

EXHIBIT E

Feasibility Study

1. Description of company, its objectives, and area proposed to be served.

Holtgrewe Farms Sewer Company LLC. (hereinafter "Applicant") was incorporated on February 22, 2010 with the purpose of operating and/or supervising a sewer system for the Holtgrewe Farms Subdivision. The area proposed to be served is limited to the Holtgrewe Farms Subdivision, a 47 lot subdivision located in an unincorporated portion of Franklin County, Missouri (part of the SE 1/4 of the SE 1/4, Sec. 20, and part of the SW 1/4 of the SW 1/4, Sec. 21, Township 44N, Range 1W, of the 5th P.M.). See Exhibit C for a map of the proposed service area and Exhibit D for a legal description of the Holtgrewe Farms.

2. Plan or Plat showing total proposed system and detailed estimate of costs.

A Site Improvement Plan for the Holtgrewe Farms Subdivision is attached hereto as **Item 2**. Said plan sets forth the proposed system, specifically the proposed site of the Recirculating Sand Filter System on a south western area of the subdivision, contiguous with lots 21 and 22, the sanitary sewer line(s) throughout the subdivision, and all appurtenances.

The entire cost of the feasibility study, and the engineering and construction of the proposed water system will be paid by the subdivision developer, Holtgrewe Farms LLC, lending the necessary funds for the sewer system to the Applicant at a rate to be determined. An estimate of costs is as follows:

4,237 ft. Sewer Main	\$55,100.00
21 Manholes	\$31,500.00
Service to 47 Homes	\$14,100.00
<u>Treatment Plant</u>	<u>\$70,000.00</u>
TOTAL	\$170,700.00

3. Description of existing facilities (if any) and detailed costs.

There are currently no existing facilities.

4. Description of proposed facilities to be constructed immediately and estimate of costs.

The proposed system will consist of 4,237 feet of 8 inch, gravity sewer line flowing to a recirculating sand filter treatment facility designed by Buescher Ditch and Associates Inc. The components of the wastewater treatment facility include a septic tank / recirculation tank, sand filter media bed, and a UV disinfection unit.

Septic Tank:

The gravity sewer system will flow to a concrete tank having eight chambers, each being six feet wide, 28 feet long and seven feet high. The inside face of all exterior walls and ceiling shall be painted with commercial grade tar to cover all porosity in the concrete, to stop any leaks and to protect the concrete against hydrogen sulfide and other damaging gasses.

Primary sewage treatment will take place in the first four chambers of the concrete tank. The normal liquid depth for the septic treatment will be six feet. The septic volume provided will be

30,161 gallons, 170% of the daily flow. Liquid will pass from chamber to chamber via 10 inch diameter ports in the walls protected by PVC piping.

Recirculation Tank:

The recirculating volume including mixing and flow equalization will be located in the last four chambers of the concrete tank. The filtrate return and mixing will be provided in chamber #5. The mixing volume provided will be 20,108 gallons higher than the required 24 hour volume (17,500 gallons) at a normal water depth of four feet.

The flow equalization volume provided will be 10,054 gallons, greater than 50% of the total daily discharge. The volume provided will be between the 4 feet depth of the mixing level and the maximum liquid depth of 6 feet. Following the peak hour, the levels will revert to the normal water depth explained above. The liquid dosing to the recirculating sand filter will be accomplished by means of six effluent pumps installed in three biotube, duplex pump vaults in chamber #8.

Sand Filter:

The secondary treatment will take place within the filter media and will continue due to the recirculating process, as filtrate return is being mixed with the incoming septic tank effluent. The dosing pumps will be Orenco p-5007-O1-O1, 3/4 hp, 3 stage, 115 volt, single phase, able to provide 40 gpm at 66.5 feet tdh. The pumps will be wired and controlled to create three pumping stations controlled by a timer set to start simultaneously, the first pump in each vault for 2 minutes and 40 seconds, then stop, pause for 2 minutes 38 seconds, then alternate and start the second pumps in each vault for 2 minutes and 40 seconds, then pause again for 2 minutes 38 seconds and restart the cycle. The first pumps will feed zones #1 and #3 of each group. The second pumps will feed zones #2 and #4 of each group, allowing the required resting time for each zone. The timer may be adjusted in a way that pumps start one at a time and work for 2 minutes 46 seconds. Some will overlap in order to pump continuously to the filter, if desired.

The initial timer setting as explained above will allow each pump to discharge approximately 14,583 gallons per day against 66.5 feet tdh during about 136 working cycles. 300 cycles is the maximum allowed. The actual timer's settings may need to be field adjusted by maintenance personnel to properly operate the system.

The force main pipe from the pumps to the recirculating sand filter (rsf) will be 1 1/2" sch 40 PVC. The pipes from the pump vaults to the rsf will be 42" deep. The force mains shall terminate at each of the three distributing valves (type orenco V6404A) installed in access risers with insulated lids. The distributing valves will be located such as to allow liquid to drain by gravity to the filter when the pumps stop. The three distributing valves feed the distributing network of pipes at the top of the rsf.

The walls of the sand filter box will be 6" thick cast in place concrete. The walls will be lined with a PVC vinyl liner. Slotted drain pipes (4" sch 40 pvc) will be installed flat (no slope) on the liner at the bottom of the sand box.

The drain pipes will be covered with a 7" thick layer of 1" to 1 1/2" washed creek rock laid directly on the liner, followed by a 4" layer of 1/2" washed pea gravel, 24" of rsf media as specified below, and 11" of 1/2" washed pea gravel at the top. The distribution piping will be installed inside this last layer.

The media will be hard, durable particles such as quartz grains, chert, or other similar materials. Less than 1% of the media shall pass the #20 sieve. Crushed dolomite or limestone will be unacceptable. The filter media shall be minimum 24 inch thick Winter Brothers WB-40 "filter sand" as per sieve analysis included in the engineering report or approved equal.

The distributing network of pipes in the top layer of the rsf include 2" sch. 40 PVC manifold pipes and distribution pipes (laterals) to be 1" diameter sch. 40 PVC, 48 feet long, each provided with 1/8" diameter shop drilled orifices in a layout as detailed below.

The 1/8" orifices in the distribution pipe shall be machine shop drilled, 2 feet on centers. Orifice 1 and 25 are to be at the 6 o'clock position. All other orifices are to be at the 12 o'clock position. Orifice shields will be installed over all of the orifices. A 6" layer of 1/2", washed, pea gravel will be between the distribution pipes and sand filter media and above the pipes.

The filtrate return from the sand box collected in 4" slotted drain pipes will be controlled by a recirculating valve Orenco RSV4 located at chamber #5 of the concrete tank. When the valve buoy sits, 20% (one fifth) of the filtrate return will be discharged and 80% will be returned to the recirculating chamber #5 for mixing. When there is no incoming sewage, 100% of the filtrate will be returned to the recirculating chamber.

UV Disinfection:

The discharged effluent will be disinfected using a Trojan UV 3025 PTP plant installed in a precast concrete box with a grated top. Should repair or maintenance work be required at the UV plant, the operator will first disconnect the recirculating splitter valve such that 100% of the filtrate return is discharged to chamber #5 of the concrete tank. The flow equalization volume available will provide enough time for work to be completed to the UV plant without discharge of un-disinfected effluent while the sand filter portion of the facility is still in operation. When the work is completed, the operator will restore the recirculating valve to normal operation.

The volume of discharge from the plant will be assessed using a V-notch flow measuring weir and box installed inline with the 6" effluent discharge pipe.

The sewer line will be installed in two separate phases. An estimate of costs for each phase is as follows:

Phase I	
3,016 ft. Sewer Main	\$39,200.00
16 Manholes	\$24,000.00
Service to 33 Homes	\$9,900.00
<u>Treatment Plant</u>	<u>\$70,000.00</u>
TOTAL	\$143,100.00
Phase II	
1,221 ft. Sewer Main	\$15,900.00
5 Manholes	\$7,500.00
<u>Service to 14 Homes</u>	<u>\$4,200.00</u>
TOTAL	\$27,600.00

5. Description of additional facilities proposed to be constructed in each of the next three years and estimate of costs.

Following the initial, phase I construction, the proposed sanitary sewer system will have the necessary facilities and infrastructure to provide sufficient capacity for at least the initial three years of operation.

6. Type of existing dwelling units, population, and actual water used, if applicable.

There are currently no existing dwelling units in the subdivision.

7. Type of dwelling units, population estimated to be added in each of the next three years and estimates of water usage.

The proposed sanitary sewer system will primarily serve the Holtgrewe Farms Subdivision, a 47 lot residential subdivision that will consist of single-family homes constructed one per lot. Obviously the size of each family will vary greatly among the residents of the subdivision but a conservative range based on 3 to 6 members in a family would result in a population range of 141 to 282. Best estimates for build-out of the subdivision is as follows:

2010 – Year One	7 Homes
2011 – Year Two	17 Homes
2012 – Year Three	27 Homes
2013 – Year Four	37 Homes
2014 – Year Five	47 Homes

The estimated waste is about 4,000 to 6,000 gallons of water per month per household.

8. Proposed rates, connection fees, and other charges (also existing rates and charges if any).

\$24.00 per month minimum for 1,000 gallons of water or less.

\$2.50 per 500 gallons after minimum.

\$1,600 connection fee per house.

\$75.00 deposit will be required prior to connection. This deposit will be refunded when the system is disconnected minus any outstanding sewer debts owed to the district.

\$50.00 reconnection charge.

There are no current customers therefore there are currently no existing rates or charges.

9. Statement of current income from existing facilities.

There are no existing facilities therefore there is no current statement of income.

10. Detailed estimate of income per year for each of the next three years from water sales and other proposed charges, or from sewer service charges.

See **Item 1-** Missouri Public Water System Financial Capacity worksheets **Item 1.**

11. Statement of operating expenses in connection with existing facilities, if any.

There are no existing facilities therefore there is no current statement of operating expenses.

12. Detailed estimate of operating expenses for each of the next three years.

See **Item 1-** Missouri Public Water System Financial Capacity worksheets **Item 1.**

13. Plans for financing and proposed capital structure of the company.

The entire cost of the feasibility study, and the engineering and construction of the proposed sewer system will be paid by the subdivision developer, Holtgrewe Farms LLC, lending the necessary funds for the sewer system to the Applicant at a rate to be determined.

14. Plans for the protection of the financial integrity of the utility during the development years.

Anthony Bequette, owner of Holtgrewe Farms LLC., (the subdivision developer) and owner of Applicant, understand the proposed sewer system will probably not be profitable during the development years and have personally guaranteed the loan with private investors.

15. Name of the professional operator and his/her qualifications, or operation-management firm to be responsible for operation and maintenance of the facilities.

Mr. Tim Flagg
Environmental Services & Associates Inc.
20 Oak Street
Washington, MO 63090
(636)-390-2517

16. Name of the person or management firm to be responsible for managing the utility's business activities, and contact person for customer inquiries.

Mr. Anthony Bequette
109 North Oak Street
Union, MO 63084
(636)-583-4311

17. Copy of proposed management contracts.

There are currently no proposed management contracts.