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Indian Lake Borough
Act 537 Sewage Facilities Plan
August 2004

Indian Lake Borough, Somerset County, Pennsylvania
Prepared by Hatch Mott MacDonald

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PLEASE NOTE:

Appendices are not available on the Web with the exception of Appendix A.

EXECUTIVE SUMMARY

Indian Lake Borough authorized the development of a Sewage Facilities Plan in accordance with the Pennsylvania Sewage Facilities Act (Act 537). The purpose of this plan is to evaluate the existing and future sewage needs of Indian Lake Borough and to evaluate sewage disposal alternatives that are compatible with the existing and future needs of the Borough.

Indian Lake Borough is a municipality of approximately 450 people (according to the 2000 U.S. Census) surrounding a 650-acre man-made lake located in eastern Somerset County, Pennsylvania. Indian Lake Borough was formed as a residential and second home community. The dominant feature of the Borough is Indian Lake, which is primarily used for recreation during the warm weather months of the year. Due to the outdoor recreational amenities located in the Borough, the population of Borough is significantly higher during the warm weather months of the year than during the cold weather months.

The Borough currently has a small flow sewage treatment plant that serves the Northwinds Lodge Complex located in the Borough. Sewage disposal for the remainder of the Borough is provided primarily by individual on-lot disposal systems. Although sewage disposal is provided primarily by individual on-lot disposal systems, soil conditions and topography in Indian Lake Borough is generally not favorable for these systems. Some malfunctioning on-lot disposal systems have been identified, and there is a concern that other on-lot disposal systems could also be malfunctioning. In addition, approval to install conventional on-lot disposal systems on many undeveloped lots has been difficult to obtain due to the type of soil conditions and topography.

The technically feasible sewage disposal alternatives that were evaluated in this study are identified as follows:

Alternative 1 – Regional Gravity Sewer System with a single treatment plant located on West Shore Trail and discharge to Rhodes Creek.

Alternative 2 – Regional Pressure Sewer System with a single treatment plant located on West Shore Trail and discharge to Rhodes Creek.

Alternative 3 – Regional Pressure Sewer System with a single treatment plant located on Peninsula Drive near Point Circle and discharge to Indian Lake.

Alternative 4 – Initial sewer service will be provided to the peninsula area through a privately constructed and operated pressure sewer system and sewage treatment plant. Future expansion for other areas of the Borough will be handled by expanding the Lakewood Sewage Treatment Plant.

Alternative 5 – Regional Pressure Sewer System with one pump station which will discharge to the Stonycreek Township gravity sewer system with treatment occurring at the Shanksville proposed sewage treatment facility.

For all of the alternatives evaluated in this study, the implementation of a Sewage Management Program would occur to oversee the operation and maintenance of existing and future individual sewage disposal systems.

After consideration by the Borough Council, Alternative 5 was selected as the alternative that will best meet the wastewater needs of Indian Lake Borough.

Alternative 5 is a grinder pump/pressure sewer system that will provide service to the existing residences and vacant lots. The service area of townhouses and lodge will remain as a gravity system with discharge to a proposed pump station in the vicinity of the existing Lakewood Sewage Treatment Plant, which will be abandoned. The new proposed Lakewood Pump Station will pump sewage collected on the south side of the lake along Causeway Drive to the proposed Stonycreek Township gravity interceptor. The pressure sewer system serving the north side of the lake will pump sewage toward West Shore Trail to the same discharge point to the proposed Stonycreek Township gravity interceptor. The proposed Stonycreek Township gravity interceptor will serve to convey Indian Lake Borough's sewage as well as Stonycreek Township's sewage to a single treatment facility that is proposed to be constructed in the Borough of Shanksville.

The selected alternative would also include the implementation of a Sewage Management Program. Under this program, the Borough will conduct routine monitoring and inspection of individual on-lot systems to ensure that the operation and maintenance of these systems is handled properly, as well as maintain a database to enable monitoring of these facilities throughout the Borough. It would also require the Borough to appoint a Borough official to oversee and administer the management program.

The utilization of various alternate techniques for individual on-lot disposal systems shall be included in the Sewage Management Program. These techniques may be utilized for existing on-lot disposal systems found to be malfunctioning and for new home construction, in which soil conditions prohibit the use of a conventional on-lot disposal system. In the event that alternate techniques to on-lot disposal systems are not feasible, the property owner may select the installation and use of a retaining tank or a small flow treatment facility. Controls over operation and maintenance requirements for retaining tanks and small flow treatment facilities would be addressed in a Sewage Management Program. These proposed alternate techniques would be considered until a public sewage system was installed.

The selected Alternative 5 is the least costly and most cost effective alternative evaluated in this study. The construction cost estimate for the selected alternative, which includes a pressure sewer system and pump station, is approximately \$7,055,000. The approximate user charge per EDU is approximately \$73.00 per month utilizing a tap fee of \$5,000 based upon the financial arrangement to be selected. Depending on whether a fee is charged for vacant lots and depending on the amount charged each resident as an upfront fee, the amount to be financed will vary increasing, or reducing the user charge. User charges from \$27.00 to \$38.00 are reviewed in the Selected Alternative Section of this Plan.

There are a variety of methods and combinations of methods, which may be utilized to fund the construction of sewage facilities. Funding methods available to Indian Lake Borough include PENNVEST funding, bond issues and long term bank financing. It shall be determined at a later date which method will be most viable for the Borough and its residents.

The following is a proposed schedule of implementation in order to put this Act 537 Plan into effect. At this time, it is somewhat premature to actually establish calendar dates due to factors that could affect the implementation schedule.

PROPOSED SCHEDULE OF IMPLEMENTATION

<u>MILESTONE</u>	<u>TIME</u>
1. Submit Act 537 Plan to Indian Lake Borough for review	Aug. 2004
2. Obtain approval from the Borough for the Act 537 Plan	Sept. 2004
3. Submit Act 537 Plan to the PaDEP for review	Oct. 2004
4. Obtain approval from the PaDEP for the Act 537 Plan	Jan. 2005
5. Implement Sewage Management Program	Feb. 2005
6. Prepare and execute intermunicipal agreements.	Feb. 2005
7. Begin design of Infrastructure Improvements	Mar. 2005

Included as part of this Act 537 Planning Process, an additional study was conducted to evaluate the trophic state of Indian Lake and Lake Stonycreek. This study was prepared by Enviro Science Incorporated and was presented under separate cover. In summary, both lakes were determined to be slightly enriched with nutrients and, of course, attempts should be made to reduce future nutrient inputs to both lakes.

1.0 PREVIOUS WASTEWATER PLANNING

1.1 Existing Wastewater Planning

Previous wastewater planning under the Sewage Facilities Act (Act 537) for Indian Lake Borough has not been completed. Nevertheless, several sewage feasibility studies have been undertaken for the Borough. Previous wastewater planning reports prepared for the Borough include the following studies in chronological order.

1. *Consulting Engineers Feasibility Report, Sanitary Sewage Facilities for Indian Lake Borough, Stonycreek Township and Shanksville Borough, prepared by The Neilan Engineers, Inc., May 1970.*

During 1967 and 1968, the Somerset County Planning Commission compiled a sewage plan for the county in compliance with the Pennsylvania Sewage Facilities Act 537. The planning commission study indicated the possibility of constructing a joint sewage treatment facility to serve the communities of Indian Lake Borough, Stony Creek Township, and Shanksville Borough. Based on the findings of the planning commission, this feasibility report studied this option and included an evaluation of the costs of financing the proposed facilities to serve these municipalities. The three municipalities would have individual collection systems with the sewage transported to the lowest point in the area, then transported through a common interceptor to a joint sewage treatment plant to be located north of Shanksville Borough. The effluent would be discharged to Stony Creek. The report recommended formation of a joint sewage authority for implementation of the plan. The options and schedule presented in this plan were not adopted by any of the municipalities.

2. Feasibility Study, Stonycreek Valley Sewage Authority Sewerage System Facilities, Indian Lake Borough, Stonycreek Township, Shanksville Borough, prepared by Duncan, Lagnese and Associates, Inc. and Carson Engineers, August 1973.

On June 5, 1972, the Pennsylvania Department of Environmental Resources ordered Stonycreek Township, Indian Lake Borough and Shanksville Borough to form a sewage authority to design, construct and begin operation of sewerage facilities to collect and dispose of sewage and other wastewaters. By 1973, the Stonycreek Valley Sewage Authority had been formed to provide for sewage management in the three municipalities. This report evaluated the feasibility of sewage conveyance and treatment alternatives available to the Authority.

Proposed facilities in this report included a system of sewers, pumping stations, force mains and a joint sewage treatment plant for the developed portions of each of the three municipalities. Three alternate interceptor systems were evaluated including two series conveyance systems and a common force main system. The preferred option provided for the upper ends of an interceptor system to be located at the point of the peninsula on Indian Lake, with a split interceptor extending back each side of the peninsula and around the east and west sides of the lake with a pump station located below the Indian Lake breastworks. The main interceptor would continue along the north shore of Lake Stonycreek. Another interceptor serving the south shore of Lake Stonycreek would join the main interceptor, which would then continue along Rhoads Creek and Stony Creek to the sewage treatment plant site located north of Shanksville Borough. The report concluded that without a grant of at least 75% of the project costs, the project would not be feasible. The Authority did not adopt the schedule in this report.

3. *Facilities Planning Information, Stonycreek Valley Sewage Authority, Indian Lake Borough, Stonycreek Township, Shanksville Borough, prepared by Duncan, Lagnese and Associates, Inc., Carson Engineers, 1976.*

Four sewage conveyance alternatives were evaluated in this report including 1) a conveyance system beginning on the east side of Indian Lake and pumping around the lake, 2) a conveyance system beginning on the west side of Indian Lake and pumping around the lake, 3) a conveyance system beginning in the middle section of the lake perimeter and pumping around both sides of the lake and 4) a conveyance system beginning in the middle section of the lake perimeter using common force mains. Weekly and seasonal population fluctuations led to the study of two basic types of sewage treatment including short-term accelerated treatment and long-term treatment. Short-term alternatives included a trickling filter, extended aeration and bio-discs. Long-term alternatives included stabilization ponds, deep lagoons with mechanical aerators or deep lagoons with low velocity aeration. The recommended alternative was a conveyance system beginning in the middle section of the lake perimeter and extending around to the dam breastworks using a common force main. Sewage would be treated in deep lagoons with low velocity aeration. A schedule of implementation was not included in this report. The referenced facilities were not constructed.

4. *Assessment of Lhormer Real Estate, Inc. Development of Proposed Sewage Effluent Discharge on Indian Lake Quality, prepared by Bucek and Associates and Frederick M. Williams, Ph.D., 1996.*

Lhormer Real Estate, Inc. proposed construction of a sewage treatment plant to serve the Indian Lake Golf Club, Inc. residential development. This study indicated that approximately 36,000 gallons per day of effluent from the sewage treatment plant would be discharged to the western lobe of Indian Lake. The purpose of the report was to study the potential effect of the effluent on the water quality of Indian Lake. The report indicated that the sewage treatment effluent would be expected to disperse relatively uniformly within the western lobe of the lake through wind action, but wind may not reach into localized inlets where water may become stagnant. The

report concluded that the only way to adequately assess the impact of the effluent was to conduct additional quantitative modeling of the lake conditions.

5. Indian Lake Golf Club Development Technical Report: Wastewater Treatment and Disposal Plan, prepared by Musser Engineering, Inc., 1999

This report provided a plan for the treatment and disposal of residential wastewater from a proposed development on the lands owned by the Indian Lake Golf Club, Inc. The project included two areas, one of fifty acres containing 44 EDUS and another of ten acres, owned by T.L. Iseman, Inc., containing 10 EDUs. The disposal method would be through septic tanks followed by pumping through a conveyance line to a batch type tertiary treatment system. The effluent from the treatment system would discharge to a disposal field located on the property. The total maximum discharge from the treatment plant would be 15,000 gallons per day, with much less flow expected during the off season. This sewage treatment system was not constructed.

6. Act 536 Sewage Facilities Plan for Stonycreek Township, Somerset County, PA, prepared by the EADS Group, September 2003.

The Study area referenced in this report included the entire Township of Stonycreek, which was broken down into seven areas: Lake Stonycreek; Lambertsville; Buckstown; Roxbury; Reels Corners; Brotherton; and all remaining areas of the Township. The study concluded that the most cost effective solution to convey and treat sewage from the Township was to: 1) utilize the Shanksville Borough sewage treatment plant for the Lake Stonycreek Area and the Lambertsville area, 2) construct small package plants for the remaining study areas and 3) continue utilizing on-lot systems in the remaining portions of the Township.

The recommended alternative was for the Lake Stonycreek area to be served initially, followed by the Village of Lambertsville and the buckstown and Reels Corners areas. A combined gravity and pressure collection system to serve the Lake Stonycreek area and utilizing the Shanksville Borough sewage treatment plant was recommended as the most feasible choice for an initial

project. The initial project would serve the Lake Stonycreek area, which consists of 223 EDUs. The Stonycreek Township supervisors approved the plan at their meeting that was held on September 4, 2003.

The institutional analysis in the plan concluded that currently, there is one sewage system within Stonycreek Township, which is owned and operated by Indian Lake Borough. A sewage system also is being constructed for the Borough of Shanksville and the system will be owned and operated by the Borough of Shanksville. With all the study areas within the Township, many options exist to own and operate any new sewage systems within Stonycreek Township. The Stonycreek Township Supervisors could operate and maintain many sewage systems within Stonycreek Township, however, recently due to the construction of the Shanksville Borough system, it becomes more realistic to form a joint municipal authority between Shanksville Borough and Stonycreek Township. The plan indicated that if Indian Lake Borough would want to utilize the Shanksville Borough system they could also join the authority. The joint authority could own and maintain all sewage facilities within Stonycreek Township, which includes all of the study areas within the plan.

The reports referenced above are the only known historical sewage planning studies conducted for Indian Lake Borough. This update to the Act 537 Sewage Facilities Plan is the only other study that is currently anticipated or planned by Indian Lake Borough.

1.2 Municipal Planning and Zoning

Planning for new land development within Indian Lake Borough is conducted through the use of building permits in conjunction with the Borough's sewage enforcement officer and the zoning officer. Planning modules for proposed commercial developments and sewage treatment systems other than on-lot sewage disposal systems are submitted to the Pennsylvania Department of Environmental Protection for review and approval.

Municipal planning documents adopted by Indian Lake Borough pursuant to the Pennsylvania Municipalities Planning Code (Act 247) include the Indian Lake Borough Zoning Ordinance No. 99. This zoning ordinance was originally enacted on April 13, 1994. The ordinance was amended on December 8, 1999 to address construction of ancillary structures, e.g. sheds, garages, boat docks, etc. on lots within the Borough. The Zoning Ordinance was amended again on August 14, 2002 to address subdivision of lots within the Borough. The current Zoning Ordinance requires a minimum lot size of $\frac{3}{4}$ acre with a minimum road frontage that meets or exceeds the Somerset County Zoning Ordinance requirements. For lake lots, the lake frontage must be at least 100 feet.

A Zoning District Map is used to designate land uses within the Borough. This map was last updated in May 2001. Zoning districts within the Borough include single family residential, multi-family residential, commercial/recreational, commercial/general, commercial/marina, public park, agricultural and wildlife preserve. A copy of the Zoning District Map is included in Figure 6.

The Borough does not currently have a floodplain management ordinance or a storm water management ordinance.

2.0 PHYSICAL AND DEMOGRAPHIC ANALYSIS

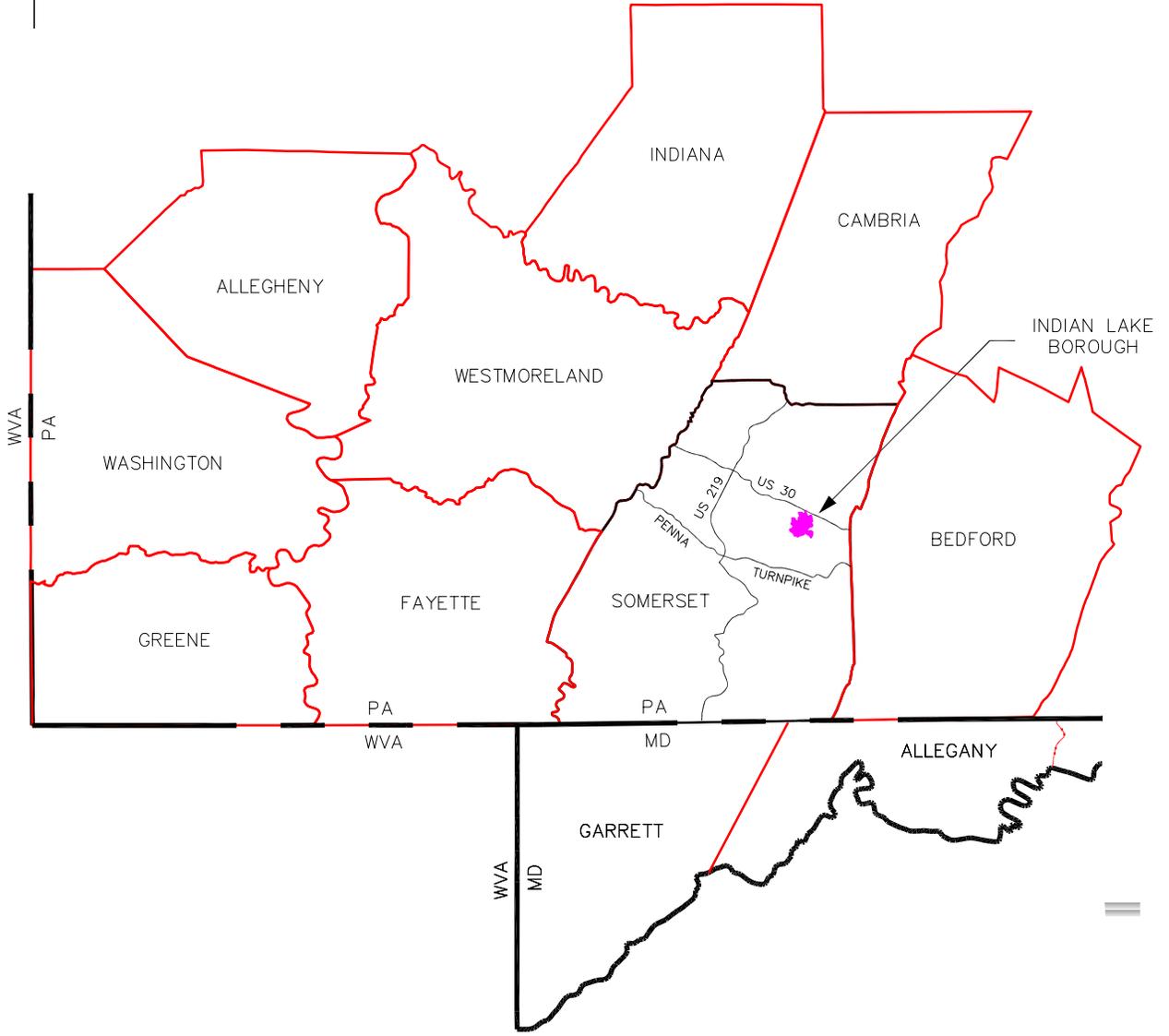
2.1 General Description of Area

Indian Lake Borough is located in the central eastern region of Somerset County, about six (6) miles south of the Borough of Central City, west of State Route 160 and south of State Route 30. See Figure 1 for a Location Map of Indian Lake Borough.

Indian Lake is located in the headwaters of the Stonycreek River. Flows from Calendars Run and Clear Run enter Indian Lake, which then flows into Stonycreek Lake through the breastworks of the Indian Lake Dam. Stonycreek Lake, in turn, discharges to Rhoads Creek. Indian Lake is the dominant feature of the community. The subdivisions are configured to take advantage of lake access as well as provide additional amenities of a resort community. The elevation of Indian Lake Borough ranges from 2,540 feet at the ridges to 2,281 feet, which is the normal water level of Indian Lake. See Figure 1A for a Physical Characteristics Map of Indian Lake Borough.

Indian Lake Borough currently has a total of 570 residential units. Of this total, 130 are permanent homes and the remaining 440 homes are occupied on a seasonal basis. The majority of homes are single-family residences many of which are second homes for their owners. Approximately 24 of the residential units are townhouses and condominiums.

Indian Lake Borough includes a marina; an airport; ski slopes, two golf courses, a construction company office, a Borough municipal office, a real estate office, a Christian center, a water treatment pump house and the North Winds Lake Lodge which incorporates a restaurant, lounge and hotel. A small sewage treatment plant currently serves the lodge and hotel, the townhouses and condominium, one house, and the golf pro shop. A small-flow treatment system (referred to as RFS III) is used to treat the wastewater from a single residence. Borough representatives reported that an acid mine drainage system operated by PBS Coal Company, is located on Lots 263 and 264 on Clear Run Road within the Borough.



H:\Projects\109071\Dwgs\LOCATION_MAP.dwg 4/9/03 3:23 pm

 Hatch Mott MacDonald	FIGURE I INDIAN LAKE BOROUGH SOMERSET COUNTY, PENNSYLVANIA ACT 537 SEWAGE FACILITIES PLANNING STUDY LOCATION MAP
	1600 West Carson Street Pittsburgh, Pennsylvania 15219
APRIL, 2003	SCALE: 1"=20 MILES

The 2000 United States Census reports a population of 450 within Indian Lake Borough. These residents would be considered full time residents. The 2000 Census reports the following demographic characteristics for Indian Lake Borough:

Total Population	450
Total Households	206
Average Household Size	2.18 people/household
Total Housing Units	548
Occupied Housing Units	206
Vacant Housing Units	342
Housing Units for Seasonal, Recreational or Occasional use	326
Occupied Housing Units	206
Owner-occupied Housing Units	198

It should be noted that the 2000 Census indicates 548 total housing units whereas representatives of Indian Lake Borough indicate a total of 570 residential units exist within the community.

Historically, there has been a gradual increase in population and new residences in Indian Lake Borough. It is expected that the population will continue to increase due to the extent of subdivided land that is available for development. The most significant restraint of rapid growth is the lack of a community sanitary sewage system. Currently, on-lot sewage systems are used but not all property can support an on-lot sewage disposal system.

See Figure 1 for base line mapping that identifies the planning area municipal boundaries. Physical characteristics including general topography, the lake and contributory streams etc. are indicated on this mapping.

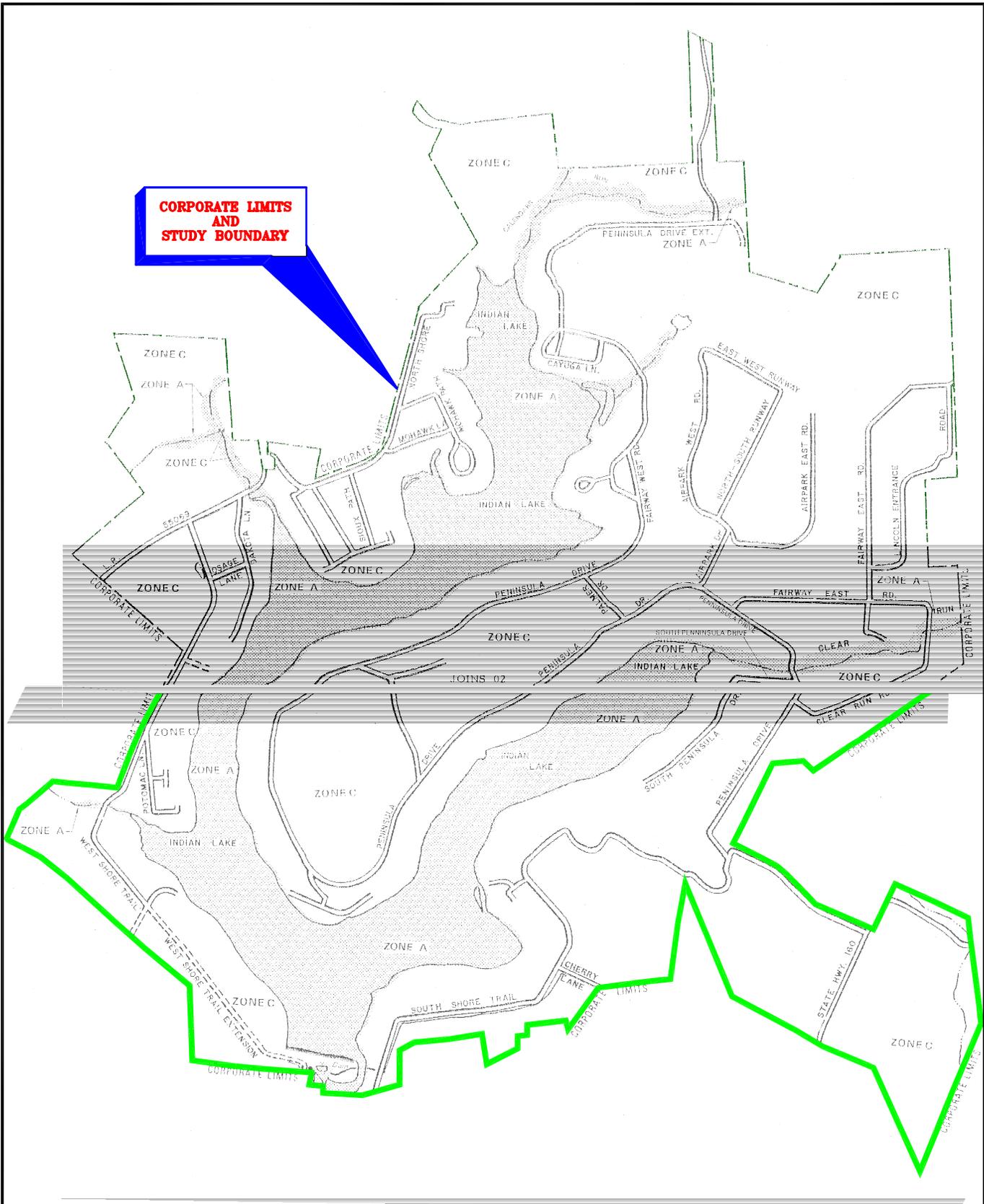
2.2 Soil Considerations

Soil characteristics, as well as topography and slope are important when determining the suitability of on-lot sewage disposal systems. In areas where the soils are not adequate for the conventional septic tank and leach field, alternative systems may be available. These alternate systems include grinder pump systems, small-flow residential treatment systems, elevated sand mounds, oversized area systems, sand lined systems and shallow placement systems.

In the past, conventional on-lot disposal systems have been installed in areas with poor soils. Some of these systems have demonstrated malfunctions and the small lot area precludes any possibility of repairing the malfunction. In these instances, an alternate disposal system is required.

The general soil suitability for on-lot disposal systems in Indian Lake Borough is indicated below. The listing identifies the soil categories and the restrictive soil features for septic tank absorption fields associated with each soil. A few soil types are capable of accommodating an alternate system. However, the slope and specific site conditions may preclude even an alternate system.

The major soil series located in Indian Lake Borough are indicated below. The Soil Survey of Somerset County, Pennsylvania, (1983) published by the U.S. Department of Agriculture Soil Conservation Service was used for information regarding soil characteristics. See Figure 2 for a Soils Map of the Borough.



KEY TO SYMBOLS				
ZONE DESIGNATIONS*	<table border="1"> <tr> <td>ZONE C</td> </tr> <tr> <td>ZONE A</td> </tr> <tr> <td>ZONE C</td> </tr> </table>	ZONE C	ZONE A	ZONE C
ZONE C				
ZONE A				
ZONE C				
Base Flood Elevation Line with elevation in feet	~ 51.3 ~			
Base Flood Elevation where uniform within zone	(E1 987)			
Elevation Reference Mark	BM7			
River Mile	+ M1.5			

<p>Hatch Mott MacDonald</p>	<p>FIGURE 3 INDIAN LAKE BOROUGH SOMERSET COUNTY, PENNSYLVANIA ACT 537 SEWAGE FACILITIES PLANNING STUDY FLOOD MAP</p>
	<p>FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP COMMUNITY NUMBER 422513A</p>
<p>1600 West Carson Street Pittsburgh, Pennsylvania 15219</p>	<p>SEPTEMBER, 2002</p>
<p>SCALE: 1"=2000'</p>	

<u>Soil Series</u>	<u>Restrictive Soil Features for Septic Tank Absorption Fields</u>
Ar Armagh silt loam	Severe, percs slowly, wetness
AsB Armagh very stony silt loam, 8-15% slopes	Severe, percs slowly, wetness
At Atkins silt loam	Severe, floods, wetness
BkB Berks-Weikert channery silt loams, 3-8% slopes	Severe, depth to rock
BkC Berks-Weikert channery silt loams, 8-15% slopes	Severe, depth to rock
BkD Berks-Weikert channery silt loams, 15-25% slopes	Severe, slope, depth to rock
BkF Berks and Weikert soils, 25-70% slopes	Severe, slope, depth to rock
BnB Blairton channery silt loam, 3-8% slopes	Severe, wetness, percs slowly
BnC Blairton channery silt loam, 8-15% slopes	Severe, wetness, percs slowly, depth to rock
BrA Brinkerton silt loam 0-3% slopes	Severe, wetness, percs slowly
BrB Brinkerton silt loam 3-8% slopes	Severe, wetness, percs slowly
BtB Brinkerton very stony silt loam, 0-8% slopes	Severe, wetness, percs slowly
CaA Cavode silt loam, 0-3% slopes	Severe, percs slowly, wetness
CaB Cavode silt loam, 3-8% slopes	Severe, percs slowly, wetness
CbB Cavode very stony silt loam, 0-8% slopes	Severe, percs slowly, wetness
CoB Cookport loam, 3-8% slopes	Severe, wetness, percs slowly
CoC Cookport loam, 8-15% slopes	Severe, wetness, spercs slowly
CpB Cookport very stony loam, 3-8% slopes	Severe, wetness, percs slowly
ErB Ernest silt loam, 3-8% slopes	Severe, percs slowly, wetness
ErC Ernest silt loam, 8-15% slopes	Severe, percs slowly, wetness
EsB Ernest very stony silt loam, 3-8% slopes	Severe, percs slowly, wetness
EsD Ernest very stony silt loam, 8-25% slopes	Severe, percs slowly, wetness
HaB Hazleton channery sandy loam 3-8% slopes	Slight
HaC Hazleton channery sandy loam, 8-15% slopes	Moderate, slope
HbB Hazleton very sandy silt loam, 3-8% slopes	Moderate, depth to rock, large stones
HbD Hazleton very stony sandy loam, 8-15% slopes	Severe, slope
HzB Hazleton very bouldery sandy loam, 0-8% slopes	Moderate, large stones
HzD Hazleton very bouldery sandy loam, 8-15% slopes	Severe, slope
RgB Rayne-Gilpin channery silt loam, 3-8% slopes	Moderate, depth to rock, wetness
RgC Rayne-Gilpin channery silt loam, 8-15% slopes	Moderate, slope, depth to rock, wetness
RgD Rayne-Gilpin channery silt loam, 15-25% slopes	Severe, slope
RgF Rayne-Gilpin channery silt loam, 25-65% slopes	Severe, slope
RpB Rayne-Gilpin very stony silt loam, 3-8% slopes	Moderate, depth to rock, large stones, wetness
RpD Rayne-Gilpin very stony silt loam, 8-15% slopes	Severe, slope
Ty Tyler silt loam	Severe, percs slowly, wetness
UDA Udorthents, mine spoil, 0-8% slopes	Soil Not Rated
UDD Udorthents, mine spoil, 8-25% slopes	Soil Not Rated
UOA Udorthents, smoothed	Soil Not Rated
WhB Wharton silt loam, 3-8% slopes	Severe, percs slowly, wetness

WhC Wharton silt loam, 8-15% slopes	Severe, percs slowly, wetness
WhD Wharton silt loam, 15-25% slopes	Severe, slope, wetness
WvB Wharton very stony silt loam, 3-8% slopes	Severe, percs slowly, wetness
WvD Wharton very stony silt loam, 8-25% slopes	Severe, slope, percs slowly, wetness

The majority of soil types within the Borough exhibit severe restrictions for on-lot sewage systems due to poor drainage characteristics. Most are severely limited for use with on-lot systems. Overall, the characteristics of the soil that are predominant throughout the Borough are such that the suitability for on-lot sewage disposal is limited.

A listing provided by the Somerset County Conservation District indicates the following soil series underlying Indian Lake Borough qualify as “Prime Farmland” soil types:

CoB	Cookport loam, 3-8% slopes
HbB	Hazleton channery sandy loam, 8-15% slopes
RgB	Rayne-Gilpin channery silt loam
WhB	Wharton silt loam, 3-8% slopes

The following soil series within the Borough are listed as “Farmland of Additional Statewide Importance”:

At	Atkins silt loam
BkB	Berks-Weikert channery silt loam, 3-8% slopes
BkC	Berks-Weikert channery silt loam, 8-15% slopes
BnB	Blairton channery silt loam, 3-8% slopes
BnC	Blairton channery silt loam, 8-15% slopes
CaA	Cavode silt loam, 0-3% slopes
CaB	Cavode silt loam, 3-8% slopes
CoC	Cookport loam, 8-15% slopes
ErB	Ernest silt loam, 3-8% slopes
ErC	Ernest silt loam, 8-15% slopes
HaC	Hazleton channery sandy loam, 8-15% slopes
RgC	Rayne-Gilpin channery silt loam, 8-15% slopes
Ty	Tyler silt loam
WhC	Wharton silt loam, 8-15% slopes

The types of soils listed as “Hydric” within the Borough include the following. A “hydric” soil is a soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation:

- Ar Armagh silt loam
- AsB Armagh very stony silt loam, 8-15% slopes
- BrA Brinkerton silt loam, 0-3% slopes
- BrB Brinkerton silt loam, 3-8% slopes
- BtB Brinkerton very stony silt loam, 0-8% slopes

2.3 Flood Mapping

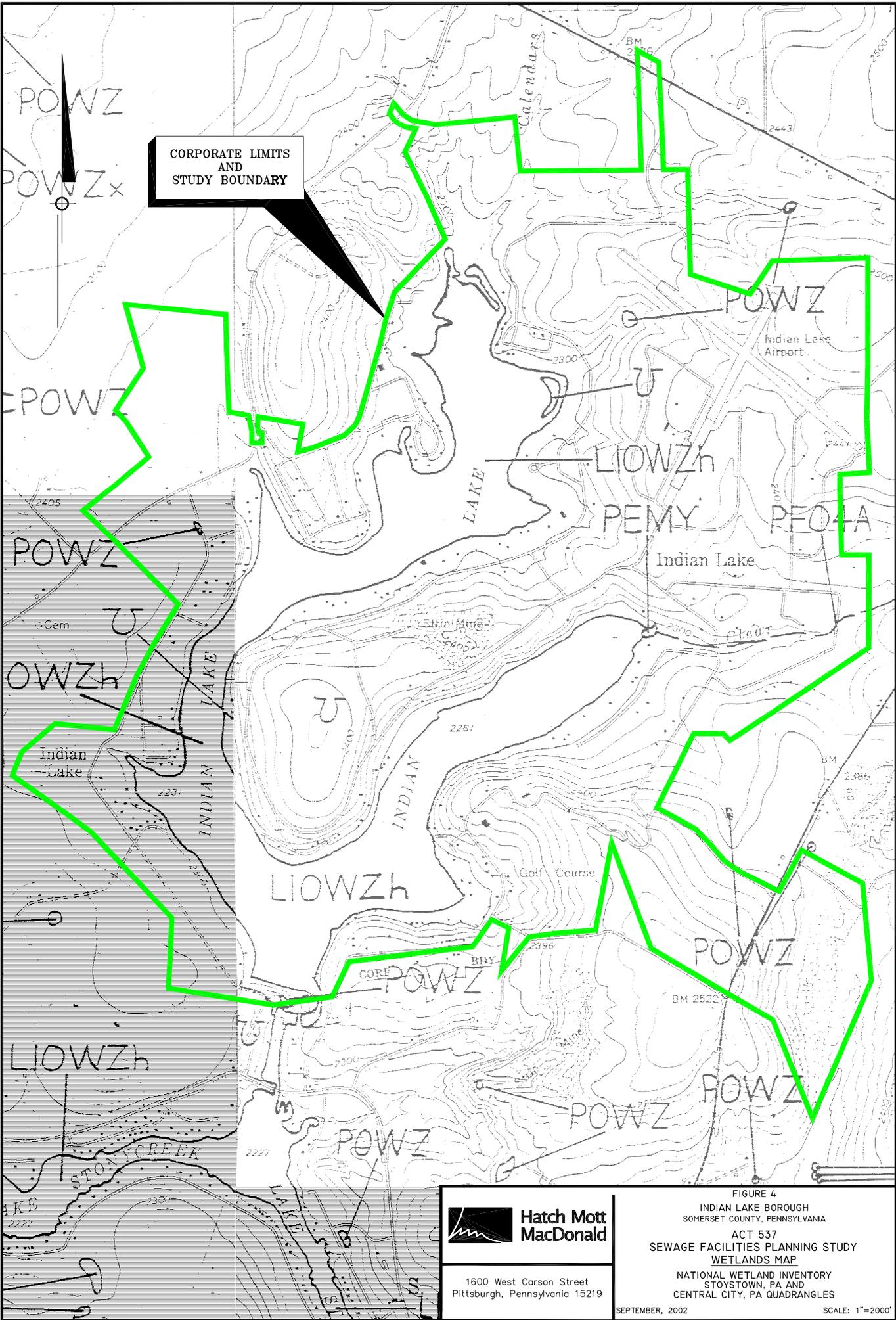
The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Indian Lake Borough (Community Number 422513A) is included as Figure 3. The Flood Insurance Rate Map is used to determine the limits of the 100-year flood boundaries within the Borough. The location of any sewage treatment plant or pump station constructed to provide sewage disposal service for the Borough must be located outside of the 100-year flood boundary or be protected such that during a catastrophic event, damage would not occur to the sewage facilities.

Conversation with a representative of FEMA in the fall of 2002 indicated that flood mapping of Indian Lake Borough consists solely of the Flood Insurance Rate Map. A complete Flood Insurance Rate Study for the Borough has not been conducted by FEMA.

An Inundation Study for Indian Lake Borough was conducted by Gusbar and Associates in the late 1990s. Results of the study indicate that areas in southern portions of the Borough, below the breastworks of the Indian Lake Dam, would be subject to inundation in the event of a breach of the dam.

2.4 Emergency Preparedness

In February, 1994, Indian Lake Borough and Stony Creek Township developed a Joint Emergency Action Plan to outline surveillance, warning and evacuation procedures for the



**CORPORATE LIMITS
AND
STUDY BOUNDARY**



1600 West Carson Street
Pittsburgh, Pennsylvania 15219

FIGURE 4
INDIAN LAKE BOROUGH
 SOMERSET COUNTY, PENNSYLVANIA
 ACT 537
 SEWAGE FACILITIES PLANNING STUDY
 WETLANDS MAP
 NATIONAL WETLAND INVENTORY
 STOYSTOWN, PA AND
 CENTRAL CITY, PA QUADRANGLES

SEPTEMBER, 2002

SCALE: 1"=2000'

Indian Lake Dam and the Lake Stonycreek Dam. This plan was last revised in October 2000. This plan is intended to safeguard lives, as well as reduce property damage of citizens living within the dam's potential flood or inundation area. The plan provides for effective dam surveillance, prompt notification to local emergency management agencies and citizen warning and evacuation response procedures, as required. The plan designates actions to be taken by the owner/operator of each dam, public officials, emergency personnel, etc. during an emergency and outlines responses to be taken by residents in the event of a potential or imminent failure of the dam.

2.5 Geologic Features

In 1999, Casselberry and Associates completed a Groundwater Exploration Report for Indian Lake Borough. This report presented findings of a groundwater exploration project within the Borough. The goal of the project was to develop a new, high-yield water supply well to expand the capacity of the Borough's potable water treatment system. The project involved construction and aquifer testing of a test well located just downstream of the Indian Lake Dam spillway.

The report indicates that the target aquifer for the project was the Glenshaw Formation (Fm) and the upper third of the underlying Allegheny Group (Freeport Fm). (The Borough's existing wells touch on the Glenshaw Formation.) These rock units are some 460 feet thick and are composed of cyclic sequences of inter-bedded sandstone, siltstone and shale with minor limestones, coals, and clays. The individual thicknesses of these beds range from several inches up to 20 feet. Several sandstone bodies within the Glenshaw and Freeport formations appeared to have sufficient thickness and areal extent to support large groundwater withdrawals. These potential water-bearing horizons include the Buffalo, Corinth, Mahoning, Butler and Freeport sandstones.

The report concluded that the Glenshaw and Freeport formations contained a relatively high percentage of alkaline strata. In areas removed from mining, these strata typically produce good quality, moderately hard calcium bicarbonate water. The only water quality problems in this

stratigraphic sequence were sporadically elevated iron and manganese concentrations. In most cases, the concentration of these parameters were low enough such that treatment can be provided via the use of a sequester agent. This report was limited to the analysis of target aquifers. Potential nitrate-nitrite pollution was not evaluated in this report.

2.6 Topography

While the topography of the majority of Borough is not the restrictive factor for conventional on-lot disposal systems, the steep topography in southeast portions of the Borough precludes the use of elevated sand mounds or on-lot systems in these areas. The types of soils, in addition to the topography, limit the use of on-lot disposal systems in many areas of the Borough.

2.7 Potable Water Supplies

Indian Lake Borough maintains its own public water supply system that serves Indian Lake Borough and a very small portion (12 homes) in Stony Creek Township. Prior to 2001, the public water supply system consisted of two wells capable of providing a maximum usage capacity of 200,000 gallons per day.

Based on the findings in the *Groundwater Exploration Report* referenced previously, the water supply system was expanded in 2001. The expansion project was intended to increase the current capacity for storage of potable water to meet the current and anticipated future needs of the community. Improvements to the system were intended to alleviate low pressure problems experienced with the system during times of high demand. A third well was drilled at the breast of the dam on West Shore Trail. The third well has the capacity to supply approximately 288,000 gallons per day. A pump house and chlorine contact tank along with approximately 6,000 feet of transmission line were constructed to convey water from the well to the Buckstown storage tank. The capacity of the Buckstown storage tank was increased to 105,000 gallons. Since one of the existing wells exhibited signs of declining quality and yield, that well was relegated to back-up status.

Water treatment consists of the addition of sodium hypochlorite and sequestering agents followed by chlorine disinfection at the newly constructed pump house. Following treatment at the pump house, the water is conveyed to three potable water tanks from which the water is distributed via gravity through distribution lines to the system users. Only two houses within the Borough still utilize well water.

2.8 Wetland Areas

The Wetlands Map included as Figure 4, was developed from the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI), (Stoystown and Central City quadrangles).

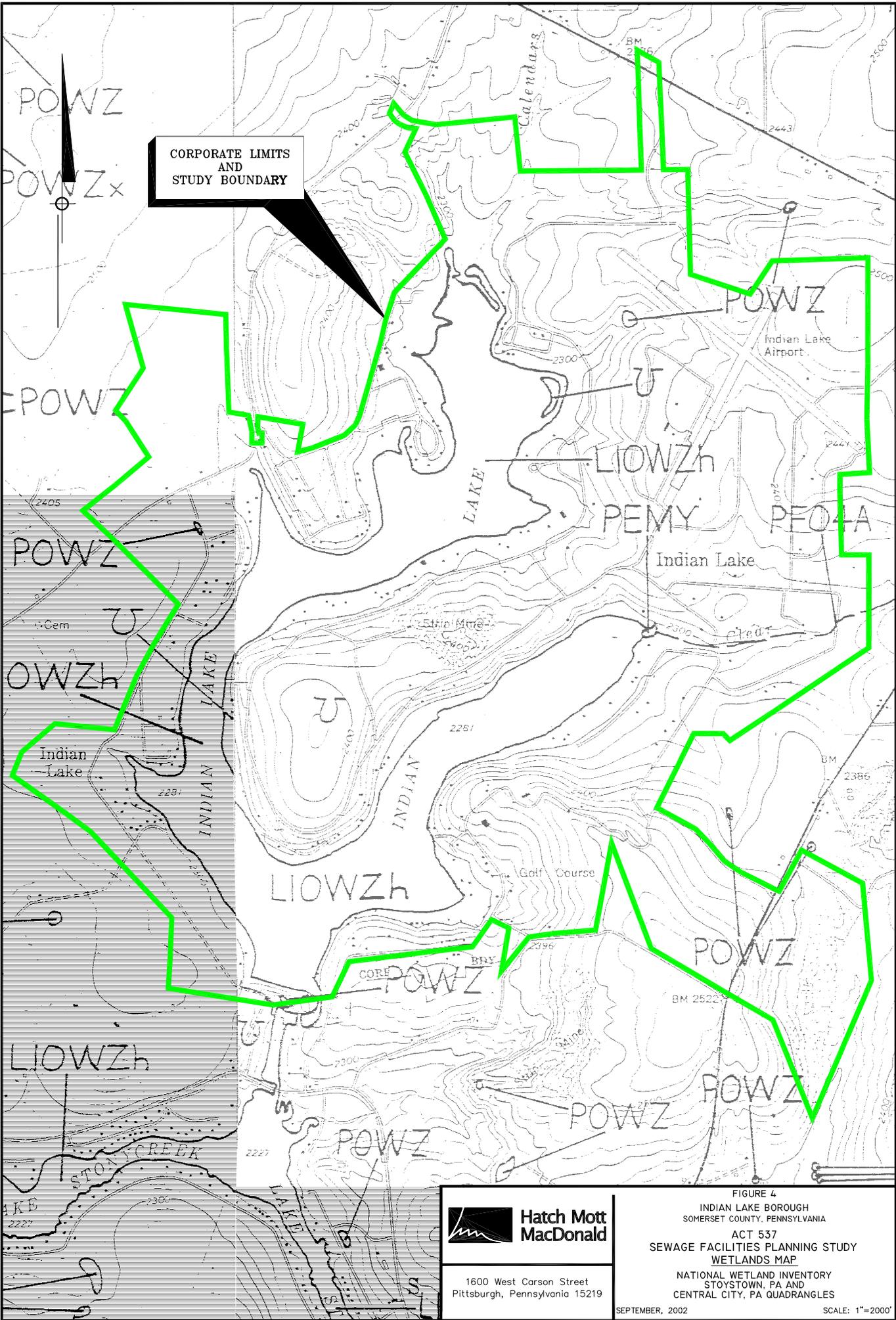
Areas classified as wetlands exhibit the following characteristics:

- The land supports predominantly hydrophytic vegetation
- The substrate is predominantly un-drained hydric soil
- The soil is saturated with water or covered by shallow water at some time during the growing season each year.

The National Wetland Inventory mapping indicates that Indian Lake is classified as Lacustrine, Open-Water, Intermittently Exposed/Permanent, Diked/Impounded (L1OWZh) wetland area. Upland (non-wetland) areas are indicated to exist within the Lake and on areas between the two lobes of the Lake. A small Palustrine, Open-Water, Intermittently Exposed/Permanent (POWZ) wetland area is indicated near the breastworks of the Indian Lake Dam. A Palustrine, Emergent, Saturated/Semi-permanent/Seasonal (PEMY) wetland area exists near the confluence of Clear Run and Indian Lake. A small POWZ wetland area is located just west of the Indian Lake Airport. Areas adjacent to Clear Run are classified as Palustrine, Forested, Needle-Leaved Evergreen, Temporary (PFO4A).

Review of proposed sewage treatment alternatives indicates the recommendations of this study would have little, or no effect on these wetland areas.

I:\Municipal\REPORTS\Indian Lake Borough\Act 537 Plan\Chap2.doc



1600 West Carson Street
Pittsburgh, Pennsylvania 15219

FIGURE 4
INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA
ACT 537
SEWAGE FACILITIES PLANNING STUDY
WETLANDS MAP
NATIONAL WETLAND INVENTORY
STOYSTOWN, PA AND
CENTRAL CITY, PA QUADRANGLES

SEPTEMBER, 2002

SCALE: 1"=2000'

3.0 EXISTING SEWAGE FACILITIES

3.1 Sewage Treatment Facilities

A review of the files of the Pennsylvania Department of Environmental Protection (PaDEP) in Pittsburgh, Pennsylvania was conducted to determine the location and capacity of all regulated sewage treatment facilities within the Borough. A listing of the sewage treatment facilities regulated by the PaDEP under the National Pollutant Discharge Elimination System (NPDES) is as follows. This listing contains the location, size and owner/operator of the treatment facilities along with the receiving stream and effluent discharge requirements. The capacity and currently loading of the facilities were also noted in instances where Discharge Monitoring Reports were available for review.

1. Name of Facility: Lakewood Sewage Treatment Plant
 Facility Owner/Operator: Indian Lake Borough
 Owner Address: 1301 Causeway Drive, Central City, PA 15926
 System Type: Municipal sewage treatment plant
 NPDES Part I: PA0030305
 NPDES Part II: WQM 5670406
 Design Flow: 0.012 MGD
 Existing Flow: Average of 0.003 MGD during 2002
 Receiving Stream: Indian Lake (Clear Run)
 Status: Permit became effective on February 1, 2000 and will expire on January 15, 2005
 Monitoring Parameters: Flow, Carbonaceous Biochemical Oxygen Demand, Total Suspended Solids, Fecal Coliform and pH.
 Compliance History: Generally consistent compliance with conditions of the NPDES permit

2. Name of Facility: McClatchey Single Residence Sewage Treatment Plant
 Owner Address: 107 Osage Path, Stoystown, PA 15563
 Facility Owner/Operator: John McClatchey, owner of residence
 System Type: Single residence sewage treatment plant
 NPDES Part I: PA0218995
 NPDES Part II: WQM 5601406
 Design Flow: 0.0004 MGD
 Existing Flow: Discharge monitoring reports not available for review
 Receiving Stream: Indian Lake

Status:	Permit became effective on December 1, 2001 and will expire on November 15, 2006
Monitoring Parameters:	Flow, Carbonaceous Biochemical Oxygen Demand, Total Suspended Solids, Fecal Coliform, pH
Compliance History:	Compliance history not available for review

The Lakewood Sewage Treatment Plant currently serves the Northwinds Lodge Complex located on the south shore of the lake. The McClatchey Sewage Treatment Plant currently serves a single residence on the west side of the lake. The remainder of residences and commercial facilities not served by the Lakewood Sewage Treatment Plant or the McClatchey Plant are currently served by on-lot disposal systems.

3.2 Problems with Existing Sewage Facilities

A review of the PaDEP inspection reports for the Lakewood Sewage Treatment Plant from 1994 to the present indicates the plant consistently achieves compliance with the conditions of the NPDES permit. The only permit violation noted for the Lakewood Sewage Treatment Plant was a slight violation of the total suspended solids limit in February of 2000. The Lakewood sewage treatment plant does not have existing or projected hydraulic or organic overload conditions, using criteria contained in Title 25, Chapter 94.

As previously mentioned, soil conditions and topography in Indian Lake Borough is generally not favorable for on-lot disposal systems. Some malfunctioning on-lot disposal systems have been identified, and there is a concern that many other on-lot disposal systems could also be malfunctioning.

3.3 Improvements to Existing Sewage Facilities

There are no known plans for upgrading or expanding either of the referenced sewage treatment facilities. However, to improve the performance of existing on-lot disposal systems, the Borough is currently considering adoption of an ordinance implementing a Sewage Management Program for the Borough. Currently, the Borough does not have any requirements for the

operation and maintenance of on on-lot disposal systems. The Sewage Management Program would provide for the rehabilitation of on-lot disposal systems that may constitute a public nuisance or hazard to public health. The utilization of various alternate techniques for on-lot disposal systems shall be included in the program. Some of the alternate techniques may include elevated sand mounds, oversized absorption areas and shallow placement absorption areas. In the event that rehabilitation of existing on-lot disposal systems are not feasible, the program would provide for the replacement of these systems.

3.4 Sewage Disposal Needs

Sewage disposal needs information was obtained from the Sewage Enforcement Officer (SEO) of Indian Lake Borough. This information includes the lots within the Borough that have an on-lot disposal facility that is malfunctioning, the lots that have failed a perc test and the lots that the SEO is concerned that an on-lot sewage disposal facility may not be functioning properly. An On-lot Facility Survey Map is shown in Figure 5 and illustrates the extent that the soil conditions and topography impose on on-lot disposal facilities within the Borough. The description of each colored lot on the referenced map is as follows:

Observed Malfunction Septic – A lot in which an on-lot sewage disposal facility was observed by the SEO to be malfunctioning. Information obtained from a survey map furnished by Indian Lake Borough.

Failed Perc Test – A lot in which a perc test was conducted, and the SEO determined, following results of the perc test, that the lot is not acceptable for on-lot sewage disposal. Information obtained from a survey map furnished by Indian Lake Borough.

Areas of Malfunction Concern – Surveyed – A lot identified by the SEO as a lot in which the SEO is concerned that an on-lot sewage disposal facility may not be functioning properly based upon soil mapping and observation. Information obtained from a survey map furnished by Indian Lake Borough.

Areas of Malfunction Concern – Unsurveyed – A lot not physically observed by the SEO in which there is concern that an on-lot sewage disposal facility may not be functioning properly due to known soil conditions and slopes. Information obtained from a survey map furnished by Indian Lake Borough.

In reference to the On-lot Facility Survey Map, the SEO of Indian Lake Borough has identified 184 lots as lots that have failed a perc test, and hundreds more have been identified by the SEO as lots in which there is a concern that an on-lot sewage disposal facility may not be functioning properly. This Map illustrates a significant need for improved sewage disposal for the existing homes in the Borough and the need for improved sewage disposal methods for future development.

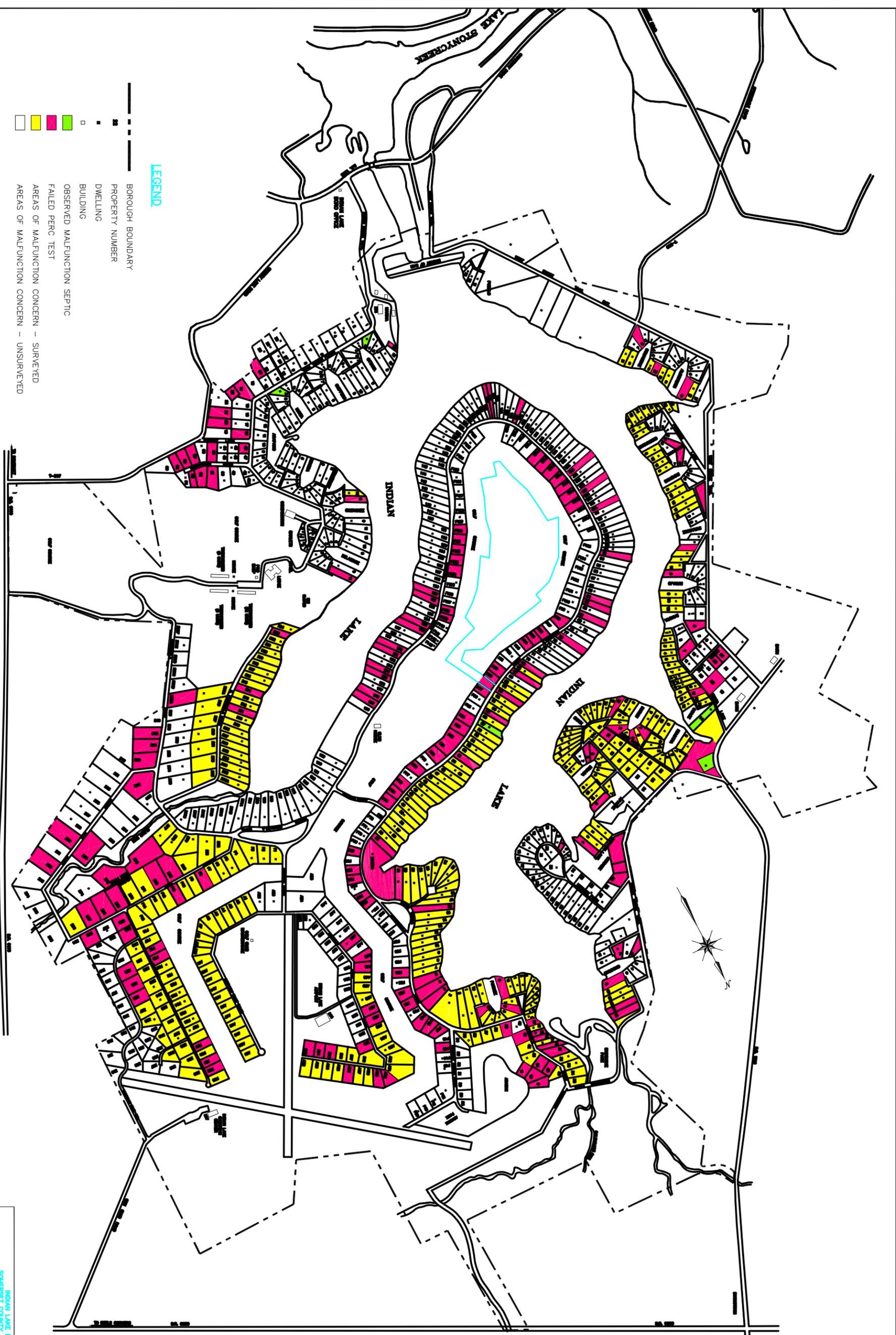
3.5 Sludge Handling

The NPDES permit for the Lakewood Sewage Treatment Plant requires sludge disposal in conformance with PaDEP requirements. Sludge from the Lakewood Sewage Treatment Plant is currently hauled to an offsite disposal location by Stutzman Trucking.

The NPDES permit for the referenced single residence treatment system requires periodic sludge removal and disposal from the system. This system is currently maintained under an inspection/maintenance agreement between the homeowner and Somerset Rural Electric Cooperative.

Sludge removal from septic tanks located in Indian Lake Borough is required periodically. The removal, transport and proper disposal of sludge from septic tanks in the Borough is the responsibility of the individual property owner.

There are no known disposal areas, other than discharges to Indian Lake, within the Borough and there are no applicable groundwater limitations for either of the existing sewage treatment facilities.



- LEGEND**
- BOROUGH BOUNDARY
 - PROPERTY NUMBER
 - DWELLING
 - BUILDING
 - OBSERVED MALFUNCTION SEPTIC
 - FAILED PERC TEST
 - AREAS OF MALFUNCTION CONCERN - SURVEYED
 - AREAS OF MALFUNCTION CONCERN - UNSURVEYED



INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA

ACT 537 SEWAGE FACILITIES PLAN

FIGURE 5 - ON-LOT FACILITY SURVEY MAP

Hatch Mot MacDonald
PITTSBURGH, PENNSYLVANIA

DRAWN	DATE	SCALE	PROJECT NO.	DRAWING NO.
HLK	NOV. 2002	AS SHOWN	107091	1 OF 1

4.0 FUTURE GROWTH AND DEVELOPMENT

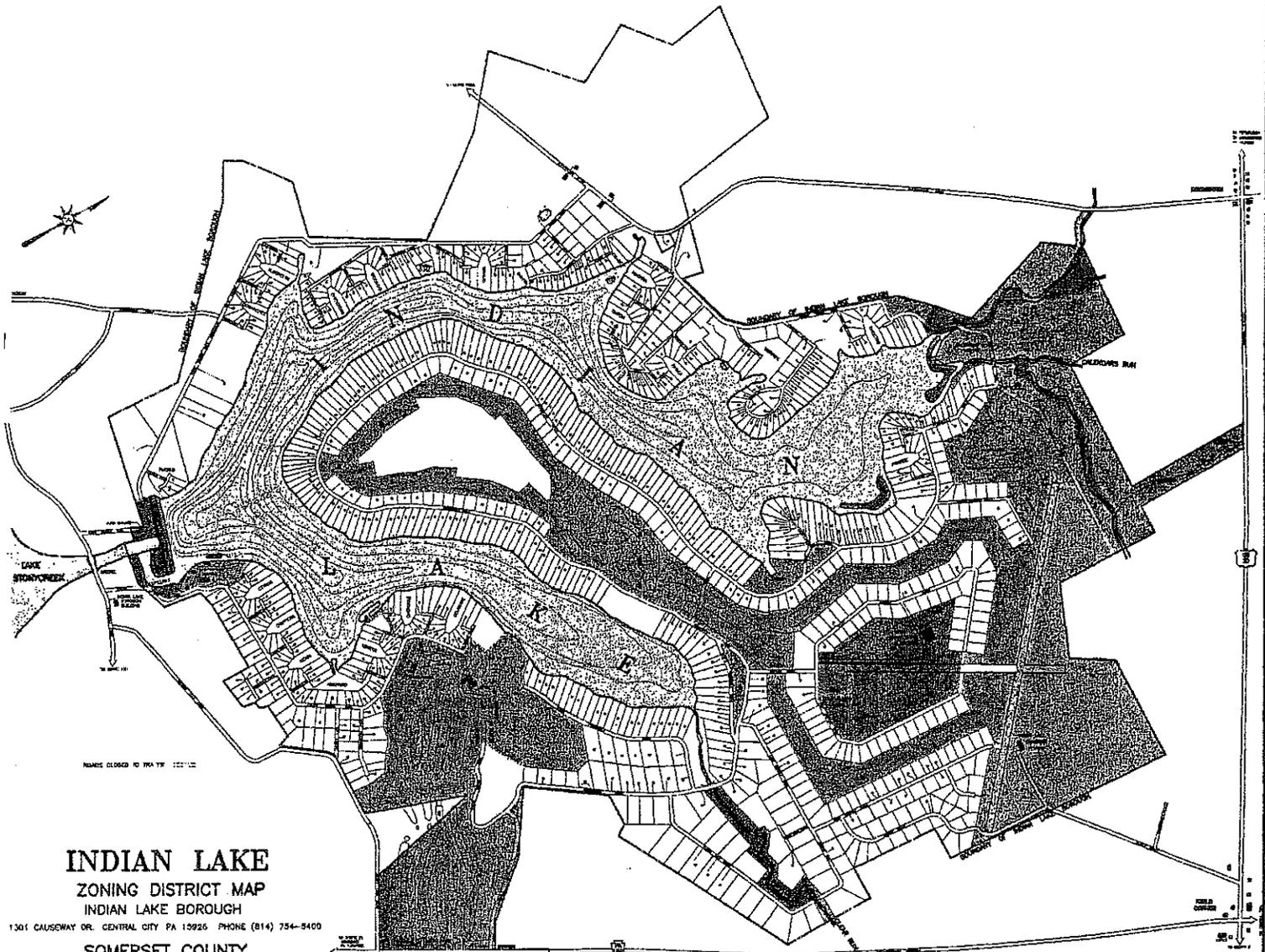
4.1 Land Development

While population projections were unavailable from the Pennsylvania Department of Environmental Protection (PaDEP), information provided by representatives of Indian Lake Borough indicate there are approximately 1,100 lots within the Borough. Of these lots, approximately 560 lots remain undeveloped. The Borough estimates there are approximately 126 EDUs anticipated to be developed including 19 additional taps in the Cheyenne Subdivision at the Northwinds Lodge and Golf Course, 65 homes within the Indian Lake Golf Club, 12 homes on the Mostoller property located west of Indian Lake Dam and 30 homes scattered throughout the Borough.

Due to unsuitable soil conditions, many undeveloped residential lots currently exist within the Borough. During the time period from January 1994 to January 2000, the Sewage Enforcement Officer (SEO) documented where building permits have been denied due to unsuitability of the lots for on-lot disposal systems. The SEO also documented areas of concern based on the types of soils underlying the site and through visual observation. Based on the extent of observed malfunctioning on-lot disposal systems, the SEO cautioned that the potential for malfunctioning on-lot disposal systems exist on all portions of the lake.

4.2 Land Use Designations

The residential land use within the Borough is concentrated along the perimeter of Indian Lake while the commercial development is located along outlying areas of the Borough. A Zoning District Map is shown in Figure 6. The Borough has been divided into three Districts, designated as follows:



INDIAN LAKE

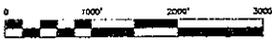
ZONING DISTRICT MAP
INDIAN LAKE BOROUGH

1301 CAUSEWAY DR. CENTRAL CITY PA 19926 PHONE (610) 754-5400

SOMERSET COUNTY

REVISED 5/01

APPROXIMATE SCALE: 1" = 1000'



MEI 2745 Locust Avenue
Central City, PA 19926-9632
(610) 754-5400
Musser Engineering, Inc.

S:\Civil-Survey\Indian Lake Service Corp\Drawings & Data\11.ZONE.dwg

FIGURE 6

Residential Districts

R-1 One Family Detached Dwelling

R-2 One Family Detached Dwelling (including mobile homes)

Recreational Districts

P-1 Private Parks

P-2 Public Parks

Business Districts

C-R Commercial Recreational

C-M Commercial Marina

C-G Commercial General

A Agricultural

Residential Land Use

The Zoning District Map provides the land use designations established under the Pennsylvania Municipalities Planning Code including residential, commercial and light industrial areas. The Proposed land uses as related to existing sewage planning are limited due to the unsuitability of many lots to accommodate on-lot disposal systems. As such, commercial developments such as the Indian Lake Golf Club were forced to install sewage treatment facilities due to the unsuitability of the land for conventional on-lot disposal systems.

Commercial Land Use

Commercial land use within the Borough consists of Commercial/Recreational, Commercial/General and Commercial/Marina. The commercial establishments within the Borough appear to be intended for the enjoyment of the residents of Indian Lake Borough, rather than establishments for economic gain. While areas within the Borough would be adequate for commercial growth and development, due to the soil types being unable to support on-lot disposal systems, commercial development has been limited.

Industrial Land Use

There are currently no areas within the Borough specifically zoned for industrial development. Available land exists for industrial development, but the Borough's desire to maintain a residential resort community, rather than a mixed-use community accounts for the lack of industrial development within the Borough.

4.3 Future Growth

The primary type of growth expected in Indian Lake Borough during the next decade is residential. Services such as grocery stores, gasoline stations, barber/beauty shops, etc. would be expected as part of the growth pattern expected to serve the local population within the Borough.

It is expected that growth within the Borough will continue with the availability of sewage treatment system alternatives to on-lot disposal. However, it is not expected that growth will increase dramatically due to the fact that the Borough desires to maintain the community for residential and recreational uses. Due to the already developed nature of the community, this shift in population may occur, but is not anticipated that this growth would be excessive.

The PaDEP Harrisburg office was contacted in September and again in October of 2002 to obtain population projections for Indian Lake Borough. The PaDEP reported that information from the 2000 Census has not yet been incorporated into PaDEP's population projection database. The PaDEP would not provide population projections until the referenced census data is incorporated into their database. The PaDEP representative was unable to provide an estimate of when the database would be updated.

4.4 Zoning Regulations and Ordinances

Indian Lake Borough has implemented a municipal Zoning Ordinance for the Borough. There are no other land development ordinances enacted. A Comprehensive Plan has not been developed for the Borough. Groundwater recharge areas are not identified on any public documents, however standard development practices, including soil erosion and sedimentation control practices are utilized for development within the Borough. Industrial water use is not an issue within the Borough.

The National Wetland Inventory mapping indicates wetland areas have been mapped within the Borough. Development approvals within the Borough would necessitate compliance with the requirements of 25 Pa Code Chapter 105 regarding wetland areas.

4.5 Sewage Planning

The initial goal of this planning study is to address the alternatives available to provide acceptable sewage disposal to all residences and commercial developments within the Borough. Since malfunctioning on-lot disposal systems have been documented in various areas of the Borough, as well as lots that did not pass the perc test for on-lot disposal systems, use of alternative treatment systems is warranted.

The first step in sewage planning for the Borough is to address the residential areas in immediate need. Factors including the number of malfunctioning on-lot disposal systems, available system capacity and the ability to financially support any extension of a sewage treatment system must be considered.

5.0 IDENTIFICATION OF ALTERNATIVES

5.1 Conventional Collection, Conveyance and Treatment Alternatives

At the present time, there are no regional sewage treatment facilities in Indian Lake Borough. Regionalization of sewage treatment would provide a workable alternative for the handling of sewage from Indian Lake Borough. However, overall drainage patterns throughout the Borough flow toward Indian Lake and the presence of very steep slopes, the installation of an entire gravity conveyance system would not be feasible. Substantial pumping would be required to convey sewage throughout the Borough to a single location for treatment.

Due to the topography, either a conventional conveyance system with a series of pump stations or a total pressurized collection system would be required for a regional collection and conveyance system within Indian Lake Borough.

The Lakewood Sewage Treatment Plant currently serves the Northwinds Lodge Complex. Sewage treatment by this plant could be extended to additional areas in need of improved sewage facilities, however expansion of the Lakewood Sewage Treatment Plant may be required.

Repair and upgrading of the Lakewood Sewage Treatment Plant could provide continued sewage treatment for the Northwinds Lodge Complex and additional residences that may potentially be served by this plant. Reduction of hydraulic and organic loadings, in addition to improved operation and maintenance, could also provide continued use of the Lakewood Sewage Treatment Plant.

Due to on-lot surveys conducted in Indian Lake Borough, there is a need to address sewage disposal in the Borough, and construction of new community sewage facilities including sewer systems and/or treatment facilities could provide a viable alternative.

The only existing sewage collection and conveyance system located in Indian Lake Borough includes the system from the Northwinds Lodge complex and the Lakewood Sewage Treatment

Plant. Repair and replacement of this existing system is not required. Use of innovative or alternative methods of collection and conveyance to serve needs areas is not required.

5.2 Individual Sewage Disposal Systems

The majority of Indian Lake Borough is supported through the use of individual on-lot disposal systems. However, with more stringent PaDEP requirements for individual on-lot disposal systems have been required, and in some cases, areas of the Borough are simply not approved for any type of on-lot sewage disposal system.

The primary reason for the limited use of on-lot disposal systems is the inability of the soils to permit adequate percolation. The soils suitable for conventional on-lot disposal systems are generally located on hilltops or in areas not conducive to development. Many lots in Indian Lake Borough have failed percolation tests due to low soil permeability and steep slopes that exist in the Borough. See Figure 5 for an illustration of the On-lot Facility Survey Map. Although some of the lots have failed percolation tests and a few others have malfunctioning on-lot systems, some lots within Indian Lake Borough may have individual on-lot disposal systems that could be operating in marginally acceptable soils.

The additional steep slopes and small lots will not permit the utilization of individual spray irrigation systems to resolve the existing malfunctions.

The establishment of a Sewage Management Program will be given consideration as part of the overall solution to serving the Borough. The Sewage Management Program shall include operation and maintenance requirements for acceptable individual on-lot disposal systems. Replacement and/or upgrades to individual on-lot disposal systems that are not functioning properly shall also be included in a Sewage Management Program. Various alternate techniques to conventional on-lot disposal systems are preferred, in certain soil conditions, for new home construction, and the utilization of various alternate techniques shall be included in the Sewage Management Program.

Replacement and/or upgrading of an on-lot disposal system may utilize various alternate techniques. These techniques may include elevated sand mounds, oversized absorption areas and shallow placement absorption areas. Many of these techniques are preferred, in certain soil conditions, for new home construction. The use of water conservation devices may also improve existing malfunctioning systems.

5.3 Small Flow Sewage Treatment Facilities

The Lakewood Sewage Treatment Plant is currently providing sewage treatment for the Northwinds Lodge Complex in the Borough. There is also an RFS III system currently providing sewage treatment for a single residence in Indian Lake Borough. The effluent from each of these facilities is conveyed directly to Indian Lake. Treatment and discharge requirements for these small flow sewage treatment facilities is under the jurisdiction of the PaDEP.

The use of additional small flow sewage treatment facilities to serve individual homes or cluster of homes in the Borough is a feasible option due to the topography and soil conditions of Indian Lake Borough. However, due to unfavorable soil conditions, effluent discharges from small flow treatment facilities may require surface discharge in some cases. With Indian Lake in close proximity to many lots within the Borough, it may be economically viable in many cases to convey effluent from small flow sewage treatment facilities to Indian Lake, which may assimilate the effluent. This alternative may be considered in circumstances where poor percolation and steep slopes prohibit on-lot disposal systems, and the opportunity to connect to public sewers is not available.

The establishment of a Sewage Management Program will be given consideration as part of the overall solution to serving the Borough. The Sewage Management Program shall include operation and maintenance requirements for small flow sewage treatment facilities. Replacement and/or upgrades to small flow sewage treatment facilities and the utilization of

various alternate techniques, including RFS-III technology, shall be included in a Sewage Management Program.

5.4 Community Land Disposal Alternatives

There are no designated areas within Indian Lake Borough that are used for community land disposal of sewage discharges. Individual land disposal of sewage discharges could be accomplished through use of an elevated sand mound, oversized absorption area or a shallow placement absorption area.

Due to the unavailability of suitable areas for land disposal in Indian Lake Borough, community land disposal alternatives do not appear to be feasible. However, individual land disposal alternatives could be accomplished through the use of elevated sand mounds, oversized absorption areas or a shallow placement absorption area.

The Borough will further permit, as part of this study, the use of technology referred to as alternate or experimental system designs. The systems are based on technologies that may not yet be recognized by PaDEP; however, any system that is proposed to be used in the Borough must be submitted, reviewed and approved by PaDEP.

The establishment of a Sewage Management Program will be given consideration as part of the overall solution to serving the Borough. Controls over operation and maintenance requirements for individual land disposal alternatives would be addressed in a Sewage Management Program.

5.5 Retaining Tank Alternatives

With a large number of part-time residents in Indian Lake Borough, retaining tanks may provide permanent sewage treatment alternatives to failing on-lot disposal systems. Retaining tanks may also be used on a temporary basis in which the installation of permanent sewage disposal facilities are anticipated. The use of retaining tanks would require continuing pumpouts, and

individual property owners may be required to carry out retaining tank pumpouts. Disposal sites for retaining tanks may be limited to a number of sewage treatment facilities located outside of the Borough.

The implementation of a retaining tank ordinance shall be given consideration as part of a Sewage Management Program. Financial guarantees for interim retaining tanks may also be addressed in a Sewage Management Program.

5.6 Sewage Management Programs

A Sewage Management Program could be established in Indian Lake Borough to oversee the installation and operation of existing and future individual on-lot disposal systems and small flow treatment facilities. Ownership of individual on-lot disposal systems and small flow treatment facilities would be maintained by the individual property owner. Operation and maintenance of these facilities would be undertaken by the individual property owner.

The Sewage Monitoring Program would control permitting, inspections, maintenance, repair and fee collection related to on-lot disposal systems and small flow treatment facilities, as well as a database to enable monitoring of the individual sewage systems throughout the Borough. The establishment of a Sewage Management Program would require the Borough to appoint a Borough official to oversee and administer the program. The official appointed by the Borough shall carry out inspections of existing individual on-lot disposal systems and small flow treatment facilities as often as it is necessary in order to ensure that these systems are properly operated and maintained. Maintenance required to be undertaken under the Program by individual property owners shall include pumpouts and upgrading of nonconforming systems as often as it is necessary to keep these systems operating properly.

The utilization of various alternate techniques for on-lot disposal systems shall be included in the Sewage Management Program. These techniques may be utilized for existing on-lot disposal systems found to be malfunctioning and for new home construction, in which a soil conditions

prohibit the use of a conventional on-lot disposal system. Some of the alternate techniques may include elevated sand mounds, oversized absorption areas and shallow placement absorption areas. The PaDEP publishes an alternate systems guidance for acceptable alternate techniques for sewage disposal that could assist with the utilization of alternate techniques. In the event that alternate techniques to on-lot disposal systems are not feasible, the property owner may select the installation and use of a retaining tank, a small flow treatment facility or another alternative, such as RFS-III technology. Controls over operation and maintenance requirements for retaining tanks, small flow treatment facilities and alternative technologies would be addressed in a Sewage Management Program. Standard PaDEP planning modules would be required for certain alternatives and the Borough would be required to approve ordinance to permit holding tanks as a means of addressing sewage concerns. In approving these facilities a performance surety amount shall be required for operation and maintenance of these types of facilities.

5.7 Non-Structural Comprehensive Planning Alternatives

Non-structural comprehensive planning alternatives to control existing and future sewage disposal do not play a significant role in Indian Lake Borough.

Proposed modification of the comprehensive plan is not an option in the Borough since a comprehensive plan has not been developed. Land use designations and densities are controlled somewhat through the existing zoning ordinance and map. Densities and development types are directed through enforcement of the zoning ordinance. Drinking water as well as surface water source protection has been studied in the past. The historically dense lot development of the Borough has promoted the development of a public water system.

Development of a comprehensive plan can provide some direction to maintain a sound and consistent future growth pattern. However, due to the fact that the land in the Borough is presently developed to its fullest potential, planning is somewhat after the fact.

The Borough has not adopted its own land development and subdivision regulations, but utilizes the regulations of Somerset County. The consideration of changing regulations to permit large lot on-site sewage disposal is not an option for consideration. The Borough has little land for further subdivision. The majority of the area is subdivided into quarter acre or smaller lots. Whether the lots were made large or not, the poor soil conditions are the primary reason this study was undertaken and the larger lot will still not provide a secondary replacement area for on-lot disposal.

5.8 No Action Alternatives

Due to the quantity of existing on-lot disposal systems that are a concern, a no action alternative may adversely affect the Borough. A no action alternative could harm water quality, public health, growth potential, economic vitality, recreational amenities and sources of drinking water. As a result of these concerns, a no action alternative does not appear to be a practical alternative.

6.0 EVALUATION OF ALTERNATIVES

6.1 Technically Feasible Alternatives

The technically feasible sewage disposal alternatives to be evaluated in this section of the study are identified as follows:

Alternative 1 – Regional Gravity Sewer System with a single treatment plant located on West Shore Trail and discharge to Rhoads Creek.

Alternative 2 – Regional Pressure Sewer System with a single treatment plant located on West Shore Trail and discharge to Rhoads Creek.

Alternative 3 – Regional Pressure Sewer System with a single treatment plant located on Peninsula Drive near Point Circle and discharge to Indian Lake.

Alternative 4 – Initial sewer service will be provided to the peninsula area through a privately constructed and operated pressure sewer system and sewage treatment plant to be constructed. Future expansion for other areas of the Borough will be handled by expanding the Lakewood Sewage Treatment Plant.

Alternative 5 – Regional Pressure Sewer System with one pump station which will discharge to the Stonycreek Township gravity sewer system with treatment occurring at the Shanksville proposed sewage treatment facility.

All of the identified alternatives include the implementation of a Sewage Management Program to oversee the installation and operation of existing and future individual on-lot disposal systems and small flow treatment facilities. The identified sewage disposal alternatives are described in detail as follows:

Alternative 1

Alternative 1 consists of a gravity sewer system, eleven (11) pump stations and a 200,000 gpd treatment plant. The system would serve 539 EDUs initially and may serve an additional 125 EDUs as a result of anticipated development within the Borough. The proposed alternative includes intercepting 27 EDUs from the existing Lakewood Treatment Plant and 23 additional

EDUs from the Northwinds Lodge Complex. The existing 12,000 gpd Lakewood Treatment Plant would be abandoned following completion of the proposed Alternative.

Most of the existing homes within Indian Lake Borough would be sewer under the proposed alternative. The few homes in the Borough that are not economically viable to sewer would be regulated under a Sewage Management Program. This Program would oversee the operation and maintenance of existing and future on-lot disposal systems and small flow treatment facilities. The operation and maintenance of these facilities under this Program would apply to properties that are not intended to be sewer in addition to properties that are not yet sewer by the proposed alternative.

Due to the topography of the Borough, the gravity sewer system is divided into eleven (11) areas. An illustration of Alternative 1 is shown in Figure 7. Each area would be furnished with its own pump station that would convey sewage to the neighboring area. The last pump station would pump sewage to the treatment plant located on the corner of West Shore Trail and West Shore Trail Extension. An outfall force main and outfall gravity main would be installed along West Shore Trail Extension and Springdale Road (T-569) to convey the effluent from the treatment plant to Rhoads Creek where it shall be discharged.

Alternative 2

Alternative 2 consists of a pressure sewer system, one (1) pump station and a 200,000 gpd treatment plant. The system would serve 539 EDUs initially and may serve an additional 125 EDUs as a result of anticipated development. The proposed alternative includes intercepting 27 EDUs from the existing Lakewood Treatment Plant and 23 additional EDUs from the Northwinds Lodge Complex. The existing 12,000 gpd Lakewood Treatment Plant would be abandoned following completion of the proposed Alternative.

Most of the existing homes within Indian Lake Borough would be sewer under the proposed alternative. The few homes in the Borough that are not economically viable to sewer would be regulated under a Sewage Management Program. This Program would oversee the operation and

maintenance of existing and future on-lot disposal systems and small flow treatment facilities. The operation and maintenance of these facilities under this Program would apply to properties that are not intended to be sewerred in addition to properties that are not yet sewerred by the proposed alternative. A pump station would be installed near point circle in order for sewage to bypass the collection system on the west shore of the lake. An illustration of Alternative 2 is shown in Figure 8. Similar to Alternative 1, the treatment plant would be located on the corner of West Shore Trail and West Shore Trail Extension. An outfall force main and outfall gravity main would be installed along West Shore Trail Extension and Springdale Road (T-569) to convey the effluent from the treatment plant to Rhoads Creek where it shall be discharged.

Alternative 3

Alternative 3 consists of a pressure sewer system and a 200,000 gpd treatment plant. The system would serve 539 EDUs initially and may serve an additional 125 EDUs as a result of future development. The proposed alternative includes intercepting 27 EDUs from the existing Lakewood Treatment Plant and 23 additional EDUs from the Northwinds Lodge Complex. The existing 12,000 gpd Lakewood Treatment Plant would be abandoned following completion of the proposed Alternative.

Most of the existing homes within Indian Lake Borough would be sewerred under the proposed alternative. The few homes in the Borough that are not economically viable to sewer would be regulated under a Sewage Management Program. This Program would oversee the operation and maintenance of existing and future on-lot disposal systems and small flow treatment facilities. The operation and maintenance of these facilities under this Program would apply to properties that are not intended to be sewerred in addition to properties that are not yet sewerred by the proposed alternative.

Unlike alternatives 1 & 2, a 200,000 gpd treatment plant would be located on the property of the old Marina near Point Circle, and effluent from the plant would be discharge into the western side of Indian Lake. An illustration of Alternative 3 is shown in Figure 9.

Alternative 4

Alternative 4 was developed to address immediate sewage needs with an infrastructure system and future needs through a Sewage Management Program. The potential sewage service to be provided is developed in three (3) phases. Figure 10 provides the details of how Alternative 4 is developed. The phases represent the areas for future sewage service. Those areas not covered by sewer service will be handled by a Sewage Management Program.

The purpose of the phasing is to address sewer needs in a timely manner. The potential sewage service to be provided in Phase I will be divided into two subsections based upon the timing of providing sewage service. Phase I-A is proposed to serve the existing Indian Lake Golf Club (ILGC) Clubhouse and approximately 60 proposed single family homes to be constructed on the Golf Club's property. The proposed privately owned sewer system would consist of a sewage treatment plant to be located on the peninsula (identified as the North Plant) with discharge on the southern arm of the lake. Sewage service can be extended to those existing houses and vacant lots immediately adjacent to the Golf Club's property. The system that would serve these lots would be a pressure sewer system consisting of individual grinder pumps that will discharge into the system on the Golf Club's property.

Phase I-B would utilize the same sewer system on the ILGC property, but extends the pressure sewer system to other areas of the golf course and will be available for vacant lots on the opposite side of Peninsula Drive. As malfunctions develop on the peninsula they can be addressed by private easements to permit access to the sewer system.

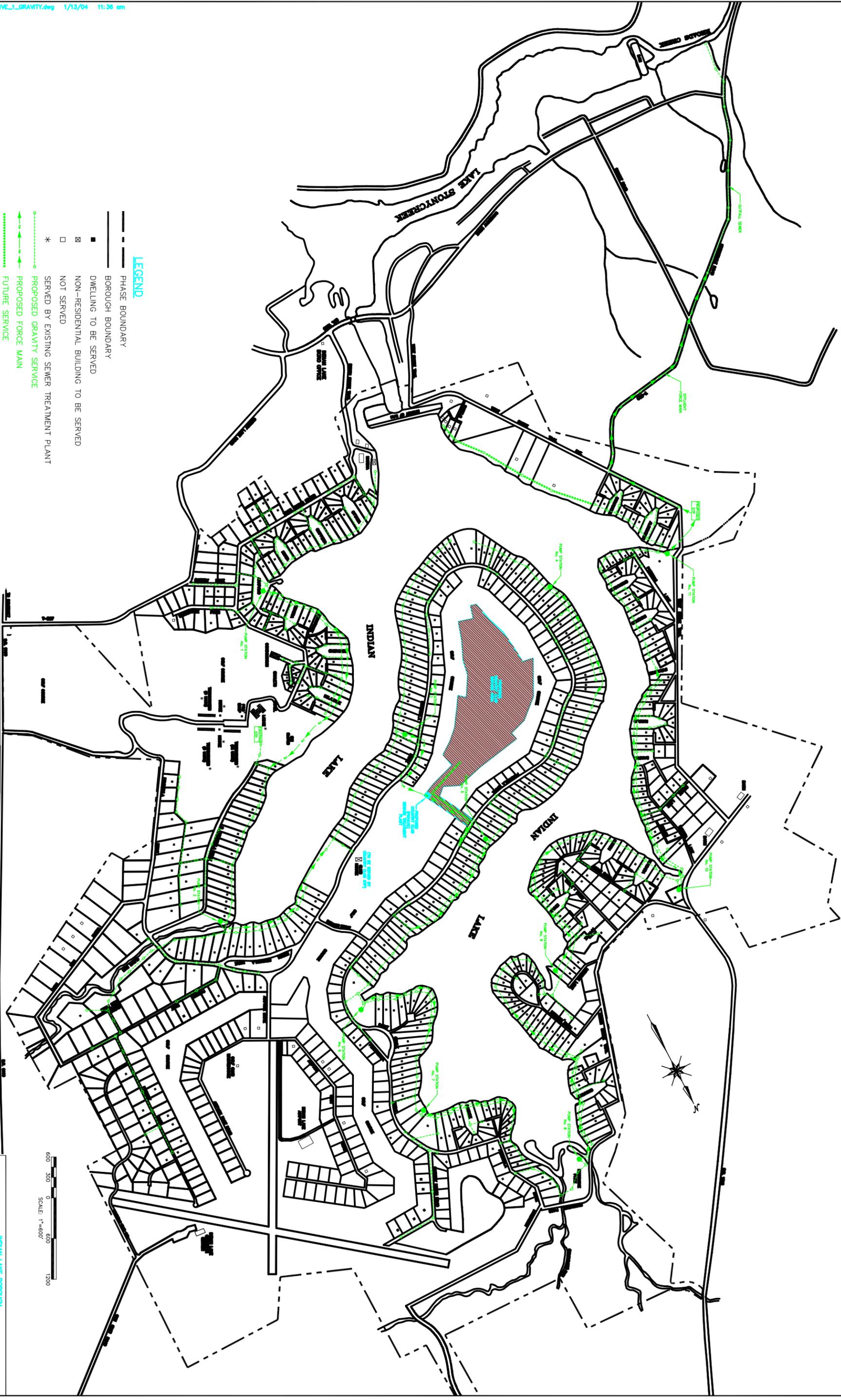
The primary difference between the Phase I-A and I-B alternatives is the timing of the proposed improvements. Phase I-A is proposed to take place within the next two (2) years, while the I-B alternative is estimated to take place in approximately five (5) years.

The proposed Phase II sewage service area is expected to be addressed after Phase I-A and I-B are completed. Those lots adjacent to the pressure sewer system can be served as well as those

properties experiencing specific malfunctions. Those properties requiring access to the proposed pressure sewer system will be required to utilize individual easements.

Phase III development will take place in a five (5) to ten (10) year time frame and will utilize the existing Lakewood Sewage Treatment Plant discharging to the south arm of the Indian Lake. Currently the existing sewage treatment plant serves approximately 27 customers and is sized for 12,000 gallons per day. Expansion of this sewage plant will be necessary and a pressure sewer will be required to serve the existing homes and the vacant lots. This system would be completed by the Borough, who is presently operating this sewage treatment plant. Future customers to this plant, including existing and future customers would total approximately 164 dwelling units.

Phase I-A, I-B and Phase II sewer systems will be developed on the Indian Lake Golf Club property as well as a sewage treatment plant. The sewer system and the sewage treatment plant will be constructed and operated by a private entity. Sewage service to residents surrounding the Golf Club property will be offered. The estimate of cost for the connections will be based upon the cost to build the facilities and the cost to operate and maintain them. The estimate of customers are proposed as follows.



- LEGEND**
- PHASE BOUNDARY
 - - - BOROUGH BOUNDARY
 - DWELLING TO BE SERVED
 - ▣ NON-RESIDENTIAL BUILDING TO BE SERVED
 - NOT SERVED
 - * SERVED BY EXISTING SEWER TREATMENT PLANT
 - PROPOSED GRAVITY SERVICE
 - - - PROPOSED FORCE MAIN
 - FUTURE SERVICE



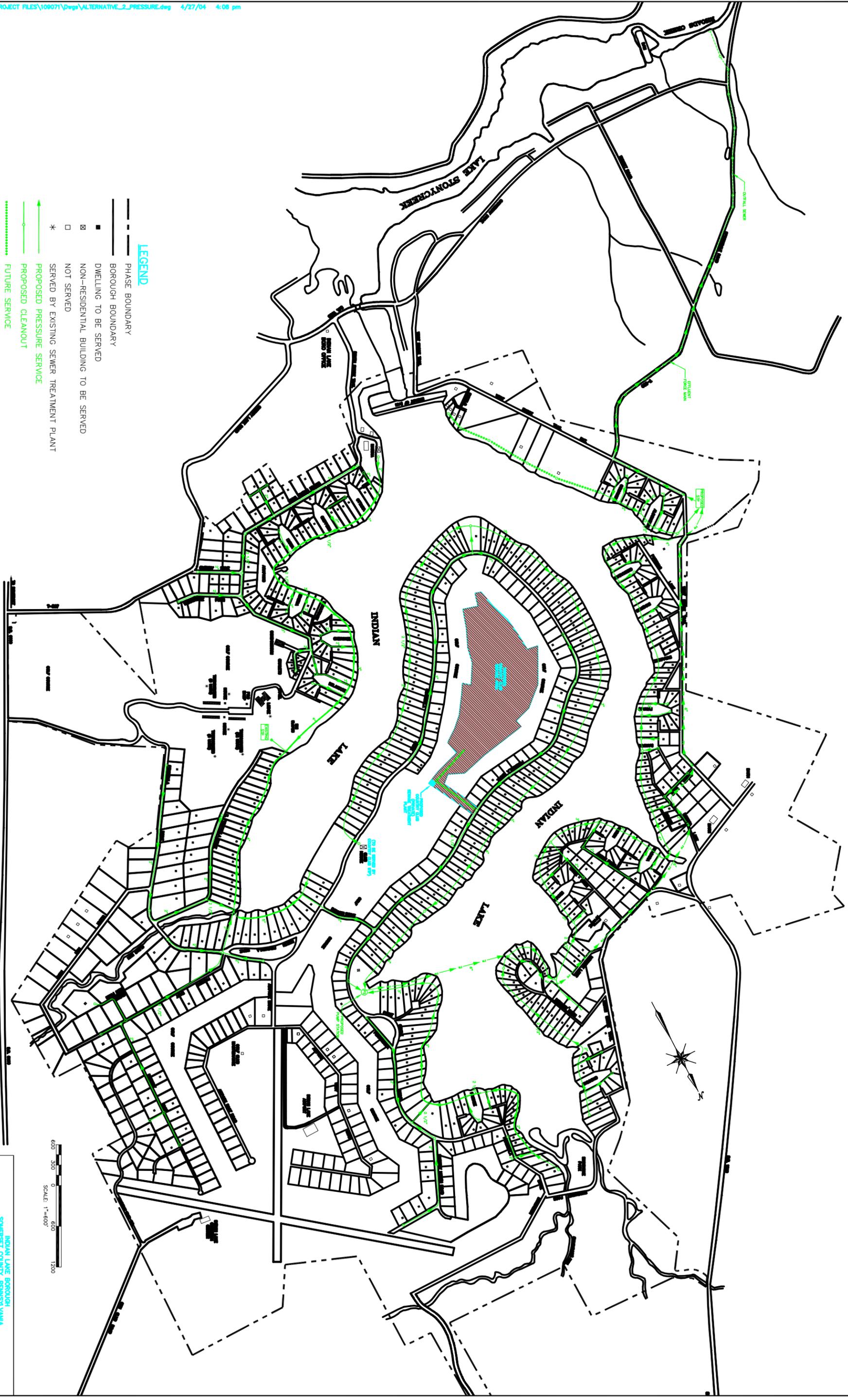
INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA

ACT 537 SEWAGE FACILITIES PLAN

FIGURE 7 - ALTERNATIVE 1

Hatch Mot MacDonald
PITTSBURGH, PENNSYLVANIA

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	DRAWING NO.
HLK	G.S.S.	NOV. 2002	AS SHOWN	107091	1 OF 1



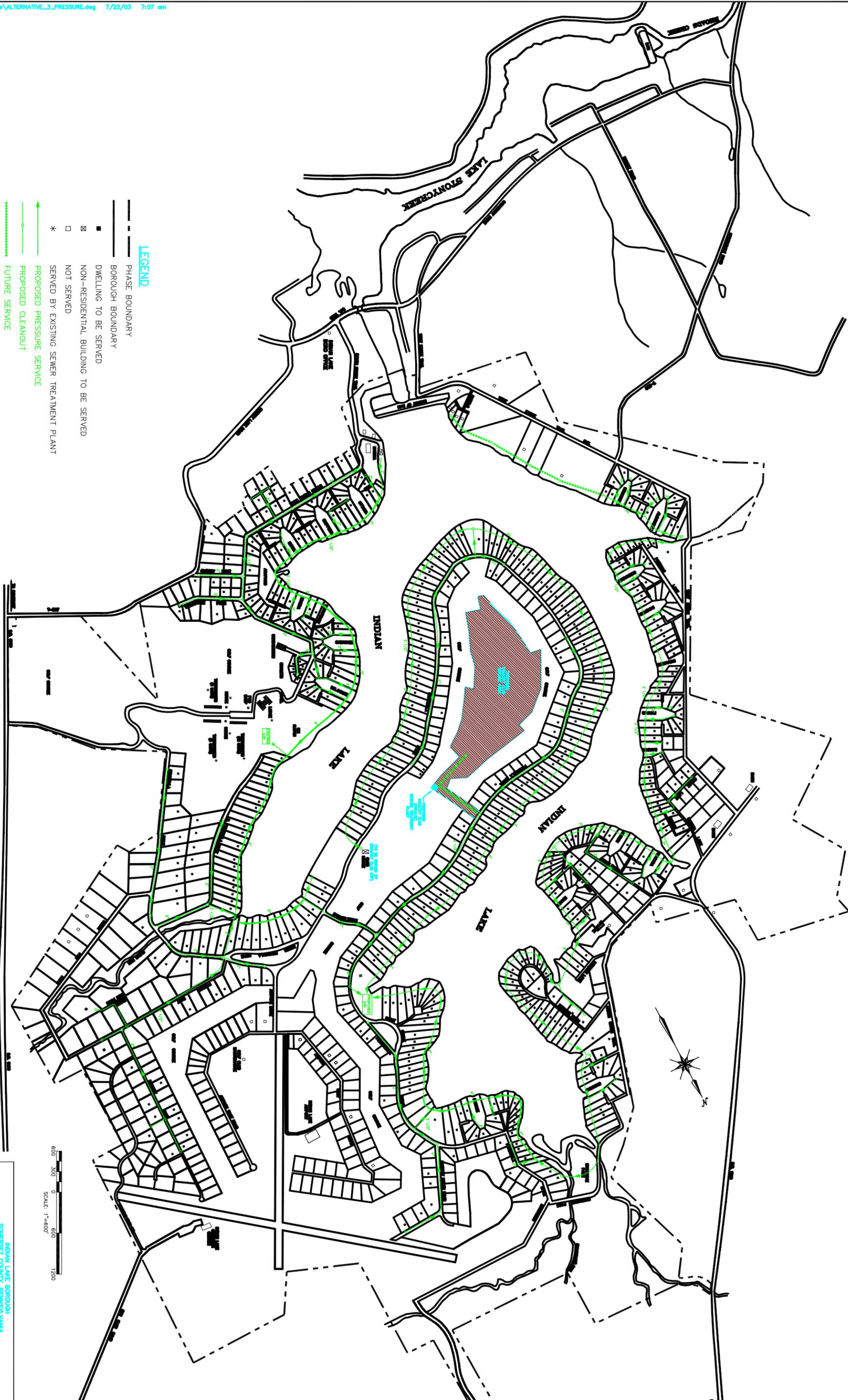
600 300 0 600 1200
SCALE: 1"=600'

INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA

ACT 537 SEWAGE FACILITIES PLAN

FIGURE 8 - ALTERNATIVE 2

DRAWN	DATE	SCALE	PROJECT NO.	DRAWING NO.
Hatch Mot MacDonald	PITTSBURGH, PENNSYLVANIA	AS SHOWN	107091	1 OF 1
CHECKED	DATE	SCALE	PROJECT NO.	DRAWING NO.
G.S.S.	NOV. 2002	AS SHOWN	107091	1 OF 1



LEGEND

- PHASE BOUNDARY
- - - BOROUGH BOUNDARY
- DWELLING TO BE SERVED
- ▣ NON-RESIDENTIAL BUILDING TO BE SERVED
- NOT SERVED
- * SERVED BY EXISTING SEWER TREATMENT PLANT
- PROPOSED PRESSURE SERVICE
- PROPOSED CLEANOUT
- FUTURE SERVICE

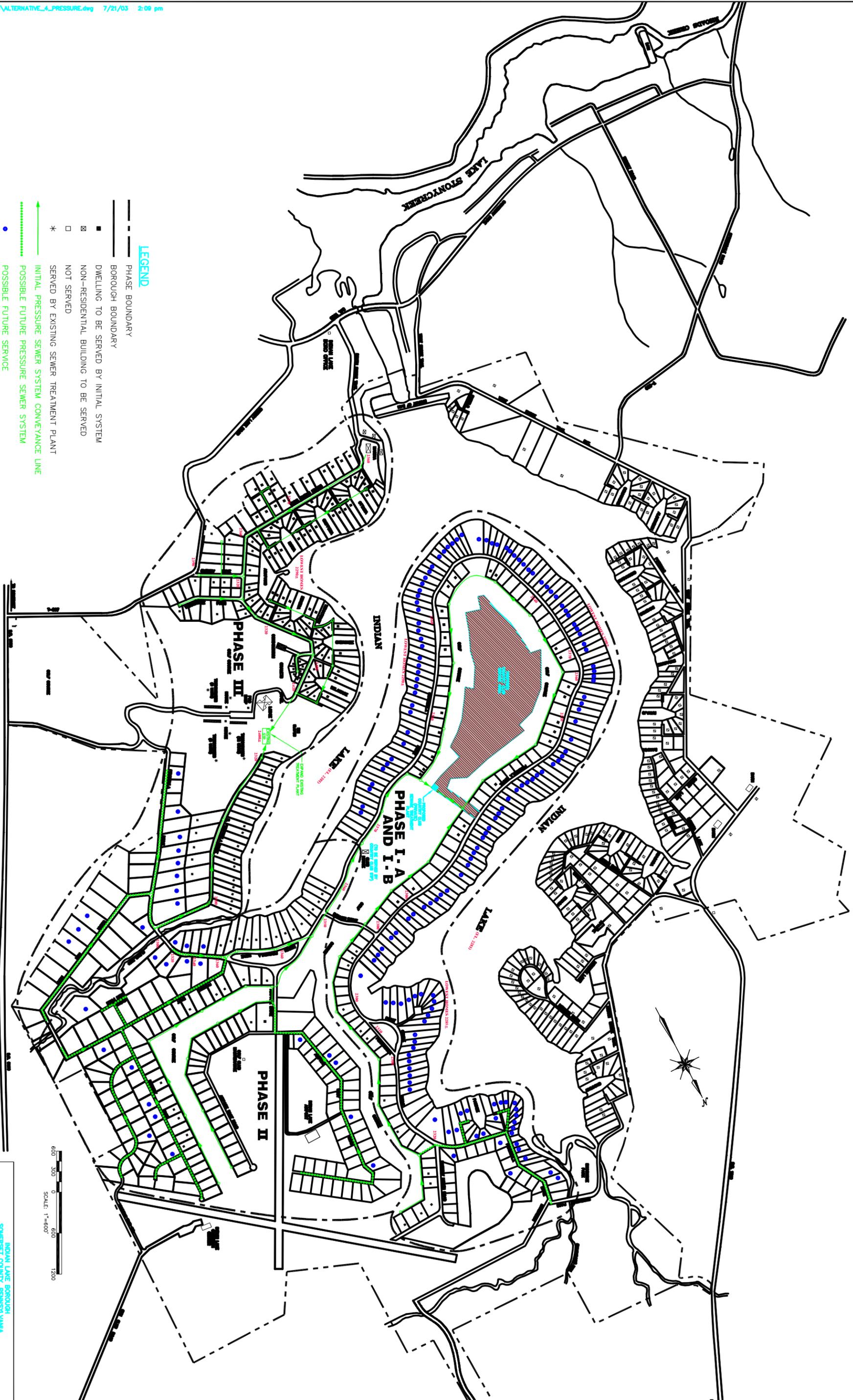


INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA

ACT 537 SEWAGE FACILITIES PLAN

FIGURE 9 - ALTERNATIVE 3

DRAWN	Hatch Mot	DATE	PITTSBURGH, PENNSYLVANIA
CHECKED	MacDonald	SCALE	
DATE	NOV. 2002	PROJECT NO.	107091
SCALE	AS SHOWN	DRAWING NO.	1 OF 1



LEGEND

- PHASE BOUNDARY
- - - BOROUGH BOUNDARY
- DWELLING TO BE SERVED BY INITIAL SYSTEM
- ▣ NON-RESIDENTIAL BUILDING TO BE SERVED
- NOT SERVED
- * SERVED BY EXISTING SEWER TREATMENT PLANT
- INITIAL PRESSURE SEWER SYSTEM CONVEYANCE LINE
- POSSIBLE FUTURE PRESSURE SEWER SYSTEM
- POSSIBLE FUTURE SERVICE
- ▣ MAINTAIN SEPTIC SYSTEMS UNTIL SERVICE AVAILABLE BY FUTURE PRESSURE SYSTEM AND NEW SEWAGE TREATMENT PLANT
- 2100 APPROXIMATE ROAD GRADE



INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA

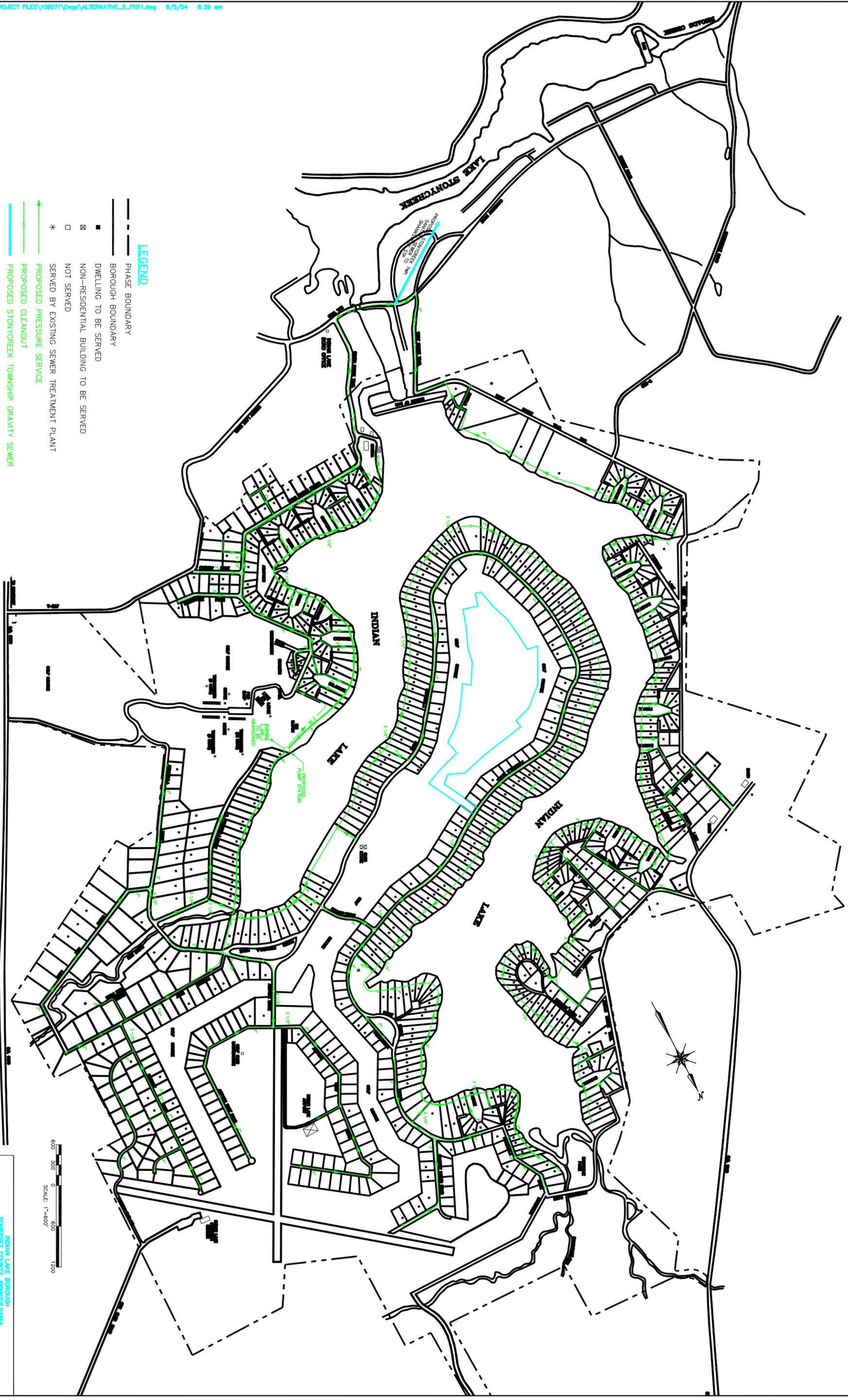
ACT 537 SEWAGE FACILITIES PLAN

FIGURE 10 - ALTERNATIVE 4

Hatch Mott MacDonald

PITTSBURGH, PENNSYLVANIA

DRAWN	CHECKED	DATE	SCALE	PROJECT NO.	DRAWING NO.
HLK	G.S.S.	MAY 2003	AS SHOWN	107091	1 OF 1



LEGEND

- PHASE BOUNDARY
- - - BOROUGH BOUNDARY
- DWELLING TO BE SERVED
- ⊠ NON-RESIDENTIAL BUILDING TO BE SERVED
- NOT SERVED
- * SERVED BY EXISTING SEWER TREATMENT PLANT
- PROPOSED PRESSURE SERVICE
- PROPOSED CLEANOUT
- PROPOSED STONYCREEK TOWNSHIP GRAVITY SEWER



INDIAN LAKE BOROUGH
SOMERSET COUNTY, PENNSYLVANIA

ACT 537 SEWAGE FACILITIES PLAN

FIGURE 11 - ALTERNATIVE 5

DRAWN	Hatch Mot	DATE	PITTSBURGH, PENNSYLVANIA
CHECKED	MacDonald	SCALE	
DATE	APRIL 2004	PROJECT NO.	100071
SCALE	AS SHOWN	DRAWING NO.	1 OF 1

TABLE 6.0
INDIAN LAKE BOROUGH
ANTICIPATED CUSTOMERS
FOR ALTERNATIVE 4

<u>Description</u>	<u>Existing Customer (Dwelling Unit)</u>
<u>Indian Lake Golf Club Plant</u>	
Phase I-A and I-B (1-5 years)	185
Phase II (5-10 years)	47
<u>Lakewood Plant</u>	
Phase III (5-10 years)*	164
*(Add existing flows 27)	_____
Total All	396

**Per NPDES Permit*

The northern shore of the lake along with those houses that are not immediately anticipated to be served, will be placed in the Borough's Sewage Management Program. In general this Program would oversee the operation and maintenance of existing and future on-lot disposal systems and small flow treatment facilities. The operation and maintenance of these facilities under this Program would apply to properties that were not intended to be sewered initially, as well as those properties that are not yet sewered by the proposed alternative.

Alternative 5

This alternative consists of a pressure sewer system serving the entire Borough of Indian Lake. One pressure sewer system will serve the northern shore of the lake and discharges to the proposed interceptor sewer in Stonycreek Township. Sewer service to the peninsula and the south shore will be developed as a pressure sewer system with discharge to a proposed sewage pump station. The pump station sized for approximately 100,000 gallons per day will intercept

the sewage flows from the townhouses and lodge which are presently being treated by the Lakewood Sewage Treatment plant scheduled to be abandoned. All sewage will be directed from the proposed pump station along South Shore Trail and along Causeway Drive to the proposed interceptor sewer in Stonycreek Township. Sewage will flow in a westerly direction to Shanksville Borough to a proposed sewage treatment facility to be located west of Shanksville Borough.

Service would be extended to approximately 539 EDUs with a future anticipated development of 126 EDUs. As was mentioned, the Lakewood Treatment Plant would be abandoned. A total of 27 EDUs from the townhouse complex and 23 EDUs from the Northwinds Lodge Complex would be rerouted to the new pump station. This total of 50 EDUs is included in the 539 EDUs proposed to be served.

Sewage flows from Indian Lake Borough anticipated at the Shanksville Sewage treatment facility are estimated initially to be approximately 200,000 gallons per day.

An evaluation of the five (5) alternatives listed above were evaluated for consistency with respect to the following topics, as required by PA Title 25 Chapter 71.21(a)(5)(i):

1. Clean Streams Law

All of the alternatives are consistent with the requirements of the Clean Streams Law to eliminate the actual and potential pollution threat to Commonwealth waters.

2. Municipal Wasteload Management Plans

Municipal Wasteload Management Plans for Indian Lake Borough are not available.

3. Title II of the Clean Water Act

All of the alternatives are consistent with Title II of the Clean Water Act. All of the alternatives will improve overall water quality in the area and promote the public health by reducing the discharge of improperly treated sewage.

4. Pennsylvania Municipalities Planning Code Comprehensive Plan

All of the Alternatives are consistent with land use designations of the city and with sewage facilities plans of municipalities within the existing service area.

5. Antidegradation Requirements Per PA Code, Title 25

All of the alternatives will reduce the discharge of improperly treated sewage and promote the public health by reducing the discharge of inadequately treated sewage. All of the alternatives are consistent with the Antidegradation Requirements.

6. State Water Plan

All of the alternatives will improve overall water quality in the area and promote the public health by reducing the discharge of improperly treated sewage. All of the alternatives are consistent with the State Water Plans under the Water Resources Planning Act.

7. Pennsylvania Prime Agricultural Land Policy

The Borough of Indian Lake has two (2) active farms. The sewer service areas identified are adjacent to the lake, or established roads, therefore, sanitary sewers are not proposed in prime agricultural areas, nor will they impact the development of agricultural lands.

8. County Stormwater Management Plans

Stormwater management plans for Somerset County are not available.

9. Wetland Protection

The National Wetlands Inventory Maps indicate that wetlands exist in the planning area. However, these wetlands should neither pose any major restrictions to future sanitary sewage facilities nor restrict future land development. On the occasion that a necessary conflict cannot be avoided, mitigation procedures will be undertaken.

10. Pennsylvania National Diversity Inventory (PNDI)

A completed Request For Pennsylvania Natural Diversity Inventory (PNDI) data was submitted to the Pennsylvania Department of Conservation and Natural Resources on April 9, 2003. This submission requested a listing of known rare, endangered or threatened plant and animal species. The response letter from the DCNR, included in Appendix B, indicated threatened and endangered species may be located within the project area. A follow-up letter providing more details of the recommended alternative was prepared. A copy of this correspondence is also enclosed in the Appendix. The PNDI comments may need to be further addressed during the design phase of the project.

11. Historical and Archaeological Resource Protection

A completed Cultural Resource Notice was submitted to the Pennsylvania Historical and Museum Commission (PHMC) on April 2, 2003 requesting a determination of whether any known historical or archaeological sites would be impacted by any of the alternatives proposed in the Act 537 Sewage Facilities Plan. The response letter from PHMC, which is included in Appendix B, indicated the project is a planning study therefore the PHMC

could not assess the effects on specific historic and archaeological resources. A follow-up letter providing more details of the recommended alternative was prepared. A copy of this correspondence is also included in the Appendix.

6.2 Resolution of Inconsistencies

In reviewing the selected alternatives previously identified, it was determined that none of the alternatives provide any inconsistencies that would need to be resolved, except for comments received from the Department of Conservation and Natural Resources and the Pennsylvania Historical and Museum Commission. As more detailed information becomes available during the design phase of a project, comments from these agencies can be resolved.

6.3 Effluent Requirements

Preliminary effluent limitations for the identified alternatives were obtained from the PaDEP. The effluent limitations for Alternative 1 and Alternative 2 are shown in the following table:

TABLE 6.1
PRELIMINARY EFFLUENT LIMITATIONS
ALTERNATIVES 1 & 2

<u>Parameter</u>	<u>Average Monthly (mg/l)</u>	<u>Maximum (mg/l)</u>
CBOD-5		
May-October	20	40
November-April	25	50
Total Suspended Solids	30	60
Ammonia Nitrogen		
May-October	8	16
November-April	22	44
Dissolved Oxygen	3 (Minimum)	
Total Residual Chlorine	0.3	0.8
Fecal Coliform		

May-October 200/100 ml
 November-April 5000/100 ml

The effluent limitations for Alternative 3 and Alternative 4 are as shown in the following table:

TABLE 6.2
 PRELIMINARY EFFLUENT LIMITATIONS
 ALTERNATIVES 3 & 4

<u>Parameter</u>	<u>Average Monthly (mg/l)</u>	<u>Maximum (mg/l)</u>
CBOD-5	25	50
Total Suspended Solids	30	60
Dissolved Oxygen	5 (Minimum)	
Total Residual Chlorine	0.5	1.0
Fecal Coliform		
May-October	200/100 ml	
November-April	2000/100 ml	
Total Nitrogen	10	20
Total Phosphorus	1	2

It must be noted that these limits, which were obtained from the PaDEP, are preliminary and have not been subject to a complete review. Therefore, the actual limits imposed in an NPDES permit may be different at the time in which the permit is issued. Effluent limitations for Alternative 5 were not specifically requested in this 537 Study since there were no discharges proposed within Indian Lake Borough.

6.4 Cost Considerations

Project cost estimates include construction costs, engineering fees, legal fees and administrative costs. Project cost estimates are based on current construction costs and experience with similar projects. Estimates of Project Costs for each proposed alternative is included in the Appendix and is summarized in the following table. The estimated project costs per services are based

upon 539 EDUs that Alternatives 1, 2 and 3 would initially serve. Alternative 4 would ultimately serve approximately 396 EDUs.

TABLE 6.3
PROJECT COST ESTIMATE SUMMARY

	<u>Estimated Cost</u>	<u>Estimated Cost per EDU</u>
Alternative 1	\$12,056,400	\$22,370
Alternative 2	\$ 7,920,100	\$14,690
Alternative 3	\$ 7,222,400	\$13,400
Alternative 4	\$ 6,752,900	\$17,100
Alternative 5	\$ 7,055,000	\$13,100

Annual operating cost estimates include expenses pertaining to operation and maintenance of treatment systems, collection systems and pump stations in addition to administrative services related to the operation and maintenance of sewage facilities. Annual operating cost estimates are based on current operating cost estimates. Estimates of annual operating costs for each proposed alternative is included in the Appendix and is summarized in the following table. The estimated annual operating costs per services are based upon 539 EDUs that the Alternatives 1, 2, 3 and 5 would serve initially and 396 EDUs that Alternative 4 would serve ultimately.

TABLE 6.4
ANNUAL OPERATING COST ESTIMATE SUMMARY

	<u>Estimated Cost</u>	<u>Estimated Cost per EDU</u>
Alternative 1	\$224,000	\$416
Alternative 2	\$196,500	\$365
Alternative 3	\$181,100	\$336
Alternative 4	\$159,000	\$402
Alternative 5	\$174,100	\$323

Present worth analysis is a technique by which alternatives having different project costs and different annual operating costs can be compared on the basis of their “Present Worth”. The alternative having the least present worth is then considered to be the most cost effective on a financial basis. Strict reliance on present worth is risky since the analysis can be no better than the project cost estimates, prediction of annual operating costs, and assumptions regarding service life and interest rates. For these reasons, alternatives which have a present worth within fifteen percent (15%) of each other are considered to be essentially equal.

A summary of the present worth analysis is provided in the following table. A planning period of twenty years and a discount rate of three percent (3%) was used for the analysis.

TABLE 6.5
PRESENT WORTH ESTIMATE SUMMARY

	<u>Estimated Present Worth</u>
Alternative 1	\$16,405,900
Alternative 2	\$11,735,600
Alternative 3	\$10,738,900
Alternative 4	\$ 9,840,300
Alternative 5	\$10,435,600

Since the estimated present worth of Alternatives 2,3,4 and 5 are within fifteen percent (15%) of each other, these alternatives are considered to be essentially equal. The estimated present worth of Alternative 1 as compared to the other alternatives is more than fifteen percent (15%) higher than all of the other alternatives and is considered to be higher than the estimated present worth of the other alternatives. In summary, any of the Alternatives 2,3,4 and 5 are comparable as far as the present worth analyses and may be considered as a viable alternative. A more detailed analyses of the present worth cost estimates may be found in Table 8 in Appendix A.

6.5 Funding Methods

There are a variety of methods and combinations of methods, which may be utilized to fund the construction of sewage facilities. Funding methods available to Indian Lake Borough to implement the selected alternative include PENNVEST funding, bond issues and long term bank financing. These funding methods need to be investigated at a later date, and it shall be determined at a later date which method will be most viable for the Borough and its residents. A summary of various funding methods is presented herein.

6.5.1 PENNVEST Program (Act 16 of 1988)

Act 16, which was signed into law on March 1, 1988, is designed to provide assistance to local governments in financing sewer and water projects. The PENNVEST program provides grants and loans for the acquisition, construction, improvement, expansion, extension, repair or rehabilitation of all or part of any water or sewage system, whether publicly or privately owned.

Funds are extracted from a number of sources; e.g., state budget appropriations, Federal funds, unused Water Facilities Loan Board funds, previously authorized but unused general obligation bonds and an approved \$300 million general obligation bond referendum. All sewer projects are currently funded from Federal sources.

Funding is primarily in the form of loans. PENNVEST has the power to set loan terms and may defer principal payments for up to five years. The minimum interest rate on any loan will be one percent. The maximum rate will vary depending upon the unemployment rate in the county or the municipality being served by the project. PENNVEST may provide grants to supplement loans when it determines it is necessary for a municipality to keep their user rate in an “affordable range” as determined by PENNVEST.

The maximum assistance for any single project under the PENNVEST Program is limited to \$11 million. Projects, which serve more than one or more municipalities, may obtain loans in excess of \$20 million if approved by nine of the thirteen members of the PENNVEST Board.

Eligibility for financing assistance, determined by PENNVEST, considers the following criteria: will the project improve the health, safety, welfare, or economical well being of the people; will the project provide an effective or complete solution to the problem; is the project cost effective; is the project consistent with state and regional plans; has the applicant demonstrated the ability to operate and/or maintain the project; will the project encourage consolidation of existing systems; and are other funds available.

PENNVEST has stated that maximum grants will be in the amount of \$1,000,000. Projects have been funded at 1 percent interest for 30 years, however, under Title VI, any federally funded sewer related project cannot exceed a 20-year term. Interim design loans are available for qualifying municipalities for a term of up to 5 years (typical interest rate is 1 percent).

Loan application and funding must be approved by Board action. The Board meets approximately three (3) times per year. The application deadlines normally precede the Board Meetings by about two (2) months.

Application for construction funding is generally not considered for approval by the PENNVEST Board until:

- Act 537 Plan is approved (sewer projects);
- Design is complete;
- PaDEP permits (NPDES and Water Quality Management for sewer projects, Water Allocation Permit for and water projects) issued or verbally approved by PaDEP;
- Technical evaluation and priority rating of application by PaDEP concluded; and
- Other permits are obtained.

6.5.2 Bond Issues

There are three basic types of bonds commonly used for these purposes:

- General Obligation Bonds - General obligation bonds are backed by the full faith and credit of a community, and repaid through local property taxes. This type of bond is issued by the local unit of government.

Because of the security of this pledge, these bonds may have an interest rate that is lower than that of the other types of bonds depending on the financial status of the community. A variation of general obligation bonds may be used when the revenue collected from the provision of a particular service, i.e., wastewater disposal, is pledged toward the repayment of the bonds.

- Special Assessment Bonds - A municipality may also issue special assessment bonds only when certain properties are recipients of special benefits not available to other properties within the municipality.

This method of financing is intended to apportion the cost of the improvement among the benefited property owners. Since special assessment bonds are not backed by the full faith and credit of the municipality, they may be considered a greater risk and therefore carry a higher interest rate. These types of bonds are used predominately for financing local sanitary sewer projects.

- Revenue Bonds - Revenue bonds are payable by fees received for services which are provided by the organization which sold the bonds. No further backing is required other than the obligation of the borrower to operate the utility and collect revenues so that they can buy back the bonds. Special fiscal policies and practices may be required by the trust indenture signed by the issuing organization. Revenue Bonds are issued by the Municipality, but more often by an Authority appointed by the Municipality.

Of the three bond arrangements, revenue bonds are the most commonly used method of financing larger amounts of money for the local share of the project costs for wastewater projects. Unlike general obligation bonds, which are limited by statutes regarding the indebtedness of the municipalities, revenue bonds are not considered to be debts against the community and do not affect the municipality's ability to borrow money for other purposes.

6.5.3 Long-Term Bank Financing

An alternative to any type of bond issue and the additional fiscal costs involved is to borrow directly from local banks in the form of long-term notes. These notes can be issued for periods of up to 20 years, but generally a 5 to 10 year period is common. Municipal interest rates typically run several points below the prime rate, making this type of financing more attractive because the debt is paid off in 5 to 10 years compared to the 20 to 30 year commitment for bond issues. Conversely, the principal payments of a short-term bank loan are higher than for a long-term bond issue. This type of borrowing depends on municipality's borrowing capabilities and depends on the type of project.

6.6 Phased Implementation

Implementation of any one of the alternatives would abate public health concerns. A Sewage Management Program shall be implemented for all alternatives that would abate public health hazards pending the completion of public sewage facilities. Phased implementation is a little more difficult with a proposed pressure sewer system since the force main design size is more closely related to the number of customers to be served as compared to a gravity system. Since the favored alternatives involve pressure sewer systems, phasing is not being considered. Funding packages are also more difficult to schedule when development is proposed to extend over a five (5) to ten (10) year period.

6.7 Administrative Plan Implementation

For the majority of the alternatives to be functional and properly financed, Indian Lake Borough will need to pass a sewer connection ordinance to require residents to connect to the system if it is available to them.

It is the recommendation of this study that Indian Lake Borough would undertake the financing and construction of the selected alternative. The management and administration of the public system can be undertaken by the Borough. Operations and maintenance of the public portion of the implemented plan can also be handled by the Borough.

Contract operation is another option for the Borough to consider for a sanitary sewer system. This option would establish an outside agency to perform all operations maintenance and administration functions. This outside group of professionals would provide all necessary services to run the system. The Borough would hire a qualified firm and utilize their services under contract for a specific time period. In this option, the Borough would not be directly responsible for employees or equipment to maintain the sewage system. Payment for this work would be derived from the user charge rate system.

7.0 INSTITUTIONAL EVALUATION

7.1 Analysis of Authorities

Indian Lake Borough is in good financial standing. The Borough has no outstanding debts with the exception of the debts associated with the existing water system.

The Stonycreek Valley Sewage Authority had been formed in 1973 to provide for sewage management in the three municipalities as ordered by the PaDEP. This Authority was intended to operate joint sewage treatment system for Indian Lake Borough, Stonycreek Township and Shanksville Borough. Since none of the proposed alternatives involve a joint treatment system, this Authority would not have jurisdiction for a sewage treatment system that serves sewage customers within Indian Lake Borough.

Operation and maintenance of the Lakewood Sewage Treatment Plant is conducted by Indian Lake Borough's supervisor and employees. The supervisor of Indian Lake Borough is certified to operate a Class E Type 1 Sewage Treatment Plant.

The Borough is adequately governed and staffed with seven (7) council members, superintendent, administrator, sewage enforcement officer, zoning officer and Borough secretary. The Borough has the authorization and capabilities to construct, repair, operate and maintain sewage systems within the Borough.

As an official municipality in Pennsylvania, Indian Lake Borough can implement planning recommendations, develop, operate and maintain a Borough wide wastewater system. Indian Lake Borough is permitted to set user fees for public wastewater systems.

In accordance with the appropriate Borough Ordinances, Council can act to enforce sewage connection ordinances and take action against violators.

The Borough is permitted to negotiate agreements with other parties as well as other municipalities. Intermunicipal service, operation and maintenance agreements will be necessary in order to provide service in some alternatives.

For those portions of the Borough requiring the extension of Borough constructed sewer lines and sewage treatment plant expansion, the Borough has the ability to raise capital through loans, grant programs, bonds, commercial borrowing, or user charges.

7.2 Analysis of Implementation

It is the recommendation of this study that Indian Lake Borough would undertake the responsibility of implementing a Sewage Facilities Plan and a Sewage Management Program. The establishment of a new municipal department or municipal authority is not required.

The Borough staff is currently responsible for the operation and maintenance of the Lakewood Sewage Treatment Plant. The Borough is adequately staffed to implement the proposed technical alternatives.

It is the recommendation of this study that Indian Lake Borough make contact with the Pennsylvania Infrastructure Investment Authority (PENNVEST) to discuss the proposed project and discuss advanced funding to implement the selected alternatives.

7.3 Administrative and Legal Activities

It is proposed that Indian Lake Borough act as the lead agency for the implementation of the recommended alternative. The Borough has the choice of operating the system itself, establishing an Authority to operate and maintain the system or having a third party operate and maintain the system through a contract.

The implementation of a sewage management ordinance is planned to address the residences that will not be provided with public sewage facilities immediately.

Easements for the installation of interceptors and sewers will be necessary in areas outside of public right-of-ways. All easements should be secured prior to construction.

At the present time, with the exception of this plan, there are no other sewage facilities plans being entertained by the Borough.

The proposed intermunicipal agreements should address guarantees of service, cost of service, and operation and maintenance procedures. These agreements should be in place before the design of the facilities take place. An estimate of the project schedule for executing agreements is found in the Executive Summary.

7.4 Selected Institutional Alternative

The chosen institutional alternative for implementing the chosen technical wastewater disposal alternative is to have Indian Lake Borough act as the lead agency for the implementation of all portions of the recommended alternative.

If the Borough chose not to oversee the operation and maintenance of their proposed sewage facilities, the Borough could either establish and appoint an Authority or contract a third party to operate and maintain the sewage facilities.

8.0 SELECTED ALTERNATIVE

8.1 Selected Alternative

Section 5 of this Plan identified five (5) alternatives for consideration. After consideration, Alternative 5 was selected as the alternative that best meets the wastewater treatment needs of Indian Lake Borough.

The selected alternative meets existing wastewater disposal needs by the implementation of a Sewage Management Program to ensure that sewage facilities within the Borough are properly operated and maintained.

Alternative 5 was developed to address the immediate and long term sewage needs of the Borough. Based upon public comment the general consensus of the residents was the following:

1. Provide sewage service to all existing dwelling units.
2. Have no sewage treatment plant discharge to Indian Lake.
3. Provide sewage service to vacant lots in the Borough.

The selected Alternative 5 will be designed as a pressure sewer system with grinder pumps at each dwelling unit. The North Shore Area of the lake will be provided a pressure sewer system with discharge across Causeway Drive into the proposed Stonycreek Township gravity interceptor sewer. The Peninsula Drive area and the South Shore area will be provided a pressure sewer system with discharge to a proposed pump station. This pump station will replace the Lakewood Sewage Treatment Plant and be the new collection point for the Northwinds Lodge and Golf Course and the existing townhouses. The force main from the proposed pump station will follow the South Shore Trail to the proposed Stonycreek Township gravity interceptor across Causeway Drive. From the point of connection the Stonycreek Township gravity interceptor follows along Causeway Drive and then Springdale Road to

Shanksville Borough. The Shanksville Sewage Treatment Facility will be located to the west of the Borough.

Based upon the calculation of user charge found in Table 8 of Appendix A the lowest user charge of \$73.00 per month is calculated for Alternative 5. This user charge is developed based upon a tap fee per customer of \$5,000. The user charge can be developed in different ways depending on the amount of the local contribution versus the amount to be financed. Also, the method of financing, the time, and interest rate are also elements that will effect the user charge.

A further set of user charge calculations were developed using Alternative 5's project costs. Table 5 in Appendix A provides the project cost estimate of \$7,055,000 to provide service to existing dwelling units. However, if the total of all lots which include vacant lots would be served with a pressure main as the system is initially installed the total user charge would be less. By servicing additional lots the total project cost will increase to \$7,495,000, however, the number of participants will also increase.

The total number of lots in the Borough is estimated to be 1,100. Realizing that not all vacant lot owners will participate, 880 lots were used to perform the calculations in Table 8.0 and 8.1. These two (2) options present two scenarios showing, depending on the tap fee and lot assessment, how the user charge can be adjusted. The proposed option one (1) has the home owner paying an upfront fee of \$10,545; the lot owner initially paying \$5,454 and the amount to be financed equaling zero (0). With this option the user charge would be \$27.00 for each home owner.

Option 2 Table 8.1 shows the same scenario with the home owner paying \$9,318 up front and project financing of \$1,000,000. This user charge is estimated to be \$38.00. With the number of dwelling units and lots remaining the same, the user charge increased approximately \$11.00 per customer per month for each \$1,000,000 to be financed.

Table 8.2 shows option 3 which was developed using \$7,000 as the home owner's contribution. Based upon the cost to repair a septic system, or reconstruct a sand mound, \$7,000 was considered a reasonable expense to pay for a public sewer system. This option requires public financing of approximately \$3,000,000, providing a reasonable \$59.00 per dwelling unit per month user charge.

Indian Lake Borough is adequately staffed to implement the selected alternative. The Borough supervisor and employees may continue to operate and maintain the existing Lakewood Sewage Treatment Plant, and the Borough shall appoint a Borough official to oversee the monitoring and inspection of individual on-lot disposal systems and small flow treatment facilities located within the Borough.

Financing methods available to Indian Lake Borough to implement the selected alternative include PENNVEST funding, bond issues and long term bank financing. Each of these financing methods are described in Section 6. It shall be determined at a later date which funding method will be most viable for the Borough and its residents.

The selected alternative will promote the preservation of the environment and natural resources by inhibiting the discharge of inadequately treated sewage.

8.2 Capital Financing Plan

There are a variety of methods and combinations of methods, which may be utilized to fund the construction of sewage facilities. Funding methods available to Indian Lake Borough to implement the selected alternative include PENNVEST funding, bond issues and long term bank financing.

It is the recommendation of this study that Indian Lake Borough make contact with the PENNVEST to discuss the proposed project and discuss advanced funding to implement the selected alternatives. It is also the recommendation of this study to consider other funding

methods, and it shall be determined at a later date which method will be most viable for the Borough and its residents.

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9.0 ENVIRONMENTAL IMPACT ASSESSMENT

9.1 Environmental Impact Factors

The items listed below will be addressed in a short narrative regarding compliance with Environmental Impact Assessment Issues:

Activity

- Best practicable waste treatment technology
- Innovative alternative technology
- Non-excessive infiltration/inflow
- Recreation and open space usage
- Environmental impact assessment
- Historical and archaeological sites
- Wetlands
- Endangered and protected species
- Air quality
- Flood plains
- Fish and wildlife
- Agricultural lands
- Wild and scenic rivers
- Coastal zone management
- Socio-economic impacts
- Water supplies
- Other environmentally sensitive areas
- Cost effectiveness
- Capital Finance Plan
- Value Engineering
- Civil rights
- User charge system

- Minority Business Enterprise/Women's Business Enterprise/Disadvantaged Business Enterprise
- Davis-Bacon Wage Rate
- Initiation of Operation/Performance Certification

9.2 Narrative

The selected alternative provides sewage service to the Borough through a pressure sewer system and a pump station which will convey sewage to the proposed Stonycreek Township interceptor. Sewage treatment will take place at the proposed sewage treatment facility in Shanksville Borough. This alternative provides the most practical method of sewage conveyance and disposal for Indian Lake Borough.

Innovative technologies have been considered to the extent that they are available and practical. It should be noted that with a low pressure sewer system, infiltration will be minimal and inflow will not be possible. Nonetheless, water tightness of sewage facilities shall be tested, and minimum allowable infiltration will not exceed the specified amount as indicated in the PaDEP Sewerage Design Manual.

Recreational and open space areas that exist in the existing service area will not be significantly affected by the selected alternative.

The planned project will be designed in such a manner as not to significantly environmentally impact the following:

- Historical and archaeological sites
- Wetlands
- Endangered and protected species
- Air quality
- Flood plains

- Fish and wildlife
- Agricultural lands
- Wild and scenic rivers
- Coastal zone management
- Socio-economic impacts
- Water supplies
- Other environmentally sensitive areas

The selected alternative is a cost effective alternative in addition to the least costly of all evaluated alternatives. The preliminary cost estimates are located in the Appendix.

The project cost estimate for the selected alternative is approximately \$7,055,000. This work will require a value engineering review to obtain PENNVEST funding.

Minority Business Enterprise/Women Business Enterprise/Disadvantaged Business Enterprise requirements will be included in the Contract Specifications when the project is prepared for bidding.

Indian Lake Borough and their Consultants and Contractors will not infringe on the Civil Rights of those residents participating in the proposed project.

Davis-Bacon Wage Rate requirements will be included in the Contract Specifications when the project is prepared for bidding.

Indian Lake Borough presently bills for sewage within the existing service area, as well as operate the existing Lakewood Sewage Treatment Plant. The Borough is capable of implementing the selected alternative.

It is the recommendation of this study that Indian Lake Borough make contact with PENNVEST to discuss the proposed project and discuss advanced funding to implement the selected

alternatives. It is also the recommendation of this study to consider other funding methods, and it shall be determined at a later date which method will be most viable for the Borough and its residents.



Hatch Mott
MacDonald

APPENDIX A
COST ESTIMATES

Table 1

PROJECT COST ESTIMATE
ALTERNATIVE 1

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
8-inch PVC Sewer	95,600	LF	\$35	\$3,346,000
Manholes	430	EA	\$1,700	\$731,000
Service Connections	512	EA	\$600	\$307,200
4-inch PVC Force Main	13,600	LF	\$21	\$285,600
6-inch PVC Force Main	8,900	LF	\$25	\$222,500
Pump Station #1 (75 GPM)	1	EA	\$75,000	\$75,000
Pump Station #2 (120 GPM)	1	EA	\$130,000	\$130,000
Pump Station #3 (145 GPM)	1	EA	\$145,000	\$145,000
Pump Station #4 (160 GPM)	1	EA	\$155,000	\$155,000
Pump Station #5 (210 GPM)	1	EA	\$185,000	\$185,000
Pump Station #6 (225 GPM)	1	EA	\$195,000	\$195,000
Pump Station #7 (240 GPM)	1	EA	\$205,000	\$205,000
Pump Station #8 (260 GPM)	1	EA	\$215,000	\$215,000
Pump Station #9 (290 GPM)	1	EA	\$225,000	\$225,000
Pump Station #10 (310 GPM)	1	EA	\$240,000	\$240,000
Pump Station #11 (340 GPM)	1	EA	\$260,000	\$260,000
8-inch PVC Outfall Sewer	3,600	LF	\$35	\$126,000
6-inch PVC Outfall Force Main	4,800	LF	\$25	\$120,000
Treatment Plant (200,000 GPD)	1	EA	\$1,600,000	\$1,600,000
SUBTOTAL				\$8,768,300
ESTIMATED CONTINGENCIES				\$876,800
TOTAL ESTIMATED CONSTRUCTION COST				\$9,645,100
TOTAL PROJECT COST ESTIMATE				\$12,056,400
Project Cost per EDU (@ 539 EDU)				\$22,370

Table 2

PROJECT COST ESTIMATE
ALTERNATIVE 2

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
2-inch PVC Pressure Main	55,000	LF	\$14	\$770,000
2.5-inch PVC Pressure Main	17,000	LF	\$15	\$255,000
3-inch PVC Pressure Main	17,500	LF	\$17	\$297,500
4-inch PVC Pressure Main	14,000	LF	\$21	\$294,000
5-inch PVC Pressure Main	2,400	LF	\$23	\$55,200
6-inch PVC Pressure Main	1,500	LF	\$25	\$37,500
Cleanouts	130	EA	\$2,500	\$325,000
1.25-inch PVC Pressure Taps	512	EA	\$200	\$102,400
Furnishing Grinder Pumps	512	EA	\$2,500	\$1,280,000
Pump Station (250 GPM)	1	EA	\$210,000	\$210,000
6-inch PVC Force Main	11,500	LF	\$25	\$287,500
8-inch PVC Outfall Sewer	3,600	LF	\$35	\$126,000
6-inch PVC Outfall Force Main	4,800	LF	\$25	\$120,000
Treatment Plant (200,000 GPD)	1	EA	\$1,600,000	\$1,600,000
SUBTOTAL				\$5,760,100
ESTIMATED CONTINGENCIES				\$576,000
TOTAL ESTIMATED CONSTRUCTION COST				\$6,336,100
TOTAL PROJECT COST ESTIMATE				\$7,920,100
Project Cost per EDU (@ 539 EDU)				\$14,690

Table 3

PROJECT COST ESTIMATE
ALTERNATIVE 3

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
2-inch PVC Pressure Main	55,000	LF	\$14	\$770,000
2.5-inch PVC Pressure Main	17,000	LF	\$15	\$255,000
3-inch PVC Pressure Main	8,500	LF	\$17	\$144,500
4-inch PVC Pressure Main	23,000	LF	\$21	\$483,000
5-inch PVC Pressure Main	2,400	LF	\$23	\$55,200
6-inch PVC Pressure Main	1,500	LF	\$25	\$37,500
Cleanouts	130	EA	\$2,500	\$325,000
1.25-inch PVC Pressure Taps	512	EA	\$200	\$102,400
Furnishing Grinder Pumps	512	EA	\$2,500	\$1,280,000
Treatment Plant (200,000 GPD)	1	LS	\$1,800,000	\$1,800,000
SUBTOTAL				\$5,252,600
ESTIMATED CONTINGENCIES				\$525,300
TOTAL ESTIMATED CONSTRUCTION COST				\$5,777,900
TOTAL PROJECT COST ESTIMATE				\$7,222,400
Project Cost per EDU (@ 539 EDU)				\$13,400

Table 4

PROJECT COST ESTIMATE
ALTERNATIVE 4 – PHASES 1-A, 1-B, 2 AND 3 COMBINED

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
2" PVC Pressure Main	9900	LF	\$14	\$138,600
2 1/2" PVC Pressure Main	14,300	LF	\$15	\$214,500
3" PVC Pressure Main	9700	LF	\$17	\$164,900
4" PVC Pressure Main	5600	LF	\$21	\$117,600
Cleanouts	70	EA	\$2,500	\$175,000
1.25" PVC Pressure Taps	349	EA	\$200	\$69,800
Furnishing Grinder Pumps	349	EA	\$2,500	\$872,500
Sewage Treatment Plant	1	LS	\$1,450,000	\$1,450,000
Sewage Treatment Plant Expansions (Phases 2 & 3)	1	LS	\$1,708,000	\$1,708,000
 SUBTOTAL				 \$4,910,900
ESTIMATED CONTINGENCIES				\$491,100
TOTAL ESTIMATED CONSTRUCTION COST				\$5,402,000
TOTAL PROJECT COST ESTIMATE				\$6,752,900
Project Cost Per EDU @ 396 EDUs				\$17,100

Table 5

PROJECT COST ESTIMATE
ALTERNATIVE 5

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL AMOUNT
2" PVC Pressure Main	45,800	LF	\$14	\$641,200
2 1/2" PVC Pressure Main	22,100	LF	\$15	\$331,500
3" PVC Pressure Main	13,100	LF	\$17	\$222,700
4" PVC Pressure Main	9100	LF	\$21	\$191,100
5" PVC Pressure Main	7500	LF	\$26	\$195,000
6" PVC Pressure Main	2500	LF	\$30	\$75,000
Force Main	9000	LF	\$30	\$270,000
Cleanouts	150	EA	\$2,500	\$375,000
1.25" PVC Pressure Taps	512	EA	\$200	\$102,400
Furnishing Grinder Pumps	512	EA	\$2,500	\$1,280,000
Pump Station	1	LS	\$210,000	\$210,000
				\$3,893,900
SUBTOTAL				\$389,400
ESTIMATED CONTINGENCIES				\$4,283,300
TOTAL ESTIMATED CONSTRUCTION COST				\$5,354,200
TOTAL PROJECT COST ESTIMATE				^a \$1,600,000
CAPITAL COST (SHANKSVILLE BOROUGH)				^b \$100,800
CAPITAL COST (STONYCREEK TOWNSHIP)				\$7,055,000
TOTAL PROJECT COST ESTIMATE				\$13,100
Project Cost Per EDU @ 539 EDUs				
<hr/>				
ADDITIONAL SEWER LINES TO VACANT LOTS				
2" PVC Pressure Main	17,000	LF	\$14	\$238,000
2 1/2" PVC Pressure Main	1,300	LF	\$15	\$19,500
Cleanouts	25	EA	\$2,500	\$62,500
SUBTOTAL				\$320,000
ESTIMATED CONTINGENCIES				\$32,000
TOTAL ADDITIONAL CONSTRUCTION COST				\$352,000
TOTAL ADDITIONAL PROJECT COST ESTIMATE				\$440,000
TOTAL PROJECT COST ESTIMATE (FROM ABOVE)				\$7,055,000
TOTAL PROJECT COST ESTIMATE – ALL				\$7,495,000
Project Cost per EDU @ 1,100 EDU's				\$6,814

Notes

- a. Indian Lake Borough's share of capital cost for construction of the Shanksville Borough wastewater treatment facility, estimated at \$8/GPD, at 200,000 gpd
- b. Indian Lake Borough's share of capital cost for the construction of the Stonycreek Township sewer interceptor estimated based on costs shown in Stonycreek Township's Act 537 Sewage Facilities Plan dated September 2003. Capital costs estimated as cost of portion of sewer line (8,000 LF) to be utilized by Indian Lake Borough, less the 37% of the project to be paid by grant funds, times one-half to approximate Indian Lake Borough's share of capacity in the sewer interceptor.

Table 6

ANNUAL OPERATING COST ESTIMATES

INDIAN LAKE BOROUGH ACT 537 PLAN SOMERSET COUNTY, PENNSYLVANIA

ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4 (all phases)	ALTERNATIVE 5 (See Note 1)
COLLECTION SYSTEM					
Salaries and wages	\$17,500	\$26,300	\$26,300	\$26,300	\$26,300
Gen materials and supplies	500	500	500	400	500
Maint. and repairs – equipment	500	500	500	400	500
Contracted Repairs	2,000	1,000	1,000	800	1,000
Major capital repairs	2,000	2,000	2,000	1,000	2,000
Minor capital repairs	500	500	500	400	500
Sewer Interceptor	0	0	0	0	9,100
SUBTOTAL	\$23,000	\$30,800	\$30,800	\$29,300	\$39,900
PUMP STATIONS					
Salaries and wages	\$35,000	\$17,500	\$0	\$0	\$17,500
Gen. materials and supplies	1,500	400	0	0	400
General expenses	2,400	600	0	0	600
Insurance expense	10,200	1,100	0	0	1,100
Public utilities – Electricity	2,000	200	0	0	200
PS Maint. and Repairs	2,400	600	0	0	600
Major capital repairs	2,400	600	0	0	600
Minor capital repairs	600	200	0	0	200
SUBTOTAL	\$56,500	\$21,200	\$0	\$0	\$21,200
TREATMENT SYSTEM – PLANT					
Salaries and wages	\$26,300	\$26,300	\$26,300	\$26,300	\$26,300
Gen Materials and supplies	1,200	1,200	1,500	1,200	1,200
Chemicals for treatment and testing	1,500	1,500	1,800	1,500	1,500
General expenses	900	900	1,200	500	500
Sludge removal	50,000	50,000	50,000	35,100	35,100
Engineering services	10,000	10,000	10,000	9,000	9,000
Laboratory testing	1,200	1,200	1,200	1,200	1,200
Telephone charges	400	400	400	400	400
Insurance expense	7,000	7,000	9,000	8,000	6,400
Public utilities – Electricity	16,000	16,000	18,000	17,000	15,000
Plant maintenance & repairs	1,500	1,500	1,800	1,200	1,200
Major capital repairs	1,500	1,500	1,800	1,300	1,300
Minor capital repairs	900	900	1,200	900	900
SUBTOTAL	\$118,400	\$118,400	\$124,200	\$103,600	\$100,000
ADMINISTRATION					
Salaries – clerical	\$17,500	\$17,500	\$17,500	\$17,500	\$10,000
Office supplies & materials	1,200	1,200	1,200	1,200	300
Office materials – billing forms	1,200	1,200	1,200	1,200	0
Accounting fees	500	500	500	500	500
Legal expense	2,400	2,400	2,400	2,400	1,000
Lien expense	1,000	1,000	1,000	1,000	200
Telephone charges – office	600	600	600	600	200
Postage	1,000	1,000	1,000	1,000	200
Dues, subscriptions, memberships	200	200	200	200	100
Meeting and conferences	500	500	500	500	500
SUBTOTAL	\$26,100	\$26,100	\$26,100	\$26,100	\$13,000
TOTAL ANNUAL OPERATING COST	\$224,000	\$196,500	\$181,100	\$159,000	\$174,100

Notes

- Alternative 5 based on discharge of wastewater from Indian Lake Borough to Stonycreek Township sewer interceptor, for treatment at the proposed Shanksville Borough Wastewater Treatment Plant. Estimated annual payment to Stonycreek Township for Indian Lake Borough's use of the sewer interceptor based on one-half of the \$33.63/yr/EDU shown in Stonycreek Township's Act 537 Plan. Estimated wastewater treatment plant costs shown above for Alternative 5 based on Indian Lake Borough's portion of flow treated at the proposed Shanksville Borough Wastewater Treatment Plant.

Table 7

PRESENT WORTH COST ESTIMATES

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA
REVISED AUGUST 2004

ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4 (all phases)	ALTERNATIVE 5
ESTIMATED ANNUAL OPERATING COST	\$224,000	\$196,500	\$181,100	\$159,000	\$174,100
PRESENT WORTH OF OPERATING COSTS $P=A/(P/A, g, i, n)$ $P=NA/(1+i)$ (3% for 20 years)	\$4,349,500	\$3,815,500	\$3,516,500	\$3,087,400	\$3,380,600
TOTAL PROJECT COST ESTIMATE	\$12,056,400	\$7,920,100	\$7,222,400	\$6,752,900	\$7,055,000
TOTAL PRESENT WORTH ESTIMATE	\$16,405,900	\$11,735,600	\$10,738,900	\$9,840,300	\$10,435,600
EDU'S SERVED	539	539	539	396	539
TOTAL PRESENT WORTH PER EDU	\$30,440	\$21,780	\$19,930	\$24,850	\$19,370

Table 8

CALCULATION OF USER CHARGE
EXISTING CUSTOMERS

INDIAN LAKE BOROUGH ACT 537 PLAN
SOMERSET COUNTY, PENNSYLVANIA
REVISED AUGUST 2004

ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5 (See Notes 1 & 2)
ESTIMATED PROJECT COST	\$12,056,400	\$7,920,100	\$7,222,400	\$6,752,900	\$7,055,000
TAP FEE (\$5,000)	\$2,695,000	\$2,695,000	\$2,695,000	\$1,980,000	\$2,695,000
FINANCE AMOUNT	\$9,361,400	\$5,225,100	\$4,527,400	\$4,772,900	\$4,360,000
ANNUAL DEBT SERVICE A=P/(A/P,i,n) (3% for 20 years)	\$629,100	\$351,100	\$304,200	\$320,900	\$293,100
TOTAL ANNUAL OPERATING COST	\$224,000	\$196,500	\$181,100	\$159,000	\$174,100
TOTAL ANNUAL COST	\$853,100	\$547,600	\$485,300	\$479,900	\$467,200
COST PER EDU PER YEAR	\$1,583	\$1,016	\$900	\$1,212	\$867
COST PER EDU PER MONTH	\$132	\$85	\$75	\$101	\$73

NOTES:

1. FOR COMPARISON PURPOSES, ALTERNATIVE 5 COSTS BASED ON SERVING CURRENT RESIDENTS ONLY.
2. ALTERNATIVE 5 INCLUDES ESTIMATED CAPACITY, OPERATION AND MAINTENANCE FEES TO SHANKSVILLE BOROUGH AND STONYCREEK TOWNSHIP FOR USE OF WASTEWATER FACILITIES.