in utility improvements as necessitated by their developments. Such contribution should be determined on a pro rate basis, and applied equally to all projects. When appropriate, utility lines should be oversized to accommodate planned future development, above and beyond the subject development under current over-sizing regulations. This strategy is not intended to conflict with Land Use Plan Objective 1e.

Responsibility Party:	*City Manager (Lead), Utilities Director and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

Objective 5 – Industrial Park Development

Strategies

5a) Identifying potential areas west of I-75 for development into industrial parks.

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

5b) Apply for state and federal grants for the development of industrial parks.

Responsibility Party:	*City Manager (Lead), Planning Director, Utilities Director and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

Section 2: Water Distribution and Treatment

A. Introduction

The City of Sidney has been the long-term provider of potable water to the residents of the community. The system consists of AWWA (American Water Works Association) and NSF (National Sanitation Foundation) approved and licensed under permit by the Ohio EPA as a drinking water supplier and meeting regulatory standards. The plant consistently meets chemical and bacteriological testing requirements for drinking water standards of the USEPA.

These facilities are vitally important for the protection of public health and safety (fire protection), and to serve as one of the critical components of the economic base. In every sense, the water system is essential to the city's quality of life.

B. Planning Issues

There has been an increase in activity with the water system since the development of the Sidney 2025 Comprehensive Plan. Since 2002, the City has been working with the consultant on two main issues.

1. **Short Term Water Improvements**
   a) Raw Water Pump Station Improvements
   b) Lime Sludge Lagoon Improvements
   c) Water Distribution Improvements
      i. Water Age and Water Loss
      ii. Evaluation of Pressure Zones
      iii. Complete Modeling of the Distribution System
      iv. Identification of Current System Deficiencies
      v. Evaluation of Build-Out Needs
2. **Water Source Study**
   a) Evaluation of a potential wellfield site at an existing gravel quarry in Washington Township.

In 2008, Sidney City Council held a retreat to identify and prioritize the needs of the City. The number one priority of Sidney City Council was the alternate/new water source. Sidney City Council is fully aware of the contamination and drought susceptibility that we face with the current water source.

C. Existing Conditions

1. Water Source

The average day usage of potable water in the City is approximately 3.86 to 4.0 million gallons per day (MGD). The City of Sidney obtains its raw water from three (3) sources: 1) 600,000 – 800,000 gallons per day from four bedrock wells; 2) Tawawa Creek a surface water source; and 3) the Great Miami River also a surface water source. The capacity of the fractured bedrock wells have declined over the past decade. The original capacity of the wellfield produced in excess of 1,000,000 gallons per day. In 2000, the City expended funds to rehabilitate the wells. Although the wells had the pumps rebuilt and the well casings cleaned, the capacity of the wells have declined to approximately 600,000 – 800,000 gallons per day total.

The remaining 75% of the raw water supply originates from surface water either the Great Miami River or Tawawa Creek. The source of the Great Miami River is Indian Lake and its headwaters. The source of Tawawa Creek is Tawawa Lake. Both bodies of water are State Parks. Tawawa Creek produces the better quality of water and is available during the spring and fall months. However, during the summer, Tawawa Creek fails to provide sufficient water necessitating the need to draw from the Great Miami River.

Surface water as a primary potable water source is highly susceptible to contamination; seasonal river changes and drought conditions. Sources of contamination include: upstream wastewater plants; agricultural runoff; mega farms; and potential contamination from road spills on St. Rt. 47 and adjacent roads. All of these potential contamination sources necessitate the need for development and enforcement of a Source Water Protection Plan.

The more severe issue is the drought conditions that the Shelby County and the Indian Lake area have experienced in the past decade. As a matter of reference, the City has experienced drought conditions in 1988, 1999, 2002 and 2005. During the 1999 drought, the City was within one day of implementing the Drought Contingency Plan. This would require the mandatory reduction in water consumption from both residential and industrial sources.

It is widely known that the City of Sidney has been seeking an alternate source of water for the past 50 years. In 1957, in cooperation with the Ohio Department of Natural Resources, an upland reservoir was evaluated. An upland reservoir was again evaluated in 1976 and 1978.

Beginning in 2002, the City began actively researching and evaluating alternate water sources. Studies that have been completed include: upland reservoirs; converting a lime stone quarry into a reservoir; impoundment of Amos Lake; riverbed collector wells; and evaluating groundwater wells in the ancient Teays underground river northeast of the City. All of the options studied resulted in the lack of available water to meet the City's future needs.

In 2005, the City started its evaluation of a gravel quarry site in Washington Township. The site is the headwaters of several water sources including: Loramie Creek; Fox Creek; Turtle Creek and Millcreek. The gravel quarry site is directly upstream of Lockington Dam and is subject to flooding which is conducive to the type of water source needed. There are two gravel quarries at this location. One of the quarries is no longer active while the other quarry remains under the possession of an active gravel quarry mining operation. Both quarries hold and retain water. Initial calculations suggest that the quarries hold approximately 660 million gallons. However, using this water would still be classified as a surface water source. The City wanted to evaluate whether the quarry sites would be a suitable ground water source that would have a recharge rate that would meet the City's future needs of 10 MGD.

In 2006, the City initiated a Wellfield Study at the site. Several borings were taken and a production test well was drilled. Upon completion of the testing of the well, the results were inputted into an aquifer model. The model suggested that the site was capable of producing 10 MGD. However, further exploratory borings and additional test wells were needed to confirm the results and to determine the Maximum Safe Yield of the aquifer. The recharge rate in the aquifer must be able to meet the 10 MGD demand.

In 2008, the City initiated the next phase of the wellfield study. Under this part of the study, the City will perform the following: 6 shallow borings; 9 deep borings (to bedrock); install 7 deep and 6 shallow monitoring wells and

install 1 shallow and 2 deep production test wells. Upon completion of the production test wells, the City will perform step tests and a 7 day constant rate test of the aquifer. Those results will be inputted into the aquifer model to determine the Maximum Safe Yield. In order for this to be the City's new water source, the Max Safe Yield needs to indicate a minimum of 10 MGD.

All testing activities and the determination of the Maximum Safe Yield have been completed. The results indicate that the new wellfield would support a 10 MGD supply for the City. Sidney City Council has made the determination to hold off on the increased water rates and proceeding with this project until the years 2011-2013.

2. Service Area and Distribution System

The City provides water service to an extensive portion of the planning area. The network of water mains extends to both sides of the Great Miami River and along Riverside Drive, Russell Road, Campbell Road, Fair Road, Millcreek Road and Sidney-Freyburg Road.

As part of the overall evaluation of the City's water needs, the City hired a consultant to develop a study on the Short Term Water Improvements. Short Term Water Improvements covered the basic water infrastructure improvement needs of the City. This report was completed in 2007. The report identified the following needs:

a) Raw Water Pump Station Improvements: The Raw Water Pump Station is located on the Great Miami River at Custenborder Field. The age of the pump station exceeds 25 years. Although City staff has performed normal maintenance activities on the pump station, there remains a need to make some physical improvements including: the replacement of the pumps with higher capacity pumps; replacement of the screening equipment; the installation of an on-site generator; and modifying the river intakes. The preliminary cost estimate for this project in 2007 dollars was $1,687,000. *It is important to note that if the City proceeds with the new water source then this pump station upgrade won't be necessary.*

b) Lime Sludge Lagoon Improvements: The byproduct of Water Treatment is a lime sludge material. This material is pumped from the Water Treatment Plant to the Lime Lagoon close to Flannigan Field. The size of the lagoon is approximately 9 acres and has been in operation for the past 25 years. Over the years, the lagoon has filled up. In 1999, the City began to clean the lagoon and hauling the material to farmland as a fertilizer supplement. With the rising fuel prices, the costs associated with the cleaning of the lagoon has resulted in a lower tonnage of lime removed. It has been identified that an alternate 5-yr capacity lagoon is needed. The cost associated with constructing an alternate lagoon is $960,000. An alternate to constructing a 5-Yr lagoon is to install dewatering facilities at the Water Plant and allow the farmers to come directly to the plant and obtain the spent lime. The cost associated with this alternative exceeds $1,200,000.

c) Water Distribution Improvements: As part of the Short Term Water Improvements Study, an evaluation of the distribution system was made. Emphasis was given on whether the City should install pressure zones to boost pressure to the north end while maintaining the higher pressures in the downtown area. The result of that evaluation was not to install pressure zones but to regulate pressures through other improvements.

1. **Current Water Main Deficiencies**: The report indicated that the water age in the system was good indicating that the system was well looped. The City's water loss was below 15% which is good based on the National average. The report identified deficiencies with the current water distribution system. Those deficiencies were:
   i. Riverside Drive Water Main Improvements: Replace existing 8" water main with a 16" water main. Cost: $1,633,000
   ii. Hoewisher Rd Water Main: Loop Hoewisher Rd from Main Ave to County Rd 25A with a 16" water main. Cost: $800,000
   iii. 24" Transmission Main: Complete the 24" transmission main on Poplar extending to the intersection of Fair and Campbell Rd. Cost: $1,000,000

2. **Water System Build-Out:** The report identified certain water infrastructure needs as the City grows. Those needs include:

   i. 5 MGD – as the City grows and the daily demand reaches 5 MGD, certain piping improvements are needed. Costs: $5,600,000
   ii. 7 MGD – as the City grows and the daily demand reaches 7 MGD then a new water tower on the north end and piping improvements needed. Costs: $3,000,000 for water tower and $8,590,000 for piping improvements.
   iii. 9 MGD – as the City grows and the daily demand reaches 9 MGD then a new water tower is needed on the west site of the City and certain piping improvements must be made. Costs: $3,000,000 for water tower and $9,470,000 for piping improvements.
   iv. 10 MGD Build-Out. As the City reaches the build-out of 10 MGD then additional water storage and piping improvements are needed. Costs: $3,000,000 for clearwell expansion at Water Plant and $6,000,000 in piping improvements.

3. **Water Modeling:** A Water Model is a computer simulation of the distribution system that identifies deficiencies, predicts pressures and fire flows, and identifies the need for future main extensions. The City has the necessary hardware, software and training to perform its modeling. Upgrades to the system are needed to keep the model current.
4. **Water Looping:** In order to address low pressure and dirty water complaints associated with dead end water mains, the City needs to aggressively loop existing dead end mains, and require new developments to loop water mains. In addition to creating the two-pressure zone system, the water model recommended the following water looping projects.

   i. Extend 16" water main from the intersection of Russell Road and Fourth Avenue to St. Rt. 29.
   ii. Extend 16" water main from St. Rt. 29 to Eagle Glen Subdivision.
   iii. Extend 16" water main from the intersection of Hoewisher Road and Wapakoneta Avenue to the intersection of Main Street and Hoewisher Road.
   iv. Extend 16" water main on Kuther Road near NK Parts to the north and connect at St. Rt. 47.

The City of Sidney participates in the Annual Water & Sewer Rate Survey performed by the Village of Oakwood. 68 communities in west central Ohio participate in the water portion of this survey. The 2008 Rate Survey indicates that Sidney, Ohio is ranked 19th lowest out of the 68 participating communities and Sidney's water rates are 19% below average.

The in-City residential water rates are currently $2.25/100 ft^3 for volume charges, and $3.82 for a base charge ($26.69/month for 250 gallon per day usage). Dating back to 1989, the water rates have been reviewed and adjusted annually.

All new water mains are class 53 cement lined ductile iron and service connections are either type K copper or ductile iron. No plastic pipe is permitted. Old cast iron lines continue to serve the City well, and main breaks are infrequent.

3. Water Treatment Plant

The water treatment plant (constructed in 1978) has a pumping capacity of 7.0 million gallons per day (MGD), and currently provides about 3.86 MGD of treated water. The peak days are 4.0-4.5 MGD. The additional capacity was planned for industrial growth, which was slower in coming than originally projected. The plant could be easily expanded to 10.0 MGD with the addition of 6 mixers. Finished water hardness levels are 8 – 10 grains per gallon. Water Plant lime sludge is stored in a large capacity lagoon and ultimately spread on agricultural land.

a) Water Plant Upgrades

The City is currently under contract with a consultant to perform an evaluation of the Water Treatment Plant needs for the present and future. This study has yet to be initiated due to the work on the Water Source Study. Essentially, if the City can obtain cleaner more pure water source, than some of the treatment upgrades at the Water Plant won't be needed. Although there are treatment processes that need some

improvements, there is an uncertainty as to the future water source. Therefore, postponement of the Water Plant Study is necessary until such time as we identify the water source.

It is prudent to advise of the issues that will be evaluated during this study:

1. Regulatory Issues
   i. Cryptosporidium and Giardia Cysts Treatment
   ii. Chlorinated Byproducts Treatment
   iii. Filtration Improvements

2. Equipment Replacement
   i. Pumps, Motors, Feeders

3. Increasing Treatment Capacity
   i. Larger high service pumps
   ii. Additional mixers
   iii. Clearwell storage

Over the years, City staff has been performing maintenance functions at the Water Treatment Plant including:

1. Raw Water Pump Station Pump Rehabilitation: Currently the City is in the first year of the Raw Water Pump Rehabilitation Program whereby all three Raw Water Pumps will be completely rebuilt.
2. River Gate Installations: As a component of protecting the Water Treatment Plant and the potable water supply, the City has installed intake gates on the surface water sources. Through the installation of these gates, Water Plant personnel can immediately close the water intakes from the Great Miami River or Tawawa Creek if it is determined that these sources have been contaminated from a spill or from other non-point pollution sources.
3. Filter Media Replacement: In compliance with regulatory changes by the USEPA, the City has replaced the filter media for each of the 6 rapid sand filters at the Water Treatment Plant.
4. Large Motor Replacement Program: In 1999, the City initiated the Large Motor Replacement Program for the Water Treatment Plant. The purpose of the program was to rebuild/replace aging motors, drives and pumps at the Treatment Works. This is an ongoing program with an annual allocation of $25,000 per year.
5. Feeder Replacement Program: In 1999, the City initiated the Feeder Replacement Program for the Water Treatment Plant. The purpose of the program was to rebuild/replace aging chemical feeders at the Treatment Works. This is an ongoing program with an annual allocation of $15,000 per year.

4. Water Funding/Financing

a) Short Term Water Improvements

Short term water improvement Costs are estimated at $6,094,000 to meet the current needs of the City.

b) Alternate/New Water Source

The Water Source Project involves the acquisition of land, design, and construction of a new 10 MGD well field and a 9 mile transmission main back to Sidney's Water Treatment Plant. The consultant's estimate to develop the well field and install the necessary infrastructure is approximately $19,000,000. Over the past three (3) years, staff has been working with Congressional Representative in applying for financial assistance through several federal and state programs. Those programs for which the City has submitted financial applications are:

<u>Federal</u>
Energy & Water Appropriations Bill – Section 594 Ohio Environmental Infrastructure Program
Department of the Interior Appropriations Bill – United States EPA STAG Grant
Army Corps of Engineers – Section 22 Planning Assistance to the States

State
Ohio EPA – Drinking Water Revolving Loan Fund

c) Conclusion

At the 2008 Council Retreat, it was decided that the Water Source Project would be priority and that the Short Term Water Improvements would be postponed. Several financial scenarios were presented and discussed. Without the assistance of federal or state grants and delaying the Short Term Water Improvements, the amount of a water rate increase to complete the Water Source Project alone was in the range of 25%-35%.

D. Water System Plan

1. Introduction

The plan focuses on improving, expanding and protecting the water system to meet the projected outcomes of the Land Use Plan. This plan will require a significant expansion of the water treatment plant capacity, reinforcements to the distribution system (new pipe, elevated storage tanks), plus an investigation of an alternate water sources.

2. Policies

The following summarizes the mission statement, objectives and strategies that serve as the policy foundation for the water system plan.

a) Mission Statement
The utilities' mission is to *provide water, sewer and stormwater services that meet current needs and future growth.*

b) Objectives
The following are the objectives that detail the mission statement for water system plan. Strategies that indicate how the objectives will be fulfilled are located in the Implementation Section.

Objective 1 - Drinking Water Standards
Maintain compliance with all applicable drinking water standards, and anticipate shifting regulatory changes.

Objective 2 - Maintain System Standards
Maintain adequate water pressure and delivery parameters to meet fire protection requirements and industrial/domestic water delivery demands.

Objective 3 - Long Term Plan
Develop a financial and technical blueprint to systematically implement water improvements on a timeline consistent with the Land Use Plan.

Objective 4 - Expansion Policy
Upgrade and enforce system expansion policy to ensure that the private sector development interests growth.

3. Standards

The following standards serve as a technical basis for the water system plan:

a) Water Treatment Plant
1. Meet applicable drinking water standards.
2. Finished water hardness level - 8 - 10 grains per gallon.
3. Peak capacity (build-out) - about 16.4 MGD (3.0 average plus 4.3 increase times 1.5 peak times 1.25 reserve).

b) Distribution System

1. Maintain pressure and flow standards:
   i. System Depressurization: 20 psi
   ii. Desired Static Pressure: Minimum 30 psi and maximum 60-80 psi
   iii. Fire Flows:
      - Residential - 1,500 gal/min at 20 psi residual
      - Commercial - 2,500 gal/min at 20 psi residual
      - Institutions - 3,500 gal/min at 20 psi residual
      - Industrial - 5,000 gal/min at 20 psi residual
2. Conform to AWWA & NSF standards.
3. Water Main Standards: In all cases, water mains shall be constructed as follows:
   - Residential – 8" Class 53 Cement Line Ductile Iron Water Main
   - Commercial – 10" Class 53 Cement Line Ductile Iron Water Main
   - Industrial – 12" Class 53 Cement Line Ductile Iron Water Main

4. Water Plan

The Water Plan focuses on maintaining drinking water standards, maintaining system standards, continuing with preparation of long term plans for the system, and ensuring developers continue to pay their fair share for system extensions.

E. Implementation

1. Introduction

The following strategies should be aggressively and systematically followed over the planning period in accordance with the preferred growth scenarios.

2. Strategies

The following is implementation strategies of the water plan. Unlike traffic and transportation issues, the utility systems are handicapped by "out of sight, out of mind" attitudes. Water plans should be actively promoted within a community.

Objective 1 - Drinking Water Standards

Strategies

1a) Maintain a high level of awareness in the community regarding the critical nature the wastewater system.
Issue written and verbal reports on a quarterly basis at City Council meetings. Emphasis is a preventative maintenance approach. Detail demand versus capacity issues. Outline Ohio EPA compliance and noncompliance communiqués.

Responsibility Party: *Utilities Director (Lead)*
Timeframe: *Ongoing - Annual Basis*
Estimated Cost: *In-House Staff Time*

1b) Issue technical report to the City administration on water system performance versus Land Use Plan.
A key building block of the city's long term Land Use Plan is the ability of the water supply system to keep up with demand. This demand will take the form of quality and capacity elements. The City administration should stay current as to whether the system is able to consistently handle the increasing activity.

Responsibility Party: *Utilities Director (Lead)*
Timeframe: *Ongoing*
Estimated Cost: *In-House Staff Time*

Objective 2 - Maintain System Standards

Strategies

2a) System Improvements

i. Distribution System Improvements
The completion of the Short Term Water Improvements Study resulted in system deficiencies that need addressed. Those immediate system needs are:

a. Riverside Drive Water Main Improvements: Replace existing 8" water main with a 16" water main. Cost: $1,633,000
b. Hoewisher Rd Water Main: Loop Hoewisher Rd from Main Ave to County Rd 25A with a 16" water main. Cost: $800,000

ii. Water Treatment Plant

The Land Use Plan will require more potable water to "fuel" expansion. The City should chart a course to stay well ahead of both the growth curve and stricter drinking water standards. It is recommended that the City continue with the following maintenance programs for the Water Treatment Plant.

- Rehabilitation of Wells: Periodically review, evaluate and budget for well rehabilitations as needed.
- Raw Water Pump Station Pump Rehabilitation: Periodically review, evaluate and budget for raw water pump rehabilitations as needed.
- Filter Media Replacement: Periodically review and replace the media in the Water Plant's filter gallery.
- Large Motor Replacement Program: Ongoing program to inspect and replace motors and pumps with more energy efficient equipment.
- Feeder Replacement Program: Ongoing program to inspect and replace chemical feeders.

Additionally, upon completion of the Water Source Project, the City should immediately proceed with the Water Treatment Plant Study to evaluate the following.

- Regulatory Issues
  i. Cryptosporidium and Giardia Cysts Treatment
  ii. Chlorinated Byproducts Treatment
  iii. Filtration Improvements
- Equipment Replacement
  i. Pumps, Motors, Feeders
- Increasing Treatment Capacity
  i. Larger high service pumps
  ii. Additional mixers
  iii. Clearwell storage

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Short Term (expected 2009-2011 installation)*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

2b) Aggressively protect the Tawawa Creek and Great Miami River water sources.
Any contamination of the raw water supply could be extremely serious and difficult to correct. Constant vigilance before problems occur is vitally important, especially with ever-stricter drinking water standards.

Responsible Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

2c) Plan and build above ground storage tanks.
The Land Use Plan will require more water storages for domestic use and fire protection purposes. The system should be periodically studied in-terms of flow and pressure characteristics and appropriate reinforcements made. The recommendations made in the Short Term Improvements Study recommended a water tower on the north end and a water tower on the west end at specific water demands due to growth. This Study should be followed.

Responsible Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Ongoing (expected completion 2009-2012)*
Estimated Cost:	*$2.00 - $3.00/gallon*

2d) Continue with in-House Water Modeling Capability
This will enable staff to accurately predict system pressures and fire flows for new development, and assist in the identification of system deficiencies. The costs for the training, hardware and software is $12,000. It is anticipated an annual costs of $1,000 per year for system maintenance and software upgrades.

Responsibility Party:	*Utilities Director*
Timeframe:	*Short Term*
Estimated Cost:	*$12,000 for training, hardware and software $1,000 annually for system upgrades and maintenance*

2e) Aggressively loop existing dead end mains and require new developments to loop water mains
In order to address low pressure and dirty water complaints associated with dead end water mains, the City needs to aggressively loop existing dead end mains and require new developments to loop water mains

Responsibility Party:	*Utilities Director*
Timeframe:	*Ongoing*
Estimated Cost:	*Project Specific*

Objective 3 - Long Term Plan

Strategies

3a) Adequately support the reserve water improvement fund through adequate customer fees.
A positive cash flow should be established for the eventual issuance of debt related to the new water source and short term water improvements.

Responsibility Party:	*Finance Director (Lead), Utilities, City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*Increased User Fees*

3b) Seek alternate water source
The City completed Phase I of the Alternate Water Source Study in 1999-2000. That study focused on the availability of ground water for additional wells. That report indicated the lack of an available ground water supply to sustain the City's needs. The report also looked at the potential of constructing a reservoir for water storage. The report focused on the following:

i. Construction of Upland Reservoir: The cost estimate for constructing an Upland Reservoir with proper intakes and discharge lines based on 1999 dollars is $9,000,000-$10,000,000.
ii. Conversion of existing Rock Quarry to a Reservoir: The cost estimate for converting an existing Rock Quarry to a Reservoir depends on the existing quarry selected for use, the length of the transmission main and acquisition costs. It is recommended that the City proceed with Phase II of the Reservoir/Alternate Water Source Study to obtain preliminary cost estimates and proceed with a feasibility study to ascertain the City's ability to convert the quarry to a reservoir. The cost estimate for Phase II is $80,000.

Responsibility Party:	*Utilities Director (Lead)*
Timeframe:	*Long-Term (2015-2020)*
Estimated Cost:	*$15-18 million*

3c) Water System Build-Out

Responsibility Party: *Utilities Director*
Timeframe: *Mid-Term*
Estimated Cost: *See 2d) above*

3d) Determine fiscal impact of extending utility lines north and west of the City per the land use plan.
The City should evaluate the cost of extending water service to this area versus the benefit from increased commercial and residential development. Comparisons should be made between the costs of servicing development at existing densities with the costs of servicing development under a more traditional development pattern.

Responsibility Party: *Utilities Director*
Timeframe: *Ongoing*
Estimated Cost: *In-House*

Objective 4 - Expansion Policy

Strategies

4a) Continue to require developer participation in utility improvements.
The City should continue to require developers to participate in utility improvements as necessitated by their developments. Such contribution should be determined on a pro rata basis and applied equally to all projects. When appropriate utility lines should be oversized to accommodate planned future development above and beyond the subject development under current over-sizing regulations. This strategy is not intended to conflict with Land Use Plan Objective 1e.

Responsible Party: *City Manager (Lead), Utilities Director, Finance Officer, and City Council*
Timeframe: *Ongoing*
Estimated Cost: *To Be Determined On A Project Specific Basis*

4b) Adequately support the reserve water improvement fund with annual appropriations.
Currently, cash flow is running at a deficit from this account. In 1996, a total of $400,000 was contributed, but, $800,000 was spent (new storage tanks) from reserves. A positive cash flow should be established.

Responsibility Party: City Council
Timeframe: Annually
Estimated Cost: $150,000 annually

Section 3: Stormwater Utility

A. Introduction

The main functions of the storm sewer system and the storm water utility is to protect and improve the water quality of the Great Miami River and other receiving streams and to ensure public health by properly conveying storm water runoff to prevent flooding. The Ohio Environmental Protection Agency provides governmental oversight of the City's Storm Water Monitoring Program, ensuring compliance with state and federal regulations.

The City of Sidney's Stormwater Monitoring Program began in 2007 to comply with USEPA and OEPA requirements. A utility fee was created to offset the cost of the Monitoring Program and maintenance of the stormwater collection system.

The City continues to require the developer to extend water, sanitary sewer, and storm sewer mains to proposed development with the City over sizing the utilities to accommodate future growth. Development agreements are generated for new areas that are annexed that specify the utility extensions.

B. Planning Issues

In 1993, City Council established a Stormwater Management Committee to evaluate the flooding and to develop a stormwater master plan. The first objective was to construct a 40 Yr. Flood levee with 2 ft of freeboard to help prevent property damage. The levee was constructed in the mid-1990's and was designed to prevent flooding from the river during a 40 yr. flood event. Additionally, two storm pump stations were constructed on the south end to empty the storm sewer system when the river reached a certain elevation.

Currently, the levee will withstand river flooding when the river reaches a level of 18.5 ft. as measured at the North Street bridge. Since its construction, it has held back flood waters. However, the City and the Shelby County area have not been subject to a 100 yr or a 500 yr flood event. In the event that this would occur, the south end of the City would be under water.

The City has developed a River Flood Operations Plan. The plan can be reviewed on the City's website at www.sidneyoh.com. The plan calls for certain City operations and activities during specified river levels. The Emergency Operations Center would be activated when the river reaches 14.2 ft. This would allow the City to prepare for evacuations and plan for the next stages of river flooding. The River Flood Operations Plan website is linked to the river gauging system so that real time data on the river levels is available. Additionally, the National Weather Service is linked to the same gauging system. The National Weather Service has modeled the Great Miami River's flood stages and predicts flooding events based on forecasting and actual river levels. City personnel are notified by the NWS of their forecasted flood stages.

The Stormwater Management Committee that was established in 1993 also recommended the creation of stormwater policies, design standards, maintenance funding and priorities for capital expenditures. As a result of the Committee's recommendations, Chapter 919 of the Codified Ordinances was created. Chapter 919 Stormwater Management creates policies and standards for the City's storm drainage system. The codified ordinances can also be viewed on the City's website. As a compliment to Chapter 919, Engineering Standards for storm sewers and drainage systems were created. The enforcement of the stormwater code and engineering standards is the responsibility of the City Engineer.

In the late 1990's, the United States EPA under the Clean Water Act started requiring communities with populations over 100,000 to develop and implement a Stormwater Management Plan. The purpose of the plan is to mitigate and prevent exposing the receiving water from contaminants from surface runoff. In the early 2000's this program was expanded to include Municipal Separate Storm Sewer Systems with communities with a population greater than 10,000. Sidney was designated for inclusion into this program.

In 2006, the City of Sidney received notice from the Ohio EPA of its inclusion into the EPA Stormwater NPDES Phase II Program. The City was required to submit a Storm Water Management Program (SWMP) to the state. This document contains that program which will be executed during the five years of Sidney's program once approved. Sidney's program is designed to meet the requirements of the discharge of pollutants to the maximum extent practicable, to protect water quality, and to satisfy the appropriate requirements of the Clean Water Act in accordance with the National Pollutant Discharge Elimination System (NPDES) and Ohio Environmental Protection Agency's (Ohio EPA) Phase II Storm Water program. The SWMP addresses the six minimum control measures as required by federal and state regulations.

C. Existing Conditions

1. Overview

The existing storm sewer service area is in the process of being mapped. ARC GIS is an essential tool to establish accurate maps and identify storm water outfalls.

2. Storm Sewer System Service Area

Currently the City's storm sewer service area extends to Sidney's corporate boundary. The City's drainage system is comprised of the following:

a) Drainage Basin Systems

i. **Central Area**- Located mainly within the downtown area of the City of Sidney, this drainage-way lies along the west edge of the Great Miami River. The outlet for the Central Area is at various locations to the Great Miami River.

ii. **Dingsmanburg Area**- This area is located along the east edge of the Great Miami River in the City of Sidney. Dingsmanburg Area drains and outlets west to the Great Miami River.

iii. **Doorley Run Area**- Located at the southeast edge of the City of Sidney. Doorley Run creek begins outside the City corporation limits and then outlets to the Great Miami River.

iv. **Mill Branch Area**- Located south of the Starrett Run Area, this drainage-way is at the southwest edge of the City of Sidney. Mill Branch drainage-way outlet near Millcreek Rd & Fair Rd intersection and continues on outside the City corporation limits.

v. **Mill Creek Area**- This drainage-way is located at the west end of the City of Sidney; between the Turtle Creek Area and the Mill Branch Area. This area drains in a southwestern direction to Millcreek Rd and Kuther Rd., and then continues outside the City limits.

vi. **Plum Creek Area**- Located at the north east corner of the City of Sidney. The Plum Creek meanders through the drainage-way in a southeastern direction from I-75 to SR 47 (Riverside Dr) and outlets to the Great Miami River.

vii. **Pt. Jefferson Rd Area**- This drainage area is located within the east-middle area of the City. This area drains to the Great Miami River.

viii. **Riverbend Area-** Located at the east side of the City of Sidney; the Great Miami River bounds the west and north sides. This area drains to the Great Miami River and Tawawa Creek.

ix. **South End Area**- Located south of Fair Rd & Highland Ave, east of I-75 and west of the north/south CSX railroad. This drainage area outlets to the M&E Canal and the Great Miami River; both being at the south edge of the area.

x. **Starrett Run Area**- Located within the west-middle side of the City of Sidney. The east side connects with the Central Drainage Area along the N/S CSX railroad.

xi. **Tawawa Creek Area**- This drainage area is located at the Tawawa Civic Park Tawawa Creek drains to the Great Miami River at SR 47E (Riverside Dr).

xii. **Tilberry Run Area-** Located within the north-middle side of the City; this drainage area is the largest with 990 acres. The final down stream is at Canal St and the Great Miami River. A hydraulic analysis study was conducted in 2002.

xiii. **Turtle Creek Area-** Located at the northwest corner of the City of Sidney, this drainage area continues outside the City corporation limits west of Kuther Rd and SR 47W.

xiv. **Wells Creek Area-** Located on the north side of the City of Sidney. The stream drains approximately 675 acres of land located at the north end by Hoewisher Rd, A hydraulic analysis study was conducted in 2006 of this drainage area.

2. Infrastructure

a) Miles of Storm Sewers – 74.46
b) Number of Storm Manholes – 1,223
c) City Responsible Detention Basins
   i. City Service center
   ii. Direct graphics area
   iii. Monarch parking lot
   iv. North main
   v. Westminster
   vi. Buckeye (Tillberry area)
d) Number of Catch Basins – 2,869
e) Stormwater Pump Stations
   i. Miami Ave Storm Pump Station
   ii. Enterprise Street Storm Pump Station

3. Maintenance Activities

The City's Underground Utilities Crew is responsible for the cleaning and maintenance of the drainage system. The following are performance measures for the previous years.

Routine Work	2006	2007	2008 Projected
Number of catch basins cleaned	4,786	4,800	4,500
Number of detention basins cleaned or repaired	18	25	10
Number of catch basins rebuilt	62	60	60
Total man-hours for catch basins rebuilds/repairs	1,117	1,600	1,600
Average cost to rebuild a catch basin	$2,300	$2,400	$2,500
Number of service calls responded to	12	18	20
Ft of storm sewer repaired/replaced	67	55	50

4. Stormwater Ordinances

The City of Sidney regulates stormwater management through its stormwater ordinance; CHAPTER 919 STORMWATER MANAGEMENT

5. Sidney Stormwater Management Plan

a) OEPA NPDES Phase II Requirements - City of Sidney is required to submit a Storm Water Management Program (SWMP) to the Ohio EPA that addresses the program requirements. Sidney's program is designed to meet the requirements of the discharge of pollutants to the maximum extent practicable, to protect water quality, and to satisfy the appropriate requirements of the Clean Water Act in accordance with the National Pollutant Discharge Elimination System (NPDES) and Ohio Environmental Protection Agency's (Ohio EPA) Phase II Storm Water program. The SWMP addresses the six minimum control measures as required by federal and state regulations.

b) NPDES Plan Submittal – The Notice of Intent (NOI) and (SWMP) was submitted to the OEPA on August 4, 2006. Additional information and revisions were submitted to the OEPA on June 1, 2007. As of July 30, 2008 the City of Sidney has <u>not</u> been issued a NPDES Stormwater Permit from the OEPA

c) Six (6) Minimum Controls

i. Public Education and Outreach on Storm Water Impacts
ii. Public Involvement/Participation
iii. Illicit Discharge Detection and Elimination
iv. Construction Site Storm Water Runoff Control
v. Post-Construction Storm Water Management in New Development and Redevelopment
vi. Pollution Prevention/Good Housekeeping for Municipal Operations

6. Stormwater Utility Fee

a) Program Overview - The Department of Utilities shall (1) promote stormwater management activities and practices as required by the Ohio EPA NPDES Stormwater Permit; (2) educate the public on stormwater control; (3) operate and provide maintenance of the storm sewer system; (4) perform stormwater sampling and surveys in accordance with the NPDES permit; and (5) manage the funding of the stormwater maintenance and stormwater monitoring.

i. Calculations - All non-residential properties are assigned an ERU multiple based upon the individually measured impervious area (in square feet) of the property divided by 2,752 square feet (1 ERU) but in no event less than one (1) ERU.

The storm water service fee has been originally established by City Council at $0.83 per Equivalent Residential Unit (ERU) per month. City Council reviews the rates periodically and adjusts the $/ERU accordingly.

The total square footage of impervious area is measured by the City based on the records of the County Recorder or County Auditor; City Engineering Drawings & Plans; questionnaires completed by the property owners; field measurements or photogrammetric analysis.

ii. Implementation – It is necessary for the protection of the public health, safety, welfare of the City and its inhabitants to establish a Stormwater Utility which allocates the cost of providing storm water service to each user in such a manner that the allocated costs are proportionate to the benefit of providing storm water service to that user, insofar as those costs can reasonably be determined. The revenue received by the City is used by the City for the payment of the cost of the management, maintenance, operation, repair, monitoring, sampling and survey costs of the storm water system. This fee is not related to water and/or sewer service and applies whether or not the premises are occupied.

7. River Flood Action Plan

The River Flood Action Plan can be viewed on the City's website at www.sidneyoh.com. The challenge is to keep property owners safe during high river events. The public should be educated on the limitations on the City's efforts for flood protection.

8. Storm Sewer Utility

a) Improving water quality of the receiving stream(s) and regulatory compliance is the purpose of the Storm Water Monitoring Program. It is expected that the program will be fully implemented by 2011. Annual evaluations of the program will be completed to monitor the effectiveness of the program and identify improvements.

b) The mapping of the system will allow for an inventory of the storm sewer assets (catch basins, man holes, and piping). Once the inventory is obtained the system can be evaluated for ongoing maintenance activities and replacement.

D. Recommendations

1. Storm Sewer System

The following requirements should be included in future City Planning:

a) Storm Sewer Mapping
This information is useful in determining future capital sewer replacements, and determining key connection points for future development. Aerials should be updated at a frequency of no greater than 3 years.

b) Storm Sewer Replacements
With the improved data collected through mapping an evaluation of the storm sewer system will be possible. Replacement(s) will be based on capacity, age, and condition of the storm sewer.

c) Expanding Sewer System for Future Residential Development
There currently remains a need to provide storm sewer services to areas predicted for residential growth. The City should identify those areas, and schedule sewer installations, provided existing sewers have sufficient capacity to handle the extensions. In all cases, the City should enforce developer requirements for the utility extensions with the City paying for oversizing and overdepth.

2. Stormwater Management

a) Implementation of EPA Stormwater Phase II Program
The City, as required by the Ohio EPA, should continue implementation of the six (6) minimum controls for the stormwater system as follows:

i. **Six (6) Minimum Controls**

- **Public Education and Outreach on Storm Water Impacts** - Implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities to the community. By promoting the proper disposal of household waste, providing publications on stormwater articles that promotes cleaner water entering our stormwater system, hold training opportunities for the public and coordinate tour of the city's stormwater BMP's. The City of Sidney and Miami Conservancy District will coordinate activities that satisfy this requirement.

- **Public Involvement/Participation** - Implement a public involvement and participation program which at a minimum complies with State and local public notice requirements. By complying with public notice requirements, stormwater drain stenciling, collect data and report on stream health, support existing water festivals for general public and children and attend Great Miami River Watershed Network meetings. The "Clean Sweep of the Great Miami River" is an example of the activities used to comply with this requirement.

- **Illicit Discharge Detection and Elimination** - Create a storm sewer system map and ordinance(s) or other guidance document(s) to prohibit non-storm water discharges into the MS4. By improving current stormwater mapping system, develop and implement ordinance(s) to prohibit non-stormwater discharge, develop and implement a plan to locate and eliminate illicit discharges within the MS4 and provide publications on illicit discharge informing the public.

- **Construction Site Storm Water Runoff Control** - Create ordinance(s) or other guidance document(s) requiring erosion and sediment controls on disturbed sites equal to or greater than one acre (1st build single family structures exempted) that includes sanctions to help ensure compliance, require construction site operators to implement appropriate erosion and sediment control BMP's, construction site operators to control waste, including discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste, procedures for site plan review which incorporates consideration of potential water quality impacts, procedures for receipt and consideration of information submitted by the public and procedures for site inspection and enforcement of control measures. By review and modify existing ordinances, enforce City construction standards, drawings and designs and enforce control construction site waste, site plan review committee will obtain one person with water quality experience, develop procedures for receipt and consideration of information submitted by the public and site inspections and enforcement.

- **Post-Construction Storm Water Management in New Development and Redevelopment** - Develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, develop and implement strategies which include a combination of structural and/or non-structural BMP's, use a regulatory mechanism to address post-construction runoff from new development or

redevelopment projects and ensure adequate and long-term operation and maintenance of BMP's projects. By reviewing and modifying City Ordinances, Construction Standards and Drawings and Design Criteria, Comprehensive Plan, change the existing ordinance and standard to improve erosion and sediment controls on disturbed site equal to or greater than one acre and develop a plan for long term control of BMP's.

- **Pollution Prevention/Good Housekeeping for Municipal Operations** - Develop and implement an operation and maintenance program that includes a training component to prevent/reduce pollutant runoff from municipal operations, use available training materials to train employees to prevent/reduce storm water pollution from park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. By developing and implementing an operation and maintenance program for the City's municipal operations that promotes pollution prevention and good housekeeping practices.

b) Drainage Basin Modeling

The City should complete the modeling of the following drainage basins:

i. Turtle Creek Area
ii. Tawawa Creek Area
iii. Central Area
iv. Dingsmanburg Area
v. Doorley Run Area
vi. Mill Branch Area
vii. Mill Creek Area
viii. Plum Creek Area
ix. Pt. Jefferson Rd Area
x. Riverbend Area
xi. South End Area
xii. Starrett Run Area

c) Storm Sewer System Maintenance

City staff should continue with the maintenance of the storm sewers, drainage ditches and detention basins. Adequate funding should be made available for the normal and routine activities. It is recommended that the City continue funding for Miscellaneous Stormwater Projects to quickly address stormwater issues that arise during the year.

d) Stormwater Utility Fee

Staff should explore with City Council the feasibility of increasing the Stormwater Fee to include capital projects. Staff should also explore the issuance of credits to those industries/entities that implement Best Management Practices for stormwater runoff control. At a minimum, the Stormwater Fee should generate sufficient revenue to address the Stormwater Maintenance activities and the Stormwater Monitoring activities associated with the Stormwater Management Plan. The Stormwater Fee should be evaluated periodically and adjusted accordingly.

e) River Flood Action Plan

The City should continue to update the River Flood Action Plan and to educate the public on the City's limitations on protecting property owners living adjacent to the Great Miami River.

E. Preliminary Project Cost for Planning Purposes

1. Storm Sewer Modeling

The estimated cost for hiring a consultant to perform modeling of the storm drainage basins and identification of system capacities and deficiencies is approximately $40,000 per drainage basin.

2. Storm Sewers Extension/Replacements

The following are general cost estimates for storm sewer extensions:
8 inch = $88 per linear foot on 1997 dollars. The following is a description of how these dollars are allocated.

i. 12 inch = $96 per linear foot
ii. 15 inch = $114 per linear foot
iii. 24 inch = $158 per linear foot

D. Storm Water Monitoring Plan

1. Introduction

The plan focuses on improving water quality and meeting regulatory requirements through the implementation of Best Management Practices and Minimum Controls.

2. Policies

The following summarizes the mission statement, objectives, and strategies that serve as the policy foundation for the wastewater system plan.

a) Mission Statement

The utilities' mission is to *provide water, sewer and stormwater services that meet current needs and future growth.*

b) Objectives

The following are objectives that detail the mission statement for the storm water system plan. Strategies indicating how the objectives will be satisfied are located in the Implementation Section.

Objective 1 – River Flooding Operations
a. Drainage Basin Modeling
b. River Modeling
c. Continued Flood Operations

Objective 2 – Implementation of EPA Stormwater Management Plan
a. Implementation of Six (6) Minimum Controls
b. Revisions of Codified Ordinances

Objective 3 – Stormwater Maintenance
a. Erosion Control
b. Drainage Basin Maintenance
c. Drainageway Maintenance
d. Infrastructure Improvements
e. Discharge Maintenance

Objective 4 – Stormwater Utility Fee
a. Annual Evaluation of Stormwater Fee and Adjust Accordingly
b. Explore Fee Increase to Include Capital Projects
c. Explore Stormwater Credits for Business & Industry

Objective 5 - Developer Contributions
a. Erosion Control Using Best Management Practices
b. Developer's Utility Extension Responsibilities
c. Perform Drainageway Study as Part of Development

Objective 6 – Update of Flood Damage Protection Regulations

G. Implementation

1. Introduction

The following strategies should be aggressively and systematically followed over the planning period in accordance with the Land Use Plan.

2. Strategies

The following is a detail implementation of the wastewater plan. Unlike traffic and transportation issues, the utility system is handicapped by "out of sight, out of mind" attitudes. Storm Sewer plans should be actively promoted.

Objective 1 - Clean Water Standards

Strategies

1a) Maintaining a high level of awareness in community of critical nature of the storm water system and runoff.
Written and verbal reports on an annual basis at City Council meetings should be issued. The City has a substantial investment in its storm water collection system. It is important to constantly reinforce both the investment aspect and critical nature of the system in the public arena, with an emphasis on non-crisis issues. Detail flow versus capacity issues are significant indicators of the system.

Responsibility Party:	*Utilities Director (Lead)*
Timeframe:	*Ongoing - Annual Basis*
Estimated Cost:	*In-House Staff Time*

1b) Issuing annual technical report to the City administration on stormwater system performance versus Land Use Plan.
A key building block of the city's long term Land Use Plan is the ability of the storm water management system to keep up with city demands. This will take the form of quality and capacity elements. The City administration should stay current regarding the systems ability to consistently handle the increasing activity.

Responsibility Party:	*Utilities Director (Lead)*
Timeframe:	*Ongoing - Annual Basis*
Estimated Cost:	*In-House Staff Time*

Objective 2 - Maintenance

Strategies

2a) Enforcing "clean water ordinances" for eliminating pollutant runoff
The most vulnerable side of the city's storm water system is the degree to which pollutants can be discharged either directly or indirectly into the collection system. Considerable effort must be expended to both contain and reduce the pollutant discharges. This effort must begin with the property owner. The approach to improving water quality for the typical house will vary from public education/outreach to enforcement of ordinance.

Responsibility Party:	*Utilities Director* (Lead)
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined*

2b) Maintenance
The storm sewers, catch basins and manholes are subject to detrimental influences. The City should continue to administer an aggressive approach in televising and inspecting all storm sewer mains.

Responsibility Party:	*Utilities Director* (Lead)
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined*

Objective 3 - Long Term Plan

Strategies

3a) Supporting the storm sewer improvement fund through adequate customer fees.
A positive cash flow should be established.

Responsibility Party:	*Utilities Director (Lead), Finance Officer, City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*Increased User Fees*

3b) Expanding the storm sewer system.
The Land Use Plan will necessitate incremental increases in capacity to handle wet weather flows.

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined*

3c) Determine fiscal impact of extending utility lines north and west of the City per the land use plan.
The City should evaluate the costs of extending storm sewer service to this area versus the benefit from increased commercial and residential development. Comparison should be made between the costs of servicing development at existing densities, with the costs of servicing development under a more traditional development pattern.

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Short and Long Term*
Estimated Cost:	$3.00 - $4.50 per gallon of sewage flow

Objective 4 - Developer Contributions

Strategies

4a) Continuing to require developer participation in utility improvements.
The City should continue to require developers to participate in utility improvements as necessitated by their developments. Such contribution should be determined on a pro rate basis, and applied equally to all projects. When appropriate, utility lines should be oversized to accommodate planned future development, above and beyond the subject development under current over-sizing regulations. This strategy is not intended to conflict with Land Use Plan Objective 1e.

Responsibility Party:	*City Manager (Lead), Utilities Director and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

Objective 5 – Industrial Park Development

Strategies

5a) Identifying potential areas west of I-75 for development into industrial parks.

Responsibility Party:	*Utilities Director (Lead), City Manager and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*

5b) Apply for state and federal grants for the development of industrial parks.

Responsibility Party:	*City Manager (Lead), Planning Director, Utilities Director and City Council*
Timeframe:	*Ongoing*
Estimated Cost:	*To Be Determined On A Project Specific Basis*