

49	1.0089	0.9685
50	1.0043	0.9622
51	0.9948	0.9503
52	0.9524	0.9087
53	0.8910	0.8739
54	0.8695	0.8710
55	0.8260	0.8516
56	0.8159	0.8386
57	0.8008	0.8130
58	0.7759	0.7940
59	0.7575	0.7494
60	0.6172	0.6967
61	0.4437	0.5732

Stream Protection Duration

POC #1

The Facility PASSED

The Facility PASSED.

Flow(cfs) Predev Mit Percentage Pass/Fail

0.8562	2887	1854	64	Pass
0.9363	1976	1276	64	Pass
1.0165	1392	995	71	Pass
1.0967	1092	791	72	Pass
1.1769	909	660	72	Pass
1.2571	716	547	76	Pass
1.3372	612	473	77	Pass
1.4174	536	423	78	Pass
1.4976	474	383	80	Pass
1.5778	417	341	81	Pass
1.6579	379	303	79	Pass
1.7381	344	257	74	Pass
1.8183	312	220	70	Pass
1.8985	285	184	64	Pass
1.9787	253	149	58	Pass
2.0588	221	118	53	Pass
2.1390	198	92	46	Pass
2.2192	157	73	46	Pass
2.2994	128	53	41	Pass
2.3796	101	42	41	Pass
2.4597	72	39	54	Pass
2.5399	51	39	76	Pass
2.6201	40	34	85	Pass
2.7003	36	33	91	Pass
2.7804	33	29	87	Pass
2.8606	31	25	80	Pass
2.9408	29	22	75	Pass
3.0210	24	20	83	Pass
3.1012	22	20	90	Pass
3.1813	20	17	85	Pass
3.2615	18	16	88	Pass
3.3417	17	16	94	Pass
3.4219	17	16	94	Pass
3.5021	16	15	93	Pass
3.5822	16	13	81	Pass

3.6624	14	11	78	Pass
3.7426	13	10	76	Pass
3.8228	11	10	90	Pass
3.9029	11	9	81	Pass
3.9831	9	8	88	Pass
4.0633	9	8	88	Pass
4.1435	8	6	75	Pass
4.2237	8	6	75	Pass
4.3038	7	6	85	Pass
4.3840	7	5	71	Pass
4.4642	6	5	83	Pass
4.5444	6	5	83	Pass
4.6246	6	5	83	Pass
4.7047	6	5	83	Pass
4.7849	6	5	83	Pass
4.8651	5	5	100	Pass
4.9453	5	5	100	Pass
5.0254	5	5	100	Pass
5.1056	5	5	100	Pass
5.1858	5	5	100	Pass
5.2660	5	5	100	Pass
5.3462	5	5	100	Pass
5.4263	5	5	100	Pass
5.5065	5	5	100	Pass
5.5867	5	5	100	Pass
5.6669	5	5	100	Pass
5.7471	5	5	100	Pass
5.8272	5	5	100	Pass
5.9074	5	4	80	Pass
5.9876	5	4	80	Pass
6.0678	5	4	80	Pass
6.1479	5	4	80	Pass
6.2281	5	4	80	Pass
6.3083	5	4	80	Pass
6.3885	4	4	100	Pass
6.4687	4	4	100	Pass
6.5488	4	4	100	Pass
6.6290	4	4	100	Pass
6.7092	4	4	100	Pass
6.7894	4	4	100	Pass
6.8696	4	4	100	Pass
6.9497	4	4	100	Pass
7.0299	4	4	100	Pass
7.1101	4	3	75	Pass
7.1903	4	3	75	Pass
7.2704	4	3	75	Pass
7.3506	4	3	75	Pass
7.4308	4	3	75	Pass
7.5110	4	3	75	Pass
7.5912	4	3	75	Pass
7.6713	4	3	75	Pass
7.7515	3	3	100	Pass
7.8317	3	3	100	Pass
7.9119	3	3	100	Pass
7.9921	3	3	100	Pass
8.0722	3	3	100	Pass
8.1524	3	3	100	Pass

8.2326	3	3	100	Pass
8.3128	3	3	100	Pass
8.3929	3	3	100	Pass
8.4731	3	3	100	Pass
8.5533	3	3	100	Pass
8.6335	3	3	100	Pass
8.7137	3	3	100	Pass
8.7938	3	3	100	Pass

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Wetlands Input Volume

Average Annual Volume (acft)

Series 1: 501 POC 1 Predeveloped flow

Series 2: 801 POC 1 Mitigated flow

Month	Series 1	Series 2	Percent	Pass/Fail
Jan	5.7335	4.8925	85.3	Pass
Feb	4.1117	3.5012	85.2	Pass
Mar	4.0426	3.4461	85.2	Pass
Apr	2.7796	2.3755	85.5	Pass
May	1.4175	1.2607	88.9	Pass
Jun	1.2802	1.1331	88.5	Pass
Jul	0.3259	0.3155	96.8	Pass
Aug	0.1372	0.1788	130.3	Fail
Sep	0.3149	0.3534	112.2	Pass
Oct	1.3795	1.3120	95.1	Pass
Nov	4.6639	4.0743	87.4	Pass
Dec	6.0991	5.2208	85.6	Pass

Day	Series 1	Series 2	Percent	Pass/Fail
Jan1	0.2199	0.1882	85.6	Pass
2	0.1940	0.1637	84.4	Pass
3	0.1785	0.1504	84.2	Pass
4	0.2050	0.1790	87.3	Pass
5	0.2079	0.1757	84.5	Pass
6	0.1942	0.1670	86.0	Pass
7	0.2367	0.2043	86.3	Pass
8	0.2230	0.1885	84.5	Pass
9	0.1832	0.1537	83.9	Pass
10	0.1481	0.1239	83.7	Pass
11	0.1509	0.1279	84.8	Pass
12	0.1472	0.1264	85.9	Pass
13	0.1968	0.1727	87.8	Pass
14	0.2147	0.1824	85.0	Pass
15	0.1882	0.1613	85.7	Pass
16	0.1943	0.1652	85.0	Pass
17	0.2183	0.1886	86.4	Pass
18	0.2162	0.1820	84.2	Pass

19	0.1793	0.1495	83.4	Pass
20	0.1530	0.1293	84.5	Pass
21	0.1543	0.1326	85.9	Pass
22	0.1811	0.1567	86.5	Pass
23	0.2115	0.1825	86.3	Pass
24	0.1728	0.1434	83.0	Pass
25	0.1378	0.1159	84.1	Pass
26	0.1209	0.1018	84.2	Pass
27	0.1413	0.1222	86.5	Pass
28	0.1857	0.1607	86.5	Pass
29	0.1914	0.1636	85.4	Pass
30	0.1692	0.1439	85.0	Pass
31	0.1614	0.1360	84.2	Pass
Feb1	0.1468	0.1230	83.7	Pass
2	0.1142	0.0955	83.6	Pass
3	0.1412	0.1216	86.1	Pass
4	0.1388	0.1193	85.9	Pass
5	0.1493	0.1273	85.3	Pass
6	0.1291	0.1094	84.7	Pass
7	0.1609	0.1384	86.0	Pass
8	0.1258	0.1045	83.1	Pass
9	0.0978	0.0826	84.5	Pass
10	0.1050	0.0901	85.8	Pass
11	0.1343	0.1176	87.6	Pass
12	0.1516	0.1305	86.1	Pass
13	0.1429	0.1220	85.4	Pass
14	0.1443	0.1230	85.3	Pass
15	0.1471	0.1266	86.0	Pass
16	0.1698	0.1461	86.0	Pass
17	0.1650	0.1419	86.0	Pass
18	0.1715	0.1440	84.0	Pass
19	0.1346	0.1131	84.0	Pass
20	0.1467	0.1270	86.6	Pass
21	0.1579	0.1331	84.3	Pass
22	0.1395	0.1177	84.4	Pass
23	0.1859	0.1598	86.0	Pass
24	0.1747	0.1490	85.3	Pass
25	0.1629	0.1368	84.0	Pass
26	0.1362	0.1139	83.7	Pass
27	0.1404	0.1204	85.7	Pass
28	0.1391	0.1185	85.2	Pass
29	0.1549	0.1327	85.7	Pass
Mar1	0.1549	0.1323	85.4	Pass
2	0.1604	0.1367	85.2	Pass
3	0.1585	0.1342	84.6	Pass
4	0.1262	0.1066	84.5	Pass
5	0.0975	0.0796	81.7	Pass
6	0.1097	0.0953	86.9	Pass
7	0.1107	0.0959	86.6	Pass
8	0.1678	0.1465	87.3	Pass
9	0.1471	0.1252	85.1	Pass
10	0.1535	0.1308	85.2	Pass
11	0.1403	0.1194	85.1	Pass
12	0.1340	0.1130	84.4	Pass
13	0.1196	0.1012	84.6	Pass
14	0.1242	0.1065	85.7	Pass
15	0.1252	0.1069	85.4	Pass

16	0.1236	0.1057	85.6	Pass
17	0.1311	0.1123	85.6	Pass
18	0.1261	0.1069	84.8	Pass
19	0.1277	0.1091	85.4	Pass
20	0.1014	0.0848	83.6	Pass
21	0.1214	0.1063	87.5	Pass
22	0.1453	0.1253	86.2	Pass
23	0.1389	0.1179	84.9	Pass
24	0.1323	0.1119	84.6	Pass
25	0.1421	0.1220	85.8	Pass
26	0.1205	0.1008	83.6	Pass
27	0.1235	0.1057	85.6	Pass
28	0.1127	0.0955	84.8	Pass
29	0.1026	0.0865	84.3	Pass
30	0.1088	0.0929	85.4	Pass
31	0.1078	0.0925	85.8	Pass
Apr1	0.1042	0.0889	85.3	Pass
2	0.1051	0.0903	85.9	Pass
3	0.1215	0.1048	86.3	Pass
4	0.1228	0.1044	85.0	Pass
5	0.1109	0.0934	84.3	Pass
6	0.0861	0.0723	84.0	Pass
7	0.1090	0.0946	86.7	Pass
8	0.1012	0.0848	83.8	Pass
9	0.0907	0.0770	84.8	Pass
10	0.1032	0.0892	86.4	Pass
11	0.1137	0.0984	86.6	Pass
12	0.1043	0.0894	85.7	Pass
13	0.0894	0.0752	84.1	Pass
14	0.0913	0.0785	86.0	Pass
15	0.1211	0.1047	86.4	Pass
16	0.1064	0.0897	84.3	Pass
17	0.0801	0.0674	84.1	Pass
18	0.1016	0.0893	87.9	Pass
19	0.1112	0.0927	83.4	Pass
20	0.0569	0.0454	79.7	Fail
21	0.0440	0.0376	85.3	Pass
22	0.0809	0.0717	88.6	Pass
23	0.0992	0.0851	85.8	Pass
24	0.0716	0.0601	83.8	Pass
25	0.0499	0.0416	83.3	Pass
26	0.0627	0.0558	88.9	Pass
27	0.0881	0.0763	86.7	Pass
28	0.0690	0.0597	86.5	Pass
29	0.0757	0.0650	85.8	Pass
30	0.0585	0.0494	84.5	Pass
May1	0.0488	0.0425	86.9	Pass
2	0.0575	0.0504	87.7	Pass
3	0.0549	0.0472	86.0	Pass
4	0.0656	0.0573	87.3	Pass
5	0.0523	0.0447	85.3	Pass
6	0.0339	0.0278	82.0	Pass
7	0.0244	0.0218	89.1	Pass
8	0.0245	0.0228	92.8	Pass
9	0.0552	0.0507	91.9	Pass
10	0.0716	0.0646	90.2	Pass
11	0.0549	0.0467	85.1	Pass

12	0.0497	0.0439	88.4	Pass
13	0.0480	0.0430	89.5	Pass
14	0.0559	0.0481	86.1	Pass
15	0.0471	0.0416	88.4	Pass
16	0.0301	0.0257	85.4	Pass
17	0.0280	0.0255	91.1	Pass
18	0.0368	0.0341	92.5	Pass
19	0.0435	0.0394	90.5	Pass
20	0.0389	0.0349	89.6	Pass
21	0.0329	0.0290	87.9	Pass
22	0.0282	0.0252	89.4	Pass
23	0.0308	0.0291	94.4	Pass
24	0.0344	0.0308	89.6	Pass
25	0.0416	0.0380	91.3	Pass
26	0.0497	0.0465	93.6	Pass
27	0.0552	0.0489	88.5	Pass
28	0.0392	0.0363	92.7	Pass
29	0.0479	0.0431	90.1	Pass
30	0.0774	0.0719	93.0	Pass
31	0.0682	0.0584	85.6	Pass
Jun1	0.0621	0.0542	87.4	Pass
2	0.0736	0.0651	88.4	Pass
3	0.0590	0.0504	85.5	Pass
4	0.0417	0.0362	86.8	Pass
5	0.0410	0.0360	88.0	Pass
6	0.0572	0.0502	87.7	Pass
7	0.0505	0.0437	86.6	Pass
8	0.0453	0.0396	87.4	Pass
9	0.0629	0.0586	93.1	Pass
10	0.0759	0.0657	86.6	Pass
11	0.0531	0.0469	88.3	Pass
12	0.0407	0.0350	86.0	Pass
13	0.0205	0.0169	82.2	Pass
14	0.0143	0.0133	92.9	Pass
15	0.0352	0.0326	92.5	Pass
16	0.0551	0.0498	90.4	Pass
17	0.0512	0.0450	88.0	Pass
18	0.0500	0.0437	87.4	Pass
19	0.0304	0.0252	82.9	Pass
20	0.0222	0.0193	87.2	Pass
21	0.0180	0.0175	97.1	Pass
22	0.0229	0.0213	93.1	Pass
23	0.0429	0.0406	94.7	Pass
24	0.0428	0.0389	90.8	Pass
25	0.0382	0.0334	87.4	Pass
26	0.0290	0.0262	90.3	Pass
27	0.0186	0.0168	90.1	Pass
28	0.0319	0.0294	92.2	Pass
29	0.0257	0.0231	89.7	Pass
30	0.0304	0.0290	95.3	Pass
Jul1	0.0475	0.0425	89.5	Pass
2	0.0303	0.0276	91.1	Pass
3	0.0188	0.0163	87.0	Pass
4	0.0189	0.0182	96.0	Pass
5	0.0134	0.0118	87.8	Pass
6	0.0062	0.0060	96.6	Pass
7	0.0129	0.0131	101.1	Pass

8	0.0168	0.0168	100.3	Pass
9	0.0137	0.0119	86.6	Pass
10	0.0064	0.0069	106.7	Pass
11	0.0097	0.0088	90.3	Pass
12	0.0119	0.0122	102.5	Pass
13	0.0133	0.0124	93.1	Pass
14	0.0087	0.0077	88.5	Pass
15	0.0136	0.0157	115.6	Pass
16	0.0142	0.0131	92.0	Pass
17	0.0084	0.0073	86.3	Pass
18	0.0040	0.0052	129.4	Fail
19	0.0049	0.0054	110.8	Pass
20	0.0052	0.0043	83.9	Pass
21	0.0041	0.0049	118.5	Pass
22	0.0019	0.0019	102.3	Pass
23	0.0008	0.0012	136.5	Fail
24	0.0004	0.0014	315.2	Fail
25	0.0014	0.0034	249.2	Fail
26	0.0011	0.0019	163.6	Fail
27	0.0023	0.0034	151.4	Fail
28	0.0028	0.0035	122.8	Fail
29	0.0011	0.0010	94.2	Pass
30	0.0005	0.0007	157.3	Fail
31	0.0002	0.0005	234.0	Fail
Aug1	0.0002	0.0007	419.8	Fail
2	0.0002	0.0010	541.8	Fail
3	0.0002	0.0012	531.0	Fail
4	0.0004	0.0011	310.2	Fail
5	0.0036	0.0063	175.0	Fail
6	0.0059	0.0080	136.2	Fail
7	0.0049	0.0044	89.7	Pass
8	0.0022	0.0026	114.9	Pass
9	0.0009	0.0012	131.5	Fail
10	0.0004	0.0010	244.1	Fail
11	0.0003	0.0013	493.7	Fail
12	0.0003	0.0031	1002.4	Fail
13	0.0003	0.0017	576.5	Fail
14	0.0018	0.0050	283.3	Fail
15	0.0037	0.0055	146.5	Fail
16	0.0086	0.0088	102.3	Pass
17	0.0046	0.0065	141.1	Fail
18	0.0078	0.0106	135.3	Fail
19	0.0092	0.0090	97.1	Pass
20	0.0037	0.0040	107.3	Pass
21	0.0029	0.0065	225.0	Fail
22	0.0057	0.0101	178.2	Fail
23	0.0126	0.0139	110.4	Pass
24	0.0102	0.0106	104.2	Pass
25	0.0154	0.0171	110.8	Pass
26	0.0153	0.0163	106.6	Pass
27	0.0064	0.0072	113.0	Pass
28	0.0038	0.0048	126.8	Fail
29	0.0027	0.0040	145.4	Fail
30	0.0029	0.0051	179.4	Fail
31	0.0037	0.0069	187.1	Fail
Sep1	0.0077	0.0080	104.7	Pass
2	0.0051	0.0062	121.8	Fail

3	0.0068	0.0077	111.7	Pass
4	0.0067	0.0075	111.9	Pass
5	0.0048	0.0080	164.9	Fail
6	0.0026	0.0043	165.0	Fail
7	0.0026	0.0053	200.2	Fail
8	0.0109	0.0131	119.8	Pass
9	0.0086	0.0117	137.2	Fail
10	0.0143	0.0161	112.5	Pass
11	0.0086	0.0075	87.6	Pass
12	0.0055	0.0067	122.8	Fail
13	0.0091	0.0112	123.6	Fail
14	0.0127	0.0136	107.1	Pass
15	0.0068	0.0101	149.6	Fail
16	0.0201	0.0231	115.1	Pass
17	0.0141	0.0135	95.5	Pass
18	0.0067	0.0087	130.1	Fail
19	0.0048	0.0076	159.7	Fail
20	0.0149	0.0145	96.9	Pass
21	0.0252	0.0260	103.3	Pass
22	0.0399	0.0372	93.0	Pass
23	0.0262	0.0241	91.9	Pass
24	0.0107	0.0106	98.6	Pass
25	0.0052	0.0069	133.2	Fail
26	0.0050	0.0067	133.6	Fail
27	0.0048	0.0067	137.4	Fail
28	0.0110	0.0120	108.6	Pass
29	0.0098	0.0121	124.3	Fail
30	0.0158	0.0174	109.8	Pass
Oct1	0.0195	0.0190	97.3	Pass
2	0.0112	0.0130	116.4	Pass
3	0.0109	0.0146	133.5	Fail
4	0.0137	0.0157	114.4	Pass
5	0.0462	0.0452	97.8	Pass
6	0.0364	0.0338	92.7	Pass
7	0.0274	0.0291	106.0	Pass
8	0.0234	0.0241	102.6	Pass
9	0.0257	0.0262	102.0	Pass
10	0.0335	0.0324	97.0	Pass
11	0.0222	0.0215	96.7	Pass
12	0.0194	0.0204	105.1	Pass
13	0.0212	0.0221	104.5	Pass
14	0.0206	0.0203	98.5	Pass
15	0.0248	0.0262	105.7	Pass
16	0.0469	0.0467	99.6	Pass
17	0.0605	0.0547	90.5	Pass
18	0.0538	0.0523	97.0	Pass
19	0.0824	0.0781	94.7	Pass
20	0.0719	0.0658	91.5	Pass
21	0.0632	0.0578	91.4	Pass
22	0.0678	0.0615	90.7	Pass
23	0.0630	0.0590	93.7	Pass
24	0.0694	0.0636	91.7	Pass
25	0.0729	0.0692	94.9	Pass
26	0.0779	0.0716	91.9	Pass
27	0.0874	0.0803	91.9	Pass
28	0.0655	0.0579	88.4	Pass
29	0.0684	0.0619	90.5	Pass

30	0.0567	0.0509	89.8	Pass
31	0.0680	0.0634	93.2	Pass
Nov1	0.0961	0.0852	88.7	Pass
2	0.0881	0.0813	92.3	Pass
3	0.1251	0.1134	90.6	Pass
4	0.0988	0.0871	88.1	Pass
5	0.0952	0.0841	88.2	Pass
6	0.0919	0.0814	88.6	Pass
7	0.0878	0.0782	89.1	Pass
8	0.1035	0.0931	89.9	Pass
9	0.1155	0.1053	91.2	Pass
10	0.1366	0.1228	89.9	Pass
11	0.1811	0.1614	89.1	Pass
12	0.1790	0.1568	87.6	Pass
13	0.1652	0.1416	85.7	Pass
14	0.1488	0.1291	86.7	Pass
15	0.1544	0.1338	86.7	Pass
16	0.1524	0.1333	87.5	Pass
17	0.1569	0.1368	87.2	Pass
18	0.1899	0.1695	89.2	Pass
19	0.2519	0.2200	87.3	Pass
20	0.2248	0.1902	84.6	Pass
21	0.1580	0.1325	83.9	Pass
22	0.1604	0.1392	86.8	Pass
23	0.2352	0.2062	87.7	Pass
24	0.2646	0.2303	87.0	Pass
25	0.1960	0.1634	83.4	Pass
26	0.1924	0.1646	85.6	Pass
27	0.1613	0.1359	84.3	Pass
28	0.1810	0.1567	86.6	Pass
29	0.2043	0.1779	87.1	Pass
30	0.2159	0.1871	86.6	Pass
Dec1	0.2082	0.1788	85.9	Pass
2	0.2522	0.2189	86.8	Pass
3	0.2348	0.2007	85.5	Pass
4	0.2174	0.1874	86.2	Pass
5	0.2260	0.1921	85.0	Pass
6	0.1715	0.1438	83.8	Pass
7	0.1610	0.1369	85.0	Pass
8	0.1616	0.1403	86.8	Pass
9	0.1845	0.1602	86.8	Pass
10	0.2041	0.1764	86.4	Pass
11	0.2232	0.1929	86.4	Pass
12	0.2052	0.1731	84.3	Pass
13	0.1949	0.1680	86.2	Pass
14	0.2645	0.2291	86.6	Pass
15	0.2327	0.1976	84.9	Pass
16	0.2097	0.1757	83.8	Pass
17	0.1693	0.1421	83.9	Pass
18	0.1751	0.1505	85.9	Pass
19	0.1967	0.1688	85.8	Pass
20	0.1948	0.1667	85.6	Pass
21	0.1742	0.1479	84.9	Pass
22	0.1747	0.1504	86.0	Pass
23	0.1932	0.1664	86.1	Pass
24	0.1995	0.1705	85.5	Pass
25	0.1830	0.1560	85.3	Pass

26	0.1998	0.1714	85.8	Pass
27	0.1600	0.1347	84.2	Pass
28	0.1747	0.1503	86.0	Pass
29	0.1771	0.1502	84.8	Pass
30	0.1597	0.1362	85.3	Pass
31	0.2183	0.1898	87.0	Pass

LID Report

LID Technique Percent	Water Quality	Used for Percent Treatment? Water Quality	Total Volume Comment Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit
0.00	0.00	0%	0.00	0.00	0.00	No Treat. Credit
Compliance with LID Standard 8						
Duration Analysis Result = Passed						

Perln and Implnd Changes

No changes have been made.

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SECTION 5: CONVEYANCE ANALYSIS AND DESIGN

This project consists of separate infiltration facilities to provide flow control for developed stormwater runoff. As a result, conveyance analysis is not applicable for the proposed development.

SECTION 6: OPERATIONS AND MAINTENANCE MANUAL

The proposed storm drainage system consists of catch basins, a Bioretention swale filtration system, and drywell. These facilities will require periodic maintenance and inspection. A separate O&M document will be provided with the submittal.

Table V-A.5: Maintenance Standards - Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
General	Trash & Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No Trash or debris located immediately in front of catch basin or on grate opening. No trash or debris in the catch basin. Inlet and outlet pipes free of trash or debris. No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch. (Intent is to make sure no material is running into basin). Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Top slab is free of holes and cracks. Frame is sitting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound. Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Basin replaced or repaired to design standards. Pipe is regouted and secure at basin wall.
	Settlement/ Mis-alignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the basin opening. Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation blocking opening to basin. No vegetation or root growth present.
	Contamination and Pollution	See Table V-A.1: Maintenance Standards - Detention Ponds	No pollution present.
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Cover/grate is in place, meets design standards, and is secured
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Grate is in place, meets the design standards, and is installed and aligned with the flow path.

Table V-A.6: Maintenance Standards - Debris Barriers (e.g., Trash Racks)

Maintenance Components	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash and Debris	Trash or debris that is plugging more than 20% of the openings in the barrier.	Barrier cleared to design flow capacity.
Metal	Damaged/ Missing Bars.	Bars are bent out of shape more than 3 inches.	Bars in place with no bends more than 3/4 inch.
		Bars are missing or entire barrier missing. Bars are loose and rust is causing 50% deterioration to any part of barrier.	Bars in place according to design. Barrier replaced or repaired to design standards.
	Inlet/Outlet Pipe	Debris barrier missing or not attached to pipe	Barrier firmly attached to pipe

Table V-A.8: Maintenance Standards - Typical Biofiltration Swale

Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Recommended Maintenance to Correct Problem
General	Sediment Accumulation on Grass	Sediment depth exceeds 2 inches.	Remove sediment deposits on grass treatment area of the bio-swale. When finished, swale should be level from side to side and drain freely toward outlet. There should be no areas of standing water once inflow has ceased.
	Standing Water	When water stands in the swale between storms and does not drain freely.	Any of the following may apply: remove sediment or trash blockages, improve grade from head to foot of swale, remove clogged check dams, add underdrains or convert to a wet biofiltration swale.
	Flow spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed through entire swale width.	Level the spreader and clean so that flows are spread evenly over entire swale width.
	Constant Base-flow	When small quantities of water continually flow through the swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom.	Add a low-flow pea-gravel drain the length of the swale or by-pass the baseflow around the swale.
	Poor Vegetation Coverage	When grass is sparse or bare or eroded patches occur in more than 10% of the swale bottom.	Determine why grass growth is poor and correct that condition. Re-plant with plugs of grass from the upper slope: plant in the swale bottom at 8-inch intervals. Or re-seed into loosened, fertile soil.
	Vegetation	When the grass becomes excessively tall (greater than 10-inches); when nuisance weeds and other vegetation starts to take over.	Mow vegetation or remove nuisance vegetation so that flow not impeded. Grass should be mowed to a height of 3 to 4 inches. Remove grass clippings.
	Excessive Shading	Grass growth is poor because sunlight does not reach swale.	If possible, trim back over-hanging limbs and remove brushy vegetation on adjacent slopes.
	Inlet/Outlet	Inlet/outlet areas clogged with sediment and/or debris.	Remove material so that there is no clogging or blockage in the inlet and outlet area.
	Trash and Debris Accumulation	Trash and debris accumulated in the bio-swale.	Remove trash and debris from bioswale.
	Erosion/Scouring	Eroded or scoured swale bottom due to flow channelization, or higher flows.	For ruts or bare areas less than 12 inches wide, repair the damaged area by filling with crushed gravel. If bare areas are large, generally greater than 12 inches wide, the swale should be re-graded and re-seeded. For smaller bare areas, overseed when bare spots are evident, or take plugs of grass from the upper slope and plant in the swale bottom at 8-inch intervals.

SECTION 7: SPECIAL REPORTS AND STUDIES

The following report has been performed on the site:

- Geotechnical Design Report
- Critical Area Report

SECTION 8: CSWPP ANALYSIS AND DESIGN

Construction Stormwater General Permit (CSWGP)

Stormwater Pollution Prevention Plan (SWPPP)

for
Fall View

Prepared for:
Department of Ecology
Northwest Region

Permittee / Owner	Developer	Operator / Contractor
Fall View, LLC 10515 20 th St SE, STE 202, Lake Stevens, WA, 98223	TBD	TBD

Ley Road and May Creek Road, Gold Bar, WA, 98251

Certified Erosion and Sediment Control Lead (CESCL)

Name	Organization	Contact Phone Number
TBD	TBD	TBD

SWPPP Prepared By

Name	Organization	Contact Phone Number
Priyanka Patel	LDC, Inc. 20210 142 nd Ave NE Woodinville, WA 98072	(425) 892-9506

SWPPP Preparation Date

November 2022
Revised March 2023

Project Construction Dates

Activity / Phase	Start Date	End Date
	TBD	TBD

Contents

Monitoring and Sampling Requirements (4.0)	17
Site Inspection (4.1)	17
Stormwater Quality Sampling (4.2)	17
Turbidity Sampling (4.2.1)	17
pH Sampling (4.2.2)	19
Discharges to 303(d) or Total Maximum Daily Load (TMDL) Waterbodies (5.0) ... 20	
303(d) Listed Waterbodies (5.1)	20
TMDL Waterbodies (5.2)	20
Reporting and Record Keeping (6.0)	21
Record Keeping (6.1)	21
Site Log Book (6.1.1)	21
Records Retention (6.1.2)	21
Updating the SWPPP (6.1.3)	21
Reporting (6.2)	21
Discharge Monitoring Reports (6.2.1)	21
Notification of Noncompliance (6.2.2)	22
Appendix/Glossary	23
Appendix A – Site Plans	24
Appendix B – Construction BMPs	25
Appendix C - Correspondence	26
Appendix D - Site Inspection Form	27
Appendix - Construction Stormwater General Permit (CSWGP)	33
Appendix F - 303(d) List Waterbodies / TMDL Waterbodies Information	34
Appendix G - Contaminated Site Information	35
Appendix H - Engineering Calculations	36

List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
303(d)	Section of the Clean Water Act pertaining to Impaired Waterbodies
BFO	Bellingham Field Office of the Department of Ecology
BMP(s)	Best Management Practice(s)
CESCL	Certified Erosion and Sediment Control Lead
CO₂	Carbon Dioxide
CRO	Central Regional Office of the Department of Ecology
CSWGP	Construction Stormwater General Permit
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ERO	Eastern Regional Office of the Department of Ecology
ERTS	Environmental Report Tracking System
ESC	Erosion and Sediment Control
GULD	General Use Level Designation
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
NWRO	Northwest Regional Office of the Department of Ecology
pH	Power of Hydrogen
RCW	Revised Code of Washington
SPCC	Spill Prevention, Control, and Countermeasure
su	Standard Units
SWMMEW	Stormwater Management Manual for Eastern Washington
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion and Sediment Control
SWRO	Southwest Regional Office of the Department of Ecology
TMDL	Total Maximum Daily Load
VFO	Vancouver Field Office of the Department of Ecology
WAC	Washington Administrative Code
WSDOT	Washington Department of Transportation
WWHM	Western Washington Hydrology Model

Project Information (1.0)

Project/Site Name: Fall View

Street/Location: Ley Road and May Creek (parcel numbers 27090500200300, 27090500200400, 27090500201100)

City: Gold Bar State: WA Zip code: 98251

Subdivision: N/A

Receiving waterbody: May Creek & Wallace River

Existing Conditions (1.1)

Total acreage: 38.26

Disturbed acreage: 5.14

Existing structures: Gravel Access Road (TBR)

Landscape topography:

Drainage patterns: There are locally steep slopes north and west, ranging from 30 to 50 percent. These two high regions create two flow paths for existing site runoff to exit the site north, and west of two separate Threshold Discharge Areas (TDA's).

TDA 1 exits the site across the northeast site boundary and eventually discharges into Wallace River

TDA 2 exits the west corner of the site and eventually discharges into May Creek.

Flow paths 1 and 2 do not converge within the ¼ mile buffer, however waters from May Creek eventually drain into Wallace River.

Existing Vegetation: Existing ground cover is mostly pasture with areas of trees, grass, blackberry vines, ferns, ivy.

Critical Areas (wetlands, streams, high erosion risk, steep or difficult to stabilize slopes): There are 3 wetlands on site.

Wetland A Category II with a 100 ft buffer located along the west border.

Wetland B Category III with a 75 ft buffer located on the northeast.

Wetland C Category III with a 75 ft buffer

Steep slopes along the north and west ranging from 30 to 50 percent.

List of known impairments for 303(d) listed or Total Maximum Daily Load (TMDL) for the receiving waterbody: Washington State Department of Ecology's Water Quality Assessment for Washington does contain listings for the May Creek and Wallace River immediately downstream of the project site within the typical 0.25 analysis distance. Please refer to Appendix F for copies of applicable 303(d) listings.

Proposed Construction Activities (1.2)

Description of site development (example: subdivision):

The Fall View project proposes for site development for 39 single-family units with access from Ley Road along with utility improvements. Frontage improvements will consist of the access point to the proposed lots, sidewalk, ADA ramps, and landscaping.

Description of construction activities (example: site preparation, demolition, excavation):

Construction activities include site preparation, grading and stormwater mitigation.

Description of site drainage including flow from and onto adjacent properties. Must be consistent with Site Map in Appendix A:

For the proposed Fall View project, all runoff from developed/disturbed surfaces will be collected through a system of catch basins and pipes touring flow to the Bioretention planter along the perimeter of the Alder Lane and proposed Road A and will be infiltrated. The roof and driveway runoff will discharge to drywells on each lot.

Description of final stabilization (example: extent of revegetation, paving, landscaping):

Final stabilization of the site will be conducted using BMPs listed in section 2.0 of this report. All landscaped areas will be underlain with BMP T5.13 soil mixtures in the developed condition.

Contaminated Site Information:

Proposed activities regarding contaminated soils or groundwater (example: on-site treatment system, authorized sanitary sewer discharge):

Depending on the project, temporary and permanent seeding and plastic covering will be used to control flow and sediment for construction period run-off.

Construction Stormwater Best Management Practices (BMPs) (2.0)

The SWPPP is a living document reflecting current conditions and changes throughout the life of the project. These changes may be informal (i.e. hand-written notes and deletions). Update the SWPPP when the CESCL has noted a deficiency in BMPs or deviation from original design.

The 12 Elements (2.1)

Element 1: Mark Clearing Limits (1.2.1)

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. Trees that are to be preserved, as well as all sensitive areas and their buffers, shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible. The BMPs relevant to marking the clearing limits that will be applied for this project include:

- High Visibility Plastic or Metal Fence (BMP C103)
- Silt Fence (BMP C233)

Clearing limits shall be marked in the initial stages of construction in order to establish the correct boundary for clearing and grubbing. Alternate BMPs for marking clearing limits are included in Appendix B as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix B after the first sign that existing BMPs are ineffective or failing.

Element 2: Establish Construction Access (2.1.2)

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads, and wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. All wash wastewaters shall be controlled on site. Therefore, two stabilized construction exits are proposed at the intersection of Road A and Ley Road, and the intersection of Alder Lane and Ley Road.

- Stabilized Construction Access (BMP C105)

The proposed gravel access will be used as construction access in the initial stages of construction concurrent with the clearing limits to minimize vehicles tracking sediment off-site. Street sweeping, cleaning, or wheel wash/tire baths may be necessary if the stabilized construction access is not effective. All wheel wash wastewater shall be controlled on-site and cannot be discharged into waters of the State. Alternate construction access BMPs are included in Appendix B as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix B after the first sign that existing BMPs are ineffective or failing.

Element 3: Control Flow Rates (2.1.3)

The project is located west of the Cascade Mountain Crest. As such, the project must comply with Minimum Requirement 7 (Ecology 2012).

In order to protect the properties and waterways downstream of the project site, stormwater discharges from the site will be controlled. The specific BMPs for flow control that shall be used on this project include:

- Temporary Interceptor Dike and Swale (BMP C200)
- Check Dams (BMP C207)

In general, discharge rates of stormwater from the site will be controlled where increases in impervious area or soil compaction during construction could lead to downstream erosion, or where necessary to meet local agency stormwater discharge requirements (e.g. discharge to combined sewer systems).

Element 4: Install Sediment Controls (2.1.4)

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMPs to be used for controlling sediment on this project include:

- Storm Drain Inlet Protection (BMP C220)
- Silt Fence (BMP C233)
- Temporary Interceptor Dike and Swale (BMP C200)

Alternate sediment control BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

In addition, sediment will be removed from paved areas in and adjacent to construction work areas manually or using mechanical sweepers, as needed, to minimize tracking of sediments on vehicle tires away from the site and to minimize wash off of sediments from adjacent streets in runoff.

In some cases, sediment discharge in concentrated runoff can be controlled using permanent stormwater BMPs (e.g., infiltration swales, ponds, trenches). Sediment loads can limit the effectiveness of some permanent stormwater BMPs, such as those used for infiltration or biofiltration; however, those BMPs designed to remove solids by settling (wet ponds or detention ponds) can be used during the construction phase. When permanent stormwater BMPs will be used to control sediment discharge during construction, the structure will be protected from excessive sedimentation with adequate erosion and sediment control BMPs. Any accumulated sediment shall be removed after construction is complete and the permanent stormwater BMP will be restabilized with vegetation per applicable design requirements once the remainder of the site has been stabilized.

Element 5: Stabilize Soils (2.1.5)

Season	Dates	Number of Days Soils Can be Left Exposed
During the Dry Season	May 1 – September 30	7 days
During the Wet Season	October 1 – April 30	2 days

Soils must be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

Anticipated Start date: TBD

Anticipated End date: TBD

Will you construct during the wet season?

TBD

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. The specific BMPs for soil stabilization that shall be used on this project include:

- Temporary and Permanent Seeding (BMP C120)
- Mulching (BMP C121)
- Plastic Covering (BMP C123)

The project site is located west of the Cascade Mountain Crest. As such, no soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of the time of year, all soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on weather forecasts.

In general, cut and fill slopes will be stabilized as soon as possible and soil stockpiles will be temporarily covered with plastic sheeting. All stockpiled soils shall be stabilized from erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

Element 6: Protect Slopes (2.1.6)

Will steep slopes be present at the site during construction?

Yes

All cut and fill slopes will be designed, constructed, and protected in a manner that minimizes erosion. The following specific BMPs will be used to protect slopes for this project:

- Temporary and Permanent Seeding (BMP C120)
- Mulching (BMP C121)
- Plastic Covering (BMP C123)

Erosion will be minimized by designing and constructing cut-and-fill slopes in a manner where continuous length of slope will be reduced with diversions and roughening slope surfaces. Stormwater runoff will be diverted away from slopes and disturbed areas with interceptor dikes, pipes, and swales. Check dams will be installed every 100' or 2' of elevation change along constructed channels to reduce flow velocity and erosion. Excavated material shall be placed on the uphill side of trenches, consistent with safety and space considerations. Responsible Staff:

Contractor

Element 7: Protect Drain Inlets (2.1.7)

All storm drain inlets and culverts made operable during construction shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the priority is to keep all access roads clean of sediment and keep street wash water separate from entering storm drains until treatment can be provided.

- Storm Drain Inlet Protection (BMP C220)

If the BMP options listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D), or if no BMPs are listed above but deemed necessary during construction, the Certified Erosion and Sediment Control Lead shall implement one or more of the alternative BMP inlet protection options listed in Appendix B.

Element 8: Stabilize Channels and Outlets (2.1.8)

Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches, will be installed at the outlets of all conveyance systems.

Where site runoff is to be conveyed in channels or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion. The specific BMPs for channel and outlet stabilization that shall be used on this project include:

- Check Dams (BMP C207)

Element 9: Control Pollutants (2.1.9)

The following pollutants are anticipated to be present on-site:

Table 1 – Pollutants

Pollutant (and source, if applicable)
Waste Materials
Demolition Debris
Fuel leak from vehicles, equipment, and petroleum product storage

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well-organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following

any discharge or spill incident.

Concrete and grout:

- Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures (BMP C151). Concrete wash out areas shall not be allowed on bare dirt or allowed to drain to bare dirt or the storm system.

The facility does not require a Spill Prevention, Control, and Countermeasure (SPCC) Plan under the Federal regulations of the Clean Water Act (CWA).

Element 10: Control Dewatering (2.1.10)

There will be no dewatering as part of this construction project. All dewatering water from open cut excavation, tunneling, foundation work, trench, or underground vaults shall be discharged into a controlled conveyance system prior to discharge to a sediment trap or sediment pond, or will be treated with dispersion across vegetated areas or by other modular methods before being discharged to or draining to an uncontrolled collection and conveyance system. Channels will be stabilized, per Element #8. Clean, non-turbid dewatering water will not be routed through stormwater sediment ponds and will be discharged to systems tributary to the receiving waters of the State in a manner that does not cause erosion, flooding, or a violation of State water quality standards in the receiving water. Highly turbid dewatering water from soils known or suspected to be contaminated, or from use of construction equipment, will require additional monitoring and treatment as required for the specific pollutants based on the receiving waters into which the discharge is occurring. Such monitoring is the responsibility of the contractor.

However, the dewatering of soils known to be free of contamination will trigger BMPs to trap sediment and reduce turbidity. At a minimum, geotextile fabric socks/bags/cells will be used to filter this material. Other BMPs to be used for sediment trapping and turbidity reduction include the following:

- Concrete Handling (BMP C151)

Alternative BMP not included in the above bulleted list are included in Appendix B as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix B after the first sign that existing BMPs are ineffective or failing.

Element 11: Maintain BMPs (2.1.11)

All temporary and permanent Erosion and Sediment Control (ESC) BMPs shall be maintained and repaired as needed to ensure continued performance of their intended function.

Maintenance and repair shall be conducted in accordance with each particular BMP specification (see *Volume II of the SWMMWW* or *Chapter 7 of the SWMMEW*).

Visual monitoring of all BMPs installed at the site will be conducted at least once every calendar week and within 24 hours of any stormwater or non-stormwater discharge from the site. If the site becomes inactive and is temporarily stabilized, the inspection frequency may be reduced to once every calendar month.

- Material on Hand (BMP C150)
- Certified Erosion and Sediment Control Lead (BMP C160)

All temporary ESC BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.

Trapped sediment shall be stabilized on-site or removed. Disturbed soil resulting from removal of either BMPs or vegetation shall be permanently stabilized.

Additionally, protection must be provided for all BMPs installed for the permanent control of stormwater from sediment and compaction. BMPs that are to remain in place following completion of construction shall be examined and restored to full operating condition. If sediment enters these BMPs during construction, the sediment shall be removed, and the facility shall be returned to conditions specified in the construction documents.

Element 12: Manage the Project (2.1.12)

The project will be managed based on the following principles:

- Certified Erosion and Sediment Control Lead (BMP C160)
- Projects will be phased to the maximum extent practicable and seasonal work limitations will be taken into account.
- Inspection and monitoring:
 - Inspection, maintenance and repair of all BMPs will occur as needed to ensure performance of their intended function.
 - Site inspections and monitoring will be conducted in accordance with Special Condition S4 of the CSWGP. Sampling locations are indicated on the [Site Map](#). Sampling station(s) are located in accordance with applicable requirements of the CSWGP.
- Maintain an updated SWPPP.

- The SWPPP will be updated, maintained, and implemented in accordance with Special Conditions S3, S4, and S9 of the CSWGP.

As site work progresses the SWPPP will be modified routinely to reflect changing site conditions. The SWPPP will be reviewed monthly to ensure the content is current.

Table 2 – Management

X	Design the project to fit the existing topography, soils, and drainage patterns
X	Emphasize erosion control rather than sediment control
X	Minimize the extent and duration of the area exposed
X	Keep runoff velocities low
X	Retain sediment on-site
X	Thoroughly monitor site and maintain all ESC measures
X	Schedule major earthwork during the dry season
	Other (please describe)

Element 13: Protect Low Impact Development (LID) BMPs (2.1.13)

Low impact development (LID) BMPs are not proposed for use on this project. The BMPs stated in Elements #1 through #12 shall be used to protect LID BMPs if LID BMPs become utilized.

Pollution Prevention Team (3.0)

Table 4 – Team Information

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	TBD	TBD
Resident Engineer	Joe Hopper, PE, LDC	(425) 806-1869
Emergency Ecology Contact	TBD	TBD
Emergency Permittee/ Owner Contact	TBD	TBD
Non-Emergency Owner Contact	TBD	TBD
Monitoring Personnel	TBD	TBD
Ecology Regional Office	Northwest Region	(425) 649-7000

Monitoring and Sampling Requirements (4.0)

Monitoring includes visual inspection, sampling for water quality parameters of concern, and documentation of the inspection and sampling findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Stormwater sampling data

The site log book must be maintained on-site within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

Numeric effluent limits may be required for certain discharges to 303(d) listed waterbodies. See CSWGP Special Condition S8 and Section 5 of this template.

Complete the following paragraph for sites that discharge to impaired waterbodies for fine sediment, turbidity, phosphorus, or pH:

Site Inspection (4.1)

Site inspections will be conducted at least once every calendar week and within 24 hours following any discharge from the site. For sites that are temporarily stabilized and inactive, the required frequency is reduced to once per calendar month.

The discharge point(s) are indicated on the Site Map (see Appendix A) and in accordance with the applicable requirements of the CSWGP.

Reference Appendix D for a Site Inspection Form.

Stormwater Quality Sampling (4.2)

Turbidity Sampling (4.2.1)

Requirements include calibrated turbidity meter or transparency tube to sample site discharges for compliance with the CSWGP. Sampling will be conducted at all discharge points at least once per calendar week.

Method for sampling turbidity:

Table 8 – Turbidity Sampling Method

x	Turbidity Meter/Turbidimeter (required for disturbances 5 acres or greater in size)
	Transparency Tube (option for disturbances less than 1 acre and up to 5 acres in size)

The benchmark for turbidity value is 25 nephelometric turbidity units (NTU) and a transparency less than 33 centimeters.

If the discharge's turbidity is 26 to 249 NTU or the transparency is less than 33 cm but equal to or greater than 6 cm, the following steps will be conducted:

1. Review the SWPPP for compliance with Special Condition S9. Make appropriate revisions within 7 days of the date the discharge exceeded the benchmark.
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period.
3. Document BMP implementation and maintenance in the site log book.

If the turbidity exceeds 250 NTU or the transparency is 6 cm or less at any time, the following steps will be conducted:

1. Telephone or submit an electronic report to the applicable Ecology Region's Environmental Report Tracking System (ERTS) within 24 hours.
<https://www.ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue>
 - Central Region (Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima): (509) 575-2490
 - Eastern Region (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman): (509) 329-3400
 - Northwest Region (King, Kitsap, Island, San Juan, Skagit, Snohomish, Whatcom): (425) 649-7000
 - Southwest Region (Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum,): (360) 407-6300
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period
3. Document BMP implementation and maintenance in the site log book.
4. Continue to sample discharges daily until one of the following is true:
 - Turbidity is 25 NTU (or lower).
 - Transparency is 33 cm (or greater).
 - Compliance with the water quality limit for turbidity is achieved.
 - 1 - 5 NTU over background turbidity, if background is less than 50 NTU
 - 1% - 10% over background turbidity, if background is 50 NTU or greater
 - The discharge stops or is eliminated.

pH Sampling (4.2.2)

pH monitoring is required for “Significant concrete work” (i.e. greater than 1000 cubic yards poured concrete or recycled concrete over the life of the project). The use of engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust [CKD] or fly ash) also requires pH monitoring.

For significant concrete work, pH sampling will start the first day concrete is poured and continue until it is cured, typically three (3) weeks after the last pour.

For engineered soils and recycled concrete, pH sampling begins when engineered soils or recycled concrete are first exposed to precipitation and continues until the area is fully stabilized.

Stormwater samples will be collected daily from all points of discharge from the site and measure for pH using a calibrated pH meter, pH test kit, or wide range pH indicator paper.

If the measured pH is 8.5 or greater, the following measures will be taken:

1. Prevent high pH water from entering storm sewer systems or surface water.
2. Adjust or neutralize the high pH water to the range of 6.5 to 8.5 su using appropriate technology such as carbon dioxide (CO₂) sparging (liquid or dry ice).
3. Written approval will be obtained from Ecology prior to the use of chemical treatment other than CO₂ sparging or dry ice.

Method for sampling pH:

Table 8 – pH Sampling Method

x	pH meter
x	pH test kit
x	Wide range pH indicator paper

Discharges to 303(d) or Total Maximum Daily Load (TMDL) Waterbodies (5.0)

303(d) Listed Waterbodies (5.1)

Jim Creek is the only body of water within 0.25 miles of the project site.

TMDL Waterbodies (5.2)

The 303(d) list is used to determine what water quality improvements are most needed. The TMDL process is only used where it is determined it will be the most effective tool.

Discharges to TMDL receiving waterbodies will meet in-stream water quality criteria at the point of discharge.
--

The Construction Stormwater General Permit Proposed New Discharge to an Impaired Water Body form is included in Appendix F.

Reporting and Record Keeping (6.0)

Record Keeping (6.1)

Site Log Book (6.1.1)

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Sample logs

Records Retention (6.1.2)

Records will be retained during the life of the project and for a minimum of three (3) years following the termination of permit coverage in accordance with Special Condition S5.C of the CSWGP.

Permit documentation to be retained on-site:

- CSWGP
- Permit Coverage Letter
- SWPPP
- Site Log Book

Permit documentation will be provided within 14 days of receipt of a written request from Ecology. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with Special Condition S5.G.2.b of the CSWGP.

Updating the SWPPP (6.1.3)

The SWPPP will be modified if:

- Found ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site.
- There is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the State.

The SWPPP will be modified within seven (7) days if inspection(s) or investigation(s) determine additional or modified BMPs are necessary for compliance. An updated timeline for BMP implementation will be prepared.

Reporting (6.2)

Discharge Monitoring Reports (6.2.1)

Cumulative soil disturbance is one (1) acre or larger; therefore, Discharge Monitoring Reports (DMRs) will be submitted to Ecology monthly. If there was no discharge during a given monitoring period the DMR will be submitted as required, reporting "No Discharge". The DMR due date is fifteen (15) days following the end of each calendar month.

DMRs will be reported online through Ecology's WQWebDMR System.

To sign up for WSWebDMR, visit:

<https://www.ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance/WQWebPortal-guidance>

Notification of Noncompliance (6.2.2)

If any of the terms and conditions of the permit is not met, and the resulting noncompliance may cause a threat to human health or the environment, the following actions will be taken:

1. Ecology will be notified within 24-hours of the failure to comply by calling the applicable Regional office ERTS phone number (Regional office numbers listed below).
2. Immediate action will be taken to prevent the discharge/pollution or otherwise stop or correct the noncompliance. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Anytime turbidity sampling indicates turbidity is 250 NTUs or greater, or water transparency is 6 cm or less, the Ecology Regional office will be notified by phone within 24 hours of analysis as required by Special Condition S5.A of the CSWGP.

- Central Region at (509) 575-2490 for Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, or Yakima County
- Eastern Region at (509) 329-3400 for Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, or Whitman County
- Northwest Region at (425) 649-7000 for Island, King, Kitsap, San Juan, Skagit, Snohomish, or Whatcom County
- Southwest Region at (360) 407-6300 for Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, or Wahkiakum

Include the following information:

1. Your name and / Phone number
2. Permit number
3. City / County of project
4. Sample results
5. Date / Time of call
6. Date / Time of sample
7. Project name

In accordance with Special Condition S4.D.5.b of the CSWGP, the Ecology Regional office will be notified if chemical treatment other than CO₂ sparging is planned for adjustment of high pH water.

Appendix/Glossary



Appendix A – Site Plans



Appendix B – Construction BMPs

Construction BMPs

- High Visibility Plastic or Metal Fence (BMP C103)
 - Stabilized Construction Access (BMP C105)
 - Temporary and Permanent Seeding (BMP C120)
 - Mulching (BMP C121)
 - Plastic Covering (BMP C123)
 - Material On Hand (BMP C150)
 - Concrete Handling (BMP C151)
 - Certified Erosion and Sediment Control Lead (BMP C160)
 - Temporary Interceptor Dike and Swale (BMP C200)
 - Check Dams (BMP C207)
 - Storm Drain Inlet Protection (BMP C220)
 - Silt Fence (BMP C233)
-

BMP C103: High-Visibility Fence

Purpose

High-visibility fencing is intended to:

- Restrict clearing to approved limits.
- Prevent disturbance of sensitive areas, their buffers, and other areas required to be left undisturbed.
- Limit construction traffic to designated construction entrances, exits, or internal roads.
- Protect areas where marking with survey tape may not provide adequate protection.

Conditions of Use

To establish clearing limits plastic, fabric, or metal fence may be used:

- At the boundary of sensitive areas, their buffers, and other areas required to be left uncleared.
- As necessary to control vehicle access to and on the site.

Design and Installation Specifications

High-visibility plastic fence shall be composed of a high-density polyethylene material and shall be at least four feet in height. Posts for the fencing shall be steel or wood and placed every 6 feet on center (maximum) or as needed to ensure rigidity. The fencing shall be fastened to the post every six inches with a polyethylene tie. On long continuous lengths of fencing, a tension wire or rope shall be used as a top stringer to prevent sagging between posts. The fence color shall be high-visibility orange. The fence tensile strength shall be 360 lbs/ft using the ASTM D4595 testing method.

If appropriate install fabric silt fence in accordance with [BMP C233: Silt Fence](#) to act as high-visibility fence. Silt fence shall be at least 3 feet high and must be highly visible to meet the requirements of this BMP.

Metal fences shall be designed and installed according to the manufacturer's specifications.

Metal fences shall be at least 3 feet high and must be highly visible.

Fences shall not be wired or stapled to trees.

Maintenance Standards

If the fence has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.

BMP C105: Stabilized Construction Access

Purpose

Stabilized construction accesses are established to reduce the amount of sediment transported onto paved roads outside the project site by vehicles or equipment. This is done by constructing a stabilized pad of quarry spalls at entrances and exits for project sites.

Conditions of Use

Construction accesses shall be stabilized wherever traffic will be entering or leaving a construction site if paved roads or other paved areas are within 1,000 feet of the site.

For residential subdivision construction sites, provide a stabilized construction access for each residence, rather than only at the main subdivision entrance. Stabilized surfaces shall be of sufficient length/width to provide vehicle access/parking, based on lot size and configuration.

On large commercial, highway, and road projects, the designer should include enough extra materials in the contract to allow for additional stabilized accesses not shown in the initial Construction SWPPP. It is difficult to determine exactly where access to these projects will take place; additional materials will enable the contractor to install them where needed.

Design and Installation Specifications

See [Figure II-3.1: Stabilized Construction Access](#) for details. Note: the 100' minimum length of the access shall be reduced to the maximum practicable size when the size or configuration of the site does not allow the full length (100').

Construct stabilized construction accesses with a 12-inch thick pad of 4-inch to 8-inch quarry spalls, a 4-inch course of asphalt treated base (ATB), or use existing pavement. Do not use crushed concrete, cement, or calcium chloride for construction access stabilization because these products raise pH levels in stormwater and concrete discharge to waters of the State is prohibited.

A separation geotextile shall be placed under the spalls to prevent fine sediment from pumping up into the rock pad. The geotextile shall meet the standards listed in [Table II-3.2: Stabilized Construction Access Geotextile Standards](#).

Table II-3.2: Stabilized Construction Access Geotextile Standards

Geotextile Property	Required Value
Grab Tensile Strength (ASTM D4751)	200 psi min.

**Table II-3.2: Stabilized Construction Access
Geotextile Standards (continued)**

Geotextile Property	Required Value
Grab Tensile Elongation (ASTM D4632)	30% max.
Mullen Burst Strength (ASTM D3786-80a)	400 psi min.
AOS (ASTM D4751)	20-45 (U.S. standard sieve size)

- Consider early installation of the first lift of asphalt in areas that will be paved; this can be used as a stabilized access. Also consider the installation of excess concrete as a stabilized access. During large concrete pours, excess concrete is often available for this purpose.
- Fencing (see [BMP C 103: High-Visibility Fence](#)) shall be installed as necessary to restrict traffic to the construction access.
- Whenever possible, the access shall be constructed on a firm, compacted subgrade. This can substantially increase the effectiveness of the pad and reduce the need for maintenance.
- Construction accesses should avoid crossing existing sidewalks and back of walk drains if at all possible. If a construction access must cross a sidewalk or back of walk drain, the full length of the sidewalk and back of walk drain must be covered and protected from sediment leaving the site.

Alternative Material Specification

WSDOT has raised safety concerns about the Quarry Spall rock specified above. WSDOT observes that the 4-inch to 8-inch rock sizes can become trapped between Dually truck tires, and then released off-site at highway speeds. WSDOT has chosen to use a modified specification for the rock while continuously verifying that the Stabilized Construction Access remains effective. To remain effective, the BMP must prevent sediment from migrating off site. To date, there has been no performance testing to verify operation of this new specification. Jurisdictions may use the alternative specification, but must perform increased off-site inspection if they use, or allow others to use, it.

Stabilized Construction Accesses may use material that meets the requirements of WSDOT's *Standard Specifications for Road, Bridge, and Municipal Construction* Section 9-03.9(1) ([WSDOT, 2016](#)) for ballast except for the following special requirements.

The grading and quality requirements are listed in [Table II-3.3: Stabilized Construction Access Alternative Material Requirements](#).

**Table II-3.3: Stabilized
Construction Access
Alternative Material
Requirements**

Sieve Size	Percent Passing
2½"	99-100

**Table II-3.3: Stabilized
Construction Access
Alternative Material
Requirements
(continued)**

Sieve Size	Percent Passing
2"	65-100
¾"	40-80
No. 4	5 max.
No. 100	0-2
% Fracture	75 min.

- All percentages are by weight.
- The sand equivalent value and dust ratio requirements do not apply.
- The fracture requirement shall be at least one fractured face and will apply the combined aggregate retained on the No. 4 sieve in accordance with FOP for AASHTO T 335.

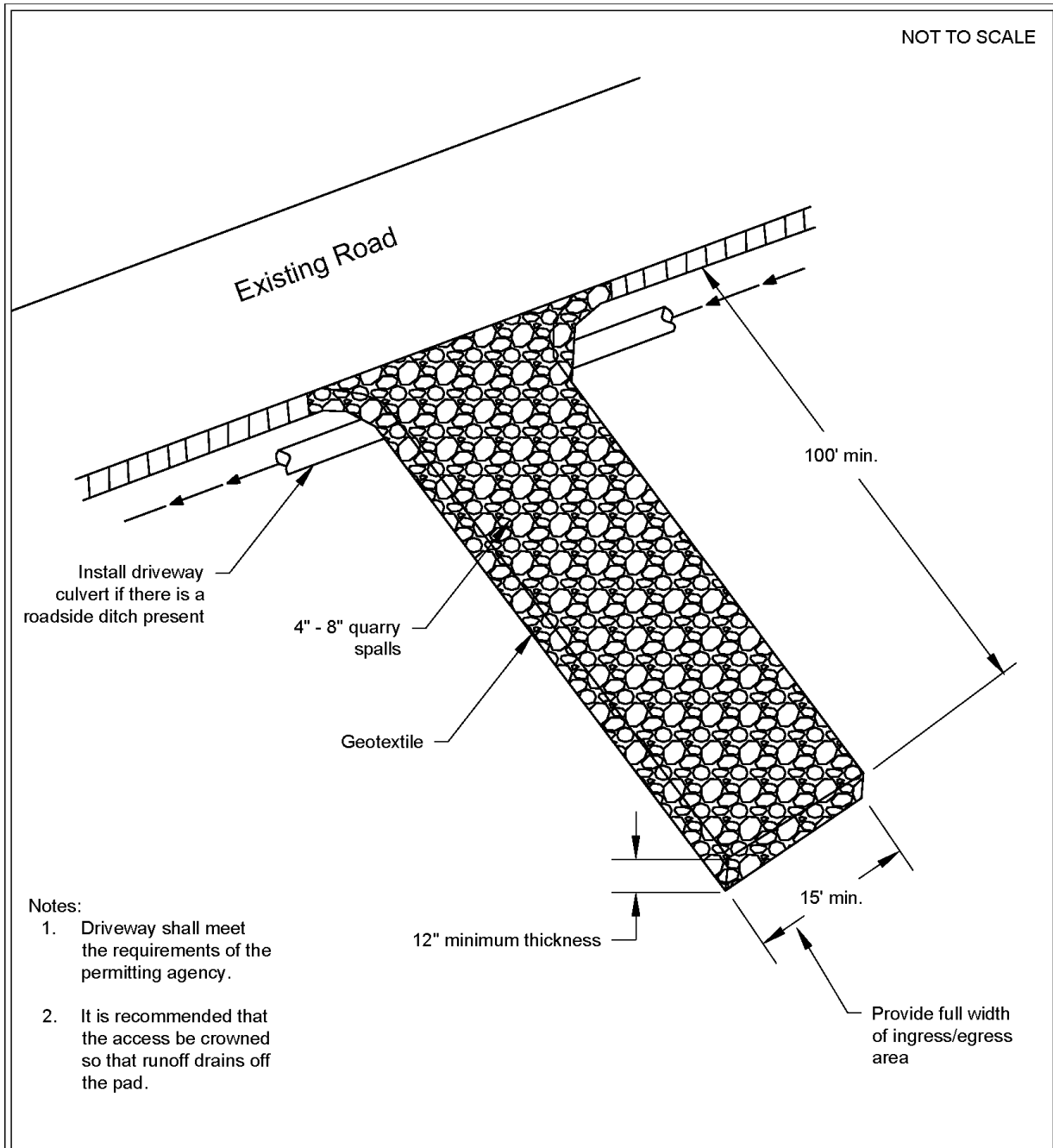
Maintenance Standards

Quarry spalls shall be added if the pad is no longer in accordance with the specifications.

- If the access is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This may include replacement/cleaning of the existing quarry spalls, street sweeping, an increase in the dimensions of the access, or the installation of [BMP C106: Wheel Wash](#).
- Any sediment that is tracked onto pavement shall be removed by shoveling or street sweeping. The sediment collected by sweeping shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when high efficiency sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump to contain the wash water shall be considered. The sediment would then be washed into the sump where it can be controlled.
- Perform street sweeping by hand or with a high efficiency sweeper. Do not use a non-high efficiency mechanical sweeper because this creates dust and throws soils into storm systems or conveyance ditches.
- Any quarry spalls that are loosened from the pad, which end up on the roadway shall be removed immediately.
- If vehicles are entering or exiting the site at points other than the construction access(es), [BMP C103: High-Visibility Fence](#) shall be installed to control traffic.

- Upon project completion and site stabilization, all construction accesses intended as permanent access for maintenance shall be permanently stabilized.

Figure II-3.1: Stabilized Construction Access



Stabilized Construction Access

Revised June 2018

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Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies>

BMP C120: Temporary and Permanent Seeding

Purpose

Seeding reduces erosion by stabilizing exposed soils. A well-established vegetative cover is one of the most effective methods of reducing erosion.

Conditions of Use

Use seeding throughout the project on disturbed areas that have reached final grade or that will remain unworked for more than 30 days.

The optimum seeding windows for western Washington are April 1 through June 30 and September 1 through October 1.

Between July 1 and August 30 seeding requires irrigation until 75 percent grass cover is established.

Between October 1 and March 30 seeding requires a cover of mulch or an erosion control blanket until 75 percent grass cover is established.

Review all disturbed areas in late August to early September and complete all seeding by the end of September. Otherwise, vegetation will not establish itself enough to provide more than average protection.

Mulch is required at all times for seeding because it protects seeds from heat, moisture loss, and transport due to runoff. Mulch can be applied on top of the seed or simultaneously by hydroseeding. See [BMP C121: Mulching](#) for specifications.

Seed and mulch all disturbed areas not otherwise vegetated at final site stabilization. Final stabilization means the completion of all soil disturbing activities at the site and the establishment of a permanent vegetative cover, or equivalent permanent stabilization measures (such as pavement, riprap, gabions, or geotextiles) which will prevent erosion. See [BMP T5.13: Post-Construction Soil Quality and Depth](#).

Design and Installation Specifications

General

- Install channels intended for vegetation before starting major earthwork and hydroseed with a Bonded Fiber Matrix. For vegetated channels that will have high flows, install erosion control blankets over the top of hydroseed. Before allowing water to flow in vegetated channels, establish 75 percent vegetation cover. If vegetated channels cannot be established by seed

before water flow; install sod in the channel bottom — over top of hydromulch and erosion control blankets.

- Confirm the installation of all required surface water control measures to prevent seed from washing away.
- Hydroseed applications shall include a minimum of 1,500 pounds per acre of mulch with 3 percent tackifier. See [BMP C121: Mulching](#) for specifications.
- Areas that will have seeding only and not landscaping may need compost or meal-based mulch included in the hydroseed in order to establish vegetation. Re-install native topsoil on the disturbed soil surface before application. See [BMP T5.13: Post-Construction Soil Quality and Depth](#).
- When installing seed via hydroseeding operations, only about 1/3 of the seed actually ends up in contact with the soil surface. This reduces the ability to establish a good stand of grass quickly. To overcome this, consider increasing seed quantities by up to 50 percent.
- Enhance vegetation establishment by dividing the hydromulch operation into two phases:
 - Phase 1- Install all seed and fertilizer with 25-30 percent mulch and tackifier onto soil in the first lift.
 - Phase 2- Install the rest of the mulch and tackifier over the first lift.

Or, enhance vegetation by:

- Installing the mulch, seed, fertilizer, and tackifier in one lift.
- Spread or blow straw over the top of the hydromulch at a rate of 800-1000 pounds per acre.
- Hold straw in place with a standard tackifier.

Both of these approaches will increase cost moderately but will greatly improve and enhance vegetative establishment. The increased cost may be offset by the reduced need for:

- Irrigation.
- Reapplication of mulch.
- Repair of failed slope surfaces.

This technique works with standard hydromulch (1,500 pounds per acre minimum) and Bonded Fiber Matrix/ Mechanically Bonded Fiber Matrix (BFM/MBFMs) (3,000 pounds per acre minimum).

- Seed may be installed by hand if:
 - Temporary and covered by straw, mulch, or topsoil.
 - Permanent in small areas (usually less than 1 acre) and covered with mulch, topsoil, or erosion blankets.
- The seed mixes listed in [Table II-3.4: Temporary and Permanent Seed Mixes](#) include

recommended mixes for both temporary and permanent seeding.

- Apply these mixes, with the exception of the wet area seed mix, at a rate of 120 pounds per acre. This rate can be reduced if soil amendments or slow-release fertilizers are used. Apply the wet area seed mix at a rate of 60 pounds per acre.
- Consult the local suppliers or the local conservation district for their recommendations. The appropriate mix depends on a variety of factors, including location, exposure, soil type, slope, and expected foot traffic. Alternative seed mixes approved by the local authority may be used, depending on the soil type and hydrology of the area.

Table II-3.4: Temporary and Permanent Seed Mixes

Common Name	Latin Name	% Weight	% Purity	% Germination
Temporary Erosion Control Seed Mix				
A standard mix for areas requiring a temporary vegetative cover.				
Chewings or annual blue grass	<i>Festuca rubra var. commutata</i> or <i>Poa annua</i>	40	98	90
Perennial rye	<i>Lolium perenne</i>	50	98	90
Redtop or colonial bentgrass	<i>Agrostis alba</i> or <i>Agrostis tenuis</i>	5	92	85
White dutch clover	<i>Trifolium repens</i>	5	98	90
Landscaping Seed Mix				
A recommended mix for landscaping seed.				
Perennial rye blend	<i>Lolium perenne</i>	70	98	90
Chewings and red fescue blend	<i>Festuca rubra var. commutata</i> or <i>Festuca rubra</i>	30	98	90
Low-Growing Turf Seed Mix				
A turf seed mix for dry situations where there is no need for watering. This mix requires very little maintenance.				
Dwarf tall fescue (several varieties)	<i>Festuca arundinacea var.</i>	45	98	90
Dwarf perennial rye (Barclay)	<i>Lolium perenne var. barclay</i>	30	98	90
Red fescue	<i>Festuca rubra</i>	20	98	90
Colonial bentgrass	<i>Agrostis tenuis</i>	5	98	90
Bioswale Seed Mix				
A seed mix for bioswales and other intermittently wet areas.				
Tall or meadow fes-	<i>Festuca arundin-</i>	75-80	98	90

Table II-3.4: Temporary and Permanent Seed Mixes (continued)

Common Name	Latin Name	% Weight	% Purity	% Germination
cue	<i>acea</i> or <i>Festuca elatior</i>			
Seaside/Creeping bentgrass	<i>Agrostis palustris</i>	10-15	92	85
Redtop bentgrass	<i>Agrostis alba</i> or <i>Agrostis gigantea</i>	5-10	90	80
Wet Area Seed Mix				
A low-growing, relatively non-invasive seed mix appropriate for very wet areas that are not regulated wetlands. Consult Hydraulic Permit Authority (HPA) for seed mixes if applicable.				
Tall or meadow fescue	<i>Festuca arundinacea</i> or <i>Festuca elatior</i>	60-70	98	90
Seaside/Creeping bentgrass	<i>Agrostis palustris</i>	10-15	98	85
Meadow foxtail	<i>Alepocurus pratensis</i>	10-15	90	80
Alsike clover	<i>Trifolium hybridum</i>	1-6	98	90
Redtop bentgrass	<i>Agrostis alba</i>	1-6	92	85
Meadow Seed Mix				
A recommended meadow seed mix for infrequently maintained areas or non-maintained areas where colonization by native plants is desirable. Likely applications include rural road and utility right-of-way. Seeding should take place in September or very early October in order to obtain adequate establishment prior to the winter months. Consider the appropriateness of clover, a fairly invasive species, in the mix. Amending the soil can reduce the need for clover.				
Redtop or Oregon bentgrass	<i>Agrostis alba</i> or <i>Agrostis oregonensis</i>	20	92	85
Red fescue	<i>Festuca rubra</i>	70	98	90
White dutch clover	<i>Trifolium repens</i>	10	98	90

Roughening and Rototilling

- The seedbed should be firm and rough. Roughen all soil no matter what the slope. Track walk slopes before seeding if engineering purposes require compaction. Backblading or smoothing of slopes greater than 4H:1V is not allowed if they are to be seeded.
- Restoration-based landscape practices require deeper incorporation than that provided by a simple single-pass rototilling treatment. Wherever practical, initially rip the subgrade to improve long-term permeability, infiltration, and water inflow qualities. At a minimum,

permanent areas shall use soil amendments to achieve organic matter and permeability performance defined in engineered soil/landscape systems. For systems that are deeper than 8 inches complete the rototilling process in multiple lifts, or prepare the engineered soil system per specifications and place to achieve the specified depth.

Fertilizers

- Conducting soil tests to determine the exact type and quantity of fertilizer is recommended. This will prevent the over-application of fertilizer.
- Organic matter is the most appropriate form of fertilizer because it provides nutrients (including nitrogen, phosphorus, and potassium) in the least water-soluble form.
- In general, use 10-4-6 N-P-K (nitrogen-phosphorus-potassium) fertilizer at a rate of 90 pounds per acre. Always use slow-release fertilizers because they are more efficient and have fewer environmental impacts. Do not add fertilizer to the hydromulch machine, or agitate, more than 20 minutes before use. Too much agitation destroys the slow-release coating.
- There are numerous products available that take the place of chemical fertilizers. These include several with seaweed extracts that are beneficial to soil microbes and organisms. If 100 percent cottonseed meal is used as the mulch in hydroseed, chemical fertilizer may not be necessary. Cottonseed meal provides a good source of long-term, slow-release, available nitrogen.

Bonded Fiber Matrix and Mechanically Bonded Fiber Matrix

- On steep slopes use Bonded Fiber Matrix (BFM) or Mechanically Bonded Fiber Matrix (MBFM) products. Apply BFM/MBFM products at a minimum rate of 3,000 pounds per acre with approximately 10 percent tackifier. Achieve a minimum of 95 percent soil coverage during application. Numerous products are available commercially. Most products require 24-36 hours to cure before rainfall and cannot be installed on wet or saturated soils. Generally, products come in 40-50 pound bags and include all necessary ingredients except for seed and fertilizer.
- Install products per manufacturer's instructions.
- BFMs and MBFMs provide good alternatives to blankets in most areas requiring vegetation establishment. Advantages over blankets include:
 - BFMs and MBFMs do not require surface preparation.
 - Helicopters can assist in installing BFM and MBFMs in remote areas.
 - On slopes steeper than 2.5H:1V, blanket installers may require ropes and harnesses for safety.
 - Installing BFM and MBFMs can save at least \$1,000 per acre compared to blankets.

Maintenance Standards

Reseed any seeded areas that fail to establish at least 75 percent cover (100 percent cover for areas that receive sheet or concentrated flows). If reseeding is ineffective, use an alternate method such as sodding, mulching, nets, or blankets.

- Reseed and protect by mulch any areas that experience erosion after achieving adequate cover. Reseed and protect by mulch any eroded area.
- Supply seeded areas with adequate moisture, but do not water to the extent that it causes run-off.

Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies>

BMP C121: Mulching

Purpose

Mulching soils provides immediate temporary protection from erosion. Mulch also enhances plant establishment by conserving moisture, holding fertilizer, seed, and topsoil in place, and moderating soil temperatures. There are a variety of mulches that can be used. This section discusses only the most common types of mulch.

Conditions of Use

As a temporary cover measure, mulch should be used:

- For less than 30 days on disturbed areas that require cover.
- At all times for seeded areas, especially during the wet season and during the hot summer months.
- During the wet season on slopes steeper than 3H:1V with more than 10 feet of vertical relief.

Mulch may be applied at any time of the year and must be refreshed periodically.

For seeded areas, mulch may be made up of 100 percent:

- cottonseed meal;
- fibers made of wood, recycled cellulose, hemp, or kenaf;

- compost;
- or blends of these.

Tackifier shall be plant-based, such as guar or alpha plantago, or chemical-based such as polyacrylamide or polymers.

Generally, mulches come in 40-50 pound bags. Seed and fertilizer are added at time of application.

Recycled cellulose may contain polychlorinated biphenyl (PCBs). Ecology recommends that products should be evaluated for PCBs prior to use.

Refer to [BMP C126: Polyacrylamide \(PAM\) for Soil Erosion Protection](#) for conditions of use. PAM shall not be directly applied to water or allowed to enter a water body.

Any mulch or tackifier product used shall be installed per the manufacturer’s instructions.

Design and Installation Specifications

For mulch materials, application rates, and specifications, see [Table II-3.6: Mulch Standards and Guidelines](#). Consult with the local supplier or the local conservation district for their recommendations. Increase the application rate until the ground is 95% covered (i.e. not visible under the mulch layer). Note: Thickness may be increased for disturbed areas in or near sensitive areas or other areas highly susceptible to erosion.

Where the option of “Compost” is selected, it should be a coarse compost that meets the size gradations listed in [Table II-3.5: Size Gradations of Compost as Mulch Material](#) when tested in accordance with Test Method 02.02-B found in *Test Methods for the Examination of Composting and Compost* (Thompson, 2001).

Table II-3.5: Size Gradations of Compost as Mulch Material

Sieve Size	Percent Passing
3"	100%
1"	90% - 100%
3/4"	70% - 100%
1/4"	40% - 100%

Mulch used within the ordinary high-water mark of surface waters should be selected to minimize potential flotation of organic matter. Composted organic materials have higher specific gravities (densities) than straw, wood, or chipped material. Consult the Hydraulic Permit Authority (HPA) for mulch mixes if applicable.

Maintenance Standards

The thickness of the mulch cover must be maintained.

Any areas that experience erosion shall be remulched and/or protected with a net or blanket. If the erosion problem is drainage related, then the problem shall be fixed and the eroded area remulched.

Table II-3.6: Mulch Standards and Guidelines

Mulch Material	Guideline	Description
Straw	Quality Standards	Air-dried; free from undesirable seed and coarse material.
	Application Rates	2"-3" thick; 5 bales per 1,000 sf or 2-3 tons per acre
	Remarks	Cost-effective protection when applied with adequate thickness. Hand-application generally requires greater thickness than blown straw. The thickness of straw may be reduced by half when used in conjunction with seeding. In windy areas straw must be held in place by crimping, using a tackifier, or covering with netting. Blown straw always has to be held in place with a tackifier as even light winds will blow it away. Straw, however, has several deficiencies that should be considered when selecting mulch materials. It often introduces and/or encourages the propagation of weed species and it has no significant long-term benefits. It should also not be used within the ordinary high-water elevation of surface waters (due to flotation).
Hydromulch	Quality Standards	No growth inhibiting factors.
	Application Rates	Approx. 35-45 lbs per 1,000 sf or 1,500 - 2,000 lbs per acre
	Remarks	Shall be applied with hydromulcher. Shall not be used without seed and tackifier unless the application rate is at least doubled. Fibers longer than about 3/4 - 1 inch clog hydromulch equipment. Fibers should be kept to less than 3/4 inch.
Compost	Quality Standards	No visible water or dust during handling. Must be produced per WAC 173-350 , Solid Waste Handling Standards, but may have up to 35% biosolids.
	Application Rates	2" thick min.; approx. 100 tons per acre (approx. 750 lbs per cubic yard)
	Remarks	More effective control can be obtained by increasing thickness to 3". Excellent mulch for protecting final grades until landscaping because it can be directly seeded or tilled into soil as an amendment. Compost used for mulch has a coarser size gradation than compost used for BMP C125: Topsoiling / Composting or BMP T5.13: Post-Construction Soil Quality and Depth . It is more stable and practical to use in wet areas and during rainy weather conditions. Do not use near wetlands or near phosphorous impaired water bodies.
Chipped Site Vegetation	Quality Standards	Gradations from fines to 6 inches in length for texture, variation, and interlocking properties. Include a mix of various sizes so that the average size is between 2- and 4- inches.
	Application Rates	2" thick min.;

Table II-3.6: Mulch Standards and Guidelines (continued)

Mulch Material	Guideline	Description
	Remarks	<p>This is a cost-effective way to dispose of debris from clearing and grubbing, and it eliminates the problems associated with burning. Generally, it should not be used on slopes above approx. 10% because of its tendency to be transported by runoff. It is not recommended within 200 feet of surface waters. If permanent seeding or planting is expected shortly after mulch, the decomposition of the chipped vegetation may tie up nutrients important to grass establishment.</p> <p>Note: thick application of this material over existing grass, herbaceous species, and some groundcovers could smother and kill vegetation.</p>
Wood-Based Mulch	Quality Standards	No visible water or dust during handling. Must be purchased from a supplier with a Solid Waste Handling Permit or one exempt from solid waste regulations.
	Application Rates	2" thick min.; approx. 100 tons per acre (approx. 750 lbs. per cubic yard)
	Remarks	This material is often called "wood straw" or "hog fuel". The use of mulch ultimately improves the organic matter in the soil. Special caution is advised regarding the source and composition of wood-based mulches. Its preparation typically does not provide any weed seed control, so evidence of residual vegetation in its composition or known inclusion of weed plants or seeds should be monitored and prevented (or minimized).
Wood Strand Mulch	Quality Standards	A blend of loose, long, thin wood pieces derived from native conifer or deciduous trees with high length-to-width ratio.
	Application Rates	2" thick min.
	Remarks	Cost-effective protection when applied with adequate thickness. A minimum of 95-percent of the wood strand shall have lengths between 2 and 10-inches, with a width and thickness between 1/16 and 1/2-inches. The mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust or wood shavings shall not be used as mulch. [Specification 9-14.4(4) from the <i>Standard Specifications for Road, Bridge, and Municipal Construction</i> (WSDOT, 2016)

BMP C123: Plastic Covering

Purpose

Plastic covering provides immediate, short-term erosion protection to slopes and disturbed areas.

Conditions of Use

Plastic covering may be used on disturbed areas that require cover measures for less than 30 days, except as stated below.

- Plastic is particularly useful for protecting cut and fill slopes and stockpiles. However, the relatively rapid breakdown of most polyethylene sheeting makes it unsuitable for applications greater than six months.
- Due to rapid runoff caused by plastic covering, do not use this method upslope of areas that might be adversely impacted by concentrated runoff. Such areas include steep and/or unstable slopes.
- Plastic sheeting may result in increased runoff volumes and velocities, requiring additional on-site measures to counteract the increases. Creating a trough with wattles or other material can convey clean water away from these areas.
- To prevent undercutting, trench and backfill rolled plastic covering products.
- Although the plastic material is inexpensive to purchase, the cost of installation, maintenance, removal, and disposal add to the total costs of this BMP.
- Whenever plastic is used to protect slopes, install water collection measures at the base of the slope. These measures include plastic-covered berms, channels, and pipes used to convey clean rainwater away from bare soil and disturbed areas. Do not mix clean runoff from a plastic covered slope with dirty runoff from a project.
- Other uses for plastic include:
 - Temporary ditch liner.
 - Pond liner in temporary sediment pond.
 - Liner for bermed temporary fuel storage area if plastic is not reactive to the type of fuel being stored.
 - Emergency slope protection during heavy rains.
 - Temporary drainpipe (“elephant trunk”) used to direct water.

Design and Installation Specifications

- Plastic slope cover must be installed as follows:
 1. Run plastic up and down the slope, not across the slope.
 2. Plastic may be installed perpendicular to a slope if the slope length is less than 10 feet.

3. Provide a minimum of 8-inch overlap at the seams.
 4. On long or wide slopes, or slopes subject to wind, tape all seams.
 5. Place plastic into a small (12-inch wide by 6-inch deep) slot trench at the top of the slope and backfill with soil to keep water from flowing underneath.
 6. Place sand filled burlap or geotextile bags every 3 to 6 feet along seams and tie them together with twine to hold them in place.
 7. Inspect plastic for rips, tears, and open seams regularly and repair immediately. This prevents high velocity runoff from contacting bare soil, which causes extreme erosion.
 8. Sandbags may be lowered into place tied to ropes. However, all sandbags must be staked in place.
- Plastic sheeting shall have a minimum thickness of 0.06 millimeters.
 - If erosion at the toe of a slope is likely, a gravel berm, riprap, or other suitable protection shall be installed at the toe of the slope in order to reduce the velocity of runoff.

Maintenance Standards

- Torn sheets must be replaced and open seams repaired.
- Completely remove and replace the plastic if it begins to deteriorate due to ultraviolet radiation.
- Completely remove plastic when no longer needed.
- Dispose of old tires used to weight down plastic sheeting appropriately.

Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

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BMP C150: Materials on Hand

Purpose

Keep quantities of erosion prevention and sediment control materials on the project site at all times to be used for regular maintenance and emergency situations such as unexpected heavy rains. Having these materials on-site reduces the time needed to replace existing or implement new BMPs when inspections indicate that existing BMPs are not meeting the Construction SWPPP requirements. In addition, contractors can save money by buying some materials in bulk and storing them at their office or yard.

Conditions of Use

- Construction projects of any size or type can benefit from having materials on hand. A small commercial development project could have a roll of plastic and some gravel available for immediate protection of bare soil and temporary berm construction. A large earthwork project, such as highway construction, might have several tons of straw, several rolls of plastic, flexible

pipe, sandbags, geotextile fabric and steel “T” posts.

- Materials should be stockpiled and readily available before any site clearing, grubbing, or earthwork begins. A large contractor or project proponent could keep a stockpile of materials that are available for use on several projects.
- If storage space at the project site is at a premium, the contractor could maintain the materials at their office or yard. The office or yard must be less than an hour from the project site.

Design and Installation Specifications

Depending on project type, size, complexity, and length, materials and quantities will vary. A good minimum list of items that will cover numerous situations includes:

- Clear Plastic, 6 mil
- Drainpipe, 6 or 8 inch diameter
- Sandbags, filled
- Straw Bales for mulching
- Quarry Spalls
- Washed Gravel
- Geotextile Fabric
- Catch Basin Inserts
- Steel "T" Posts
- Silt fence material
- Straw Wattles

Maintenance Standards

- All materials with the exception of the quarry spalls, steel “T” posts, and gravel should be kept covered and out of both sun and rain.
- Re-stock materials as needed.

BMP C151: Concrete Handling

Purpose

Concrete work can generate process water and slurry that contain fine particles and high pH, both of which can violate water quality standards in the receiving water. Concrete spillage or concrete discharge to waters of the State is prohibited. Use this BMP to minimize and eliminate concrete, concrete process water, and concrete slurry from entering waters of the State.

Conditions of Use

Any time concrete is used, utilize these management practices. Concrete construction project components include, but are not limited to:

- Curbs
- Sidewalks
- Roads
- Bridges
- Foundations
- Floors
- Runways

Disposal options for concrete, in order of preference are:

1. Off-site disposal
2. Concrete wash-out areas (see [BMP C154: Concrete Washout Area](#))
3. De minimus washout to formed areas awaiting concrete

Design and Installation Specifications

- Wash concrete truck drums at an approved off-site location or in designated concrete washout areas only. Do not wash out concrete trucks onto the ground (including formed areas awaiting concrete), or into storm drains, open ditches, streets, or streams. Refer to [BMP C154: Concrete Washout Area](#) for information on concrete washout areas.
 - Return unused concrete remaining in the truck and pump to the originating batch plant for recycling. Do not dump excess concrete on site, except in designated concrete washout areas as allowed in [BMP C154: Concrete Washout Area](#).
- Wash small concrete handling equipment (e.g. hand tools, screeds, shovels, rakes, floats, trowels, and wheelbarrows) into designated concrete washout areas or into formed areas awaiting concrete pour.
- At no time shall concrete be washed off into the footprint of an area where an infiltration feature will be installed.
- Wash equipment difficult to move, such as concrete paving machines, in areas that do not directly drain to natural or constructed stormwater conveyance or potential infiltration areas.
- Do not allow washwater from areas, such as concrete aggregate driveways, to drain directly (without detention or treatment) to natural or constructed stormwater conveyances.
- Contain washwater and leftover product in a lined container when no designated concrete washout areas (or formed areas, allowed as described above) are available. Dispose of contained concrete and concrete washwater (process water) properly.

- Always use forms or solid barriers for concrete pours, such as pilings, within 15-feet of surface waters.
- Refer to [BMP C252: Treating and Disposing of High pH Water](#) for pH adjustment requirements.
- Refer to the Construction Stormwater General Permit (CSWGP) for pH monitoring requirements if the project involves one of the following activities:
 - Significant concrete work (as defined in the CSWGP).
 - The use of soils amended with (but not limited to) Portland cement-treated base, cement kiln dust or fly ash.
 - Discharging stormwater to segments of water bodies on the 303(d) list (Category 5) for high pH.

Maintenance Standards

Check containers for holes in the liner daily during concrete pours and repair the same day.

BMP C160: Certified Erosion and Sediment Control Lead

Purpose

The project proponent designates at least one person as the responsible representative in charge of erosion and sediment control (ESC), and water quality protection. The designated person shall be responsible for ensuring compliance with all local, state, and federal erosion and sediment control and water quality requirements. Construction sites one acre or larger that discharge to waters of the State must designate a Certified Erosion and Sediment Control Lead (CESCL) as the responsible representative.

Conditions of Use

A CESCL shall be made available on projects one acre or larger that discharge stormwater to surface waters of the state. Sites less than one acre may have a person without CESCL certification conduct inspections.

The CESCL shall:

- Have a current certificate proving attendance in an erosion and sediment control training course that meets the minimum ESC training and certification requirements established by Ecology.

Ecology has provided the minimum requirements for CESCL course training, as well as a list of ESC training and certification providers at:

<https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Certified-erosion-sediment-control>

OR

- Be a Certified Professional in Erosion and Sediment Control (CPESC). For additional information go to:

<http://www.envirocertintl.org/cpesc/>

Specifications

- CESCL certification shall remain valid for three years.
- The CESCL shall have authority to act on behalf of the contractor or project proponent and shall be available, or on-call, 24 hours per day throughout the period of construction.
- The Construction SWPPP shall include the name, telephone number, fax number, and address of the designated CESCL. See [II-2 Construction Stormwater Pollution Prevention Plans \(Construction SWPPPs\)](#).
- A CESCL may provide inspection and compliance services for multiple construction projects in the same geographic region, but must be on site whenever earthwork activities are

occurring that could generate release of turbid water.

- Duties and responsibilities of the CESCL shall include, but are not limited to the following:
 - Maintaining a permit file on site at all times which includes the Construction SWPPP and any associated permits and plans.
 - Directing BMP installation, inspection, maintenance, modification, and removal.
 - Updating all project drawings and the Construction SWPPP with changes made.
 - Completing any sampling requirements including reporting results using electronic Discharge Monitoring Reports (WebDMR).
 - Facilitate, participate in, and take corrective actions resulting from inspections performed by outside agencies or the owner.
 - Keeping daily logs, and inspection reports. Inspection reports should include:
 - Inspection date/time.
 - Weather information; general conditions during inspection and approximate amount of precipitation since the last inspection.
 - Visual monitoring results, including a description of discharged stormwater. The presence of suspended sediment, turbid water, discoloration, and oil sheen shall be noted, as applicable.
 - Any water quality monitoring performed during inspection.
 - General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.
 - A summary or list of all BMPs implemented, including observations of all erosion/sediment control structures or practices. The following shall be noted:
 1. Locations of BMPs inspected.
 2. Locations of BMPs that need maintenance.
 3. Locations of BMPs that failed to operate as designed or intended.
 4. Locations of where additional or different BMPs are required.

II-3.3 Construction Runoff BMPs

BMP C200: Interceptor Dike and Swale

Purpose

Provide a dike of compacted soil or a swale at the top or base of a disturbed slope or along the perimeter of a disturbed construction area to convey stormwater. Use the dike and/or swale to intercept the runoff from unprotected areas and direct it to areas where erosion can be controlled. This can prevent storm runoff from entering the work area or sediment-laden runoff from leaving the construction site.

Conditions of Use

Use an interceptor dike or swale where runoff from an exposed site or disturbed slope must be conveyed to an erosion control BMP which can safely convey the stormwater.

- Locate upslope of a construction site to prevent runoff from entering the disturbed area.
- When placed horizontally across a disturbed slope, it reduces the amount and velocity of runoff flowing down the slope.
- Locate downslope to collect runoff from a disturbed area and direct it to a sediment BMP (e.g. [BMP C240: Sediment Trap](#) or [BMP C241: Sediment Pond \(Temporary\)](#)).

Design and Installation Specifications

- Dike and/or swale and channel must be stabilized with temporary or permanent vegetation or other channel protection during construction.
 - Steep grades require channel protection and check dams.
 - Review construction for areas where overtopping may occur.
 - Can be used at the top of new fill before vegetation is established.
 - May be used as a permanent diversion channel to carry the runoff.
 - Contributing area for an individual dike or swale should be one acre or less.
 - Design the dike and/or swale to contain flows calculated by one of the following methods:
 - Single Event Hydrograph Method: The peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm for the worst-case land cover condition.
- OR
- Continuous Simulation Method: The 10-year peak flow rate, as determined by an approved continuous runoff model with a 15-minute time step for the worst-case land cover condition.

Worst-case land cover conditions (i.e., producing the most runoff) should be used for analysis (in most cases, this would be the land cover conditions just prior to final landscaping).

Interceptor Dikes

Interceptor dikes shall meet the following criteria:

- Top Width: 2 feet minimum.
- Height: 1.5 feet minimum on berm.
- Side Slope: 2H:1V or flatter.
- Grade: Depends on topography, however, dike system minimum is 0.5%, and maximum is 1%.
- Compaction: Minimum of 90 percent ASTM D698 standard proctor.
- Stabilization: Depends on velocity and reach. Inspect regularly to ensure stability.
- Ground Slopes <5%: Seed and mulch applied within 5 days of dike construction (see [BMP C121: Mulching](#)).
- Ground Slopes 5 - 40%: Dependent on runoff velocities and dike materials. Stabilization should be done immediately using either sod or riprap, or other measures to avoid erosion.
- The upslope side of the dike shall provide positive drainage to the dike outlet. No erosion shall

occur at the outlet. Provide energy dissipation measures as necessary. Sediment-laden runoff must be released through a sediment trapping facility.

- Minimize construction traffic over temporary dikes. Use temporary cross culverts for channel crossing.
- See [Table II-3.8: Horizontal Spacing of Interceptor Dikes Along Ground Slope](#) for recommended horizontal spacing between dikes.

Table II-3.8: Horizontal Spacing of Interceptor Dikes Along Ground Slope

Average Slope	Slope Percent	Flowpath Length
20H:1V or less	3-5%	300 feet
(10 to 20)H:1V	5-10%	200 feet
(4 to 10)H:1V	10-25%	100 feet
(2 to 4)H:1V	25-50%	50 feet

Interceptor Swales

Interceptor swales shall meet the following criteria:

- Bottom Width: 2 feet minimum; the cross-section bottom shall be level.
- Depth: 1-foot minimum.
- Side Slope: 2H:1V or flatter.
- Grade: Maximum 5 percent, with positive drainage to a suitable outlet (such as [BMP C241: Sediment Pond \(Temporary\)](#)).
- Stabilization: Seed as per [BMP C120: Temporary and Permanent Seeding](#), or [BMP C202: Riprap Channel Lining](#), 12 inches thick riprap pressed into the bank and extending at least 8 inches vertical from the bottom.

Maintenance Standards

- Inspect diversion dikes and interceptor swales once a week and after every rainfall. Immediately remove sediment from the flow area.
- Damage caused by construction traffic or other activity must be repaired before the end of each working day.
- Check outlets and make timely repairs as needed to avoid gully formation. When the area below the temporary diversion dike is permanently stabilized, remove the dike and fill and stabilize the channel to blend with the natural surface.

BMP C207: Check Dams

Purpose

Construction of check dams across a swale or ditch reduces the velocity of concentrated flow and dissipates energy at the check dam.

Conditions of Use

Use check dams where temporary or permanent channels are not yet vegetated, channel lining is infeasible, and/or velocity checks are required.

- Check dams may not be placed in streams unless approved by the State Department of Fish and Wildlife.
- Check dams may not be placed in wetlands without approval from a permitting agency.
- Do not place check dams below the expected backwater from any salmonid bearing water between October 1 and May 31 to ensure that there is no loss of high flow refuge habitat for overwintering juvenile salmonids and emergent salmonid fry.

Design and Installation Specifications

- Construct rock check dams from appropriately sized rock. The rock used must be large enough to stay in place given the expected design flow through the channel. The rock must be placed by hand or by mechanical means (do not dump the rock to form the dam) to achieve complete coverage of the ditch or swale and to ensure that the center of the dam is lower than the edges.
- Check dams may also be constructed of either rock or pea-gravel filled bags. Numerous new products are also available for this purpose. They tend to be re-usable, quick and easy to install, effective, and cost efficient.
- Place check dams perpendicular to the flow of water.
- The check dam should form a triangle when viewed from the side. This prevents undercutting as water flows over the face of the check dam rather than falling directly onto the ditch bottom.
- Before installing check dams, impound and bypass upstream water flow away from the work area. Options for bypassing include pumps, siphons, or temporary channels.
- Check dams combined with sumps work more effectively at slowing flow and retaining sediment than a check dam alone. A deep sump should be provided immediately upstream of the check dam.
- In some cases, if carefully located and designed, check dams can remain as permanent installations with very minor regrading. They may be left as either spillways, in which case accumulated sediment would be graded and seeded, or as check dams to prevent further sediment from leaving the site.
- The maximum spacing between check dams shall be such that the downstream toe of the

upstream dam is at the same elevation as the top of the downstream dam.

- Keep the maximum height at 2 feet at the center of the check dam.
- Keep the center of the check dam at least 12 inches lower than the outer edges at natural ground elevation.
- Keep the side slopes of the check dam at 2H:1V or flatter.
- Key the stone into the ditch banks and extend it beyond the abutments a minimum of 18 inches to avoid washouts from overflow around the dam.
- Use filter fabric foundation under a rock or sand bag check dam. If a blanket ditch liner is used, filter fabric is not necessary. A piece of organic or synthetic blanket cut to fit will also work for this purpose.
- In the case of grass-lined ditches and swales, all check dams and accumulated sediment shall be removed when the grass has matured sufficiently to protect the ditch or swale - unless the slope of the swale is greater than 4 percent. The area beneath the check dams shall be seeded and mulched immediately after dam removal.
- Ensure that channel appurtenances, such as culvert entrances below check dams, are not subject to damage or blockage from displaced stones.
- See [Figure II-3.16: Rock Check Dam](#).

Maintenance Standards

Check dams shall be monitored for performance and sediment accumulation during and after each rainfall that produces runoff. Sediment shall be removed when it reaches one half the sump depth.

- Anticipate submergence and deposition above the check dam and erosion from high flows around the edges of the dam.
- If significant erosion occurs between dams, install a protective riprap liner in that portion of the channel. See [BMP C202: Riprap Channel Lining](#).

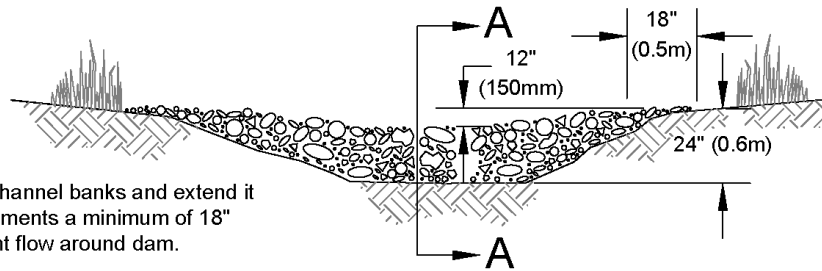
Approved as Functionally Equivalent

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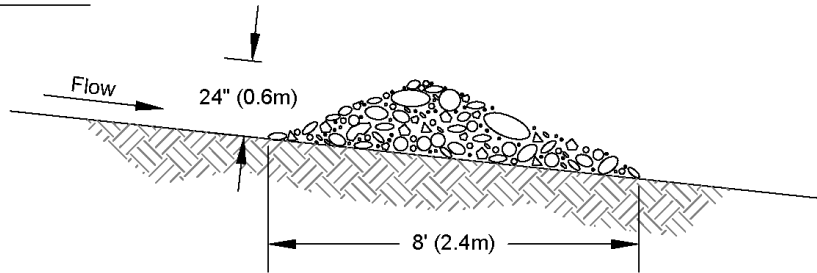
Figure II-3.16: Rock Check Dam

View Looking Upstream

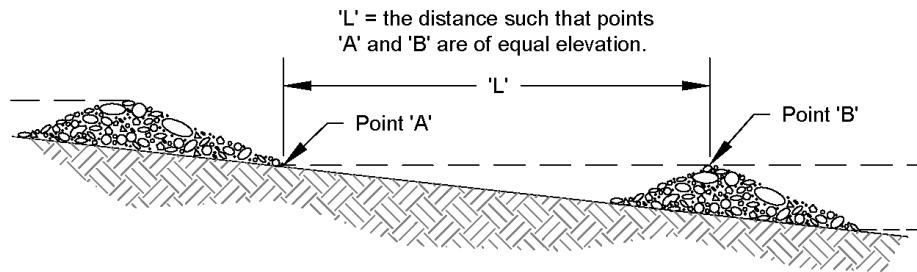


Note:
Key stone into channel banks and extend it beyond the abutments a minimum of 18" (0.5m) to prevent flow around dam.

Section A-A



Spacing Between Check Dams



NOT TO SCALE



Rock Check Dam

Revised June 2016

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BMP C220: Inlet Protection

Purpose

Inlet protection prevents coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area.

Conditions of Use

Use inlet protection at inlets that are operational before permanent stabilization of the disturbed areas that contribute runoff to the inlet. Provide protection for all storm drain inlets downslope and within 500 feet of a disturbed or construction area, unless those inlets are preceded by a sediment trapping BMP.

Also consider inlet protection for lawn and yard drains on new home construction. These small and numerous drains coupled with lack of gutters can add significant amounts of sediment into the roof drain system. If possible, delay installing lawn and yard drains until just before landscaping, or cap these drains to prevent sediment from entering the system until completion of landscaping. Provide 18-inches of sod around each finished lawn and yard drain.

[Table II-3.10: Storm Drain Inlet Protection](#) lists several options for inlet protection. All of the methods for inlet protection tend to plug and require a high frequency of maintenance. Limit contributing drainage areas for an individual inlet to one acre or less. If possible, provide emergency overflows with additional end-of-pipe treatment where stormwater ponding would cause a hazard.

Table II-3.10: Storm Drain Inlet Protection

Type of Inlet Protection	Emergency Overflow	Applicable for Paved/ Earthen Surfaces	Conditions of Use
Drop Inlet Protection			
Excavated drop inlet protection	Yes, temporary flooding may occur	Earthen	Applicable for heavy flows. Easy to maintain. Large area requirement: 30'x30'/acre
Block and gravel drop inlet protection	Yes	Paved or Earthen	Applicable for heavy concentrated flows. Will not pond.
Gravel and wire drop inlet protection	No	Paved or Earthen	Applicable for heavy concentrated flows. Will pond. Can withstand traffic.
Catch basin filters	Yes	Paved or Earthen	Frequent maintenance required.
Curb Inlet Protection			
Curb inlet protection with wooden weir	Small capacity overflow	Paved	Used for sturdy, more compact installation.
Block and gravel curb inlet protection	Yes	Paved	Sturdy, but limited filtration.
Culvert Inlet Protection			
Culvert inlet sediment trap	N/A	N/A	18 month expected life.

Design and Installation Specifications

Excavated Drop Inlet Protection

Excavated drop inlet protection consists of an excavated impoundment around the storm drain inlet. Sediment settles out of the stormwater prior to entering the storm drain. Design and installation specifications for excavated drop inlet protection include:

- Provide a depth of 1-2 ft as measured from the crest of the inlet structure.
- Slope sides of excavation should be no steeper than 2H:1V.
- Minimum volume of excavation is 35 cubic yards.
- Shape the excavation to fit the site, with the longest dimension oriented toward the longest inflow area.
- Install provisions for draining to prevent standing water.
- Clear the area of all debris.

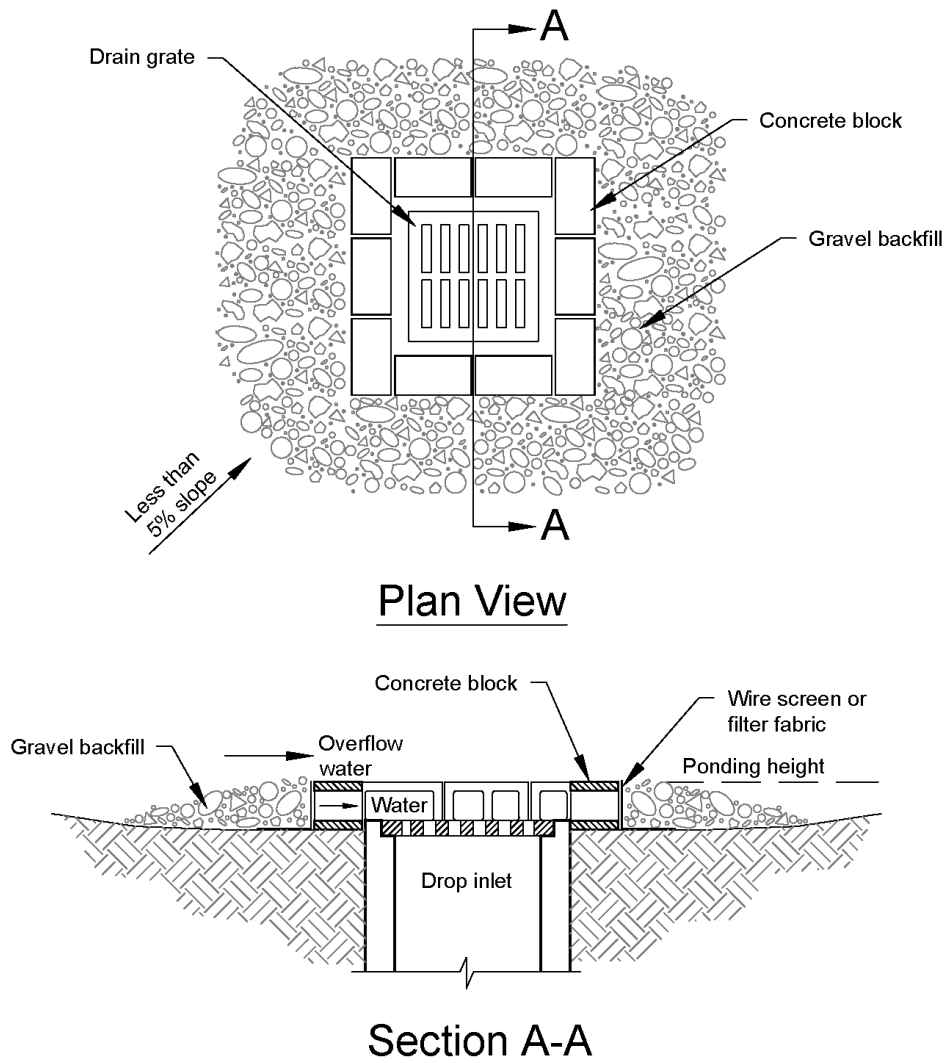
- Grade the approach to the inlet uniformly.
- Drill weep holes into the side of the inlet.
- Protect weep holes with screen wire and washed aggregate.
- Seal weep holes when removing structure and stabilizing area.
- Build a temporary dike, if necessary, to the down slope side of the structure to prevent bypass flow.

Block and Gravel Filter

A block and gravel filter is a barrier formed around the inlet with standard concrete blocks and gravel. See [Figure II-3.17: Block and Gravel Filter](#). Design and installation specifications for block gravel filters include:

- Provide a height of 1 to 2 feet above the inlet.
- Recess the first row of blocks 2-inches into the ground for stability.
- Support subsequent courses by placing a pressure treated wood 2x4 through the block opening.
- Do not use mortar.
- Lay some blocks in the bottom row on their side to allow for dewatering the pool.
- Place hardware cloth or comparable wire mesh with ½-inch openings over all block openings.
- Place gravel to just below the top of blocks on slopes of 2H:1V or flatter.
- An alternative design is a gravel berm surrounding the inlet, as follows:
 - Provide a slope of 3H:1V on the upstream side of the berm.
 - Provide a slope of 2H:1V on the downstream side of the berm.
 - Provide a 1-foot wide level stone area between the gravel berm and the inlet.
 - Use stones 3 inches in diameter or larger on the upstream slope of the berm.
 - Use gravel ½- to ¾-inch at a minimum thickness of 1-foot on the downstream slope of the berm.

Figure II-3.17: Block and Gravel Filter



Notes:

1. Drop inlet sediment barriers are to be used for small, nearly level drainage areas. (less than 5%)
2. Excavate a basin of sufficient size adjacent to the drop inlet.
3. The top of the structure (ponding height) must be well below the ground elevation downslope to prevent runoff from bypassing the inlet. A temporary dike may be necessary on the downslope side of the structure.

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Block and Gravel Filter

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Gravel and Wire Mesh Filter

Gravel and wire mesh filters are gravel barriers placed over the top of the inlet. This method does not provide an overflow. Design and installation specifications for gravel and wire mesh filters include:

- Use a hardware cloth or comparable wire mesh with ½-inch openings.
 - Place wire mesh over the drop inlet so that the wire extends a minimum of 1-foot beyond each side of the inlet structure.
 - Overlap the strips if more than one strip of mesh is necessary.
- Place coarse aggregate over the wire mesh.
 - Provide at least a 12-inch depth of aggregate over the entire inlet opening and extend at least 18-inches on all sides.

Catch Basin Filters

Catch basin filters are designed by manufacturers for construction sites. The limited sediment storage capacity increases the amount of inspection and maintenance required, which may be daily for heavy sediment loads. To reduce maintenance requirements, combine a catch basin filter with another type of inlet protection. This type of inlet protection provides flow bypass without overflow and therefore may be a better method for inlets located along active rights-of-way. Design and installation specifications for catch basin filters include:

- Provides 5 cubic feet of storage.
- Requires dewatering provisions.
- Provides a high-flow bypass that will not clog under normal use at a construction site.
- Insert the catch basin filter in the catch basin just below the grating.

Curb Inlet Protection with Wooden Weir

Curb inlet protection with wooden weir is an option that consists of a barrier formed around a curb inlet with a wooden frame and gravel. Design and installation specifications for curb inlet protection with wooden weirs include:

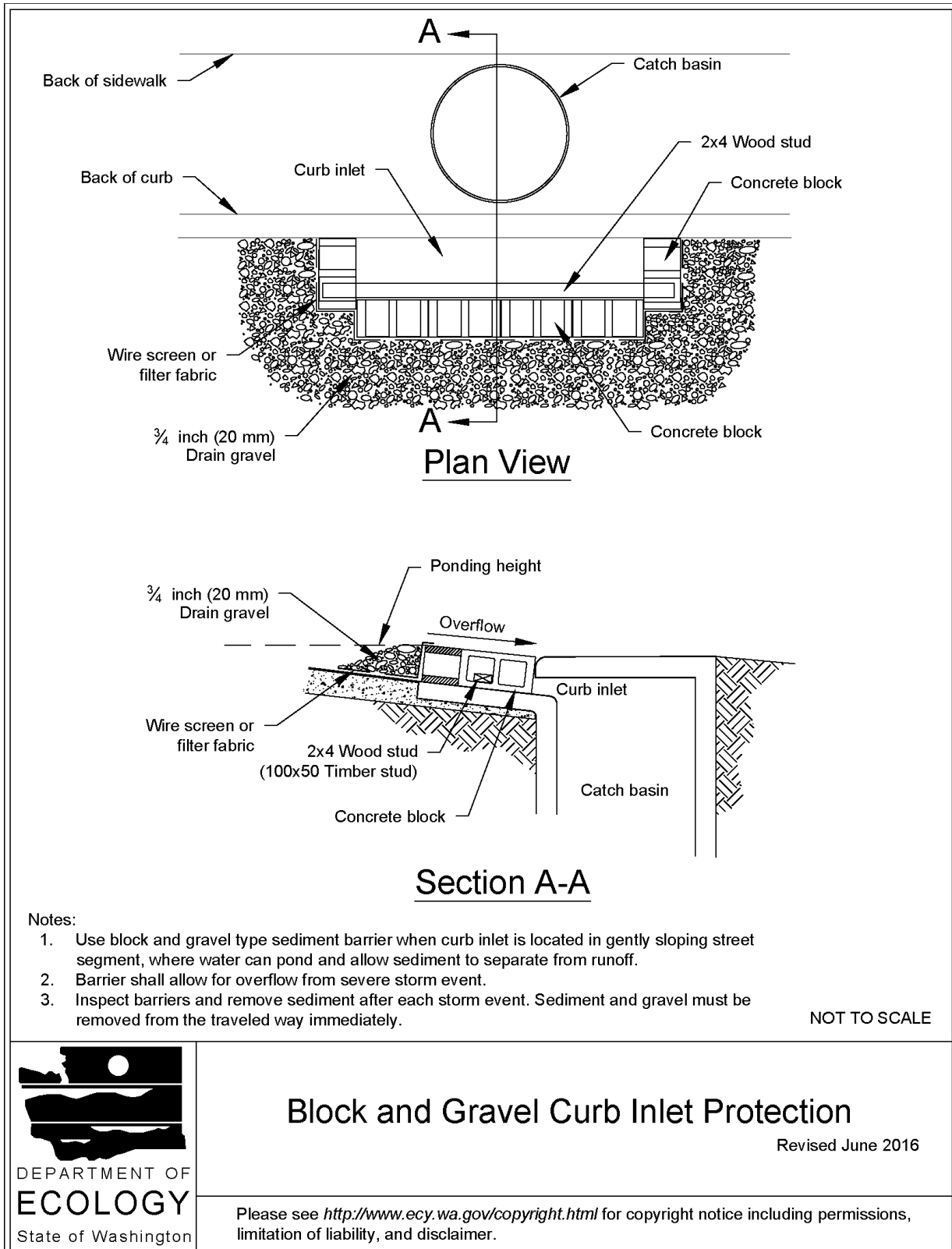
- Use wire mesh with ½-inch openings.
- Use extra strength filter cloth.
- Construct a frame.
- Attach the wire and filter fabric to the frame.
- Pile coarse washed aggregate against the wire and fabric.
- Place weight on the frame anchors.

Block and Gravel Curb Inlet Protection

Block and gravel curb inlet protection is a barrier formed around a curb inlet with concrete blocks and gravel. See [Figure II-3.18: Block and Gravel Curb Inlet Protection](#). Design and installation specifications for block and gravel curb inlet protection include:

- Use wire mesh with ½-inch openings.
- Place two concrete blocks on their sides abutting the curb at either side of the inlet opening. These are spacer blocks.
- Place a 2x4 stud through the outer holes of each spacer block to align the front blocks.
- Place blocks on their sides across the front of the inlet and abutting the spacer blocks.
- Place wire mesh over the outside vertical face.
- Pile coarse aggregate against the wire to the top of the barrier.

Figure II-3.18: Block and Gravel Curb Inlet Protection

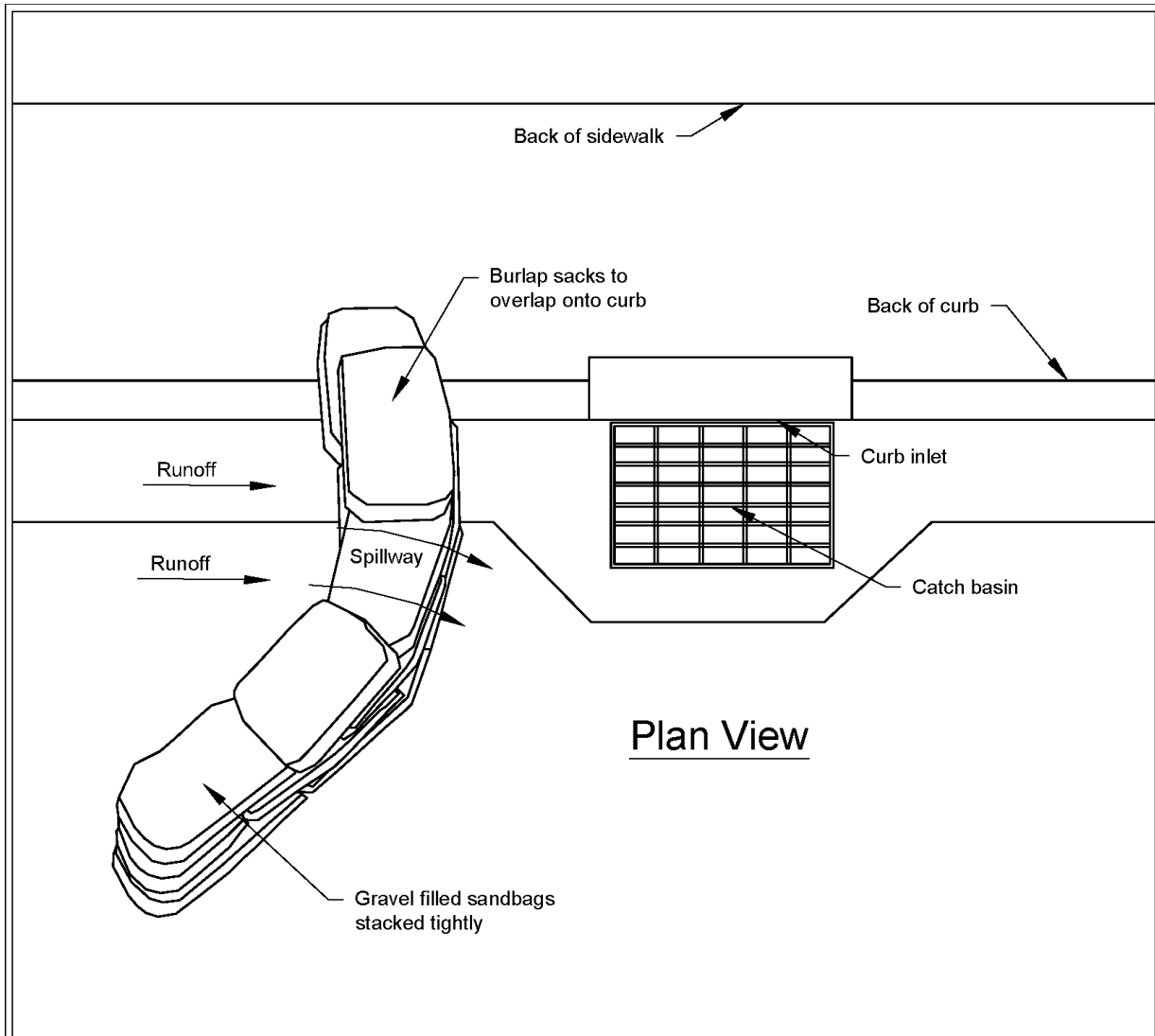


Curb and Gutter Sediment Barrier

Curb and gutter sediment barrier is a sandbag or rock berm (riprap and aggregate) 3 feet high and 3 feet wide in a horseshoe shape. See [Figure II-3.19: Curb and Gutter Barrier](#). Design and installation specifications for curb and gutter sediment barrier include:

- Construct a horseshoe shaped berm, faced with coarse aggregate if using riprap, 3 feet high and 3 feet wide, at least 2 feet from the inlet.
- Construct a horseshoe shaped sedimentation trap on the upstream side of the berm. Size the trap to sediment trap standards for protecting a culvert inlet.

Figure II-3.19: Curb and Gutter Barrier



Notes:

1. Place curb type sediment barriers on gently sloping street segments, where water can pond and allow sediment to separate from runoff.
2. Sandbags of either burlap or woven 'geotextile' fabric, are filled with gravel, layered and packed tightly.
3. Leave a one sandbag gap in the top row to provide a spillway for overflow.
4. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

NOT TO SCALE



Curb and Gutter Barrier

Revised June 2016

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Maintenance Standards

- Inspect all forms of inlet protection frequently, especially after storm events. Clean and replace clogged catch basin filters. For rock and gravel filters, pull away the rocks from the inlet and clean or replace. An alternative approach would be to use the clogged rock as fill and put fresh rock around the inlet.
- Do not wash sediment into storm drains while cleaning. Spread all excavated material evenly over the surrounding land area or stockpile and stabilize as appropriate.

Approved as Functionally Equivalent

Ecology has approved products as able to meet the requirements of this BMP. The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept these products, or may require additional testing prior to consideration for local use. Products that Ecology has approved as functionally equivalent are available for review on Ecology's website at:

<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies>

BMP C233: Silt Fence

Purpose

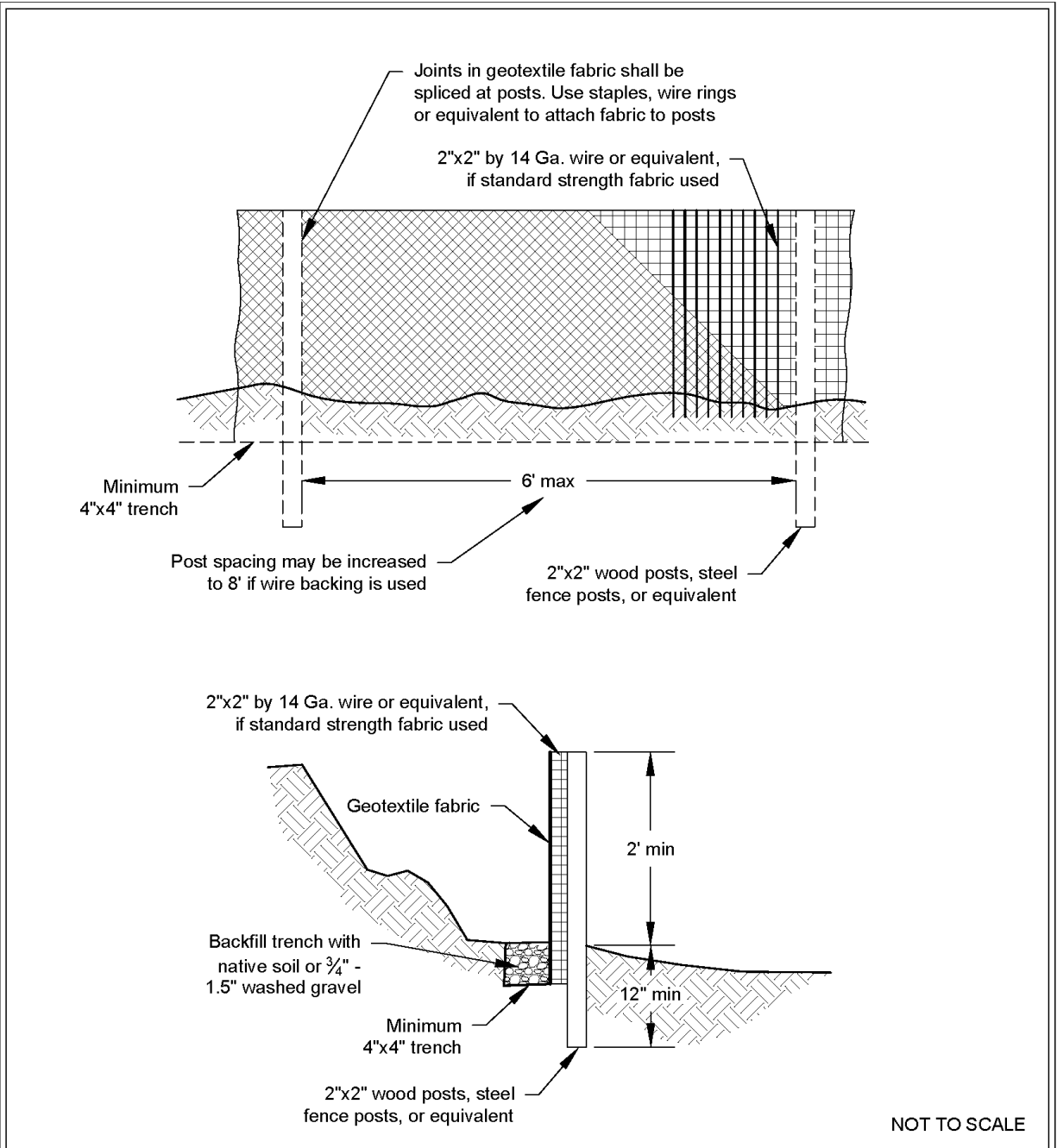
Silt fence reduces the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow.

Conditions of Use

Silt fence may be used downslope of all disturbed areas.

- Silt fence shall prevent sediment carried by runoff from going beneath, through, or over the top of the silt fence, but shall allow the water to pass through the fence.
- Silt fence is not intended to treat concentrated flows, nor is it intended to treat substantial amounts of overland flow. Convey any concentrated flows through the drainage system to a sediment trapping BMP.
- Do not construct silt fences in streams or use in V-shaped ditches. Silt fences do not provide an adequate method of silt control for anything deeper than sheet or overland flow.

Figure II-3.22: Silt Fence



Silt Fence

Revised July 2017

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Design and Installation Specifications

- Use in combination with other construction stormwater BMPs.
- Maximum slope steepness (perpendicular to the silt fence line) 1H:1V.
- Maximum sheet or overland flow path length to the silt fence of 100 feet.
- Do not allow flows greater than 0.5 cfs.
- Use geotextile fabric that meets the following standards. All geotextile properties listed below are minimum average roll values (i.e., the test result for any sampled roll in a lot shall meet or exceed the values shown in [Table II-3.11: Geotextile Fabric Standards for Silt Fence](#)):

Table II-3.11: Geotextile Fabric Standards for Silt Fence

Geotextile Property	Minimum Average Roll Value
Polymeric Mesh AOS (ASTM D4751)	0.60 mm maximum for slit film woven (#30 sieve). 0.30 mm maximum for all other geotextile types (#50 sieve). 0.15 mm minimum for all fabric types (#100 sieve).
Water Permittivity (ASTM D4491)	0.02 sec ⁻¹ minimum
Grab Tensile Strength (ASTM D4632)	180 lbs. Minimum for extra strength fabric. 100 lbs minimum for standard strength fabric.
Grab Tensile Strength (ASTM D4632)	30% maximum
Ultraviolet Resistance (ASTM D4355)	70% minimum

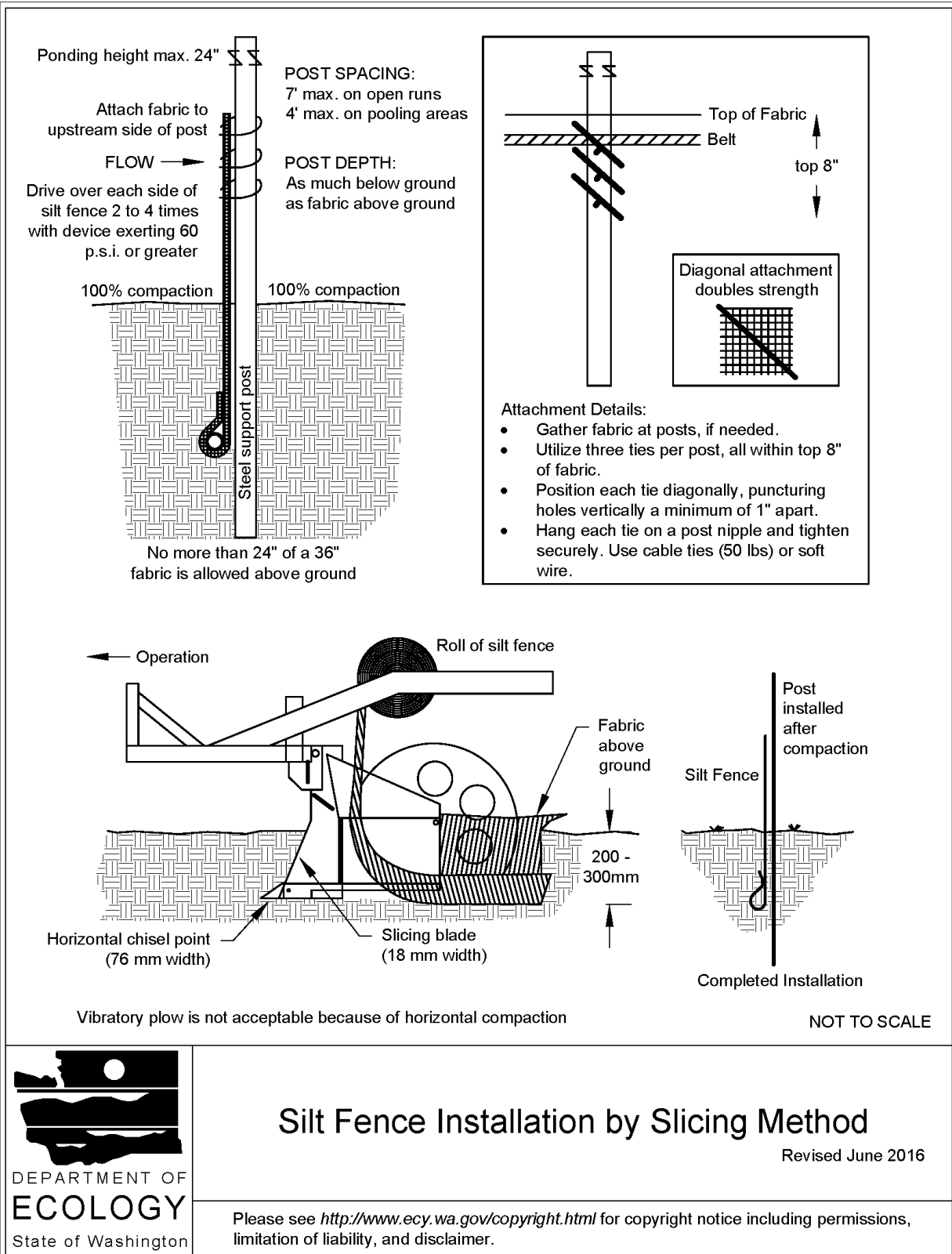
- Support standard strength geotextiles with wire mesh, chicken wire, 2-inch x 2-inch wire, safety fence, or jute mesh to increase the strength of the geotextile. Silt fence materials are available that have synthetic mesh backing attached.
- Silt fence material shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0°F to 120°F.
- One-hundred percent biodegradable silt fence is available that is strong, long lasting, and can be left in place after the project is completed, if permitted by the local jurisdiction.
- Refer to [Figure II-3.22: Silt Fence](#) for standard silt fence details. Include the following Standard Notes for silt fence on construction plans and specifications:
 1. The Contractor shall install and maintain temporary silt fences at the locations shown in the Plans.
 2. Construct silt fences in areas of clearing, grading, or drainage prior to starting those activities.

3. The silt fence shall have a 2-foot min. and a 2½-foot max. height above the original ground surface.
4. The geotextile fabric shall be sewn together at the point of manufacture to form fabric lengths as required. Locate all sewn seams at support posts. Alternatively, two sections of silt fence can be overlapped, provided that the overlap is long enough and that the adjacent silt fence sections are close enough together to prevent silt laden water from escaping through the fence at the overlap.
5. Attach the geotextile fabric on the up-slope side of the posts and secure with staples, wire, or in accordance with the manufacturer's recommendations. Attach the geotextile fabric to the posts in a manner that reduces the potential for tearing.
6. Support the geotextile fabric with wire or plastic mesh, dependent on the properties of the geotextile selected for use. If wire or plastic mesh is used, fasten the mesh securely to the up-slope side of the posts with the geotextile fabric up-slope of the mesh.
7. Mesh support, if used, shall consist of steel wire with a maximum mesh spacing of 2-inches, or a prefabricated polymeric mesh. The strength of the wire or polymeric mesh shall be equivalent to or greater than 180 lbs. grab tensile strength. The polymeric mesh must be as resistant to the same level of ultraviolet radiation as the geotextile fabric it supports.
8. Bury the bottom of the geotextile fabric 4-inches min. below the ground surface. Backfill and tamp soil in place over the buried portion of the geotextile fabric, so that no flow can pass beneath the silt fence and scouring cannot occur. When wire or polymeric back-up support mesh is used, the wire or polymeric mesh shall extend into the ground 3-inches min.
9. Drive or place the silt fence posts into the ground 18-inches min. A 12-inch min. depth is allowed if topsoil or other soft subgrade soil is not present and 18-inches cannot be reached. Increase fence post min. depths by 6 inches if the fence is located on slopes of 3H:1V or steeper and the slope is perpendicular to the fence. If required post depths cannot be obtained, the posts shall be adequately secured by bracing or guying to prevent overturning of the fence due to sediment loading.
10. Use wood, steel or equivalent posts. The spacing of the support posts shall be a maximum of 6-feet. Posts shall consist of either:
 - Wood with minimum dimensions of 2 inches by 2 inches by 3 feet. Wood shall be free of defects such as knots, splits, or gouges.
 - No. 6 steel rebar or larger.
 - ASTM A 120 steel pipe with a minimum diameter of 1-inch.
 - U, T, L, or C shape steel posts with a minimum weight of 1.35 lbs./ft.
 - Other steel posts having equivalent strength and bending resistance to the post sizes listed above.
11. Locate silt fences on contour as much as possible, except at the ends of the fence,

where the fence shall be turned uphill such that the silt fence captures the runoff water and prevents water from flowing around the end of the fence.

12. If the fence must cross contours, with the exception of the ends of the fence, place check dams perpendicular to the back of the fence to minimize concentrated flow and erosion. The slope of the fence line where contours must be crossed shall not be steeper than 3H:1V.
 - Check dams shall be approximately 1-foot deep at the back of the fence. Check dams shall be continued perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface behind the fence.
 - Check dams shall consist of crushed surfacing base course, gravel backfill for walls, or shoulder ballast. Check dams shall be located every 10 feet along the fence where the fence must cross contours.
- Refer to [Figure II-3.23: Silt Fence Installation by Slicing Method](#) for slicing method details. The following are specifications for silt fence installation using the slicing method:
 1. The base of both end posts must be at least 2- to 4-inches above the top of the geotextile fabric on the middle posts for ditch checks to drain properly. Use a hand level or string level, if necessary, to mark base points before installation.
 2. Install posts 3- to 4-feet apart in critical retention areas and 6- to 7-feet apart in standard applications.
 3. Install posts 24-inches deep on the downstream side of the silt fence, and as close as possible to the geotextile fabric, enabling posts to support the geotextile fabric from upstream water pressure.
 4. Install posts with the nipples facing away from the geotextile fabric.
 5. Attach the geotextile fabric to each post with three ties, all spaced within the top 8-inches of the fabric. Attach each tie diagonally 45 degrees through the fabric, with each puncture at least 1-inch vertically apart. Each tie should be positioned to hang on a post nipple when tightening to prevent sagging.
 6. Wrap approximately 6-inches of the geotextile fabric around the end posts and secure with 3 ties.
 7. No more than 24-inches of a 36-inch geotextile fabric is allowed above ground level.
 8. Compact the soil immediately next to the geotextile fabric with the front wheel of the tractor, skid steer, or roller exerting at least 60 pounds per square inch. Compact the upstream side first and then each side twice for a total of four trips. Check and correct the silt fence installation for any deviation before compaction. Use a flat-bladed shovel to tuck the fabric deeper into the ground if necessary.

Figure II-3.23: Silt Fence Installation by Slicing Method



Silt Fence Installation by Slicing Method

Revised June 2016

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Maintenance Standards

- Repair any damage immediately.
- Intercept and convey all evident concentrated flows uphill of the silt fence to a sediment trapping BMP.
- Check the uphill side of the silt fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. If this occurs, replace the fence and remove the trapped sediment.
- Remove sediment deposits when the deposit reaches approximately one-third the height of the silt fence, or install a second silt fence.
- Replace geotextile fabric that has deteriorated due to ultraviolet breakdown.

Appendix C - Correspondence

There are no correspondence documents at this time.

Appendix D - Site Inspection Form

Site Inspection Form

General Information

Project Name: _____

Inspector Name: _____

Date: _____

Title: _____

CESCL # : _____

Time: _____

- Inspection Type:**
- After a rain event
 - Weekly
 - Turbidity/transparency benchmark exceedance
 - Other

Weather

Precipitation

Since last inspection _____

In last 24 hours _____

Description of General Site Conditions:

Inspection of BMPs

Element 1: Mark Clearing Limits

BMP: _____

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP: _____

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 2: Establish Construction Access

BMP: _____

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP: _____

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 3: Control Flow Rates

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 4: Install Sediment Controls

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 5: Stabilize Soils

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 6: Protect Slopes

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 7: Protect Drain Inlets

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 8: Stabilize Channels and Outlets

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 9: Control Pollutants

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Element 10: Control Dewatering

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

BMP:

Location	Inspected		Functioning			Problem/Corrective Action
	Y	N	Y	N	NIP	

Stormwater Discharges From the Site

Location	Observed?		Problem/Corrective Action
	Y	N	
Turbidity			
Discoloration			
Sheen			
Turbidity			
Discoloration			
Sheen			

Appendix - Construction Stormwater General Permit (CSWGP)

The Construction Stormwater General Permit will be inserted once it has been granted approval by the Department of Ecology.









Appendix F - 303(d) List Waterbodies / TMDL Waterbodies Information

MAP









Assessed Water/Sediment

Water

-  Category 5 - 303d
-  Category 4C
-  Category 4B
-  Category 4A
-  Category 2
-  Category 1

Sediment

-  Category 5 - 303d
-  Category 4C
-  Category 4B
-  Category 4A
-  Category 2
-  Category 1



LISTING_ID	CURRENT_C CATEGORY	ASSESSMENT_UNIT_ID	WATERBOD Y_NAME	PARAMETER_NAME	MEDIUM_ NAME	TMDL_NA ME	DESIGNATED_USE	STUDY_ID	LOCATION_ID	SOURCE_DB_NAME
4818	5	17110012000228_001_002	MAY CREEK	Temperature	Water		Aquatic Life - Core Summer Salmonid Habitat	KCstrm-1; National Water Quality Assessment Program (NAWQA)	KCM-0440; USGS-12119600	EIM; Water Quality Portal
7445	5	17110012000239_001_002	MAY CREEK	Temperature	Water		Aquatic Life - Core Summer Salmonid Habitat	AJOH0028	UPPERMAY	EIM
7447	2	17110012000231_001_001	MAY CREEK	Temperature	Water		Aquatic Life - Core Summer Salmonid Habitat	SAM_PLES	RSM06600-029907	EIM
12667	2	17110012000228_001_002	MAY CREEK	Dissolved Oxygen	Water		Aquatic Life - Core Summer Salmonid Habitat	KCstrm-1	KCM-0440	EIM
13124	5	17110012000228_001_002	MAY CREEK	Bacteria - Fecal coliform	Water		Recreation - Primary Contact	KCstrm-1	KCM-0440	EIM
13546	1	17110012000228_001_002	MAY CREEK	Ammonia-N	Water		Aquatic Life - Toxic	KCstrm-1	KCM-0440	EIM
13555	2	17110012000228_001_002	MAY CREEK	Mercury	Water		Aquatic Life - Toxic	KCstrm-1	KCM-0440	EIM
70087	5	17110012000228_001_002	MAY CREEK	Benthic Macroinvertebrates Bioassessments	Other		Aquatic Life - General	Ambient Monitoring	08EAS1964	EIM
70092	2	17110012000239_001_002	MAY CREEK	Benthic Macroinvertebrates Bioassessments	Other		Aquatic Life - General	Ambient Monitoring	08EAS2631	EIM
70255	2	17110009000942_001_001	MAY CREEK	Bioassessments	Other		Aquatic Life - General	SAM_PLES	RSM06600-006123	EIM
82170	2	17110009000942_001_001	MAY CREEK	Dissolved Oxygen	Water		Aquatic Life - Core Summer Salmonid Habitat	SAM_PLES	RSM06600-006123	EIM
83035	5	17110012000228_001_002	MAY CREEK	Bacteria - Escherichia coli	Water		Recreation - Primary Contact	KCstrm-1	KCM-0440	EIM
94118	2	17110009000942_001_001	MAY CREEK	Temperature	Water		Aquatic Life - Core Summer Salmonid Habitat	SAM_PLES National Water Quality Assessment Program	RSM06600-006123	EIM
94456	2	17110012000228_002_002	MAY CREEK	Temperature	Water		Aquatic Life - Core Summer Salmonid Habitat	(NAWQA)	USGS-12119495	Water Quality Portal

Appendix G - Contaminated Site Information

There are no known contaminated soils onsite at this time.



Appendix H - Engineering Calculations



SECTION 9: BOND QUANTITIES, FACILITY SUMMARIES, AND DECLARATION OF COVENANT

Fall View

Engineer's Estimate



www.LDCcorp.com

Tel: (425) 806-1869

Project Name: Fall View

Project No.: C22-248

Description: Engineer's Estimate

Date: 12/6/2022

Calc. By: PJP

Item No.	Items	Quantity	Unit	Unit Price	Cost
TESC					
1	Clearing and Grubbing	7.45	AC	\$ 7,000.00	\$ 52,150.00
2	Sawcut	985	LF	\$ 10.00	\$ 9,850.00
3	Potholing	2	DAY	\$ 6,000.00	\$ 12,000.00
4	Silt Fence	5779	LF	\$ 6.00	\$ 34,674.00
5	Temporary Broad Site Seeding (WSDOT)	7.45	AC	\$ 4,500.00	\$ 33,525.00
6	Catch Basin Protection (WSDOT)	5	EA	\$ 125.00	\$ 625.00
7	NGPE Fence	2688.00	LF	\$ 6.00	\$ 16,128.00
8	Construction Entrance	2	EA	\$ 3,000.00	\$ 6,000.00
9	Bioinfiltrating Swale	8323	SF	\$ 20.00	\$ 166,460.00
10	12" Culvert	796	LF	\$ 28.00	\$ 22,288.00
11	Wheel Wash	1	LF	\$ 2,500.00	\$ 2,500.00
TOTAL					\$ 356,200.00
STORM					
1	Drywell	3	EA	\$ 6,000.00	\$ 18,000.00
TOTAL					\$ 18,000.00
WATER					
1	8" DI Water Main	2348	LF	\$ 100.00	\$ 234,800.00
2	6" DI Spool	83	LF	\$ 83.00	\$ 6,889.00
3	8" Gate Valve	9	EA	\$ 2,300.00	\$ 20,700.00
4	5 1/4" Fire Hydrant Assembly	3	EA	\$ 9,000.00	\$ 27,000.00
5	8"x8" Tee	2	EA	\$ 2,200.00	\$ 4,400.00
6	1" Water Meter	39	EA	\$ 1,400.00	\$ 54,600.00
7	2" Blow-Off Assembly	2	EA	\$ 4,200.00	\$ 8,400.00
8	45 degree bend W/Thrust Blocking	1	EA	\$ 800.00	\$ 800.00
9	22-1/5 degree bend W/Thrust Blocking	7	EA	\$ 800.00	\$ 5,600.00
10	11 1/4 Degree Bend W/Thrust Blocking	1	EA	\$ 800.00	\$ 800.00
11	Connect to existing DI Main	1	LS	\$ 12,500.00	\$ 12,500.00
TOTAL					\$ 376,489.00
PAVING					
1	ADA Ramp	4	EA	\$ 2,000.00	\$ 8,000.00
2	3" HMA	1279	TON	\$ 155.00	\$ 198,181.85
3	6" CSTB	2557	TON	\$ 48.00	\$ 122,744.89
4	3" CSBC	1154	TON	\$ 45.00	\$ 51,923.33
5	Concrete Curb and Gutter	4166	LF	\$ 18.00	\$ 74,988.00
6	4" Concrete Sidewalk	463	SY	\$ 22.00	\$ 10,183.56
TOTAL					\$ 466,021.63
OTHER					
1	Mailboxes	3	LS	\$ 1,000.00	\$ 3,000.00
TOTAL					\$ 3,000.00
PROJECT TOTAL					\$ 1,219,710.63

SECTION 10: OTHER PERMITS