



# Bucks County Water and Sewer Authority

1275 ALMSHOUSE ROAD  
WARRINGTON, PENNSYLVANIA 18976

TCE fwo  
ORIGINAL  
(Red) 107195

August 8, 1988

Re: Dublin Water Study

Mr. Luther Wonsidler  
Dublin Borough Sewer Authority  
119 Maple Avenue  
Dublin, PA 18917

Dear Mr. Wonsidler:

Enclosed is a letter from Mr. Andrew L. Samuelson, P.E., Carroll Engineering Corporation, detailing the results of the study of the Dublin Borough Water System.

Also enclosed is a bill of \$4,969.14 representing Dublin Borough's share of the cost to do the study. Accordingly, would you please forward a check in that amount.

We appreciate the chance to have been of service to the Borough and regret that we were unable to complete the program. Please advise if we may be of any further assistance of this or other projects.

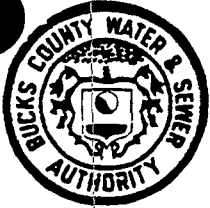
Sincerely,

  
Harold D. Sursa  
Executive Director

HDS/cq

AR300148

ORIGINAL  
(Red)



# Bucks County Water and Sewer Authority

1275 ALMSHOUSE ROAD • WARRINGTON, PA 18978  
215-343-2538 1-800-222-2068

April 30, 1987

No. 7149-20

Mr. Luther L. Wonsidler  
Dublin Borough  
119 Maple Avenue  
Dublin PA 18917

Central Bucks  
RE: Dublin Water System

Engineering Bills per Attached Carroll Engineering Invoices	6/01 to 12/31/86	\$9,763.13
Less: 50%		<u>4,881.57</u>
Engineering Bill @ 50%		<u>\$4,881.56</u>
		<u>87.58</u>
 Balance Due BCW&SA		 <u>\$4,969.14</u>

(20-100-1780)

LK/tk

TO INSURE PROPER CREDIT PLEASE  
RETURN CARBON COPY WITH REMITTANCE

AR300149



# CARROLL ENGINEERING CORPORATION

ORIGINAL  
(Red)

Suite 100, 949 Easton Road, Warrington, PA 18976

Consulting Engineers

(215) 343-5700

FAX:

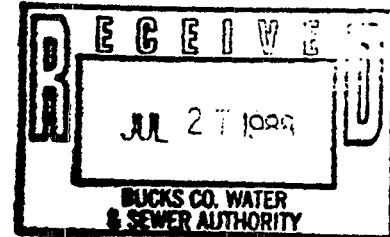
(215) 343-0875

991 Woodbine Avenue, Bensalem, PA 19020

(215) 638-3400

July 26, 1988

Harold D. Sursa, Executive Director  
Bucks County Water & Sewer Authority  
1275 Almshouse Road  
Warrington, PA 18976



RE: Dublin Borough Water System  
CEC #86-2257 (BCWSA884.10)

Dear Mr. Sursa:

Transmitted herewith is the documentation for our study of the upgrade and expansion of the Dublin Borough Water System. The documentation consists of the following:

1. Feasibility Study Memorandum which provides the design criteria and cost estimate for the required construction.
2. Amplifying memoranda and communications:
  - a. Preliminary Data Research, dated July 25, 1986.
  - b. Plan of Action for Water Study, Phase 1, 2 and 3, dated August 15, 1986.
  - c. Proposal for Hydrogeological Services, August 19, 1986.
  - d. Authorization to Subcontractor, dated August 25, 1986.
  - e. Cost Proposal for Phase 2 Water Study, dated October 22, 1986.
3. Hydrogeological Study Report, dated November 20, 1986.
4. Notification to Delaware River Basin Commission, dated December 19, 1986.
5. Projected Water Rates Study, dated February 20, 1987.

CIVIL • SANITARY • MUNICIPAL • SUBDIVISION

(OVER)

AR30015Q

Harold D. Sursa, Executive Director  
CEC #86-2257 (BCWSA884.10)  
Page Two  
July 26, 1988

We trust that the attachments adequately summarize our study efforts and justify the billing for same.

Very truly yours,

CARROLL ENGINEERING CORPORATION

  
Andrew L. Samuelson, P.E.

ALS:dp  
enclosures

AR300150A

DUBLIN BOROUGH WATER SUPPLY

ORIGINAL  
(Red)

I. 1986 COST ESTIMATE - WELLS

Two 135 gpm wells required

Well development (Rosanelli)	\$ 32,000	
Well development (other)	32,000	
Well House #1	110,000	
Well House #2	110,000	
Portable Generator	20,000	
Land - (1) site free	10,000	
Subtotal		\$314,000

II. ONE STRIPPING TOWER PER WELL

150 gpm tower - fabrication only		
40' high alum. tower,		
packing, fan, piping, control		
panel, pumps	\$30,000	
Erection and Installation	20,000	
Power Supply	10,000	
Slab and Foundation	10,000	
Site Work	10,000	
Test and Adjust	5,000	
Subtotal		\$ 85,000
GC Profit and OH		13,000
GC Misc. and Cont.		<u>12,000</u>
Total (1) tower		\$110,000

AR300151

ORIGINAL  
(Red)

**SERIES 7400 - VOC AIR STRIPPERS**

**APPLICATION** The MICROTROL Series 7400 Air Stripping Towers are designed to remove volatile organic compounds (VOC's) from ground water supplies, industrial waste waters and process plant effluents. The MICROTROL Air Stripper carefully balances the design variables of VLE's (contaminants vapor/liquid equilibrium constants); VAR (Volumetric Air Ratio); LAR (Liquid to Air Ratio) with Tower Packing Materials having low aspect ratios and low packing factors to give most effective/economical capital cost and operating cost unit.

**OPERATION** The MICROTROL Air Stripper System features a vertical, counterflow packed tower where the contaminant laden water is introduced at the top of the packed bed (thru a specifically designed liquid distributor to assure proper liquid distribution) and cascade down thru the packed section media. Stripping air is introduced at the bottom of the packed section and flows upward thru the media and exits the top, having removed the VOC's from the water. The Tower has a bottom clean water effluent pipe; top screened air outlet; top mist eliminator; and is available with replaceable carbon absorption cells for exhaust air purification.

The Air Stripper System includes a forced draft (ground mounted) or induced draft (tower mounted) blower to move the stripping air thru the packing media. The Blower is interlocked with the supply water system to operate when the water supply is activated and to shut-down when either the blower is not operating or when there is no water flowing.

**FEATURES** Vertical Counter-flow Packed Tower Contact Bed Depth/Type Packing based on performance required Spray-Weir Trough-Orifice Plate Type Distributors Liquid Redistributors Mesh Pad or Chevron Type Mist Eliminator Free-standing or Guyed Construction Influent Riser Pipe

**OPTIONAL FEATURES** Charcoal Filter for Air Exhaust Purification Top, Induced Draft Blower Partial Water Recirculation Access Platform or Ladder Effluent overflow Completely shop assembled Package Units

**MATERIALS OF CONSTRUCTION**

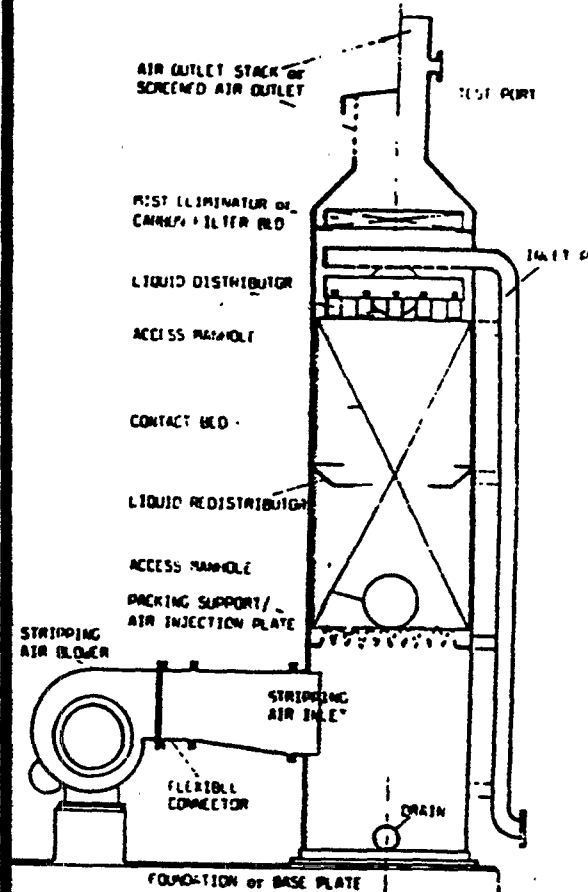
**SHELL** Fiberglass Reinforced Plastic-FRP-Polyester Resin with ultraviolet inhibitors

Aluminum - Types 3033, 5051 or 6061 Stn. Stl. Type 304  
Carbon Steel with Epoxy Liner Polyethylene PVC

**PACKING** Polypropylene - 100% Virgin

**MIST ELIMINATOR** Polypropylene - glass filled Ryton

**BLOWER** Carbon Steel with TEFC Motor



**SIZES** 6" DIA to 144" DIA  
**CAPACITIES** 5 GPM to 3,500 GPM

AR300152

PACKAGE UNITS AVAILABLE Air  
Stripper Columns are available on a  
unitary base with blower and controls

PILOT PLANTS AVAILABLE Pilot  
Plants, to evaluate your specific re-  
quirements and assure performance are  
available

RENTAL UNITS AVAILABLE Por-  
table units are available for waste  
water clean-up, pool water stripping  
and clean-up and interior potable water  
treatment

ENGINEER CONSULTANTS We will  
assist Engineering Consultants in the  
preparation of Specifications for Air  
Stripping Requirements

PARTIAL LIST OF CONTAMINENTS OUR AIR  
STRIPPER CAN HANDLE

Ammonia  
Benzene  
Bromodichloromethane  
Bromoform  
Bromomethane  
1 - Butylmethyl Ether  
Carbon Tetrachloride  
Chlorobenzene  
Chloroethane  
Chloroform  
Chloromethane  
2 - Chloroethylvinyl Ether  
Dibromochloromethane  
Dichlorodifluoromethane  
Dieldrine  
Diisopropyl Ether  
1, 1 - Dichloroethane  
1, 2 - Dichloroethane  
1, 1 - Dichloroethylene  
t, 1, 2 - Dichloroethylene  
1, 4 - Dichlorobenzene  
1, 2 - Dichloropropane  
t, 1, 3 - Dichloropropene  
c, 1, 3 - Dichloropropene  
Ethylbenzene  
Hydrogen Sulfide  
Methane  
Methylene  
Pentachlorophenol  
Phthalates  
Sulfur dioxide  
Tetrachlorethylene (PCE)  
Tolyene  
Trichloroethylene (TCE)  
1, 1, 1 - Trichloroethane  
1, 1, 2 - Trichloroethane  
1, 2, 4 - Trimethylbenzene  
Vinyl Chlorides  
Xylenes

MICROTROL

Environmental  
Systems, Inc.

P.O. BOX 426 NEW HOPE, PA 18938

AR300153

DUBLIN BOROUGH WATER SYSTEM EXPANSION

ORIGINAL  
(Red)

1986 COST ESTIMATE

III. WATER TRANSMISSION AND DISTRIBUTION LINES

8" PVC (C900) distribution system in place - includes hydrants, valves, fittings, excavation and backfill - 23,000 LF @ \$22.00	\$ 506,000
10" PVC (C900) transmission system in place - includes valves and fittings, excavation and backfill - 3,000 LF @ \$20.00	60,000
Pressure reducers 300 @ \$70.00	21,000
Water Services 769 @ \$250.00	192,000
Traffic Control	10,000
Select Backfill (11,000 LF)	84,000
Pavement Restoration (9,600 LF)	131,000
Driveway and Lawn Restoration (16,400 LF)	<u>33,000</u>
TOTAL	\$1,037,000

AR300154



Pine Cone Acres

ADINO  
(107)

Water Main

50 L/F 12" DIP	@	27.00/ft.	\$ 1,350.00
1,985 L/F 8" DIP	@	16.00/ft.	31,760.00
2 8" Bends	@	150.00 ea.	300.00
3 8x8 Tees	@	225.00 ea.	675.00
2 8x6 Hydrant Tees	@	215.00 ea.	430.00
9 8" Valves & Boxes	@	550.00 ea.	4,950.00
2 6" Valves & Boxes	@	450.00 ea.	900.00
2 Fire Hydrants	@	1,100.00 ea.	2,200.00
2 Blow-offs	@	400.00 ea.	800.00
1 Tie In	@	500.00 ea.	500.00
21 3/4" Water Services	@	255.00 ea.	<u>5,355.00</u>
			\$49,220.00

*Beaver & Casey, Inc.*

DUBLIN BOROUGH WATER SYSTEM EXPANSION

1986 Project Cost Estimate

I Wells (2)	\$ 314,000
II TCE Removal (2)	220,000
III Transmission and Distribution System	1,037,000
IV Tank Reconditioning	<u>32,000</u>
SUBTOTAL Construction	1,603,000
Miscellaneous & Contingency @ 15%	240,000
Engineering @ 6%	96,000
Survey @ 5%	80,000
Hydrogeologist	15,000
Legal and Easements	<u>36,000</u>
TOTAL PROJECT	\$2,070,000

AR300155