SECTION 5

SELECTION OF AN ALTERNATIVE

5.1 General Information

5.1.1 Introduction

A cost-effective-analysis was prepared for each of the feasible alternatives listed in Section 4. The cost-effective-analysis takes into consideration the initial capital (project) costs; annual operation, maintenance and replacement cost, and salvage values. All of the estimated costs were brought back into today's costs for comparison purposes. A current Federal discount interest rate of 0.5% was utilized for the cost-effective-analysis. A 20-year planning period is used for the cost-effective-analysis.

The estimated construction costs are based on manufacturer's quotations, estimating manuals, recent bid construction prices and estimating experience and have been slightly inflated, as the construction bids would most likely not be received until sometime next year.

The estimated salvage values are arrived at based on their future worth at the end of the 20-year planning period.

Besides the estimated construction costs there are other costs associated with undertaking a project. These other costs are identified as non-construction costs, which are explained in the following paragraphs of this section.

5.1.2 Non-Construction Costs

1. General

Non-construction costs are those costs that are associated with preparing a project for construction, monitoring the project during construction, and follow-up after construction is completed. Non-construction costs generally include engineering, legal and administrative, land acquisition and easements, grant administration, sometimes direct equipment purchases, accounting services, start-up costs and contingencies. As a whole, non-construction costs can range between 10% and 40% of the total project cost depending on the method utilized to finance the project and size of the project.

2. Engineering

Engineering generally includes the associated costs for preparing detailed studies, design plans and specifications, assisting with project financing, field exploration surveys, preparing permit applications, easement preparation, and construction shop drawing review, construction observation and post construction follow-up activities.

3. Legal and Administrative

Legal services are often required to assist with the preparation of bond and/or rate ordinances that may be required. Some of the funding agencies for projects of this type require additional legal documents. Administrative costs include such things as permit fees, bid advertising fees, newspaper legal advertising, etc. A bond council may need to be retained depending on the method utilized to fund the project.

4. Grant Administration

A certified Grant Administrator is required for projects that are partially funded by the Indiana Office of Community and Rural Affairs Community Focus Fund. The Grant Administrator is generally responsible for handling the forms and paperwork associated with this funding program, reviewing payrolls during construction, drawing-down funds and performs several other miscellaneous duties.

5. Land Acquisition

Land acquisition is commonly referred to as the process of obtaining needed site property and easements for pipelines, lift stations and wastewater treatment plant.

6. Contingencies

Budgeted contingency money is used to pay for unexpected, unforeseen, or unanticipated costs associated with the project. Contingency money may be needed for construction or non-construction items. Contingencies are typically based on a percentage of the project cost and that percentage is determined by the project complexity. During the study and design phases of a project contingency is usually estimated at 10% of the construction costs and after construction bids are received and the costs are better known, then the contingency amount is reduced to 3% to 5%.

5.2 Life-Cycle Cost Analysis - Collection System Alternatives

Based on the information provided in Section 4, the following collection system alternatives have been deemed feasible:

- Conventional gravity for Bean Blossom and low pressure with grinder pumps for Woodland Lake, Little Fox Lake and Freeman Ridge Areas
- Low pressure with grinder pumps for Bean Blossom, Woodland Lake, Little Fox Lake and Freeman Ridge Areas
- Low pressure with septic tanks (STEP) for Bean Blossom, Woodland Lake, Little Fox Lake and Freeman Ridge Areas

The opinion of probable project costs associated with the listed collection system alternatives is provided in Table 5.1.

Table 5.1
Collection System Alternatives - Opinion of Probable Project Costs

Alternative	Project Cost
Conventional gravity for Bean Blossom and low pressure with grinder pumps for Woodland Lake, Little Fox Lake & Freeman Ridge Areas	$6,435,510
Low pressure with grinder pumps for Bean Blossom, Woodland Lake, Little Fox Lake & Freeman Ridge Areas	$5,923,490
Low pressure with septic tanks (STEP) for Bean Blossom, Woodland Lake, Little Fox Lake & Freeman Ridge Areas	$5,481,110

The following salvage values for the listed alternatives is provided in Table's 5.2 through 5.10.

Table 5.2
Estimated Salvage Value – Conventional Gravity Bean Blossom

Item	Estimated Current Value	Estimated Life (years)	Estimated Value at Year 20
Lift Station Pumps	$54,000	15	$40,500
Grinder Pumps	$18,000	12	$10,800
Air Release Valves	$13,500	15	$10,125
Gravity Sewer	$140,000	50	$84,000
Force Main/Pressure Sewer	$8,200	50	$4,920
Manholes, Wet Wells & Valve Vaults	$62,400	50	$37,400
Simplex Grinder Pump Tanks	$16,200	50	$9,720
Total			**$197,465**

Table 5.3 Estimated Salvage Value – Pressure Sewers with Grinder Pump Stations Bean Blossom			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Lift Station Pumps	$7,500	15	$7,500
Grinder Pumps	$162,000	15	$121,500
Air Release Valves	$16,500	15	$12,375
Pressure Sewers	$49,620	50	$29,770
Valve Vaults	$21,600	50	$12,960
Simplex Grinder Pump Tanks	$145,800	50	$87,480
Duplex Lift Station Pump Tanks	$5,000	50	$3,000
Total			**$274,585**

Table 5.4 Estimated Salvage Value – Pressure Sewers with Grinder Pump Stations Woodland Lake			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Grinder Pumps	$158,000	15	$118,500
Air Release Valves	$25,500	15	$19,125
Lift Station Pumps	$10,000	15	$7,500
Pressure Sewers	$46,860	50	$28,100
Valve Vaults	$8,800	50	$5,280
Simplex Grinder Pump Tanks	$142,200	50	$85,320
Total			**$263,825**

Table 5.5 Estimated Salvage Value – Pressure Sewers with Grinder Pump Stations Little Fox Lake			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Grinder Pumps	$36,000	15	$27,000
Air Release Valves	$6,000	15	$4,500
Pressure Sewers	$7,160	50	$4,300
Valve Vaults	$3,200	50	$1,920
Simplex Grinder Pump Tanks	$32,400	50	$19,440
Total			**$57,160**

Table 5.6 Estimated Salvage Value – Pressure Sewers with Grinder Pump Stations Freeman Ridge			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Grinder Pumps	$64,000	15	$48,000
Air Release Valves	$7,500	15	$5,625
Pressure Sewers	$18,940	50	$11,360
Valve Vaults	$5,600	50	$3,360
Simplex Grinder Pump Tanks	$57,600	50	$34,560
Total			**$102,905**

Table 5.7 Estimated Salvage Value – Pressure Sewers with Septic Tanks Bean Blossom			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Lift Station Pumps	$10,000	15	$7,500
Effluent Pumps	$120,000	15	$90,000
Air Release Valves	$16,500	15	$12,375
Pressure Sewers	$48,580	50	$29,150
Valve Vaults	$21,600	50	$12,960
Septic Tanks	$190,000	50	$146,000
Total			**$297,985**

Table 5.8 Estimated Salvage Value – Pressure Sewers with Septic Tanks Woodland Lake			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Effluent Pumps	$118,500	15	$88,875
Air Release Valves	$25,500	15	$19,125
Pressure Sewers	$53,600	50	$32,160
Valve Vaults	$8,800	50	$5,280
Septic Tanks	$79,000	50	$47,400
Total			**$192,840**

Table 5.9 Estimated Salvage Value – Pressure Sewers with Septic Tanks Little Fox Lake			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Effluent Pumps	$27,000	15	$20,250
Air Release Valves	$6,000	15	$4,500
Pressure Sewers	$11,080	50	$6,650
Valve Vaults	$3,200	50	$1,920
Septic Tanks	$18,000	50	$10,800
Total			**$44,120**

Table 5.10 Estimated Salvage Value – Pressure Sewers with Septic Tanks Freeman Ridge			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Effluent Pumps	$48,000	15	$36,000
Air Release Valves	$7,500	15	$5,625
Pressure Sewers	$13,680	50	$8,205
Valve Vaults	$5,600	50	$3,360
Septic Tanks	$32,000	50	$19,200
Total			**$72,390**

A life-cycle-cost summary of the collection system alternatives for Bean Blossom, Woodland Lake, Little Fox Lake and Freeman Ridge are provided in Table's 5.11 through 5.14.

Table 5.11 Present Worth Cost Comparison of Collection Alternatives – Bean Blossom			
Item	**Alternative**		
	Gravity	**Pressure w/ Grinder Pumps**	**Pressure w/Effluent Pumps**
Project Cost	$2,858,250	$2,346,230	$2,129,040
Annual O, M & R Cost	$48,560	$55,150	$48,220
Salvage Value at year 20	$197,465	$274,585	$297,985
Present Worth Summary (20 years @ 0.5% interest)			
a) Total Project Cost	$2,858,250	$2,346,230	$2,129,040
b) PW of Annual O, M & R (PW factor 18.987)	$922,010	$1,047,130	$915,550
c) PW of Salvage Value (PW factor 0.9051)	$178,730	$248,530	$269,710
Total (a+b-c)	**$3,958,990**	**$3,641,890**	**$3,314,300**
Ranking	**3**	**2**	**1**

Table 5.12 Present Worth Cost Comparison of Collection Alternatives – Woodland Lake		
Item	**Alternative**	
	Pressure w/ Grinder Pumps	**Pressure w/Effluent Pumps**
Project Cost	$2,148,660	$2,039,160
Annual O, M & R Cost	$36,450	$34,700
Salvage Value at year 20	$263,825	$192,840
Present Worth Summary (20 years @ 0.5% interest)		
a) Total Project Cost	$2,148,660	$2,039,160
b) PW of Annual O, M & R (PW factor 18.987)	$692,080	$658,850
c) PW of Salvage Value (PW factor 0.9051)	$238,790	$174,540
Total (a+b-c)	**$3,079,530**	**$2,872,550**
Ranking	**2**	**1**

Table 5.13 Present Worth Cost Comparison of Collection Alternatives – Little Fox Lake		
Item	**Alternative**	
	Pressure w/ Grinder Pumps	**Pressure w/Effluent Pumps**
Project Cost	$532,290	$553,940
Annual O, M & R Cost	$5,500	$4,630
Salvage Value at year 20	$57,160	$44,120
Present Worth Summary (20 years @ 0.5% interest)		
a) Total Project Cost	$532,290	$553,940
b) PW of Annual O, M & R (PW factor 18.987)	$104,430	$87,910
c) PW of Salvage Value (PW factor 0.9051)	$51,740	$39,930
Total (a+b-c)	**$688,460**	**$681,780**
Ranking	**1**	**2**

Table 5.14 Present Worth Cost Comparison of Collection Alternatives – Freeman Ridge		
Item	**Alternative**	
	Pressure w/ Grinder Pumps	**Pressure w/Effluent Pumps**
Project Cost	$896,310	$758,970
Annual O, M & R Cost	$9,480	$7,820
Salvage Value at year 20	$102,905	$72,390
Present Worth Summary (20 years @ 0.5% interest)		
a) Total Project Cost	$896,310	$758,970
b) PW of Annual O, M & R (PW factor 18.987)	$180,000	$148,480
c) PW of Salvage Value (PW factor 0.9051)	$93,140	$65,520
Total (a+b-c)	**$1,169,450**	**$972,970**
Ranking	**2**	**1**

Considering that the conventional gravity sewer alternative for the Bean Blossom Area has a present-worth cost that is considerably higher than the other alternatives, it will not be considered further. A summary of the present worth costs for the pressure with grinder pumps and pressure with septic tanks for all of the Areas combined is provided Table 5.15.

Table 5.15
Present Worth Cost Comparison Alternatives – All Areas Combined

Item	Alternative	
	Pressure w/ Grinder Pumps	Pressure w/Effluent Pumps
Total Present Worth	$8,579,330	$7,841,600
Ranking	2	1

5.3 Non-Monetary Factors - Collection System Alternatives

A listing of the advantages and disadvantages of each collection system considered are listed in Table 5.16.

Table 5.16
Collection System Types – Advantages/Disadvantages

Collection System	Advantages	Disadvantages
Gravity	• Widely used • Simple • Reliable	• Terrain dependent • Large excavations • More construction related environmental impacts • More prone to I/I
Low Pressure w/Grinder Pump Sta's	• Not terrain dependent • Solids ground up • Less excavation and environmental impacts than gravity	• Some policing of what is conveyed to the pumping structure • Higher maintenance
Low Pressure w/Septic Tanks	• Not terrain dependent • Less excavation and environmental impacts than gravity • Requires fewer lift stations • Least cost	• Some policing of what is conveyed to the pumping structure (cleaning outlet filters) • Periodic solids removal from septic tanks • More prone to I/I than low pressure w/grinder pumps • Potential for odor complaints from septic wastewater in coll. System & at WWTP

The small diameter pressure sewer collection systems are the least cost based on the life-cycle-cost summary and offer the greatest flexibility because they can overcome hilly terrain, such as that found in most of the study areas. In addition, a smaller quantity of excavation is required for these types of systems lessening negative environmental impacts. With the recent advancement and increased popularity of the directional drilling (boring) method of utility pipeline

installation, pressure sewers could be installed in the study area with minimized disturbance to the public. The gravity sewer alternative is approximately 15% on the average, higher than the low pressure with grinder pumps, or with septic tanks alternatives for Bean Blossom. Considering that the present worth value of the grinder pump stations is approximately 9% higher than the septic tank effluent systems on a present-worth analysis basis and taking into consideration the advantages and disadvantages of the alternatives, and the lower O, M & R costs, it is recommended that the low-pressure system with septic tanks be selected for all Areas.

5.4 Life-Cycle Cost Analysis - Treatment Plant

Based on the information provided in Section 4, the following conveyance and treatment system alternatives have been deemed feasible:

- Conveyance and treatment at Helmsburg
- Conveyance to Nashville for treatment
- Extended Aeration Activated Sludge WWTP at Bean Blossom
- Algaewheel WWTP at Bean Blossom
- MBR or MBBR WWTP at Bean Blossom

The opinion of probable project costs associated with the listed conveyance and treatment system alternatives is provided in Table 5.17.

Table 5.17
Conveyance & Treatment System Alternatives - Opinion of Probable Project Costs

Alternative	Project Cost
Conveyance and treatment at Helmsburg	$2,554,305
Conveyance to Nashville for treatment	$2,277,460
Extended aeration (AeroMod) WWTP at Bean Blossom	$1,901,435
Algaewheel WWTP at Bean Blossom	$2,755,370
MBR or MBBR WWTP at Bean Blossom	$2,042,230

The following salvage values for the listed alternatives are provided in Table's 5.18 through 5.22.

Table 5.18 Estimated Salvage Value – Conveyance & Treatment at Helmsburg			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Lift Station Pumps & Controls	$12,000	15	$9,000
Blowers	$50,000	15	$37,500
Chemical Feed Pumps	$3,200	15	$2,400
Air Release Valves	$22,500	15	$16,875
Plant Piping & Valves	$12,000	50	$7,200
Force Main	$67,000	50	$40,000
Concrete Structures	$25,000	50	$15,000
Wet Well & Valve Vault	$17,000	50	$10,200
Control/Storage Building	$35,000	50	$21,000
Total			**$159,175**

Table 5.19 Estimated Salvage Value – Conveyance to Nashville			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Lift Station Pumps & controls	$54,000	15	$40,500
Air Release Valves	$27,000	15	$20,250
Force Main	$208,750	50	$125,250
Wet Wells & Valve Vaults	$24,400	50	$14,650
Total			**$200,650**

Table 5.20 Estimated Salvage Value – Extended Aeration WWTP			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Blowers	$40,000	15	$30,000
Chemical Feed Pumps	$3,200	15	$2,400
Air Release Valves	$7,500	15	$4,500
Force Main	$29,400	50	$17,640
Plant Piping & Valves	$12,000	50	$7,200
Concrete Structures	$22,500	50	$13,500
Valve Vaults	$4,000	50	$2,400
Control/Storage Building	$35,000	50	$21,000
Total			**$98,640**

Table 5.21 Estimated Salvage Value – Algaewheel WWTP			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Chemical Feed Pumps	$3,200	15	$2,400
Air Release Valves	$7,500	15	$4,500
Force Main	$29,400	50	$17,640
Plant Piping & Valves	$12,000	50	$7,200
Concrete Structures	$48,000	50	$28,800
Valve Vaults	$4,000	50	$2,400
Greenhouse Building	$100,000	50	$60,000
Control/Storage Building	$25,000	50	$15,000
Total			**$137,940**

Table 5.22 Estimated Salvage Value – MBR or MBBR WWTP			
Item	**Estimated Current Value**	**Estimated Life (years)**	**Estimated Value at Year 20**
Blowers	$33,500	15	$25,125
Chemical Feed Pumps	$3,200	15	$2,400
Air Release Valves	$7,500	15	$4,500
Force Main	$29,400	50	$17,640
Plant Piping & Valves	$12,000	50	$7,200
Tanks & Structures	$100,000	50	$60,000
Valve Vaults	$4,000	50	$2,400
Control/Storage Building	$35,000	50	$21,000
Total			**$140,265**

A life-cycle-cost summary of the conveyance and treatment system alternatives for Bean Blossom, Woodland Lake, Little Fox Lake and Freeman Ridge Areas are provided in Table 5.23.

Table 5.23 Present Worth Cost Comparison of Conveyance & Treatment Alternatives					
Item	**Alternative**				
	Conveyance to Helmsburg	**Conveyance to Nashville**	**Extended Aeration WWTP**	**Algaewheel WWTP**	**MBR or MBBR WWTP**
Project Cost	$2,554,305	$2,277,460	$1,901,435	$2,755,370	$2,042,230
Annual O, M & R Cost	$95,150	$102,580	$95,100	$79,400	$102,830
Salvage Value at year 20	$159,175	$200,650	$98,640	$137,940	$140,265
Present Worth Summary (20 years @ 0.5% interest)					
a) Total Project Cost	$2,554,305	$2,277,460	$1,901,435	$2,755,370	$2,042,230
b) PW of Annual O, M & R (PW factor 18.987)	$1,806,610	$1,947,690	$1,805,660	$1,507,570	$1,952,430
c) PW of Salvage Value (PW factor 0.9051)	$144,070	$181,610	$89,280	$124,850	$126,950
Total (a+b-c)	**$4,504,985**	**$4,406,760**	**$3,796,375**	**$4,387,790**	**$4,121,610**
Ranking	**5**	**4**	**1**	**3**	**2**

5.5 Non-Monetary Factors – Treatment System Alternatives

A listing of the advantages and disadvantages of each conveyance and treatment system considered are listed in Table 5.24.

Table 5.24
Treatment System Types – Advantages/Disadvantages

Treatment System	Advantages	Disadvantages
Conveyance and Treatment at Helmsburg RSD	• No operation and maintenance associated with treatment and disposal if under the control of the Helmsburg RSD • Potentially lowest user rate with added Helmsburg customers if HRRSD & Brown Co. RSD combine	• Treatment costs would be under the control of an outside entity unless regionalization occurred with local representation • Requires a conveyance line and lift station with odor control • Requires significant plant upgrade • Higher project cost • NPDES permit required if under the control of Brown Co. RSD, otherwise would be required of HRSD • HRSD does not want to regionalize or accept wastewater if existing rates are affected
Conveyance to Nashville	• No maintenance associated with treatment and disposal • No NPDES permit required • Additional customers can be served along the conveyance route	• Treatment costs would be under the control of an outside entity • Requires a long conveyance line and lift station with odor control • Unknown as to whether Nashville needs to make WWTP upgrades to accept Brown Co. RSD flow • Potential resistance from property owners along the conveyance route for easements & annexation waivers
Extended Aeration Activated Sludge	• Capable of producing high quality effluent • Minimal land use • Most used of local treatment alternatives • Lowest cost on a PW basis • Capable of expansion with common wall concrete construction • More control of operations and user rate impacts	• Certified operator attention required • Routine sludge removal and disposal • NPDES permit required • Higher O,M&R cost • Potential resistance from nearby neighbors
Algaewheel WWTP	• Minimal land use • Lowest O,M&R cost • Lowest energy use local treatment alternative • More control of operations and user rate impacts	• Certified operator attention required • Routine sludge removal and disposal • NPDES permit required • Technology fairly new • Highest cost on a PW basis • Potential resistance from nearby neighbors
MBR or MBBR WWTP	• Minimal land use • More control of operations and user rate impacts	• Certified operator attention required • Routine sludge removal and disposal • Highest O,M&R cost • NPDES permit required • MBR biofilm membranes most likely to require more operator attention • Potential resistance from nearby neighbors

As can be seen from Table 5.23, the extended aeration treatment plant at Bean Blossom is the most cost-effective alternative on a present worth basis. The Conveyance to Helmsburg alternative is not feasible, as the HRSD Board has indicated that they do not want to receive the study area flows, or merge with the Brown County RSD and impact their existing users. However, there other factors besides monetary such as reliability, expandability and implementability that should be considered in selecting the best alternative. The conveyance to Nashville and the extended aeration plant at Bean Blossom alternatives are considered equal and best when it comes to reliability. The WWTP at Bean Blossom alternatives are considered equal and best in regards to implementability, as environmental considerations, easement acquisition and construction obstacles may be encountered with the Conveyance to Nashville alternative. In addition, the Nashville Agreement includes a requirement that anyone being served within 3 – miles from their Corporation boundary be requested to sign an annexation waiver, which could potentially impact the implementability. Meetings have occurred between representatives of the BCRSD Board and Town of Nashville, the most recent being 2/13/2018. The Town is hesitant to accept wastewater flows from the BCRSD, as they have two developments pending and are concerned about having adequate WWTP capacity. Refer to Appendix I for a draft Nashville Wholesale Wastewater Treatment Agreement, correspondence and meeting minutes. As far as expandability, the AeroMod WWTP at Bean Blossom is expandable with the Algaewheel WWTP at Bean Blossom being the easiest to expand. The 8-inch conveyance force main to Nashville has excess capacity available, however due to its length, additional flows would be limited. In addition, an estimated 46 additional customers could be connected along the conveyance line to Nashville. Considering monetary and other factors, the extended aeration activated sludge WWTP at Bean Blossom alternative is recommended.

SECTION 6

PROPOSED PROJECT

6.1 Wastewater Improvements

The wastewater improvements consist of the construction of a septic tank effluent sewer (STEP) at Bean Blossom, Woodland Lake, Little Fox Lake and Freeman Ridge Areas, with a WWTP along Gatesville Road near Bean Blossom. Refer to Exhibit 6.1.

Refer to Exhibit's 6.1 for a map showing the proposed wastewater improvements.

A preliminary design summary for the proposed wastewater improvement is provided in Appendix J.

6.2 Project Cost Estimate

An opinion of probable project costs for the recommended improvements described in Section 5, is provided in Table 6.1. The non-construction costs in Table 6.1 should be considered as preliminary until the various professionals are contracted for services and the funding sources determined.

Table 6.1
Proposed Wastewater Project
Opinion of Probable Project Costs

Construction

Item No.	Description	Quantity	Unit	Unit Cost	Total
1	6" Force Main/Pressure Sewer	3,200	LF	$25	$96,100
2	4" Force Main Pressure Sewer	14,850	LF	$22	$326,700
3	3" Pressure Sewer	14,565	LF	$21	$305,865
4	2" Pressure Sewer	16,100	LF	$19	$305,900
5	1-1/4" Pressure Sewer	32,950	LF	$15	494,250
6	Septic Tanks w/Effluent Pump	209	EA	$5,000	$1,045,000
7	Effluent Pump Electrical & Control Panels	212	EA	$1,000	$212,000
8	Pressure Sewer Valve Assemblies	209	EA	$500	$104,580
9	Pressure Sewer/Force Main Air Release Valves	37	EA	$3,000	$111,000
10	Line Flushing Valve Pits	49	EA	$2,000	$98,000
11	Compacted Granular Backfill	6,400	LF	$18	$115,200
12	Pavement Replacement	400	LF	$50	$20,000
13	Stone Driveway/Roadway Replacement	4,500	LF	$12	$54,000

Table 6.1 Continued					
Item No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
14	Bill Monroe C'Ground/Festival Septic Tank & Pumps	1	LS	$100,000	$100,000
15	Staley's Mobile Home Park Septic Tank & Pumps	1	LS	$45,000	$45,000
16	Brownie's Restaurant Septic Tank & Pumps	1	LS	$30,000	$30,000
17	6" Force Main/Pressure Sewer, Directional Bores	100	LF	$60	$6,000
18	4" Pressure Sewer, Directional Bores	1,100	LF	$50	$55,000
19	3" Pressure Sewer, Directional Bores	3,400	LF	$45	$153,000
20	2" Pressure Sewer, Directional Bores	950	LF	$30	$28,500
21	1-1/4" Pressure Sewer, Directional Bores	1,600	LS	$20	32,000
22	Treatment Plant	1	LS	$1,254,350	$1,254,350
23	Spare Parts	1	LS	$10,000	$10,000
24	Miscellaneous (Site Restoration, Traffic Control, Rule 5 Permit, etc.)	1	LS	$492,600	$492,600
25	Mobilization, Bond & Insurance	1	LS	$276,000	$276,000
Subtotal Construction					**$5,771,045**
Non-Construction					
Engineering Study & Environmental Report					$13,000
Engineering Design and Construction					$475,000
Additional Engineering					$75,000
Construction Inspection					$200,000
Legal					$15,000
Bond Council					$30,000
Financial Advisor					$20,000
CFF Grant Administration (includes Environmental Review & Labor Standards)					$48,000
Land/Easement Acquisition					$58,000
Soils Evaluation					$12,000
Administrative					$2,000
Maintenance Equipment (Truck & Portable Generator)					$59,300
Construction Contingency					$577,100
Subtotal Non-Construction					**$1,584,400**
Total Project					**$7,355,445**

6.3 Annual Operating Budget

In addition to covering operation and maintenance expenses there is a need for funding reserve amounts to fund short-lived assets (i.e. equipment, etc. that has less than a 20-year life). These amounts may also be referred to as replacement costs. In addition to these assets previously shown in the Section 4 tables a maintenance truck will be included having a value of $28,000 and an estimated 10-year life, which equates to an annual amount needed of $2,800 are included. The energy costs shown in the O, M & R tables for the STEP Collection Systems in Section 4 have been removed from the estimated O, M & R for the Sewer District, as these costs will be borne by the customer.

A summary of the estimated operation and maintenance expenses, including the short-lived assets in provided in Table 6.2.

Table 6.2
Estimated Annual O, M & R Costs for Proposed Project

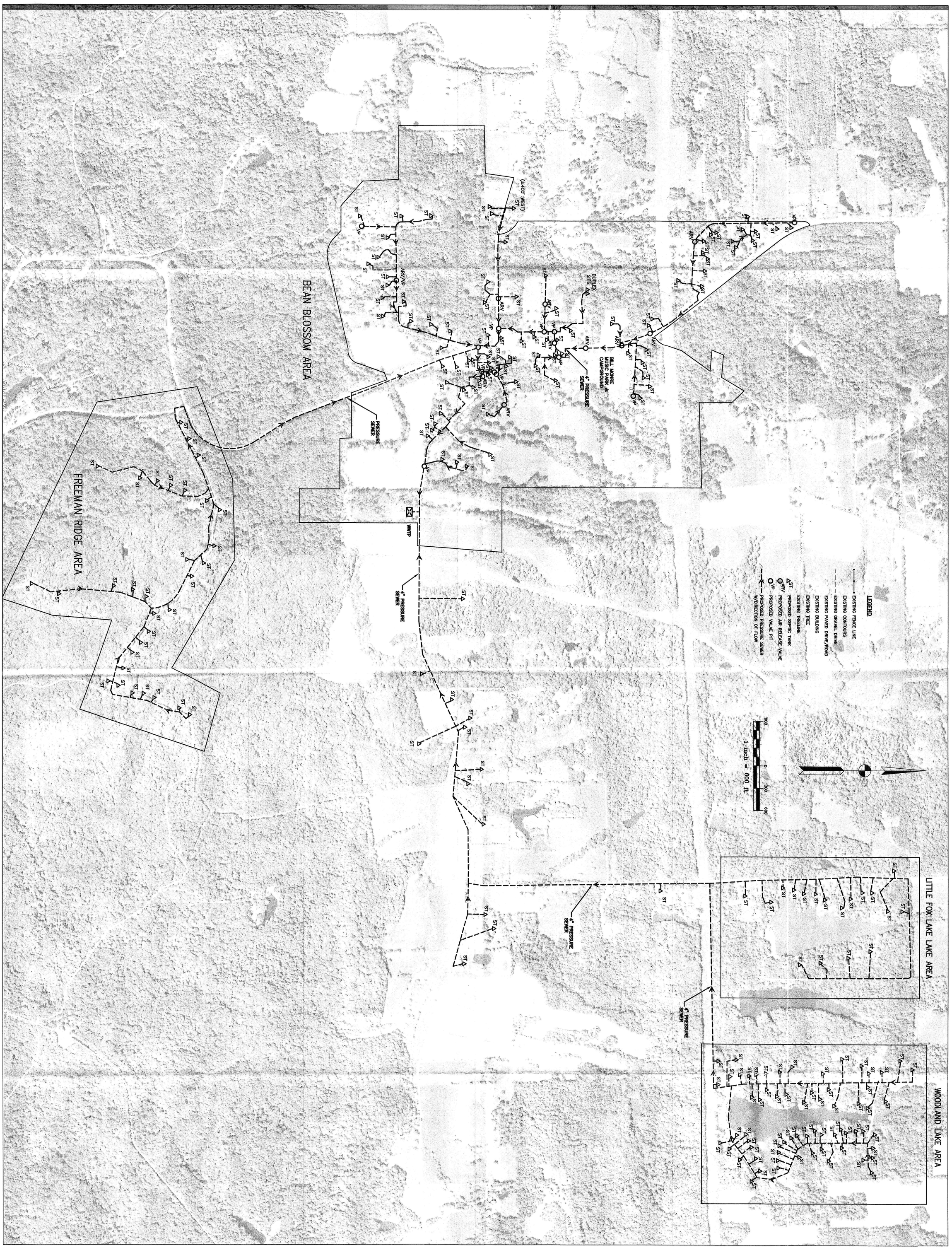
Item	Estimated Annual Amount
Labor (Salary, Benefits, Payroll Tax, Insurance, etc.)	$57,600
Energy (Power Costs)	$32,800
Materials and Supplies (including chemicals)	$5,000
Repairs	$2,150
Short-Lived Assets (Replacement)	$33,420
Outside Services (Tank Cleaning, Billing, Certified Operator, etc.)	$25,000
Biosolids Handling and Disposal	$5,000
Insurance	8,500
Conferences, Training, etc.	$1,200
Professional Services (Attorney, Engineer, Financial Advisor, etc.)	$5,000
Total	**$175,670**

The potential sources for funding the proposed project are a CFF grant an RD grant and RD loan, or SRF loan. The RD issues direct loans for wastewater projects of this type and are available to rural areas and to cities and towns with a population of 10,000 or less. Funds are available to public entities, such as municipalities, counties, special-purpose districts and Indiana tribes. In addition, funds may be made available to corporations operated on a not-for-profit basis. Priority will be given to public entities, in areas with less than 5,500 people, to construct, extend or improve wastewater facilities. The maximum term for loans is 40 years. The interest rate is based on the MHI. Based on the 2010 census tract map, both the Bean Blossom, Woodland Lake and Little Fox Lake Areas could qualify for the RD poverty rate if adequate documentation was provided that there exists a health and safety issue. The Freeman Ridge Area is assumed to qualify for the RD poverty interest rate. An RD grant up to 75% of the eligible project costs could be available if in the poverty range. RD grant amounts are also based on the reasonable level of user rates determined by the RD and project need. The CFF is a grant program administered by the OCRA and funded with federal Community Development Block Grant (CBDG) dollars. These grants support a

variety of construction projects that either benefit low to moderate-income persons or eliminate blight in communities. At least 51% of the population must be at the low to moderate-income level. The CFF program is generally only available to cities, incorporated towns and counties. The CFF program is very competitive and requires a minimum 10% match with the maximum grant amount being $700,000. Therefore, the County would need to apply for the grant on behalf of the sewer district. The SRF is a federal loan program available to cities, towns, counties, regional sewer districts, conservancy districts and Water Authorities and is administered by the IDEM. The loan money is provided for treatment plant improvements, sewer line extensions, upgrades, combined sewer overflow corrections and infiltration/inflow projects.

Table 6.3 provides various funding amounts and estimated user rates based on 275 EDU's. A RD loan for a 40-year financing period at an interest rate of 2.375% was used to estimate a user rate. An interest rate of 2.00% and 20-year financing period was utilized for a SRF loan. The SRF program also offers a 35-year financing period at a slightly higher interest rate for the pipeline portion of the project since pipes have useful life of greater than 50 years. An interest rate of 2.25% and 50% of the estimated project costs is utilized for this option. These interest rates are subject to change on a quarterly basis.

Table 6.3 Estimated User Rates – Funding Scenarios					
Funding Scenario	**Loan Amount**	**Total Annual Debt Service Amount**	**Total Annual Reserve Amount**	**O, M & R**	**Est. Monthly Rate/EDU**
RD Loan – 2.375%	$7,355,445	$287,598	$28,760	$175,670	$149.10
75% RD Grant & RD Loan @ 2.375%	$1,838,861	$71,899	$7,190	$175,670	$77.20
75% RD Grant + $700k CFF Grant & RD Loan @ 2.375%	$1,663,861	$65,057	$6,506	$175,670	$74.92
SRF Loan @ 2% - 20 years	$7,355,445	$450,153	$112,538	$175,670	$223.75
SRF Loan @ 2% - 20 Years & 2.2% - 35 Years	$7,355,445	$375,863	$93,966	$175,670	$195.61
SRF Loan @ 2% - 20 Years, 2.25% - 35 Years & $700K CFF Grant	$6,655,445	$333,023	$83,256	$175,670	$179.38



LADD ENGINEERING, INC.
LEBANON, INDIANA

Brown County RSD

PRELIMINARY ENGINEERING REPORT

Exhibit 6.1
Selected Plan Layout
Bean Blossom