

Ref # 7



Carroll Engineering Corporation

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DOYLESTOWN TOWNSHIP

September 13, 2006

Walter C. Berry, Chairman
Board of Supervisors
Doylestown Township
425 Wells Road
Doylestown, PA 18901

Dear Mr. Berry:

Subject: Feasibility Study - Doylestown Township

We have finalized the study requested in your June 21, 2006 letter to Mr. Jones, including the items requested by the Township Manager in her letter dated August 22, 2006.

Attached is a highlighted map showing the study areas outlined in blue. We have separated out the Dell Haven service area and omitted the 30 EDUs which were recently serviced along Turk Road from the Pebble Ridge service area. We also separated out the Route 611 Corridor area which was the subject of a previous feasibility study, and have summarized the results in the attached cost estimates for your convenience.

The estimated costs for sewer service to the Pebble Ridge Area are \$ 9,717,120. The estimated project cost per EDU, including tapping fee, would be approximately \$27,000. The estimated costs for sewer service to the Dell Haven Area are \$ 1,389,250. The estimated project cost per EDU, including tapping fee, would be approximately \$ 24,600. Detailed cost estimates are enclosed.

The estimated costs for sewer service to the Pebble Hill/Sugar Bottom Areas are \$ 35,313,900. The estimated project cost per EDU, including tapping fee, would be approximately \$28,300. The estimated costs for sewer service to the Route 611 Corridor are \$ 1,773,500. The estimated project cost per EDU, including tapping fee, would be range between \$ 24,100 and 29,800, depending on the number of EDUs that would connect to the system.

Please note that ultimate EDUs, as presented in the Township 537 Plan for the subject study areas, were used for the purpose of estimating the number of services and the project cost distribution per EDU. Also, not all of the study service areas can be accommodated in existing treatment facilities. Additional treatment plant capacity used in these estimates was based on typical unit costs for such facilities of this kind. A more detailed cost estimate for this capacity will require a separate analysis of alternative treatment capacity upgrades to either Kings Plaza or Green Street WWTPs, which would be done during 537 Planning activities.

Today's Commitment To Tomorrow's Challenges

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If you have any questions on this information, please do not hesitate to call or this can be discussed in more detail at the upcoming Sewer Committee meeting on September 21, 2006.

Very truly yours,

CARROLL ENGINEERING CORPORATION



John A. Swenson, P.E.

JAS:jd

Enclosures

cc: Stephanie Mason, Manager, Doylestown Township
Benjamin W. Jones, Executive Director, BCWSA
Jeffrey P. Garton, Esquire, Begley, Carlin & Mandio
Harry J. Barford, Jr., P.E., Chairman

**PEBBLE RIDGE AREA SEWER EXTENSION
OPINION OF PROBABLE COSTS**

ITEM	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
10" DIP	LF	6,700	\$ 29.00	\$ 194,300.00
8" DIP	LF	3,000	\$ 27.00	\$ 81,000.00
8" PVC	LF	31,400	\$ 22.00	\$ 690,800.00
6" PVC (Gravity Laterals)	LF	8,140	\$ 15.00	\$ 122,100.00
2.5" PVC (Grinder)	LF	4,200	\$ 13.00	\$ 54,600.00
1.5" PVC (Grinder Laterals)	LF	320	\$ 11.00	\$ 5,720.00
Manholes (Gravity)	EA	165	\$ 1,464.00	\$ 241,560.00
MH Frames & Covers	EA	165	\$ 348.00	\$ 57,420.00
Cleanout Fittings (Gravity)	EA	407	\$ 195.00	\$ 79,365.00
Cleanout Fittings (Grinder)	EA	28	\$ 244.00	\$ 6,832.00
Stone Bedding	LF	56,760	\$ 2.00	\$ 113,520.00
Stone Backfill	LF	43,695	\$ 9.00	\$ 393,255.00
Concrete Encasement	LF	1,500	\$ 37.00	\$ 55,500.00
Rock Excavation	LF	24,992	\$ 31.00	\$ 774,752.00
Temporary Pavement Restoration	LF	43,695	\$ 2.00	\$ 87,390.00
Permanent Pavement Restoration	LF	43,695	\$ 48.00	\$ 2,097,360.00
Lawn Restoration	LF	13,065	\$ 4.00	\$ 52,260.00
Silt Fence	LF	20,000	\$ 1.00	\$ 20,000.00
Creek Crossing	EA	4	\$ 6,100.00	\$ 24,400.00
Pump Station	LS	1	\$ 300,000.00	\$ 300,000.00
6" Force Main	LF	2,800	\$ 20.00	\$ 56,000.00
Air Release Chamber	EA	3	\$ 4,000.00	\$ 12,000.00
Connect to Existing Manhole	EA	4	\$ 2,000.00	\$ 8,000.00
Upgrade to WWTP for Add'l Capacity	GPD	48,020	\$ 20.00	\$ 960,400.00
Subtotal (Public Construction Cost)				\$ 6,488,530.00
Construction Contingency (10%)				\$ 648,850.00
Engineering, Legal, Administration and Easements (30%)				\$ 1,946,560.00
Total Public Construction Cost				\$ 9,083,940.00
Public Cost per EDU				\$ 20,880.00
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Grinder Pumps	EA	28	\$ 4,880.00	\$ 136,640.00
Gravity Laterals	EA	407	\$ 1,220.00	\$ 496,540.00
Total Private Construction Cost				\$ 633,180.00
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Total Cost				\$ 9,717,120.00
Total Cost per EDU				\$ 22,340.00
Collection Sewer System Tapping Fee				\$ 4,700.00
Total Overall Project Cost per EDU				\$ 27,040.00

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**DELL HAVEN AREA SEWER EXTENSION (ALTERNATIVE)
OPINION OF PROBABLE COSTS**

ITEM	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
2.5" PVC (Grinder)	LF	5,600	\$ 13.00	\$ 72,800.00
1.5" PVC (Grinder Laterals)	LF	1,400	\$ 11.00	\$ 15,400.00
Cleanout Fittings (Grinder)	EA	70	\$ 244.00	\$ 17,080.00
Stone Bedding	LF	7,000	\$ 2.00	\$ 14,000.00
Stone Backfill	LF	6,650	\$ 9.00	\$ 59,850.00
Rock Excavation	LF	2,408	\$ 31.00	\$ 74,648.00
Temporary Pavement Restoration	LF	6,650	\$ 2.00	\$ 13,300.00
Permanent Pavement Restoration	LF	6,650	\$ 48.00	\$ 319,200.00
Lawn Restoration	LF	350	\$ 4.00	\$ 1,400.00
Creek Crossing	EA	1	\$ 6,100.00	\$ 6,100.00
Upgrade to WWTP for Add'l Capacity	GPD	7,727	\$ 20.00	\$ 154,540.00
Subtotal (Public Construction Cost)				\$ 748,320.00
Construction Contingency (10%)				\$ 74,830.00
Engineering, Legal, Administration and Easements (30%)				\$ 224,500.00
Total Public Construction Cost				\$ 1,047,650.00
Public Cost per EDU				\$ 14,970.00
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Grinder Pumps	EA	70	\$ 4,880.00	\$ 341,600.00
Total Private Construction Cost				\$ 341,600.00
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Total Cost				\$ 1,389,250.00
Total Cost per EDU				\$ 19,850.00
Collection Sewer System Tapping Fee				\$ 4,700.00
Total Overall Project Cost per EDU				\$ 24,550.00

**PEBBLE HILL/TABOR TOWER HILL/PHEASANT RUN/SUGAR BOTTOM/FURLONG
AREAS SEWER EXTENSION
OPINION OF PROBABLE COSTS**

ITEM	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
14" DIP	LF	7,550	\$ 46.00	\$ 347,300.00
12" DIP	LF	12,350	\$ 37.00	\$ 456,950.00
10" DIP	LF	9,650	\$ 29.00	\$ 279,850.00
10" PVC	LF	1,600	\$ 23.00	\$ 36,800.00
8" DIP	LF	25,880	\$ 27.00	\$ 698,760.00
8" PVC	LF	110,285	\$ 22.00	\$ 2,426,270.00
6" DIP (Gravity Laterals)	LF	960	\$ 26.00	\$ 24,960.00
6" PVC (Gravity Laterals)	LF	45,430	\$ 15.00	\$ 681,450.00
2.5" PVC (Grinder)	LF	13,000	\$ 13.00	\$ 169,000.00
1.5" PVC (Grinder Laterals)	LF	2,065	\$ 11.00	\$ 22,715.00
4' Dia. Manholes (Gravity)	EA	700	\$ 1,464.00	\$ 1,024,800.00
5' Dia. Manholes (Gravity)	EA	8	\$ 2,196.00	\$ 17,368.00
MH Frames & Covers	EA	708	\$ 348.00	\$ 246,384.00
Cleanout Fittings (Gravity)	EA	1,395	\$ 195.00	\$ 272,025.00
Cleanout Fittings (Grinder)	EA	102	\$ 244.00	\$ 24,888.00
Stone Bedding	LF	239,070	\$ 2.00	\$ 478,140.00
Stone Backfill	LF	144,750	\$ 9.00	\$ 1,302,750.00
Concrete Encasement	LF	5,075	\$ 37.00	\$ 187,775.00
Rock Excavation	LF	55,900	\$ 31.00	\$ 1,732,900.00
Temporary Pavement Restoration	LF	140,750	\$ 2.00	\$ 281,500.00
Permanent Pavement Restoration	LF	140,750	\$ 48.00	\$ 6,756,000.00
Lawn Restoration	LF	98,320	\$ 4.00	\$ 393,280.00
Silt Fence	LF	114,100	\$ 1.00	\$ 114,100.00
Major Creek Crossing	EA	2	\$ 18,300.00	\$ 36,600.00
Minor Creek Crossing	EA	5	\$ 6,100.00	\$ 30,500.00
Jacking/Boring Route 611	LS	1	\$ 463,600.00	\$ 463,600.00
Booster Pump Station and Force Main Mod.	LS	1	\$ 885,000.00	\$ 885,000.00
Pump Station to serve Sugar Bottom Area	LS	1	\$ 500,000.00	\$ 500,000.00
Force Main for Sugar Bottom P/S w/air release vaults	LS	1	\$ 338,100.00	\$ 338,100.00
Castle Valley Pump Station Upgrade	LS	1	\$ 108,000.00	\$ 108,000.00
Connect to Existing Manhole	EA	5	\$ 2,000.00	\$ 10,000.00
Upgrade to WWTP for Add'l Capacity	GPD	165,253	\$ 20.00	\$ 3,305,060.00
Subtotal (Public Construction Cost)				\$ 23,653,030.00
Construction Contingency (10%)				\$ 2,365,300.00
Engineering, Legal, Administration and Easements (30%)				\$ 7,095,910.00
Total Public Construction Cost				\$ 33,114,240.00
Public Cost per EDU				\$ 22,120.00
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Grinder Pumps	EA	102	\$ 4,880.00	\$ 497,760.00
Gravity Laterals	EA	1395	\$ 1,220.00	\$ 1,701,900.00
Total Private Construction Cost				\$ 2,199,660.00
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Total Cost				\$ 35,313,900.00
Total Cost per EDU				\$ 23,590.00
Collection Sewer System Tapping Fee				\$ 4,700.00
Total Overall Project Cost per EDU				\$ 28,290.00

**ROUTE 611 CORRIDOR (ALTERNATIVE)
OPINION OF PROBABLE COSTS**

See Carroll Engineering Corporation's correspondence dated September 7, 2005 for breakdown of cost estimate

Total Overall Project Cost per EDU (if 71 EDU's are to be connected)	\$	29,814.00 *
Total Overall Project Cost per EDU (if 92 EDU's are to be connected)	\$	24,112.00 *

* including tapping fee

Note: A separate study was performed on this area. At the time the study was performed, there was sufficient treatment capacity to accommodate the future flows from this area. As such, the cost of additional treatment capacity has been excluded from this area.