

**PIPE DESIGN**

**Pipe Location: 1**

**Lakeside Phase One – Oak Ridge**

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	1.800	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>1.800</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	1.800	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	1.800	*	0.80	=	0.0000
Rur. Sing. Fam.	1.800	/	1.800	*	0.40	=	0.4000
Parks/Cem.	0.000	/	1.800	*	0.20	=	0.0000

**TOTAL C:** 0.4000

**I (in/hr):**

Remote Elev.:  
Design Elev.:  
Diff. Elevation: 0  
Length of travel:  
Tc: 10 min.  
Intensity:  
10 yr: 5.48  
25 yr: 5.89

<b><u>Q: (C*I*A)</u></b>	3.946	cfs	10 yr:
	4.241	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	<b>3.946</b>	<b>cfs</b>	<b>10 yr:</b>
	<b>4.241</b>	<b>cfs</b>	<b>25 yr:</b>

**GIVEN SLOPE:** 0.50% 25 yr:  
**REQUIRED D:** 14.57 " RCP  
18.34 " CMP

**GIVEN DIAM.:** 18 " 25 yr:  
**REQ. SLOPE:** 0.16% RCP  
0.55% CMP

**USE 18" RCP PIPE** 25 yr:

Pipe Location: 2

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	23.520	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>23.520</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	23.520	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	23.520	*	0.80	=	0.0000
Rur. Sing. Fam.	23.520	/	23.520	*	0.40	=	0.4000
Parks/Cem.	0.000	/	23.520	*	0.20	=	0.0000
<b>TOTAL C:</b>							<b>0.4000</b>

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	51.556	cfs	10 yr:
	55.413	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	51.556	cfs	10 yr:
	55.413	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	38.21 " RCP	
	48.08 " CMP	

GIVEN DIAM.:	30 "	25 yr:
REQ. SLOPE:	1.82% RCP	
	6.19% CMP	

USE 30" RCP PIPE 25 yr:

Pipe Location: 3

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	1.170	ac.
Parks/Cem	0.000	ac.
TOTAL:	1.170	ac.

**C:**

Paved Areas	0.000	/	1.170	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	1.170	*	0.80	=	0.0000
Rur. Sing. Fam.	1.170	/	1.170	*	0.40	=	0.4000
Parks/Cem.	0.000	/	1.170	*	0.20	=	0.0000
TOTAL C:							0.4000

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	2.565	cfs	10 yr:
	2.757	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
TOTAL Q:	2.565	cfs	10 yr:
	2.757	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	12.40 " RCP	
	15.61 " CMP	

GIVEN DIAM.:	18 "	25 yr:
REQ. SLOPE:	0.07% RCP	
	0.23% CMP	

USE 18" RCP PIPE 25 yr:

Pipe Location: 4

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	2.240	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>2.240</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	2.240	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	2.240	*	0.80	=	0.0000
Rur. Sing. Fam.	2.240	/	2.240	*	0.40	=	0.4000
Parks/Cem.	0.000	/	2.240	*	0.20	=	0.0000
<b>TOTAL C:</b>							<b>0.4000</b>

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	4.910	cfs	10 yr:
	5.277	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	4.910	cfs	10 yr:
	5.277	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	15.82 " RCP	
	19.91 " CMP	

GIVEN DIAM.:	18 "	25 yr:
REQ. SLOPE:	0.25% RCP	
	0.86% CMP	

USE 18" RCP PIPE 25 yr:

Pipe Location: 5

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	2.180	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>2.180</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	2.180	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	2.180	*	0.80	=	0.0000
Rur. Sing. Fam.	2.180	/	2.180	*	0.40	=	0.4000
Parks/Cem.	0.000	/	2.180	*	0.20	=	0.0000
<b>TOTAL C:</b>							<b>0.4000</b>

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	4.779	cfs	10 yr:
	5.136	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	4.779	cfs	10 yr:
	5.136	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	15.66 " RCP	
	19.71 " CMP	

GIVEN DIAM.:	18 "	25 yr:
REQ. SLOPE:	0.24% RCP	
	0.81% CMP	

USE 18" RCP PIPE 25 yr:

Pipe Location: 6

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	6.290	ac.
Parks/Cem	0.000	ac.
TOTAL:	6.290	ac.

**C:**

Paved Areas	0.000	/	6.290	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	6.290	*	0.80	=	0.0000
Rur. Sing. Fam.	6.290	/	6.290	*	0.40	=	0.4000
Parks/Cem.	0.000	/	6.290	*	0.20	=	0.0000

TOTAL C: 0.4000

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	13.788	cfs	10 yr:
	14.819	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
TOTAL Q:	13.788	cfs	10 yr:
	14.819	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	23.30 " RCP	
	29.32 " CMP	

GIVEN DIAM.:	18 "	25 yr:
REQ. SLOPE:	1.98% RCP	
	6.75% CMP	

USE 18" RCP PIPE 25 yr:

Pipe Location: 7

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	10.010	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>10.010</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	10.010	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	10.010	*	0.80	=	0.0000
Rur. Sing. Fam.	10.010	/	10.010	*	0.40	=	0.4000
Parks/Cem.	0.000	/	10.010	*	0.20	=	0.0000
<b>TOTAL C:</b>							<b>0.4000</b>

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	21.942	cfs	10 yr:
	23.584	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	21.942	cfs	10 yr:
	23.584	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	27.73 " RCP	
	34.90 " CMP	

GIVEN DIAM.:	24 "	25 yr:
REQ. SLOPE:	1.08% RCP	
	3.69% CMP	

USE 24" RCP PIPE 25 yr:

Pipe Location: 8

Lakeside Phase One – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	0.690	ac.
Parks/Cem	0.000	ac.
TOTAL:	0.690	ac.

**C:**

Paved Areas	0.000	/	0.690	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	0.690	*	0.80	=	0.0000
Rur. Sing. Fam.	0.690	/	0.690	*	0.40	=	0.4000
Parks/Cem.	0.000	/	0.690	*	0.20	=	0.0000
TOTAL C:							0.4000

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	1.512	cfs	10 yr:
	1.626	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
TOTAL Q:	1.512	cfs	10 yr:
	1.626	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	10.17 " RCP	
	12.80 " CMP	

C

GIVEN DIAM.:	18 "	25 yr:
REQ. SLOPE:	0.02% RCP	
	0.08% CMP	

USE 18" RCP PIPE 25 yr:



Pipe Location: 9

Lakeside Phase Two – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	14.470	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>14.470</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	14.470	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	14.470	*	0.80	=	0.0000
Rur. Sing. Fam.	14.470	/	14.470	*	0.40	=	0.4000
Parks/Cem.	0.000	/	14.470	*	0.20	=	0.0000
<b>TOTAL C:</b>							<b>0.4000</b>

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	31.718	cfs	10 yr:
	34.091	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	<b>31.718</b>	<b>cfs</b>	<b>10 yr:</b>
	<b>34.091</b>	<b>cfs</b>	<b>25 yr:</b>

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	31.84 " RCP	
	40.08 " CMP	

GIVEN DIAM.:	30 "	25 yr:
REQ. SLOPE:	0.69% RCP	
	2.34% CMP	

USE 30" RCP PIPE 25 yr:

Pipe Location: 10

Lakeside Phase Two – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	#####	ac.
Parks/Cem	0.000	ac.
TOTAL:	#####	ac.

**C:**

Paved Areas	0.000	/	#####	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	#####	*	0.80	=	0.0000
Rur. Sing. Fam.	226.630	/	#####	*	0.40	=	0.3723
Parks/Cem.	0.000	/	#####	*	0.20	=	0.0000
TOTAL C:							0.3723

**I (in/hr):**

Remote Elev.:  
 Design Elev.:  
 Diff. Elevation: 0  
 Length of travel:  
 Tc: 10 min.  
 Intensity:  
     10 yr: 5.48  
     25 yr: 5.89

<b>Q: (C*I*A)</b>	496.773	cfs	10 yr:
	533.940	cfs	25 yr:
Previous Run:	39.935	cfs	10 yr:
	39.699	cfs	25 yr:
TOTAL Q:	536.708	cfs	10 yr:
	573.639	cfs	25 yr:

GIVEN SLOPE: 0.50% 25 yr:  
 REQUIRED D: 91.79 " RCP  
 115.51 " CMP

GIVEN DIAM.: 72 " 25 yr:  
 REQ. SLOPE: 1.83% RCP  
 6.22% CMP

USE 72" RCP PIPE 25 yr:

Pipe Location: 11

Lakeside Phase Two – Oak Ridge

08-03-2021

**Area (ac.):**

Paved Areas:	0.000	ac.
Multi-family/Industrial:	0.000	ac.
Rural Single Family:	16.850	ac.
Parks/Cem	0.000	ac.
<b>TOTAL:</b>	<b>16.850</b>	<b>ac.</b>

**C:**

Paved Areas	0.000	/	16.850	*	0.95	=	0.0000
Multi-family/Ind.	0.000	/	16.850	*	0.80	=	0.0000
Rur. Sing. Fam.	16.850	/	16.850	*	0.40	=	0.4000
Parks/Cem.	0.000	/	16.850	*	0.20	=	0.0000
<b>TOTAL C:</b>							<b>0.4000</b>

**I (in/hr):**

Remote Elev.:	
Design Elev.:	
Diff. Elevation:	0
Length of travel:	
Tc:	10 min.
Intensity:	
10 yr:	5.48
25 yr:	5.89

<b>Q: (C*I*A)</b>	36.935	cfs	10 yr:
	39.699	cfs	25 yr:
Previous Run:	0.000	cfs	10 yr:
	0.000	cfs	25 yr:
<b>TOTAL Q:</b>	36.935	cfs	10 yr:
	39.699	cfs	25 yr:

GIVEN SLOPE:	0.50%	25 yr:
REQUIRED D:	33.72 " RCP	
	42.43 " CMP	

GIVEN DIAM.:	30 "	25 yr:
REQ. SLOPE:	0.93% RCP	
	3.18% CMP	

USE 30" RCP PIPE 25 yr: