



Environment One Corporation

**Pressure Sewer Preliminary  
Cost and Design Analysis  
For  
Tiffany Woods 2nd Plat  
Lee's Summit, Missouri**

**Prepared For:**

**Olsson**

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**Prepared By: M. Crowley/D. Smead**

**October 7, 2022**

## **Tiffany Woods 2nd Plat Lee's Summit, Missouri**

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### **Notes :**

Analysis based upon drawings and data provided. Station recommendations are preliminary.

GPD values impact retention times only, not line sizing or hydraulics. GP laterals to be 1.25".

Analysis valid only with pipe type listed.

General recommendations for valve placement are: clean out valves at intervals of approximately 1,000 ft and at branch ends and junctions; isolation valves at branch junctions; and air release valves at changes in grade of 20 to 25 ft or more and/or at intervals of 2,000 to 2,500 ft. Lateral kits comprised of a ball and check valve are required to be installed between the pump discharge and street main on all installations. Laterals should be located as close to the public right of way as possible.

Quantities of grinder pumps, pipe, and valves are indicated on the cost page. The model of grinder pump(s) indicated is based upon the initial information provided to us but may not be the most appropriate for the specific location or requirements of the project. Costs of these items and their installation are best obtained from sources in your region. We recommend you contact your local distributor of Environment One products for additional recommendations.

06.27.2014 - Initial Report

10.07.2022 - Rev 1. This analysis was done with the assumption that it was put in the ground as designed on 06.27.2014. No as build data available. If different pipe type, pipe size, or pipe routing was used then this design is not valid. Removed Zone 1 from original layout (both removed stations were in that zone). Adjusted Zone 2 min elevation to reflect topo data. Adjusted number of pumps in Zones 2 and 3 to reflect png file/original layout. All pipe type and sizes remained the same as original.

**<<<<< END OF NOTES >>>>>**

# Budgetary Low Pressure Sewer System Costs

## Tiffany Woods 2nd Plat Lee's Summit, Missouri

	<u>Quantity</u>	<u>Description</u>	<u>Unit Cost</u>	<u>Installation</u>	<u>Sub Total</u>
<b>Valves</b>	1	Clean Out	\$0.00	0.00	\$0.00
					<b><u>\$0.00</u></b>
<b>Pumps</b>	5	DH071-74	\$0.00	0.00	\$0.00
	5	Lateral Kits (Includes Ball\Check Valve Assembly)	\$0.00	0.00	\$0.00
	5	Lateral (Boundary) Installation	\$0.00	0.00	\$0.00
	5	Pump/Panel Installation	\$0.00	0.00	\$0.00
	250	LF of 1.25" Lateral Pipe	\$0.00	0.00	\$0.00
					<b><u>\$0.00</u></b>
<b>Piping</b>	360	2.00" Pipe	\$0.00	0.00	\$0.00
	625	2.50" Pipe	\$0.00	0.00	\$0.00
					<b><u>\$0.00</u></b>

<b>Number of Connections</b>	<u>5</u>		
<b>Total Per Connection</b>	<u>\$0.00</u>	<b>Total (w/o other)</b>	<b><u>\$0.00</u></b>
<b>Grand Total Per Connection</b>	<u>\$0.00</u>	<b>Grand Total (including other)</b>	<b><u>\$0.00</u></b>

Note: The System Costs above are based on piping sized for, and Grinder Pumps manufactured by Environment One Corporation.

# PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS

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Zone Number	Connects to Zone	Number of Pumps in Zone	Accum Pumps in Zone	Gals/day per Pump	Max Flow Per Pump (gpm)	Max Sim Ops	Max Flow (GPM)	Pipe Size (inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100 ft)	Friction Loss This Zone	Accum Friction Loss (feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (feet)	Total Dynamic Head (ft)
This spreadsheet was calculated using pipe diameters for: SDR21PVC										Friction loss calculations were based on a Constant for inside roughness"C" of: 150							
2.00	3.00	2	2	200	12.19	2	24.37	2.00	2.16	360.00	0.88	3.17	8.49	914.00	860.00	54.00	62.49
3.00	3.00	3	5	200	13.84	3	39.54	2.50	2.39	625.00	0.85	5.32	5.32	914.00	894.00	20.00	25.32

# PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME (HR)

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Zone Number	Connects to Zone	Accumulated Total of Pumps this Zone	Pipe Size (inches)	Gallons per 100 lineal feet	Length of Zone	Capacity of Zone	Average Daily Flow	Average Fluid Changes per Day	Average Retention Time (Hr)	Accumulated Retention Time (Hr)
This spreadsheet was calculated using pipe diameters for: SDR21PVC							Gals per Day per Dwelling		200	
2.00	3.00	2	2.00	18.84	360.00	67.83	400	5.90	4.07	8.21
3.00	3.00	5	2.50	27.60	625.00	172.51	1,000	5.80	4.14	4.14