

Sudden Impact:

An Assessment of Short-Term
Economic Impacts of Water and
Wastewater Construction Projects in
the United States

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DRAFT



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Background and Purpose

Clean Water is essential to life itself and our standard of living. Water and wastewater treatment plants, collection and distribution pipelines and related appurtenances are therefore indispensable components of our core national infrastructure. Without viable clean water facilities, human health and environmental integrity deteriorate, the economy cannot flourish and the ability to compete domestically and internationally is inhibited.

The condition of our nation's environmental infrastructure has deteriorated significantly as a direct result of perpetual underinvestment. Water and wastewater capital "needs estimates" produced by the U.S. Environmental Protection Agency (EPA) are nothing short of staggering. In fact, the EPA's 2002 Clean Water and Drinking Water Infrastructure Gap Analysis forecast an alarming \$534 billion gap between current investment and projected needs over 20 years for water and wastewater infrastructure if federal funding was not increased (It's been cut in real and nominal terms). Two years later, the EPA's 2004 Clean Watersheds Needs Survey documented existing nationwide wastewater infrastructure needs alone at \$202.5 billion.

In addition, the American Society of Civil Engineers (ASCE) has given America's wastewater infrastructure and drinking water infrastructure letter grades of "D minus" in their most recent (January, 2009) Report Card for America's Infrastructure. Clearly, there is a consensus among government, industry and academic professionals that the condition of this infrastructure has gone from bad to worse. This consensus is borne out first-hand by communities across the land that must manage the fallout from collapsed and deteriorated water and wastewater facilities (See www.waternewsupdate.com for daily reports highlighting environmental infrastructure failures).

Background and Purpose Continued

The lasting economic benefits of clean water investments have been demonstrated time and again. These projects preserve national wealth through the removal of contaminants from a vital national resource. Construction of these projects also spurs higher private sector profits, increases private investments in plant and equipment, works to improve labor productivity, strengthens the tax base and generates employment throughout the multi-decade life expectancy of each facility.

This new assessment measures the short-term cumulative economic and employment effects associated with public or private investment in water treatment and distribution and wastewater collection and treatment in the United States.

ADDITIONAL TEXT AND PHOTOS

Key Findings

A \$1 billion investment in water and wastewater infrastructure generates the following national economic benefits during the period of construction only:

1. Total output or demand for products and services in all industries of between \$2.87 and \$3.46 billion.
2. Between 20,003 and 26,669 full-time jobs (with average annual earnings for the construction portion of the jobs of \$50,396).
3. Personal or household income of between \$1.01 and \$1.06 billion.
4. State and local taxes of \$84 million.

These short-term economic effects substantially increase the value of an investment priority that is wholly justifiable on other long-term economic, public health, recreational and environmental protection merits.

ADDITIONAL TEXT AND PHOTOS

Methodology

TEXT AND PHOTOS NEEDED

The study is designed to reflect regional and local variation

Design Study

Develop Model

Collect Case Studies

Estimate Impacts

Study area: California, Georgia, Minnesota, New Mexico, and Pennsylvania define the geographic boundaries over which economic impacts were measured. These states were selected to reflect variation in region, local economies, climate, and labor conditions.

Case Studies: Actual construction projects within each state capture variation in project size and local economies. In addition, taking inventory of what is known about actual projects fuels the models with real-world data and more accurately reflects existing activity.

Time frame for analysis: Projects completed in 2006 and 2007 were eligible for selection to ensure results were based on recent construction activity.

Transparency is essential for building a credible model



IMPLAN software: IMPLAN is a computer software package that consists of procedures for estimating local input-output models and associated databases.

Input-Output models: Input-output models are a technique for quantifying interactions between firms, industries, and social institutions within a local economy. IMPLAN models include outputs and inputs from 440 industrial sectors, value added, employment, wages and business taxes paid, imports and exports, final demand by households and government, capital investment, business inventories, marketing margins, and inflation factors.

Multipliers: Multipliers quantify how certain changes (i.e., in jobs, earnings, or sales) in one industry will have effects on other industries in the region. Multipliers are aptly called estimators of the 'ripple effect' and are available at the national, state and county levels.

Data sources: The economic source data for IMPLAN models includes the system of national accounts for the US based on data collected by the US Department of Commerce, US Bureau of Economic Activity, US Bureau of Labor Statistics, and other federal and state agencies. All analyses used 2007 IMPLAN data (released in October 2008).

Industry: The 2007 IMPLAN data classifies water and wastewater pipe construction activity in the 'Construction of other new non-residential structures' which corresponds to the updated classification used by the US Bureau of Economic Activity.

Actual project data provide real world results



Sample: Members of the National Utility Contractors Association in the five target states were invited by phone and email to provide data on water and wastewater pipe construction projects completed in 2006 and 2007. In total, data from 116 projects were analyzed, representing 35 contractors, 5 states, and 73 counties.

Data collection: Respondents reported project data electronically or by fax. Information was collected on type and location of project, contract value and project costs, and year of completion. As needed, follow-up phone calls were made to clarify questions about the data or try to obtain additional information.

Data checks: County-level data can be unreliable if the county has sparse economic activity or is thinly populated. Internal checks were conducted to ensure case data and local level inputs used were reliable and in-line with state inputs.

Economic impact results help prioritize planning & investment decisions



The economic impacts at the state level, and county level for actual pipe construction projects, were estimated using IMPLAN software and economic multiplier data. Briefly, the analysis produced the following estimates:

Direct effects: The output, jobs, and income that are directly related to the construction of the project.

Indirect effects: The additional output, jobs, and incomes for suppliers and vendors indirectly related to the construction project. These reflect the broader impacts in the community such as expanding business among local vendors and suppliers.

Induced effects: The expansion of local commercial business as a result of income re-spent by persons employed by the construction project sector or by the suppliers and vendors that indirectly support that sector.

Overall Results and Analysis

TEXT AND PHOTOS

A \$1B investment in pipe construction in the United States

Results in the following economic impacts:

Total output	2867.5 M
Business expenditures	1000.0 M
Sales of suppliers	918.5 M
Household spending	949.0 M
Personal Income	1011.2 M
State and local tax revenue	82.4 M
Employment	20,003 jobs
Pipe construction	8,366 jobs
Other	11,637 jobs
Average Earnings	\$50,396

Results and Analysis -- California

TEXT AND PHOTOS

A \$1B investment in pipe construction in California

Results in the following economic impacts:

Total output of the region	1826.0 M
Local business expenditures	1000.0 M
Sales of suppliers	377.5 M
Household spending	448.5 M
Personal Income	775.2 M
State and local tax revenue	47.5 M
Employment	12,390 jobs
Pipe construction	7,085 jobs
Other	5,305 jobs
Average Earnings	\$68,099

California

Georgia

Minnesota

Pennsylvania

New Mexico

Case Studies: California (1 of 4)

Project Name	Booster Pump Station	Bypass Mud Outlets	Interceptor Overflow Structures	Force Main Reconstruction
County	Alameda	Alameda	Alameda	Contra Costa
Total output of the region	11.98 M	2.94 M	1.61 M	5.06 M
Local business expenditures	7.22 M	1.77 M	0.97 M	3.17 M
Sales of suppliers	2.06 M	0.51 M	0.28 M	0.89 M
Household spending	2.70 M	0.66 M	0.36 M	1.00 M
Personal income	5.49 M	1.35 M	0.74 M	2.29 M
State & local tax revenue	0.31 M	0.75 M	0.04 M	0.11 M
Employment	79	19	11	33
Pipe construction	47	12	6	21
Other	32	7	5	12

Case Studies: California (2 of 4)

Project Name	Sewer Lines	Water/Sewer Replacement	GWRS Unit II	Force Main
County	Kern	Merced	Orange	Sacramento
Total output of the region	0.65 M	1.65 M	4.17 M	55.66 M
Local business expenditures	0.40 M	1.17 M	2.45 M	34.9 M
Sales of suppliers	0.13 M	0.22 M	0.78 M	9.91 M
Household spending	0.12 M	0.27 M	0.95 M	10.9 M
Personal income	0.27 M	0.66 M	1.84 M	24.7 M
State & local tax revenue	0.02 M	0.33 M	0.11 M	1.35 M
Employment	5	13	28	412
Pipe construction	3	9	17	251
Other	2	4	11	161

Case Studies: California (3 of 4)

Project Name	36" Waterline	Upper NW Interceptor	WWTP Improve.	Transmission Main
County	Sacramento	Sacramento	San Benito	San Francisco
Total output of the region	2.28 M	1.83 M	0.33 M	0.52 M
Local business expenditures	1.43 M	1.15 M	0.25 M	0.35 M
Sales of suppliers	0.41 M	0.33 M	0.42 M	0.09 M
Household spending	0.48 M	0.36 M	0.41 M	0.08 M
Personal income	1.01 M	0.81 M	0.14 M	0.25 M
State & local tax revenue	0.55 M	0.44 M	0.01 M	0.01 M
Employment	17	14	3	3
Pipe construction	10	8	2	2
Other	7	6	1	1

Case Studies: California (4 of 4)

Project Name	Storm Drainage Improvements	Interceptor Rehab	Sanitary Sewer Trunk Line	Force Main	
County	San Joaquin	Santa Clara	Tulare	Yolo	
Total output of the region	6.14 M	6.75 M	7.75 M	90.85 M	
Local business expenditures	3.97 M	4.47 M	5.35 M	60.79 M	
Sales of suppliers	0.92 M	1.12 M	1.10 M	16.53 M	
Household spending	1.25 M	1.16 M	1.30 M	13.53 M	
Personal income	2.64 M	3.18 M	3.26 M	40.66 M	
State & local tax revenue	0.15 M	0.16 M	0.17 M	2.05 M	
Employment	46	43	63	663	
Pipe construction	29	29	42	429	
Other	17	14	21	234	

Results and Analysis -- Georgia

TEXT AND PHOTOS

A \$1B investment in pipe construction in Georgia

Results in the following economic impacts:

Total output of the region	1758.6 M
Local business expenditures	1000.0 M
Sales of suppliers	392.9 M
Household spending	365.7 M
Personal Income	667.9 M
State and local tax revenue	44.5 M
Employment	14,867 jobs
Pipe construction	8,959 jobs
Other	5,908 jobs
Average Earnings	\$ 44,260

California

Georgia

Minnesota

Pennsylvania

New Mexico

Case Studies: Georgia (1 of 9)

Project Name	12" DIP Water Main	New Sewer & Water Lines	Wastewater Treatment Plt	Wastewater Treatment Plt
County	Barrow	Bibb	Chatham	Chattooga
Total output of the region	0.28 M	1.77 M	6.94 M	9.90 M
Local business expenditures	0.20 M	1.09 M	4.31 M	8.13 M
Sales of suppliers	0.04 M	0.39 M	1.46 M	0.98 M
Household spending	0.04 M	0.29 M	1.17 M	0.79 M
Personal income	0.10 M	0.66 M	2.66 M	3.28 M
State & local tax revenue	0.01 M	0.04 M	0.16 M	0.14 M
Employment	3	16	62	103
Pipe construction	2	10	39	83
Other	1	6	23	20

Case Studies: Georgia (2 of 9)

Project Name	Pump Station	WWTP Improvements	Sewer & Water Line Replace.	New Sewer & Water Lines
County	Cherokee	Clarke	Cobb	Cobb
Total output of the region	0.60 M	43.03 M	1.50 M	1.09 M
Local business expenditures	0.42 M	31.07 M	0.93 M	0.67 M
Sales of suppliers	0.10 M	6.93 M	0.30 M	0.22 M
Household spending	0.07 M	5.03 M	0.28 M	0.20 M
Personal income	0.22 M	16.10 M	0.61 M	0.44 M
State & local tax revenue	0.01 M	0.85 M	0.04 M	0.03 M
Employment	6	397	13	9
Pipe construction	4	286	8	6
Other	2	111	5	3

Case Studies: Georgia (3 of 9)

Project Name	WWTP Expansion	Water Filter Plant	New Water & Sewer Lines	New Sewer & Water Lines
County	Coweta	Dekalb	Dekalb	Dekalb
Total output of the region	17.74 M	267.2 M	0.55 M	0.34 M
Local business expenditures	12.6 M	164.9 M	0.34 M	0.21 M
Sales of suppliers	2.86 M	51.6 M	0.11 M	0.06 M
Household spending	2.27 M	50.7 M	0.10 M	0.06 M
Personal income	6.39 M	107.0 M	0.22 M	0.13 M
State & local tax revenue	0.36 M	6.68 M	0.01 M	0.01 M
Employment	169	2246	5	3
Pipe construction	120	1410	4	2
Other	49	836	1	1

Case Studies: Georgia (4 of 9)

Project Name	Storm Drain Improvements	New Sewer & Water Lines	Wastewater Treatment Plt	Pump Station
County	Dougherty	Floyd	Floyd	Floyd
Total output of the region	4.46 M	0.20 M	6.15 M	1.33 M
Local business expenditures	3.00 M	0.13 M	4.20 M	0.91 M
Sales of suppliers	0.92 M	0.04 M	0.97 M	0.21 M
Household spending	0.55 M	0.03 M	0.97 M	0.21 M
Personal income	1.73 M	0.08 M	2.15 M	0.47 M
State & local tax revenue	0.09 M	<0.01 M	0.13 M	0.03 M
Employment	42	2	58	13
Pipe construction	27	1	40	9
Other	15	1	18	4

Case Studies: Georgia (5 of 9)

Project Name	Pump Station	Sanitary Sewer	Gravity Sewer	Sewer & Water Line Rehab
County	Floyd	Forsyth	Forsyth	Fulton
Total output of the region	0.60 M	4.37 M	0.20 M	0.84 M
Local business expenditures	0.41 M	2.95 M	0.14 M	0.55 M
Sales of suppliers	0.10 M	0.81 M	0.04 M	0.17 M
Household spending	0.10 M	0.61 M	0.03 M	0.11 M
Personal income	0.17 M	1.84 M	0.09 M	0.34 M
State & local tax revenue	0.01 M	0.10 M	<0.01 M	0.02 M
Employment	6	34	2	7
Pipe construction	4	24	1	5
Other	2	10	1	2

Case Studies: Georgia (6 of 9)

Project Name	New Sewer & Water Lines	Gravity Sewer	Reuse Pipeline and Diffuser	Water Line Improvements
County	Fulton	Gordon	Gwinnett	Gwinnett
Total output of the region	0.16 M	0.23 M	42.87 M	29.20 M
Local business expenditures	0.11 M	0.18 M	26.25 M	17.88 M
Sales of suppliers	0.03 M	0.03 M	8.35 M	5.69 M
Household spending	0.02 M	0.03 M	8.27 M	5.63 M
Personal income	0.07 M	0.08 M	17.64 M	12.02 M
State & local tax revenue	<0.01 M	<0.01 M	1.09 M	0.75 M
Employment	1	2	339	231
Pipe construction	1	2	211	144
Other	0	0	128	87

Case Studies: Georgia (7 of 9)

Project Name	Sanitary Sewer	Sanitary Sewer Replacement	Water & Sewer Utility Relocations	Sewer & Water Line Repairs
County	Gwinnett	Gwinnett	Gwinnett	Gwinnett
Total output of the region	15.25 M	6.66 M	4.90 M	0.83 M
Local business expenditures	9.34 M	4.08 M	3.00 M	0.51 M
Sales of suppliers	2.97 M	1.30 M	0.95 M	0.16 M
Household spending	2.94 M	1.28 M	0.95 M	0.16 M
Personal income	6.28 M	2.74 M	2.02 M	0.34 M
State & local tax revenue	0.39 M	0.17 M	0.13 M	0.02 M
Employment	120	53	39	7
Pipe construction	75	33	24	4
Other	45	20	15	3

Case Studies: Georgia (8 of 9)

Project Name	Pump Station	WWTP Expansion	Water Extension	Water Main Connections
County	Henry	Newton	Putnam	Richmond
Total output of the region	10.72 M	16.50 M	7.03 M	1.35 M
Local business expenditures	7.32 M	12.50 M	5.44 M	1.00 M
Sales of suppliers	1.84 M	1.92 M	0.86 M	0.20 M
Household spending	1.56 M	2.08 M	0.73 M	0.15 M
Personal income	3.94 M	6.19 M	2.40 M	0.52 M
State & local tax revenue	0.23 M	0.31 M	0.13 M	0.03 M
Employment	101	149	68	12
Pipe construction	69	113	54	9
Other	31	36	14	3

Case Studies: Georgia (9 of 9)

Project Name	35,000 LF 12" Water Main
County	Troup
Total output of the region	1.44 M
Local business expenditures	1.06 M
Sales of suppliers	0.18 M
Household spending	0.19 M
Personal income	0.54 M
State & local tax revenue	0.03 M
Employment	13
Pipe construction	10
Other	3

Results and Analysis -- Minnesota

TEXT AND PHOTOS

A \$1B investment in pipe construction in Minnesota

Results in the following economic impacts:

Total output of the region	1802.3 M
Local business expenditures	1000.0 M
Sales of suppliers	406.3 M
Household spending	396.0 M
Personal Income	685.2 M
State and local tax revenue	44.1 M
Employment	14,698 jobs
Pipe construction	8,591 jobs
Other	6,107 jobs
Average Earnings	\$ 48,122

California

Georgia

Minnesota

Pennsylvania

New Mexico

Case Studies: Minnesota (1 of 3)

Project Name	Utility Line Reconstruction	Collection Sys Improvements	Storm water Treatments	Water Collection Sys
County	Blue Earth	Douglas	Hennepin	Kandiyohi
Total output of the region	1.75 M	4.39 M	2.97 M	2.21 M
Local business expenditures	1.14 M	2.98 M	1.89 M	1.56 M
Sales of suppliers	0.32 M	0.73 M	0.59 M	0.34 M
Household spending	0.29 M	0.68 M	0.49 M	0.31 M
Personal income	0.67 M	1.60 M	1.27 M	0.85 M
State & local tax revenue	0.04 M	0.10 M	0.07 M	0.05 M
Employment	16	43	23	21
Pipe construction	10	28	15	14
Other	6	15	8	7

Case Studies: Minnesota (2 of 3)

Project Name	Sewer Lining	Sewer Lining	Sanitary & Storm Sewer Improve.	Storm Sewer Replacement
County	Ramsey	Ramsey	Renville	St. Louis
Total output of the region	2.06 M	1.88 M	17.72 M	1.67 M
Local business expenditures	1.33 M	1.22 M	14.4 M	1.12 M
Sales of suppliers	0.37 M	0.34 M	1.78 M	0.27 M
Household spending	0.35 M	0.32 M	1.54 M	0.28 M
Personal income	0.91 M	0.83 M	5.95 M	0.65 M
State & local tax revenue	0.05 M	0.04 M	0.26 M	0.03 M
Employment	15	14	179	15
Pipe construction	10	9	145	10
Other	5	5	34	5

Case Studies: Minnesota (3 of 3)

Project Name	Wastewater System	Utility Rehabilitation	Water Main Extension
County	Wabasha	Wadena	Wright
Total output of the region	1.74 M	3.53 M	1.25 M
Local business expenditures	1.44 M	2.59 M	0.90 M
Sales of suppliers	0.15 M	0.54 M	0.18 M
Household spending	0.15 M	0.41M	0.17 M
Personal income	0.56 M	1.14 M	0.48 M
State & local tax revenue	0.02 M	0.07 M	0.03 M
Employment	18	37	11
Pipe construction	15	27	8
Other	3	10	3

Results and Analysis – New Mexico

TEXT AND PHOTOS

A \$1B investment in pipe construction in New Mexico

Results in the following economic impacts:

Total output of the region	1711.0 M
Local business expenditures	1000.0 M
Sales of suppliers	389.2 M
Household spending	321.8 M
Personal Income	607.6 M
State and local tax revenue	39.4 M
Regional Employment	15,329 jobs
Pipe construction	9,272 jobs
Other	6,057 jobs
Average Job Compensation	\$40,930

California

Georgia

Minnesota

New Mexico

Pennsylvania

Case Studies: New Mexico (1 of 5)

Project Name	Water & Wastewater Trans Lines	New 36" & 60" Water Lines	Water & Sewer Lines	Water & Sewer Line Improve.
County	Bernalillo	Bernalillo	Bernalillo	Bernalillo
Total output of the region	14.45 M	5.27 M	4.94 M	0.50 M
Local business expenditures	9.21 M	3.36 M	3.15 M	0.32 M
Sales of suppliers	2.82 M	1.03 M	0.96 M	0.10 M
Household spending	2.42 M	0.88 M	0.83 M	0.08 M
Personal income	5.58 M	2.03 M	1.91 M	0.20 M
State & local tax revenue	0.31 M	0.11 M	0.11 M	0.01 M
Employment	130	47	44	4
Pipe construction	82	30	28	3
Other	48	17	16	1

Case Studies: New Mexico (2 of 5)

Project Name	Water & Sewer Line Improve.	Water & Sewer Line Improve.	WWTP Upgrade	New Water & Sewer Lines
County	Bernalillo	Cibola	Cibola	Dona Ana
Total output of the region	0.47 M	0.69 M	0.56 M	3.98 M
Local business expenditures	0.30 M	0.54 M	0.44 M	2.65 M
Sales of suppliers	0.09 M	0.06 M	0.05 M	0.73 M
Household spending	0.08 M	0.08 M	0.07 M	0.61 M
Personal income	0.18 M	0.26 M	0.22 M	1.35 M
State & local tax revenue	0.01 M	0.01 M	0.01 M	0.08 M
Employment	4	6	5	42
Pipe construction	3	5	4	27
Other	1	1	1	15

Case Studies: New Mexico (3 of 5)

Project Name	Sewer Line & Storm Drain Improve.	Water Line Replacement	Pipe Bursting	Sewer Line & Lift Station
County	Dona Ana	Guadalupe	Otero	Rio Arriba
Total output of the region	0.81 M	1.66 M	0.72 M	0.39 M
Local business expenditures	0.54 M	1.46 M	0.56 M	0.30 M
Sales of suppliers	0.15 M	0.12 M	0.08 M	0.05 M
Household spending	0.12 M	0.08 M	0.08 M	0.04 M
Personal income	0.27 M	0.59 M	0.24 M	0.13 M
State & local tax revenue	0.02 M	0.02 M	0.01 M	0.01 M
Employment	8	16	8	4
Pipe construction	5	14	6	3
Other	3	2	2	1

Case Studies: New Mexico (4 of 5)

Project Name	New Well Bldg, Pump, & Lines	Sewer Improvements	WWTP Expansion	Water Storage Tank Upgrade
County	Sandoval	Sandoval	Santa Fe	Santa Fe
Total output of the region	1.62 M	0.16 M	4.93 M	0.31 M
Local business expenditures	1.20 M	0.12 M	3.27 M	0.20 M
Sales of suppliers	0.24 M	0.02 M	0.90 M	0.06 M
Household spending	0.18 M	0.02 M	0.76 M	0.05 M
Personal income	0.62 M	0.06 M	1.73 M	0.11 M
State & local tax revenue	0.03 M	<0.01 M	0.10 M	0.01 M
Employment	15	2	50	3
Pipe construction	11	1	32	2
Other	4	1	18	1

Case Studies: New Mexico (5 of 5)

Project Name	Wastewater Treatment Plt	WWTP Upgrade
County	San Juan	Taos
Total output of the region	4.92 M	2.34 M
Local business expenditures	3.33 M	1.72 M
Sales of suppliers	0.81 M	0.29 M
Household spending	0.78 M	0.33 M
Personal income	1.88 M	0.79 M
State & local tax revenue	0.11 M	0.04 M
Employment	42	24
Pipe construction	28	17
Other	20	7

Results and Analysis -- Pennsylvania

TEXT AND ANALYSIS

A \$1B investment in pipe construction in Pennsylvania

Results in the following economic impacts:

Total output of the region	1867.0 M
Local business expenditures	1000.0 M
Sales of suppliers	428.9 M
Household spending	438.2 M
Personal Income	725.9 M
State and local tax revenue	46.6 M
Regional Employment	14,524 jobs
Pipe construction	8,247 jobs
Other	6,277 jobs
Average Earnings	\$ 52,037

California

Georgia

Minnesota

New Mexico

Pennsylvania

Case Studies: Pennsylvania (1 of 10)

Project Name	Sanitary Sewer System Improvements	Interceptor Replacement	Water Line & Services	Sanitary Sewer Replacement
County	Adams	Allegheny	Beaver	Beaver
Total output of the region	0.78 M	0.79 M	1.87 M	1.70 M
Local business expenditures	0.55 M	0.48 M	1.24 M	1.13 M
Sales of suppliers	0.11 M	0.16 M	0.33 M	0.30 M
Household spending	0.12 M	0.15 M	0.30 M	0.28 M
Personal income	0.30 M	0.33 M	0.75 M	0.69 M
State & local tax revenue	0.02 M	0.02 M	0.04 M	0.03 M
Employment	7	6	16	15
Pipe construction	5	4	11	10
Other	2	2	5	5

Case Studies: Pennsylvania (2 of 10)

Project Name	Valve Vault & Tie-ins	Water & Sewer Extension	Sewer & Water Lines	Pipe Bursting, Reline & Rehab
County	Beaver	Bedford	Bedford	Blair
Total output of the region	0.12 M	1.89 M	0.39 M	7.57 M
Local business expenditures	0.08 M	1.43 M	0.29 M	4.92 M
Sales of suppliers	0.02 M	0.21 M	0.04 M	1.38 M
Household spending	0.02 M	0.26 M	0.05 M	1.26 M
Personal income	0.05 M	0.73 M	0.15 M	2.84 M
State & local tax revenue	<0.01 M	0.04 M	0.01 M	0.16 M
Employment	1	17	4	72
Pipe construction	0	12	3	46
Other	0	5	1	26

Case Studies: Pennsylvania (3 of 10)

Project Name	Wastewater Treatment Plant	New Pumping Station	Pumping Station Rehab.	New Collector Sewer
County	Bucks	Bucks	Bucks	Butler
Total output of the region	3.95 M	3.22 M	1.87 M	16.45 M
Local business expenditures	2.45 M	2.00 M	1.16 M	10.35 M
Sales of suppliers	0.79 M	0.64 M	0.37 M	3.48 M
Household spending	0.70 M	0.57 M	0.33 M	2.63 M
Personal income	1.59 M	1.30 M	0.75 M	6.34 M
State & local tax revenue	0.09 M	0.08 M	0.04 M	0.36 M
Employment	32	26	15	136
Pipe construction	21	17	10	87
Other	11	9	5	49

Case Studies: Pennsylvania (4 of 10)

Project Name	New Collector Sewer & Appurt.	Sewer Main & Lateral Rpl.	Sewer Main & Lateral Rpl.	Waste Water Collection Sys
County	Butler	Clearfield	Clearfield	Clearfield
Total output of the region	14.9 M	10.89 M	8.07 M	4.67 M
Local business expenditures	9.35 M	7.39 M	5.48 M	3.12 M
Sales of suppliers	3.13 M	1.92 M	1.43 M	0.82 M
Household spending	2.37 M	1.57 M	1.17 M	0.67 M
Personal income	5.72 M	4.00 M	2.97 M	1.71 M
State & local tax revenue	0.32 M	0.21 M	0.15 M	0.09 M
Employment	122	105	78	45
Pipe construction	78	70	52	30
Other	44	35	26	15

Case Studies: Pennsylvania (5 of 10)

Project Name	Pump Station Sludge Tank	Sanitary Sewer Replacement	Sewer Lines	Sewer Extension
County	Dauphin	Dauphin	Fayette	Franklin
Total output of the region	4.19 M	1.94 M	7.57 M	0.55 M
Local business expenditures	2.75 M	1.27 M	5.12 M	0.37 M
Sales of suppliers	0.81 M	0.37 M	1.32 M	0.09 M
Household spending	0.63 M	0.29 M	1.13 M	0.09 M
Personal income	1.77 M	0.82 M	2.90 M	0.21 M
State & local tax revenue	0.09 M	0.04 M	0.15 M	0.01 M
Employment	34	16	70	5
Pipe construction	22	10	46	3
Other	12	6	24	2

Case Studies: Pennsylvania (6 of 10)

Project Name	Sanitary Sewer	Wastewater System Improvement	Sewer Lines & Appurt.	Wastewater Treatment Plt
County	Huntingdon	Jefferson	Jefferson	Jefferson
Total output of the region	1.50 M	8.31 M	3.65 M	1.49 M
Local business expenditures	1.13 M	6.16 M	2.70 M	1.11 M
Sales of suppliers	0.17 M	1.15 M	0.51 M	0.21 M
Household spending	0.20 M	1.00 M	0.44 M	0.18 M
Personal income	0.54 M	2.84 M	1.25 M	0.51 M
State & local tax revenue	0.03 M	0.14 M	0.06 M	0.03 M
Employment	14	84	37	15
Pipe construction	11	62	27	11
Other	3	22	10	4

Case Studies: Pennsylvania (7 of 10)

Project Name	Storm Sewer	Sludge Holding Tank filter building w/ UV	Storm Water Pump Station Improvement	Interceptor Replacement
County	Jefferson	Lebanon	Lycoming	Mercer
Total output of the region	0.35 M	10.45 M	1.39 M	3.04 M
Local business expenditures	0.26 M	7.07 M	0.91 M	2.07 M
Sales of suppliers	0.05 M	1.69 M	0.24 M	0.48 M
Household spending	0.04 M	1.69 M	0.24 M	0.50 M
Personal income	0.12 M	4.02 M	0.54 M	1.16 M
State & local tax revenue	0.01 M	0.22 M	0.03 M	0.06 M
Employment	4	93	13	28
Pipe construction	3	62	8	18
Other	1	31	5	10

Case Studies: Pennsylvania (8 of 10)

Project Name	WWTP Renovation	Renovation of Primary Sed Tank	Water Distribution Lines	Sewer Lines & Appurtenances
County	Montgomery	Philadelphia	Schuykill	Westmoreland
Total output of the region	5.42 M	6.05 M	8.73 M	7.41 M
Local business expenditures	3.37 M	4.07 M	6.2 M	4.64 M
Sales of suppliers	1.02 M	0.98 M	1.29 M	1.48 M
Household spending	1.03 M	1.00 M	1.24 M	1.30 M
Personal income	2.30 M	2.76 M	3.26 M	2.92 M
State & local tax revenue	0.13 M	0.13 M	0.15 M	0.17 M
Employment	41	43	79	65
Pipe construction	27	28	56	40
Other	14	15	23	15

Case Studies: Pennsylvania (9 of 10)

Project Name	Sewage Coll Sys & Pump Station	Water Main Transmission	Underground Water Tanks	Water Filtration Plant Rehab
County	Westmoreland	Westmoreland	Westmoreland	Westmoreland
Total output of the region	7.36 M	4.58 M	4.22 M	4.11 M
Local business expenditures	4.60 M	2.86 M	2.64 M	2.57 M
Sales of suppliers	1.47 M	0.91 M	0.84 M	0.82 M
Household spending	1.29 M	0.80 M	0.74 M	0.72 M
Personal income	2.89 M	1.80 M	1.66 M	1.61 M
State & local tax revenue	0.17 M	0.10 M	0.10 M	0.09 M
Employment	64	40	37	36
Pipe construction	40	25	23	22
Other	24	15	14	14

Case Studies: Pennsylvania (10 of 10)

Project Name	Wastewater Treatment Plant	Force Main and Trunk Sewer Upgrade
County	York	York and Adams
Total output of the region	4.91 M	1.18 M
Local business expenditures	3.09 M	0.74 M
Sales of suppliers	0.92 M	0.22 M
Household spending	0.90 M	0.22 M
Personal income	2.01 M	0.48 M
State & local tax revenue	0.11 M	0.03 M
Employment	41	10
Pipe construction	25	6
Other	16	4