CAVE SPRINGS WATER DEPT.

P.O. BOX 5
CAVE SPRINGS, ARKANSAS 72718
PH: 479-248-1040 FAX: 479-248-7521

Re: Permit No: 4893-WR-2: AFIN: 04-01642

Dear Mr. Rick McConnell
Here is a copy of our Waste Management Plan.
Nothing has changed in our Waste Management Plan.

If you have any more questions please feel free to call our office, or my cell phone 479-721-7539

Sincerely,

Rick A Sayre
City of Cave Springs

WASTE MANAGEMENT PLAN

FOR CAVE SPRINGS MUNICIPAL PROPERTY OWNERS IMPROVEMENT DISCTRICT #1 / THE CREEKS SPECIAL SEWER DISTRICT

CAVE SPRINGS, ARKANSAS

CEI Project No. 20733.0

Revised
February 22, 2006

REV. 1

GENERAL OFFICES:
CEI Engineering Associates, Inc.
P.O Box 1408
3317 SW"I" Street
Bentonville, AR 72712
(479) 273-9472
FAX (479) 273-0844

DRIPFIELD DESIGN
FOR CAVE SPRINGS MUNICIPAL PROPERTY OWNERS IMPROVEMENT DISTRICT #1 / THE CREEKS SPECIAL SEWER DISTRICT
CAVE SPRINGS, ARKANSAS

There are five effluent disposal fields proposed on the Creeks golf course to discharge effluent from the proposed treatment facilities into the underground drip system. Engineering services Inc. (ESI) designed a drip field just west of Treatment facility #1 on the driving range. This drip field is designed to have enough capacity to dispose the effluent generated on the 92 lots that is the Fairway Valley subdivision.

The second field is actually an expansion of the drip field for Treatment Plant #1. This dripfield is designed by CEI Engineering and is located just south of Spring Creek (See Construction Drawings). The dripfield is designed to dispose of the excess capacity of Treatment Plant #1. Treatment Plant #1 has a capacity of 92,000 gallons per day. The expanded dripfield south of Spring Creek is sized to dispose of 66,000 gallons per day.

Dripfields 3 through 5 will be connected to Treatment Plant #2 as follows:

The third field is located west of Osage Creek (See Construction Drawings sheet 22 of 42 for dripfield layout). This field is divided into 13 zones. Each zone is subdivided into a specific number of areas. These areas have the same size and allowable perc rate, and therefore the exact same dosing times.

The fourth field is to the north of the third field. It contains 18 zones, which again is subdivided into areas with the same dosing times, as shown in the calculations.

The fifth field is to the north of the fourth field. It contains 10 zones, subdivided into areas with, again, the same dosing times.

Treatment Plant #1 is described in the attached letter from Engineering Services, Inc.

Treatment Plant #2 will be located at the following approximate latitude and longitude: 36°15'02''N LAT, 94°14'30''W LONG.

Wastewater will enter Treatment Plant #2 from the proposed Cave Springs Interceptor line. From here the wastewater will be split into two "Lotus" Aerobic reactor tanks. Next the wastewater will flow to the two proposed 26-diameter concrete secondary clarifiers. Effluent from the clarifiers will flow to three proposed pump tanks on the fairway of The Creeks Golf course. Please refer to the included Specifications of this project for specific information regarding the wastewater treatment plant components.

Treatment facility #2 is designed with the following parameters in mind:

	Settled Influent	Final Effluent
Design Flow (gpd)	320000	320000
pH	6.5-8.5	6.5-8.5
BOD5 (mg/L)	150	-
CBOD5 (mg/L)	-	15
TSS (mg/L)	150	15
Fecal Coliform	-	<10000

Concrete sludge holding tanks will be constructed as part of Treatment Plant #2. Sludge from these tanks will be periodically removed. This service will be provided by the following subcontractor at the request of the Sewer district.

Best Jet Sewer and Drain, Inc.
P.O Box 8113
Fayetteville, AR 72703
Phone: (479) 973-4446

Respectfully Submitted,

Ferdi Fourie, E.I.
Project Designer

DRIPFIELD DESIGN CALCULATIONS

DRIPFIELD DESIGN
FOR CAVE SPRINGS MUNICIPAL PROPERTY OWNERS IMPROVEMENT DISTRICT #1 / THE CREEKS SPECIAL SEWER DISTRICT
CAVE SPRINGS, ARKANSAS

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The fifth field is to the north of the fourth field. It contains 10 zones, subdivided into areas with, again, the same dosing times.

8317 SW "I" ST
Bentonville, AR 72712
Tel. (479) 273-9472
Ferdi Fourie

DRIPFIELD SUMMARY CALCULATION

Zone Number	Area Number	Hydraulic Loading Rate (g/d/sq.ft)	Area (ft²)	Daily Allowable Disposal (g/d)	Flowrate for area (gpm)	Number of doses for area	Dosing Time for area (min)	Disposal Rate For Area (g/d/sq.ft) (check)	Number of doses for zone	Dosing Time for zone (min)	Dosing Time for zone (hours)	Dose Volume for zone	Disposal Rate for zone (g/d/sq.ft) (check)
1	1	0.42	7650	3213	16.89	15	12.68	3212	45	570.60	9.51	9637	0.42
	2	0.42	7650	3213	16.89	15	12.68	3212					
	3	0.42	7650	3213	16.89	15	12.68	3212					
2	1	0.45	6950	3128	15.35	15	13.58	3127	45	611.10	10.19	9380	0.45
	2	0.45	6950	3128	15.35	15	13.58	3127					
	3	0.45	6950	3128	15.35	15	13.58	3127					
3	1	0.40	6620	2648	14.62	15	12.08	2649	45	543.60	9.06	7947	0.40
	2	0.40	6620	2648	14.62	15	12.08	2649					
	3	0.40	6620	2648	14.62	15	12.08	2649					
4	1	0.45	6950	3128	15.35	20	10.19	3128	40	407.60	6.79	6257	0.25
	2	0.45	6950	3128	15.35	20	10.19	3128					
5	1	0.20	11262	2252	24.87	10	9.06	2253	50	453.00	7.55	11266	0.20
	2	0.20	11262	2252	24.87	10	9.06	2253					
	3	0.20	11262	2252	24.87	10	9.06	2253					
	4	0.20	11262	2252	24.87	10	9.06	2253					
	5	0.20	11262	2252	24.87	10	9.06	2253					
6	1	0.20	13728	2746	30.31	10	9.06	2746	20	181.20	3.02	5492	0.16
	2	0.20	13728	2746	30.31	10	9.06	2746					
7	1	0.20	7642	1528	16.88	10	9.06	1529	30	271.80	4.53	4588	0.20
	2	0.20	7642	1528	16.88	10	9.06	1529					
	3	0.20	7642	1528	16.88	10	9.06	1529					
8	1	0.30	7820	2346	17.27	15	9.06	2347	45	407.70	6.80	7041	0.30
	2	0.30	7820	2346	17.27	15	9.06	2347					
	3	0.30	7820	2346	17.27	15	9.06	2347					
9	1	0.50	845	423	1.87	20	11.32	423	100	1132.00	18.87	2117	0.50
	2	0.50	845	423	1.87	20	11.32	423					
	3	0.50	845	423	1.87	20	11.32	423					
	4	0.50	845	423	1.87	20	11.32	423					
	5	0.50	845	423	1.87	20	11.32	423					
10	1	0.20	5950	1190	13.14	10	9.06	1190	20	181.20	3.02	2381	0.11
	2	0.20	5950	1190	13.14	10	9.06	1190					
11	1	0.30	10547	3164	23.29	10	13.58	3163	20	271.60	4.53	6326	0.21
	2	0.30	10547	3164	23.29	10	13.58	3163					
12	1	0.40	8916	3566	19.69	15	12.08	3568	75	906.00	15.10	17839	0.40
	2	0.40	8916	3566	19.69	15	12.08	3568					
	3	0.40	8916	3566	19.69	15	12.08	3568					
	4	0.40	8916	3566	19.69	15	12.08	3568					
	5	0.40	8916	3566	19.69	15	12.08	3568					
13	1	0.16	7638	1222	16.87	10	7.25	1223	10	72.50	1.21	1223	0.16
14	1	0.45	8682	3907	19.17	20	10.19	3907	40	407.60	6.79	7814	0.31
	2	0.45	8682	3907	19.17	20	10.19	3907					
15	1	0.10	7450	745	16.45	5	9.06	745	15	135.90	2.27	2236	0.10
	2	0.10	7450	745	16.45	5	9.06	745					
	3	0.10	7450	745	16.45	5	9.06	745					
16	1	0.40	10114	4046	22.34	15	12.08	4048	45	543.60	9.06	12144	0.40
	2	0.40	10114	4046	22.34	15	12.08	4048					
	3	0.40	10114	4046	22.34	15	12.08	4048					
17	1	0.20	10828	2166	23.91	10	9.06	2166	30	271.80	4.53	6499	0.20
	2	0.20	10828	2166	23.91	10	9.06	2166					
	3	0.20	10828	2166	23.91	10	9.06	2166					
18	1	0.60	9697	5818	21.41	20	13.58	5815	60	814.80	13.58	17445	0.60
	2	0.60	9697	5818	21.41	20	13.58	5815					
	3	0.60	9697	5818	21.41	20	13.58	5815					
19	1	0.28	7807	2186	17.24	15	8.45	2185	30	253.50	4.23	4370	0.18
	2	0.28	7807	2186	17.24	15	8.45	2185					

20	1	0.25	8030	2008	17.73	10	11.32	2007	20	226.40	3.77	4014	0.16
	2	0.25	8030	2008	17.73	10	11.32	2007					
21	1	0.25	9516	2379	21.01	10	11.32	2378	40	452.80	7.55	9513	0.25
	2	0.25	9516	2379	21.01	10	11.32	2378					
	3	0.25	9516	2379	21.01	10	11.32	2378					
	4	0.25	9516	2379	21.01	10	11.32	2378					
22	1	0.40	8814	3526	19.46	20	9.06	3526	100	906.00	15.10	17631	0.40
	2	0.40	8814	3526	19.46	20	9.06	3526					
	3	0.40	8814	3526	19.46	20	9.06	3526					
	4	0.40	8814	3526	19.46	20	9.06	3526					
	5	0.40	8814	3526	19.46	20	9.06	3526					
23	1	0.20	6952	1390	15.35	10	9.06	1391	30	271.80	4.53	4172	0.20
	2	0.20	6952	1390	15.35	10	9.06	1391					
	3	0.20	6952	1390	15.35	10	9.06	1391					
24	1	0.20	9335	1867	20.61	10	9.06	1867	30	271.80	4.53	5602	0.20
	2	0.20	9335	1867	20.61	10	9.06	1867					
	3	0.20	9335	1867	20.61	10	9.06	1867					
25	1	0.40	7856	3142	17.35	15	12.08	3144	45	543.60	9.06	9431	0.40
	2	0.40	7856	3142	17.35	15	12.08	3144					
	3	0.40	7856	3142	17.35	15	12.08	3144					
26	1	0.30	10493	3148	23.17	15	9.06	3149	60	543.60	9.06	12595	0.30
	2	0.30	10493	3148	23.17	15	9.06	3149					
	3	0.30	10493	3148	23.17	15	9.06	3149					
	4	0.30	10493	3148	23.17	15	9.06	3149					
27	1	0.20	7010	1402	15.48	15	6.04	1402	45	271.80	4.53	4207	0.20
	2	0.20	7010	1402	15.48	15	6.04	1402					
	3	0.20	7010	1402	15.48	15	6.04	1402					
28	1	0.50	11144	5572	24.61	20	11.32	5572	40	452.80	7.55	11143	0.35
	2	0.50	11144	5572	24.61	20	11.32	5572					
29	1	0.50	9802	4901	21.65	20	11.32	4902	60	679.20	11.32	14705	0.50
	2	0.50	9802	4901	21.65	20	11.32	4902					
	3	0.50	9802	4901	21.65	20	11.32	4902					
30	1	0.15	5667	850	12.51	20	3.4	851	60	204.00	3.40	2552	0.15
	2	0.15	5667	850	12.51	20	3.4	851					
	3	0.15	5667	850	12.51	20	3.4	851					
31	1	0.25	8134	2034	17.96	10	11.32	2033	20	226.40	3.77	4066	0.16
	2	0.25	8134	2034	17.96	10	11.32	2033					
32	1	0.15	8616	1292	19.03	5	13.58	1292	15	203.70	3.40	3876	0.15
	2	0.15	8616	1292	19.03	5	13.58	1292					
	3	0.15	8616	1292	19.03	5	13.58	1292					
33	1	0.25	11434	2859	25.25	10	11.32	2858	20	226.40	3.77	5717	0.18
	2	0.25	11434	2859	25.25	10	11.32	2858					
34	1	0.20	9625	1925	21.26	10	9.06	1926	20	181.20	3.02	3852	0.13
	2	0.20	9625	1925	21.26	10	9.06	1926					
35	1	0.50	10247	5124	22.63	20	11.32	5123	80	905.60	15.09	20494	0.50
	2	0.50	10247	5124	22.63	20	11.32	5123					
	3	0.50	10247	5124	22.63	20	11.32	5123					
	4	0.50	10247	5124	22.63	20	11.32	5123					
36	1	0.50	8876	4438	19.6	20	11.32	4437	120	1358.40	22.64	26625	0.50
	2	0.50	8876	4438	19.6	20	11.32	4437					
	3	0.50	8876	4438	19.6	20	11.32	4437					
	4	0.50	8876	4438	19.6	20	11.32	4437					
	5	0.50	8876	4438	19.6	20	11.32	4437					
	6	0.50	8876	4438	19.6	20	11.32	4437					
37	1	0.30	10371	3111	22.9	15	9.06	3112	45	407.70	6.80	9336	0.30
	2	0.30	10371	3111	22.9	15	9.06	3112					
	3	0.30	10371	3111	22.9	15	9.06	3112					
35	1	0.50	11389	5695	25.15	20	11.32	5694	80	905.60	15.09	22776	0.50
	2	0.50	11389	5695	25.15	20	11.32	5694					
	3	0.50	11389	5695	25.15	20	11.32	5694					
	4	0.50	11389	5695	25.15	20	11.32	5694					
39	1	0.25	8286	2072	18.3	10	11.32	2072	20	226.40	3.77	4143	0.19
	2	0.25	8286	2072	18.3	10	11.32	2072					
40	1	0.30	5607	1682	12.38	10	13.58	1681	10	135.80	2.26	1681	0.30
41	1	0.60	9196	5518	20.31	25	10.87	5519	50	543.50	9.06	11038	0.44
	2	0.60	9196	5518	20.31	25	10.87	5519					
42	1	0.20	6415	1283	14.17	10	9.06	1284	10	90.60	1.51	1284	0.20
43	1	0.49	4480	2195	9.89	20	11.09	2194	20	221.80	3.70	2194	0.49
44	1	0.38	8037	3054	17.75	15	11.47	3054	60	688.20	11.47	12216	0.38
	2	0.38	8037	3054	17.75	15	11.47	3054					
	3	0.38	8037	3054	17.75	15	11.47	3054					
	4	0.38	8037	3054	17.75	15	11.47	3054					

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 1

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	3,850	gallons / day
Hydraulic loading rate	0.17	gallons / sq.ft. / day
Total Dispersal Field Area	22,950	square ft.
Number of areas	3	Areas(s)
Dispersal area	7,650	square ft.
Choose spacing between WASTEFLOW lines	2 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft per zone (minimum required)	3,825	each
Total number of emitters per zone	1,913	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per area - dosing	16.89	gallons per minute

If required, choose flush velocity	2.0	ft/sec
How many lines of WASTEFLOW?	3	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	9.25	gpm
Total System Flow - worst case scenario	26.14	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	15	doses
Pump run time per dose/area (minutes):	12.68	minutes
Pump run time per day/area (hours):	3.17	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	9.51	hours
Dose volume per area	214	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,825	ft
Total Volume in dripline / zone	47.21	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 2

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	20,851	square ft.
Number of areas		
Dispersal area	6,950	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per area (minimum required)	3,475	each
Total number of emitters	1,738	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	15.35	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	9.25	gpm
Total System Flow - worst case scenario	24.60	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	13.58	minutes
Pump run time per day/area (hours):	3.40	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	10.19	hours
Dose volume per area	209	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,475	ft
Total Volume in dripline / zone	42.89	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 3

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	19,860	square ft.
Number of Zones		zone(s)
Dispersal area per zone	6,620	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,310	each
Total number of emitters per zone	1,655	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	14.62	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	7.77	gpm
Total System Flow - worst case scenario	22.39	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	12.08	minutes
Pump run time per day/area (hours):	3.02	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	9.06	hours
Dose volume per area	177	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,310	ft
Total Volume in dripline / zone	40.85	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 4

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	3,475	gallons / day
Hydraulic loading rate	0.25	gallons / sq.ft. / day
Total Dispersal Field Area	13,900	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	6,950	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,475	each
Total number of emitters per zone	1,738	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	15.35	gallons per minute

If required, choose flush velocity	0.5	ft/sec
How many lines of WASTEFLOW?	1	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	6.29	gpm
Total System Flow - worst case scenario	21.64	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	2	doses
Pump run time per dose/area (minutes):	10.19	minutes
Pump run time per day/area (hours):	3.40	hours / day
Number of doses per day for zone	40	
Pump run time per day for zone	6.79	hours
Dose volume per area	156	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,475	ft
Total Volume in dripline / zone	42.89	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 5

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/24/2006

Total Quantity of effluent to be disposed per day	25,000	gallons / day
Hydraulic loading rate	0.5	gallons / sq.ft. / day
Total Dispersal Field Area	56,310	square ft.
Number of Zones	5	zone(s)
Dispersal area per zone	11,262	square ft.
Choose spacing between WASTEFLOW lines	2 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,631	each
Total number of emitters per zone	2,816	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	25 psi	psi
Feet of Head at the beginning of the dripfield	57.75	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	24.87	gallons per minute

If required, choose flush velocity	1.0	ft/sec
How many lines of WASTEFLOW?	4	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	5.18	gpm
Total System Flow - worst case scenario	30.05	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	478	ft.

Check below to choose quantity and length of daily doses

Number of doses per day / zone:	10	doses
Pump run time per dose/zone (minutes):	9.06	minutes
Pump run time per day/zone (hours):	1.51	hours / day
Number of doses per day / all zones	50	
Pump run time per day/all zones (hours):	7.55	hours
Dose volume per zone	225	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,631	ft
Total Volume in dripline / zone	69.50	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 6

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	4,320	gallons / day
Hydraulic loading rate	0.2	gallons / sq.ft. / day
Total Dispersal Field Area	27,455	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	13,728	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	6,864	each
Total number of emitters per zone	3,432	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	25 psi	psi
Feet of Head at the beginning of the dripfield	57.75	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	30.31	gallons per minute

If required, choose flush velocity	2.0	ft/sec
How many lines of WASTEFLOW?	1.0	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	7.03	gpm
Total System Flow - worst case scenario	37.35	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1.5F-3 (1.5in./3hole)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	478	ft.

Number of doses per day / zone:	10	doses
Pump run time per dose/zone (minutes):	9.06	minutes
Pump run time per day/zone (hours):	1.51	hours / day
Number of doses per day / all zones	20	
Pump run time per day/all zones (hours):	3.02	hours
Dose volume per zone	275	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	6,864	ft
Total Volume in dripline / zone	84.72	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 7

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	22,925	square ft.
Number of Zones		zone(s)
Dispersal area per zone	7,642	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,821	each
Total number of emitters per zone	1,910	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	25 psi	psi
Feet of Head at the beginning of the dripfield	57.75	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	16.88	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	9.99	gpm
Total System Flow - worst case scenario	26.87	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	478	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	30	
Pump run time per day for zone	4.53	hours
Dose volume per area	153	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,821	ft
Total Volume in dripline / zone	47.16	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 8

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	23,460	square ft.
Number of Zones	3	zone(s)
Dispersal area per zone	7,820	square ft.
Choose spacing between WASTEFLOW lines	2 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,910	each
Total number of emitters per zone	1,955	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	17.27	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	39	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	14.43	gpm
Total System Flow - worst case scenario	31.70	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	5	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	2.26	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	6.79	hours
Dose volume per area	156	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,910	ft
Total Volume in dripline / zone	48.26	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 9

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	4,226	square ft.
Number of Zones		zone(s)
Dispersal area per zone	845	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	423	each
Total number of emitters per zone	211	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	1.87	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	3.33	gpm
Total System Flow - worst case scenario	5.20	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-.75F	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	3.77	hours / day
Number of doses per day for zone	100	
Pump run time per day for zone	18.87	hours
Dose volume per area	21	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	423	ft
Total Volume in dripline / zone	5.22	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 10

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	2,500	gallons / day
Hydraulic loading rate	0.21	gallons / sq.ft. / day
Total Dispersal Field Area	11,900	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	5,950	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	2,975	each
Total number of emitters per zone	1,488	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	13.14	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	10.36	gpm
Total System Flow - worst case scenario	23.50	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.02	hours
Dose volume per area	119	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	2,975	ft
Total Volume in dripline / zone	36.72	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 11

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	21,093	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	10,547	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,273	each
Total number of emitters per zone	2,637	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	23.29	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	6.66	gpm
Total System Flow - worst case scenario	29.95	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	15	doses
Pump run time per dose/area (minutes):	13.58	minutes
Pump run time per day/area (hours):	2.26	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	4.53	hours
Dose volume per area	316	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,273	ft
Total Volume in dripline / zone	65.09	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 12

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	44,580	square ft.
Number of Zones		zone(s)
Dispersal area per zone	8,916	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,458	each
Total number of emitters per zone	2,229	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	19.69	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	12.58	gpm
Total System Flow - worst case scenario	**32.27**	**gpm**
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	12.08	minutes
Pump run time per day/area (hours):	3.02	hours / day
Number of doses per day for zone	75	
Pump run time per day for zone	15.09	hours
Dose volume per area	238	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,458	ft
Total Volume in dripline / zone	55.02	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 13

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	5,000	gallons / day
Hydraulic loading rate	0.65	gallons / sq.ft. / day
Total Dispersal Field Area	7,638	square ft.
Number of Zones	1	zone(s)
Dispersal area per zone	7,638	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,819	each
Total number of emitters per zone	1,909	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	16.87	gallons per minute

If required, choose flush velocity	0.5	ft/sec
How many lines of WASTEFLOW?	1	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	6.29	gpm
Total System Flow - worst case scenario	23.16	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	not applicable	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	7.25	minutes
Pump run time per day/area (hours):	1.21	hours / day
Number of doses per day for zone	10	
Pump run time per day for zone	1.21	hours
Dose volume per area	122	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,819	ft
Total Volume in dripline / zone	47.13	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 14

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	17,364	square ft.
Number of Zones		zone(s)
Dispersal area per zone	8,682	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,341	each
Total number of emitters per zone	2,171	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	19.17	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	13.32	gpm
Total System Flow - worst case scenario	32.49	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	10.19	minutes
Pump run time per day/area (hours):	3.40	hours / day
Number of doses per day for zone	40	
Pump run time per day for zone	6.79	hours
Dose volume per area	195	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,341	ft
Total Volume in dripline / zone	53.58	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 15

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	22,350	square ft.
Number of Zones		zone(s)
Dispersal area per zone	7,450	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,725	each
Total number of emitters per zone	1,863	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	16.45	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	7.77	gpm
Total System Flow - worst case scenario	24.22	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	0.75	hours / day
Number of doses per day for zone	15	
Pump run time per day for zone	2.26	hours
Dose volume per area	149	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,725	ft
Total Volume in dripline / zone	45.98	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 16

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	30,343	square ft.
Number of Zones	3	zone(s)
Dispersal area per zone	10,114	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft per zone (minimum required)	5,057	each
Total number of emitters per zone	2,529	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	22.34	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	7.03	gpm
Total System Flow - worst case scenario	29.37	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	2	doses
Pump run time per dose/area (minutes):	12.08	minutes
Pump run time per day/area (hours):	3.02	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	9.06	hours
Dose volume per area	270	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,057	ft
Total Volume in dripline / zone	62.42	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 17

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	32,485	square ft.
Number of Zones		zone(s)
Dispersal area per zone	10,828	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,414	each
Total number of emitters per zone	2,707	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	23.91	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	7.77	gpm
Total System Flow - worst case scenario	31.68	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	30	
Pump run time per day for zone	4.53	hours
Dose volume per area	217	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,414	ft
Total Volume in dripline / zone	66.83	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 18

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	29,090	square ft.
Number of Zones	3	zone(s)
Dispersal area per zone	9,697	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,848	each
Total number of emitters per zone	2,424	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	21.41	gallons per minute

If required, choose flush velocity	2	ft/scc
How many lines of WASTEFLOW?	5	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	5.55	gpm
Total System Flow - worst case scenario	26.96	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	20	doses
Pump run time per dose/area (minutes):	13.58	minutes
Pump run time per day/area (hours):	4.53	hours / day
Number of doses per day for zone	60	
Pump run time per day for zone	13.58	hours
Dose volume per area	291	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,848	ft
Total Volume in dripline / zone	59.84	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 19

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	15,614	square ft.
Number of Zones		zone(s)
Dispersal area per zone	7,807	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,904	each
Total number of emitters per zone	1,952	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	17.24	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	4.44	gpm
Total System Flow - worst case scenario	21.68	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	8.45	minutes
Pump run time per day/area (hours):	2.11	hours / day
Number of doses per day for zone	30	
Pump run time per day for zone	4.23	hours
Dose volume per area	146	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,904	ft
Total Volume in dripline / zone	48.18	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 20

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	3,015	gallons / day
Hydraulic loading rate	0.2	gallons / sq.ft. / day
Total Dispersal Field Area	16,060	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	8,030	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,015	each
Total number of emitters per zone	2,008	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	17.73	gallons per minute

If required, choose flush velocity	0.5	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	8.14	gpm
Total System Flow - worst case scenario	25.87	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	1.89	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.77	hours
Dose volume per area	201	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,015	ft
Total Volume in dripline / zone	49.56	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 21

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	[redacted]	gallons / day
Hydraulic loading rate	[redacted]	gallons / sq.ft. / day
Total Dispersal Field Area	38,064	square ft.
Number of Zones	[redacted]	zone(s)
Dispersal area per zone	9,516	square ft.
Choose spacing between WASTEFLOW lines	[redacted]	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,758	each
Total number of emitters per zone	2,379	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	21.01	gallons per minute

If required, choose flush velocity	[redacted]	ft/sec
How many lines of WASTEFLOW?	22	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	8.14	gpm
Total System Flow - worst case scenario	29.16	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	[redacted]	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	1.89	hours / day
Number of doses per day for zone	40	
Pump run time per day for zone	7.55	hours
Dose volume per area	238	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,758	ft
Total Volume in dripline / zone	58.73	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 22

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	44,070	square ft.
Number of Zones		zone(s)
Dispersal area per zone	8,814	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,407	each
Total number of emitters per zone	2,204	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	19.46	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	10.36	gpm
Total System Flow - worst case scenario	29.83	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	2	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	3.02	hours / day
Number of doses per day for zone	100	
Pump run time per day for zone	15.09	hours
Dose volume per area	176	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,407	ft
Total Volume in dripline / zone	54.39	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 24

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total field		
Total Quantity of effluent to be disposed per day	5,601	gallons / day
Hydraulic loading rate	0.2	gallons / sq.ft. / day
Total Dispersal Field Area	28,005	square ft.
Flow per zone		
Number of Zones	3	zone(s)
Dispersal area per zone	9,335	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,668	each
Total number of emitters per zone	2,334	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	**20.61**	**gallons per minute**

If required, choose flush velocity	0.5	ft/sec
How many lines of WASTEFLOW?	16	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	5.92	gpm
Total System Flow - worst case scenario	**26.54**	**gpm**
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Dosing		
Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	30	
Pump run time per day for zone	4.53	hours
Dose volume per area	187	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,668	ft
Total Volume in dripline / zone	57.61	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 25

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	23,568	square ft.
Number of Zones		zone(s)
Dispersal area per zone	7,856	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,928	each
Total number of emitters per zone	1,964	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	17.35	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?	10	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	3.70	gpm
Total System Flow - worst case scenario	21.05	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	12.08	minutes
Pump run time per day/area (hours):	3.02	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	9.06	hours
Dose volume per area	209	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,928	ft
Total Volume in dripline / zone	48.48	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 26

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	10,597	gallons / day
Hydraulic loading rate	0.25	gallons / sq.ft. / day
Total Dispersal Field Area	41,973	square ft.
Number of Zones	4	zone(s)
Dispersal area per zone	10,493	square ft.
Choose spacing between WASTEFLOW lines	4 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,247	each
Total number of emitters per zone	2,623	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	23.17	**gallons per minute**

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	6.29	gpm
Total System Flow - worst case scenario	29.46	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	5	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	2.26	hours / day
Number of doses per day for zone	60	
Pump run time per day for zone	9.06	hours
Dose volume per area	210	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,247	ft
Total Volume in dripline / zone	64.76	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 27

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	21,030	square ft.
Number of Zones		zone(s)
Dispersal area per zone	7,010	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft per zone (minimum required)	3,505	each
Total number of emitters per zone	1,753	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	15.48	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	3.33	gpm
Total System Flow - worst case scenario	18.81	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	6.04	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	4.53	hours
Dose volume per area	93	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,505	ft
Total Volume in dripline / zone	43.26	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 28

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	11,144	gallons / day
Hydraulic loading rate	0.5	gallons / sq.ft. / day
Total Dispersal Field Area	22,288	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	11,144	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,572	each
Total number of emitters per zone	2,786	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	24.61	gallons per minute

If required, choose flush velocity	2.0	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	3.33	gpm
Total System Flow - worst case scenario	27.94	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	20	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	3.77	hours / day
Number of doses per day for zone	40	
Pump run time per day for zone	7.55	hours
Dose volume per area	279	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,572	ft
Total Volume in dripline / zone	68.77	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 29

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	29,406	square ft.
Number of Zones		zone(s)
Dispersal area per zone	9,802	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,901	each
Total number of emitters per zone	2,451	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	21.65	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	4.81	gpm
Total System Flow - worst case scenario	26.46	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	3.77	hours / day
Number of doses per day for zone	60	
Pump run time per day for zone	11.32	hours
Dose volume per area	245	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,901	ft
Total Volume in dripline / zone	60.49	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 30

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	2,500	gallons / day
Hydraulic loading rate	0.15	gallons / sq.ft. / day
Total Dispersal Field Area	17,000	square ft.
Number of Zones	3	zone(s)
Dispersal area per zone	5,667	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	2,833	each
Total number of emitters per zone	1,417	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	12.51	gallons per minute

If required, choose flush velocity	2.0	ft/sec
How many lines of WASTEFLOW?	3	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	4.81	gpm
Total System Flow - worst case scenario	17.32	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	60	doses
Pump run time per dose/area (minutes):	3.40	minutes
Pump run time per day/area (hours):	1.13	hours / day
Number of doses per day for zone	60	
Pump run time per day for zone	3.40	hours
Dose volume per area	43	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	2,833	ft
Total Volume in dripline / zone	34.97	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 31

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	16,268	square ft.
Number of Zones		zone(s)
Dispersal area per zone	8,134	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,067	each
Total number of emitters per zone	2,034	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	17.96	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	8.51	gpm
Total System Flow - worst case scenario	26.47	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	1.89	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.77	hours
Dose volume per area	203	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,067	ft
Total Volume in dripline / zone	50.20	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 32

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	4,000	gallons / day
Hydraulic loading rate	0.15	gallons / sq.ft. / day
Total Dispersal Field Area	25,847	square ft.
Number of Zones	3	zone(s)
Dispersal area per zone	8,616	square ft.
Choose spacing between WASTEFLOW lines	2 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,308	each
Total number of emitters per zone	2,154	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	19.03	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	13	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	4.81	gpm
Total System Flow - worst case scenario	23.84	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	5	doses
Pump run time per dose/area (minutes):	13.58	minutes
Pump run time per day/area (hours):	1.13	hours / day
Number of doses per day for zone	15	
Pump run time per day for zone	3.40	hours
Dose volume per area	258	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,308	ft
Total Volume in dripline / zone	53.17	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 33

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	5,717	gallons / day
Hydraulic loading rate	0.5	gallons / sq.ft. / day
Total Dispersal Field Area	22,868	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	11,434	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,717	each
Total number of emitters per zone	2,859	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	25.25	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	16	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	5.92	gpm
Total System Flow - worst case scenario	31.17	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	1.89	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.77	hours
Dose volume per area	286	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,717	ft
Total Volume in dripline / zone	70.56	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 34

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	3,850	gallons / day
Hydraulic loading rate	0.2	gallons / sq.ft. / day
Total Dispersal Field Area	19,250	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	9,625	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,813	each
Total number of emitters per zone	2,406	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	21.26	gallons per minute

If required, choose flush velocity	2.0	ft/sec
How many lines of WASTEFLOW?	1	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	13.69	gpm
Total System Flow - worst case scenario	34.95	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1.5F-3 (1.5in./3hole)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	3	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.02	hours
Dose volume per area	193	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,813	ft
Total Volume in dripline / zone	59.40	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 35

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	20,500	gallons / day
Hydraulic loading rate	0.5	gallons / sq.ft. / day
Total Dispersal Field Area	40,988	square ft.
Number of Zones	4	zone(s)
Dispersal area per zone	10,247	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,124	each
Total number of emitters per zone	2,562	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	22.63	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	5	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	9.25	gpm
Total System Flow - worst case scenario	31.88	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	80	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	3.77	hours / day
Number of doses per day for zone	80	
Pump run time per day for zone	15.09	hours
Dose volume per area	256	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,124	ft
Total Volume in dripline / zone	63.24	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 36

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	6,66	gallons / day
Hydraulic loading rate	0.1	gallons / sq.ft. / day
Total Dispersal Field Area	53,258	square ft.
Number of Zones	6	zone(s)
Dispersal area per zone	8,876	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,438	each
Total number of emitters per zone	2,219	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	19.60	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	13.69	gpm
Total System Flow - worst case scenario	33.29	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	6	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	3.77	hours / day
Number of doses per day for zone	120	
Pump run time per day for zone	22.64	hours
Dose volume per area	222	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,438	ft
Total Volume in dripline / zone	54.78	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 37

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	31,113	square ft.
Number of Zones		zone(s)
Dispersal area per zone	10,371	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,186	each
Total number of emitters per zone	2,593	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	22.90	gallons per minute

If required, choose flush velocity	0.5	ft/sec
How many lines of WASTEFLOW?	30	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	11.10	gpm
Total System Flow - worst case scenario	34.00	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1.5F-3 (1.5in./3hole)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	3.5	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	2.26	hours / day
Number of doses per day for zone	45	
Pump run time per day for zone	6.79	hours
Dose volume per area	207	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,186	ft
Total Volume in dripline / zone	64.00	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 38

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	45,556	square ft.
Number of Zones		zone(s)
Dispersal area per zone	11,389	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	5,695	each
Total number of emitters per zone	2,847	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	25.15	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	9.62	gpm
Total System Flow - worst case scenario	34.77	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1.5F-3 (1.5in./3hole)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	3.77	hours / day
Number of doses per day for zone	80	
Pump run time per day for zone	15.09	hours
Dose volume per area	285	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	5,695	ft
Total Volume in dripline / zone	70.29	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 39

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	2,553	gallons / day
Hydraulic loading rate	0.7	gallons / sq.ft. / day
Total Dispersal Field Area	16,572	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	8,286	square ft.
Choose spacing between WASTEFLOW lines	2 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,143	each
Total number of emitters per zone	2,072	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	18.30	gallons per minute

If required, choose flush velocity	0.05	ft/sec
How many lines of WASTEFLOW?	7	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	6.29	gpm
Total System Flow - worst case scenario	24.59	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	20	doses
Pump run time per dose/area (minutes):	11.32	minutes
Pump run time per day/area (hours):	1.89	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.77	hours
Dose volume per area	207	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,143	ft
Total Volume in dripline / zone	51.14	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 40

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	1,682	gallons / day
Hydraulic loading rate	0.3	gallons / sq.ft. / day
Total Dispersal Field Area	5,607	square ft.
Number of Zones	1	zone(s)
Dispersal area per zone	5,607	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	2,803	each
Total number of emitters per zone	1,402	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	12.38	gallons per minute

If required, choose flush velocity	1.0	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	9.99	gpm
Total System Flow - worst case scenario	22.37	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	not applicable	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	10	doses
Pump run time per dose/area (minutes):	13.58	minutes
Pump run time per day/area (hours):	2.26	hours / day
Number of doses per day for zone	10	
Pump run time per day for zone	2.26	hours
Dose volume per area	168	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	2,803	ft
Total Volume in dripline / zone	34.60	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 41

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	18,392	square ft.
Number of Zones		zone(s)
Dispersal area per zone	9,196	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,598	each
Total number of emitters per zone	2,299	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	20.31	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	5.55	gpm
Total System Flow - worst case scenario	25.86	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	SVLV-100	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	10.87	minutes
Pump run time per day/area (hours):	4.53	hours / day
Number of doses per day for zone	50	
Pump run time per day for zone	9.06	hours
Dose volume per area	221	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,598	ft
Total Volume in dripline / zone	56.75	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 41

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	1,280	gallons / day
Hydraulic loading rate	0.2	gallons / sq.ft. / day
Total Dispersal Field Area	6,415	square ft.
Number of Zones	2	zone(s)
Dispersal area per zone	6,415	square ft.
Choose spacing between WASTEFLOW lines	2	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	3,208	each
Total number of emitters per zone	1,604	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	14.17	gallons per minute

If required, choose flush velocity	1.0	ft/sec
How many lines of WASTEFLOW?	2	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	4.07	gpm
Total System Flow - worst case scenario	18.24	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	not applicable	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	1.0	doses
Pump run time per dose/area (minutes):	9.06	minutes
Pump run time per day/area (hours):	1.51	hours / day
Number of doses per day for zone	10	
Pump run time per day for zone	1.51	hours
Dose volume per area	128	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	3,208	ft
Total Volume in dripline / zone	39.59	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 43

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day	4,955	gallons / day
Hydraulic loading rate	1.11	gallons / sq.ft. / day
Total Dispersal Field Area	4,480	square ft.
Number of Zones	1	zone(s)
Dispersal area per zone	4,480	square ft.
Choose spacing between WASTEFLOW lines	2 ft.	ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	2,240	each
Total number of emitters per zone	1,120	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	9.89	gallons per minute

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW?	15	lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	3.33	gpm
Total System Flow - worst case scenario	13.22	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)	
Select Zone Valve (item no.)	not applicable	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:	20	doses
Pump run time per dose/area (minutes):	11.09	minutes
Pump run time per day/area (hours):	3.70	hours / day
Number of doses per day for zone	20	
Pump run time per day for zone	3.70	hours
Dose volume per area	110	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	2,240	ft
Total Volume in dripline / zone	27.65	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

Geoflow Subsurface Dripline Dispersal: Field Calculation Zone 44

Job Description:	Cave Springs Wastewater Transfer
Contact:	Ferdi Fourie
Prepared by:	Ferdi Fourie
Date:	2/8/2006

Total Quantity of effluent to be disposed per day		gallons / day
Hydraulic loading rate		gallons / sq.ft. / day
Total Dispersal Field Area	32,147	square ft.
Number of Zones		zone(s)
Dispersal area per zone	8,037	square ft.
Choose spacing between WASTEFLOW lines		ft.
Choose spacing between WASTEFLOW emitters	2 ft.	ft.
Total linear ft.per zone (minimum required)	4,018	each
Total number of emitters per zone	2,009	each
Select Wasteflow dripline	Wasteflow PC - 1/2gph	dripline
Pressure at the beginning of the dripfield	30 psi	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	0.53	gallons per hour
Total flow per zone - dosing	17.75	gallons per minute

If required, choose flush velocity		ft/sec
How many lines of WASTEFLOW?		lines
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	12.58	gpm
Total System Flow - worst case scenario	30.33	gpm
Select pipe diameters for manifolds and submains	2	inch
Select Vortex Filter (item no.)	Two x AP4E-1F (1in.)	
Select Zone Valve (item no.)	SVLV-150	
Maximum length of each WASTEFLOW line. For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.	535	ft.

Number of doses per day / area:		doses
Pump run time per dose/area (minutes):	11.47	minutes
Pump run time per day/area (hours):	2.87	hours / day
Number of doses per day for zone	60	
Pump run time per day for zone	11.47	hours
Dose volume per area	204	gallons per dose

Dripline Volume Formula		
Tubing Inside diameter	0.55	inches
Total length of WASTEFLOW dripline / zone	4,018	ft
Total Volume in dripline / zone	49.60	gallons

Flush Cycle Flow formula		
Drip tube diameter	0.55	in
Drip Tube Diameter	0.0458	ft
Drip Tube Cross Sectional Area	0.0016	ft^2
Flow required per dripline for flush velocity	0.0008	ft^3/sec

SOILS INVESTIGATION

TREATMENT PLANT#1 EXPANSION

FAIRWAY VALLEY RESERVE AREA DRIP DISPERSAL FIELD SIZE AND SOIL LOADING RATES

Pit 62

Brief SWT @ 40"
Loading rate 0.820 Gal/Ft2/Day
121.951 Ft2/100 Gal

Pit 63

Brief SWT @ 30"
Loading rate 0.615 Gal/Ft2/Day
162.602 Ft2/100 Gal

Pit 64

Brief SWT @ 22"
Loading rate 0.451 Gal/ft2/Day
221.729Ft2/100 Gal

Pit 65

Too close to pond and property line

Pit 66

Too close to property line

Pit 67

Brief SWT @ 23"
Loading rate 0.472 Ga/Ft2/Day
212.089 Ft2/100 Gal

Pit 68

Brief SWT @ 23"
Loading rate 0.472 Gal/Ft2/Day
212.089 Ft2/100 Gal

Pit 69

Too close to property line

Pit 70

Brief SWT @ 22"
Loading rate 0.451 Gal/Ft2/Day
221.729 Ft2/100 Gal

Pit 71

Brief SWT @ 22"
Moderate SWT @ 42" (Adjusted to 35")
Loading rate 0.239 Gal/Ft2/Day
418.118 Ft2/100 Gal

Pit 72

Brief SWT @ 20"
Moderate SWT @ 42" (Adjusted to 35")
Loading rate 0.239 Gal/Ft2/Day
418.118 Ft2/100 Gal

Pit 73

Brief SWT @ 20"
Moderate @ 34" (Adjusted to 29")
Loading rate 0.198 Gal/Ft2/Day
504.626 Ft2/100 Gal

Pit 74

Brief SWT @ 21"
Loading rate 0.431 Gal/Ft2/Day
232.288 Ft2/100 Gal

Pit 75

Edge of green. Did not dig.

Pit 76

Edge of sandtrap, disturbed area, did not dig.

Pit 77

Brief SWT @ 19"
Moderate SWT @ 40" (Adjusted to 33")
Loading rate 0.226 Gal/Ft2/Day
443.459 Ft2/100 Gal

Pit 78

Brief SWT @ 34"
Loading rate 0.697 Gal/Ft2/Day
143.472 Ft2/100 Gal

Pit 79

Brief SWT @ 20"
Loading rate 0.410 Gal/Ft2/Day
243.902 Ft2/100 Gal

Pit 80

Brief SWT @ 18"
Loading rate 0.369 Gal/Ft2/Day
271.003 Ft2/100 Gal

Pit 81

Brief SWT @ 18"
Loading rate 0.369 Gal/Ft2/Day
271.003 Ft2/100 Gal

Pit 82

Brief SWT @ 20"
Loading rate 0.410 Gal/Ft2/Day
243.902 Ft2/100 Gal

Pit 83

Brief SWT @ 19"
Loading rate 0.390 Gal/Ft2/Day
256.739 Ft2/100 Gal

Pit 84

Brief SWT @ 19"
Loading rate 0.390 Gal/Ft2/Day
256.739 Ft2/100 Gal

Pit 85

Brief SWT @ 23"
Loading rate 0.472 Gal/Ft2/Day
212.089 Ft2/100 Gal

Pit 86

Brief SWT @ 17"
Loading rate 0.349 Gal/Ft2/Day
286.944 Ft2/100 Gal

Pits completed 12-15-05 North of Club House and Shed

Pit 1

Overburden @ 8"
Brief @ 21"
Long @ 31" Unsuitable pit area

Pit 2

Brief SWT @ 30"
Moderate SWT @ 38" (Adjusted to 35")
Loading rate 0.239 Gal/Ft2/Day
418.118 Ft2/100 Gal

Pit 3

Brief SWT @ 22"
Loading rate 0.451Gal/Ft2/Day
221.729 Ft2/100 Gal

These drip disposal field sizes and loading rates are taken from the Arkansas Department of Health Guidelines for the Design and Construction of Drip Dispersal Systems.

TREATMENT PLANT #2

BAILEY ENVIRONMENTAL SERVICES, INC.
P.O. Box 6428
Springdale, AR 72766
Ph (479) 361-5044

June 13, 2005

Brian Hash, Developer
ReMax and Associates
1285 N. Shiloh
Fayetteville, AR 72703

RE: Irrigation lines on the The Creeks
Highway 112, Cave Springs, AR

To Whom It May Concern:

Soil pit analyses were made of 105 pits as marked by surveyors from CEI Engineering to determine seasonal water tables and loading rates by Reba Bailey, DR and Glen Laurent, P.S.C. on June 7th and 8th, 2005. This information is also being provided to Benny Mays, E.H.S. from the Benton County Health Department.

This information is pertinent to the area of the property where the soil pits were dug. Pit locations must be shown on the plat. 15 other proposed pits were not dug due either to proximity to ponds, irrigation lines, putting greens or stakes not found. Notes referring to this are included on the attached analysis chart.

The drip field disposal field sizes and loading rates are taken from the Arkansas Department of Health Guidelines for the Design and Construction of Drip Dispersal Systems provided to the designated representatives. Pits were reviewed by Benny Mays, Environmental Health Specialist, on June 7th, 2005. Pit locations considered unsuitable for irrigation lines and proposed pit sites not dug are noted on the plat provided by CEI Engineering.

Sincerely,

Reba Bailey, R.S.
Designated Representative #269

C: Benny Mays, E.H.S., Benton County Health Department
CEI Engineering Associates

Soils Investigation Data
Drip Dispersal Field Loading Rates
The Creeks Golf Course
Cave Springs, AR

Prepared for:
Brett Hash, Developer
CEI Engineering Associates

Prepared by:
Reba Bailey, R.S.
Designated Representative #269

June 13, 2005

Introduction

This report was prepared to provide information for health department approval of the proposed irrigation lines using treated effluent on The Creeks Golf Course.

105 soil pits were dug and soil pit analyses were made on June 7th and 8th, 2005. A health department representative reviewed the pits and concurred with our findings.

Soil pit locations are indicated on the plat provided by CEI Engineering Associates. Related loading rates are pertinent to the referenced pit locations.

Site description

The proposed drip dispersal field is located on The Creeks Golf Course located on Highway 112 in Cave Springs, AR in Benton County. Areas analyzed were staked and identified by CEI Engineering Associates.

Methods

This investigation was performed by digging four feet deep soil pits based on a 100 foot grid in the non disturbed areas over much of the golf course. All soil interpretations and profile descriptions were made by Glen Laurent, Arkansas Registered Professional Soil Classifier. Seasonal water table depths were determined by Reba Bailey, Designated Representative #269 and Glen Laurent, Arkansas Registered Professional Soil Classifier. Soil pits were reviewed by Benny Mays, Environmental Health Specialist with the Arkansas Department of Health.

Loading rates were based on the seasonal water tables and interpretations were made using the Arkansas Department of Health Guidelines for the Design and Construction of Drip Dispersal Systems

THE CREEKS GOLF COURSE
PIT B4

PROFILE DESCRIPTION

A	0 – 10"	Dark brown (10YR3/3) silt loam; weak, medium subangular blocky structure; friable; 5% gravel by volume1/2 to 3 inches in diameter; gradual, smooth boundary.
B	10– 18"	Brown (10YR4/4) silt loam; weak, medium subangular blocky structure; friable; 10% gravel by volume 1 to 3 inches in diameter; gradual, smooth boundary.
Bt1	18 – 27"	Brown (7.5YR4/4) gravelly silt loam with common, medium distinct yellowish brown (10YR5/4) iron depletions; moderate, medium subangular blocky structure; friable; common, distinct clay films on ped faces; 2% common black stains on ped faces; 20% rounded gravel by volume 1 to 3 inches in diameter; gradual, wavy boundary.
Bt2	27 – 42"	Brown (7.5YR4/4) gravelly silty clay loam with common, medium distinct brown (7.5YR5/4) iron depletions; moderate, medium subangular blocky structure; friable; many, distinct clay films on ped faces; common black stains; 15% rounded gravel by volume 1 to 3 inches in diameter; gradual, wavy boundary.
Bt3	42 – 52"	Brown (7.5YR4/4) silty clay loam with common, medium distinct yellowish brown (10YR5/4) iron depletions; moderate, medium subangular blocky structure; friable; common, distinct clay films on ped faces; common black stains on ped faces; 10% rounded gravel by volume 1 to 3 inches in diameter.

THE CREEKS GOLF COURSE
PIT B33

PROFILE DESCRIPTION

A	0 – 18"	Dark yellowish brown (10YR4/4) silt loam; weak, medium subangular blocky structure; friable; gradual, smooth boundary.
Bt1	18– 28"	Brown (7.5YR4/4) silt loam with common, medium distinct yellowish brown (10YR5/4) iron depletions; moderate, medium subangular blocky structure; friable; common, clay films; gradual, smooth boundary.
Bt2	28 – 45"	Brown (7.5YR4/4) silty clay loam with common, medium distinct light yellowish brown (10YR6/4) iron depletions; moderate, medium subangular blocky structure; friable; common, distinct clay films on ped faces; 2% common black stains on ped faces; gradual, smooth boundary.
Bt3	45 – 52"	Brown (7.5YR4/4) silty clay loam with common, medium distinct light yellowish brown (10YR6/4) and light brownish gray (10YR6/2) iron depletions; moderate, medium subangular blocky structure; friable; common, distinct clay films on ped faces; common FeMn concretions.

THE CREEKS GOLF COURSE
PIT B75

PROFILE DESCRIPTION

A	0 – 13"	Dark yellowish brown (10YR4/4) silt loam; weak, medium subangular blocky structure; friable; 10% rounded gravel by volume1to 3 inches in diameter; gradual, smooth boundary.
B1	13– 21"	Brown (10YR4/4) very gravelly silt loam; weak, medium subangular blocky structure; very friable; 60% rounded gravel by volume 1 to 3 inches in diameter; gradual, smooth boundary.
B2	21 – 48"	Dark brown (7.5YR3/4) extremely gravelly silt loam; wesak, medium subangular blocky structure; very friable; 80% rounded gravel by volume 1 to 3 inches in diameter.

SOIL PITS SIMILAR TO SOIL PROFILE DESCRIPTIONS FOR :						
B4		**B33**			**B75**	
B1		B25	B72		B6	B110
B2		B26	B73		B11	B112
B3		B27	B74		B12	B113
B7		B29	B81		B15	B120
B8		B30	B86		B16	
B10		B31	B88		B21	
B76		B32	B89		B22	
B77		B33	B90		B23	
B78		B34	B92		B28	
B79		B36	B93		B35	
B80		B38	B94		B42	
B95		B39	B96		B43	
B104		B40	B97		B50	
B107		B41	B98		B54	
B114		B44	B99		B55	
		B45	B100		B56	
		B46	B102		B57	
		B48	B105		B58	
		B49	B106		B62	
		B51	B109		B67	
		B52	B115		B69	
		B53	B116		B71	
		B59	B117		B75	
		B60	B118		B82	
		B61	B119		B83	
		B64			B84	
		B65			B91	
		B66			B101	
		B68			B103	
		B70			B108	

PIT #	BSWT	MSWT	LSWT	ADJ MSWT	ADJ LSWT	LOADING RATE G/FT2/DAY	FT2/100 GAL		
B1	19"					0.39	256.739		
B2	18"					0.369	271.003		
B3	19"					0.39	256.739		
B4	18"					0.369	271.003		
B5	NO PIT OR STAKE								
B6			28" FREE H20			0.096	1045.3	UNSUITABLE	
B7	18"	34"		29"		0.198	504.626		
B8	29"					0.492	203.252		
B9	NO PIT OR STAKE								
B10	20"						243.902		
B11	22"					0.451	221.729		
B12	>48"					0.984	101.626		
B13	NO PIT OR STAKE								
B14	NO PIT OR STAKE								
B15			47" FREE H20			0.161	622.73		
B16	43"					0.882	113.443		
B17	LOCATED IN DRY POND								
B18	NO PIT OR STAKE					USE LR from PIT 10			
B19	NO PIT OR STAKE					" " 25			
B20	LOCATED IN DRY POND								
B21	>51"					0.984	101.626		
B22	23"					0.472	212.069		
B23	19"					0.39	256.739		
B24	NO PIT OR STAKE					USE LR from PIT 25			
B25	29"					0.595	168.209		
B26	20"	42"		35"		0.239	418.118		
B27	19"	42"		34"		0.226	443.459		
B28	>48"					0.984	101.626		
B29	18"	33"		28"		0.191	522.648		
B30	16"	38"		31"		0.212	472.069		
B31	20"	43"		35"		0.239	418.118		
B32	18"	44"		35"		0.239	418.118		
B33	18"	45"		36"		0.246	406.504		

Close to creek

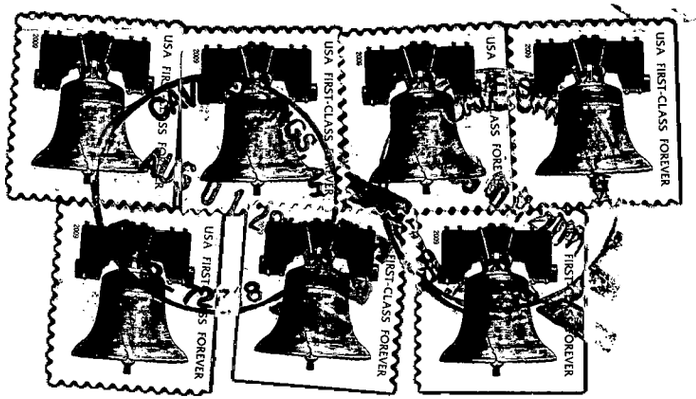
PIT #	BSWT	MSWT	LSWT	ADJ MSWT	ADJ LSWT	LOADING RATE G/FT2/D	FT2/100 GAL
B34	20"					0.41	243.902
B35	21"	48"		39"		0.267	375.235
B36	17"	30"	45" FREE H20	26"	35"	0.12	836.237
B37	AT EDGE OF POND-(H20 PUMPED IN)				NOT DUG		
B38	22"					0.451	221.729
B39	22"					0.451	221.729
B40	12"	24"	50" FREE H20	20"	35"	0.12	836.237
B41	18"	32"		27"		0.185	542.005
B42	55"+					0.984	101.626
B43	22"	46"		38"		0.26	385.109
B44	10"	20"	45" FREE H20	17"	31"	0.106	944.138
B45	25"					0.513	195.122
B46	27"					0.554	180.668
B47	AT EDGE OF POND-(H20 PUMPED IN)						
B48	18"	49"		39"		0.267	375.235
B49	18"	38"	51" FREE H20	31"	41"	0.14	713.861
B50	4"	24"	46" FREE H20	18"	34"	0.082	1219.51
B51	SURFACE	12"	25"				
B52	19"	45"		36"		0.246	406.504
B53	20"	47"		38"		0.26	385.109
B54	>54"					0.984	101.626
B55	28"					0.574	174.216
B56	28"	36"	45" FREE H20	33"	39"	0.133	750.469
B57	5" FILL	25"				DO NOT USE THIS AREA, HEALTH DEPT REQUEST	
B58	38"					0.779	128.37
B59	32"	49"		43"		0.294	340.329
B60	19"	48"		38"		0.26	385.109
B61	19"	48"		38"		0.26	385.109
B62	SURFACE		27" , 34" H20				
B63	NOT DUG, NORTH OF POND						
B64	21"	41"	52"	35"	43"	0.147	680.658
B65	21"	48"		38"		0.26	385.109
B66	28"	33"		31"		0.212	472.069
B67	44"					0.902	110.865

HASH PROJECT SEASONAL WATER TABLES AND LOADING RATES THE CREEKS								
PIT #	BSWT	MSWT	LSWT	ADJ MSWT	ADJ LSWT	LOADING RATE G/FT2/D	FT2/100 GAL	
B68	20"	30"		27"		0.185	542.005	
B69	26"	54"		45"		0.308	325.203	
B70	20"	39"		33"		0.226	443.459	
B71	SURFACE					UNSUITABLE		
B72	30"					0.615	162.602	
B73	23"	28"		26"		0.178	562.852	
B74	20"	52"		41"		0.28	356.93	
B75	48"+					0.984	101.626	
B76		24"				0.164	609.756	
B77	22"					0.451	221.729	
B78	6"	20"		15"		0.103	975.61	
B79	48"+					0.984	101.626	
B80	22"					0.451	221.729	
B81	33"	51"		45'		0.308	325.203	
B82	34"					0.697	143.472	
B83	23"					0.472	212.089	
B84	48"+					0.984	101.626	
B85	NOT DUG-TOO CLOSE TO T (GREEN?)							
B86	20"	40"		33"		0.226	443.459	
B87	NOT DUG-TOO CLOSE TO IRRIGATION LINES							
B88	18"					0.369	271.003	
B89	17"	33"		28"		0.191	522.648	
B90	17"	27"		24"		0.164	609.756	
B91	21"					0.431	232.288	
B92	19"	26"		24"		0.164	609.756	
B93	18"	29"		25"		0.171	585.366	
B94	18"	37"		31"		0.212	472.069	
B95	30"					0.615	162.602	
B96	22"					0.451	221.729	
B97	20"	35"		30"		0.205	487.205	
B98	29"	33"		32"		0.219	457.317	

HASH PROJECT SEASONAL WATER TABLES AND LOADING RATES THE CREEKS							
PIT #	BSWT	MSWT	LSWT	ADJ MSWT	ADJ LSWT	LOADING RATE G/FT2/D	FT2/100 GAL
B99	29"	34"		32"		0.219	457.317
B100	29"	38"		35"		0.239	418.118
B101	23"	36"		32"		0.219	457.317
B102	23"	34"		30"		0.205	487.205
B103	33"					0.677	147.82
B104	20"	28"		25"		0.171	585.366
B105	17"	27"		24"		0.164	609.756
B106	17"	24"		22"		0.15	665.188
B107	20"	33"		29"		0.198	504.628
B108	48"					0.984	101.626
B109	22"	25"		24"		0.164	609.756
B110	SURFACE	UNSUITABLE AREA					
B111	TOO CLOSE TO POND-HEALTH DEPT ASKED NOT TO USE AREA						
B112	7"	15"		12"		0.082	1219.51
B113	35"					0.718	139.373
B114	20"	26"		24"		0.164	609.756
B115	SURFACE	16"	UNSUITABLE				
B116	SURFACE						
B117	10"	16"		14"		0.096	1045.3
B118	6"	19"		15"		0.103	975.61
B119	23"	33"		30"		0.205	487.805
B120	34"					0.697	143.472
BSWT=BRIEF SEASONAL WATER TABLE							
MSWT=MODERATE "							
LSWT=LONG "							
ADJ=ADJUSTED							

AVG 0.375

Cave Springs Water
P.O. Box 5
Cave Springs, ARK 72718



FIRST CLASS

ARKANSAS Department of Environmental Quality
5301 Northshore Drive
North Little Rock, ARK. 72118-5317
ATT: Rick McConnell