APPENDIX 9-3

SETTLEMENT POND DESIGN CALCULATIONS

Glenard WF - Settlement Pond Designs								
Drainage Area	**SP label**	**Description**	**Area (m^2)**	**Settlement Pond Dimensions***				
				L (m)	**Depth (m)**	**Width (m)**	**Cross-Section Area (m^2)**	**Pond Volume (m^3)**
Catchment A1	SP-A1	catchment A1	2504	17.00	1.00	5.25	5.25	89
Catchment A2	SP-A2	catchment A2	515	10.00	1.00	3.00	3.00	30
Catchment A3	SP-A3	catchment A3	1290	14.75	1.00	4.50	4.50	66
Catchment A4	SP-A4	catchment A4	5327	27.75	1.00	8.50	8.50	236
Catchment B1	SP-B1	Catchment B1	1357	15.50	1.00	4.50	4.50	70
Catchment B2	SP-B2	Catchment B2	2686	19.75	1.00	6.50	6.50	128
Catchment B3	SP-B3	Catchment B3	1980	17.75	1.00	5.50	5.50	98
Catchment B4	SP-B4	Catchment B4	2002	17.75	1.00	5.50	5.50	98
Catchment B5	SP-B5	Catchment B5	1519	15.25	1.00	5.00	5.00	76
Catchment C1	SP-C1	Catchment C1	1626	16.50	1.00	5.00	5.00	83
Catchment C2	SP-C2	Catchment C2	1833	18.25	1.00	5.00	5.00	91
Catchment C3	SP-C3	Catchment C3	1679	16.75	1.00	5.00	5.00	84
Catchment C4	SP-C4	Catchment C4	1266	14.50	1.00	4.50	4.50	65
Catchment D1	SP-D1	Catchment D1	1235	15.00	1.00	4.50	4.25	64
Catchment D2	SP-D2	Catchment D2	901	12.25	1.00	4.00	4.00	49
Catchment D3	SP-D3	Catchment D3	2069	18.50	1.00	5.50	5.50	102
Catchment D4	SP-D4	Catchment D4	2195	18.50	1.00	5.75	5.75	106
Catchment E1	SP-E1	Catchment E1	1729	16.50	1.00	5.25	5.25	87
Catchment E2	SP-E2	Catchment E2	1569	18.00	1.00	5.75	5.75	104
Catchment E3	SP-E3	Catchment E3	1999	17.50	1.00	5.50	5.50	96
Catchment E4	SP-E4	Catchment E4	1608	16.25	1.00	5.00	5.00	81
Catchment E5	SP-E5	Catchment E5	1466	15.00	1.00	5.00	5.00	75
Catchment E6	SP-E6	Catchment E6	2047	18.25	1.00	5.50	5.50	100
Catchment E7	SP-E7	Catchment E7	1685	16.00	1.00	5.25	5.25	84
Catchment F1	SP-F1	Catchment F1	3902	23.75	1.00	7.50	7.50	178
Catchment F2	SP-F2	Catchment F2	2171	18.50	1.00	5.75	5.75	106
Catchment F3	SP-F3	Catchment F3	1696	16.25	1.00	5.25	5.25	85
Catchment G1	SP-G1	Catchment G1	3877	23.50	1.00	7.50	7.50	176
Catchment G2	SP-G2	Catchment G2	2109	18.00	1.00	5.75	5.75	104
Catchment G3	SP-G3	Catchment G3	1957	17.50	1.00	5.50	5.50	96
Catchment H1	SP-H1	Catchment H1	2293	18.50	1.00	6.00	6.00	111
Catchment H2	SP-H2	Catchment H2	4153	24.00	1.00	8.00	8.00	192
Catchment H3	SP-H3	Catchment H3	1584	16.00	1.00	5.00	5.00	80
Catchment H4	SP-H4	Catchment H4	1251	14.25	1.00	4.50	4.50	64
Catchment H5	SP-H5	Catchment H5	1444	15.00	1.00	5.00	5.00	75
Catchment H6	SP-H6	Catchment H6	1372	15.00	1.00	4.75	4.75	71
Catchment I1	SP-I1	Catchment I1	6565	28.00	1.00	9.00	9.00	252
Catchment I2	SP-I2	Catchment I2	1488	15.00	1.00	5.00	5.00	75
Catchment I3	SP-I3	Catchment I3	1770	16.75	1.00	5.25	5.25	88
Catchment I4	SP-I4	Catchment I4	4551	25.50	1.00	8.00	8.00	204
Catchment J1	SP-J1	Catchment J1	1336	15.25	1.00	4.50	4.50	69
Catchment J2_PSA	SP-J2 - Peat Repository	Catchment J2_PSA	66027	170.00	1.00	55.00	55.00	9350
Catchment J3	SP-J3	Catchment J3	2066	18.25	1.00	5.50	5.50	100
Catchment J4	SP-J4	Catchment J4	1907	17.00	1.00	5.50	5.50	94
Catchment K1	SP-K1	Catchment K1	5099	26.50	1.00	8.50	8.50	225
Catchment K2	SP-K2	Catchment K2	1951	17.50	1.00	5.50	5.50	96
Catchment K3	SP-K3	Catchment K3	1978	17.50	1.00	5.50	5.50	96
Catchment K4	SP-K4	Catchment K4	1877	17.00	1.00	5.50	5.50	94
Catchment K5	SP-K5	Catchment K5	1877	17.00	1.00	5.50	5.50	94
Catchment L1	SP-L1	Catchment L1	1813	17.00	1.00	5.25	5.25	89
Catchment L2	SP-L2	Catchment L2	1970	17.50	1.00	5.50	5.50	96
Catchment L3	SP-L3	Catchment L3	2117	18.00	1.00	5.75	5.75	104
Catchment L4	SP-L4	Catchment L4	1734	16.50	1.00	5.25	5.25	87
Catchment L5	SP-L5	Catchment L5	5884	28.50	1.00	9.00	9.00	257
Catchment M1	SP-M1	Catchment M1	2171	18.00	1.00	6.00	6.00	108
Catchment M2	SP-M2	Catchment M2	2245	18.00	1.00	6.00	6.00	108
Catchment M3	SP-M3	Catchment M3	2024	18.00	1.00	5.50	5.50	99
Catchment M4	SP-M4	Catchment M4	2732	20.00	1.00	6.50	6.50	130
Catchment M5	SP-M5	Catchment M5	4086	24.00	1.00	7.75	7.75	186
Catchment N1	SP-N1	Catchment N1	2031	18.00	1.00	5.50	5.50	99
Catchment N2	SP-N2	Catchment N2	2099	18.50	1.00	5.50	5.50	102
Catchment N3	SP-N3	Catchment N3	1924	17.25	1.00	5.50	5.50	95
Catchment N4	SP-N4	Catchment N4	1899	17.00	1.00	5.50	5.50	94
Catchment N5	SP-N5	Catchment N5	3550	22.50	1.00	7.25	7.25	163
Catchment N6	SP-N6	Catchment N6	1855	16.75	1.00	5.50	5.50	92
Catchment N7	SP-N7	Catchment N7	1644	16.50	1.00	5.00	5.00	83
Catchment N8_BP	SP-N8 - Borrow Pit	Catchment N8_BP	36121	100.00	1.00	30.00	30.00	3000
Catchment O1	SP-O1	Catchment O1	1822	16.50	1.00	5.50	5.50	91
Catchment O2	SP-O2	Catchment O2	2020	18.00	1.00	5.50	5.50	99
Catchment O3	SP-O3	Catchment O3	3678	23.25	1.00	7.25	7.25	169
Catchment P1	SP-P1	Catchment P1	2268	19.00	1.00	5.75	5.75	109
Catchment P2	SP-P2	Catchment P2	1709	16.25	1.00	5.25	5.25	85
Catchment P3	SP-P3	Catchment P3	1954	17.50	1.00	5.50	5.50	96
Catchment Q1	SP-Q1	Catchment Q1	1250	14.25	1.00	4.50	4.50	64
Catchment Q2	SP-Q2	Catchment Q2	3749	23.00	1.00	7.50	7.50	173
Catchment R1	SP-R1	Catchment R1	2545	19.50	1.00	6.25	6.25	122
Catchment S1	SP-S1	Catchment S1	1625	16.25	1.00	5.00	5.00	81
Catchment S2	SP-S2	Catchment S2	1619	16.25	1.00	5.00	5.00	81
Catchment S3	SP-S3	Catchment S3	1669	16.00	1.00	5.25	5.25	84
Catchment S4_SS	SP-S4 - Substation	Catchment S4_SS	33396	90.00	1.00	30.00	30.00	2700
Catchment S5	SP-S5	Catchment S5	1957	17.50	1.00	5.25	5.25	92
Catchment T1	SP-T1	Catchment T1	3784	17.50	1.00	5.50	5.50	96
Catchment T2	SP-T2	Catchment T2	1846	23.00	1.00	7.50	7.50	173

Catchment U1	SP-U1	Catchment U1	1688	17.25	1.00	5.25	5.25	91
Catchment U2	SP-U2	Catchment U2	1439	16.00	1.00	5.25	5.25	84
Catchment U3	SP-U3	Catchment U3	2122	15.00	1.00	5.00	5.00	75
Catchment V1	SP-V1	Catchment V1	1977	18.75	1.00	5.50	5.50	103
Catchment V2	SP-V2	Catchment V2	1612	17.75	1.00	5.50	5.50	98
Catchment V3	SP-V3	Catchment V3	1133	16.25	1.00	5.00	5.00	81
Catchment V4	SP-V4	Catchment V4	1133	14.00	1.00	4.25	4.25	60
Catchment V5	SP-V5	Catchment V5	3822	23.25	1.00	7.50	7.50	174
Catchment W1	SP-W1	Catchment W1	1837	17.25	1.00	5.25	5.25	91
Catchment W2	SP-W2	Catchment W2	1895	17.00	1.00	5.50	5.50	94
Catchment W3	SP-W3	Catchment W3	2190	18.50	1.00	5.75	5.75	106
Catchment W4	SP-W4	Catchment W4	1956	17.50	1.00	5.50	5.50	96
Catchment W5	SP-W5	Catchment W5	5880	28.50	1.00	9.00	9.00	257
Catchment X1	SP-X1	Catchment X1	1794	17.00	1.00	5.25	5.25	89
Catchment X2	SP-X2	Catchment X2	1750	16.50	1.00	5.25	5.25	87
Catchment X3	SP-X3	Catchment X3	1741	16.50	1.00	5.25	5.25	87
Catchment X4	SP-X4	Catchment X4	1683	16.00	1.00	5.25	5.25	84
Catchment Y1	SP-Y1	Catchment Y1	2273	19.00	1.00	5.75	5.75	109
Catchment Y2	SP-Y2	Catchment Y2	3961	24.00	1.00	7.50	7.50	180
Catchment Z1	SP-Z1	Catchment Z1	1758	16.75	1.00	5.25	5.25	88
Catchment Z2	SP-Z2	Catchment Z2	1754	16.50	1.00	5.25	5.25	87
Catchment Z3	SP-Z3	Catchment Z3	2009	16.25	1.00	5.00	5.00	81
Catchment Z4	SP-Z4	Catchment Z4	1163	13.50	1.00	4.50	4.50	61
Catchment Z5	SP-Z5	Catchment Z5	3347	21.50	1.00	7.25	7.25	156
* for removal of particles up to 6 microns in size, and 4 microns in size for PS and BP areas, at 10°C.								

Catchment A:	**SP-A1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002504				
Area of (site) catchment (m2)	2504	m^2			
SAAR	1569	mm	1569		
SOIL	0.3				Placed road material
Q mean =	0.00210107	m^3/sec			
Q mean =	2.1	L/s			
Q mean =	181.5	m^3/day			
Factored Q_{BAR}-Rural	0.0021	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.9	L/s			
10 yr return peak flow	248.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00055	m/sec		
Required length of Pond =	L =	22.81	m say:	17	m length
Length to Width ratio		3.24	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	89.25	m^2		
% of catchment area	C% =	3.56%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.25**	**1.00**	Single pond design
Operating Volume:	89	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment A:	**SP-A2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.000515				
Area of (site) catchment (m2)	515	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00051424	m^3/sec			
Q mean =	0.5	L/s			
Q mean =	44.4	m^3/day			
Factored Q_{BAR}-Rural	0.0005	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.001	m^3/sec			
10 yr return peak flow	0.7	L/s			
10 yr return peak flow	60.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		3.00	m^2	3.00	m width
Q= V.A implies	V =	0.00023	m/sec		
Required length of Pond =	L =	9.77	m say:	10	m length
Length to Width ratio		3.33	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	30.00	m^2		
% of catchment area	C% =	5.83%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**10**	**3.00**	**1.00**	Single pond design
Operating Volume:	30	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment A:	**SP-A3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00129				
Area of (site) catchment (m2)	1290	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00116434	m^3/sec			
Q mean =	1.2	L/s			
Q mean =	100.6	m^3/day			
Factored Q_{BAR}-Rural	0.0012	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.6	L/s			
10 yr return peak flow	137.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00035	m/sec		
Required length of Pond =	L =	14.75	m say:	14.75	m length
Length to Width ratio		3.28	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	66.38	m^2		
% of catchment area	C% =	5.15%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**14.75**	**4.50**	**1.00**	Single pond design
Operating Volume:	66	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment A:	**SP-A4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.005327				
Area of (site) catchment (m2)	5327	m^2			
SAAR	1569	mm			Placed road material
SOIL	0.3				
Q mean =	0.00411363	m^3/sec			
Q mean =	4.1	L/s			
Q mean =	355.4	m^3/day			
Factored Q_{BAR}-Rural	0.0041	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.006	m^3/sec			
10 yr return peak flow	5.6	L/s			
10 yr return peak flow	486.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		8.50	m^2	8.50	m width
Q= V.A implies	V =	0.00066	m/sec		
Required length of Pond =	L =	27.58	m say:	27.75	m length
Length to Width ratio		3.26	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	235.88	m^2		
% of catchment area	C% =	4.43%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**27.75**	**8.50**	**1.00**	Single pond design
Operating Volume:	236	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment B:	**SP-B1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001357				
Area of (site) catchment (m2)	1357	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00121801	m^3/sec			
Q mean =	1.2	L/s			
Q mean =	105.2	m^3/day			
Factored Q_{BAR}-Rural	0.0012	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.7	L/s			
10 yr return peak flow	144.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00037	m/sec		
Required length of Pond =	L =	15.43	m say:	15.5	m length
Length to Width ratio		3.44	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	69.75	m^2		
% of catchment area	C% =	5.14%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15.5**	**4.50**	**1.00**	Single pond design
Operating Volume:	70	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment B:	**SP-B2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002686				
Area of (site) catchment (m2)	2686	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00223645	m^3/sec			
Q mean =	2.2	L/s			
Q mean =	193.2	m^3/day			
Factored Q_{BAR}-Rural	0.0022	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	3.1	L/s			
10 yr return peak flow	264.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		6.50	m^2	6.50	m width
Q= V.A implies	V =	0.00047	m/sec		
Required length of Pond =	L =	19.61	m say:	19.75	m length
Length to Width ratio		3.04	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	128.38	m^2		
% of catchment area	C% =	4.78%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**19.75**	**6.50**	**1.00**	Single pond design
Operating Volume:	128.375	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment B:	**SP-B3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00198				
Area of (site) catchment (m2)	1980	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00170486	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	147.3	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	201.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.67	m say:	17.75	m length
Length to Width ratio		3.23	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	97.63	m^2		
% of catchment area	C% =	4.93%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.75**	**5.50**	**1.00**	Single pond design
Operating Volume:	98	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment B:	**SP-B4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002002				
Area of (site) catchment (m2)	2002	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00172171	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	148.8	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	203.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	17.84	m say:	17.75	m length
Length to Width ratio		3.23	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	97.63	m^2		
% of catchment area	C% =	4.88%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.75**	**5.50**	**1.00**	Single pond design
Operating Volume:	97.625	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment B:	**SP-B5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001519				
Area of (site) catchment (m2)	1519	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00134661	m^3/sec			
Q mean =	1.3	L/s			
Q mean =	116.3	m^3/day			
Factored Q_{BAR}-Rural	0.0013	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.8	L/s			
10 yr return peak flow	159.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00037	m/sec		
Required length of Pond =	L =	15.35	m say:	15.25	m length
Length to Width ratio		3.05	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	76.25	m^2		
% of catchment area	C% =	5.02%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	76.25	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment C:	**SP-C1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001626				
Area of (site) catchment (m2)	1626	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00143071	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	123.6	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	169.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.31	m say:	16.5	m length
Length to Width ratio		3.30	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	82.50	m^2		
% of catchment area	C% =	5.07%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.00**	**1.00**	Single pond design
Operating Volume:	82.5	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment C:	**SP-C2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001833				
Area of (site) catchment (m2)	1833	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00159173	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	137.5	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	188.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.14	m say:	18.25	m length
Length to Width ratio		3.65	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	91.25	m^2		
% of catchment area	C% =	4.98%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	91.25	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment C:	**SP-C3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001679				
Area of (site) catchment (m2)	1679	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00147215	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	127.2	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	174.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.78	m say:	16.75	m length
Length to Width ratio		3.35	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	83.75	m^2		
% of catchment area	C% =	4.99%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.75**	**5.00**	**1.00**	Single pond design
Operating Volume:	83.75	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment C:	**SP-C4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001266				
Area of (site) catchment (m2)	1266	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00114504	m^3/sec			
Q mean =	1.1	L/s			
Q mean =	98.9	m^3/day			
Factored Q_{BAR}-Rural	0.0011	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.6	L/s			
10 yr return peak flow	135.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00035	m/sec		
Required length of Pond =	L =	14.50	m say:	14.5	m length
Length to Width ratio		3.22	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	65.25	m^2		
% of catchment area	C% =	5.15%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**14.5**	**4.50**	**1.00**	Single pond design
Operating Volume:	65.25	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment D:	**SP-D1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001235				
Area of (site) catchment (m2)	1235	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00112005	m^3/sec			
Q mean =	1.1	L/s			
Q mean =	96.8	m^3/day			
Factored Q_{BAR}-Rural	0.0011	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.5	L/s			
10 yr return peak flow	132.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.25	m^2	4.25	m width
Q= V.A implies	V =	0.00036	m/sec		
Required length of Pond =	L =	15.02	m say:	15	m length
Length to Width ratio		3.53	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	63.75	m^2		
% of catchment area	C% =	5.16%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15**	**4.25**	**1.00**	Single pond design
Operating Volume:	64	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment D:	**SP-D2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.000901				
Area of (site) catchment (m2)	901	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00084598	m^3/sec			
Q mean =	0.8	L/s			
Q mean =	73.1	m^3/day			
Factored Q_{BAR}-Rural	0.0008	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.001	m^3/sec			
10 yr return peak flow	1.2	L/s			
10 yr return peak flow	100.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.00	m^2	4.00	m width
Q= V.A implies	V =	0.00029	m/sec		
Required length of Pond =	L =	12.05	m say:	12.25	m length
Length to Width ratio		3.06	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	49.00	m^2		
% of catchment area	C% =	5.44%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**12.25**	**4.00**	**1.00**	Single pond design
Operating Volume:	49	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment D:	**SP-D3**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002069				
Area of (site) catchment (m2)	2069	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00177289	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	153.2	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	209.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.37	m say:	18.5	m length
Length to Width ratio		3.36	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	101.75	m^2		
% of catchment area	C% =	4.92%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	102	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment D:	**SP-D4**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002195				
Area of (site) catchment (m2)	2195	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00186867	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	161.5	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.6	L/s			
10 yr return peak flow	221.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00045	m/sec		
Required length of Pond =	L =	18.52	m say:	18.5	m length
Length to Width ratio		3.22	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	106.38	m^2		
% of catchment area	C% =	4.85%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.5**	**5.75**	**1.00**	Single pond design
Operating Volume:	106	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:		**SP-E1**			
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001729				
Area of (site) catchment (m2)	1729	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.0015111	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	130.6	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	178.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.41	m say:	16.5	m length
Length to Width ratio		3.14	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	86.63	m^2		
% of catchment area	C% =	5.01%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.25**	**1.00**	Single pond design
Operating Volume:	87	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:	**SP-E2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002122				
Area of (site) catchment (m2)	2122	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00181326	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	156.7	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	214.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	17.97	m say:	18	m length
Length to Width ratio		3.13	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	103.50	m^2		
% of catchment area	C% =	4.88%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**5.75**	**1.00**	Single pond design
Operating Volume:	104	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:	**SP-E3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001999				
Area of (site) catchment (m2)	1999	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00171941	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	148.6	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	203.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	17.82	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.81%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:	**SP-E4**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001608				
Area of (site) catchment (m2)	1608	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00141661	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	122.4	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.9	L/s			
10 yr return peak flow	167.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.15	m say:	16.25	m length
Length to Width ratio		3.25	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	81.25	m^2		
% of catchment area	C% =	5.05%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	81	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:	**SP-E5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001466				
Area of (site) catchment (m2)	1466	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00130471	m^3/sec			
Q mean =	1.3	L/s			
Q mean =	112.7	m^3/day			
Factored Q_{BAR}-Rural	0.0013	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.8	L/s			
10 yr return peak flow	154.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00036	m/sec		
Required length of Pond =	L =	14.87	m say:	15	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	75.00	m^2		
% of catchment area	C% =	5.12%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15**	**5.00**	**1.00**	Single pond design
Operating Volume:	75	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:	**SP-E6**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002047				
Area of (site) catchment (m2)	2047	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00175611	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	151.7	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	207.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.20	m say:	18.25	m length
Length to Width ratio		3.32	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	100.38	m^2		
% of catchment area	C% =	4.90%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.25**	**5.50**	**1.00**	Single pond design
Operating Volume:	100	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment E:	**SP-E7**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001685				
Area of (site) catchment (m2)	1685	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00147683	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	127.6	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	174.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.03	m say:	16	m length
Length to Width ratio		3.05	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	84.00	m^2		
% of catchment area	C% =	4.99%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16**	**5.25**	**1.00**	Single pond design
Operating Volume:	84	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment F:	**SP-F1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003902				
Area of (site) catchment (m2)	3902	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00311818	m^3/sec			
Q mean =	3.1	L/s			
Q mean =	269.4	m^3/day			
Factored Q_{BAR}-Rural	0.0031	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.3	L/s			
10 yr return peak flow	369.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.50	m^2	7.50	m width
Q= V.A implies	V =	0.00057	m/sec		
Required length of Pond =	L =	23.70	m say:	23.75	m length
Length to Width ratio		3.17	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	178.13	m^2		
% of catchment area	C% =	4.56%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**23.75**	**7.50**	**1.00**	Single pond design
Operating Volume:	178	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment F:	**SP-F2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002171				
Area of (site) catchment (m2)	2171	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00185047	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	159.9	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	219.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.34	m say:	18.5	m length
Length to Width ratio		3.22	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	106.38	m^2		
% of catchment area	C% =	4.90%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.5**	**5.75**	**1.00**	Single pond design
Operating Volume:	106	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment F:	**SP-F3**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001696				
Area of (site) catchment (m2)	1696	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.0014854	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	128.3	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	175.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.13	m say:	16.25	m length
Length to Width ratio		3.10	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	85.31	m^2		
% of catchment area	C% =	5.03%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.25**	**1.00**	Single pond design
Operating Volume:	85	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment G:	**SP-G1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003877				
Area of (site) catchment (m2)	3877	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00310039	m^3/sec			
Q mean =	3.1	L/s			
Q mean =	267.9	m^3/day			
Factored Q_{BAR}-Rural	0.0031	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.2	L/s			
10 yr return peak flow	367.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.50	m^2	7.50	m width
Q= V.A implies	V =	0.00057	m/sec		
Required length of Pond =	L =	23.56	m say:	23.5	m length
Length to Width ratio		3.13	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	176.25	m^2		
% of catchment area	C% =	4.55%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**23.5**	**7.50**	**1.00**	Single pond design
Operating Volume:	176	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment G:	**SP-G2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002109				
Area of (site) catchment (m2)	2109	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00180337	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	155.8	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	213.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	17.88	m say:	18	m length
Length to Width ratio		3.13	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	103.50	m^2		
% of catchment area	C% =	4.91%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**5.75**	**1.00**	Single pond design
Operating Volume:	104	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment G:	**SP-G3**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001957				
Area of (site) catchment (m2)	1957	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00168722	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	145.8	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	199.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.48	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.92%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment H:	**SP-H1**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002293				
Area of (site) catchment (m2)	2293	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00194274	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	167.9	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.7	L/s			
10 yr return peak flow	230.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		6.00	m^2	6.00	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.45	m say:	18.5	m length
Length to Width ratio		3.08	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	111.00	m^2		
% of catchment area	C% =	4.84%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.5**	**6.00**	**1.00**	Single pond design
Operating Volume:	111	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment H:	**SP-H2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.004153				
Area of (site) catchment (m2)	4153	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00329608	m^3/sec			
Q mean =	3.3	L/s			
Q mean =	284.8	m^3/day			
Factored Q_{BAR}-Rural	0.0033	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.005	m^3/sec			
10 yr return peak flow	4.5	L/s			
10 yr return peak flow	390.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		8.00	m^2	8.00	m width
Q= V.A implies	V =	0.00056	m/sec		
Required length of Pond =	L =	23.48	m say:	24	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	192.00	m^2		
% of catchment area	C% =	4.62%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**24**	**8.00**	**1.00**	Single pond design
Operating Volume:	192	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment H:	**SP-H3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001584				
Area of (site) catchment (m2)	1584	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00139778	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	120.8	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.9	L/s			
10 yr return peak flow	165.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00038	m/sec		
Required length of Pond =	L =	15.93	m say:	16	m length
Length to Width ratio		3.20	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	80.00	m^2		
% of catchment area	C% =	5.05%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16**	**5.00**	**1.00**	Single pond design
Operating Volume:	80	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment H:	**SP-H4**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001251				
Area of (site) catchment (m2)	1251	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00113296	m^3/sec			
Q mean =	1.1	L/s			
Q mean =	97.9	m^3/day			
Factored Q_{BAR}-Rural	0.0011	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.6	L/s			
10 yr return peak flow	134.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00034	m/sec		
Required length of Pond =	L =	14.35	m say:	14.25	m length
Length to Width ratio		3.17	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	64.13	m^2		
% of catchment area	C% =	5.13%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**14.25**	**4.50**	**1.00**	Single pond design
Operating Volume:	64	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment H:	**SP-H5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001444				
Area of (site) catchment (m2)	1444	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00128727	m^3/sec			
Q mean =	1.3	L/s			
Q mean =	111.2	m^3/day			
Factored Q_{BAR}-Rural	0.0013	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.8	L/s			
10 yr return peak flow	152.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00035	m/sec		
Required length of Pond =	L =	14.67	m say:	15	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	75.00	m^2		
% of catchment area	C% =	5.19%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15**	**5.00**	**1.00**	Single pond design
Operating Volume:	75	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment H:	**SP-H6**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001372				
Area of (site) catchment (m2)	1372	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00122999	m^3/sec			
Q mean =	1.2	L/s			
Q mean =	106.3	m^3/day			
Factored Q_{BAR}-Rural	0.0012	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.7	L/s			
10 yr return peak flow	145.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.75	m^2	4.75	m width
Q= V.A implies	V =	0.00035	m/sec		
Required length of Pond =	L =	14.76	m say:	15	m length
Length to Width ratio		3.16	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	71.25	m^2		
% of catchment area	C% =	5.19%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15**	**4.75**	**1.00**	Single pond design
Operating Volume:	71	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment I:	**SP-I1**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.006565				
Area of (site) catchment (m2)	6565	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00495444	m^3/sec			
Q mean =	5.0	L/s			
Q mean =	428.1	m^3/day			
Factored Q_{BAR}-Rural	0.0050	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.007	m^3/sec			
10 yr return peak flow	6.8	L/s			
10 yr return peak flow	586.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		9.00	m^2	9.00	m width
Q= V.A implies	V =	0.00075	m/sec		
Required length of Pond =	L =	31.38	m say:	28	m length
Length to Width ratio		3.11	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	252.00	m^2		
% of catchment area	C% =	3.84%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**28**	**9.00**	**1.00**	Single pond design
Operating Volume:	252	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment I:	**SP-I2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001488				
Area of (site) catchment (m2)	1488	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00132212	m^3/sec			
Q mean =	1.3	L/s			
Q mean =	114.2	m^3/day			
Factored Q_{BAR}-Rural	0.0013	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.8	L/s			
10 yr return peak flow	156.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00036	m/sec		
Required length of Pond =	L =	15.07	m say:	15	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	75.00	m^2		
% of catchment area	C% =	5.04%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15**	**5.00**	**1.00**	Single pond design
Operating Volume:	75	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment I:	**SP-I3**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.00177				
Area of (site) catchment (m2)	1770	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00154295	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	133.3	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	182.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.75	m say:	16.75	m length
Length to Width ratio		3.19	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	87.94	m^2		
% of catchment area	C% =	4.97%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.75**	**5.25**	**1.00**	Single pond design
Operating Volume:	88	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment I:	**SP-I4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.004551				
Area of (site) catchment (m2)	4551	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00357578	m^3/sec			
Q mean =	3.6	L/s			
Q mean =	308.9	m^3/day			
Factored Q_{BAR}-Rural	0.0036	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.005	m^3/sec			
10 yr return peak flow	4.9	L/s			
10 yr return peak flow	423.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		8.00	m^2	8.00	m width
Q= V.A implies	V =	0.00061	m/sec		
Required length of Pond =	L =	25.48	m say:	25.5	m length
Length to Width ratio		3.19	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	204.00	m^2		
% of catchment area	C% =	4.48%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**25.5**	**8.00**	**1.00**	Single pond design
Operating Volume:	204	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment J:		**SP-J1**			
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001336				
Area of (site) catchment (m2)	1336	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00120122	m^3/sec			
Q mean =	1.2	L/s			
Q mean =	103.8	m^3/day			
Factored Q_{BAR}-Rural	0.0012	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.6	L/s			
10 yr return peak flow	142.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00037	m/sec		
Required length of Pond =	L =	15.21	m say:	15.25	m length
Length to Width ratio		3.39	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	68.63	m^2		
% of catchment area	C% =	5.14%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15.25**	**4.50**	**1.00**	Single pond design
Operating Volume:	69	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment J:	**SP-J2 - Peat Repository**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.066027				
Area of (site) catchment (m2)	66027	m^2			
SAAR	1569	mm			
SOIL	0.4				Placed peat material
Q mean =	0.07216473	m^3/sec			
Q mean =	72.2	L/s			
Q mean =	6235.0	m^3/day			
Factored Q_{BAR}-Rural	0.0722	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.099	m^3/sec			
10 yr return peak flow	98.9	L/s			
10 yr return peak flow	8542.0	m^3/day			
GW Inflow	15.0	m^3/day			Based on assumed permeability and aquifer type
Total Flow (SW+GW)	0.099	m^3/sec			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 4 µm particles	4.00E-06	m			4 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00001	m/s			
m/hr	0.038	m/hr			
Time for D (m)	26.00	hrs			
				1.00	D (m) - depth
say pond cross section area =		55.00	m^2	55.00	m width
Q= V.A implies	V =	0.00180	m/sec		
Required length of Pond =	L =	168.56	m say:	170	m length
Length to Width ratio		3.09	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	9350.00	m^2		
% of catchment area	C% =	14.16%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**170**	**55.00**	**1.00**	Single pond design
	2 no.	**120**	**39.00**	**1.00**	**Apply 2 no. ponds**
Operating Volume:	9350	m^3		OK	Good to remove fine silts to 0.004mm

Catchment J:	**SP-J3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002066				
Area of (site) catchment (m2)	2066	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00177061	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	153.0	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	209.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.35	m say:	18.25	m length
Length to Width ratio		3.32	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	100.38	m^2		
% of catchment area	C% =	4.86%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.25**	**5.50**	**1.00**	Single pond design
Operating Volume:	100	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment J:	**SP-J4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001907				
Area of (site) catchment (m2)	1907	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.0016488	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	142.5	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	195.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00041	m/sec		
Required length of Pond =	L =	17.09	m say:	17	m length
Length to Width ratio		3.09	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	93.50	m^2		
% of catchment area	C% =	4.90%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.50**	**1.00**	Single pond design
Operating Volume:	94	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment K:	**SP-K1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.005099				
Area of (site) catchment (m2)	5099	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00395656	m^3/sec			
Q mean =	4.0	L/s			
Q mean =	341.8	m^3/day			
Factored Q_{BAR}-Rural	0.0040	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.005	m^3/sec			
10 yr return peak flow	5.4	L/s			
10 yr return peak flow	468.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		8.50	m^2	8.50	m width
Q= V.A implies	V =	0.00064	m/sec		
Required length of Pond =	L =	26.53	m say:	26.5	m length
Length to Width ratio		3.12	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	225.25	m^2		
% of catchment area	C% =	4.42%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**26.5**	**8.50**	**1.00**	Single pond design
Operating Volume:	225	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment K:	**SP-K2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001951				
Area of (site) catchment (m2)	1951	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00168261	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	145.4	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	199.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.44	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.93%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment K:	**SP-K3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001978				
Area of (site) catchment (m2)	1978	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00170332	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	147.2	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	201.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.65	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.87%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment K:	**SP-K4**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001877				
Area of (site) catchment (m2)	1877	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00162569	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	140.5	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	192.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.85	m say:	17	m length
Length to Width ratio		3.09	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	93.50	m^2		
% of catchment area	C% =	4.98%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.50**	**1.00**	Single pond design
Operating Volume:	94	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment K:	**SP-K5**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001877				
Area of (site) catchment (m2)	1877	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00162569	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	140.5	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	192.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.85	m say:	17	m length
Length to Width ratio		3.09	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	93.50	m^2		
% of catchment area	C% =	4.98%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.50**	**1.00**	Single pond design
Operating Volume:	94	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment L:	**SP-L1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001813				
Area of (site) catchment (m2)	1813	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00157627	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	136.2	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	186.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00041	m/sec		
Required length of Pond =	L =	17.11	m say:	17	m length
Length to Width ratio		3.24	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	89.25	m^2		
% of catchment area	C% =	4.92%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.25**	**1.00**	Single pond design
Operating Volume:	89	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment L:	**SP-L2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00197				
Area of (site) catchment (m2)	1970	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00169719	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	146.6	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	200.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.59	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.89%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96.25	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment L:	**SP-L3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002117				
Area of (site) catchment (m2)	2117	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00180945	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	156.3	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	214.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	17.94	m say:	18	m length
Length to Width ratio		3.13	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	103.50	m^2		
% of catchment area	C% =	4.89%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**5.75**	**1.00**	Single pond design
Operating Volume:	104	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment K:	**SP-L4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001734				
Area of (site) catchment (m2)	1734	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00151499	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	130.9	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	179.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.45	m say:	16.5	m length
Length to Width ratio		3.14	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	86.63	m^2		
% of catchment area	C% =	5.00%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.25**	**1.00**	Single pond design
Operating Volume:	87	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment L:	**SP-L5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.005884				
Area of (site) catchment (m2)	5884	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00449432	m^3/sec			
Q mean =	4.5	L/s			
Q mean =	388.3	m^3/day			
Factored Q_{BAR}-Rural	0.0045	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.006	m^3/sec			
10 yr return peak flow	6.2	L/s			
10 yr return peak flow	532.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		9.00	m^2	9.00	m width
Q= V.A implies	V =	0.00068	m/sec		
Required length of Pond =	L =	28.46	m say:	28.5	m length
Length to Width ratio		3.17	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	256.50	m^2		
% of catchment area	C% =	4.36%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**28.5**	**9.00**	**1.00**	Single pond design
Operating Volume:	257	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment M:	**SP-M1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002171				
Area of (site) catchment (m2)	2171	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00185047	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	159.9	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	219.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		6.00	m^2	6.00	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.58	m say:	18	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	108.00	m^2		
% of catchment area	C% =	4.97%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**6.00**	**1.00**	Single pond design
Operating Volume:	108	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment M:	**SP-M2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002245				
Area of (site) catchment (m2)	2245	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00190651	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	164.7	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.6	L/s			
10 yr return peak flow	225.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		6.00	m^2	6.00	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.11	m say:	18	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	108.00	m^2		
% of catchment area	C% =	4.81%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**6.00**	**1.00**	Single pond design
Operating Volume:	108	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment M:	**SP-M3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002024				
Area of (site) catchment (m2)	2024	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00173853	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	150.2	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	205.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	18.02	m say:	18	m length
Length to Width ratio		3.27	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	99.00	m^2		
% of catchment area	C% =	4.89%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**5.50**	**1.00**	Single pond design
Operating Volume:	99	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment M:	**SP-M4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002732				
Area of (site) catchment (m2)	2732	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00227051	m^3/sec			
Q mean =	2.3	L/s			
Q mean =	196.2	m^3/day			
Factored Q_{BAR}-Rural	0.0023	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	3.1	L/s			
10 yr return peak flow	268.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		6.50	m^2	6.50	m width
Q= V.A implies	V =	0.00048	m/sec		
Required length of Pond =	L =	19.91	m say:	20	m length
Length to Width ratio		3.08	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	130.00	m^2		
% of catchment area	C% =	4.76%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**20**	**6.50**	**1.00**	Single pond design
Operating Volume:	130	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment M:	**SP-M5**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.004086				
Area of (site) catchment (m2)	4086	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00324871	m^3/sec			
Q mean =	3.2	L/s			
Q mean =	280.7	m^3/day			
Factored Q_{BAR}-Rural	0.0032	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.5	L/s			
10 yr return peak flow	384.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.75	m^2	7.75	m width
Q= V.A implies	V =	0.00057	m/sec		
Required length of Pond =	L =	23.89	m say:	24	m length
Length to Width ratio		3.10	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	186.00	m^2		
% of catchment area	C% =	4.55%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**24**	**7.75**	**1.00**	Single pond design
Operating Volume:	186	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002031				
Area of (site) catchment (m2)	2031	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00174388	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	150.7	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	206.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	18.07	m say:	18	m length
Length to Width ratio		3.27	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	99.00	m^2		
% of catchment area	C% =	4.87%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**5.50**	**1.00**	Single pond design
Operating Volume:	99	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.002099				
Area of (site) catchment (m2)	2099	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00179575	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	155.2	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	212.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00045	m/sec		
Required length of Pond =	L =	18.61	m say:	18.5	m length
Length to Width ratio		3.36	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	101.75	m^2		
% of catchment area	C% =	4.85%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	102	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001924				
Area of (site) catchment (m2)	1924	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00166187	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	143.6	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	196.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00041	m/sec		
Required length of Pond =	L =	17.22	m say:	17.25	m length
Length to Width ratio		3.14	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	94.88	m^2		
% of catchment area	C% =	4.93%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.25**	**5.50**	**1.00**	Single pond design
Operating Volume:	95	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N4**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001899				
Area of (site) catchment (m2)	1899	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00164264	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	141.9	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	194.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00041	m/sec		
Required length of Pond =	L =	17.02	m say:	17	m length
Length to Width ratio		3.09	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	93.50	m^2		
% of catchment area	C% =	4.92%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.50**	**1.00**	Single pond design
Operating Volume:	94	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N5**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.00355				
Area of (site) catchment (m2)	3550	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00286655	m^3/sec			
Q mean =	2.9	L/s			
Q mean =	247.7	m^3/day			
Factored Q_{BAR}-Rural	0.0029	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	3.9	L/s			
10 yr return peak flow	339.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.25	m^2	7.25	m width
Q= V.A implies	V =	0.00054	m/sec		
Required length of Pond =	L =	22.54	m say:	22.5	m length
Length to Width ratio		3.10	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	163.13	m^2		
% of catchment area	C% =	4.60%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**22.5**	**7.25**	**1.00**	Single pond design
Operating Volume:	163	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N6**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001855				
Area of (site) catchment (m2)	1855	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00160872	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	139.0	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	190.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.67	m say:	16.75	m length
Length to Width ratio		3.05	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	92.13	m^2		
% of catchment area	C% =	4.97%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.75**	**5.50**	**1.00**	Single pond design
Operating Volume:	92	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N7:	**SP-N7**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001644				
Area of (site) catchment (m2)	1644	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.0014448	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	124.8	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	171.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.47	m say:	16.5	m length
Length to Width ratio		3.30	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	82.50	m^2		
% of catchment area	C% =	5.02%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.00**	**1.00**	Single pond design
Operating Volume:	83	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-N8 - Borrow Pit**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.036121				
Area of (site) catchment (m2)	36121	m^2			
SAAR	1569	mm			
SOIL	0.3				Quarry material
Q mean =	0.02259758	m^3/sec			
Q mean =	22.6	L/s			
Q mean =	1952.4	m^3/day			
Factored Q_{BAR}-Rural	0.0226	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.031	m^3/sec			
10 yr return peak flow	31.0	L/s			
10 yr return peak flow	2674.8	m^3/day			
GW Inflow	15.0	m^3/day			Based on assumed permeability and aquifer type
Total Flow (SW+GW)	0.031	m^3/sec			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 4 µm particles	4.00E-06	m			4 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00001	m/s			
m/hr	0.038	m/hr			
Time for D (m)	26.00	hrs			
				1.00	D (m) - depth
say pond cross section area =		30.00	m^2	30.00	m width
Q= V.A implies	V =	0.00104	m/sec		
Required length of Pond =	L =	97.14	m say:	100	m length
Length to Width ratio		3.33	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	3000.00	m^2		
% of catchment area	C% =	8.31%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**100**	**30.00**	**1.00**	Single pond design
	2 no.	**70**	**22.00**	**1.00**	**Apply 2 no. ponds**
Operating Volume:	3000	m^3		OK	Good to remove fine silts to 0.004mm

Catchment O:	**SP-O1**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001822				
Area of (site) catchment (m2)	1822	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00158323	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	136.8	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	187.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.41	m say:	16.5	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	90.75	m^2		
% of catchment area	C% =	4.98%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	91	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment O:	**SP-O2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00202				
Area of (site) catchment (m2)	2020	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00173548	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	149.9	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.4	L/s			
10 yr return peak flow	205.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00043	m/sec		
Required length of Pond =	L =	17.98	m say:	18	m length
Length to Width ratio		3.27	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	99.00	m^2		
% of catchment area	C% =	4.90%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18**	**5.50**	**1.00**	Single pond design
Operating Volume:	99	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment O:	**SP-O3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003678				
Area of (site) catchment (m2)	3678	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00295835	m^3/sec			
Q mean =	3.0	L/s			
Q mean =	255.6	m^3/day			
Factored Q_{BAR}-Rural	0.0030	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.1	L/s			
10 yr return peak flow	350.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.25	m^2	7.25	m width
Q= V.A implies	V =	0.00056	m/sec		
Required length of Pond =	L =	23.26	m say:	23.25	m length
Length to Width ratio		3.21	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	168.56	m^2		
% of catchment area	C% =	4.58%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**23.25**	**7.25**	**1.00**	Single pond design
Operating Volume:	169	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment P:	**SP-P1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002268				
Area of (site) catchment (m2)	2268	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00192388	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	166.2	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.6	L/s			
10 yr return peak flow	227.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00046	m/sec		
Required length of Pond =	L =	19.07	m say:	19	m length
Length to Width ratio		3.30	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	109.25	m^2		
% of catchment area	C% =	4.82%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**19**	**5.75**	**1.00**	Single pond design
Operating Volume:	109	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment P:	**SP-P2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001709				
Area of (site) catchment (m2)	1709	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00149553	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	129.2	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	177.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.24	m say:	16.25	m length
Length to Width ratio		3.10	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	85.31	m^2		
% of catchment area	C% =	4.99%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.25**	**1.00**	Single pond design
Operating Volume:	85	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment P:	**SP-P3**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001954				
Area of (site) catchment (m2)	1954	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00168492	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	145.6	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	199.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.46	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.93%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Q:	**SP-Q1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00125				
Area of (site) catchment (m2)	1250	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00113215	m^3/sec			
Q mean =	1.1	L/s			
Q mean =	97.8	m^3/day			
Factored Q_{BAR}-Rural	0.0011	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.6	L/s			
10 yr return peak flow	134.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00034	m/sec		
Required length of Pond =	L =	14.34	m say:	14.25	m length
Length to Width ratio		3.17	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	64.13	m^2		
% of catchment area	C% =	5.13%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**14.25**	**4.50**	**1.00**	Single pond design
Operating Volume:	64	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Q:	**SP-Q2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003749				
Area of (site) catchment (m2)	3749	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00300913	m^3/sec			
Q mean =	3.0	L/s			
Q mean =	260.0	m^3/day			
Factored Q_{BAR}-Rural	0.0030	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.1	L/s			
10 yr return peak flow	356.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.50	m^2	7.50	m width
Q= V.A implies	V =	0.00055	m/sec		
Required length of Pond =	L =	22.87	m say:	23	m length
Length to Width ratio		3.07	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	172.50	m^2		
% of catchment area	C% =	4.60%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**23**	**7.50**	**1.00**	Single pond design
Operating Volume:	173	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment R:	**SP-R1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002545				
Area of (site) catchment (m2)	2545	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00213166	m^3/sec			
Q mean =	2.1	L/s			
Q mean =	184.2	m^3/day			
Factored Q_{BAR}-Rural	0.0021	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.9	L/s			
10 yr return peak flow	252.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		6.25	m^2	6.25	m width
Q= V.A implies	V =	0.00047	m/sec		
Required length of Pond =	L =	19.44	m say:	19.5	m length
Length to Width ratio		3.12	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	121.88	m^2		
% of catchment area	C% =	4.79%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**19.5**	**6.25**	**1.00**	Single pond design
Operating Volume:	122	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment S:	**SP-S1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001625				
Area of (site) catchment (m2)	1625	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00142993	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	123.5	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	169.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.30	m say:	16.25	m length
Length to Width ratio		3.25	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	81.25	m^2		
% of catchment area	C% =	5.00%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	81	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment S:	**SP-S2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001619				
Area of (site) catchment (m2)	1619	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00142523	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	123.1	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	168.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.25	m say:	16.25	m length
Length to Width ratio		3.25	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	81.25	m^2		
% of catchment area	C% =	5.02%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	81	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment S:	**SP-S3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001669				
Area of (site) catchment (m2)	1669	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00146434	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	126.5	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	173.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00038	m/sec		
Required length of Pond =	L =	15.90	m say:	16	m length
Length to Width ratio		3.05	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	84.00	m^2		
% of catchment area	C% =	5.03%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16**	**5.25**	**1.00**	Single pond design
Operating Volume:	84	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment N:	**SP-S4 - Substation**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.033396				
Area of (site) catchment (m2)	33396	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.02107385	m^3/sec			
Q mean =	21.1	L/s			
Q mean =	1820.8	m^3/day			
Factored Q_{BAR}-Rural	0.0211	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.029	m^3/sec			
10 yr return peak flow	28.9	L/s			
10 yr return peak flow	2494.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 4 µm particles	4.00E-06	m			4 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00001	m/s			
m/hr	0.038	m/hr			
Time for D (m)	26.00	hrs			
				1.00	D (m) - depth
say pond cross section area =		30.00	m^2	30.00	m width
Q= V.A implies	V =	0.00096	m/sec		
Required length of Pond =	L =	90.08	m say:	90	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	2700.00	m^2		
% of catchment area	C% =	8.08%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**90**	**30.00**	**1.00**	Single pond design
	2 no.	**70**	**20.00**	**1.00**	**Apply 2 no. ponds**
Operating Volume:	2700	m^3		OK	Good to remove medium silts to 0.004mm

Catchment S:	**SP-S5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00185				
Area of (site) catchment (m2)	1850	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00160487	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	138.7	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	190.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.42	m say:	17.5	m length
Length to Width ratio		3.33	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	91.88	m^2		
% of catchment area	C% =	4.97%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.25**	**1.00**	Single pond design
Operating Volume:	92	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment T:	**SP-T1**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001957				
Area of (site) catchment (m2)	1957	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00168722	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	145.8	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	199.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.48	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.92%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment T:	**SP-T2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003784				
Area of (site) catchment (m2)	3784	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00303412	m^3/sec			
Q mean =	3.0	L/s			
Q mean =	262.1	m^3/day			
Factored Q_{BAR}-Rural	0.0030	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.2	L/s			
10 yr return peak flow	359.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.50	m^2	7.50	m width
Q= V.A implies	V =	0.00055	m/sec		
Required length of Pond =	L =	23.06	m say:	23	m length
Length to Width ratio		3.07	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	172.50	m^2		
% of catchment area	C% =	4.56%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**23**	**7.50**	**1.00**	Single pond design
Operating Volume:	173	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment U:	**SP-U1**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001846				
Area of (site) catchment (m2)	1846	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00160178	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	138.4	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	189.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.39	m say:	17.25	m length
Length to Width ratio		3.29	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	90.56	m^2		
% of catchment area	C% =	4.91%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.25**	**5.25**	**1.00**	Single pond design
Operating Volume:	91	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment U:	**SP-U2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001688				
Area of (site) catchment (m2)	1688	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00147917	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	127.8	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	175.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.06	m say:	16	m length
Length to Width ratio		3.05	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	84.00	m^2		
% of catchment area	C% =	4.98%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16**	**5.25**	**1.00**	Single pond design
Operating Volume:	84	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment U:	**SP-U3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001439				
Area of (site) catchment (m2)	1439	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.0012833	m^3/sec			
Q mean =	1.3	L/s			
Q mean =	110.9	m^3/day			
Factored Q_{BAR}-Rural	0.0013	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.8	L/s			
10 yr return peak flow	151.9	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00035	m/sec		
Required length of Pond =	L =	14.63	m say:	15	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	75.00	m^2		
% of catchment area	C% =	5.21%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**15**	**5.00**	**1.00**	Single pond design
Operating Volume:	75	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment V:	**SP-V1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002122				
Area of (site) catchment (m2)	2122	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00181326	m^3/sec			
Q mean =	1.8	L/s			
Q mean =	156.7	m^3/day			
Factored Q_{BAR}-Rural	0.0018	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.5	L/s			
10 yr return peak flow	214.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00045	m/sec		
Required length of Pond =	L =	18.79	m say:	18.75	m length
Length to Width ratio		3.41	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	103.13	m^2		
% of catchment area	C% =	4.86%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.75**	**5.50**	**1.00**	Single pond design
Operating Volume:	103	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment V:	**SP-V2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001977				
Area of (site) catchment (m2)	1977	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00170256	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	147.1	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	201.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.64	m say:	17.75	m length
Length to Width ratio		3.23	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	97.63	m^2		
% of catchment area	C% =	4.94%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.75**	**5.50**	**1.00**	Single pond design
Operating Volume:	98	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment V:	**SP-V3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001612				
Area of (site) catchment (m2)	1612	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00141975	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	122.7	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.9	L/s			
10 yr return peak flow	168.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.18	m say:	16.25	m length
Length to Width ratio		3.25	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	81.25	m^2		
% of catchment area	C% =	5.04%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	81	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment V:	**SP-V4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001133				
Area of (site) catchment (m2)	1133	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00103734	m^3/sec			
Q mean =	1.0	L/s			
Q mean =	89.6	m^3/day			
Factored Q_{BAR}-Rural	0.0010	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.001	m^3/sec			
10 yr return peak flow	1.4	L/s			
10 yr return peak flow	122.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.25	m^2	4.25	m width
Q= V.A implies	V =	0.00033	m/sec		
Required length of Pond =	L =	13.91	m say:	14	m length
Length to Width ratio		3.29	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	59.50	m^2		
% of catchment area	C% =	5.25%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**14**	**4.25**	**1.00**	Single pond design
Operating Volume:	60	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment V:	**SP-V5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003822				
Area of (site) catchment (m2)	3822	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00306122	m^3/sec			
Q mean =	3.1	L/s			
Q mean =	264.5	m^3/day			
Factored Q_{BAR}-Rural	0.0031	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.2	L/s			
10 yr return peak flow	362.4	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.50	m^2	7.50	m width
Q= V.A implies	V =	0.00056	m/sec		
Required length of Pond =	L =	23.26	m say:	23.25	m length
Length to Width ratio		3.10	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	174.38	m^2		
% of catchment area	C% =	4.56%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**23.25**	**7.50**	**1.00**	Single pond design
Operating Volume:	174	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment W:	**SP-W1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001837				
Area of (site) catchment (m2)	1837	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00159482	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	137.8	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	188.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.31	m say:	17.25	m length
Length to Width ratio		3.29	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	90.56	m^2		
% of catchment area	C% =	4.93%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.25**	**5.25**	**1.00**	Single pond design
Operating Volume:	91	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment W:	**SP-W2**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001895				
Area of (site) catchment (m2)	1895	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00163956	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	141.7	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.2	L/s			
10 yr return peak flow	194.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00041	m/sec		
Required length of Pond =	L =	16.99	m say:	17	m length
Length to Width ratio		3.09	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	93.50	m^2		
% of catchment area	C% =	4.93%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.50**	**1.00**	Single pond design
Operating Volume:	94	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment W:	**SP-W3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00219				
Area of (site) catchment (m2)	2190	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00186488	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	161.1	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.6	L/s			
10 yr return peak flow	220.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00044	m/sec		
Required length of Pond =	L =	18.49	m say:	18.5	m length
Length to Width ratio		3.22	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	106.38	m^2		
% of catchment area	C% =	4.86%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**18.5**	**5.75**	**1.00**	Single pond design
Operating Volume:	106	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment W:	**SP-W4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001956				
Area of (site) catchment (m2)	1956	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00168645	m^3/sec			
Q mean =	1.7	L/s			
Q mean =	145.7	m^3/day			
Factored Q_{BAR}-Rural	0.0017	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.3	L/s			
10 yr return peak flow	199.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.50	m^2	5.50	m width
Q= V.A implies	V =	0.00042	m/sec		
Required length of Pond =	L =	17.48	m say:	17.5	m length
Length to Width ratio		3.18	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	96.25	m^2		
% of catchment area	C% =	4.92%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17.5**	**5.50**	**1.00**	Single pond design
Operating Volume:	96	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment W:	**SP-W5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.00588				
Area of (site) catchment (m2)	5880	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.0044916	m^3/sec			
Q mean =	4.5	L/s			
Q mean =	388.1	m^3/day			
Factored Q_{BAR}-Rural	0.0045	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.006	m^3/sec			
10 yr return peak flow	6.2	L/s			
10 yr return peak flow	531.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		9.00	m^2	9.00	m width
Q= V.A implies	V =	0.00068	m/sec		
Required length of Pond =	L =	28.44	m say:	28.5	m length
Length to Width ratio		3.17	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	256.50	m^2		
% of catchment area	C% =	4.36%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**28.5**	**9.00**	**1.00**	Single pond design
Operating Volume:	257	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment X:	**SP-X1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001794				
Area of (site) catchment (m2)	1794	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00156156	m^3/sec			
Q mean =	1.6	L/s			
Q mean =	134.9	m^3/day			
Factored Q_{BAR}-Rural	0.0016	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	184.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00041	m/sec		
Required length of Pond =	L =	16.95	m say:	17	m length
Length to Width ratio		3.24	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	89.25	m^2		
% of catchment area	C% =	4.97%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**17**	**5.25**	**1.00**	Single pond design
Operating Volume:	89	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment X:	**SP-X2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.00175				
Area of (site) catchment (m2)	1750	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00152742	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	132.0	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	180.8	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.58	m say:	16.5	m length
Length to Width ratio		3.14	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	86.63	m^2		
% of catchment area	C% =	4.95%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.25**	**1.00**	Single pond design
Operating Volume:	87	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment X3:	**SP-X3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001741				
Area of (site) catchment (m2)	1741	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00152043	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	131.4	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	180.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.51	m say:	16.5	m length
Length to Width ratio		3.14	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	86.63	m^2		
% of catchment area	C% =	4.98%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.25**	**1.00**	Single pond design
Operating Volume:	87	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment X:	**SP-X4**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001683				
Area of (site) catchment (m2)	1683	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00147527	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	127.5	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.0	L/s			
10 yr return peak flow	174.6	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00038	m/sec		
Required length of Pond =	L =	16.02	m say:	16	m length
Length to Width ratio		3.05	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	84.00	m^2		
% of catchment area	C% =	4.99%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16**	**5.25**	**1.00**	Single pond design
Operating Volume:	84	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Y:	**SP-Y1**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002273				
Area of (site) catchment (m2)	2273	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00192765	m^3/sec			
Q mean =	1.9	L/s			
Q mean =	166.5	m^3/day			
Factored Q_{BAR}-Rural	0.0019	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.003	m^3/sec			
10 yr return peak flow	2.6	L/s			
10 yr return peak flow	228.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.75	m^2	5.75	m width
Q= V.A implies	V =	0.00046	m/sec		
Required length of Pond =	L =	19.11	m say:	19	m length
Length to Width ratio		3.30	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	109.25	m^2		
% of catchment area	C% =	4.81%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**19**	**5.75**	**1.00**	Single pond design
Operating Volume:	109	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Y:	**SP-Y2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.003961				
Area of (site) catchment (m2)	3961	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00316011	m^3/sec			
Q mean =	3.2	L/s			
Q mean =	273.0	m^3/day			
Factored Q_{BAR}-Rural	0.0032	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	4.3	L/s			
10 yr return peak flow	374.1	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.50	m^2	7.50	m width
Q= V.A implies	V =	0.00058	m/sec		
Required length of Pond =	L =	24.02	m say:	24	m length
Length to Width ratio		3.20	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	180.00	m^2		
% of catchment area	C% =	4.54%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**24**	**7.50**	**1.00**	Single pond design
Operating Volume:	180	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Z:	**SP-Z1**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001758				
Area of (site) catchment (m2)	1758	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00153364	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	132.5	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	181.5	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.65	m say:	16.75	m length
Length to Width ratio		3.19	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	87.94	m^2		
% of catchment area	C% =	5.00%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.75**	**5.25**	**1.00**	Single pond design
Operating Volume:	88	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Z:	**SP-Z2**				
Mean Greenfield Runoff Rates					
Q_{mean} = 0.00108 × (AREA km^2)$^{0.89}$ × (SAAR mm)$^{1.17}$ × (SOIL)$^{2.17}$					
Area of site (km2)	0.001754				
Area of (site) catchment (m2)	1754	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00153053	m^3/sec			
Q mean =	1.5	L/s			
Q mean =	132.2	m^3/day			
Factored Q_{BAR}-Rural	0.0015	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	2.1	L/s			
10 yr return peak flow	181.2	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.25	m^2	5.25	m width
Q= V.A implies	V =	0.00040	m/sec		
Required length of Pond =	L =	16.62	m say:	16.5	m length
Length to Width ratio		3.14	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	86.63	m^2		
% of catchment area	C% =	4.94%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.5**	**5.25**	**1.00**	Single pond design
Operating Volume:	87	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Z:	**SP-Z3**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.002009				
Area of (site) catchment (m2)	2009	m^2			
SAAR	1329	mm			
SOIL	0.3				Placed road material
Q mean =	0.00142218	m^3/sec			
Q mean =	1.4	L/s			
Q mean =	122.9	m^3/day			
Factored Q_{BAR}-Rural	0.0014	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.002	m^3/sec			
10 yr return peak flow	1.9	L/s			
10 yr return peak flow	168.3	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		5.00	m^2	5.00	m width
Q= V.A implies	V =	0.00039	m/sec		
Required length of Pond =	L =	16.21	m say:	16.25	m length
Length to Width ratio		3.25	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	81.25	m^2		
% of catchment area	C% =	4.04%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**16.25**	**5.00**	**1.00**	Single pond design
Operating Volume:	81.25	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Z:	**SP-Z4**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.001163				
Area of (site) catchment (m2)	1163	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00106175	m^3/sec			
Q mean =	1.1	L/s			
Q mean =	91.7	m^3/day			
Factored Q_{BAR}-Rural	0.0011	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.001	m^3/sec			
10 yr return peak flow	1.5	L/s			
10 yr return peak flow	125.7	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		4.50	m^2	4.50	m width
Q= V.A implies	V =	0.00032	m/sec		
Required length of Pond =	L =	13.45	m say:	13.5	m length
Length to Width ratio		3.00	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	60.75	m^2		
% of catchment area	C% =	5.22%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**13.5**	**4.50**	**1.00**	Single pond design
Operating Volume:	61	m^3		OK	Good to remove medium to fine silts to 0.006mm

Catchment Z:	**SP-Z5**				
Mean Greenfield Runoff Rates					
$Q_{mean} = 0.00108 \times (\text{AREA km}^2)^{0.89} \times (\text{SAAR mm})^{1.17} \times (\text{SOIL})^{2.17}$					
Area of site (km2)	0.003347				
Area of (site) catchment (m2)	3347	m^2			
SAAR	1569	mm			
SOIL	0.3				Placed road material
Q mean =	0.00272019	m^3/sec			
Q mean =	2.7	L/s			
Q mean =	235.0	m^3/day			
Factored Q_{BAR}-Rural	0.0027	m^3/sec			
Groth Factor - 10 yr return	1.3700				
10 yr return peak flow	0.004	m^3/sec			
10 yr return peak flow	3.7	L/s			
10 yr return peak flow	322.0	m^3/day			
Settlement Pond Design					
Using Stokes Law:	$V_p = \frac{g(sg_p - 1) \times d_p^2}{18\nu}$				from Metcalf & Eddy, 4th Ed, pg 365.
For 10 µm particles	6.00E-06	m			6 micron particles
Particle Specific gravity	2.6				
Water Temp	10	°C			
Kinematic viscosity	1.306E-06	(m^2/s)			
V_s (m/sec)	0.00002	m/s			
m/hr	0.087	m/hr			
Time for D (m)	11.56	hrs			
				1.00	D (m) - depth
say pond cross section area =		7.25	m^2	7.25	m width
Q= V.A implies	V =	0.00051	m/sec		
Required length of Pond =	L =	21.38	m say:	21.5	m length
Length to Width ratio		2.97	:1	>=3:1	Acceptable
					Length to width ratio of ~3:1
Plan Area	A =	155.88	m^2		
% of catchment area	C% =	4.66%	>3%	OK	Acceptable
		L (m)	B (m)	D (m)	
Dimensions of Settlement Pond:	**1 no.**	**21.5**	**7.25**	**1.00**	Single pond design
Operating Volume:	156	m^3		OK	Good to remove medium to fine silts to 0.006mm