

**APPENDIX E**

**SCHEMATIC DIAGRAMS FOR THE BASIC  
TREATMENT PROCESS**







**APPENDIX F**

**2002 RERATING REPORT**

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**EAST NORRITON/PLYMOUTH/WHITPAIN  
JOINT SEWER AUTHORITY**

**PROPOSED RERATE OF THE  
ACTIVATED SLUDGE PLANT**

September 2002

Engineer's Project No. 3560.04



ARRO Consulting, Inc.  
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**EAST NORRITON/PLYMOUTH/WHITPAIN  
JOINT SEWER AUTHORITY**

**PROPOSED RERATE OF THE  
ACTIVATED SLUDGE PLANT**

The purpose of this document is to rerate the capacity of the activated sludge process at the East Norriton Whitpain Joint Sewer Authority (ENPWJSA) to 5.44 MGD. Design calculations, which are included in the Appendix, for all aspects of the activated sludge process indicate that the facility is adequate to treat 5.44 MGD and meet conservative Pennsylvania Department of Environmental Protection (DEP) design guidelines. Further evidence such as theoretical calculations and plant demonstration results are also presented to provide further support that the activated sludge process can adequately treat this flow to required effluent permit requirements.

**1.0 ENPWJSA WASTEWATER TREATMENT PLANT**

The ENPWJSA Wastewater Treatment Plant (WWTP) consists of three completely separate treatment trains. Two trains consist of primary clarifiers, followed by trickling filters and final clarifiers. The third treatment train consists of primary clarifiers followed by activated sludge treatment. The activated sludge train is fed by pumps and therefore does not have to handle peak flows. The flow rate through the activated sludge trains is maintained at a constant rate, and the peak flows are diverted to the two trickling filter trains. The activated sludge train is currently rated to treat 4.4 MGD.

All parts of the activated sludge treatment train have adequate capacity to treat <sup>5.44</sup> 5.44 MGD, and therefore we submit that this train should be rerated from its current capacity of 4.4 MGD to <sup>5.44</sup> 5.44 MGD. Following are descriptions of all the unit processes and tankage of the activated sludge train and justification to increase the capacity.

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## 2.0 ACTIVATED SLUDGE FACILITY

The activated sludge process consists of

- Primary clarification in two 60-ft diameter circular primary clarifiers
- Aeration in two basins, each with a volume of 0.68 MG and dimensions of 180 ft long by 24 ft wide by 21 ft deep (total volume of 1.36 MG)
- Final clarification in two 70-ft diameter circular clarifiers. These clarifiers have 12 ft minimum side water depth, and have suction sludge removal mechanisms
- Aeration is provided using Kenic's static aeration tubes with 60 tubes in each tank, and three blowers each with a capacity of 4,000 scfm
- Final effluent is disinfected by chlorination
- Sludge management is by thickening, dewatering, and incineration

### A. Primary Clarifiers

The DEP *Domestic Wastewater Facilities Manual* (1997) recommends that surface overflow rates for primary clarifiers should be less than 1000 gpd/ft<sup>2</sup> at the maximum monthly average flow rate. The two primary clarifiers have a combined surface area of 5655 ft<sup>2</sup>. The surface overflow rate at the proposed flow rate of 5.44 MGD is 960 gpd/ft<sup>2</sup>. This is a satisfactory overflow rate, since it is less than 1000 gpd/ft<sup>2</sup>. Calculations for this and other justifications are provided in the appendix to this report.

Peak flow rates are irrelevant to the activated sludge plant because the peak flows are diverted to the two trickling filter trains of the plant. The primary clarifiers, though, could accommodate higher flows on a short-term basis. A typical criterion for overflow rates in primary clarifiers at peak flows is 2500 gpd/ft<sup>2</sup>, suggesting that up to 2.5 times the proposed flow rate of 5.44 MGD could be handled on a short-term basis.



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**B. Final Clarifiers**

The DEP *Domestic Wastewater Facilities Manual* (1997) recommends that surface overflow rates for final clarifiers following activated sludge should be less than 800 gpd/ft<sup>2</sup> at the maximum monthly average flow rate. The two final clarifiers have a combined surface area of 7700 ft<sup>2</sup>. The surface overflow rate at the proposed flow rate of 5.44 MGD is 710 gpd/ft<sup>2</sup>. This is a satisfactory overflow rate, since it is less than 800 gpd/ft<sup>2</sup>. The solids loading is 24 lb/d/ft<sup>2</sup>, which is less than the maximum recommended 40 lb/d/ft<sup>2</sup>.

**C. Aeration Basins**

Since the aeration basins have a total volume of 1.36 million gallons, the calculated hydraulic detention time of the wastewater in the basins at a flow rate of 5.44 MGD is 6 hours. The BOD loading at this flow rate is 37 lb/1000ft<sup>3</sup>/d. A primary effluent BOD concentration of 150 mg/l was used in the calculation to be conservative, even though primary effluent BOD concentrations in the past year averaged about 130 mg/l. Both hydraulic detention time and BOD loading satisfy recommended guidelines from the DEP *Domestic Wastewater Facilities Manual* (1997).

As additional justification that the aeration basins are of sufficient volume, the required hydraulic detention time was also calculated based on a theoretical, kinetic approach. The calculations are shown in the Appendix. This theoretical approach is based on Monod growth kinetics and assumes a conservative value for microbial growth rate and BOD utilization. The kinetic approach shows that only 4.8 hours of detention time are needed for BOD oxidation, therefore 6 hours is more than sufficient.

Nitrification is not required in the activated sludge process, although it would be possible to nitrify to some extent, especially in the warmer times of the year. It is not necessary to nitrify in the activated sludge train, however, because ammonia-

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nitrogen is reduced sufficiently by microbial uptake and normal sludge wasting alone to reduce the concentration to the 20 mg/l NPDES permit limit. Also, an upgrading of the trickling filters to treat to reduce ammonia-nitrogen to 15 mg/l, throughout the coldest winter months and at full design capacity, is being planned. This will provide further cushion ensuring compliance with the 20 mg/l limit.

Further evidence that the activated sludge train is capable of treating 5.44 MGD is the fact that on at least two occasions treatment at this capacity has been demonstrated. For instance, from June 1 through July 18, 2002, one primary clarifier, one aeration basin, and one final clarifier were taken out of service, and the flow rate through the remaining tanks was maintained at about 3.0 MGD. This corresponds to the total activated sludge train treating 6.0 MGD. The demonstration showed that the hydraulic profile and capacity was satisfactory; e.g., hydraulic profile was such that tanks did not overflow, and return activated sludge pump capacity was adequate.

Also, following a two-week period allowing the system to achieve steady state conditions, effluent CBOD<sub>5</sub> concentrations averaged 15 mg/l and effluent ammonia-nitrogen concentrations averaged 20 mg/l. Excluding five days when filamentous sludge bulking problems caused effluent suspended solids to be exceedingly high, effluent suspended solids averaged less than 30 mg/l. And, as stated earlier, the surface overflow rate of the final clarifiers is below maximum recommended values.

#### **D. Aeration Capacity**

A thorough analysis of oxygen requirements and air requirements was performed. Refer to the Appendix for the detailed calculations. The aeration capacity is more than adequate to treat the flows of 5.44 MGD, even when making the most conservative assumptions.

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For purposes of this report, the worst case scenario is evaluated for calculations of oxygen and air requirements; e.g., summer conditions where nitrification is complete and oxygen transfer efficiency is at a minimum. The specific assumptions made for the calculations are that BOD and ammonia oxidation are complete, 1.2 lbs of oxygen are required per lb of BOD, and 4.6 lbs of oxygen are required per lb of ammonia-nitrogen. A warm wastewater temperature of 25°C is assumed for oxygen transfer calculations, and a minimum mixed liquor dissolved oxygen concentration of 2 mg/l is assumed.

Oxygen requirements at 5.44 MGD, including the nitrogenous oxygen demand, are 13,385 lb/day. The Kenic diffuser tubes in place at the facility have a standard oxygen transfer efficiency (SOTE) of 14%. The calculated actual oxygen transfer efficiency under these conditions is 8.7%. The calculated air requirements for an oxygen demand of 13,385 lb/d are 6140 scfm.

There are three blowers, each with a capacity of 4000 scfm. Therefore, the facility can easily meet air requirements with one blower out of service.

### 3.0 SUMMARY AND CONCLUSIONS

The results of this analysis clearly demonstrate that the activated sludge process train is capable of treating 5.44 MGD. Primary clarification, aeration basin detention time, aeration basin BOD loading, blower capacity and ability to transfer dissolved oxygen, final clarification, and hydraulic capacity have all been evaluated by calculations and comparison to conservative design criteria, and through demonstration. All possible limiting factors have been evaluated and there are no limitations to the process to adequately treat this amount of flow. It is estimated that effluent BOD and SS concentrations of 15 mg/l or less will be achieved, and effluent ammonia-nitrogen concentrations less than 20 mg/l will be achieved.

# APPENDIX

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## PRIMARY CLARIFIERS

$$\begin{aligned}\text{Total Surface Area} &= 2 \text{ clarifiers} \times \frac{\pi D^2}{4} \\ &= 2 \times \frac{\pi 60^2}{4} = 5,655 \text{ ft}^2\end{aligned}$$

$$\text{Overflow Rate @ 5.44 MGD} = \frac{5.44 \text{ MGD}}{5,655 \text{ ft}^2} = 960 \frac{\text{gpd}}{\text{ft}^2}$$

This is okay, should not exceed  $1,000 \frac{\text{gpd}}{\text{ft}^2}$  at maximum monthly average flow (DEP *Domestic Wastewater Facilities Manual*, 1997)

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## FINAL CLARIFIERS

$$\text{Total Surface Area:} = 2 \times \frac{\pi 70^2}{4} = 7,700 \text{ ft}^2$$

$$(1) \text{ Overflow Rate @ 5.44 MGD} = \frac{5.44 \text{ MGD}}{7,770 \text{ ft}^2} = 710 \frac{\text{gpd}}{\text{ft}^2}$$

Okay,  $< 800 \frac{\text{gpd}}{\text{ft}^2}$  at maximum monthly average flow (DEP *Domestic Wastewater Facilities Manual*, 1997)

$$(2) \text{ Solids Loading:} = \frac{(Q + Q_r)(\text{MLSS})(8.34)}{A} = \frac{(6\text{MGD} + 3\text{MGD})(2,500 \frac{\text{mg}}{\text{L}})8.34}{7,700 \text{ ft}^2} = 24.4 \frac{\text{lb}}{\text{d} \cdot \text{ft}^2}$$

Okay, less than  $40 \frac{\text{lb}}{\text{d} \cdot \text{ft}^2}$

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## AERATION BASINS

Hydraulic retention time of aeration basins at 5.44 MGD

(1)  $HRT = V/Q = (1.36 \text{ MG}/5.44 \text{ MGD})$   
 $= 0.25 \text{ d} = 6 \text{ h}$   
Okay = 6h

(2) BOD Loading at 5.44 MGD  
(lb/1,000ft<sup>3</sup>/d)  $= \frac{(150 \frac{\text{mg}}{\text{L}} \times 5.44 \text{ MGD} \times 8.34)}{\left( \frac{1.36 \times 10^6 \text{ gal}}{7.48 \frac{\text{gal}}{\text{ft}^3}} \right)}$   
 $= 0.037 \text{ lb/ft}^3/\text{d} = 37 \text{ lb/1,000ft}^3/\text{d}$

OK < 40 lb/1,000ft<sup>3</sup>/d

Reference: DEP *Domestic Wastewater Facilities Manual*, 1997.

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**HYDRAULIC RETENTION TIME NEEDED  
FOR  
ENPWJSA ACTIVATED SLUDGE AERATION BASINS**

**Theoretical Approach**

**Reference: Metcalf & Eddy, *Wastewater Engineering: Treatment, Disposal  
& Reuse*, 3<sup>rd</sup> ed., 1991.**

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- (1) Determine the BOD removal rate for the activated sludge process

$$\begin{aligned}\text{Assume: } \theta_c &= 6 \text{ days} \\ k_d &= 0.6 \text{ d}^{-1} \\ Y &= 0.6 \text{ lbVSS/lb BOD} \\ \frac{1}{\theta_c} &= YU - k_d\end{aligned}$$

$$\begin{aligned}U \text{ (BOD Removal Rate)} &= \left( \frac{1}{\theta_c} + k_d \right) \frac{1}{Y} \\ &= \left( \frac{1}{6} + 0.06 \right) \frac{1}{0.6} \\ U &= 0.378 \text{ d}^{-1}\end{aligned}$$

- (2) Calculate required hydraulic detention time in aeration basins.

$$\begin{aligned}\text{Assume } S_o \text{ (inf BOD}_5) &= 150 \frac{\text{mg}}{\text{L}} \\ S \text{ (eff BOD}_5) &= 0 \frac{\text{mg}}{\text{L}} \quad (\text{Assume Complete Removal}) \\ X \text{ (MLVSS)} &= 2,000 \frac{\text{mg}}{\text{L}}\end{aligned}$$

$$U = \frac{S_o - S}{\theta X}$$

$$\theta = \frac{S_o - S}{UX}$$

$$\theta = \frac{(150 - 20) \frac{\text{mg}}{\text{L}}}{(0.378 \text{ d}^{-1}) \left( 2,000 \frac{\text{mg}}{\text{L}} \right)}$$

Required hydraulic detention time = 0.20d = 4.8 hours

Okay < 6 hours (DEP *Domestic Wastewater Facilities Manual*, 1997)

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## OXYGEN REQUIREMENTS AND AIR REQUIREMENTS

Maximum expected wastewater T = 25°C

Kenic diffusers  $\alpha = 0.80$

Standard oxygen transfer efficiency, SOTE, of Kenic diffusers = 0.14

Mixed liquor  $\beta = 0.98$

Minimum D.O. in mixed liquor = 2.0 mg/L

D.O. saturation at 20°C = 10.0 mg/L

D.O. saturation at 25°C = 9.1 mg/L

Temperature correction coefficient = 1.024

The actual oxygen transfer coefficient (AOTE) is calculated as follows:

$$\begin{aligned} \text{AOTE} &= \text{SOTE} \left( \frac{\beta C_s - C_w}{C_{s20}} \right) 1.024^{T-20} (\alpha) \\ &= 0.14 \left( \frac{0.98(9.1) - 2.0}{10.0} \right) 1.024^{25-20} (0.8) \\ &= 0.087 \end{aligned}$$

The oxygen requirements are calculated as follows:

$$\begin{aligned} &1.2 \text{ lb O}_2/\text{lb BOD}_5 \left( 150 \frac{\text{mg}}{\text{L}} \times 5.44 \text{ MGD} \times 8.34 \right) \\ &+ 4.6 \text{ lb O}_2/\text{lb NH}_3 \cdot \text{N} \left( 25 \frac{\text{mg}}{\text{L}} \times 5.44 \text{ MGD} \times 8.34 \right) \\ &= 8,167 + 5,218 = 13,385 \text{ lb O}_2/\text{d} \end{aligned}$$

Air requirements (cfm):

$$\begin{aligned} &\frac{\text{Oxygen Requirements (lb O}_2/\text{d)}}{0.075 \frac{\text{lb}}{\text{ft}^3} \times 0.232 \times 1,440 \frac{\text{min}}{\text{d}} \times \text{AOTE}} \\ &\quad \uparrow \qquad \qquad \uparrow \\ &\quad \text{density} \quad \text{fraction} \\ &\quad \text{of air} \quad \text{of oxygen} \\ &\qquad \qquad \text{in air} \\ &= \frac{13,385 \text{ lb O}_2/\text{d}}{0.075 \times 0.232 \times 1,440 \times 0.087} \\ &= 6,140 \text{ cfm} \end{aligned}$$

Total air capacity: 3 blowers, each with capacity of 4,000 cfm

Conclusion: Aeration capacity is sufficient.

Plant is capable of meeting air requirements with one blower out of service.



**APPENDIX G**

**PRELIMINARY DESIGN REPORT FOR  
REPLACING THE MEDIA IN THE WEST  
TRICKLING FILTERS**

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**EAST NORRITON-PLYMOUTH-WHITPAIN  
JOINT SEWER AUTHORITY (ENPWJSA)**

**PRELIMINARY DESIGN REPORT  
FOR  
WASTEWATER TREATMENT PLANT  
MEDIA REPLACEMENT IN WEST TRICKLING FILTERS**

July 30, 2002

Engineer's Project No. 05354.00



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- Appendix A Computer Model Runs
- Appendix B Opinion of Probable Construction Cost (Options 1 through 4)
- Appendix C Brentwood Industries Brochure/Product Data

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## EXECUTIVE SUMMARY

This report summarizes the preliminary design for the replacement of media in the West Trickling Filters at the East Norriton-Plymouth-Whitpain Joint Sewer Authority (ENPWJSA) Wastewater Treatment Plant. The preliminary design shows that plastic media at a depth of five feet will fit into the existing tanks, and effluent limits will be met year-round. Additional height for the walls and distributor arms is not necessary.

Cost estimates are provided for four variations of trickling filter modification. The logic behind presenting these four variations is explained in the document. The estimated costs of the four variations range from \$534,800 to \$671,400.

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## I. BACKGROUND

The West Trickling Filters at the East Norriton-Plymouth-Whitpain Joint Sewer Authority (ENPWJSA) Wastewater Treatment Plant were constructed in 1959. Even though there have been repairs and upgrades to the distributor arms and other parts of the process, the original stone media and underdrain system have been in place since the trickling filters were first constructed. They have exceeded their expected useful life, and it is strongly suspected that there is significant corrosion and damage to the underdrain system and stone at the bottom of the filters. The extended age and expected poor condition of the media and underdrains led to this study, which has the purpose of evaluating the feasibility of replacing the stone with plastic media and a new support system, and of predicting the effluent concentrations for various contaminants. It was desired to determine the most economical way to upgrade the system to consistently meet effluent limits year-round.

Trickling filters are often upgraded, or retrofitted, to provide a higher level of treatment by replacing stone media with plastic media. Plastic media has more surface area for microorganisms to grow and come in contact with the wastewater, thus providing a higher level of treatment. Treatment of wastewater typically removes biochemical oxygen demand (BOD) and suspended solids, but some treatment plants are also required to remove ammonia. Ammonia is removed in wastewater treatment by a microbiological oxidation process called *nitrification*, which is considered advanced treatment. Nitrification is required to a certain degree by the ENPWJSA Wastewater Treatment Plant to reduce ammonia below its NPDES permit limit of 20 mg/l as nitrogen. Nitrification in trickling filters requires more media surface area than BOD removal. Nitrification is sensitive to temperature; and designing wastewater treatment processes to

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achieve the required nitrification at the coldest expected temperature is usually the limiting factor for processes requiring BOD removal and nitrification.

## II. PRELIMINARY STUDY RESULTS

Evaluations were performed for the West Trickling Filters to determine the required depth of plastic media to treat the design capacity, of 2.2 MGD, to meet effluent requirements. The first evaluation was performed using a stricter limit for ammonia-nitrogen (15 mg/l) than is on the permit (20 mg/l). This was done to provide a factor of safety for the plant effluent, and provides for a conservative design. A second evaluation was performed assuming the 20 mg/l limit for ammonia-nitrogen (NH<sub>3</sub>-N).

The media manufacturer, Brentwood Industries (of Reading, PA), was enlisted to perform computer modeling to determine the performance of its media for this application (Appendix A). Brentwood's Accu-Pac media has been installed in over 150 treatment plants, including facilities at Allentown and Shippensburg, PA, in the past 14 years. Brentwood's equipment and technical expertise are very highly regarded in the wastewater treatment field. Examination of Brentwood's equipment, installation, and design methodologies demonstrates its competence and reliability. Handouts with illustrations of the Accu-Pac media, the Accu-Pier support system, and the Accu-Grid grating that is recommended for this design is provided as an attachment to this report (Appendix C).

A careful review of trickling filter dimensions and plant operational data was necessary to provide input to the computer model. It was determined that winter conditions will govern the design. Therefore, some conservative values for influent BOD and ammonia to the trickling filters were chosen for winter conditions based on existing data. Ammonia-nitrogen concentrations of 29 mg/l and BOD concentrations of 110 mg/l were used, as these are the highest

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concentrations experienced during January and February, the coldest months of the year. A design wastewater temperature was also required for input into the model. Data suggested that effluent temperatures were typically never lower than 12 or 13°C, but other wastewaters in this region can get as low as 10°C. To be conservative, 10°C was chosen as input to the models.

The trickling filter diameter and depth were also required for input to the model. Table 1 summarizes some original design information related to the dimensions of the trickling filters. The trickling filters are 98 ft in diameter. To determine how much media depth could fit into the existing concrete tanks, one must subtract the "High Point of Bottom Slab Elevation" from the "Top of Rock Elevation", and the difference is 6.17 ft. The support requires a minimum of 0.75 ft, leaving 5.42 ft of space for media. Since the media comes in 1 ft or 2 ft depths, then the maximum depth that will fit without modifications is 5 ft. The top of the media can be covered with a 0.17 ft thick protective grating (called BioGrating), which serves several important functions. The grating is not necessary but provides protection of the media from people walking on top of it, from hydraulic abrasion, and helps capture any rags or other debris that might otherwise fall into and clog the media.

**Table 1. Trickling Filter Size Information**

Inside Diameter	= 98.0 ft
Top of Wall Elevation	= 77.25 ft
Top of Rock Elevation	= 77.00 ft
High Point of Bottom Slab El.	= 70.83 ft
Low Point of Bottom Slab El.	= 70.33 ft

More media (i.e., six-foot depth) could be fit into the existing tanks if necessary; but that would require raising the walls, raising the distributor arms, and increasing the pump head to the distributors, which may require new pumps.

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With the input of the carefully selected influent characteristics, the computer model was run with a desired effluent ammonia-nitrogen (NH<sub>3</sub>-N) concentration of 15 mg/l as the target, and then again with 20 mg/l as the target. Operation of the trickling filters in parallel and in series was considered. A media depth of five feet was considered. The printouts of the computer model runs are presented as an attachment to this document.

The analysis showed that series operation provides better performance than parallel operation, as was expected. Therefore, only series operation results are discussed in this report. Effluent NH<sub>3</sub>-N concentrations below 15 mg/l can be achieved during the coldest months, provided that a more expensive high-density media (CF 1900) is used in the second stage. Effluent NH<sub>3</sub>-N concentrations below 20 mg/l can be achieved using the cheaper low-density media (CFS 3000) in the second stage.

Low effluent BOD concentrations are easily achieved under each arrangement. No modifications need to be made to increase the wall height or raise the distributor arms above current levels, keeping the construction costs to a minimum, and five feet of filter media depth is adequate.

The details are presented on the computer model printouts from Brentwood Industries. For five-foot media depth, series operation, CFS 3000 media in the first stage and CF 1900 in the second stage, the results show that effluent requirements are achieved at 10 °C. At the design flow of 2.2 MGD, and recirculation at a ratio of 1.65 times the influent flow rate around the primary (first) trickling filter, effluent NH<sub>3</sub>-N concentrations would be 14.6 mg/l, effluent BOD concentrations would be 5 mg/l, and effluent suspended solids would be 20 mg/l leaving the secondary (second) trickling filter. All characteristics are well below permit limits. Table 2 summarizes the results.



**Table 2. Summary of Results with Different Media in Second Stage**

Media Type in Second Stage	Recirculation Ratio – First Stage	Recirculation Ratio- Second Stage	Expected Effluent BOD	Expected Effluent NH <sub>3</sub> -N
CFS 3000	2.0	2.0	5 mg/l	18.5 mg/l
CF 1900	1.65	0	5 mg/l	14.6 mg/l

In series operation, the first stage is sufficient to remove most of the BOD, allowing the secondary stage to provide tertiary nitrification. A literature search was performed to verify that the results were believable and that nitrification could indeed be achieved in the proposed retrofit. From the search of several references, it was found that for tertiary nitrification, the typical ammonia loading is 0.5-2.5 gN/m<sup>2</sup>/d for year-round complete nitrification. The ammonia loading on this proposed tertiary filter would be 1.44 gN/m<sup>2</sup>/d, well within the range. The organic loading of 7 lbBOD/1000ft<sup>3</sup>/d and hydraulic loading of 0.2 gpm/ft<sup>2</sup> that would be on the secondary filter under these conditions are also both well within published ranges where nitrification will be achieved.

In summary, the literature supports that this trickling filter will easily meet effluent requirements, even in winter. At all other times but the very coldest of the year, nearly complete nitrification will be achieved, and effluent ammonia-nitrogen concentrations would be less than 5 mg/l.

### III. RECOMMENDATION

A five-foot media depth for each of the two filters is recommended. The minimum clearance at the bottom should be set at 12 inches for the support system (instead of the absolute minimum of nine inches). Increased minimum clearance between the bottom of the media and the bottom of the tank allows for better airflow around the filters. Since the five-foot media depth will be adequate to meet required effluent limits year-round, even with conservative assumptions,

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there is no need to consider deeper media, which would require more modifications to the existing tanks, and a higher cost.

It will be left to the Authority to decide which media it wants in the second stage, and how much BioGrating it wants on top of each trickling filter, as these are the only two variables in the capital costs.

#### IV. OPINION OF PROBABLE CONSTRUCTION COSTS

The total estimated cost for the project ranges from \$534,800.00 to \$671,400.00, depending on which option is selected. These cost estimates include removing the existing rock media and underdrain, cleaning the tanks, the costs of all materials, complete installation of the materials, start-up, engineering fees, and administrative fees. Materials costs are based on quotations from Brentwood Industries, Inc., the manufacturer of the media, supports, and grating. A contingency of 10% is built into the cost estimates. Printouts of the Opinion of Probable Construction Cost for the four variations are provided as attachments (Appendix B).

Costs are provided for the following:

- |   |              |
|---|--------------|
| 1. CFS 3000 media in both filters, BioGrating walkway:  | \$534,800.00 |
| 2. CFS 3000 media in both filters, complete surface coverage with BioGrating:                 | 593,700.00   |
| 3. CFS 3000 media in first stage, CF 1900 in second stage, BioGrating walkway:                | 612,500.00   |
| 4. CFS 3000 media in first stage, CF 1900 in second stage, complete coverage with BioGrating: | 671,400.00   |

Options 1 and 2 reduce ammonia-nitrogen to below 20 mg/l. Options 3 and 4 provide a little bit more safety, as they will reduce ammonia-nitrogen to 15 mg/l, but cost more due to the high-density media (CF 1900) in the second stage.

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Complete coverage of the trickling filter surface with BioGrating (Options 2 and 4) is desirable, but costs more. As previously mentioned, the BioGrating provides protection of the trickling filter media from hydraulic abrasion from the water being applied to the surface, helps capture rags and other debris from becoming lodged within the media, and has aesthetic value. It also allows personnel to walk around on top of the media. At minimum, a walkway with BioGrating material must be provided (included in Options 1 and 3) so workers can have access to the distributor arms.

**APPENDIX H**

**EXCERPTS OF RK&K REPORT AND ARRO  
CONSULTING STUDY**

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**DRAFT**

**EAST NORRITON/PLYMOUTH/WHITPAIN  
JOINT SEWER AUTHORITY**

**NEEDS ASSESSMENT FOR  
CAPITAL IMPROVEMENTS TO MEET  
PROJECTED FLOW REQUIREMENTS**

**ENPWJSA WASTEWATER TREATMENT PLANT**

December 2003

Engineer's Project No. 05469.00



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- Appendix A Proposed Rerate of the Activated Sludge Plant Report
- Appendix B Preliminary Design Report for Wastewater Treatment Plant Media Replacement in West Trickling Filters

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## EXECUTIVE SUMMARY

ARRO Consulting, Inc., was enlisted by the East Norriton-Plymouth-Whitpain Joint Sewer Authority (ENPWJSA) Wastewater Treatment Plant to perform an assessment of improvements needed, and their associated costs, to meet anticipated flows. This report presents the results of that assessment.

The treatment plant, located in Plymouth Township, Montgomery County, Pennsylvania, serves three townships: Plymouth Township, Whitpain Township, and East Norriton Township. Each township submitted its projected flow requirements for average daily flow and three-month maximum daily average flow to ARRO. ARRO compiled this flow information and estimated the capital improvements needed to accommodate this flow, and the costs associated with them.

Capital improvements will be needed to accommodate the desired 3-month maximum average flows. Several assumptions were made to come up with a conceptual approach to expanding the capacity, and the costs associated with it. It was decided the best approach would be to increase the capacity of the activated sludge portion of the plant to meet the projected needs. The estimated construction costs for this upgrade would be approximately \$6-\$7 per additional gallon of capacity. To increase the capacity by 1.8 MGD, the estimated construction costs would be \$10,800,000 to \$12,600,000. Total project costs would be approximately 15% higher.

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## I. FACILITY DESCRIPTION

The East Norriton-Plymouth-Whitpain Joint Sewer Authority sewage treatment plant, located in Plymouth Township, Montgomery County, Pennsylvania, (200 Ross Street, Plymouth Meeting, PA 19462) consists of three distinct wastewater treatment trains of two process types, trickling filter biological treatment and activated sludge biological treatment, connected through various wet well and pumping systems.

As is typical to many wastewater treatment plants, expansion has occurred over the years by the addition of new facilities capable of functioning separately. In 1961, the original West Trickling Filter Plant was brought on line. As flows increased, the East Trickling Filter Plant was added in 1969. Both trickling filter plants consist of primary settling, primary and secondary trickling filters, and secondary settling. Each trickling filter system is rated at 2.2 million gallons per day (MGD). In 1978, the activated sludge facility was constructed to handle the increased flows from the municipalities.

$$\begin{aligned} 2.2 \times 2 &= 4.4 \text{ MGD} \\ 4.4 + 3.7 &= 8.1 \text{ MGD} \end{aligned}$$

The current wastewater treatment plant combined facilities have a permitted annual average daily flow capacity of 8.1 MG, with a maximum 3-month average flow of 9.3 MGD. The treatment plant discharges through an outfall into the Schuylkill River under National Pollution Discharge Elimination System (NPDES) Permit No. PA0026816. Table 1 shows the average monthly allowable effluent limits.

Influent flow metering is performed in two locations within the plant. One Parshall flume meters the combined wastewater flow from East Norriton Township and Whitpain Township. The second Parshall flume meters the wastewater flow from Plymouth Township. The flow rates are recorded in the Pump/Control Building control room.



**Table 1**  
**ENPWJSA EFFLUENT LIMITS**

Discharge Parameter	Avg. Monthly Concentrations (mg/l)
CBOD <sub>5</sub> (5-1 to 10-31)	20
CBOD <sub>5</sub> (11-1 to 4-30)	25
Total suspended solids	30
Ammonia as N	20
Fecal coliform	200 organisms/100 ml
Dissolved oxygen	5.0 mg/l minimum
pH	6 pH units minimum, 9 maximum
Total residual chlorine	0.5

A Pump/Control Building was constructed to distribute flow to the three wastewater treatment facilities. Flow to the East and West trickling filter plants occurs by pump or by gravity when the flow in the plant's main wet well exceeds a given elevation. Flow to the Activated Sludge plant is pumped from three pumps in the main plant influent wet well to two primary circular clarifiers. After primary clarification the wastewater flows by gravity to two parallel aeration basins. Effluent from the aeration basins flows by gravity to two secondary circular clarifiers.

During normal operations all three facilities work in parallel to one another. All three facilities conclude treatment with disinfection using chlorination prior to discharge to the Schuylkill River.

Sludge handling consists of thickening, dewatering with belt filter presses, and incineration by multiple-hearth incinerator.

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**A. Preliminary Treatment**

The Pump/Control Building wet well receives all wastewater flow from the collection system. The flow passes through two 10.0 MGD hydraulic powered influent grinders before passing into the wetwell. A bypass screen with openings of approximately 2-inches is available when it is desired to bypass the influent grinders. This screen requires manual cleaning.

**B. Biological Treatment (East & West Trickling Filter Systems)**

There are two identical Trickling Filter biological treatment systems at the plant. Each system consists of primary and secondary settling tanks and primary and secondary trickling filters, and adjacent chlorine contact tanks.

Each primary settling tank consists of four rectangular tanks, each with a surface area of 1,470 square feet and an effective volume of 115,500 gallons. Sludge in each tank is collected by chains and flights and withdrawn by motor operated telescoping valve. Primary settling tank effluent flows into a dedicated Recirculation Pump Station wetwell.

Each Recirculation Pump Station has a split wetwell. Half of the wetwell receives flow from the primary settling tank and also recirculation flow from the primary trickling filter. Excess water in the primary wetwell flows over a weir into the other half of the wetwell where it is pumped to the secondary trickling filter. Three Chicago vertical drive centrifugal pumps are housed in each Recirculation Pump Station. One pump sends flow to the 98-foot diameter primary trickling filter. The second pump sends flow to the 98-foot diameter secondary trickling filter. The third pump is a backup and can be valved to send flow to either trickling filter.

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Butterfly valves were once in place that were used to adjust recirculation around the trickling filters to enhance treatment. They were removed years ago. Recently, new butterfly valves and flow meters were installed

Each secondary settling tank consists of four rectangular tanks with a surface area of 1,470 square feet and an effective volume of 115,500 gallons. Sludge in each tank is collected by chains and flights and withdrawn by motor operated telescoping valve.

### **C. Biological Treatment (Activated Sludge System)**

Raw wastewater is pumped from the Pump/Control Building wetwell to the primary settling tank inlet division chamber. The division chamber splits the flow to two 60 ft. diameter primary settling tanks.

Each primary settling tank is sized for a surface-settling rate of 655 gallons per day per square foot and has an effective volume of 380,700 gallons. The surface-settling rate is well below the state criteria of 1,000 gallons per day per square foot at maximum monthly flow. Two 5-horsepower pumps pump primary clarifier sludge to the sludge thickening tanks.

Wastewater flow from the primary settling tanks proceeds by gravity to the two aeration tanks. Each 24-foot by 181-foot aeration tank has an effective volume of 685,000 gallons. The wastewater is mechanically mixed with return activated sludge pumped from the secondary settling tanks. The wastewater is aerated through sixty (60) coarse bubble static aeration tubes in each tank by one (1) or two (2) of three (3) 250-hp Lamson blowers rated at 4,000 cfm each. The aeration tanks are equipped with gates along the sides that allow for a step-feed mode of operation.

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The aerated biological floc flows by gravity to the secondary clarifier inlet division chamber. The secondary settling tank inlet division chamber splits the flow to two 70 ft. diameter secondary settling tank. Each secondary settling tank is sized for a surface settling rate of 480 gallons per day per square foot and has an effective volume of 349,400 gallons. The secondary clarifiers provide gravity settling of the biological floc generated in the aeration tank. Most of the settled floc is pumped back to the aeration tanks to treat incoming wastewater through the use of two 10-horsepower return activated sludge pumps. One pump operates continuously while one remains in standby mode. One 10-horsepower waste activated sludge pump is used to waste a portion of the settled floc to the sludge thickener tanks.

**D. Chlorine Contact Tanks**

Disinfection is achieved by adding chlorine and providing contact time in the chlorine contact tanks. The Trickling Filter System and the Activated Sludge System have dedicated chlorine contact tanks.

The Trickling Filter System has two chlorine contact tanks, each with an effective volume of 93,700 gallons. The Activated Sludge System has two chlorine contact tanks, each with an effective volume of 92,100 gallons. Contact time in these tanks is greater than the State-required 30 minutes and adequate for maximum monthly flow. Effluent leaving the chlorine contact tanks is combined and discharged by gravity flow through an 30-inch outfall pipe into the Schuylkill River.

**E. Chemical Feed Systems**

There are three chemical feed systems at the facility: Potassium Permanganate, Polymer, and Chlorine.

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An odor control potassium permanganate system is in place to deliver 290 lb/day to the thickened sludge prior to its application on the belt filter press. Potassium permanganate is also fed into the supernatant wetwell for sludge odor control.

A polymer system is in place to inject polymer into the sludge line from the sludge thickening tank prior to its application on the belt filter press. The polymer dosage is about 15 lbs. per ton of sludge solids, which is normal considering all of the sludge is secondary (biological) sludge.

The third chemical feed is for chlorine, which is used for disinfection of the effluent prior to discharge. Chlorine gas is fed by vacuum into a chlorine eductor system into the plant effluent from 1-ton cylinders located in the Incinerator Building.

#### **F. Sludge Processing**

In 1978 the two original trickling filter plant digesters were repiped and converted to sludge thickeners. Sludge removed from the system as well as sludge brought into the plant by tank sludge haulers for incineration is discharged into the sludge thickeners. Solids retention time within the tanks varies due to the varying amounts of sludge brought into the plant, therefore solids concentration of the sludge prior to pumping the sludge onto the belt filter press will vary.

The plant utilizes a 2.2-meter belt filter press. The belt filter press equipment operator regulates the amount of sludge pumped from the thickener to the belt filter press conditioning tank. Potassium permanganate and polymer are injected into the sludge prior to application on the press belt. The press is operated approximately 5 days each week.

Pressed sludge cake of approximately 25 percent solids and scum are transported to a multiple hearth incinerator by an inclined belt conveyor. The incinerator uses

natural gas to evaporate remaining water from the dewatered sludge so that it will combust.

## II. PROJECTED FLOWS

Plymouth Township, Whitpain Township, and East Norriton Township each submitted projected flow requirements for average daily flow and three-month maximum daily average flow. The results are presented in Table 2 below.

**Table 2**  
**Projected Flows**

	<b>Average Daily Flow (gpd)</b>	<b>3-Month Max. Avg. Flow (gpd)</b>
Plymouth Township	3,600,075	4,100,075
Whitpain Township	2,190,000	3,480,000
East Norriton Township	2,900,000	3,500,000
<b>Total</b>	<b>8,690,075</b>	<b>11,080,075</b>

The current wastewater treatment plant combined facilities have a permitted annual average daily flow capacity of 8.1 MGD, and are permitted to discharge 9.3 MGD maximum monthly average flow. And, as the table above shows, the annual average flow anticipated is 8.7 MGD, and the 3-month maximum average flow desired is 11.1 MGD.

*9.32  
per Act 537*

*11.39  
per Act 537*

## III. PROVISION TO TREAT ANNUAL AVERAGE FLOW OF 8.7 MGD

A previous study completed by ARRO in September 2002 proposed rerating the current activated sludge plant to treat 5.44 MGD annual average flow. A copy of the report is presented in Appendix A.

*5.56*

The existing clarifiers are satisfactory to treat the proposed rerated flow of 5.44 MGD. And, the aeration capacity of the existing blowers is more than adequate. Furthermore, ability to treat this amount of flow has been demonstrated. For instance, in June and

*5.56*

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early July of 2002, one train of treatment adequately treated 3.0 MGD, equivalent to 6.0 MGD capacity with both trains running.

Rerating the treatment capacity of the activated sludge process to 5.44 MGD would increase the total plant capacity to 9.4 MGD. Therefore, if a rerating were approved by the Pennsylvania Department of Environmental Protection (PA DEP), it should take care of the immediate needs for average daily flow.

A possible problem with PA DEP approval of rerating the activated sludge process would be the ability to meet the 20 mg/l ammonia-nitrogen limit. PA DEP may question the adequacy of the existing processes to meet that limit in the winter months. If this is the case, then replacement of the stone media with plastic media in the trickling filters will ensure nitrification is achieved through the flow treated by the trickling filters.

ARRO previously completed a preliminary design report for replacing the media in the West Trickling Filters with plastic media. A copy of this report is presented in Appendix B. The estimated cost in today's dollars to upgrade the trickling filters to achieve nitrification is about \$700,000. It is assumed the cost of replacing the media in the other trickling filters is also \$700,000, making the total cost \$1,400,000. If 4.4 MGD of the total 8.7 MGD were nitrified as expected with this upgrade, this would ensure compliance with the 20 mg/l ammonia-nitrogen limit.

It should be noted that the stone media and underdrains date back to the 1960's, and they have exceeded their expected useful life. Replacement of the stone media with plastic media is often performed as a normal capital replacement and improvement project under these circumstances.

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#### IV. PROVISION TO TREAT 3-MONTH MAXIMUM AVERAGE FLOW OF 11.1 MGD

In order to meet the desired growth and expected capacities within the three townships, the plant must be able to treat a 3-month maximum average flow of 11.1 MGD. The current treatment facilities are permitted to treat up to 9.3 MGD for 3-month maximum average flow. Even if a rerating were approved for the activated sludge process, the capacity would not be increased enough to handle this amount of flow, and capital improvements are needed.

It is recommended that the activated sludge process be expanded to accommodate the additional flows. It is not feasible to upgrade the hydraulic capacity of the trickling filters, even though the nitrification capabilities would be enhanced by plastic media. Clarifier surface area is the limiting factor to expanding hydraulic capacity of the trickling filters, and there is no room for expansion of the trickling filter clarifiers. Assuming no rerating, additional capacity of 1.8 MGD is needed.

It is proposed that ENPWJSA increase the capacity of the activated sludge process by adding an additional primary clarifier, an additional aeration tank, an additional final clarifier, and an additional chlorine contact tank. This would increase the flow capacity by at least 1.8 MGD.

The existing pumps to the activated sludge process may be adequate to handle the increased pumping (three 3900 gpm pumps), however this would have to be verified. Other items possibly requiring significant costs would also be studied as part of a full design, including influent pumping, blowers, adequacy of emergency generator, electrical costs, site work costs, etc.

#### V. SUMMARY

Plymouth Township, Whitpain Township, and East Norriton Township each projected their flow requirements for average daily flow and three-month maximum daily average.



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It is believed the current average annual flows of 8.7 can be treated in the existing facility, provided DEP approves a rerating request for the activated sludge process. It is possible the rerate may only be allowed if the trickling filters are upgraded with plastic media to provide nitrification, thus ensuring the ammonia-nitrogen limit of 20 mg/l can be met during winter. The total estimated construction cost for upgrading the trickling filters is \$1,400,000.

Capital improvements will be needed to accommodate the desired 3-month maximum average flows. It was decided the best approach would be to increase the capacity of the activated sludge portion of the plant. This would increase the capacity to meet the current projected needs. The estimated construction costs for this upgrade would be approximately \$6-\$7 per additional gallon of capacity. To increase the capacity by 1.8 MGD, the estimated construction costs would be \$10,800,000 to \$12,600,000. Total project costs would be approximately 15% higher. More detailed design needs to be done in order to refine the costs further.

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**APPENDICES**



**EAST NORRITON-PLYMOUTH- WHITPAIN  
JOINT SEWER AUTHORITY**

**WASTEWATER TREATMENT  
FACILITY STUDY**

**RECOMMENDATIONS FOR PLANNING**

**THE**

**CAPITAL IMPROVEMENT PROGRAM**

**Rummel, Klepper & Kahl, LLP**

**June 2004**

*East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Wastewater Treatment Facility Study*

**EXECUTIVE SUMMARY**

The East Norriton-Plymouth-Whitpain Joint Sewer Authority commissioned Rummel, Klepper & Kahl, LLP to perform this study to identify process areas in its existing 8.1-MGD wastewater treatment facility that may be affected by changes in regulatory standards and to identify modifications that would be required. This study will be used as a guide by the Sewer Authority in its development of a capital improvement program for the facility. This study also identifies means of achieving more efficient process control, enhancing the facility's reliability, and providing adequate redundancy of equipment and systems to enhance nitrification, improve total suspended solids and carbonaceous biochemical oxygen demand removal, and to improve disinfection. Planning level construction cost estimates are provided for the recommended capital improvements in 2004 dollars. Specific areas addressed included the influent pumping system, the development of screening and grit removal systems, nitrification in the biological treatment system, alternatives to the existing gaseous chlorine system for disinfection, cost effectiveness and reliability of sludge processing, improvements to the laboratory environment, and electrical system upgrades.

Subsequent to initiating this study, the Sewer Authority's Engineer-of-Record issued a report dated December 2003 identifying the need to increase the facility's average daily flow capacity to 8.69-MGD, or nominally 8.7-MGD. This study addresses the needs at the facility to accommodate this increase in capacity. This study was performed on the basis that the projected peak influent flow would be 27-MGD at the average capacity of 8.7-MGD.

The recommendations provided in this study are intended to be implemented as an integrated, comprehensive program with the modifications that are recommended for each unit process being related to the entire treatment system. The recommended improvements are intended to meet the applicable provisions of the Pennsylvania Department of Environmental Protection's document "Domestic Wastewater Facilities Manual, A Guide for the Preparation of Applications, Reports and Plans." They also should be implemented within the context of the following improvements that are currently being constructed:

- Upgrades to the instrumentation and control system, and
- In the miscellaneous improvements contract, replacement of the raw trickling filter pumps, HVAC improvements and loading dock door replacement in the Sludge Building, and motor control center demolition in the trickling filter recirculating pumping stations.

In order of priority, it is recommended that the capital improvement program include the projects listed below, which are categorized as short-term projects, intermediate-term projects, or long-term projects. For each project, detailed engineering should be performed and construction documents should be prepared.

*East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Wastewater Treatment Facility Study*

**Short-Term Projects**

Short-term projects should be initiated as soon as possible to 1) improve safety, 2) improve process reliability, or 3) provide an immediate operation and maintenance savings through expenditure of moderate capital funds. With the highest priority listed first, the projects should be implemented as follows:

- **Disinfection** – Convert to the use of sodium hypochlorite in lieu of gaseous chlorine to improve safety for plant personnel and the surrounding community. The estimated construction cost is \$511,000.
- **Electrical system in Sludge Processing Building** – Upgrade the motor control system in the sludge processing building by purging it with filtered air to improve the operating reliability of the sludge processing system. The estimated construction cost is \$10,000.
- **Sludge dewatering** – Provide a centrifuge to serve as an alternative means of dewatering sludge in the event that the existing belt filter press becomes inoperative for an extended period. This provides redundancy in the mechanical sludge dewatering equipment. The estimated construction cost is \$950,000.
- **Sludge stabilization** – Provide a lime stabilization system to serve as an alternative means of stabilizing sludge in the event that the existing incinerator becomes inoperative for an extended period. This provides redundancy in the sludge stabilization process. The estimated construction cost is \$975,000 if a lime storage silo is used and it is \$675,000 if lime is fed from supersacks.
- **Incinerator** – Replace the by-pass damper to reduce operating costs. The estimated construction cost is \$100,000.
- **Aeration system upgrade** – Replace the existing coarse bubble diffusers in the aeration tanks and the existing blowers with fine pore diffusers and new centrifugal blowers to reduce annual operating costs. The estimated construction cost is \$750,000. This project could be implemented without the Sewer Authority expending capital funds by implementing it through an energy performance project
- **RAS/WAS Pumping Station** – Provide knife gate valves in the RAS suction header to dedicate a RAS pump to a clarifier, thereby improving sludge blanket control. The estimated construction cost is \$30,000.
- **Laboratory** – Improve the ventilation system and the air conditioning system in the existing laboratory. The estimated construction cost is \$20,000.
- **Sludge flow meter** – Replace the flow meters for the secondary trickling filter sludge. The estimated construction cost is \$20,000.

*East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Wastewater Treatment Facility Study*

**Influent Flow Meter** – Replace the existing Parshall Flume with an area/velocity type flow meter to improve the overall operational control of the facility. The estimated construction cost is \$100,000.

- **Aeration tank baffles** – Provide reinforced concrete baffles to create an anoxic/oxic switch zone to reduce aeration costs and to promote a plug flow hydraulic regime to increase the tank capacity. The estimated construction cost is \$100,000.

### **Intermediate-Term Projects**

Intermediate-term projects are needed to 1) provide improvements that minimize stress on key equipment and processes, the failure of which could lead to effluent violations, and 2) to meet current effluent criteria when the plant capacity is increased to 8.7-MGD. In order of priority, the projects should be implemented as follows:

- **Headworks** – Provide mechanical screens, compactor, and dumpster handling system in the Main Pumping Station to replace the existing comminutors. The estimated construction cost is \$650,000.

Provide a grit removal system for the raw wastewater that is pumped to the activated sludge train. It should be a paddle-induced vortex grit chamber with a grit concentrator and dewatering clarifier that are located immediately upstream of the primary clarifier distribution structure DS-1. The grit concentrator and dewatering clarifier would be housed in a small building. Construction costs are estimated to be \$625,000.

Optionally, provide a vortex grit removal system on the gravity overflow pipe from the Main Pumping Station to the raw trickling filter pumping station. The grit concentrator and dewatering clarifier would be located in a small building. Construction costs are estimated to be \$900,000.

- **Activated sludge system capacity** – Increase the plant's biological treatment capacity by providing: 1) An additional activated sludge reactor equal in size to the existing reactors and with additional aeration capacity, 2) a 110 ft. diameter secondary clarifier, 3) return and waste activated pumping systems, and 4) pipes and structures for conveying and distributing primary effluent and mixed liquor flows. Construction costs are estimated to be \$5,100,000.
- **Disinfection capacity** – The need for additional capacity in the chlorine contact tanks in the activated sludge train was identified in the December 2003 report prepared by the Sewer Authority's Engineer-of-Record. This study did not evaluate the expansion of the chlorine contact tanks in further detail.

### **Long-Term Projects**

Long-term improvements are needed to meet the stricter ammonia limits that potentially may be imposed in the future.

**Replacement of trickling filters** – Replace the existing trickling filters by expanding the activated sludge system in accordance with Biological Alternative 5A described in Section 5 by providing 1)

*East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Wastewater Treatment Facility Study*

) pumps to convey flow from the trickling filter primary clarifiers to the activated sludge reactors 2) two new activated sludge reactors equal in size to the existing reactors with additional aeration capacity, 3) rectangular secondary clarifiers, 4) a new circular secondary clarifier, 5) return and waste activated pumping systems, and 6) pipes and structures for conveying and distributing primary effluent and mixed liquor flows. Construction costs are estimated to be \$8,600,000. These activated facilities are in addition to those provided as intermediate-term improvements.

**Other Recommendations**

It is recommended to replace the existing raw activated pumps with pumps of larger capacity to assure all flow entering the plant will be conveyed to the treatment units. The Sewer Authority plans on purchasing and installing the pumps with its own forces. The pump sizing is currently being finalized by RK&K.

To reduce capital and operation and maintenance costs at the facility, it is recommended that upgrades to the wastewater collection system should be made to reduce infiltration and inflow (I&I). For example, secondary clarifier capacities are directly related to the peak flow to the plant, according to the Pennsylvania Department of Environmental Protection's document "Domestic Wastewater Facilities Manual, A Guide for the Preparation of Applications, Reports and Plans." By reducing the peak flow, the sizes of future clarifiers will be minimized. The peak flows to the plant associated with rainfall events presently exceed 20-MGD with the average flow being only about 5-MGD. As noted above, this study was performed on the basis of the peak flow being projected to be 27-MGD when the average flow increases to 8.7-MGD. As a minimum, a goal of the I/I improvements should be to limit the flow to the plant to 27-MGD. From the perspective of minimizing future facility needs and to minimize the unnecessary treatment of storm water, the I/I improvement goal should be to reduce the peak flow to significantly less than 27-MGD.

It is recommended that sampling and analysis of the raw influent wastewater should be expanded to more definitively characterize the chemical oxygen demand (COD), total Kjeldahl nitrogen (TKN), ammonia (NH<sub>3</sub>) loadings and the influent wastewater temperature. This will enable future biological treatment facilities to be designed with a higher degree of confidence, thereby reducing the size and cost that might result from the use of unduly conservative factors of safety.

**Acknowledgement**

RK&K appreciates the significant input provided by Mr. Charles Fagan throughout the development of this study as well as the invaluable insight he provided in meetings, conversations, and in his review of the draft report. We appreciate the opportunity to have worked with the Joint Sewer Authority on this report.



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Intermediate-term plant expansion to be phased by possibly only needing to initially construct additional secondary clarifier capacity rather than an entire reactor.

**Improve the Secondary Sludge Pumping Station** – The Secondary Pumping Station houses the return activated sludge (RAS) pumps and the secondary scum pump. Deficiencies that were observed in the Secondary Sludge Pumping Station are described below. Conceptual recommendations for improvements are provided.

Inability to dedicate a RAS pump to a final clarifier – Due to there not being valves on the suction header between the individual pump suction pipes, a RAS pump cannot be dedicated to a clarifier. This is undesirable in that it would be difficult to maintain control of the clarifier sludge blanket. Knife gate valves could be provided in the suction header so that one RAS pump could be dedicated to a clarifier.

Inability to expand – While there is a piping connection to the station for the sludge underflow from a future clarifier, there is insufficient space available to locate a fourth pump. It is recommended that the existing station not be used to serve a future clarifier. A separate sludge pumping station should be provided for future clarifiers.

**Filamentous organism control** – We evaluated the continued use of chlorine as a means of filamentous control with due consideration being given to the possibility that the use of chlorine may be discontinued as an effluent disinfectant. At other facilities we have retained the use of chlorine for filamentous control when converting to ultraviolet radiation for disinfection with a concurrent reduction in the size of the chlorination facility and the amount of stored chlorine. While the use of an anoxic zone for filamentous control may be of benefit, its use would still need to be supplemented with chlorine.

It is recommended that chlorine remain available for filamentous control.

**Operating mode** – The existing activated sludge tank can be operated in either the plug flow, step feed, or contact stabilization mode. Consideration was given to the advantages of operating in each mode. On a preliminary basis it appears that it would be most advantageous to operate in a plug flow mode.

#### **D. INTERMEDIATE TERM IMPROVEMENTS**

The ARRO Needs Assessment provided recommendations for intermediate term improvements to address capacity expansion needs. The ARRO Needs Assessment recommended that an additional 60 ft. diameter primary clarifier, a 0.65-MG activated sludge reactor, a 70 ft. diameter secondary clarifier, and a chlorine contact tank should be provided to accommodate the increase in capacity from 8.1-MGD to 8.7-MGD. The Sewer Authority, ARRO, and RK&K discussed the feasibility of this course of action at the January 29, 2004 progress meeting and concluded that adding aeration tank and secondary clarifier capacity would be consistent with each of the five alternatives (see below) being considered for the long-term improvements, each of which include expansion of the activated sludge reactors and secondary clarifiers.

*East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Wastewater Treatment Facility Study*

Subsequent calculations performed by RK&K that are provided in the Appendix confirmed that the additional primary clarifier capacity would not be needed but that additional reactor volume and larger secondary clarifier capacity should be provided. A conceptual layout of the additional major facilities that would be needed is shown in Figure 4-1 on the following page. Figure 4-1 shows circular and rectangular options for the secondary clarifier configuration. Circular clarifiers would be preferred, however due to site constraints, rectangular clarifiers should be used if either Alternative 1A or 2A are planned on being implemented in the future (see below). Circular clarifiers could be used if either Alternative 4A or 5A are planned on being implemented in the future.

Of note is that the addition of a third equal-sized activated sludge reactor results in there being a surplus of reactor capacity for meeting the existing ammonia limits and for maintaining effluent mass BOD<sub>5</sub> and NH<sub>3</sub> loadings at the current permitted amounts. This affords the opportunity to obtain an oxygen credit, thereby possibly reducing operating costs for the aeration system. If necessary, an alkalinity credit could also be obtained that would be beneficial if there is too low of alkalinity concentration in the primary effluent to maintain the pH at a level to sustain the optimum nitrification rates. The oxygen and alkalinity credits could be achieved by the incorporation of a switch zone in the reactor in which either aerobic or anoxic conditions could be maintained. In such a switch zone, flexible membrane diffusers could be used along with the ability to turn down the air flow to a low level so as to keep the mixed liquor in suspension while not developing a measurable dissolved oxygen concentration.

LEGEND FOR BIOLOGICAL SYSTEM ALTERNATIVES

- EXISTING STRUCTURES
- EXISTING MAIN PROCESS PIPES
- NEW STRUCTURES AND PIPES (YELLOW = INT. PH.)
- DECOMMISSIONED STRUCTURES
- RPS = RAW SEWAGE PS
- AS = ACTIVATED SLUDGE REACTOR
- CNAS = BOD + NITRIFICATION REACTOR
- T-NTF = TOWER - NITRIFYING TRICKLING FILTER
- PC = PRIMARY CLARIFIER
- IC = INTERMEDIATE CLARIFIER
- SC = SECONDARY CLARIFIER
- CCT = CHLORINE CONTACT TANK
- UV = ULTRAVIOLET RADIATION DISINFECTION

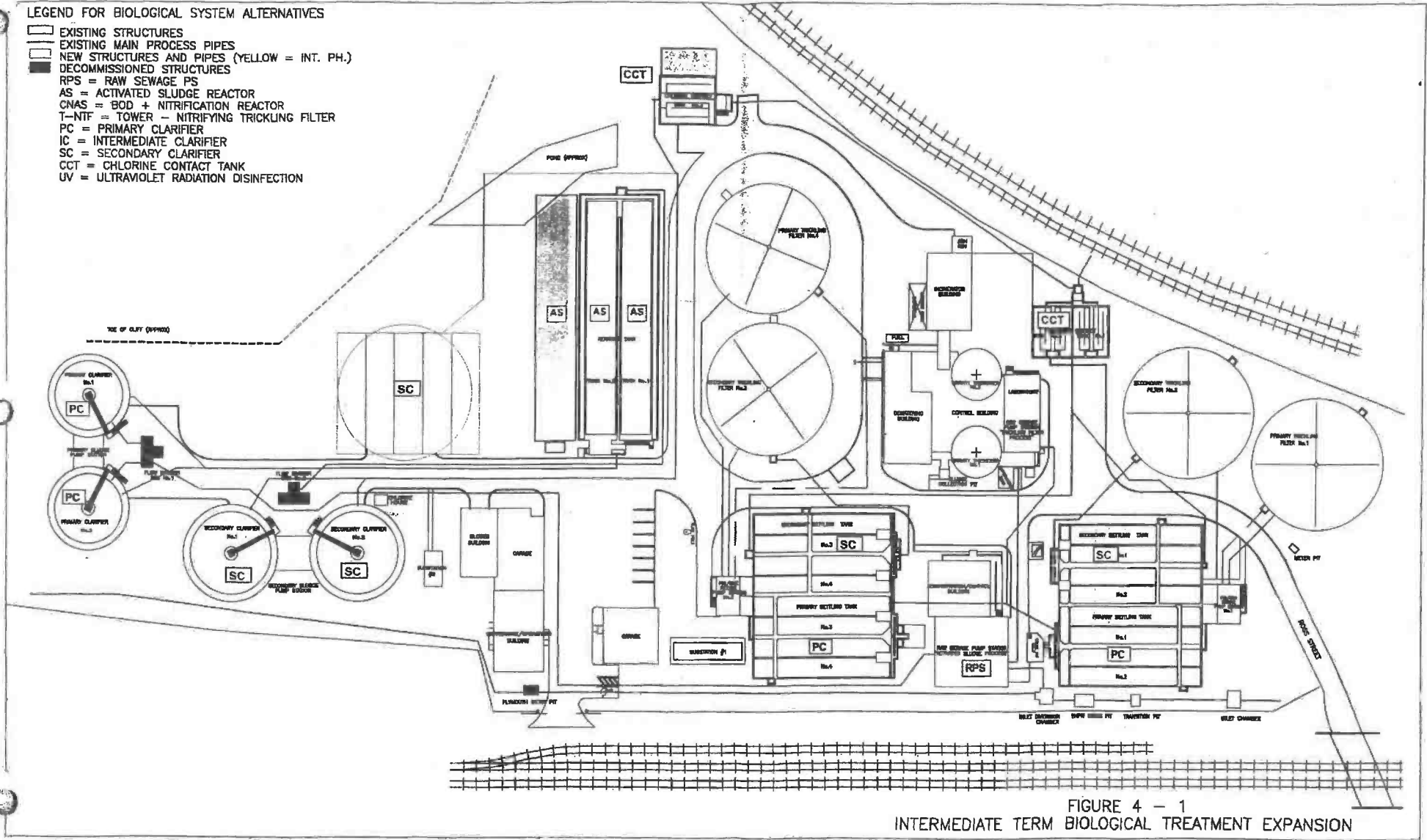


FIGURE 4 - 1  
 INTERMEDIATE TERM BIOLOGICAL TREATMENT EXPANSION  
 EAST NORRITON-PLYMOUTH-WHITPAIN JOINT SEWER AUTHORITY  
 WASTEWATER TREATMENT PLANT STUDY  
 RK&K - MARCH 2004

**APPENDIX J**

**PENNSYLVANIA NATURAL DIVERSITY  
INVENTORY RESPONSE**



August 1, 2006

U.S. Fish and Wildlife Service  
Endangered Species Biologist  
315 South Allen Street  
Suite 322  
State College, PA 16801

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain Joint  
Sewer Authority; Act 537 Plan Update;  
Upgrades to WWTP  
ARRO # 5469.00

*649 North Lewis Road*

*Suite 100*

*Limerick, PA 19468-1234*

*610.495.0303*

*Fax: 610.495.5855*

*info@thearrogroup.com*

*www.thearrogroup.com*

Dear U.S. Fish and Wildlife Service:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority, we are assisting with the preparation of an Act 537 Plan Update for proposed upgrades to the Wastewater Treatment Plant located at 200 Ross Street in Plymouth Township, Montgomery County. The activities planned for this upgrade are to occur inside the bounds of the existing wastewater treatment plant property. There are no plans to do any work beyond the site.

Enclosed, for your review, are the PNDI Project Environmental Review Receipt and the Norristown 7.5 Minute Quadrangle identifying the location of the project site. Since the planned upgrades are to occur on the current plant property, minimal if any earth disturbance is planned near the Schuylkill River

Please review this documentation and provide us with any comments or concerns that you may have at your earliest convenience. If you have any questions, please do not hesitate to call me at 610-495-2102.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

**E N G I N E E R I N G**

**C O N S U L T I N G**

**O P E R A T I O N S**



August 1, 2006

Natural Diversity Section  
Pennsylvania Fish and Boat Commission  
Division of Environmental Services  
450 Robinson Lane  
Bellefonte, PA 16823

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain Joint  
Sewer Authority; Act 537 Plan Update;  
Upgrades to WWTP  
ARRO # 5469.00

649 North Lewis Road

Suite 100

Limerick, PA 19468-1234

610.495.0303

Fax: 610.495.5855

info@thearrogroup.com

www.thearrogroup.com

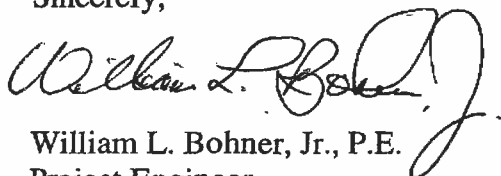
Dear Fish and Boat Commission:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority, we are assisting with the preparation of an Act 537 Plan Update for proposed upgrades to the Wastewater Treatment Plant located at 200 Ross Street in Plymouth Township, Montgomery County. The activities planned for this upgrade are to occur inside the bounds of the existing wastewater treatment plant property. There are no plans to do any work beyond the site.

Enclosed, for your review, are the PNDI Project Environmental Review Receipt and the Norristown 7.5 Minute Quadrangle identifying the location of the project site. Since the planned upgrades are to occur on the current plant property, minimal if any earth disturbance is planned near the Schuylkill River

Please review this documentation and provide us with any comments or concerns that you may have at your earliest convenience. If you have any questions, please do not hesitate to call me at 610-495-2102.

Sincerely,



William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

ENGINEERING  
CONSULTING  
OPERATIONS



## PNDI Project Environmental Review Receipt

Project Search ID: 20060801048468

Project Name: ENPWJSA Act 537 Plan Update

Date: 8/1/2006 8:52:13 AM

Pennsylvania Natural Diversity Inventory (PNDI) records indicate there are potential impacts on special concern species and resources within the project area. If the project is pursued, the jurisdictional agency/agencies indicated require that the instructions below regarding potential impacts and/or avoidance measures be followed in their entirety.

**Q1:** Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats

Your answer is: **1. Yes**

Please initial here signifying that you have provided the most accurate answer to the question as possible.

APPLICANT INITIALS: WLB

**Q2:** Accurately describe what is known about wetland presence in the project area or on the land parcel. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.

Your answer is: **2. The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands, or it is currently unknown if the project or project activities will affect wetlands.**

Please initial here signifying that you have provided the most accurate answer to the question as possible.

APPLICANT INITIALS: WLB

These determinations were based on the project-specific information you provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the information you provided does not accurately reflect this project, or if project plans change, DEP and the jurisdictional agencies require that another PNDI review be conducted.

**This response represents the most up-to-date summary of the PNDI data files and is good for one(1) year from the date of this PNDI Project Environmental Review Receipt.**

### 1 potential impact

The Applicant should MAIL a copy of this Project Environmental Review Receipt, a cover letter with project narrative, acreage to be impacted, how construction/maintenance activity is to be accomplished, township/municipality and county where project is located, and a USGS 7.5 minute quadrangle with project boundary and quad name marked on the map.

US Fish and Wildlife Service.  
Endangered Species Biologist  
315 South Allen Street, Suite 322.  
State College, PA 16801

### 1 potential impact

The Applicant should MAIL/FAX a copy of this Project Environmental Review Receipt, a cover letter with project narrative, acreage to be impacted, how construction/maintenance activity is to be accomplished, township/municipality and county where project is located, and a USGS 7.5 minute quadrangle with project boundary and quad name marked on the map.

Natural Diversity Section  
Pennsylvania Fish and Boat Commission



## PNDI Project Environmental Review Receipt

Project Search ID: 20060801048468

Project Name: ENPWJSA Act 537 Plan Update

Date: 8/1/2006 8:52:13 AM

Division of Environmental Services  
450 Robinson Lane  
Bellefonte, PA 16823

Please mail only one (1) copy of the project review request. Do not email the project information. Allow 30 days for completion of the project review from the date of PFBC receipt of the project review request.

### DISCLAIMER

The PNDI environmental review website is a preliminary environmental screening tool. It is not a substitute for information obtained from a field survey of the project area conducted by a biologist. Such surveys may reveal previously undocumented populations of species of special concern. In addition, the PNDI only contains information about species occurrences that have actually been reported to the Pennsylvania Natural Heritage Program.

### Pennsylvania State Programmatic General Permit (PASPGP)

Please note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Chester, Cumberland, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) are required by DEP to comply with the bog turtle habitat screening requirements of the PASPGP.

### TERMS OF USE

Upon signing into the PNDI environmental review website, and as a condition of using it, you agreed to certain terms of use. These are as follows:

The web site is intended solely for the purpose of screening projects for potential impacts on resources of special concern in accordance with the instructions provided on the web site. Use of the web site for any other

purpose or in any other way is prohibited and subject to criminal prosecution under federal and state law, including but not limited to the following: Computer Fraud and Abuse Act of 1986, as amended, 18 U.S.C. § 1030; Pennsylvania Crimes Code, § 4911 (tampering with public records or information), § 7611 (unlawful use of computer and other computer crimes), § 7612 (disruption of service), § 7613 (computer theft), § 7614 (unlawful duplication), and § 7615 (computer trespass).

The PNHP reserves the right at any time and without notice to modify or suspend the web site and to terminate or restrict access to it.

The terms of use may be revised from time to time. By continuing to use the web site after changes to the terms have been posted, the user has agreed to accept such changes.

This review is based on the project information that was entered. The jurisdictional agencies and DEP require that the review be redone if the project area, location, or the type of project changes. If additional information on species of special concern becomes available, this review may be reconsidered by the jurisdictional agency.

### PRIVACY and SECURITY

This web site operates on a Commonwealth of Pennsylvania computer system. It maintains a record of each environmental review search result as well as contact information for the project applicant. These records are maintained for internal tracking purposes. Information collected in this application will be made available only to the jurisdictional agencies and to the Department of Environmental Protection, except if required for law enforcement purposes—see paragraph below.

This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system consents to such monitoring and is advised that if such monitoring reveals evidence of possible criminal activity, system personnel may provide



**PNDI Project Environmental Review Receipt**

Project Search ID: 20060801048468

Project Name: ENPWJSA Act 537 Plan Update

Date: 8/1/2006 8:52:13 AM

the evidence to law enforcement officials. See Terms of Use.

**In order for this project to be considered for subsequent review, a signed and initialed copy of this receipt is required by the agency or agencies indicated. DEP requires that a signed and initialed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted in applications for permits requiring PNDI review. See DEP PNDI policy at [www.naturalheritage.state.pa.us](http://www.naturalheritage.state.pa.us) or visit the following websites for further information.**

**Regional Offices**

[Http://www.dep.state.pa.us/dep/deputate/fieldops/map.pdf](http://www.dep.state.pa.us/dep/deputate/fieldops/map.pdf)

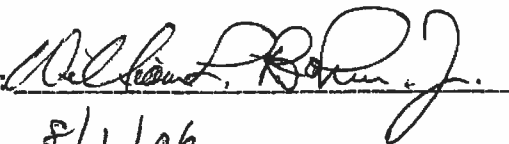
**District Mining Operations**

[Http://www.dep.state.pa.us/dep/deputate/minres/Districts/homepage/Default.htm](http://www.dep.state.pa.us/dep/deputate/minres/Districts/homepage/Default.htm)

**Oil and Gas Management**

[Http://www.dep.state.pa.us/dep/deputate/minres/OILGAS/CustomrNeeds.htm](http://www.dep.state.pa.us/dep/deputate/minres/OILGAS/CustomrNeeds.htm)

**Print this Project Review Receipt using your Internet browser's print function and keep it as a record of your search.**

Signature: 

Date: 8/1/06

Project applicant on whose behalf this search was conducted:

**APPLICANT**

Contact Name: East Norriton - Plymouth - Whitpain Joint Sewer Authority  
Address: 200 Ross Street  
City, State, Zip: Plymouth Meeting, PA 19462-2740  
Phone: 610-279-5759  
Email: \_\_\_\_\_

**PERSON CONDUCTING SEARCH (if not applicant)**

Aero Consulting, Inc.  
Contact Name: William L. Bohner, Jr  
Address: 649 N. Lewis Rd.  
City, State, Zip: Limerick, PA 19468-1234  
Phone: 610-495-2102  
Email: \_\_\_\_\_

The following contact information is for the agencies involved in this Pennsylvania Natural Diversity Inventory environmental review process. Please read this entire receipt carefully as it contains instructions for how to contact these agencies for further review of this particular project.

US Fish and Wildlife Service.  
Endangered Species Biologist  
315 South Allen Street, Suite 322.

PNDI Project Environmental Review Receipt

Project Search ID: 20060801048468

Project Name: ENPWISA Act 537 Plan Update

Date: 8/1/2006 8:52:13 AM

State College, PA 16801

Natural Diversity Section

Pennsylvania Fish and Boat Commission

Division of Environmental Services

450 Robinson Lane

Bellefonte, PA 16823



COMMONWEALTH OF PENNSYLVANIA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 BUREAU OF WATERSHED MANAGEMENT  
 BUREAU OF WATERWAYS ENGINEERING

4600869  
 SUPPLEMENT NO. 1

FOR OFFICIAL USE ONLY

PNDI Screening  
 Reviewer Kim Rye  
 Date 4-28-04  
 Phone No. 484 250-5887

PENNSYLVANIA NATURAL DIVERSITY INVENTORY SEARCH FORM

This form provides site information necessary to perform a computer screening for species of special concern listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the PA Game and Wildlife Code. Records regarding species of special concern are maintained by PA DCNR in a computer data base called the "Pennsylvania Natural Diversity Inventory" (PNDI). Results from this search are not intended to be a conclusive compilation of all potential special concern resources located within a proposed project site. On-site biological surveys may be recommended to provide a definitive statement on the presence or absence, or degree of natural integrity of any project site. Results of this PNDI search are valid for one year.

Please complete the information below, attach an 8½" x 11" photocopy (DO NOT REDUCE) of the portion of the U.S.G.S. Quadrangle Map that identifies the project location and outlines the approximate boundaries of the project and mail to the appropriate DEP regional office or delegated County Conservation District prior to completing a Chapter 105 environmental assessment or any other DEP permit application. (SEE REVERSE SIDE FOR LIST OF OFFICES AND ADDRESSES).

NAME: William L. Bohner, Jr., P.E.; ARRO Consulting, Inc.

ADDRESS: 649 N. Lewis Road

Suite 100

Limerick, PA 19468

PHONE: (610 ) 495-2102

COUNTY: Montgomery

TWP./MUNICIPALITY: Plymouth Township

U.S.G.S. 7½ Minute Quadrangle

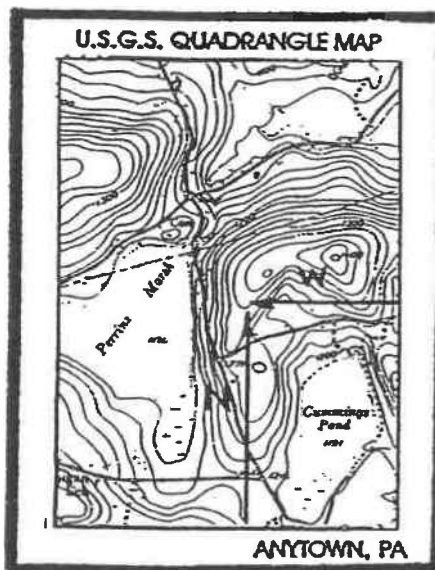
Norristown 1843

PROJECT DESCRIPTION AND SIZE (Briefly describe entire area relevant to your project, including acreage.)

Upgrades to the ENPWJSA Wastewater Treatment Plant.

Construction work shall be confined to the existing plant site.

Approximately 20% of the existing 9.2 acre site will be disturbed.



North (Up) 19.75 inches

West (to the left) 10.50 inches

INDICATE PROJECT LOCATION TO THE NEAREST ONE TENTH INCH MEASURING FROM THE EDGE OF THE MAP IMAGE FROM THE LOWER RIGHT CORNER.

FOR OFFICIAL USE ONLY

SCREENING RESULTS - Follow the directions of the checked block.

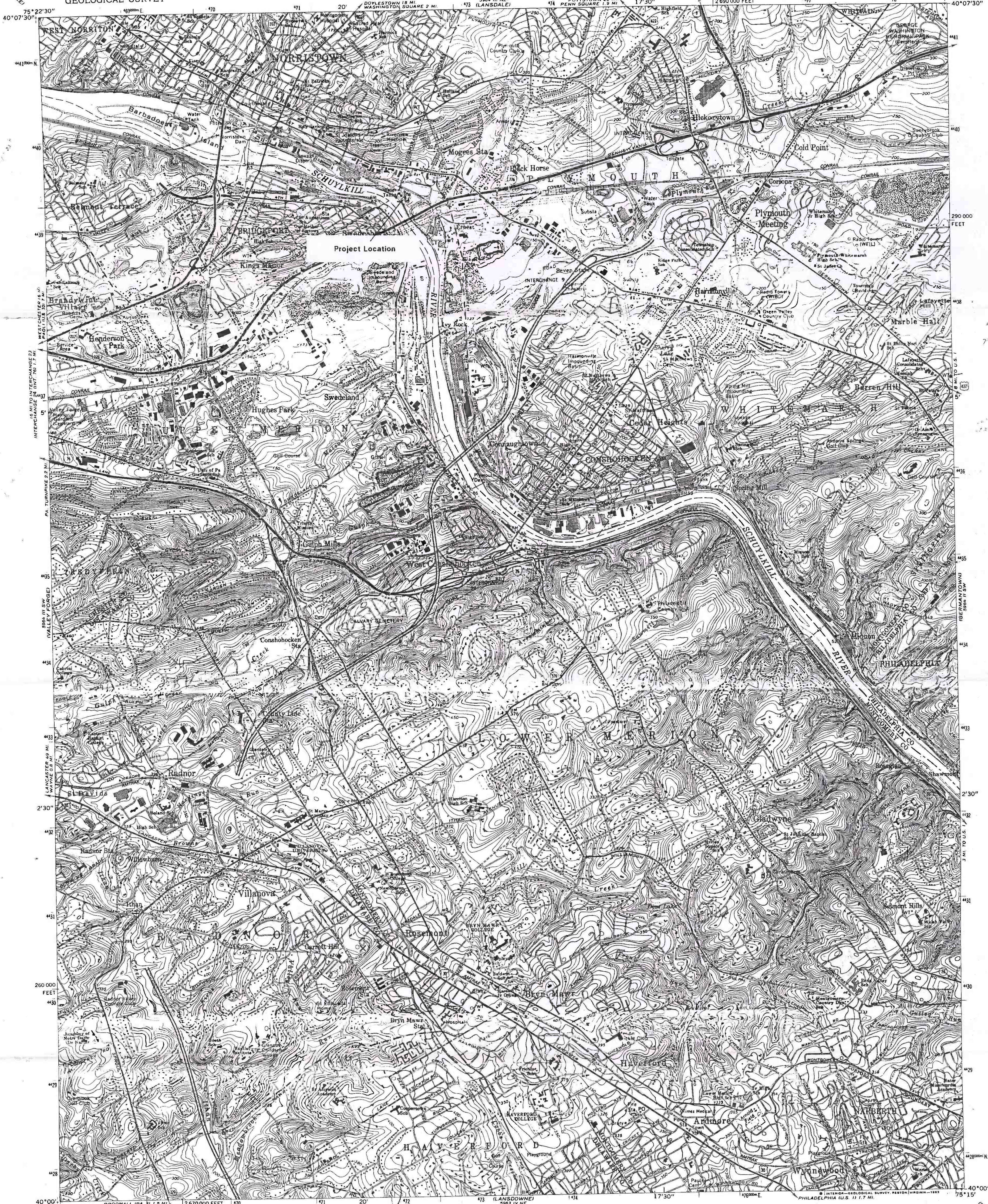
No potential conflicts were encountered during the PNDI inquiry. Include this form and the PNDI receipt with your Chapter 105 environmental assessment or other DEP permit application submissions.

Potential conflicts must be resolved by contacting the natural resource agencies listed on the PNDI receipt. Please provide a copy of this form and the PNDI receipt along with a brief description of your project to the listed agency for consultation and recommendations. Include this form, the printed PNDI search results and the natural resource agency's written recommendation with your Chapter 105 environmental assessment or other DEP permit application submissions.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

NORRISTOWN QUADRANGLE  
PENNSYLVANIA  
7.5 MINUTE SERIES (TOPOGRAPHIC)



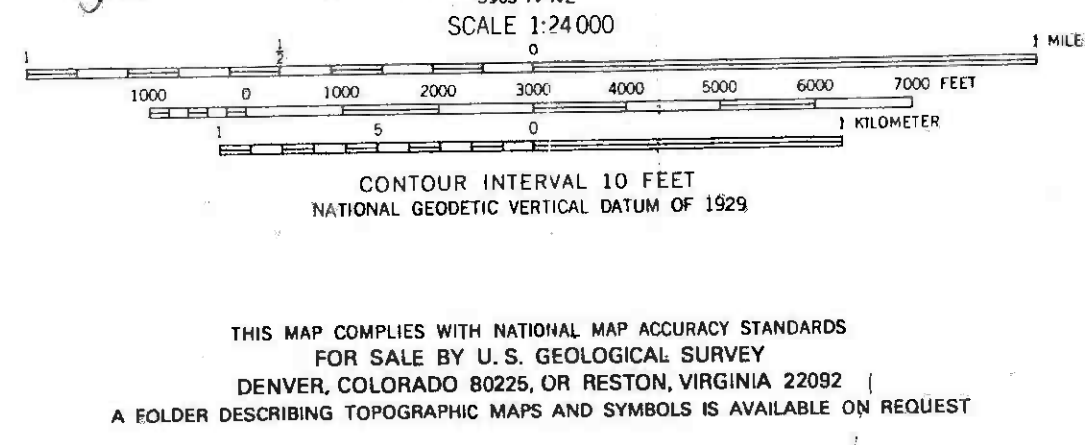
Mapped, edited, and published by the Geological Survey in cooperation with Pennsylvania Department of Internal Affairs, Topographic and Geologic Survey Control by USGS, NOS/NOAA, and USCE

Topography by photogrammetric methods from aerial photographs taken 1950. Field checked 1952. Revised from aerial photographs taken 1965. Field checked 1966

Polycyclic projection. 10,000-foot grid ticks based on Pennsylvania coordinate system, south zone. 1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue

1927 North American Datum  
To place on the predicted North American Datum 1983 move the projection lines 6 meters south and 31 meters west as shown by dashed corner ticks

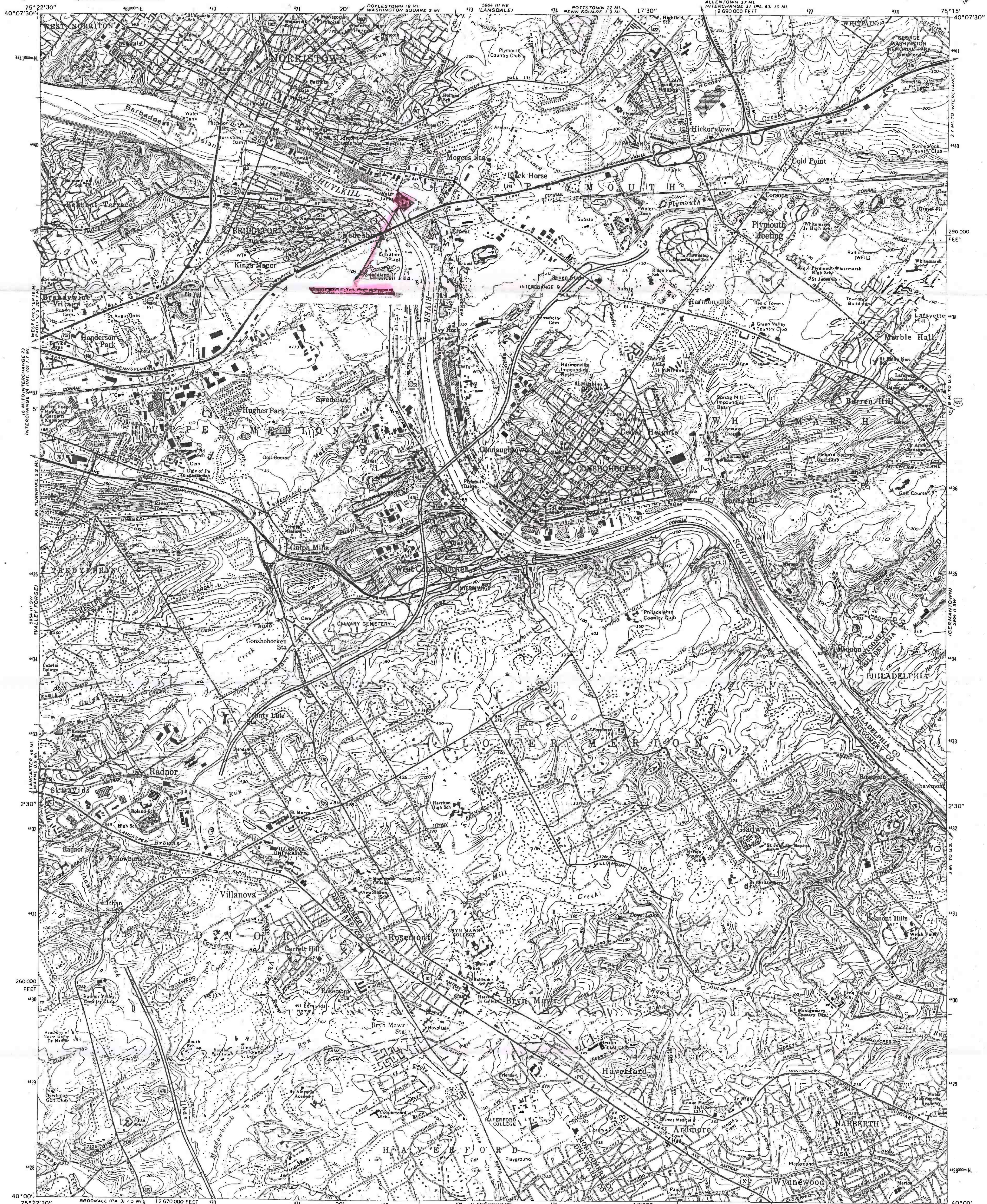
Red tint indicates areas in which only landmark buildings are shown



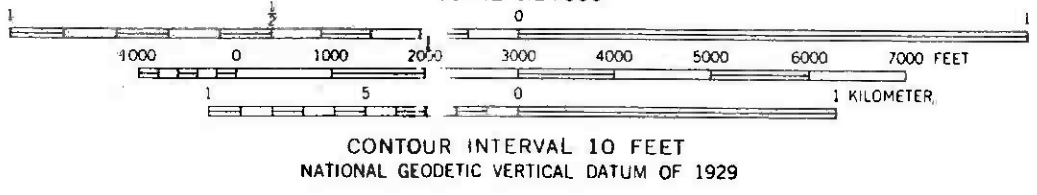
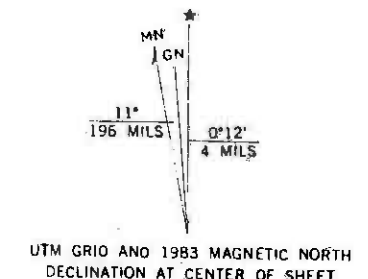
ROAD CLASSIFICATION

- Heavy duty
- Light-duty
- Medium-duty
- Unimproved dirt
- Interstate Route
- U.S. Route
- State Route

NORRISTOWN, PA.  
40075-A3-TF-024  
1966  
PHOTOREVISED 1983  
DMA 5064 III BE-SERIES 1983

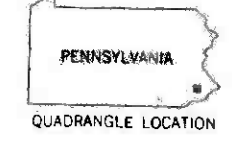


Mapped, edited, and published by the Geological Survey in cooperation with Pennsylvania Department of Internal Affairs, Topographic and Geologic Survey Control by USGS, NOS/NOAA, and USCE  
 Topography by photogrammetric methods from aerial photographs taken 1950. Field checked 1952. Revised from aerial photographs taken 1965. Field checked 1966  
 Polyconic projection. 10,000-foot grid ticks based on Pennsylvania coordinate system, south zone. 1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue  
 7 North American Datum  
 T place on the predicted North American Datum 1983 move  
 e projection lines 6 meters south and 31 meters west as  
 town by dashed corner ticks  
 red tint indicates areas in which only landmark buildings are shown



ROAD CLASSIFICATION

Heavy-duty	Light-duty
Medium-duty	Unimproved dirt
Interstate Route	U.S. Route
	Slate Route



NORRISTOWN, PA.  
 40075-A3-TF-024  
 1966  
 PHOTOREVISED 1983  
 DMA 5964 III SE-SERIES V831

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
 FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092  
 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple and woodland compiled from aerial photographs taken 1981 and other sources. This information not field checked. Map edited 1983

86-85

PNDI # 200608010-18468

USFWS Project # 2006-2633

**U.S. FISH AND WILDLIFE SERVICE**  
315 South Allen Street, Suite 322, State College, PA 16801

This responds to your inquiry about a PNDI Internet Database search that resulted in a potential conflict with a federally listed, proposed or candidate species.

**PROJECT LOCATION INFORMATION**

County: MONTGOMERY  
Township: PLYMOUTH  
Quad: NORRISTOWN

**MISC INFORMATION**

Date of PNDI search: 8-1-06  
Date received by FWS: 8-4-06  
Project Type (FWS code #): NT - WWTP  
Status:  IC  IP FA:  none  UND

**USFWS COMMENTS**  FAXED  MAILED

To: William Botner

Fax #: 610-495-5855

Affiliation: ARRG

**SPECIFIC PROJECT:** EAST NORRISTOWN - PLYMOUTH - WHITPAIN JOINT WWTP

**FISH AND WILDLIFE SERVICE COMMENT(S):**


✓ **NO EFFECT**

Except for occasional transient species, no federally listed, proposed or candidate species under our jurisdiction are known to exist in the project area. Therefore, no biological assessment or further consultation under the Endangered Species Act is required with the Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

This determination is valid for two years from the date of this letter. In addition, this response relates only to federally listed, proposed, and candidate species under our jurisdiction, based on an office review of the proposed project's location and anticipated impacts. No field inspection of the project area has been conducted by this office. Consequently, comments on this form are not to be construed as addressing other Service concerns under the Fish and Wildlife Coordination Act or other authorities.

This response supersedes our comments of \_\_\_\_\_, based on our review of the additional project information that was submitted to us on \_\_\_\_\_.

This review was conducted by the biologist listed below. He/she can be contacted at 814-234-4090.  
 Jennifer Dombroskie (x 242)  Bonnie Dershem (x 234)  Robert Anderson (x 228)  
 Pamela Shellenberger (x 241)

SIGNATURE: 

DATE: 8-30-06

Assistant Supervisor / Supervisor  
Pennsylvania Field Office



# PNDI Internet Database Search Results

---

PNDI Search Number: N142646

Search Results For [krivers@state.pa.us](mailto:krivers@state.pa.us)

Search Performed By: Kimberleigh Rivers On 4/22/04 8:06:07 AM

Agency/Organization: Department of Environmental Protection

Phone Number: (610) 832-6127

Search Parameters: Quad - 407513; North Offset - 19.75; West Offset - 10.50; Acres - 50

Project location center (Latitude): 40.10843

Project location center (Longitude): 75.32497

Project Type: Other\Wastewater treatment plant

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***Print this page using your Internet browser's print function and keep it as a record of your search.***

No conflicts with ecological resources of special concern are known to exist within the specified search area.

---

PNDI is a site specific information system, which describes significant natural resources of Pennsylvania. This system includes data descriptive of plant and animal species of special concern, exemplary natural communities and unique geological features. PNDI is a cooperative project of the Department of Conservation and Natural Resources, The Nature Conservancy and the Western Pennsylvania Conservancy. This response represents the most up-to-date summary of the PNDI data files and is valid for 1 year. An absence of recorded information does not necessarily imply actual conditions on-site. A field site survey may reveal previously unreported populations of rare species, their critical habitats, or other unique natural resources.

Legal authority for Pennsylvania's biological resources resides with three administrative agencies. The handout entitled [Pennsylvania Biological Resource Management Agencies](#), outlines which species groups are managed by these agencies. Feel free to [contact our office](#) if you have questions concerning this response or the PNDI system, and please refer to the PNDI Search Number at the top of this page in future correspondence concerning this project.

---

[New Search using inches on a Quad](#)

[New Search using Latitude and Longitude](#)

[PNDI Search Home](#)

[PNDI Search Welcome](#)



# Pennsylvania Fish & Boat Commission

Division of Environmental Services  
Natural Diversity Section  
450 Robinson Lane  
Bellefonte, PA 16823-9620  
(814) 359-5237 Fax: (814) 359-5175

September 1, 2006

IN REPLY REFER TO  
SIR # 23505

WILLIAM BOHNER  
ARRO CONSULTING  
649 NORTH LEWIS ROAD  
SUITE 100  
LIMERICK, PA 19468-1234



RE: **Species Impact Review (SIR) - Rare, Candidate, Threatened and Endangered Species**  
**ENPWJSA ACT 537 PLAN UPDATE**  
**PNDI Search Number (if available): 20060801048468**  
**PLYMOUTH Township/Borough, MONTGOMERY County, Pennsylvania**

Dear Mr. BOHNER:

The staff of the Natural Diversity Section has examined the map accompanying your recent correspondence which shows the location of the above referenced project. Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and Pennsylvania Fish & Boat Commission files, the following rare or protected species is known from the vicinity of the project site:

<u>Common Name</u>	<u>Scientific Name</u>	<u>PA Status</u>
Red-bellied turtle	<i>Pseudemys rubriventris</i>	threatened

The red-bellied turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes and marshes with permanent water and ample basking sites. Red-bellied turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality and competition with aggressive non-native turtle species that share its range and habitat (e.g., red-eared slider, *Trachemys scripta elegans*).

Red-bellied turtles are known to occur in some areas of the lower Delaware and Susquehanna Rivers and their associated tributaries and wetlands. Therefore, we will need to conduct a more thorough evaluation of the potential adverse impacts that the proposed project could have on the state threatened red-bellied turtle. We will need to review items such as: **color photographs of the project area (including bays and other potential turtle nesting sites) keyed to a map**, detailed site plans, a project narrative describing exactly how the construction/maintenance activity is to be conducted, waterway and/or wetland acreage to be impacted (directly and indirectly), a water-body characterization (i.e., depth, width, flow velocity, substrate/bottom type, presence of aquatic vegetation, and woody debris or other basking areas, etc.). Pending the review of this information, further consultation may be needed and/or a survey targeting the

Our Mission:

[www.fish.state.pa.us](http://www.fish.state.pa.us)

*To provide fishing and boating opportunities through the protection and management of aquatic resources.*

SIR #23505  
BOHNER  
Page 2

species of concern may be warranted.

If you have any questions regarding this response, please call Tina Walther at 814-359-5189 and **refer to the SIR number** at the top of this letter. Thank you for your cooperation and attention to this matter of non-game species conservation and habitat protection.

Sincerely,

  
Christopher A. Urban, Chief  
Natural Diversity Section

CAU/TW/ma

c: DEP, SE Region



September 15, 2006

Ms. Tina Walther  
Pennsylvania Fish and Boat Commission  
Natural Diversity Section  
450 Robinson Lane  
Bellefonte, PA 16823-9620

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

*649 North Lewis Road*

*Suite 100*

*Limerick, PA 19468-1234*

*610.495.0303*

*Fax: 610.495.5855*

*info@thearrogroup.com*

*www.thearrogroup.com*

RE: ENPWJSA Act 537 Plan Update;  
Species Impact Review;  
PNDI Search Number - 20060801048468  
ARRO # 5469.00

Dear Ms. Walther:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority) we wanted to thank the Commission for its prompt response regarding the requested species impact review associated with the Authority's on-going Act 537 Sewage Facilities Planning efforts.

It is understood that there may be potential impacts associated with the red-bellied turtle that will require a more thorough evaluation of those impacts in the proposed project area. Since the concepts presented in the 537 Plan are conceptual at this time, it is anticipated that the potential impacts to the red-bellied turtle will be addressed in detail during the course of the preliminary design. Given PA DEP would like some resolution from a planning perspective and an understanding that any conflict will be resolved, we would like to request that the Commission consider the deferring of the assessment and resolution of the potential impact to the preliminary design phase of the project. During the preliminary design, the scope of the project will be further defined and the limits of construction will be clarified. At that time, the project engineer and/or the Authority will then be more able to submit, for your review, the documentation requested in your letter. This should better enable you to further assess whether or not the proposed facilities construction will impact the red-bellied turtle habitat.

Please respond in writing to this request. I will need to incorporate your response in the Authority's Regional 537 Plan. If you have any questions, please do not hesitate to call me at 610-495-2102. Thank you for your assistance with the Authority's on-going sewage facilities planning.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:jag



established 1866

# Pennsylvania Fish & Boat Commission

Division of Environmental Services  
Natural Diversity Section  
450 Robinson Lane  
Bellefonte, PA 16823-9620  
(814) 359-5237 Fax: (814) 359-5175  
November 20, 2006

IN REPLY REFER TO  
SIR # 23505

WILLIAM BOHNER  
ARRO CONSULTING  
649 NORTH LEWIS ROAD  
SUITE 100  
LIMERICK, PA 19468-1234

RECEIVED  
NOV 22 2006  
ARRO

RE: Species Impact Review (SIR) - Rare, Candidate, Threatened and Endangered Species  
ENPWJSA ACT 537 PLAN UPDATE  
PNDI Search Number (if available): 20060801048468  
PLYMOUTH Township/Borough, MONTGOMERY County, Pennsylvania

Dear Mr. BOHNER:

The staff of the Natural Diversity Section has reviewed recent correspondence. Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and Pennsylvania Fish & Boat Commission files, the following rare or protected species is known from the vicinity of the project site:

<u>Common Name</u>	<u>Scientific Name</u>	<u>PA Status</u>
Red-bellied turtle	<i>Pseudemys rubriventris</i>	threatened

You have requested that the Commission defer the assessment and resolution of the potential impact to the preliminary design phase of the project. Once the preliminary design phase is completed, our office will be contacted with the documentation required to assess whether or not the proposed facilities construction will impact the red-bellied turtle. **The Commission will defer its assessment of the above reference project until the preliminary design is completed.** I recommend that in during the development of the preliminary design, you avoid potential red-bellied turtle habitat by placing a 300ft buffer around any waterways.

Please contact Tina Walther at 814-359-5186 if you have questions regarding this response. In any future correspondence with us regarding this specific project, please refer to the SIR tracking number indicated above. Thank you for your cooperation and attention to this matter of threatened and endangered species conservation.

Sincerely,

  
Christopher A. Urban, Chief  
Natural Diversity Section

CAU/TRW/dc

Our Mission:

[www.fish.state.pa.us](http://www.fish.state.pa.us)

*To provide fishing and boating opportunities through the protection and management of aquatic resources.*

---

**APPENDIX K**

**PENNSYLVANIA HISTORIC AND MUSEUM  
COMMISSION RESPONSE**



Commonwealth of Pennsylvania  
Pennsylvania Historical and Museum Commission  
Bureau for Historic Preservation  
Commonwealth Keystone Building, 2nd Floor  
400 North Street  
Harrisburg, PA 17120-0093  
www.phmc.state.pa.us

RECEIVED  
AUG 25 2006  
ARRO

August 17, 2006

William L. Bohner, Jr., P.E.  
The ARRO Group, Inc.  
649 North Lewis Road, Suite 100  
Limerick, PA 19468-1234

TO: DEPARTMENT OF ENVIRONMENTAL PROTECTION  
34P REFERENCE FILE

Re: File No. ER 04-1661-091-B  
DEP 537 PROGRAM: Act 537 Planning Approval, East  
Norriton-Plymouth-Whitpain Joint Sewer Authority  
Wastewater Treatment Plant, 200 Ross Street, East  
Norriton, Plymouth & Whitpain Twps., Montgomery  
Co.

Dear Mr. Bohner:

The Bureau for Historic Preservation has reviewed the above named project under the authority of the Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988). This review includes comments on the project's potential effect on both historic and archaeological resources.

There is a high probability that prehistoric and historic archaeological resources are located in this project area. In our opinion, the activity described in your proposal should have no effect on such resources. Should the scope of the project be amended to include additional ground disturbing activity this office should be contacted immediately and a Phase I Archaeological Survey may be necessary to locate all potentially significant archaeological resources.

In our opinion no evaluation of historic structures will be necessary for this project area.

If you need further information in this matter please consult Mark Shaffer at (717) 783-9900.

Sincerely,

Douglas C. McLearn, Chief  
Division of Archaeology &  
Protection

Cc: DEP, Southeast Regional Office

DCM/tmw



July 31, 2006

Pennsylvania Historical and Museum  
Commission  
Bureau of Historic Preservation  
400 North Street  
Commonwealth Keystone Bldg., Second Floor  
Harrisburg, PA 17120-0093

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain;  
Joint Sewer Authority; Regional Act  
537 Plan Update  
ARRO # 5469.00

649 North Lewis Road

Suite 100

Limerick, PA 19468-1234

610.495.0303

Fax: 610.495.5855

info@thearrogroup.com

www.thearrogroup.com

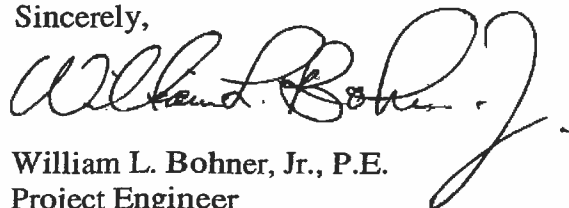
Dear Historical and Museum Commission:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), we are assisting with the preparation of an Act 537 Plan Update to establish the planning requirements necessary for the upgrade of the Authority's wastewater treatment plant.

Enclosed, for your review, is the new Cultural Resource Notification form and the Norristown 7.5 Minute Quadrangle identifying the location of the existing wastewater treatment plant. It is planned that the wastewater treatment plant will be upgraded hydraulically and from a process standpoint to accommodate additional flow from East Norriton Township, Plymouth Township, and Whitpain Township. The projected area to be disturbed for the purposes of upgrading the plant is approximately 20% of the 9.2 acres that cover the existing plant site. No structures are planned to be disturbed as a result of implementing the planned facility upgrade alternative.

Please review this documentation and provide us with any comments or concerns that you may have at your earliest convenience. If you have any questions, please do not hesitate to call me at 610-495-2102.

Sincerely,

  
William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

ENGINEERING

CONSULTING

OPERATIONS



SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece or on the front if space permits.</li> </ul>	<p>A. Signature <input type="checkbox"/> Agent  <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>[Signature]</i> Date of Delivery <b>AUG 09 2004</b></p> <p>C. Is delivery address different from item 1? <input type="checkbox"/> Yes  <input checked="" type="checkbox"/> No          If YES, enter delivery address below:</p>
<p>1. Article Addressed to:</p> <p>PA HISTORICAL AND MUSEUM COMMISSION          400 NORTH STREET, 2<sup>ND</sup> FLOOR          HARRISBURG PA 17120</p>	<p>3. Service Type</p> <p><input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail  <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>
<p>2. Article Number:          (Transfer from service label)</p>	<p>7002 0860 0008 7010 2034</p>

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7002 0860 0008 7010 2034

U.S. Postal Service  
**CERTIFIED MAIL RECEIPT**  
 (Domestic Mail Only; No Insurance Coverage Provided)

**OFFICIAL USE**

Postage	\$ .87
Certified Fee	2.40
Return Receipt Fee (Endorsement Required)	1.85
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$ 5.12</b>

Postmark Here *[Signature]* 8/1/4

Sent To PA HISTORICAL AND MUSEUM COMMISSION  
 Street, Apt or PO Box 400 NORTH STREET, 2<sup>ND</sup> FLOOR  
 City, State, HARRISBURG PA 17120

PS Form 3811

<b>BHP Use Only</b>
ER # _____

**Request to Initiate Consultation in Compliance with the State History Code and  
Section 106 of the National Historic Preservation Act**

Applicant Information (print neatly, this will be used in the return envelope)			
Applicant Name	East Norriton-	Plymouth-Whitpain	Joint Sewer Authority
Street Address	200 Ross Street		
City	Plymouth Meeting	Phone Number	610-279-5759
State/ZIP	PA 19462-2740		

Contact Person to Receive Response (if applicable) (print neatly, this will be used in the return envelope)			
Name/Company	ARRO Consulting, Inc.		
Street Address	649 N. Lewis Road	Suite 100	
City	Limerick	Phone Number	_____
State/ZIP	PA 19468-1234		

Project Information			
Project Title	ENPWJSA Act 537 Plan		
Project Location and/address	ENPWJSA Wastewater Treatment Plant/200 Ross Street		
Municipality	Plymouth Meeting	County Name	Montgomery
If this project was ever reviewed before, include previous ER #2004-1661-091-A			

Project Type (Check all that apply)			
<b>Government Funded/Sponsored or On Government Land?</b>			
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Specify Agency and/or Program Name Below			
State Agency:	_____	Local:	_____
Federal Agency:	_____	Other:	_____
<b>Permits or Approvals Required</b>			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Specify Agency and/or Program Name Below			
Anticipated Permits:	Act 537 Planning Approval		
State Agency:	PA DEP	Program:	Water Quality (Planning)
Federal Agency:	_____	Program:	_____

Agency Office to Receive Response (Check all that apply)			
Army Corps of Engineers:	<input type="checkbox"/> Philadelphia	<input type="checkbox"/> Baltimore	<input type="checkbox"/> Pittsburgh
DEP Office:	<input type="checkbox"/> Central Office	<input type="checkbox"/> Regional Office:	_____
<input type="checkbox"/> District Mining Office:	_____	<input type="checkbox"/> Oil & Gas Office:	_____
<input type="checkbox"/> Other: (provide address)	_____		

BHP Use-Only
ER #

**Required Project Information for BHP/SHPO Review**

Total Acres in the property under review: 9.2

Total acres of earth disturbance for this proposed activity: 1.8

Are there any buildings or structures within the project area?  Yes  No  
Approximate age of buildings:

Project located in or adjacent to a historic district?  Yes  No  Unsure  
N/A

Name of Historic District \_\_\_\_\_

**Submissions Must Also Include:**

**MAP LOCATION:** A 7.5 USGS Map showing the project boundary and the Area of Potential Effect (APE). The APE should include indirect effects, such as visual and audible impacts. Federal Projects must provide an explanation of how the APE was determined.

**PHOTOS:** Photos of all buildings or structures in the APE over 50 years old. If the property is over 50 years old submit a Historic Resource Form with this initial request. The forms are available at <http://www.phmc.state.pa.us/bhp/inventories>.

**PROJECT DESCRIPTION NARRATIVE:** Provide a detailed project description describing the project, any ground disturbance, any previous land use, and age of all effected buildings in the project area. Attach a site map showing the location of all buildings in the project area.

I have reviewed all DEP Permit Exemptions listed on the DEP website [www.dep.state.pa.us](http://www.dep.state.pa.us).

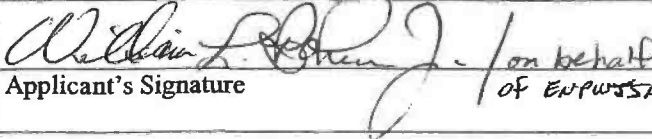
**In addition, federal agencies must provide:**

Measures that will be taken to identify consulting parties including Native Americans.

Measures that will be taken to notify and involve the public.

**The information on this form is needed to determine whether potential historic or archaeological resources are present. Additional historic information or investigation may be requested to determine the significance of the resources or the effects of the project on those resources. Form and attachments must be submitted by mail. Submissions via e-mail will not be accepted.**

**Signature Block**

 / on behalf of EWPUSA  
Applicant's Signature

7/31/06  
Date

**Please Print and Mail Completed Form and Required Information to:**

**PA Historical & Museum Commission  
Bureau for Historic Preservation  
400 North Street  
Commonwealth Keystone Building 2<sup>nd</sup> Floor  
Harrisburg, PA 17120-0093**

## EXECUTIVE SUMMARY

This Act 537 Plan/Special Study was prepared for the East Norriton-Plymouth-Whitpain Joint Sewer Authority (ENPWJSA) at the request of the Authority and the Pennsylvania Department of Environmental Protection (PA DEP) in accordance with Act 537 entitled the Pennsylvania Sewage Facilities Act, Title 25, Chapter 71 of the Pennsylvania Code and the Pennsylvania Department of Environmental Protection Act 537 Plan Content and Environmental Assessment Checklist. This Plan/Special Study addresses the planning requirement necessary to meet the wastewater conveyance and treatment needs of the ENPWJSA participating municipalities. These municipalities include Plymouth Township, Whitpain Township, and East Norriton Township.

The Plan is comprised of the following components addressed in the Plan of Study:

- I. Previous Wastewater Planning
- II. Physical and Demographic Analysis
- III. Existing Sewage Facilities in the Planning Area
- IV. Future Growth and Development
- V. Alternatives to provide for new or improved wastewater disposal facilities
- VI. Evaluation of Alternatives
- VII. Institutional Evaluation
- VIII. Selected Wastewater Treatment and Institutional Alternative

For this Plan, the planning area includes all of East Norriton Township, a portion of Plymouth Township, and a portion of Whitpain Township.

The treatment plant, located in Plymouth Township, Montgomery County, Pennsylvania, serves the three (3) townships referenced above. Each township submitted its projected flow requirements for average daily flow and three-month maximum daily average flow to ARRO. ARRO compiled this flow information and estimated the capital improvements needed to accommodate this flow, and the costs associated with them.

Capital improvements will be needed to accommodate the annual average flow of 8.67 MGD and 3-month maximum flows of 11.29 MGD. The selected approach to accommodate these flows is to:

- a. Implement the recommendations of the Corrective Action Plan as approved by DEP. (the Plan is found in Appendix A).
- b. Increase the capacity of the activated sludge portion of the wastewater treatment plant. The improvements necessary to allow for this increase are:
  - Add one 60-foot diameter primary clarifier.
  - Add one 680,000-gallon aeration tank in parallel to the existing units.
  - Add one 70-foot diameter secondary clarifier.
  - Add one 92,000-gallon chlorine contact tank.
  - Upgrades/modifications to the return activated/waste activated sludge pumping systems.
  - Additional yard piping and structures for wastewater distribution.

The capital cost to implement the expansion of the activated sludge portion of the plant is \$5,625,000.

A preliminary schedule for implementing the Corrective Action Plan items as well as the proposed activated sludge process expansion is found on the graphic in Appendix B.



Commonwealth of Pennsylvania  
 Pennsylvania Historical and Museum Commission  
 Bureau for Historic Preservation  
 Commonwealth Keystone Building, 2nd Floor  
 400 North Street  
 Harrisburg, PA 17120-0093

**RECEIVED**  
 MAY 12 2004  
**ARRO**

May 5, 2004

William L. Bohner, Jr., PE  
 ARRO Consulting, Inc.  
 649 North Lewis Road Suite 100  
 Limerick, PA 19468

TO EXPEDITE REVIEW USE  
 BHP REFERENCE NUMBER

Re: File No. ER 2004-1661-091-A  
 DEP ACT 537 Program: ACT 537 Plan,  
 Wastewater Treatment Plant ACT 537  
 Planning, Plymouth Twp., Montgomery  
 Co.

Dear Mr. Bohner:

The Bureau for Historic Preservation has reviewed the above named project under the authority of the Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 *et seq.* (1988). This review includes comments on the project's potential effect on both historic and archaeological resources.

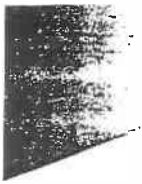
Based on our survey files, which include both archaeological sites and standing structures, there are no National Register eligible or listed historic or archaeological properties in the area of this proposed project. Therefore, your responsibility for consultation on this project is complete.

Should artifacts or archaeological resources be encountered during construction, we request that you notify our office. This notification will not delay your project in any way. We simply wish to record this information before it is lost. The Bureau for Historic Preservation can be contacted at (717) 783-8946. Thank you in advance for this consideration.

Sincerely,

Kurt W. Carr, Chief  
 Division of Archaeology &  
 Protection

CC: DEP, Southeast Region  
 KWC/lmm



April 19, 2004



Pennsylvania Historical and Museum  
Commission  
Bureau of Historic Preservation  
400 North Street, Second Floor  
Harrisburg, PA 17120-0093

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain;  
Joint Sewer Authority; Regional Act  
537 Plan Update  
ARRO # 5469.00

649 North Lewis Road

Suite 100

Limerick, PA 19468-1234

610.495.0303

Fax: 610.495.5855

[info@thearrogroup.com](mailto:info@thearrogroup.com)

[www.thearrogroup.com](http://www.thearrogroup.com)

Dear Historical and Museum Commission:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), we are assisting with the preparation of an Act 537 Plan Update to establish the planning requirements necessary for the upgrade of the Authority's wastewater treatment plant.

Enclosed, for your review, is the Cultural Resource Notification form and the Norritown 7.5 Minute Quadrangle identifying the location of the existing wastewater treatment plant. It is planned that the wastewater treatment plant will be upgraded hydraulically and from a process standpoint to accommodate additional flow from East Norriton Township, Plymouth Township, and Whitpain Township. The projected area to be disturbed for the purposes of upgrading the plant is approximately 20% of the 9.2 acres that cover the existing plant site. No structures are planned to be disturbed as a result of implementing the planned facility upgrade alternative.

Please review this documentation and provide us with any comments or concerns that you may have at your earliest convenience. If you have any questions, please do not hesitate to call me at 610-495-2102

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

ENGINEERING  
CONSULTING  
SERVICES

## CULTURAL RESOURCE NOTICE

DEP USE ONLY
Date Received



Read the instructions before completing this form.

## SECTION A. APPLICANT IDENTIFIER

Applicant Name East Norriton-Plymouth-Whitpain Joint Sewer Authority  
 Street Address 200 Ross Street  
 City Plymouth Meeting State PA Zip 19462-2740  
 Telephone Number 610-279-5759

Project Title Wastewater Treatment Plant Act 537 Planning

## SECTION B. LOCATION OF PROJECT

Municipality Plymouth Township County Name Montgomery DEP County Code 46

## SECTION C. PERMITS OR APPROVALS

Name of Specific DEP Permit or Approval Requested: Act 537 Plan

Anticipated federal permits:

- Surface Mining  404 Water Quality Permit  
 Army Corps of Engineers  Federal Energy Regulatory Commission  
 401 Water Quality Certification  Other: None

## SECTION D. GOVERNMENT FUNDING SOURCES

- State: (Name) \_\_\_\_\_  Local: (Name) \_\_\_\_\_  
 Federal: (Name) \_\_\_\_\_  Other: (Name) \_\_\_\_\_

## SECTION E. RESPONSIBLE DEP REGIONAL, CENTRAL, DISTRICT MINING or OIL &amp; GAS MGMT OFFICE

- DEP Regional Office Responsible for Review of Permit Application  Central Office (Harrisburg)  
 Southeast Regional Office (Conshohocken)  Northeast Regional Office (Wilkes-Barre)  
 Southcentral Regional Office (Harrisburg)  Northcentral Regional Office (Williamsport)  
 Southwest Regional Office (Pittsburgh)  Northwest Regional Office (Meadville)  
 District Mining Office:  Oil & Gas Office:

## SECTION F. RESPONSIBLE COUNTY CONSERVATION DISTRICT, if applicable.

County Conservation District \_\_\_\_\_ Telephone Number, if known \_\_\_\_\_  
 Montgomery County Conservation District 610-489-4509

## SECTION G. CONSULTANT

Consultant, if applicable ARRO Consulting, Inc. (c/o William L. Bohner, Jr., P.E.)  
 Street Address 649 North Lewis Road; Suite 100  
 City Limerick State PA Zip 19468  
 Telephone Number 610-495-2102



**SECTION H. PROJECT BOUNDARIES AND DESCRIPTION**

**REQUIRED**

Indicate the total acres in the property under review. Of this acreage, indicate the total acres of earth disturbance for the proposed activity.

Attach a 7.5' U.S.G.S. Map indicating the defined boundary of the proposed activity.

Attach photographs of any building over 50 years old. Indicate what is to be done to all buildings in the project area.

Attach a narrative description of the proposed activity.

Attach the return receipt of delivery of this notice to the Pennsylvania Historical and Museum Commission.

**REQUESTED**

Attach photographs of any building over 40 years old.

Attach site map, if available.

**SECTION I. SIGNATURE BLOCK**

*William L. Baker, Jr.*  
Applicant's Signature

on behalf of  
the Authority

4/19/04

Date of Submission of Notice to PHMC



**APPENDIX L**

**INTERMUNICIPAL AGREEMENT**

PLYMOUTH TOWNSHIP MUNICIPAL AUTHORITY

RECEIVED

New File  
3560.04

MONTGOMERY COUNTY

PENNSYLVANIA

AUG 28 1991

August 23, 1991

WHITPAIN TOWNSHIP

ENPWJSA  
Intermunicipal  
Agreements

Ms. Joan Mower, Mgr.  
Plymouth Township  
700 Belvoir Road  
Norristown, PA 19401

Mr. Helmuth J. Baerwald, Mgr.  
East Norriton Township  
2501 Stanbridge Street  
Norristown, PA 19401

Ms. Phyllis C. Lieberman, Mgr.  
Whitpain Township  
960 Wentz Road, P.O. Box 800  
Blue Bell, PA 19422

Mr. Raymond S. Geary, Chairman  
EN-PJSA  
12 Birchwood Circle  
Norristown, PA 19401

Mr. Herman R. Vinokur, Chairman  
PTMA  
620 Galahad Road  
Plymouth Meeting, PA 19462

Mr. William S. March, Chairman  
ENTMA  
2506 Swede Road  
Norristown, PA 19401

Re: Intermunicipal Sewage Treatment Service Agreement

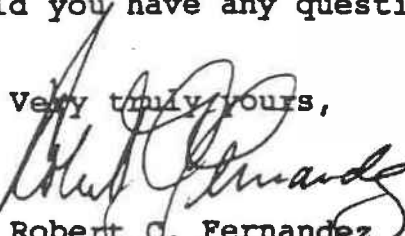
Dear Ladies and Gentlemen:

It is with great pleasure that I am enclosing a fully executed copy of the Intermunicipal Sewage Treatment Service Agreement for your records. It is our intention that this Agreement will be implemented retroactive to September 1, 1990 and will impact on the 1992 tax year of the individual township.

I will be arranging a meeting shortly of the Township Managers to review the procedure for establishing each Township's percentage of reserved capacity, unused capacity, and allocation of the budget of the Joint Sewer Authority.

In the interim, should you have any questions, please do not hesitate to contact me.

Very truly yours,

  
Robert C. Fernandez  
Secretary-Treasurer

RCP/sjm  
Enclosure

cc: Mr. Barry J. Thompson  
J. Edmund Mullin, Esq.  
James L. Hollinger, Esq.  
Herbert F. Rubenstein, Esq.  
J. Peirce Anderson, Esq.

Copy: 55's  
RJC  
JWC  
PCK  
orig: file

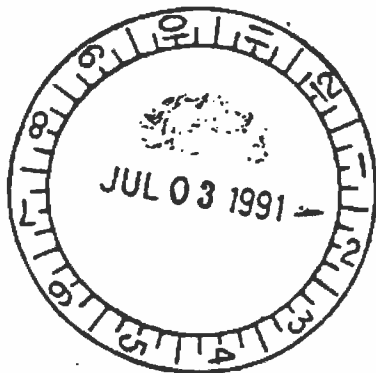
INTERMUNICIPAL  
SEWAGE TREATMENT SERVICE AGREEMENT

BETWEEN  
EAST NORRITON-PLYMOUTH JOINT SEWER AUTHORITY  
AND  
EAST NORRITON TOWNSHIP  
EAST NORRITON TOWNSHIP MUNICIPAL AUTHORITY  
PLYMOUTH TOWNSHIP  
PLYMOUTH TOWNSHIP MUNICIPAL AUTHORITY  
WHITPAIN TOWNSHIP

RECEIVED  
AUG 28 1991  
WHITPAIN TOWNSHIP

REC  
20 1991

MAY 1991



RECEIVED  
JUN 14 1991  
WHITPAIN TOWNSHIP

INTERMUNICIPAL  
SEWAGE TREATMENT SERVICE AGREEMENT

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INTERMUNICIPAL  
SEWAGE TREATMENT SERVICE AGREEMENT

This Agreement dated this \_\_\_\_\_ day of \_\_\_\_\_, 1991, by and among the East Norriton-Plymouth Joint Sewer Authority (the "Joint Sewer Authority") and East Norriton Township, Plymouth Township, and Whitpain Township (hereinafter sometimes collectively called "Municipalities"), East Norriton Township Municipal Authority and Plymouth Township Municipal Authority (hereinafter sometimes collectively called "Authorities").

RECITALS

WHEREAS, the Joint Sewer Authority owns and operates a wastewater treatment plant (the "Treatment Plant"); and

WHEREAS, the Joint Sewer Authority has entered into an agreement dated October 5, 1959, as amended (said agreement and amendments thereto being hereinafter called the "Joint Treatment Agreement") with East Norriton Township, Plymouth Township, and the Authorities, whereunder the Joint Sewer Authority is treating and disposing of wastewater collected in East Norriton and Plymouth Townships, subject to certain conditions including the payment of certain quarterly service charges, all as set forth in said Joint Treatment Agreement; and

WHEREAS, the Joint Sewer Authority has also entered into an agreement dated October 5, 1959 (the "Whitpain Treatment Agreement") with Whitpain Township and the Whitpain Township Sewer Authority, which Authority no longer exists, whereunder the Joint Sewer Authority is treating and disposing of wastewater collected in certain portions of Whitpain Township, subject to certain conditions including the payment of certain quarterly service charges, all as set forth, or incorporated by reference, in the Whitpain Treatment Agreement; and



WHEREAS, as a result of several issues having arisen among the parties hereto, a Memorandum of Understanding was entered into on April 3, 1989 addressing those issues until such time as a formal detailed agreement could be consummated; and

WHEREAS, it now appears desirable for the Joint Sewer Authority, Municipalities, and Authorities to enter into such a new agreement which would, among other things, modify the existing Joint Treatment Agreement and the Whitpain Treatment Agreement.

NOW, THEREFORE, the parties agree as follows:

## ARTICLE I

### DEFINITIONS

Section 1. Defined Terms. The terms defined in this Article I, as well as those defined in the preambles, wherever used or referred to in this agreement, shall have the following respective meanings unless a different meaning clearly appears from the context:

"Biochemical Oxygen Demand" (BOD) means the quantity of oxygen expressed in milligrams per liter (mg/l), utilized in the biochemical oxidation of organic matter under standard laboratory procedure for five days at 20 degrees Centigrade. The standard laboratory procedure for this analysis and for any laboratory analyses hereinafter listed shall be that found in the latest edition of "Standard Methods for the Examination of Water and Sewage" published by the American Public Health Association.

"Consulting Engineers" means an engineering firm or professional engineer having a favorable repute for skill and experience in the construction and operation of sewer systems and sewage treatment plants, who is registered in Pennsylvania.

"Domestic Waste" means normal household wastes from kitchens, water closets, lavatories and laundries and shall not exceed the following concentration limits:

BOD	250 mg/l
Suspended Solids	250 mg/l

"EDU" or "Equivalent Domestic Unit" shall be a parameter used to convert institutional, commercial and industrial connections to an equivalent number of residential household (domestic) connections and shall be the same as the schedule set forth in the "Resolution of the East Norriton-Plymouth Joint Sewer Authority Establishing a Capital Improvement Fee", ratified on February 8, 1989 and attached hereto as Exhibit A. For any connection not addressed in said schedule, an EDU shall be equal to a wastewater contribution of 275 gallons per day, as such contribution may be amended from time to time by the Joint Authority.

"Flow Year" means the latest 12-month period for which sewage flow data, as measured by meters, is available prior to the date when the operating budget, prepared by the Joint Sewer Authority, is furnished to each Municipality.

"Industrial Wastes" means any and all wastes discharged from an industrial establishment, other than sanitary sewage.

"Maximum 3-Month Average Flow" means the average of the highest three consecutive calendar monthly flows, as calculated during a 12-month period and expressed as a daily flow in million gallons per day (MGD).

"Operation and Maintenance Costs" mean the total costs of operating and maintaining those facilities owned by the Joint Sewer Authority, including but not limited to, labor, materials and supplies, equipment and fixtures, electric power, water, fuel, chemicals, as well as administration, auditing, legal and engineering directly attributable to the Treatment Plant, all contract services, including the costs of operating, maintaining and repairing all metering devices located at Points of Connection, less any Federal or State grants, which are specifically designated by the granting agency to be reimbursement for Operation and Maintenance Costs.

"Point" or "Points of Connection" means a point or points at which any party hereto connects collector or interceptor sewers or force mains over which it has exclusive use and control to a collector or interceptor sewer or pump station which is owned by another municipality (or its respective Authority), two or more municipalities (or their respective Authorities) or the Joint Sewer Authority. Points of Connection are identified on Exhibit B, attached hereto.

"Reserved Capacity" means capacity in the Treatment Plant in the quantities set forth in Article II, Section 2, hereof, allocated to each respective party to this Agreement and reserved for each's exclusive use.

"Sanitary Sewage" means all water-carried domestic waste from residences, offices, hotels, stores, restaurants, commercial establishments, industrial establishments, and similar users.

"Sewage Collection System" means all of the sewage collector facilities constructed or to be constructed by any of the parties to this Agreement for the respective municipality and includes sewers, interceptors, force mains, metering devices, pumping stations and other appurtenances.

"Suspended Solids" means the total suspended matter that either floats on the surface of or is suspended in water, sewage or other liquids, and which is removable by laboratory filtering.

"Treatment Plant" means the existing wastewater treatment plant owned and operated by the Joint Sewer Authority together with any additions, modifications and/or improvements thereto.

"Wastewater" means the liquid and water-carried industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, and institutions, together with any groundwater, surface water, and storm water that may be present, whether treated or untreated which is contributed into or permitted to enter the treatment plant.

## ARTICLE II

### TERM AND RESERVED CAPACITY

Section 1. Term. This Agreement shall become effective upon its execution and delivery by all of the parties hereto and shall remain in full force and effect until terminated by mutual agreement of all of the parties hereto; provided, however, it shall not be terminated as long as any bonds issued by the Joint Sewer Authority are outstanding, unless provision for the redemption of such bonds has been made or the termination is determined by the Joint Sewer Authority to have no adverse effect on such bonds.

Upon this Agreement becoming effective in the manner provided above, this Agreement will modify the Joint Treatment Agreement and the Whitpain Treatment Agreement with respect to the subject matter contained herein. Any other

agreements or understandings, written or oral, by and between any of the parties hereto, such as the Plymouth-Whitpain Transportation Agreement or the Interjurisdictional Pretreatment Agreement, to the extent that they are not modified or superseded hereby, shall remain in full force and effect, unless amended or terminated pursuant to the terms contained in such agreements or understandings.

Section 2. Reserved Capacity. Subject to the limitations and payment of charges set forth in this Agreement, East Norriton Township/East Norriton Township Municipal Authority, Plymouth Township/Plymouth Township Municipal Authority and Whitpain Township are granted the right during the term of this Agreement to discharge wastewater to the Treatment Plant to the extent of their respective Reserved Capacities, as determined initially and from time to time pursuant to the terms of this Agreement.

For purposes of this Agreement, the initial Reserved Capacities shall be determined in the following manner:

- a. For a period of one year beginning September 1, 1990, the Joint Sewer Authority will meter the wastewater flows from each Municipality, as provided in Article III, Section 3, as well as the total wastewater flows at the Treatment Plant.
- b. The maximum 3-month average flow treated by the Joint Sewer Authority for all three (3) Municipalities will be calculated for the one year metering period based upon readings of the master meter at the Treatment Plant. That number or any adjustment thereto as provided in Section 2(C) infra, will be subtracted from the total, rated, hydraulic capacity of the Treatment Plant, and the difference will be considered the unused plant capacity.

- c. For the corresponding three months utilized in Section 2(b) supra, the maximum 3-month average flow will be calculated for each Municipality for the one year metering period. At that time the Consulting Engineer may review the results of the metering within the context of the amount of rainfall that was experienced during the one year metering period. To the extent that said year was unusually wet or dry with respect to rainfall and to the extent that this adversely impacted the results attributable to one or more Municipalities, the Consulting Engineers may propose an adjustment to said results based upon generally accepted engineering practices and standards. That number, or any adjustment thereto, will be considered the present used capacity of each respective Municipality.
- d. It is agreed by all of the parties to this Agreement that East Morriton Township shall have 50,000 gallons per day added to its present used capacity to compensate for exfiltration currently occurring in its Sewage Collection System.
- e. The sum of the present used capacity of a Municipality plus one-third of the unused plant capacity will be considered the Reserved Capacity of that Municipality.

The aforesaid Reserved Capacity determination notwithstanding, future connections from Whitpain Township shall be limited to properties situated within the geographic area delineated on the map attached hereto as Exhibit C. Those areas of Whitpain Township delineated in Exhibit C which have not been included under prior Whitpain-Plymouth Transportation agreements shall be further limited to land areas which can connect by gravity to the Township Line and Mermaid pump stations and the Walton Road meter and shall not include any areas the connection of which would require the use of pumps or a pumping station.

It being recognized by the parties hereto that flows emanating from Plymouth and Whitpain Townships currently are being treated at other facilities in addition to the Treatment Plant, each Municipality hereby reserves the right to direct all or a portion of its future wastewater flow to a treatment facility other than the Treatment Plant if this should prove to be the most cost-effective approach, provided that no wastewater currently being conveyed to the Treatment Plant is redirected from the Treatment Plant and further provided that no future wastewater flow, which is included in or considered a part of an expansion undertaken by the Joint Sewer Authority pursuant to Article III, Section 7, is redirected from the Treatment Plant.

Section 3. Rated Capacity. In the event that the rated capacity of the Treatment Plant is increased (or decreased) in the future, then the Reserved Capacity of each Municipality shall be increased (or decreased) on an equal (one-third) basis among the Municipalities. If any such re-rating will require capital expenditures in excess of monies deemed available for that purpose by the sole discretion of the Joint Sewer Authority in its Bond Redemption and Improvement Fund, then each Municipality or Authority shall be required to provide its one-third share of the required capital expenditure. If a dispute arises over whether a proposed increase in capacity is considered a re-rating, as discussed herein, or an expansion, as discussed in Article III, Section 7, then the Joint Sewer Authority will make the final determination in this matter.

Section 4. Transfer of Reserved Capacity. Should any Municipality discharge wastewater, as measured according to Article III, Section 3, during any flow year in a volume less than its then Reserved Capacity, such unused Reserved Capacity shall be deemed to be available for rental by the other Municipalities. Any Municipality discharging wastewater for three (3) or more months in any flow year in excess of its Reserved Capacity shall be deemed to rent from the Municipality with the largest amount of unused Reserved Capacity for the entire calendar year, a portion of such lessor Municipality's Reserved Capacity.

The annual rental payable by the lessee Municipality in connection with the current Treatment Plant shall be determined as follows:

- a. From the total volume of wastewater discharged by the lessee Municipality for the flow year in which the volume of discharge exceeded the lessee Municipality's Reserved Capacity, as measured according to Article III, Section 3, the lessee Municipality's Reserved Capacity will be subtracted. The difference shall equal the total volume by which such lessee Municipality exceeded its Reserved Capacity.
- b. The total debt service owed by the Joint Sewer Authority on existing facilities for the current budget year will be divided by the total volume of wastewater in 1000 gallons treated at the Treatment Plant for the flow year. The quotient shall equal the debt service per 1000 gallons of wastewater discharged into the Treatment Plant (such cost being rounded to the nearest cent).
- c. The total of the excess wastewater discharged in 1000 gallons as determined in Section 4(a) supra, will be multiplied by the debt service cost per 1000 gallons discharged, as determined in Section 4(b) supra. The product will be multiplied by a penalty factor of 1.50 and shall equal the annual rental payable by the lessee Municipality to the lessor Municipality.

In the event the unused Reserved Capacity being rented is from a future expansion, then the annual debt service attendant to the lessor Municipality's share of such expansion shall be used in substitution for the total debt service, referred to above, and the amount of additional capacity purchased by the lessor Municipality in connection with such expansion shall be used in substitution for the total volume of wastewater treated at the Treatment Plant, referred to above.



The Capacity thus rented shall be deemed to be rented for 12 months by such Municipality until either: (1) the lessee Municipality goes one complete flow year without exceeding its Reserved Capacity; or (2) the lessor Municipality determines, in its discretion, that it requires the use of such rented Capacity for its own use, at which time the lessee Municipality shall surrender such Capacity rented by it and shall, at its expense, replace the Capacity rented by it so that the lessor Municipality will receive back its total Reserved Capacity. In no event shall any rental of Capacity be construed to increase the Reserved Capacity of the lessee Municipality. The sale of Reserved Capacity associated with the existing Treatment Plant is not permitted unless approved by the Joint Sewer Authority. However, the sale of Reserved Capacity associated with a future expansion is permitted, subject to the terms and conditions agreed to by the Municipalities involved, provided that said Municipalities are parties to this Sewage Treatment Service Agreement.

The rental fee owed by the lessee Municipality, together with the distribution thereof, shall be billed annually, as provided in Article V, Section 5, and shall be paid to the lessor Municipality within sixty (60) days of the date of delivery of the billing. If any rental due and payable under this Section shall not be made, as herein provided, a penalty shall accrue thereon as provided in Article V, Section 6.

### ARTICLE III

#### OPERATIONS AND ENFORCEMENT

Section 1. Operations. The Municipalities and Authorities hereby agree that the Joint Sewer Authority shall have exclusive control over the manner and means of operating and maintaining those facilities which the Joint Sewer Authority owns, including the Saw Mill Run pump station and force main and the Treatment Plant and any enlargements, additions, improvements and modifications thereto.

( ) The Municipalities and Authorities designate the Joint Sewer Authority to plan, finance, and supervise the acquisition and construction of any project which enlarges, adds to, improves, or modifies those facilities owned by the Joint Sewer Authority and further designates the Joint Sewer Authority to apply for and accept any aid, grants, subsidized loans or other beneficial programs from any federal, state or governmental agency for use in connection therewith.

Section 2. Metering of Wastewater. The Joint Sewer Authority is hereby authorized in its sole and absolute discretion to establish and install in each of the three municipalities a uniform metering system as determined by the Joint Sewer Authority, in order to isolate and measure the sewage flows from each of the Municipalities to the facilities of the Joint Sewer Authority.

To the extent that the Joint Sewer Authority deems it appropriate to replace existing meter(s) at the points of connection it is hereby authorized to do so. The cost of such specific replacement meters or any new meters determined necessary by the Joint Sewer Authority or replacements to meters heretofore installed or hereafter to be installed, as the case may be, shall be at the expense of the Joint Sewer Authority. It is hereby understood by the parties hereto that, at the execution of this Agreement, the meters at Walton Road, Sheffield Drive, and Saw Mill Run pump station, which were installed and paid for by Whitpain Township, will become the property of and the responsibility of the Joint Sewer Authority.

The Joint Sewer Authority shall have the sole responsibility for maintaining, repairing and calibrating those meters required under this Agreement, including a master meter at the Treatment Plant. The costs attendant thereto shall be included in the Operation and Maintenance Costs of the Joint Sewer Authority which costs shall be shared by the Municipalities as provided in Article V.

All metering devices shall be subject to the following conditions:

- a. The device shall be inspected and tested for accuracy at least once every six months, or such shorter time period as deemed appropriate by the Joint Sewer Authority by a person or entity competent in the inspection and testing of such devices. All repairs of meters of any type shall be accomplished within 30 calendar days of receipt of the inspection report attesting to the meter's malfunction.
- b. In the case of missing flow records due to faulty meter registration or otherwise, an estimate of flows will be made, for the purposes of determining volume of sewage discharged during the time which a faulty meter was malfunctioning. This estimate will be based on an evaluation of past flow records as applied to present conditions and as reviewed and approved by the Joint Authority's Consulting Engineers. The decision of the Joint Sewer Authority shall be conclusive.
- c. Meter records, meter installations, and certified reports of meter inspections, as referenced in Section 2(a) supra, shall be made available to any party hereto at any time upon reasonable notice.
- d. The type of metering devices to be installed will be the sole decision of the Joint Sewer Authority.
- e. Any party hereto shall have the right, upon written notice, to a calibration check of any metering device of the Joint Sewer Authority at any time outside the normal scheduled calibration time for the purpose of checking its accuracy. If the results of such non-scheduled calibrations show that the meter(s) was malfunctioning, then all costs of the non-scheduled calibration will be included in the Treatment Plant's Operations and Maintenance Costs. If no malfunction is found, then the requesting party shall pay all costs for the calibration.

- f. Subject to the requirement for estimates described above, the readings set forth at the metering devices of the Joint Sewer Authority shall constitute conclusive evidence of the amount of wastewater discharged at the points of connection.

Section 3. Flow Measurements. The monthly average of the wastewater flow through the recording meters will be made by the Joint Sewer Authority on or before the first day of the second month of each calendar quarter showing the total and daily wastewater flows discharged during the previous calendar quarter.

For purposes of determining wastewater discharged from each of the Municipalities, the following procedure will apply with respect to the current points of connection:

- a. For East Norriton Township usage will be based upon the meter reading of the East Norriton meter at the Saw Mill Run pump station.
- b. For Whitpain Township usage will be based upon the sum of the meter readings at: (1) Sheffield Drive metering station; (2) Walton Road metering station; and (3) Arch Street force main meter situated at the Saw Mill Run pump station.
- c. For Plymouth Township usage will be based upon the sum of two (2) meter readings which will be derived by a subtraction process as follows: (1) the meter reading of the Plymouth-Whitpain meter at the Saw Mill Run pump station will be reduced by the sum of the meter readings at the Sheffield Drive and Walton Road metering stations and (2) meter reading of the master meter at the Treatment Plant will be reduced by the sum of all the meter readings at the Saw Mill Run pump stations.

It will not be the responsibility of the Joint Sewer Authority to adjust metered flows for each Municipality, as determined above, to account for any users in one Municipality who are connected to the Sewage Collection System of another Municipality wherein such users are, in effect, being counted in the flow of the latter Municipality. The Joint Sewer Authority may, if requested by both parties, act as a mediator in resolving this matter.

The results of any adjustment to the metered flows shall be communicated to the Joint Sewer Authority by the parties involved so that the Joint Sewer Authority may have a record of same. However, in the event that a discharge violation occurs, as described in Article VI, Sections 4, 5, and 6, the Joint Sewer Authority will take the appropriate action, as permitted in the aforesaid Sections, against the Municipality whose metered flow is in violation unless it can be shown that the offending Municipality is not the one being metered but the one with users connected to the Sewage Collection System of the Municipality being metered.

If any new meter(s) are installed at future point(s) of connection, the Joint Sewer Authority will decide at its sole discretion the impact of such meter(s) on the above procedure and change said procedure accordingly. The Joint Sewer Authority will notify the Municipalities about any changes in the above procedure, as required.

Section 4. Facilities Insurance.

- a. The Joint Sewer Authority will cause to be insured the Treatment Plant and any other facilities owned by the Joint Sewer Authority, including the Saw Mill Run pump station and force main and the meters at the points of connection, with a responsible company or companies authorized and qualified to do business under the laws of the Commonwealth of Pennsylvania against loss or damage by fire, flood, explosion and such other risk and casualty and at replacement cost or, if not

possible, in such amounts as usually are carried upon, or with respect to, like property in Pennsylvania. All insurance shall be for the benefit of the Joint Sewer Authority, and any benefits paid as the results of any insurance claim shall be used to facilitate repair, replacement or reconstruction of the damaged or destroyed portion of the Treatment Plant. Immediately after any loss or damage to the Treatment Plant, or any part thereof, the Joint Sewer Authority will commence and duly prosecute the repair, replacement or reconstruction of the damaged or destroyed portion thereof according to plans and specifications prepared by its Consulting Engineers.

- b. In the event that it shall become necessary to make any repair, replacement or reconstruction of the Treatment Plant, or any portion thereof, and there are insufficient funds available to the Joint Sewer Authority from insurance proceeds or the Bond Redemption and Improvement Fund to pay the costs and expenses thereof, other than insufficiency caused by a breach of Subsection a. above, each party hereto shall pay the same share of the costs of such repair, replacement or reconstruction as exceed the insurance proceeds as its Reserved Capacity bears to the total design capacity of Treatment Plant. Payment of such share shall be made in accordance with Article V hereof.
  
- c. The Municipalities and/or Authorities will insure their respective sewage collection systems with a responsible company or companies authorized and qualified to do business under the laws of the Commonwealth of Pennsylvania against loss or damage by fire, flood, explosion and such other risk and casualty and at replacement cost or, if not possible, in such amounts as are usually carried on like property in Pennsylvania. Immediately after any loss or damage to any facilities in either municipality the municipality in which the loss of damage

occurred will commence and duly prosecute the repair, replacement or reconstruction of the damages or destroyed portion of their facilities.

Any Municipality and/or Authority may request the Joint Sewer Authority to secure insurance for its respective sewage collection system in combination with the Joint Sewer Authority's insurance coverage of its own facilities, as required in Section 4(a) supra. The cost of any insurance coverage obtained by the Joint Sewer Authority on behalf of any Municipality and/or Authority will be borne by the respective Municipality and/or Authority.

Section 5. Compliance With Laws. The parties hereto agree to comply with all applicable present and future Pennsylvania or United States laws, rules, regulations, permits, orders and requirements lawfully made by any governmental body having jurisdiction and all applicable grant agreements, unless the same are being contested in good faith by appropriate proceedings.

Section 6. Upgrading of Treatment Plant. If the Pennsylvania Department of Environmental Resources, or any other governmental body having jurisdiction, orders the Joint Sewer Authority to upgrade its treatment, or if the Joint Sewer Authority determines that modifications to the Treatment Plant are necessary in order to maintain current treatment standards, or proper operational procedures, the Joint Sewer Authority agrees to apply for and accept any grants or contributions from any federal, state, or other governmental agency applicable thereto and to construct the facilities necessary to the Treatment Plant. If any such upgrading will result in capital expenditures in excess of monies deemed available for that purpose by the sole discretion of the Joint Sewer Authority in its Bond Redemption and Improvement Fund, then the Joint Sewer Authority will obtain the necessary financing. With respect thereto, each Municipality agrees to pay the same share of the total project costs of such upgrading or modifications as its Reserved Capacity bears to the total capacity of the Treatment Plant. Payment of such share shall be made in accordance with Article V hereof.

Section 7. Expansion of Treatment Plant.

- a. If any Municipality wishes the Joint Sewer Authority to enlarge the Treatment Plant to provide additional treatment capacity, it shall notify the Joint Sewer Authority in writing of the amount of additional capacity it is requesting. Upon receipt of such notification, the Joint Sewer Authority shall notify, in writing, the other Municipalities hereto to determine if they desire additional capacity. Any party hereto who does not respond, in writing, to such notification from the Joint Sewer Authority within sixty (60) days of the date of such notification shall be deemed to have requested no additional capacity.
  
- b. The Joint Sewer Authority agrees that, after each party hereto has responded or is deemed to have responded, it shall obtain financing, if necessary, and construct the enlargements, additions, improvements or modifications to the Treatment Plant necessary to provide the total additional capacity requested. Such expansion shall be subject to the standards prescribed by the Department of Environmental Resources or any other governmental authority having jurisdiction thereof. Each party requesting additional capacity shall pay its pro-rata share of such enlargement cost determined by dividing its requested additional capacity by the total additional capacity being provided. Payment of such share shall be made in accordance with Article V. In no event shall a party hereto not requesting additional capacity be required to make any payments with respect to any additional capacity provided, except as stipulated in Section 7(c) infra.



- c. If any Municipality is exceeding its then current Reserved Capacity or attendant pollutant loading and has not corrected the situation, as required in Article VI, Section 6(c), and can not lease any capacity, as provided in Article II, Section 4, or if any Municipality is leasing capacity but must surrender such capacity at the request of the lessor Municipality, as permitted in Article II, Section 4, and can not lease any capacity from any other Municipality, then the said offending Municipality must request an expansion of the Treatment Plant, as provided in Section 7(a) supra. If said offending Municipality does not request such an expansion within thirty (30) days after notification by the Joint Sewer Authority, then the Joint Sewer Authority will, at its own discretion, expand the Treatment Plant to accommodate at a minimum the flow or pollutant loading of the offending Municipality in excess of its then current Reserved Capacity or attendant pollutant loading. If the Joint Sewer Authority does not believe that such an expansion is economically feasible, it will construct any holding facilities that it deems appropriate until such time that an expansion is considered economically feasible. In judging economical feasibility, the Joint Authority will investigate, among other things, the cost of treatment being charged by similar facilities. The cost of any such expansion and/or holding facilities will be borne by the offending Municipality in accordance with Section 7(b) supra.

Section 8. Combined Upgrading and Expansion. If concurrently, a project is required to be undertaken pursuant to Sections 6 and 7 supra,

and it becomes impossible to directly relate the costs thereof to either the upgrading requirement or the discretionary expansion, such project costs shall be allocated or equitably apportioned by the Consulting Engineers of the Joint Sewer Authority on the basis of sound and acceptable engineering and/or accounting principles.

Section 9. Joint Sewer Authority Records. The Joint Sewer Authority hereby agrees to make available at all reasonable times to any other party hereto, its agents, servants, employees and representatives, access to all of its records pertaining to operation and/or maintenance of the Treatment Plant.

Section 10. Sewage Collection System Records. Each party hereto agrees to make available at all reasonable times to the Joint Sewer Authority, its agents, servants, employees and representatives access to all records of such party insofar as the same relate to matters covered in this Agreement. Each party hereto also agrees that the Joint Sewer Authority, its agents, servants, employees and representatives shall have access to each party's sewage collection system at reasonable times in order to assure compliance with the terms and provisions of this Agreement.

#### ARTICLE IV

#### MAINTENANCE, HOLD HARMLESS AGREEMENT

Section 1. Facilities Maintained. Each party agrees, in connection with its respective sewer facilities, to continuously operate and keep and maintain the same at all times in first-class repair and order and in good and efficient operating condition and to meet the standards prescribed by the Joint Sewer Authority or the Department of Environmental Resources or of any other governmental authority having jurisdiction thereof.

Section 2. Indemnity. Municipalities and Authorities agree to indemnify and hold harmless the Joint Sewer Authority against all losses, costs or damages on account of any injury to persons or property occurring in the performance of this Agreement do to the negligence of any such party's servants, agents or employees, or resulting from the failure of their respective sewage collection systems to properly function due to such negligence.

The Joint Sewer Authority agrees to indemnify and hold harmless Municipalities and Authorities against all losses, costs or damages on account of any injury to persons or property occurring in the performance of this Agreement due to negligence of Joint Sewer Authority's servants, agents or employees or resulting from the failure of the Treatment Plant to properly function due to such negligence.

If the Joint Sewer Authority should contract (or has contracted) or in any way agrees to operate and maintain the sewer facilities of any Municipality and/or Authority, then the Joint Sewer Authority agrees to indemnify and hold harmless that Municipality and/or Authority against all losses, costs or damages on account of any injury to persons or property due to the negligence of Joint Sewer Authority's servants, agents or employees.

Section 3. Force Majeure. Notwithstanding any other provision of this Agreement, no party hereto shall be responsible for damages to any other for any failure to comply with this Agreement resulting from an act of God, or riot, sabotage, public calamity, flood, strike, breakdown of the Treatment Plant, or other event beyond its reasonable control. The party or parties having the responsibility for the facilities so affected, however, shall proceed promptly to remedy the consequences of such event, with costs to be shared to the extent provided elsewhere herein.

## ARTICLE V

### CHARGES AND PAYMENTS

Section 1. User Charges. The Joint Sewer Authority will charge, and each Municipality will pay a user fee which, to the extent possible, represents each Municipality's proportionate share of the costs of operating those facilities owned by the Joint Sewer Authority, which facilities include the Saw Mill Run pump station and force main and the Treatment Plant.

The user fees imposed on the Municipalities shall be at least such that the total amount to be collected, together with any other revenues available to the Joint Sewer Authority, will be sufficient in each year to pay:

- a. operation and maintenance costs, as referenced in Article I;
- b. annual debt service, including coverage if any, on all outstanding bonds attendant to the existing facilities owned by the Joint Sewer Authority; and
- c. annual debt service, including coverage if any, on all outstanding bonds attendant to any upgrading or expansion of the Treatment Plant, as provided in Article III, Sections 6, 7 and 8, respectively.

The user fees imposed on the Municipalities will have two components. First, the costs associated with Subsections (a) and (b), supra, will be allocated on the basis of wastewater flow from each Municipality. Second, the costs associated with Subsection (c), supra, if any, will be allocated on the basis of Reserved Capacity, as provided in Section 3 of this Article.

It is understood by the parties hereto that there shall be deducted from the operation and maintenance costs prior to the calculation of the user fees: (1) any funds paid under any applicable State or Federal grant or similar payment intended to offset the operation and maintenance costs and (2) any other revenues available to the Joint Sewer Authority for use in connection with the operation of the Treatment Plant as determined by the Joint Sewer Authority in its sole and absolute discretion.

Section 2. Capital Improvement Fund. A Capital Improvement Fund shall be established by the Joint Sewer Authority for the purposes of funding any improvements, modifications, or enlargements to those facilities owned by the Joint Sewer Authority. The Joint Sewer Authority shall deposit into the Capital Improvement Fund all connection fees collected by the Municipalities on behalf of the Joint Sewer Authority pursuant to Article VII, Section 2, and shall segregate the monies in the Fund by Municipality, apart from the Revenue Fund and other Joint Sewer Authority Funds established in conjunction with the 1978 Bond Issue or any additional bonds issued by the Joint Sewer Authority. Interest accruing on the accounts of each Municipality within the Capital Improvement Fund shall be credited to the Municipality's account and be treated as part of that account.

Section 3. Payment of Capital Costs. In the event the Joint Sewer Authority undertakes certain capital improvements to upgrade its treatment or maintain current treatment standards, as provided in Article III, Section 6, or to expand its treatment capacity at the request of one or more Municipalities, as provided in Article III, Section 7, or to both upgrade and expand concurrently, as provided in Article III, Section 8, each Municipality agrees to pay its pro-rata share of the costs of such capital improvements. The basis of determining this pro-rata share is specified in Article III, Sections 6, 7, and 8.

The Joint Sewer Authority agrees to finance the costs of such capital improvements through the issuance of notes or bonds, as appropriate and will reduce the amount of borrowing pertinent to each Municipality's share by the amount of monies available in each Municipality's account within the Capital Improvement Fund. However, each Municipality shall have the right to reserve a portion or all of the monies in its respective account for future projects by so informing the Joint Sewer Authority of its decision, provided such future projects are the same as those stipulated in Section 2 of this Article. With respect to the repayment of the notes or bonds issued by the Joint Sewer Authority, each Municipality shall pay periodically, as provided in Section 1 of this Article, to the Joint Sewer Authority a sum of money determined by applying the percentage, computed by dividing the amount being financed applicable to each Municipality by the total amount being financed, to the annual debt service requirements plus any fixed amount attributable to said notes or bonds required to be transferred in any such year to any fund under the terms of the Trust Indenture executed in connection with the borrowing.

Section 4. Budget. The Joint Sewer Authority shall prepare, subject to the approval of its Consulting Engineers, and furnish to each Municipality by October 1 of each year, a budget for the next fiscal year beginning April 1, or such other date as may be appropriate should the Joint Sewer Authority change its fiscal year setting forth: (1) the operation and maintenance costs for such fiscal year, (2) debt service requirements, if any, and (3) each Municipality's share of such annual costs.

In determining each Municipality's share of the operation and maintenance costs and debt service requirements attendant to the existing facilities in a given budget year, the Joint Authority will divide the actual wastewater flow from each Municipality for the flow year as such flow

is determined by Article III, Section 3, by the total metered flow discharged to the Treatment Plant during that same flow year and multiplying that ratio by the aforesaid costs. In determining each Municipality's share of any other debt service requirements, the provisions in Section 3 of this Article will apply.

If at any time during the budget year, unusual or unanticipated increases occur in the cost of operation and maintenance, then the Joint Sewer Authority will provide each Municipality with an amended budget, approved by the Consulting Engineers, setting forth: (1) the reasons(s) for the increase, (2) the revised total cost of operation and maintenance for the budget year less any federal or state grants applicable thereto, and (3) each Municipality's share of such revised total cost, after taking into consideration any payments made to date during the budget year.

Section 5. Billing. Bills for one-quarter (1/4) of the user fees with respect to the total annual cost due pursuant to Section 4, supra, shall be delivered by the Joint Sewer Authority to each Municipality hereto on the first day of April, July, October, and January. The bill delivered to each Municipality on July 1 of each year, or the second billing of the fiscal year should the Joint Sewer Authority change its fiscal year, shall show as separate items any rental fee owed by a lessee Municipality to a lessor Municipality, as provided in Article II, Section 4.

Section 6. Payment of Bills. Bills shall be payable at the office of the Joint Sewer Authority within sixty (60) days of the date of delivery of the bill. There shall be added interest at the rate of twelve (12) percent per annum, which interest rate can be changed from time to time by the Joint Sewer Authority, to bills remaining unpaid after sixty (60) days of the date of delivery of the bills. Said interest shall be chargeable from the due date thereof until payment is received by the Joint Sewer Authority.

Section 7. Surcharge. Any recognizable increase in the operation and Maintenance costs arising out of the quality of effluent discharged by a particular Municipality or Municipalities may be reflected in a surcharge imposed by the Joint Sewer Authority hereunder, payable by such Municipality or Municipalities to equitably reflect the additional costs necessary to treat and/or dispose of such effluent. The amount of such surcharge shall be determined by the Consulting Engineers in accordance with sound engineering principles and be payable to the Joint Sewer Authority.

Section 8. Financial Statement and Records. To the end that the costs upon which the charges imposed under Section 1 of this article may be readily ascertained, the Joint Sewer Authority covenants to keep accounting records indicating the basis for these charges. The Joint Sewer Authority also covenants to deliver to each Municipality a copy of its annual financial statement within thirty (30) days of the receipt thereof from the Joint Sewer Authority's accountant.

## ARTICLE VI

### EFFLUENT RESTRICTIONS

Section 1. Uniform Standards. The Joint Sewer Authority has adopted uniform wastewater effluent quality standards which will comply with the requirements of all regulatory authorities. Municipalities and Authorities agree not to discharge or permit the discharge of wastewater from their respective sewage collection systems that would violate any of such standards. The Joint Sewer Authority will make no changes in said standards except upon sixty (60) days prior notice to the Municipalities and Authorities.



Section 2. Compliance with Standards. Municipalities and Authorities have enacted appropriate ordinances and/or regulations, and will amend same from time to time as needed, which, among other things, prohibit, and provide adequate penalties for the discharge into their respective sewage collection systems of anything violating the effluent quality restrictions of the Joint Sewer Authority, and hereby covenant to enforce, and request the enforcement of, as applicable, the provisions thereof when brought to its attention. Such ordinances and/or regulations shall also prohibit and/or regulate the discharge into the respective sewage collection system by any person of industrial waste, as defined in the applicable regulations of the Joint Sewer Authority. No Municipality will permit any discharge into its respective sewage collection system except in the manner and in accordance with the provisions of said ordinance and/or regulations as applicable.

Section 3. Sampling Facilities. When deemed necessary, the Joint Sewer Authority will install, maintain and operate, at the expense of the applicable Municipality, sampling equipment or facilities at or near the point(s) of connection. Each Municipality shall install, maintain and operate additional sampling, equipment or facilities at such points of discharge into each Municipality's sewage collection system from a user thereof whose discharge of wastewater, in the opinion of the Joint Sewer Authority, may be detrimental to the operation of the Treatment Plant.

Section 4. Treatment of Harmful Wastes. If any wastewater discharged by any Municipality is in violation of the Joint Sewer Authority's standards, as determined by this Article, and requires special treatment or would be harmful to the Treatment Plant, then that Municipality will pay the entire cost of any special treatment as a separate charge, and the Municipality, on written notice of violation from the Joint Sewer Authority, shall immediately act to enforce or obtain the enforcement of those quality standard ordinances and/or regulations by connection ban or

by providing or requiring pretreatment of such waste in such manner as is provided by said ordinances or compel disconnection from its respective sewage collection system of the property from which harmful waste is being discharged. Failure by a Municipality to enforce or obtain the enforcement of those quality standard ordinances and/or regulations will be dealt with according to the provisions of the Interjurisdictional Pretreatment Agreement, entered into by the parties hereto and dated February 13, 1985. The aforesaid notwithstanding the Joint Authority shall be entitled to recover from said Municipality the costs of any upgrading, enhancements or other remedial action that it deems necessary as a result of such discharge.

Section 5. Reimbursement for Damages from Improper Discharge. The responsible Municipality will pay the cost of any damage to the Treatment Plant and/or any fines or penalties resulting from the discharge of improper waste from its sewage collection system in violation of the above-mentioned quality standards and restrictions, within thirty (30) days after notice by the Joint Sewer Authority and shall indemnify and hold harmless the Joint Sewer Authority with respect thereto.

Section 6. Discharge Limitations and Remedies.

- a. Each Municipality agrees that the wastewater it discharges will not exceed certain maximum allowable discharge limits, expressed in pounds per day, which will be based upon the concentration limits attributable to domestic waste, as referenced in Article I, and the hydraulic capacity reserved for it, as determined in Article II.
- b. Joint Sewer Authority shall issue a warning to a Municipality when its maximum 3-month average flow or attendant loading of either of the pollutants referenced

above approaches 85 percent of its respective maximum limit. The maximum 3-month average flow criteria is based on current federal and state standards and may be changed from time to time to reflect the federal and state standards in effect at any time. Within thirty (30) days after the warning, the Municipality shall initiate and within ninety (90) days thereafter complete and submit to the Joint Authority an engineering report, which at a minimum addresses the estimated time frame in which the Municipality will completely utilize its hydraulic or pollutant loading capacity.

- c. When the maximum 3-month flow or attendant loading of either of the pollutants referenced above approaches 90 percent of a Municipality's maximum limit, the Joint Sewer Authority will determine how much unused capacity is available for such Municipality and will by dividing said unused capacity by 275 gallons per day, as such amount may be amended from time to time by the Joint Sewer Authority, determine how many EDUs are available to be connected by said Municipality. This determination will be valid as of the date of the calculation and may be recalculated each year. The Municipality will not be permitted to connect any EDUs in excess of the number determined by the Joint Sewer Authority.
- d. In the event that a Municipality shall exceed any of the limits and restrictions on flow or pollutant loadings, as set forth herein, for a period of thirty (30) consecutive days, such Municipality shall take immediate steps to reduce such overloading to the satisfaction of the Joint Sewer Authority and shall not make any connections until such

overloading has been reduced to 85 percent of the Municipality's maximum limit. Furthermore, the Municipality in addition to other payments herein provided for and in addition to any other remedies legally available to the Joint Sewer Authority, shall indemnify and hold harmless the Joint Sewer Authority from any costs, fees, expenses, damages, fines, penalties, including legal, engineering or other fees and expenses, suffered or incurred as a result thereof, except such as are caused by negligence in operation of the Treatment Plant.

## ARTICLE VII

### CONNECTIONS TO SEWAGE COLLECTION SYSTEM

Section 1. Periodic Reporting. Each Municipality agrees to provide to the Joint Sewer Authority on a quarterly basis a copy of all local sewer connection permits approved by same for a property or properties which will connect to its respective sewage collection system. If requested by the Joint Sewer Authority, each Municipality also agrees to provide to the Joint Sewer Authority, in addition to the aforesaid, a copy of the permit application and attendant modules submitted on behalf of a subdivision to the Pennsylvania Department of Environmental Resources for approval to construct sanitary sewers within such subdivision for connection to the sewage collection system. The Joint Sewer Authority, for its part, agrees to provide to each Municipality on a quarterly basis a copy of the flow data recorded by the meters installed at the points of connection and the Treatment Plant in accordance with Article III, Sections 2 and 3.

Section 2. Capital Contribution Fee. Each Municipality and/or Authority covenants that it has enacted an ordinance or resolution, as appropriate, or will amend an existing ordinance or resolution, as

appropriate, requiring all owners of improved property which can connect to its respective sewage collection system to pay a tapping fee of \$1,000 per EDU, as such term is defined in Article I. This fee is to be collected at the time an application for a sewer connection permit is submitted to the Municipality and is to be paid to the Joint Sewer Authority on a quarterly basis, as appropriate. This fee, which may be changed or modified from time to time by the Joint Sewer Authority, is in addition to any local connection fee, tapping fee, or other charge imposed by the Municipality in regards to the connection of an improved property to its respective sewage collection system. Each Municipality agrees that it will not approve any sewer connection permit unless such Joint Sewer Authority fee has been paid.

Section 3. Approval of Permits. In the event of the failure of a Municipality to report its sewer connections, as required in Section 1 of this Article, or in the event of the imposition of sanctions upon a municipality by the Joint Sewer Authority, as provided in Article VI, Section 6, then the said Municipality shall be required to submit copies of all sewer connection permits intended to be issued by the Municipality for approval by the Joint Sewer Authority prior to the issuance of those permits.

Section 4. Rehabilitation Work. Each Municipality covenants that it will report to the Joint Sewer Authority, whenever practical thirty (30) days prior to initiation of same or as soon as possible thereafter but in no event no later than thirty (30) days after completion of same, any rehabilitation and/or repair work performed on its respective sewage collection system, as well as any studies conducted to determine, isolate, or quantify inflow and infiltration in its respective sewage collection system.

## ARTICLE VIII

### PLYMOUTH-WHITPAIN TRANSPORTATION AGREEMENT

Section 1. Flow Limitations. The existing Plymouth-Whitpain Transportation Agreement, as amended, shall be further modified and amended to limit and control future flows emanating from Whitpain Township draining into the Saw Mill Run Interceptor through the Sheffield Drive and Walton Road metering stations to the geographic areas indicated on the map attached hereto as Exhibit "C", so that Plymouth Township will be assured that, in the future, the Saw Mill Run Interceptor shall not become surcharged at any time as the result of flows entering the system from Whitpain Township as follows:

a. Sheffield Drive Metering Station:

- (1) Whitpain agrees that it will not design, install or operate that portion of this collection system draining into the Saw Mill Run Interceptor with the capability of discharging sewage flows in excess of 2840 gallons per minute at peak flow.
- (ii) In the event that peak flow rates exceed 3100 gallons per minute for two (2) hours during any two (2) twenty-four (24) hour periods within a span of thirty (30) days, then Whitpain shall immediately commence work on corrective action required to reduce that flow so that it will not exceed 2,840 gallons per minute at peak flow.

(iii) In the event that any single overflow shall occur, determined by the Joint Sewer Authority engineer to be caused by excessive flow from the Sheffield Drive metering station, then a moratorium on future connections from areas discharging through that metering station shall automatically be imposed and Whitpain Township shall thereupon take such immediate action as is required to prevent future surcharges from occurring. Any future connections during the moratorium period would thereafter be permitted only upon the joint consent of the Joint Sewer Authority, Plymouth Township and Plymouth Municipal Authority. At such time as acceptable corrective action has been take, the moratorium shall be lifted.

b. Walton Road Metering Station:

- (i) In the event that the flow exceeds 360 gallons per minute for three (3) hours in five (5) twenty-four (24) hour periods within a span of thirty (30) days, then Whitpain shall promptly cause plans to be prepared for such corrective action as is required to reduce that flow to not more than 440 gallons per minute;
- (ii) In the event that the flow exceeds 400 gallons per minute for three (3) hours in five (5) twenty-four (24) hour periods within a span of thirty (30) days, then Whitpain shall immediately commence actual work on corrective action required to reduce that flow to not more than 440 gallons per minute;

(iii) In the event that the flow exceeds 440 gallons per minute for one (1) hour on any single occasion, then a moratorium on future connections from the areas discharging through the Walton Road metering station shall automatically be imposed and Whitpain Township shall thereupon take such other actions as may be required to prevent surcharges from occurring. Any future connections during the moratorium period would thereafter be permitted only upon the joint consent of the Joint Sewer Authority, Plymouth Township and Plymouth Township Municipal Authority. At such time as acceptable corrective action has been taken, the moratorium shall be lifted.

Section 2. Interceptor Surcharge. In the event that a surcharge shall occur in the Saw Mill Run interceptor as the result of Whitpain exceeding flow restrictions from either the Sheffield Drive or the Walton Road metering stations, a moratorium on future connections from the areas discharging into the Saw Mill Run Interceptor shall automatically be imposed and the Whitpain Township shall immediately take such actions as may be necessary to prevent a future surcharge from occurring. Any future connections during the moratorium period would thereafter be permitted only upon the joint consent of the Joint Sewer Authority, Plymouth Township and Plymouth Township Municipal Authority. At such time as acceptable corrective action has been taken, the moratorium shall be lifted.



## ARTICLE IX

### MISCELLANEOUS

Section 1. Obligations of Municipalities. All bonds, notes or other obligations of the Municipalities and/or Authorities issued, or to be issued, shall for all purposes of this Agreement be the sole obligations of such Municipalities and/or Authorities and shall not in any way directly, or indirectly be deemed a debt or liability of the Joint Sewer Authority.

Section 2. Obligations of Joint Sewer Authority. All bonds, notes or other obligations of the Joint Sewer Authority issued, or to be issued, shall for all purposes of this Agreement be the sole obligation of the Joint Sewer Authority and shall not in any way, directly or indirectly, be deemed a debt or liability of the Municipalities and/or Authorities.

Section 3. Inspection of Records. After written notice, each party to this Agreement shall have the right at any time during business hours to inspect the books and records of the others in order to ascertain the correctness of any figures used in computing the liability of any party to this Agreement to another.

Section 4. Joint Sewer Authority Membership. Whitpain Township shall become a full member of the Joint Sewer Authority with representation equal to the representation of each Municipality on the Joint Sewer Authority, effective at the first meeting of the Joint Sewer Authority following the resolution of all procedural legal matters and the execution of this Agreement by all parties. Each Municipality shall be entitled to appoint an equal number of representatives to the Joint Sewer Authority in accordance with the applicable provisions of the Pennsylvania Municipality Authorities Act.

Section 5. Joint Sewer Authority Engineer. The Joint Sewer Authority will not engage or retain any Consulting Engineer engaged or retained by a contributing Municipality or Authority in connection with sewer matters relating to the Joint Sewer Authority.

Section 6. Waiver of Rights. The failure of any party hereto to insist upon strict performance of this Agreement or any of the terms or conditions thereof shall not be construed as a waiver of any of its rights hereunder; provided, however, that each party shall use its best efforts to protect each of the other parties from incurring any substantial additional or unnecessary liability or expense as a result of reliance by such other party upon the previous non-enforcement of any term or condition of this Agreement.

Section 7. Modification. This writing constitutes the entire Agreement between the parties, and there are no representations or agreements, verbal or written, other than those contained herein. This Agreement may be amended, modified, or supplemented by the written agreement of all parties.

Section 8. Severability. Should any provision hereof for any reason be held illegal or invalid, no other provision of this Agreement shall be affected, and this Agreement shall then be construed and enforced as if such illegal or invalid provision had not been contained herein.

Section 9. Headings. The headings in this Agreement are solely for convenience and shall have no effect in the legal interpretation of any provision hereof.

Section 10. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be properly executed by the Municipalities, Authorities and Joint Sewer Authority, and all of which shall be regarded for all purposes as one original and all of which shall constitute and be but one and the same.

Section 11. Arbitration. Any disputes arising out of this Agreement, except in cases where a decision is left to the sole discretion of the Joint Sewer Authority, shall be submitted to binding arbitration conducted in accordance with the rules and selection process of the American Arbitration Association. The expenses of arbitration shall be assessed by the arbitrator.

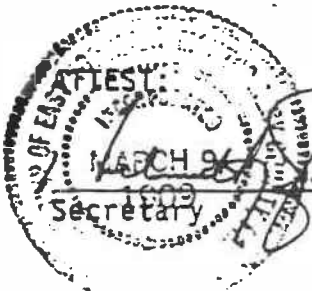
IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective duly authorized officers and their respective seals to be hereunto affixed, all as of the day and year first above written.

ATTEST:

Charles W. White  
Assistant Secretary

EAST NORRITON-PLYMOUTH JOINT  
SEWER AUTHORITY

BY: [Signature]  
Chairman



[Signature]  
5.13.91

EAST NORRITON TOWNSHIP

BY: John W. Oulite  
Chairman

ATTEST:

[Signature]  
Secretary

WHITPAIN TOWNSHIP

BY: [Signature]  
Chairman

ATTEST:

[Signature]  
Secretary

PLYMOUTH TOWNSHIP

BY: [Signature]  
Chairman

ATTEST:

[Signature]  
Secretary

PLYMOUTH TOWNSHIP MUNICIPAL AUTHORITY

BY: Herman R. Vinokur  
Chairman

ATTEST:

[Signature]  
Secretary

EAST NORRITON TOWNSHIP MUNICIPAL AUTHORITY

BY: [Signature]  
Vice Chairman

**APPENDIX M**

**COUNTY COMMENTS AND RESPONSES**



June 1, 2006

Mr. Michael Stokes  
Montgomery County Planning Commission  
Montgomery County Courthouse  
P.O. Box 311  
Norristown, PA 19404-0311

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain Joint  
Sewer Authority; Regional Act 537 Plan  
ARRO # 5469.00

*649 North Lewis Road*

*Suite 100*

*Limerick, PA 19468-1234*

*610.495.0303*

*Fax: 610.495.5855*

*info@thearrogroup.com*

*www.thearrogroup.com*

Dear Mr. Stokes:

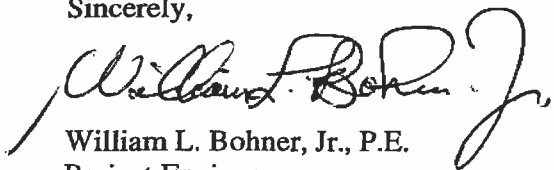
On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), we are submitting, for your review, a draft of the Authority's Regional Act 537 Plan. This regional Plan establishes the planning elements that are necessary to meet the requirements of PA DEP. The Plan will also establish the planning requirements necessary to provide sanitary sewer facilities upgrades for the Authority such that the Authority can meet the sewage facilities needs of its member municipalities.

The Authority's member municipalities have prepared their own separate Act 537 Wastewater Facilities Plans. These plans have been or will be submitted under separate cover for review and comment. Portions of these municipal Plans have been incorporated into the Authority's plan to establish the basis for the sewage needs of each municipality. These plan excerpts are found in the Authority's Plan appendices

Please review this regional Plan and provide us with any comments that you may have.

Thank you for your assistance with the review of this important sewage facilities planning document.

Sincerely,

  
William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

- c: Charles A. Fagan, II, P.E., Executive Director – ENPWJSA  
G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

ENGINEERING  
CONSULTING  
OPERATIONS



June 1, 2006

Mr. Mark Radatti  
Montgomery County Health Department  
Montgomery County Human  
Services Center  
1430 DeKalb Street  
Norristown, PA 19404-0311

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain Joint  
Sewer Authority; Regional Act 537 Plan  
ARRO # 5469.00

*649 North Lewis Road*

*Suite 100*

*Limerick, PA 19468-1234*

*610.495.0303*

*Fax: 610.495.5855*

*info@thearrogroup.com*

*www.thearrogroup.com*

Dear Mr. Radatti:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), we are submitting, for your review, a draft of the Authority's Regional Act 537 Plan. This regional Plan establishes the planning elements that are necessary to meet the requirements of PA DEP. The Plan will also establish the planning requirements necessary to provide sanitary sewer facilities upgrades for the Authority such that the Authority can meet the sewage facilities needs of its member municipalities.

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Please review this regional Plan and provide us with any comments that you may have.

Thank you for your assistance with the review of this important sewage facilities planning document.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

c: Charles A. Fagan, II, P.E., Executive Director – ENPWJSA  
G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

ENGINEERING  
CONSULTING  
OPERATIONS



## MONTGOMERY COUNTY PLANNING COMMISSION

box 311 ♦ norristown ♦ pennsylvania ♦ 19404-0311 ♦ 610-278-3722  
office location: suite 201 ♦ one montgomery plaza ♦ swede & airy streets ♦ norristown pa  
FAX 610-278-3941 ♦ Website [www.montcopa.org/plancom](http://www.montcopa.org/plancom)



JUL 24 2006

ARRO

### SEWAGE FACILITIES PLANNING MODULE COMPONENT 4b - COUNTY PLANNING AGENCY REVIEW

DEP Project Number:  
MCPC Number: 06-1812  
East Norriton Plymouth Whitpain  
Joint Sewer Authority  
537 Update  
Plymouth Township  
Date revision received by the  
County Planning Commission: 6/5/06

July 20, 2006

Ms. Karen Weiss  
700 Belvoir Road  
Plymouth Meeting PA 19462

Dear Ms. Weiss:

We have reviewed this application for an update to the Township's Sewage Facilities Plan in accordance with regulations issued under Act 537, "The Pennsylvania Sewage Facilities Act," as requested.

#### **BACKGROUND**

The East Norriton Plymouth Whitpain Joint Sewer Authority (Authority) proposes an Act 537 Plan update in order to address future sewage disposal needs of its member Townships, East Norriton, Plymouth and Whitpain. The Authority's treatment plant is located in Plymouth Township, Montgomery County and serves the three townships referenced above. Each Township has submitted their projected average daily flow and 3 month maximum flow. Given that these figures exceed the current capacity of the plant, upgraded facilities will be necessary to meet the future disposal needs. The Authority proposes updating their Average Annual Capacity from 8.1 million gallons per day (MGD) to 8.67 MGD and 3-month Maximum Monthly Flow from 9.3 MGD to 11.29 MGD.

Capitol improvements will be necessary to accommodate the increased flows. The 2004 annual average daily flow was 6.45 MGD and the maximum monthly flow was 7.75 MGD. During the very wet year of 2003, the plant's average daily flow was 7.57 MGD. The Authority is not projecting a hydraulic or organic overload condition at the WWTP. However, during significant rain events, both the wet well at the Authority's Sawmill Run Pump Station, and the manhole on Ross Road near the railroad overpass have experienced overflows. The Authority has developed a Corrective Action Plan to manage these overflows. The selected approach to accommodate the increased flows is to implement the recommendations of the Corrective Action Plan and increase the capacity of the activated sludge portion of the wastewater treatment plant.

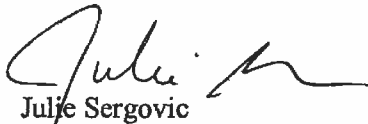
*Inflow and Infiltration (I/I)*

The ENPWJSA 537 Plan is requesting an increase in Maximum Monthly flow of 11.29 MGD from its previous 9.3 MGD allotment. This is an increase of 1.99 MGD. Although this figure is based on each of the Township's projected allocation, the Township's should continue their significant work on reducing I/I, rather than relying on the increased 3 month maximum flow figure.

**RECOMMENDATION**

Once the Township's have considered the previously mentioned comments, we can recommend approval of the proposed Act 537 Sewage Facilities Plan Revision, provided it is in accordance with all applicable DEP rules and regulations.

Sincerely,



Julie Sergovic  
Environmental Planner  
(610) 278-3750  
[jsergovi@mail.montcopa.org](mailto:jsergovi@mail.montcopa.org)

c: Clinton Cleaver, DEP, SERO  
Bill Bohner Jr, Arro Group Inc.  
East Norriton Plymouth Whitpain Joint Sewer Authority  
East Norriton Township  
Whitpain Township

Encl. Revised Table 1 Municipal Flow Needs



(Revised)

**Table 1**  
**Municipal Flow Needs**

<b>Municipality</b>	<b>Projected Municipal Avg. Daily Flow(mgd)</b>	<b>Projected 3 Month Max. Flow (mgd)</b>
Plymouth Township	3.60	4.49
East Norriton Township	2.70	3.30
Whitpain Township	2.37	3.50
<b>Totals</b>	<b>8.67</b>	<b>11.29</b>

- Notes: 1. Projected municipal flow provided by each municipality  
Refer to Appendix C for the documentation verifying  
these flow projections.
2. Whitpain Township and East Norriton Township  
provided 3 month maximum flows. Plymouth  
Township's 3 month maximum flows are  
based on their Average Annual Flow multiplied  
by the 3 mo. Maximum factor averaged over  
the past 6 years.

**COUNTY OF MONTGOMERY**

**COMMISSIONERS**

**JAMES R. MATTHEWS**

**CHAIRMAN**

**THOMAS JAY ELLIS, Esq. RUTH S. DAMSKER**

**DIRECTOR OF HEALTH**

**DR. JOSEPH M. DIMINO**

**DEPARTMENT OF HEALTH  
MONTGOMERY COUNTY HUMAN SERVICES CENTER**

**1430 DeKALB STREET**

**P.O. BOX 311**

**NORRISTOWN, PENNSYLVANIA 19404-0311**

**TEL: (610) 278-5117**

**TDD: (610) 631-1211**

**FAX: (610) 278-5167**

William L. Bohner, Jr.  
ARRO Group, Inc.  
649 North Lewis Road  
Suite 100  
Limerick, PA 19468-1234

June 25, 2006

RE: East Norriton – Plymouth – Whitpain Joint Sewer Authority Regional Act 537 Plan  
ARRO #5469.00

Dear Mr. Bohner:

The Montgomery County Health Department (MCHD) has reviewed the Joint Sewer Authority Regional Act 537 Plan. The plan includes the areas of East Norriton, Plymouth and Whitpain Townships. MCHD has no objections to the proposed Act 537 update and no additional comments at this time.

Please contact me at 610-278-5117 ext. 6730 if you have any questions.

Sincerely,



Mark John Radatti  
Sewage Enforcement Officer  
Division of Water Quality Management

cc: Townships  
Kathy Julia, Field Supervisor  
File

**NORRISTOWN HEALTH CENTER**  
1430 DEKALB STREET, PO BOX 311  
NORRISTOWN, PA 19404-0311  
PHONE: (610) 278-5145 FAX: (610) 278-5166

**POTTSTOWN HEALTH CENTER**  
364 KING STREET  
POTTSTOWN, PA 19464  
PHONE: (610) 970-5040 FAX: (610) 970-5048

**EASTERN COURT HOUSE ANNEX**  
102 YORK ROAD, SUITE 401  
WILLOW GROVE, PA 19090  
PHONE: (215) 784-5415 FAX: (215) 784-5524

**APPENDIX N**

**MUNICIPAL COMMENTS AND RESPONSES**



September 22, 2005

Timothy A. Boyd, P.E.  
Director of Public Works  
Plymouth Township  
700 Belvoir Road  
Plymouth Meeting, PA 19462

RE: Draft ENPWJSA Act 537 Plan  
For Review and Comment  
ARRO #5469.00 ✓

Dear Tim:

Enclosed is one (1) copy of a draft of the ENPWJSA Act 537 Plan for your review and comment. I have forwarded one (1) copy to East Norriton Township, Whitpain Township, and the Authority respectively. I have asked each to review the document and offer comments as well. Once I receive your comments and input along with that of the municipalities and the Authority, I will incorporate the necessary changes and send a copy to the Montgomery County Planning Commission and the Montgomery County Health Department for review.

As you review the Plan, you will see that Plymouth Township's 537 Planning documentation has been incorporated into the Appendix of this draft Plan.

If you have any questions, please call me at 610-495-2102.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

c: G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

649 North Lewis Road

Suite 100

Limerick, PA 19468-1234

610.495.0303

Fax: 610.495.5855

info@thearrogroup.com

www.thearrogroup.com



September 22, 2005

Charles A. Fagan, II, P.E.  
Executive Director  
East Norriton-Plymouth-Whitpain  
Joint Sewer Authority  
200 Ross Street  
Plymouth Meeting, PA 19462-2740

RE: Draft ENPWJSA Act 537 Plan  
For Review and Comment  
ARRO #5469.00

Dear Charlie:

Enclosed is one (1) copy of a draft of the Authority's Act 537 Plan for your review and comment. I have forwarded one (1) copy to East Norriton Township, Whitpain Township, and Plymouth Township respectively. I have asked each municipality review the documents and offer comments as well. Once I receive your comments and input along with that of the municipalities, I will incorporate the necessary changes and send a copy to the Montgomery County Planning Commission and the Montgomery County Health Department for review.

As you review the Plan, you will see that Plymouth Township's 537 Planning documentation has been incorporated into the Appendix. I am awaiting receipt of planning documentation from Whitpain Township and East Norriton Township. Once I have that information, I will insert it into the Appendix accordingly.

If you have any questions, please call me at 610-495-2102.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

c: G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

*The ARRO Group, Inc.*

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*Fax. 610.495.5855*

*info@thearrogroup.com*

*www.thearrogroup.com*



September 22, 2005

Roman M. Pronczak, P.E.  
Township Engineer  
Whitpain Township  
960 Wentz Road  
Blue Bell, PA 19422

RE: Draft ENPWJSA Act 537 Plan  
For Review and Comment  
ARRO #5469.00

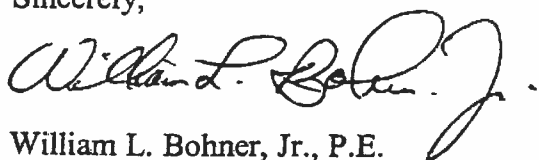
Dear Roman:

Enclosed is one (1) copy of a draft of the ENPWJSA Act 537 Plan for your review and comment. I have forwarded one (1) copy to East Norriton Township, Plymouth Township, and the Authority respectively. I have asked each to review the document and offer comments as well. Once I receive your comments and input along with that of the municipalities and the Authority, I will incorporate the necessary changes and send a copy to the Montgomery County Planning Commission and the Montgomery County Health Department for review.

As you review the Plan, you will see that I need to insert Whitpain Township's 537 Planning documentation into the Appendix. Please forward that information to my attention when you have an opportunity.

If you have any questions, please call me at 610-495-2102.

Sincerely,



William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

c: G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

*649 North Lewis Road*

*Suite 100*

*Limerick, PA 19468-1234*

*610.495.0303*

*Fax: 610.495.5855*

*info@thearrogroup.com*

*www.thearrogroup.com*



September 22, 2005

Helmuth J. Baerwald  
Manager  
East Norriton Township  
2501 Stanbridge Street  
East Norriton, PA 19401-1616

RE: Draft ENPWJSA Act 537 Plan  
For Review and Comment  
ARRO #5469.00

Dear Helmuth:

Enclosed is one (1) copy of a draft of the ENPWJSA Act 537 Plan for your review and comment. I have forwarded one (1) copy to Whitpain Township, Plymouth Township, and the Authority respectively. I have asked each to review the document and offer comments as well. Once I receive your comments and input along with that of the municipalities and the Authority, I will incorporate the necessary changes and send a copy to the Montgomery County Planning Commission and the Montgomery County Health Department for review.

As you review the Plan, you will see that I need to insert East Norriton Township's 537 Planning documentation into the Appendix. Please forward that information to my attention when you have an opportunity.

If you have any questions, please call me at 610-495-2102.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

c: G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

*649 North Lewis Road*

*Suite 100*

*Limerick, PA 19468-1234*

*610-495-0303*

*Fax: 610-495-5855*

*info@thearrogroup.com*

*www.thearrogroup.com*

**NOTE:**

No comments were received (within the 60 day review period) from the municipalities for the review of the Authority's 537 Plan.



)

**APPENDIX O**

**PUBLIC ADVERTISEMENT**

WLB



August 7, 2006

Ms. Sue Kuhn  
The Times Herald  
410 Markley Street  
Norristown, PA 19401

RE: East Norriton-Plymouth-Whitpain  
Joint Sewer Authority; Act 537 Plan  
Update; Public Notice.  
ARRO # 5469.00

Dear Ms. Kuhn:

The East Norriton-Plymouth-Whitpain Joint Sewer Authority requests the publication of the following "Public Notice", on Friday, August 11, 2006. Please publish the notice on this day only. The text reads as follows:

**PUBLIC NOTICE**

**An Act 537 Plan Update has been prepared for the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), Montgomery County, Pennsylvania. The Plan addresses the planning requirements necessary to provide for the expansion and upgrade of the Authority's Wastewater Treatment Plant to meet the treatment needs of the Authority's participating municipalities. For this Plan, the planning area includes East Norriton Township, a portion of Plymouth Township, and a portion of Whitpain Township. Given that each of these municipalities currently utilizes the facility, they have provided their needs/requirements for incorporation into this Plan.**

**Wastewater generated by East Norriton Township, Plymouth Township, and Whitpain Township will be conveyed to the expanded and upgraded wastewater treatment facility located in Plymouth Township, Montgomery County, just east of the Borough of Norristown. This is an expansion and upgrade to the existing wastewater treatment plant. The plant is currently permitted to discharge treated wastewater effluent to the Schuylkill River in accordance with its National Pollution Discharge Elimination System Permit PA0026816. The stream classification for the Schuylkill River is "Warm Water Fish" and "Migratory Fish".**

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*ENGINEERING  
CONSULTING  
OPERATIONS*

**The evaluation of alternatives for this Plan included the assessment of wastewater treatment plant's primary and secondary clarification processes, activated sludge process, and disinfection process.**

**The selected alternative which best meets the immediate and future wastewater treatment needs of the planning area is the implementation of the following unit process upgrades to increase the capacity of the activated sludge portion of the Authority's plant:**

- **Add one 60-foot diameter primary clarifier**
- **Add one 680,000 gallon aeration tank in parallel to the existing units**
- **Add one 70-foot diameter primary clarifier**
- **Add one 92,000 gallon chlorine contact tank**
- **Make upgrades/modifications to the return activated/waste activated sludge pumping systems.**
- **Additional yard piping and structures for wastewater distribution**

**The selected alternative shall also entail the continued implementation of the Authority's current Corrective Action Plan as approved by PA DEP.**

**The above capital improvements will be needed to accommodate an annual average flow of 8.67 MGD and 3-month maximum flow of 11.29 MGD.**

**The selected alternative will be funded by each of the participating municipalities in accordance with the current intermunicipal agreement. The Authority will consider financing the proposed upgrades via a municipal bond issue. However, the Authority will review all financial options available to it. Financing for installation of a new aeration tank will be accomplished through the use of bond proceeds that the Authority currently has.**

**In accordance with Chapter 71.3(c) of the Pennsylvania Code, the Authority is providing a 30-day public comment period. The Plan is available, for review, at the Authority's offices, 200 Ross Street, Plymouth Meeting, PA 19462 from 8:00 AM to 4:00 PM, Monday through Friday. Comments may be addressed to Mr. Charles A. Fagan, II, P.E., Executive Director, and are due no later than 30 days from the date of the publication of this notice.**

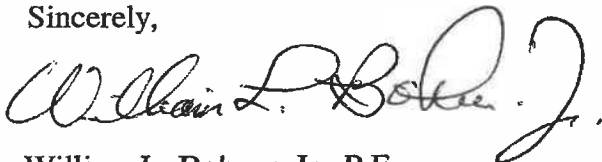
Ms. Sue Kuhn  
August 7, 2006  
Page 3

Please do not hesitate to contact me if you have any questions or if you require additional information. Please provide us with a "Proof of Publication Notice" and bill us for the charges associated with this advertisement at your earliest convenience. You can send the proof of publication and the bill to my attention at the following address:

ARRO Consulting, Inc.  
649 North Lewis Road  
Suite 100  
Limerick, PA 19468

Thank you for your attention concerning this matter.

Sincerely,



William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

c: Charles A. Fagan, II, P.E., Executive Director – ENPWJSA  
G. Matthew Brown, P.E., DEE – ARRO  
Jay R. Jackson, P.E. – ARRO

# The Times Herald

No..... Term. 20....

PROOF OF PUBLICATION NOTICE IN THE TIMES HERALD  
Under Act No.587, Approved May 16, 1929, P.L. 1784,  
As Amended by Act. No. 520 of July 5, 1947

STATE OF PENNSYLVANIA )

SS.

COUNTY OF MONTGOMERY: )

Michael Duffy, Publisher of THE TIMES HERALD, of the County and State aforesaid, being Duly sworn, deposes and says the THE TIMES HERALD, a Newspaper of general circulation Published at Markley, Ann and Airy Streets, Borough of Norristown, County and State aforesaid, Was established January 1, 1923, since which date THE TIMES HERALD has been regularly Issued in said County, and that the printed notice or publication attached hereto, is exactly the Same as was printed and published in the regular edition and issues of THE TIMES HERALD on The following dates, viz: .....

.....and the  
11<sup>th</sup> day of August A.D. 2006

**PUBLIC NOTICE**  
An Act 537 Plan Update has been prepared for the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), Montgomery County, Pennsylvania. The Plan addresses the planning requirements necessary to provide for the expansion and upgrade of the Authority's participating municipalities. For this Plan, the planning area includes East Norriton township, a portion of Plymouth township, and a portion of Whitpain Township. Given that each of these municipalities currently utilizes the facility, they have provided their needs/requirements for incorporation into this Plan.  
Wastewater generated by East Norriton Township, Plymouth Township, and Whitpain Township will be conveyed in the expanded and upgraded wastewater treatment facility located in Plymouth Township, Montgomery County, just east of the Borough of Norristown. This is an expansion and upgrade to the existing wastewater treatment plant. The unit is currently permitted to discharge treated wastewater effluent to the Schuylkill River in accordance with its National Pollution Discharge Elimination System Permit PA0026816. The stream classification for the Schuylkill River is "Warm Water Fish

The evaluation of alternatives for this Plan included the assessment of wastewater treatment plant's primary and secondary clarification processes, activated sludge process, and disinfection process.  
The selected alternative which best meets the immediate and future wastewater treatment needs of the planning area is the implementation of the following unit process upgrades to increase the capacity of the activated sludge portion of the Authority's plant:  
• Add one 60-foot diameter primary clarifier.  
• Add one 680,000 gallon aeration tank in parallel to the existing units.  
• Add one 70-foot diameter primary clarifier.  
• Add one 92,000 gallon chlorine contact tank.  
• Make upgrades/modification to the return activated/waste activated sludge pumping systems.  
• Additional yard piping and structures for wastewater distribution.  
The selected alternative shall also entail the continued implementation of the Authority's current Corrective Action Plan as approved by PA DEP.  
The above capital improvements will be needed to accommodate an annual average flow of 8.67 and 2-month maximum flow

The elected alternative will be funded by each of the participating municipalities in accordance with the current intermunicipal agreement. The Authority will consider financing the proposed upgrades via a municipal bond issue. However, the Authority will review all financial options available to it. Financing for installation of new aeration tank will be accomplished through the use of bond proceeds that the Authority currently has.  
In accordance with Chapter 71.3(c) of the Pennsylvania Code the Authority is providing a 30-day public comment period. The Plan is available for review, at the Authority's offices, 200 Ross Street, Plymouth Meeting, PA 19462 from 8:00 AM to 4:00 PM, Monday through Friday. Comments may be addressed to Mr. Charles A. Fagan, II, H.P.E., Executive Director, and are due no later than 30 days from the date of this publication of this notice.

Affiant further deposes that he is an officer Duly authorized by THE TIMES HERALD PUBLISHING COMPANY, INC. a corporation, Publisher of THE TIMES HERALD, a newspaper Of general circulation, to verify the foregoing Statement under oath, and affiant is not interested In the subject matter of the aforesaid notice of Advertisement, and that all allegations in the Foregoing statements as to time, place and Character of publication are true.

*Michael Duffy*  
Publisher, The Times Herald

Sworn to and subscribed before me this 16<sup>th</sup> day of August 2006

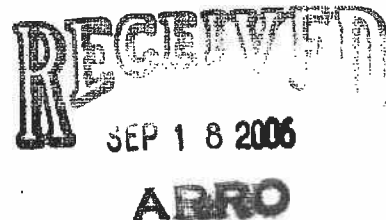
*Michele L. Lenzi*

COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
MICHELE L. LENZI, Notary Public  
Norristown Boro, Montgomery County  
My Commission Expires Oct. 10, 2009

**APPENDIX P**

**PUBLIC COMMENTS AND RESPONSES**

**EAST NORRITON-PLYMOUTH-WHITPAIN  
JOINT SEWER AUTHORITY  
200 ROSS STREET  
PLYMOUTH MEETING, PENNSYLVANIA 19462  
(610) 279-5759 • (610) 279-6264  
FAX: (610) 279-8033**



September 15, 2006

Mr. William L. Bohner, Jr., P.E.  
Project Engineer  
ARRO Consulting, Inc.  
649 North Lewis Road  
Suite 100  
Limerick, PA 19468-1234

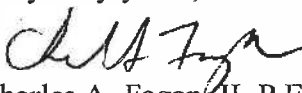
Re: East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Act 537 Sewage Facilities Plan – Public Comment

Dear Mr. Bohner:

As you know, the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority) advertised a public notice in the Norristown Times Herald newspaper that an Act 537 Plan Update (Plan) had been prepared by the Authority, and that the Plan was available for review and public comment at the Authority's offices. The public notice was advertised on Friday, August 11, 2006. The 30-day public comment period expired on September 10, 2006. The Authority received no public comments during this time period.

Please advise should you require additional information.

Very truly yours,

  
Charles A. Fagan, II, P.E.  
Executive Director

**APPENDIX Q**  
**RESOLUTIONS**



**RESOLUTION NO. 809**

**Resolution for Plan Revision**

**RESOLUTION OF WHITPAIN TOWNSHIP, MONTGOMERY COUNTY,  
PENNSYLVANIA (hereinafter "the Township").**

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537 known as the "Pennsylvania Sewage Facilities Act", as Amended, and the Rules and Regulations of the Pennsylvania Department of Environmental Protection (PADEP) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, require the Township to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said Plan whenever it is necessary to meet the sewage disposal needs of the Township's service area.

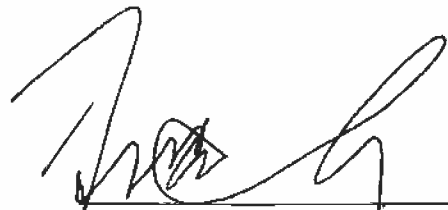
NOW, THEREFORE, BE IT RESOLVED, that the Township hereby adopts and submits to the Pennsylvania Department of Environmental Protection for its approval, a revision to the "Official Plan" of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority).

The Township hereby approves and adopts this Act 537 Plan which establishes the planning requirements necessary provide for upgrades to the Authority's existing wastewater treatment plant located at 200 Ross Road in Plymouth Township. The Plan incorporates the needs of each of the participating municipalities, thus establishing the basis for the proposed upgrades as addressed in the Plan.

The Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans, and to a comprehensive program of pollution control and water quality management.

I, Brian W. Young, Secretary, Whitpain Township, hereby certify that the foregoing is a true copy of Township Resolution No. 809, adopted December 19, 2006.

(TOWNSHIP SEAL)

  
Secretary

RESOLUTION NO. 2323

Resolution for Plan Revision

**RESOLUTION OF EAST NORRITON TOWNSHIP, MONTGOMERY COUNTY,  
PENNSYLVANIA (hereinafter "the Township").**

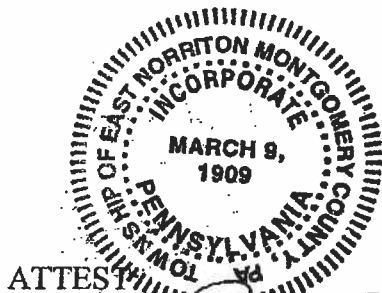
WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537 known as the "Pennsylvania Sewage Facilities Act", as Amended, and the Rules and Regulations of the Pennsylvania Department of Environmental Protection (PADEP) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, require the Township to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said Plan whenever it is necessary to meet the sewage disposal needs of the Township's service area.

NOW, THEREFORE, BE IT RESOLVED, that the Township hereby adopts and submits to the Pennsylvania Department of Environmental Protection for its approval, a revision to the "Official Plan" of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority).

The Township hereby approves and adopts this Act 537 Plan which establishes the planning requirements necessary to provide for upgrades to the Authority's existing wastewater treatment plant located at 200 Ross Road in Plymouth Township. The Plan incorporates the needs of each of the participating municipalities, thus establishing the basis for the proposed upgrades as addressed in the Plan.

The Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans, and to a comprehensive program of pollution control and water quality management.

DULY PRESENTED AND ADOPTED by the Board of Supervisors of East Norriton Township, Montgomery County, Pennsylvania, on this 19th day of December, 2006.



ATTEST

*Helmut J. K. ...*  
TOWNSHIP MANAGER

BOARD OF SUPERVISORS  
EAST NORRITON TOWNSHIP

By: *[Signature]*  
CHAIRMAN

RESOLUTION NO. 2006 - 59

Resolution for Plan Revision

**RESOLUTION OF PLYMOUTH TOWNSHIP, MONTGOMERY COUNTY,  
PENNSYLVANIA (hereinafter "the Township").**

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537 known as the "Pennsylvania Sewage Facilities Act", as Amended, and the Rules and Regulations of the Pennsylvania Department of Environmental Protection (PADEP) adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, require the Township to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said Plan whenever it is necessary to meet the sewage disposal needs of the Township's service area.

NOW, THEREFORE, BE IT RESOLVED, that the Township hereby adopts and submits to the Pennsylvania Department of Environmental Protection for its approval, a revision to the "Official Plan" of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority).

The Township hereby approves and adopts this Act 537 Plan which establishes the planning requirements necessary provide for upgrades to the Authority's existing wastewater treatment plant located at 200 Ross Road in Plymouth Township. The Plan incorporates the needs of each of the participating municipalities, thus establishing the basis for the proposed upgrades as addressed in the Plan.


The Township finds that the Facility Plan described above conforms to applicable zoning, subdivision, other municipal ordinances and plans, and to a comprehensive program of pollution control and water quality management.

I, Karen B. Weiss, Secretary, Plymouth Township, hereby certify that the foregoing is a true copy of Township Resolution No. 2006 - 59, adopted December 11, 2006

(TOWNSHIP SEAL)

Karen B. Weiss  
Secretary

Resolved that the Act 537 Plan dated May, 2006 prepared at the request of the Authority and the Pennsylvania Department of Environmental Protection, a copy of which is included in the records of this meeting, is hereby adopted. Copies of this Act 537 Plan shall be distributed to the appropriate recipients.

  
Roman M. Pronczak, Chairman

I hereby certify that this a true copy of the original resolution adopted at the East Norriton-Plymouth-Whitpain Joint Sewer Authority meeting held on October 11, 2006.

Date: October 11, 2006

  
Frederick W. McBrien III, Secretary

**APPENDIX R**

**APPROVED PLAN OF STUDY AND TASK  
ACTIVITY REPORT**

CC: Farley Fry



Pennsylvania Department of Environmental Protection

Lee Park, Suite 6010  
555 North Lane  
Conshohocken, PA 19428

MAR 04 2003

Southeast Regional Office

610-832-6130

Fax 610-832-6133

Charles A. Fagan, II, P.E.  
Executive Director  
East Norriton-Plymouth-Whitpain Joint Sewer Authority  
200 Ross Street  
Plymouth Meeting, PA 19462

MAR 06 2003

BY: enpwjsa

Re: Act 537 - Plan of Study  
Regional Act 537 Plan Update  
East Norriton Township  
Plymouth Township  
Whitpain Township  
Montgomery County

Dear Mr. Fagan:

We have completed our review of your Authority's proposed plan of study, as prepared by Arro Consulting, Inc., dated November 19, 2002.

The plan of study proposes the development of a plan that will address the sewage disposal needs of the Authority's member municipalities.

Approval of this proposed plan of study is hereby granted. The estimated cost of the plan is \$36,100.00.

The Authority's Act 537 Official Plan Update should be formatted as suggested under Appendix H of the "A Guide for Preparing Act 537 Update Revisions" including the necessary items under Appendix I - "Act 537 Plan Content and Environmental Assessment Checklist". This form is available on our website at:

[http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/Forms/Act537/Forms\\_537Plan.htm](http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/Forms/Act537/Forms_537Plan.htm)

We note that the Authority's member municipalities are each developing separate Act 537 plan updates. Some of the information developed by these plans will be incorporated into the Authority's proposed regional Act 537 plan update. The Authority's proposed plan must also be adopted by each affected municipality.

Please note, however, that this plan of study approval does not constitute a final action by the Department. When a completed plan is submitted to us, we will act upon it consistent with PA Code Title 25, Chapter 71.



MAR 04 2003

If you have any questions, please contact me at the above number.

Sincerely,



Elizabeth Mahoney  
Sewage Planning Specialist II  
Water Management

cc: Montgomery County Planning Commission  
Montgomery County Health Department  
Mr. Bohner  
East Norriton Township  
Plymouth Township  
Whitpain Township  
Planning Section  
Re 30

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Lee Park, Suite 6010  
555 North Lane  
Conshohocken, PA 19428

MAR -6 2003

ARRO

MAR 0 4 2003

**Southeast Regional Office**

610-832-6130  
Fax 610-832-6133

Charles A. Fagan, II, P.E.  
Executive Director  
East Norriton-Plymouth-Whitpain Joint Sewer Authority  
200 Ross Street  
Plymouth Meeting, PA 19462

Re: Act 537 - Plan of Study  
Regional Act 537 Plan Update  
East Norriton Township  
Plymouth Township  
Whitpain Township  
Montgomery County

Dear Mr. Fagan:

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[http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/Forms/Act537/Forms\\_537Plan.htm](http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/Forms/Act537/Forms_537Plan.htm)

We note that the Authority's member municipalities are each developing separate Act 537 plan updates. Some of the information developed by these plans will be incorporated into the Authority's proposed regional Act 537 plan update. The Authority's proposed plan must also be adopted by each affected municipality.

Please note, however, that this plan of study approval does not constitute a final action by the Department. When a completed plan is submitted to us, we will act upon it consistent with PA Code Title 25, Chapter 71.





November 19, 2002

Mr. Clinton Cleaver, Water Management  
Pennsylvania Department of  
Environmental Protection  
Lee Park, Suite 6010  
555 North Lane  
Conshohocken, PA 19428

Certified Mail #7001 1940 0004 5658 3632  
Return Receipt Requested

*The ARRO Group, Inc.*

*ARRO Consulting, Inc.*

*ARRO Environmental  
Services, Inc.*

RE: East Norriton-Plymouth-Whitpain Joint Sewer  
Authority Regional Act 537 Plan Update;  
Plan of Study and Task Activity Report;  
ARRO # 5469.00 ✓

649 North Lewis Road

Suite 100

Limerick, PA 19468-1234

610.495.0303

Fax: 610.495.5855

info@thearrogroup.com

www.thearrogroup.com

Dear Clinton:

On behalf of the East Norriton-Plymouth-Whitpain Joint Sewer Authority (Authority), we are submitting a Plan of Study (POS) and Task Activity Report (TAR) for the preparation of the Authority's Regional Act 537 Plan. This regional Plan will establish the planning elements that are necessary to meet the requirements of PA DEP. The Plan will also establish the planning requirements necessary to provide sanitary sewer facilities upgrades for the Authority such that the Authority can meet the sewage facilities needs of its member municipalities.

The Authority's member municipalities have determined it to be necessary to prepare their own separate Act 537 Wastewater Facilities Plans. These plans would cover all service areas within their respective municipal boundaries including the service areas that contribute wastewater to the Authority's wastewater treatment plant. Portions of these municipal plans will be incorporated into the Authority's plan to establish the basis for the technical and financial alternatives. Each of the member municipalities will be submitting their own separate POS and TAR under separate cover if they have not done so already.

Please review this POS and TAR. If you have any questions please call me at 610-495-2102. Thank you for your assistance and attention regarding the review of this document.

Sincerely,

William L. Bohner, Jr., P.E.  
Project Engineer

WLB:car

Enclosure

c: Charles A. Fagan, II, P.E., Executive Director – ENPWJSA (w/enclosure)  
Farley F. Fry, P.E. – ARRO Consulting, Inc.

ENGINEERING

CONSULTING

ENVIRONMENTAL

East Norriton-Plymouth-Whitpain Joint Sewer Authority  
Regional Act 537 Plan

In accordance with Title 25, Chapter 71, Administration of the Sewage Facilities Planning Program, of the Pennsylvania Code, a Plan of Study has been developed, for the preparation of an Act 537 Sewage Facilities Plan (Plan). This is being prepared to establish the planning elements that are necessary to meet the requirements of the Pennsylvania Department of Environmental Protection (PADEP) as they relate to the preparation of the East Norriton-Plymouth-Whitpain Joint Sewer Authority's (Authority) Regional Act 537 Plan. This Regional Plan is to address the planning requirements necessary to provide sanitary sewer facilities upgrades for the Authority such that the Authority can meet the sewage facilities needs of its member municipalities.

The Authority's member municipalities have determined it to be necessary to prepare their own separate Act 537 Wastewater Facilities Plans. These plans would cover all service areas within their respective municipal boundaries including the service area that contributes wastewater to the Authority's wastewater treatment plant. Portions of these municipal plans will be incorporated into the Authority's plan to establish the basis for the technical and financial alternatives.

Based on the PADEP Act 537 Plan Content and Environmental Assessment Checklist, the following addresses the planning requirements necessary to complete the proposed Plan and its associated revisions:

**ACT 537 PLAN EXECUTIVE SUMMARY**

1. Prepare a table of contents for the document.
2. Prepare a plan summary (Executive Summary)
  - A. Identify the planning area to be served by the future collection and conveyance system.
  - B. Identify the alternative chosen collection and conveyance alternative.
  - C. Include the cost opinion for implementing the proposed alternative.
  - D. Identify the municipal commitments necessary to implement the plan.
  - E. Provide a schedule for implementing the proposed project.

3. Provide original signed and sealed Resolutions of Adoption by participating municipalities
4. Provide comments by appropriate municipal planning agencies, the Chester County Planning Commission, and the Chester County Health Department
5. Provide Proof of Public Notice.
6. Provide a copy of all written comments received and written responses to each comment.
7. Prepare the project implementation schedule.
8. If any planning inconsistencies are identified, documentation will be provided discussing the resolution of the inconsistencies. If none are identified, a statement will be made to that effect.

## GENERAL PLAN

### I. Previous Wastewater Planning

- A. Identify and discuss existing wastewater planning. **(Incorporate information provided in the individual municipal plans)**
  1. Discuss previous Act 537 planning.
  2. Discuss planning that has not been done in accordance with an approved implementation schedule.
  3. Discuss additional planning, if any, that is anticipated or planned by the Authority.
  4. Discuss planning that has been done via official plan revision such as planning modules or addenda.
- B. Identification of Municipal and County planning documents. **(Incorporate information provided in the individual municipal plans)**
  1. Identify land use plans and zoning maps as they pertain to individual municipalities.
  2. Identify the zoning regulations that establish lot sizes.

3. Limitations and plans related to floodplain and stormwater management and special protection areas.

## II. Physical and Demographic Analysis

- A. Identify the planning area, municipal boundaries and Authority's service area boundaries. **(Incorporate information provided in the individual municipal plans)**
- B. Identify physical characteristics of the planning area. USGS and National Wetlands Inventory Maps will form the basis for this identification. **(Incorporate information provided in the individual municipal plans)**
- C. Soils: A discussion of soils types will be prepared based on US Soil Conservation Service Survey information. The discussion will pertain to those areas that currently have OLDS. **(Incorporate information provided in the individual municipal plans)**
- D. Discussion of geological features in the service will be based on USGS survey information. **(Incorporate information provided in the individual municipal plans)**
- E. Discuss topographic features in the service area. **(Incorporate information provided in the individual municipal plans)**
- F. Potable water supply information will be identified through the obtaining of service area mapping from the water supplier in the planning area. **(Incorporate information provided in the individual municipal plans)**
- G. Identify wetlands in the area utilizing a National Wetlands Inventory Map. **(Incorporate information provided in the individual municipal plans)**

## III. Existing Sewage Facilities in the Planning Area

- A. Identify and describe municipal sewerage systems in the planning area. **(Incorporate information provided in the individual municipal plans for all items below, and supplement the information with Authority data and information for items 1, 2, 3, and 4)**
  1. Discuss location, size and ownership of treatment, facilities. A map will be provided to show the location of the interceptors, pumping stations and force mains.

2. Provide a narrative and schematic diagram of the basic treatment process is.
  3. Provide a description of the problems, if any, with the existing treatment plant.
  4. Provide details, if any, relative to ongoing upgrading or expansion of the treatment facilities.
  5. Provide a description of operation and maintenance requirements for OLDS and the status of past and present compliance with these requirements.
  6. Ultimate disposal is a stream discharge. Identification of other ultimate disposal areas is **not applicable**.
- B. 1,2,3,4. The location and condition (**based on information provided by the individual municipalities**) of the OLDS will be discussed.
- C. 1,2,3. Identification of wastewater sludge and septage generation. (**Incorporate information to be provided by the individual municipalities**)

#### IV. Future Growth and Development

- A. Describe future growth and development through mapping, text and analysis. (**Incorporate information to be provided by the individual municipalities in their respective plans**)
1. Discuss areas with existing development or plotted subdivisions.
  2. Discuss land use designations including residential, commercial and industrial areas.
  3. Discuss future growth areas, population and EDU projections for these areas.
  4. Briefly discuss zoning and subdivision regulations as they pertain to planned development.
  5. Discuss the sewage planning required to provide adequate wastewater treatment for planned development.

## V. Alternatives to Provide New or Improved Wastewater Disposal Facilities

- A. Identify the alternative to provide for improved sewage facilities
  - 1. Identification of regional wastewater treatment concepts
  - 2. The potential for extension of existing municipal or non-municipal sewage facilities to areas in need. **(Supplemented by information provided by the individual municipalities)**
  - 3. Identify the potential for continued use of the existing treatment facility through upgrading of the facility.
  - 4. Analysis of alternatives based on the need for new community sewage systems. **(Supplemented by information provided by the individual municipalities)**
  - 5. Analysis of alternatives as they relate to repair and replacement of collection and conveyance system components will be addressed. **(Specifically as it pertains to the Sawmill Run Pump Station and Sawmill Run Interceptor)**
  - 6. Analysis of alternatives as they relate to use of alternate methods of collection/conveyance to serve needs areas using existing wastewater treatment facilities. **(Supplemented by information provided by the individual municipalities)**
- B. The use of individual sewage disposal systems. **(Based on information provided in the individual municipal plans)**
- C. Assessment of alternatives based on the use of small flow sewage treatment facilities, land treatment alternatives or package treatment facilities to serve individual homes or clusters of homes. **(Incorporate information from the individual municipal plans)**
- D. Analysis based on the use of community land disposal is. **(Incorporate information from the individual municipal plans)**
- E. The use of retaining tank alternatives. **(Incorporate information from the individual municipal plans)**
- F. Implementation of a septage management program. **(Incorporate information from the individual municipal plans)**

- G. Non-structural comprehensive planning alternatives.
- H. Provide a no-action alternative which includes impacts on:
  - 1. Water Quality and Public Health
  - 2. Growth Potential
  - 3. Community and economic conditions
  - 4. Recreational opportunities
  - 5. Drinking water sources
  - 6. Other environmental concerns.

## **VI. The Evaluation of Alternatives**

- A. Evaluate the alternative, identified in Section V, for consistency with respect to the following:
  - 1. Plans developed under the Clean Streams Law.
  - 2. Plans developed under the Municipal Wasteload Management Plan (Chapter 94).
  - 3. Plans developed under Title II of the Clean Water Act.
  - 4. Comprehensive plans developed under the Pennsylvania Municipalities Planning Code.
  - 5. Antidegradation requirements as contained in PA Code, Title 25, Chapters 93, 95 and 102 and the Clean Water Act.
  - 6. State water plans developed under the Water Resources Planning Act.
  - 7. Pennsylvania Prime Agricultural Land Policy.
  - 8. The County Stormwater Management Plan.
  - 9. Wetlands Protection. A Federal National Wetlands Inventory Map will be included.
  - 10. Protection of rare, endangered or threatened plant and animal species as identified by the PNDI.
  - 11. Historical and Archeological Resource Protection.

- B. Provide for the resolution of any inconsistencies with items 1 through 11 above, if necessary.
- C. Evaluate the alternative with respect to applicable water quality standards and effluent limitations.
- D. Provide a preliminary cost opinion for construction, financing and engineering fees for the alternative identified in Section V.
- E. Provide an analysis of funding methods available to finance the proposed alternative.
- F. Analyze the need for immediate or phased implementation.
- G. Analyze the ability of the Authority to implement the alternatives.

## **VII. Institutional Evaluation**

- A. Provide an analysis of the Authority, their past actions and present performance including:
  - 1. Financial and debt status.
  - 2. Available staff and administrative resources.
  - 3. Existing legal authority to implement wastewater planning recommendations, implement system-wide operation and maintenance activities, set user fees, take purchasing actions, take actions against ordinance violators, negotiate agreements with other parties and raise capital for construction, operation and maintenance of facilities.
- B. Describe the various institutional alternatives necessary to implement the technical alternative, including:
  - 1. There is no need for a new authority. No analysis will be completed for this.
  - 2. Function of Authority.
  - 3. Cost of administration, implementability, and capability of the Authority to react to future needs.



- C. Describe necessary administrative and legal activities, if any, to be completed and adopted to ensure the implementation of the alternative, including:
1. Legal authorities of incorporation.
  2. Required ordinances, standards, regulations and intermunicipal agreements.
  3. Provisions of rights-of-way, easements, and land transfers.
  4. Other sewage facilities plan adoptions.
  5. Legal documents, if any.
  6. Dates or timeframes of 1-5 above on the implementation schedule.
- D. Identify the chosen institutional alternative

**VIII. Selected Wastewater Treatment and Institutional Alternative (This section was revised.)**

- A. Identify the chosen technical alternative. Justify the choice based on:
1. Existing wastewater disposal needs.
  2. Future wastewater disposal needs.
  3. Operations and maintenance considerations.
  4. Cost effectiveness.
  5. Availability management and administrative systems.
  6. Available finance methods.
  7. Environmental Soundness.
- B. Describe the capital-financing plan chosen to implement the selected alternative.

ENPWJSA  
Municipality

Montgomery  
County

East Norriton, Plymouth, Whipain Twps.  
Proposed Planning Area (Attach Map)

11/15/02  
Date of Report

Date completed plan will be submitted to DEP

7/04

Estimated Cost of Plan

\$36,100

TASK ACTIVITY NUMBER FROM APPENDIX I //////////	Q/A MANAGER		PROJECT MANAGER		PROJECT ENGINEER		Sewage Fac. ENGINEER		DESIGNER (CADD)		Collection/ Conveyance		CLERICAL		EXPENSES	SUB TOTAL (\$)
	HR/ RATE	\$109	HR/ RATE	\$138	HR/ RATE	\$78	HR/ RATE	\$132	HR/ RATE	\$78	HR/ RATE	\$83	HR/ RATE	\$44		
	HRS.	COST (\$)	HRS.	COST (\$)	HRS.	COST (\$)	HRS.	COST (\$)	HRS.	COST (\$)	HRS.	COST (\$)	HRS.	COST (\$)	COST (\$)	
I					8	624										624
II					8	624										624
III					8	624			24	1872			6	264		2760
IV					8	624										624
V			2	276	24	1872	24	3168	32	2496	24	1992	8	352		10,156
VI					24	1872							8	352		2224
VII			4	552	16	1248							8	352		2152
VIII			2	276	10	780							8	352		1408
Plan of Study			2	276	22	1716							4	176		2168
Munic. Coord.			16	2208	28	2184										4392
Respond to comments			2	276	16	1248			8	624			8	352		2500
Proj. Manage.			8	1104												1104
Plan to DEP					8	624							4	176		800
Legal/Plan Ad.															500	500
In House Document Rev.	8	872														872
Plan Reimb.					8	624							4	176		800
Expenses															2392	2392
Totals	8	872	36	4968	188	14,664	24	3168	64	4992	24	1992	58	2552	2892	36,100

William L. Bohner, Jr., P.E.

*William L. Bohner, Jr.*

Project Engineer

*Chad A. F...*