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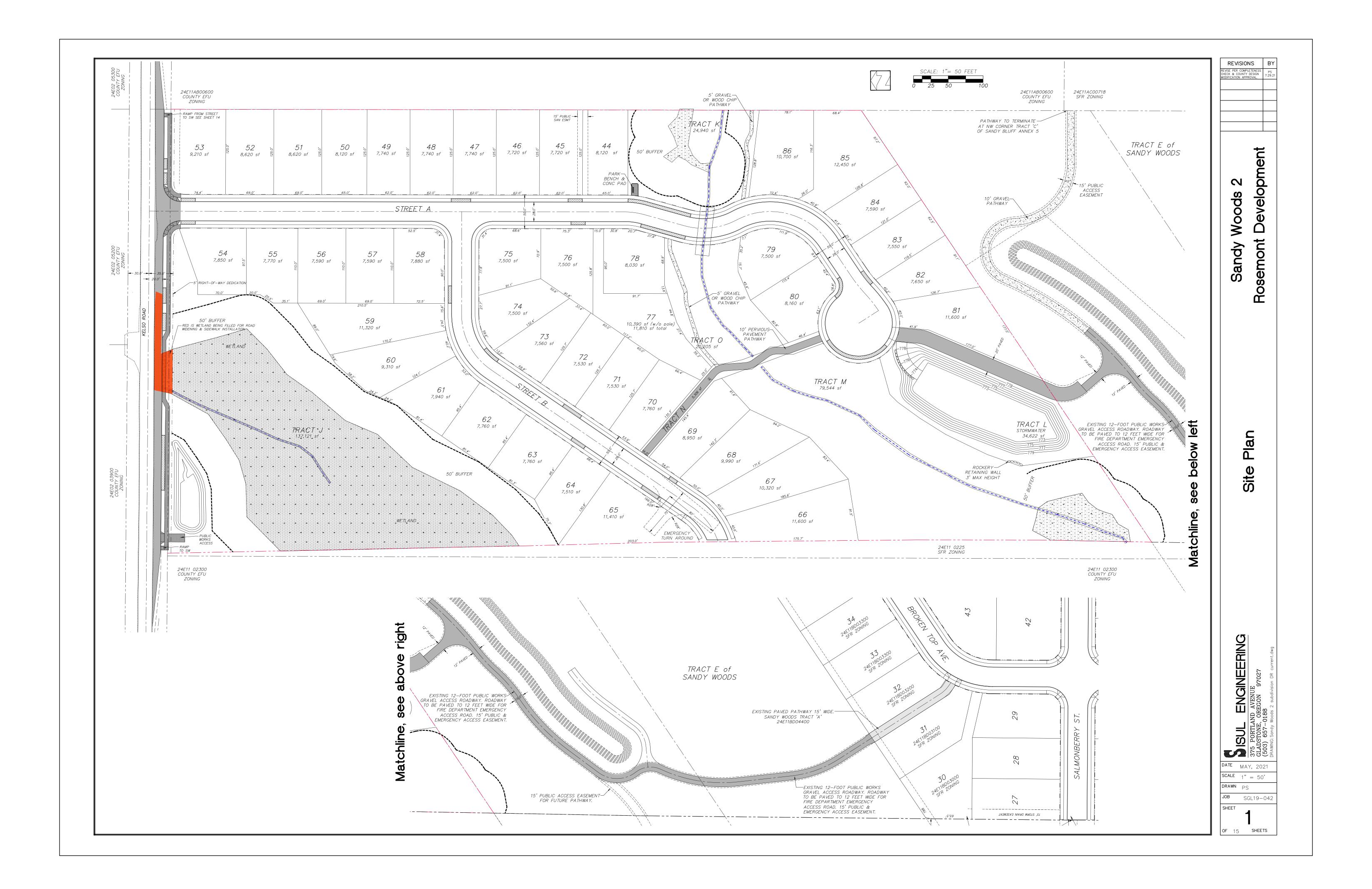
Γ	DESCRIPTION
	COVER SITE PLAN SITE PLAN WITH EXISTING CONDITI TREE RETENTION TREE LIST OFFSITE SANITAR ONSITE SANITAR STORM DRAIN PL DRIVEWAY & STR RESIDENTIAL PAR FUTURE STREET GRADING & ESC RETAINING WALLS KELSO ROAD PLA

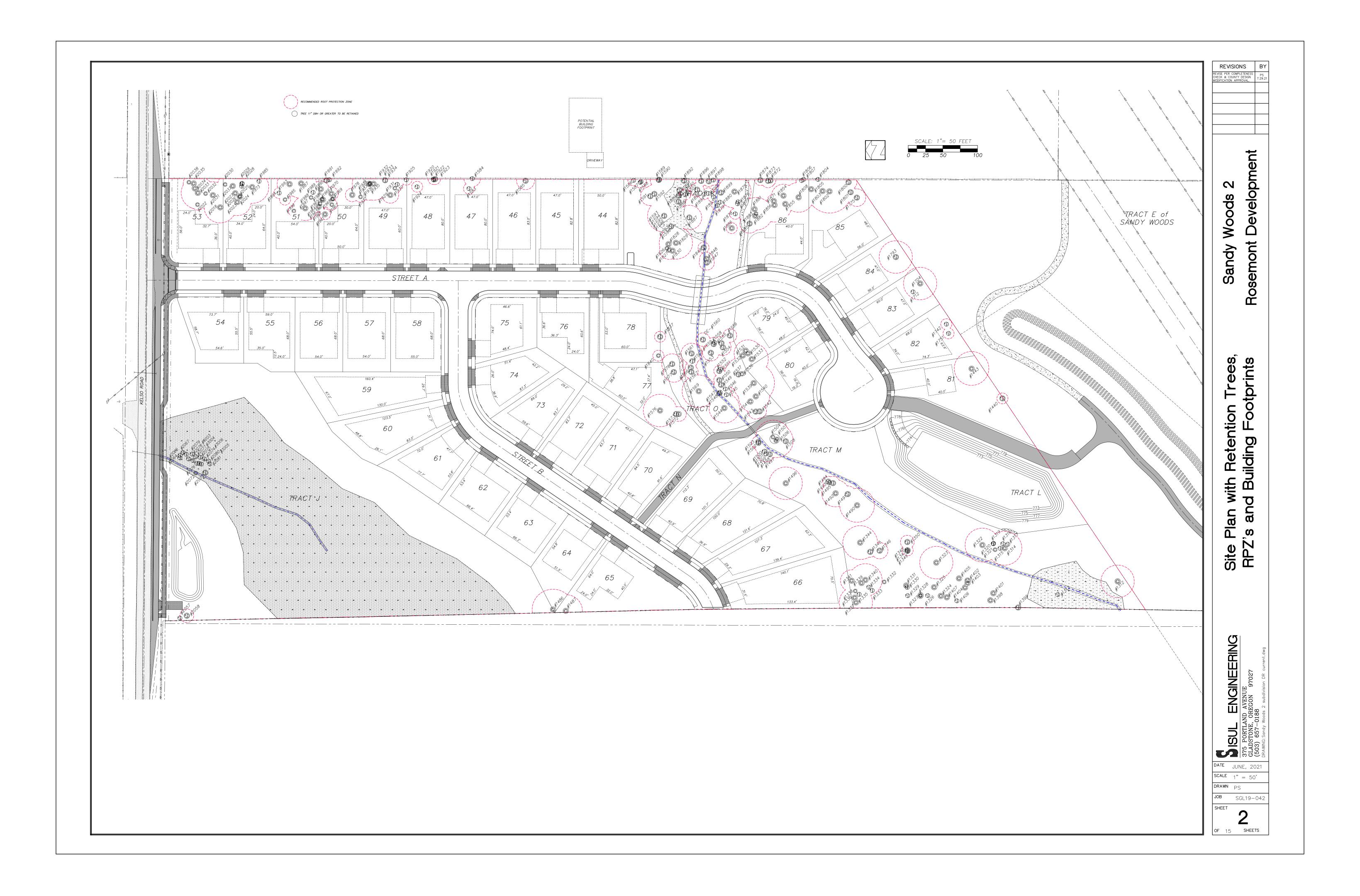
TREES TIONS PLAN / REMOVAL PLAN

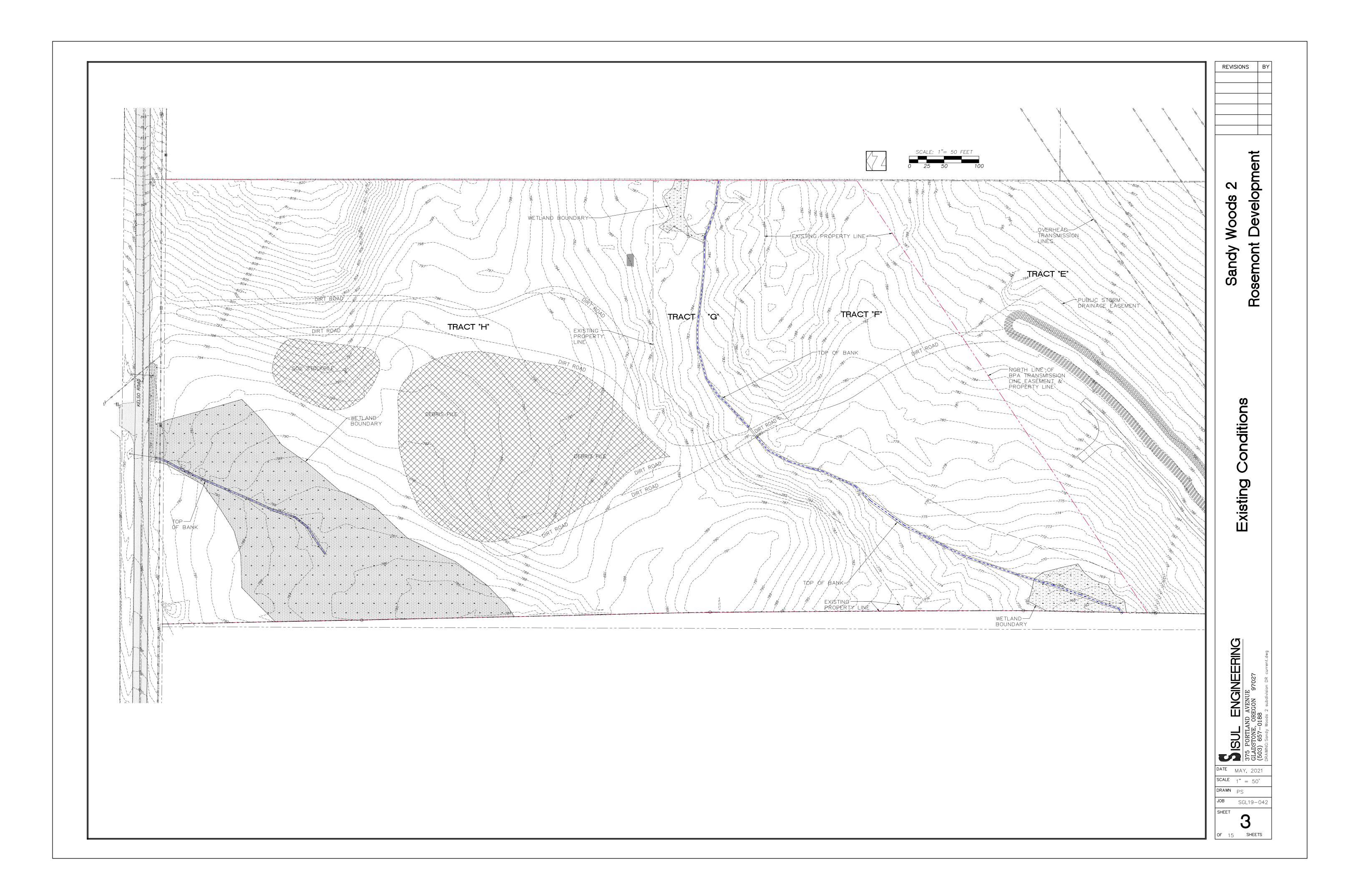
RY SEWER PLAN RY & WATERLINE PLAN _AN REET LIGHTING PLAN RKING ANALYSIS PLAN PLAN

AN & PROFILE PROFILES

MOST RECENT REVISION TO THIS SET OF PLANS: 7/29/2021





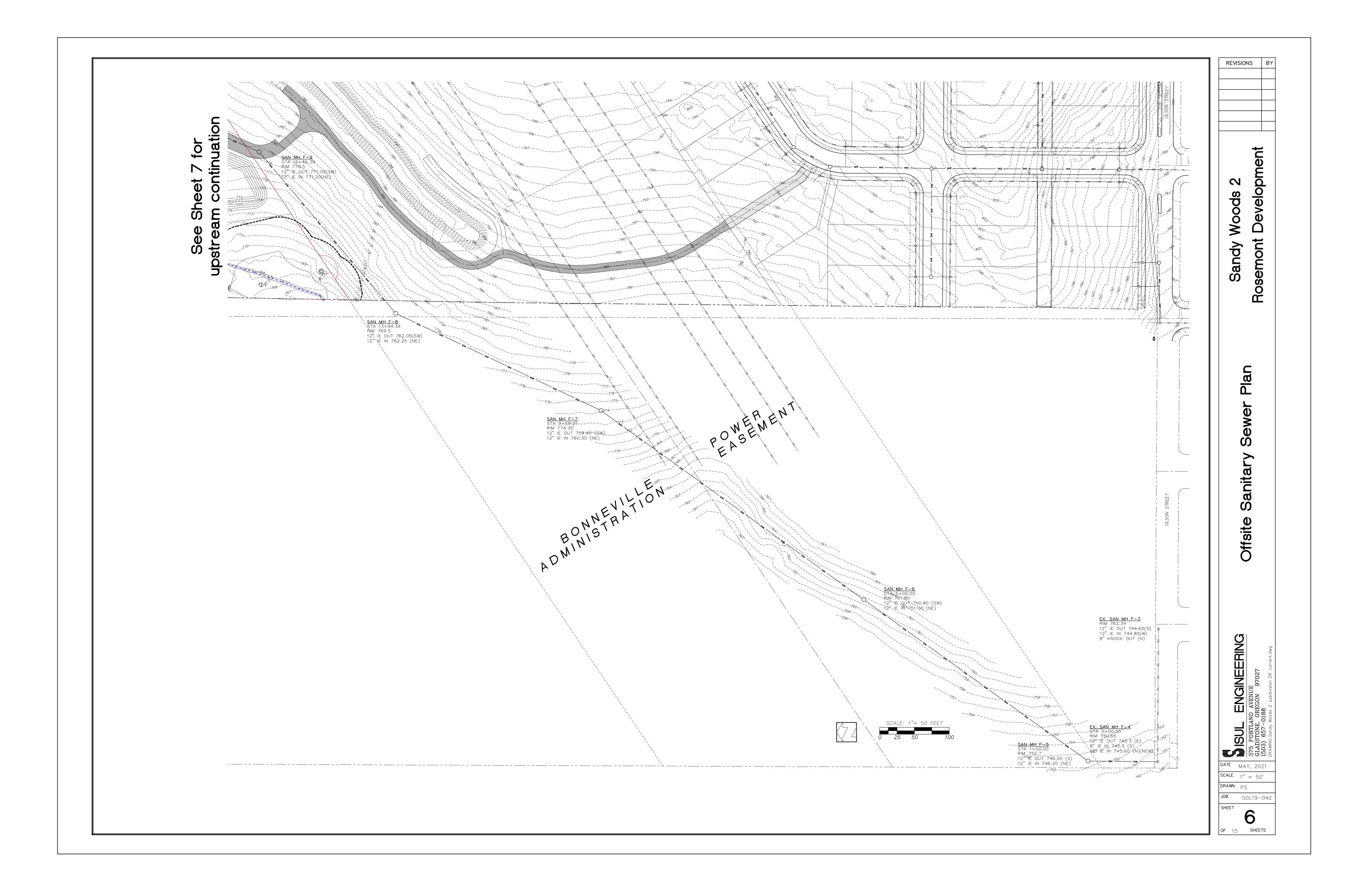


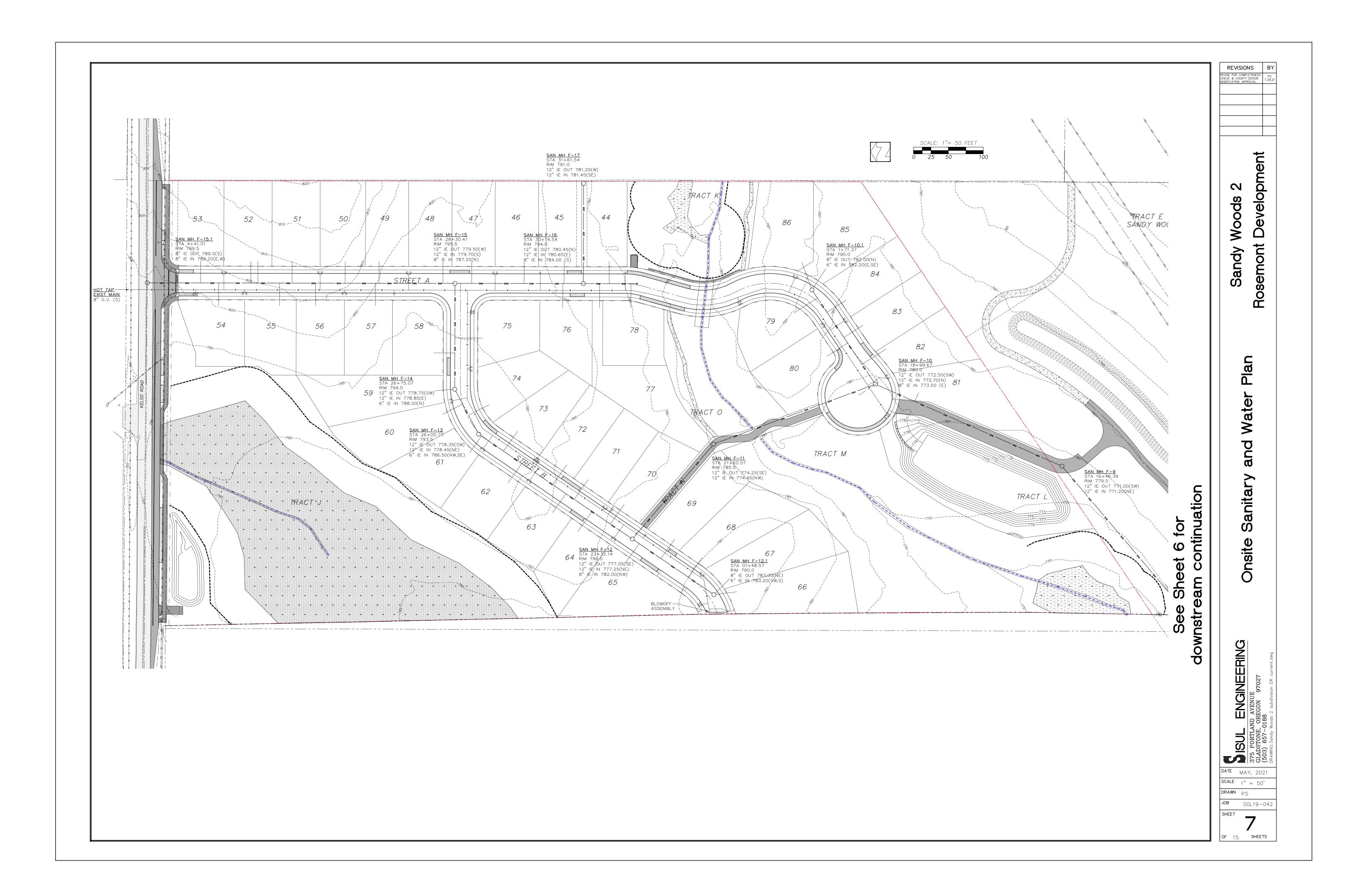


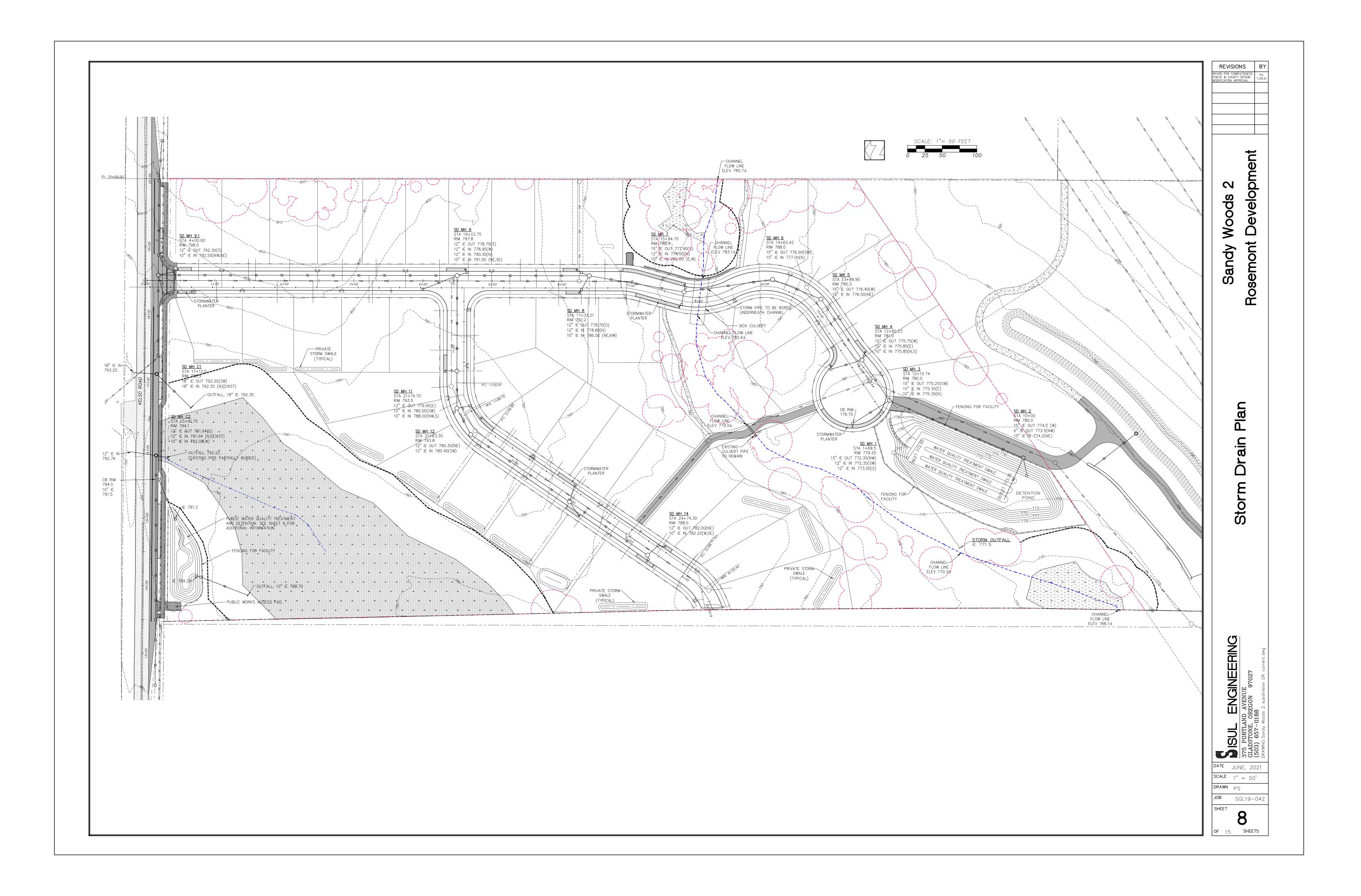
1313		51 viable; blackberries 19 size estimated due to blackberries; dead top; terminal dec	x it:	RPZ • 24 12	NO	Undersize	PRESERVE		Species Douglas fir big leaf maple
1314	western red cedar	10 suppressed		24	NO	x	PRESERVE	1514	big leaf maple Douglas fir
1 316	big leaf maple sweet cherry	B suppressed 9 excessive lean	x	9 12	NO NO	X X	PRESERVE	1516	sweet cherry big leaf maple
1318	· · · · · · · · · · · · · · · · · · ·	7		8	NO	x	REMOVE	1518	Douglas fir Douglas fir
	big leaf maple western red cedar	7 7 7		8	NO NO	X X	PRESERVE	1520	big leaf maple Douglas fir
1322		42 viable; codominant@ 50' 47 viable; trunk swoop	-	25 25	√ √ √ √		PRESERVE	1522	western hemic Douglas fir
	Douglas fir	2) viable 30 viable		22 22 22	4 4 4 4		PRESERVE	1524	Douglas fir big leaf maple
	western red cedar	10 viable 36 viable 36 viable		8	NO VV	×	PRESERVE	1526	Douglas fir western hemle
1328		33 viable		24 24 8	V V NO	×	PRESERVE	1528	Douglas fir sweet cherry
1330	red alder	8 viable	x	8 12	NO NO	x	PRESERVE	1530	Douglas fir western hemi
	snag n	/a dead; approx. 19' tall; habitat 10 viable	x	8	NO	x	PRESERVE	1532	Douglas fir Douglas fir
	sweet cherry sweet cherry	9 viable		8	NO NO	x	PRESERVE	1534	sweet cherry sweet cherry
1336	western hemlock	19 viable		0 14 24			PRESERVE	1536	Douglas fir
1338	big leaf maple	44 viable 8 viable		8		X	PRESERVE PRESERVE	1538	big leaf maple Douglas fir
	Douglas fir	17 suppressed 40 viable		12 24			PRESERVE PRESERVE	1540	Douglas fir Douglas fir
1342	Douglas fir	25 viable 27 viable		24 16	√ √ NO		PRESERVE REMOVE	1542	Douglas fir red alder
1344	Douglas fir	18 stem decay 53 viable	X	18 24	NO V V		REMOVE PRESERVE	1544	red alder Douglas fir
	bitter cherry big leaf maple	9 viable 18 viable		8 12	NO ✓	x	PRESERVE PRESERVE		red alder red alder
	red alder red alder	12 viable 9 viable		8	✓ NO	x	PRESERVE PRESERVE		red alder red alder
	red alder red alder	9 viable 15 viable		8 10	NO ✓	x	PRESERVE		red alder red alder
1351	blue spruce	9 viable 35 viable	-	8 24	NO NO	x	REMOVE	1551	red alder red alder
	Douglas fir	16 viable 35 viable	-	12 24 24	NO NO NO		REMOVE	1553	red alder red alder
1355	western red cedar	43 viable 27 viable 27 viable	-	24 25 18	NO		REMOVE	1555	red alder red alder
1357	big leaf maple	9 excessive lean	x	8	NO NO	X	REMOVE REMOVE	1557	red alder
1359	red alder	35 viable 9 viable		24 8	NO NO	x	REMOVE REMOVE	1559	red alder red alder
	red alder	11 viable		8	NO NO	x	REMOVE REMOVE	1561	red alder red alder
1362 1363		10 viable 11 viable		8	NO NO	X	REMOVE REMOVE		red alder red alder
1364 1365	red alder red alder	7 6		8	NO	X X	REMOVE	1564	red alder red alder
1366 1367		15 viable 6		10	NO NO	x	REMOVE	1566	red alder red alder
1368	red alder red alder	6	-	8	NO NO	X	REMOVE	1568	red alder Douglas fir
1370	big leaf maple	8 viable		8	NO	x	REMOVE	1570	red alder
1372	red alder big leaf maple	6 6	-	8	NO NO	x	REMOVE REMOVE	1572	red alder red alder
1374		8 viable		10 8	NO NO	×	REMOVE REMOVE	1574	red alder red alder
	big leaf maple big leaf maple	6		8	NO NO	X X	REMOVE REMOVE		red alder Douglas fir
	red alder red alder	6 7		8	NO NO	X X	REMOVE		big leaf maple big leaf maple
1379 1380	red alder red alder	8 viable 8 viable		8	NO NO	X X	REMOVE		big leaf maple big leaf maple
1381 1382	red alder red alder	7		8	NO	X X	REMOVE	1581	big leaf mapl Douglas fir
1383 1384		11 viable		8	NO NO	x	REMOVE	1583	big leaf maple big leaf maple
1385		7 11 viable		8	NO		REMOVE	1585	big leaf maple big leaf maple
1386 1387	red alder			8	NO NO	X	REMOVE REMOVE	1587	big leaf maple
1388 1389	red alder red alder	9 viable 6		8	NO NO	X X	REMOVE REMOVE	1590	big leaf mapl- red alder
1390 1391		8 listed 56 viable	×	8 25	NO NO	X	REMOVE REMOVE	1592	red alder red alder
	big leaf maple big leaf maple	8 suppressed 5 suppressed		8	NO NO	X X	REMOVE REMOVE	1597	big leaf mapl red alder
	big leaf maple	14 viable6		8 8	NO NO	x	REMOVE REMOVE	1704	big leaf mapl Douglas fir
		34 viable; shares stump with T1397 43 viable; shares stump with T1396		22 25	NO NO		REMOVE REMOVE		Douglas fir big leaf mapl
		33 viable 30 viable; grown over wire fence		22 20			PRESERVE		red alder western red (
	Douglas fir	46 viable 45 viable; shares stump with T1403		25 25	√ √ √ √		PRESERVE PRESERVE		red alder Douglas fir
1403	Douglas fir	24 viable; shares stump with T1402 29 viable		18 20	√ √ √ √		PRESERVE	1769	Douglas fir Douglas fir
1405	Douglas fir	z? viable 7		20	√√ NO	x	PRESERVE	1771	Douglas fir red alder
1407	→ <u> </u>	7 30 viable 11 viable		22	 ✓ ✓ ✓		PRESERVE	1776	big leaf maple big leaf maple
1441	red alder	12 viable		8 10	NO		PRESERVE REMOVE	1778	big leaf mapl
1443		8 viable 50 viable	-	8 25	NO 	x	REMOVE PRESERVE	1780	big leaf maple Douglas fir Douglas fir
1445	red alder 7,7,6	47 trunk swoop @ 50'; re-grown top ,6 clump; stump suckers	x	25 12	NO NO		REMOVE REMOVE	1782	Douglas fir Douglas fir
1487	Douglas fir	43 viable 34 viable		25 24	<i>\ \</i> <i>\ \</i>		PRESERVE PRESERVE	1785	Douglas fir Douglas fir
1489	big leaf maple	40 stem decay; decline; broken top 47 basal decay; multiple stems; inclusions	x	25 25	NO NO		REMOVE REMOVE	1787	western red o big leaf mapl
1491	scouler willow	35 viable 17 viable		24 12	4		PRESERVE PRESERVE	1790	Douglas fir Douglas fir
	Douglas fir big leaf maple	29 viable 8 viable		22 0	√√ NO	x	PRESERVE PRESERVE	1800	big leaf mapl- red alder
1495	big leaf maple	12 viable 14 viable		10 10	√ √		PRESERVE PRESERVE	1802	red alder Douglas fir
		44 viable 12 viable		24 8	✓ ✓ ✓		PRESERVE		Douglas fir Douglas fir
1498	red alder	10 viable 12 viable		8	NO ✓	x	PRESERVE	1806	big leaf mapl Douglas fir
1500	red alder	13 viable; same as T1501 15 viable	-	10 10	✓ ✓		PRESERVE	1809	Douglas fir Douglas fir
1503	red alder	11 viable 43 viable; shares stump with T1507 and T1506	-	8 25			PRESERVE	181 1	big leaf maple Douglas fir
1506	western red cedar	44 viable; shares stump with 11507 and 11506 46 viable; shares stump with 11504 and 11507 31 viable; shares stump with 11504 and 11506		25 25 20	↓ ↓ ↓ ↓		PRESERVE	1813	Douglas fir Douglas fir
1100/	big leaf maple	16 viable	+	10	✓		PRESERVE	1815	Douglas fir Douglas fir Douglas fir
		10 viable 26 viable 39 viable	-	8 18 25		×	REMOVE REMOVE	1817	Douglas fir Douglas fir Douglas fir
1509 1510				1 251	NO		REMOVE		big leaf mapl

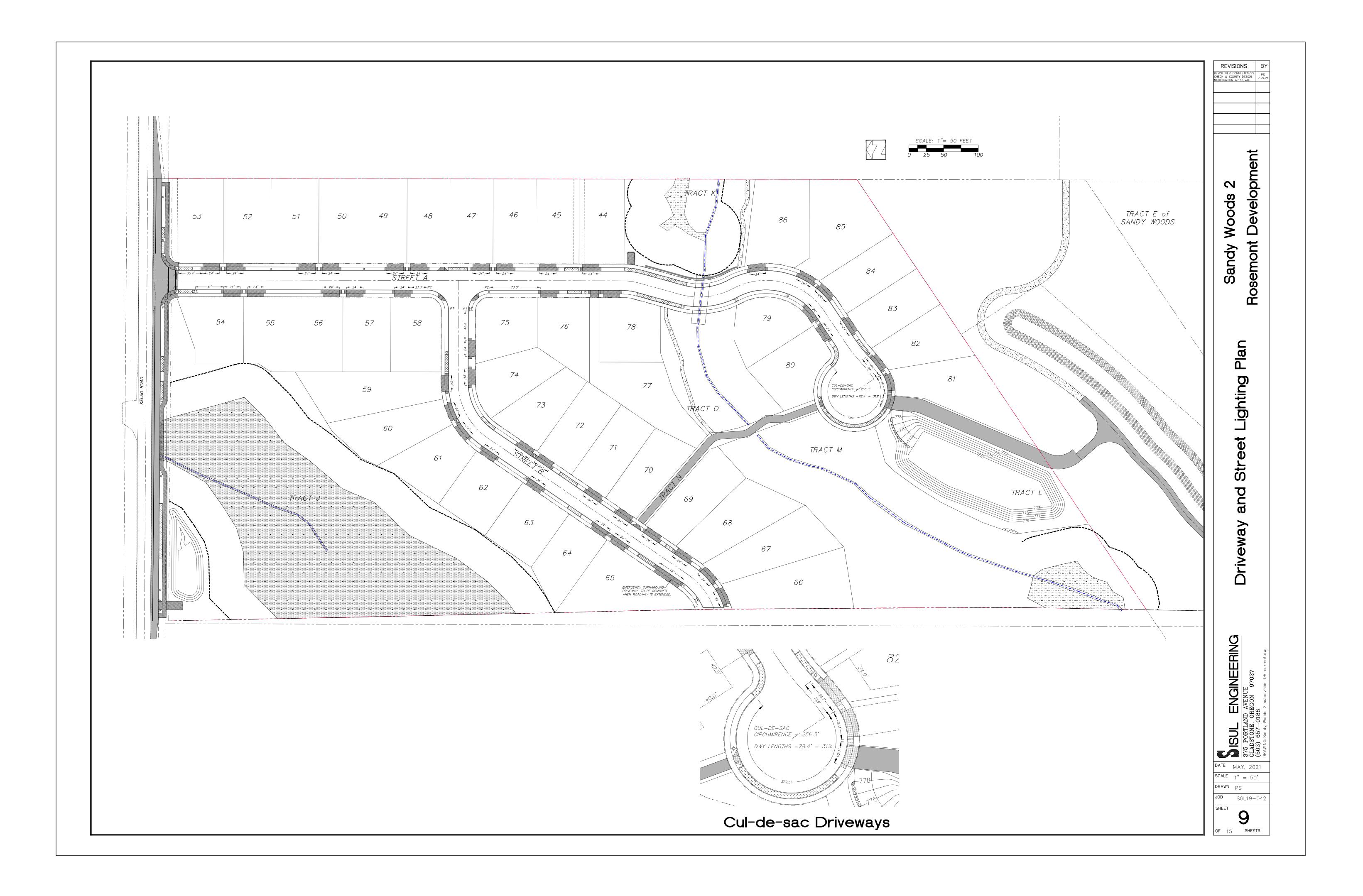
43 viable		RPZ • 25	NO	Undersize 🕐	REMOVE	1820	western hemlock	1	B[viable	- DDD -	12	NO	Undersize	REMOVE
11 viable 30 viable		8 20	NO NO		REMOVE REMOVE	1821 1822	Douglas fir Douglas fir	3) viable 1 viable		8 20	NO NO	x	REMOV
18 suppressed 8 viable		12 8	NO NO	X	REMOVE REMOVE		big leaf maple big leaf maple	2	5 basal decayl trunk decay; terminal decline 7 basal decay; decline; same as T1824	X	24 18	NO NO		REMOV REMOV
18 viable 36 red-ring rot	x	12 24	NO NO		REMOVE REMOVE	1826 1827	western red cedar western red cedar	2	D viable 1 viable		8 14	NO VV	X	PRESER
12 terminal decline 31 basal decay; trunk decay	X	8 20	NO NO		REMOVE REMOVE	1828 1829	western red cedar western red cedar	6	5 viable 5 viable; small dead top		10 24	44 44		PRESER
37 viable 22 dead	x	24 14	ND NO		REMOVE REMOVE	1830 1831	western red cedar red alder	1	4 viable 7 viable		10 12	√√ NO		PRESER REMOV
29 viable 20 viable		18 14	NO NO		REMOVE REMOVE		red alder big leaf maple	1	3 dead 7 viable	X	10 12	NO NO		REMOV REMOV
19 23 viable		12 16	NO NO		REMOVE REMOVE	1836	big leaf maple big leaf maple		4 viable 4 multiple stems; decline; dead stem; same as T1835	x	10 10	NO NO		REMOV
20 basal decay 25 viable	X	14 16	ND NO		REMOVE REMOVE	1837 1838	big leaf maple Douglas fir		1 viable 1 viable		8 25	√ NO		PRESER REMOV
10 decline 29 viable	X	0 22	NO √√	X	REMOVE PRESERVE	1839 1840	western hemlock western hemlock		2 viable 8 viable; grows out of nurse stump		8	NO NO	x	REMOV PRESER
17 grows out of old stump 25 viable		12 18	√ √ √ √		PRESERVE PRESERVE	1841 1842	red alder red alder	1	viable; in creek 440 degree lean		10 10	NO ND		REMOV
34 viable		24	√√ NO	X	PRESERVE	1843	big leaf maple	4	2 retrenched; large dead branches 3 viable; in creek		25 8	NO		REMOV
6 35 viable		8 24	NO VV	x	REMOVE	1845 1846	red alder red alder	1	D viable; in creek 3 trunk decay	x	8	NO NO	x	REMOV
16 viable		12	4		PRESERVE	1847	red alder	1	5 viable; in creek		10	 ✓		PRESER
n/a dead; on ground 43 viable	X	24	NO √√		REMOVE PRESERVE	1848 1849	red alder red alder	1	1 viable; in creek 1 leans over creek		10 8	✓		PRESER
28 viable; grows out of nurse log 35 viable		20 24	√ √ √ √		PRESERVE PRESERVE	1850 1851	western hemlock western hemlock	1	4 dead 9 dead	X	16 12	NO NO		REMOV REMOV
14 viable 16 viable		10 12	√ √		PRESERVE PRESERVE	1852 1853	Douglas fir Douglas fir		8 viable 5 viable; codominant @ 50'		18 24	NÔ V V		REMOV PRESER
32 viable; on bank 10 viable; in creek		22	√√ NO	x	PRESERVE	1854 1855	Douglas fir Douglas fir	2	4		16 10	4 4 4 4		PRESER
9 viable; in creek 9 viable; in creek		8	NO	X	PRESERVE	1856 1857	Douglas fir Douglas fir	3	s viable 8 viable		24 12	VV ND		PRESERV
11 viable; in creek 14 viable; in creek		8 10	✓ ✓		PRESERVE	1858 1859	Douglas fir Douglas fir	1	viable 5		12	NO NO	×	REMOV
12 viable; in creek		8	✓ ✓ NO	x	PRESERVE	1860	Douglas fir big leaf maple	2	s 8 viable 8 decline	×	18			REMOV
9 viable; in creek 14 viable; in creek		10	4	Á	PRESERVE PRESERVE	1862	big leaf maple	3	Viable		12 20	NO		REMOV
18 viable; in creek 16 viable		12	✓ ✓		PRESERVE PRESERVE	1863 1864	western hemlock western hemlock	2	3 dead 9 viable; grows out of nurse stump; codominant from base 1 viable; grows out of nurse stump; codominant from base	X	22 20	NO NO		REMOV
11 viable 14 viable		10 10	✓ ✓		PRESERVE PRESERVE		Douglas fir western red cedar	2	9 viable 5 viable		25 16	NO NO		REMOV REMOV
19 terminal decline 10 viable	X	12 8	NO NO		REMOVE PRESERVE		Douglas fir big leaf maple		4 viable 4 viable; soil eroded around stump		25 24	NO ND		REMOV REMOV
14 viable 14 viable; in creek		10	✓ ✓		PRESERVE	1869 1870	western hemlock Douglas fir		1 viable B viable		20 25	ND NO		REMOV
21 viable; codominant @8' 14 terminal decline	x	14	√ ND		PRESERVE	1871		1	2 viable 2 viable		8	√ √ √		PRESER
14 terminal decine 13 viable 14 dead		8	4		PRESERVE	1872 1873 1874	red alder red alder red alder	1	z viable 5 viable D viable		10 8	✓ NO	x	PRESERV
15 trunk decay	X	8 10	NO NO		REMOVE REMOVE	1875	Douglas fir	4	1 viable		24	* *		PRESER
11 viable 15 viable		8 10	✓ ✓		PRESERVE PRESERVE	1877	red alder red alder		9 viable; hard lean 8 viable 		8	NO NO	x	PRESER
22 dead 49 trunk swoop @ 45'	X	14 24	NO VV		REMOVE PRESERVE	1879	big leaf maple red alder		3 basal decay; soil eroded around stump 9 viable	X	8 8	NO NO	x	PRESER
19 terminal decline 16 terminal decline	x	12 10	NO NO		REMOVE REMOVE	1881	red alder Douglas fir	2	8 viable 3 viable		8 16	ND √√	x	PRESER
16 viable 16 viable		10 10	√ √		PRESERVE PRESERVE	1882 1883	Douglas fir Douglas fir		2 viable 5		24 8	NO NO	x	PRESER
10 dead 16 decline	X	8 10	NO ✓	х	REMOVE PRESERVE	1884 1885	Douglas fir big leaf maple		edead Viable	X	0	NO ✓		REMOV PRESER
41 viable; swollen trunk 22 viable		24 16	√ √ √		PRESERVE	1886	western red cedar big leaf maple	1	viable; grows out of large nurse-log viable; standing water; soil eroded around stump		8 18	<i>√√</i> <i>√</i>		PRESER
21 viable 16 viable		14	V NO		RESERVE	1888 1889	red alder red alder	1	3 viable; in creek 2 viable; in creek		10	√ √		PRESERV
11 terminal decline	X	0	NO		REMOVE	1890	red alder		5		8	NO	x	PRESER
11 viable 53 viable		0	NO NO		REMOVE REMOVE	1891 1892	red alder red alder	1	2 viable 5 viable		10	1		PRESERV
8 viable 16 viable		8	NO ✓	X	PRESERVE PRESERVE	1893 1894	red alder red alder		३ viable ३ viable		8	NO NO	X X	PRESER
18 viable 8 viable		12 8	√ NO	×	PRESERVE PRESERVE	1895 1896	red alder red alder		5 viable 2 viable		10 8	✓ ✓		PRESER\ PRESER\
8 viable 7		8 8	NO NO	X X	PRESERVE PRESERVE	1897 1898	red alder red alder		1 viable Diviable		8 8	√ NO	x	PRESER
15 viable; same as T1589 20 viable		12 14	✓ ✓		PRESERVE PRESERVE	1899 1900	red alder Douglas fir		s viable; labled 1890 on map; Tagged 1899 in field 7 viable		10 25	ND NO		PRESER
20 viable 13 viable; multiple stems; same as T1594, T1595, and T1596		14 24	√ √		PRESERVE PRESERVE	1901 1903	big leaf maple western red cedar	1	2 viable 9 viable; hedgerow; same as T1902, T1904, and T1905		8 24	NO NO		REMOV
21 viable; same as T1598	~	14	1		PRESERVE	1906	western red cedar	8,	7 viable; hedgerow; same as T1907		8	NO		REMOV
32 trunk decay; decline; broken tops 58 viable; codominant @ 25'	X	20 24			REMOVE PRESERVE	1908 1910	western red cedar western red cedar	7,	9 viable; hedgerow; same as T1909 5 viable; hedgerow; same as T1911 2 viable; hedgerow; same as T1911 and T1914		12 8	NO NO		REMOV REMOV
28 crook in stem @ 30' 6		18 8	NO NO	x	REMOVE PRESERVE	1912 1915	western red cedar western red cedar	16,1	9 viable; hedgerow; same as T1913 and T1914 3 viable; hedgerow; same as T1916		16 16	NO NO		REMOVI
10 viable 34 viable		8 22	NO ND	X	PRESERVE REMOVE	1917 1918	western red cedar western red cedar	1	7 viable; hedgerow 9 viable; hedgerow		12 12	NO NO		REMOV
9 viable 33 viable		8 22	ND NO	х	PRESERVE REMOVE		western red cedar big leaf maple		D <mark>basal and trunk decay; hollow; cavity @ 10'</mark> 7	X	25 8	ND ND	x	REMOV PRESER
35 viable 35 viable		24 24	NO NO		REMOVE REMOVE		big leaf maple sweet cherry		1 viable; same as T1922 9 viable		8 8	✓ NO	x	PRESER
22 viable 18 viable		14	NO V		REMOVE	1925	big leaf maple dead		7 7 7 dead	x	8 12	NO	x	PRESER
38 viable 16 viable		25 10	ND NO		REMOVE	1927	plum plum		7 7 7 trunk decay		8	NO NO	x	REMOV
34 viable		24	NO		REMOVE	1929	Douglas fir	1	7 viable		12	~ ~		PRESER
16 terminal decline 34 viable; codominant @ 25'	×	24	NO NO		REMOVE REMOVE	1931	Douglas fir sweet cherry		Diviable 8 viable 		8	ND NO	x	PRESER
29 viable 30 viable		20 20	ND NÖ		REMOVE REMOVE	1935	~	3	9 viable; multiple stems; sames as T1932 and T1934 4 viable		16 24	4		PRESER
26 viable; ivy 31 trunk swoop		16 20	NO ND		REMOVE REMOVE	1939		1	5 viable; same as T1937, and T1936 5 terminal decline	X	24 10	VV NO		PRESER REMOV
35 viable 20 basal decay; terminal decline; one dead stem	x	25 20	NO NO		REMOVE REMOVE	1940	apple		terminal decline 7 viable	X	8 10	NO NO	x	REMOV
40 viable 31 viable		25 20	ND		REMOVE		sweet cherry sweet cherry		2		8	NO NO	X X	REMOV
38 viable 15 viable		20	✓ ✓		PRESERVE	1944 1946	sweet cherry sweet cherry	1	z) viable; same as T1945 5		8	NO NO	x	REMOV
11 viable		8	* * *		PRESERVE	1947	apple		z 7 basal decay; cavity 2 terminal decline	X	12	NO	^	REMOV
IS viable 87 viable		24 24	44		PRESERVE PRESERVE	1949	apple Douglas fir	3	2 terminal decline 5 viable; ivy; shares stump with T1950	X	8 24	NO NO		REMOV REMOV
32 viable 8 viable		22 8	NO	x	PRESERVE PRESERVE			1	1 viable; ivy; shares stump with T1949 2 terminal decline	X	20 8	NO NO		REMOV REMOV
32 viable 34 viable		20 22	√√ NO		PRESERVE REMOVE	1952 1953	plum big leaf maple		8 viable 7 broken	x	8	NO NO	X X	REMOV REMOV
8 viable 12 viable; 6° dead stem		8	NO	Х	PRESERVE	1954	big leaf maple big leaf maple		9 broken 2 viable	X	8	NO NO	X	REMOV
50 viable 26 viable	+ 1	25 25 16	NO NO		REMOVE	1956	big leaf maple big leaf maple	1	4 viable D viable		8	NO NO	x	REMOV
19 viable		12	NO		REMOVE	1958	big leaf maple	1	1 viable		8	NO		REMOVI
34 viable 26 viable; shares stump with T1817		22 16	NO NO		REMOVE REMOVE	1960	big leaf maple big leaf maple	1	3 viable D viable		8	NO NO	x	REMOV
29 viable; shares stump with T1816 11 viable		20	NO NO		REMOVE REMOVE		western red cedar western red cedar		2 viable 5 viable; same as Υ1962		8 10	<u> </u>		PRESERV

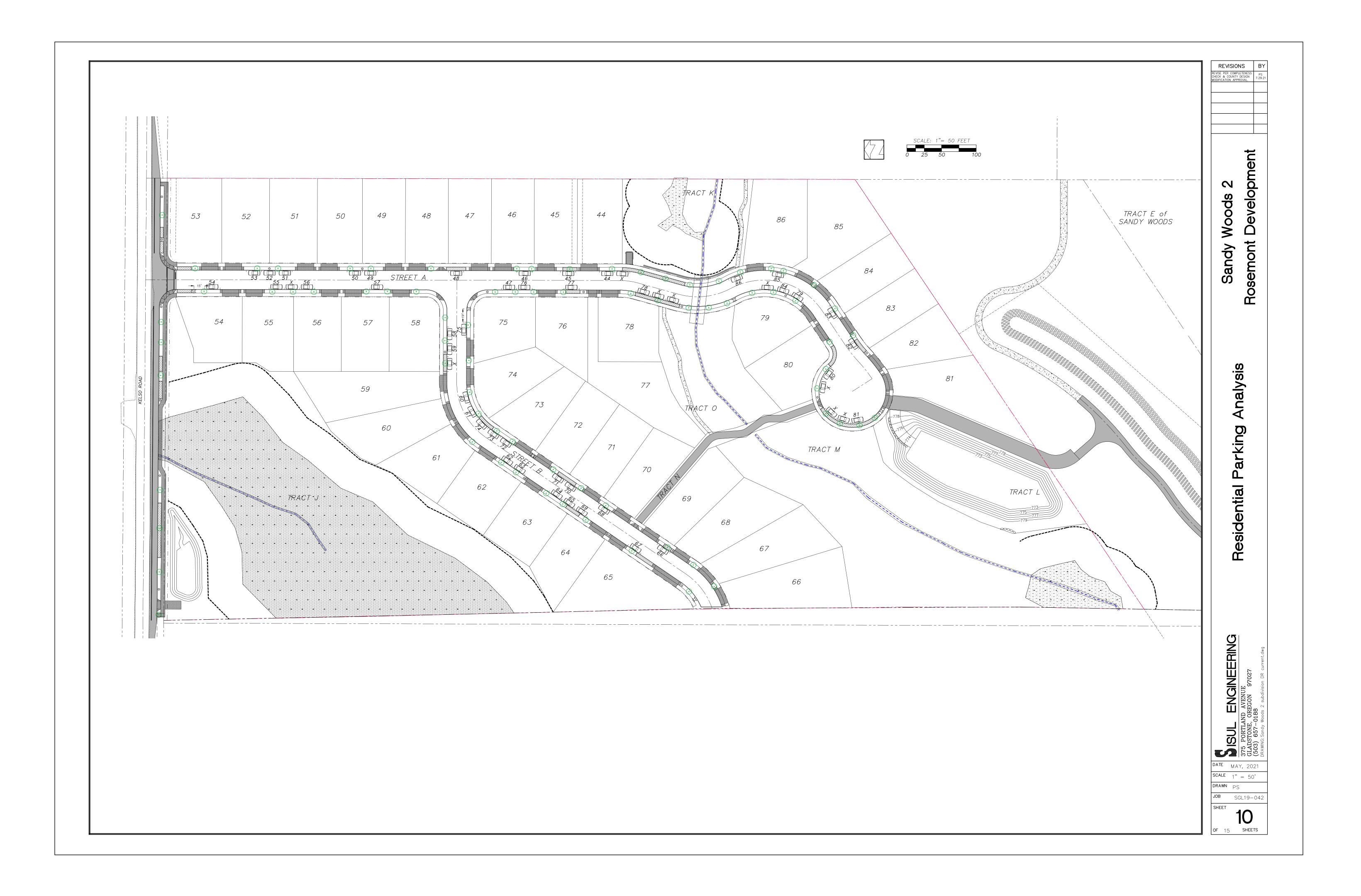
	Species	Remarks	DDD -	RPZ -		' Undersize X	Action	REVISIONS BY
6 7		2 viable 6 6		8	. √√ NO	x	PRESERVE PRESERVE PRESERVE	
9 0	western red cedar Douglas fir	7 14 viable		8	ND VV	x	PRESERVE PRESERVE	
'2		6 14 terminal decline 16 viable	x	8 8 24	NO	X	REMOVE REMOVE PRESERVE	
4 5	big leaf maple big leaf maple	13 terminal decline 17 terminal decline	X X	8 10	NO NO		REMOVE REMOVE	
7	Douglas fir	l4 broken tops 8 viable 14 viable	X	8 8 8	NO √√	×	REMOVE PRESERVE PRESERVE	
٥	apple big leaf maple western red cedar	9 terminal decline 6 13 broken @ 20'	x	8	NO	X	REMOVE REMOVE REMOVE	j
2 3	big leaf maple big leaf maple	8 viable 13 viable		8	NO NO	X	REMOVE REMOVE	e e
5	big leaf maple big leaf maple western red cedar	L2 broken 9 viable 6 viable	X	8	NÖ	X X	REMOVE PRESERVE PRESERVE	0 N D
3	Douglas fir	32 viable; codominant @ 40' 6 viable 7 viable		22 8 8	NO	x	PRESERVE PRESERVE PRESERVE	s O
0	Douglas fir big leaf maple	IZ viable; ivy I1 viable		12	<i>↓↓</i> <i>↓</i>		PRESERVE PRESERVE	
3	big leaf maple Douglas fir big leaf maple	8 viable; ivy 26 viable; ivy 6		8 18 8	 ✓✓ 	x	PRESERVE PRESERVE PRESERVE	Woods 2 Development
6		6 LO viable 25 viable		8 8 18	NO	X X	PRESERVE PRESERVE PRESERVE	
8 Q	big leaf maple western red cedar	18 viable 17 viable; same as T1999		12 12	NÖ NO		REMOVE REMOVE	z ⊊
2		9 viable L1 viable 18 viable; ivy		8	NÖ	X	REMOVE REMOVE REMOVE	Sandy semont
4 5	Douglas fir Douglas fir	24 viable		16 8	NO NO	x	REMOVE REMOVE	Sal en
8	big leaf maple Douglas fir	,8 viable; multiple stems from base 8 viable 22 viable		12 8 14	NO NO	x	REMOVE REMOVE REMOVE	
))	big leaf maple Douglas fir	6 topped @ 10' 14 viable 36 viable		8 8 24	NO NO	×	REMOVE REMOVE REMOVE	В В
	Douglas fir Douglas fir	9 viable 8 viable		8 8	NO NO	X X	REMOVE REMOVE	
;	European birch Douglas fir big leaf maple	6 terminal decline I7 viable 4	X	8 12 8	NO	x	REMOVE REMOVE REMOVE	
' }	big leaf maple Douglas fir	4 LO viable 33 viable; ivy 72 boost decourses tricological op mon		8 24	NO VV	x	REMOVE PRESERVE	
כ	Douglas fir	37 basal decay; root disease; misplaced on map 29 viable 34 viable	x	24 20 22	NO NO		REMOVE REMOVE REMOVE	
3		8 viable 29 viable 27 viable		8 20 20	NO √√	X	PRESERVE PRESERVE PRESERVE	
5 6	western red cedar Douglas fir	IS viable		10	vv NO	X	PRESERVE PRESERVE	
8	western red cedar	22 viable 8 viable 6 viable; same as T2036		16 8	NO	X	PRESERVE PRESERVE PRESERVE	
0 1	Douglas fir	8 viable 28 viable; ivy 8 viable		8 10 8	44	x	PRESERVE PRESERVE PRESERVE	
3 4	western red cedar western red cedar	34 viable 19 viable		24 14			PRESERVE PRESERVE	
7		21 viable; ivy 30 viable 7		14 22 8	11	×	PRESERVE PRESERVE PRESERVE	
9 2	Douglas fir western red cedar 22,11,	13 viable; ivy; near power line 11 viable; multiple stems; same as T2041 and T2040		24	NO		REMOVE REMOVE	tic
1		24 viable; near power line 12 topped for power 8 topped for power	× ×	16 8 8	NO	×	REMOVE REMOVE REMOVE	
,	big leaf maple western red cedar big leaf maple	8 topped for power 6 L5 viable; near power line	x	8	NO	X X	REMOVE REMOVE REMOVE) te
9)	western red cedar big leaf maple	6 LO viable; near power line		8	NO NO	X X	REMOVE REMOVE	
2	Douglas fir	9 stump suckers 7 offsite; ROW; topped for power 19 offsite; ROW; topped for power	X	10 8 12	NO	X	REMOVE REMOVE REMOVE	
5		8 offsite; ROW; topped for power 17 offsite; ROW; topped for power 22 offsite; ROW; topped for power		8 12 14	NO	X	REMOVE REMOVE REMOVE	l Ö
7 8	sweet cherry sweet cherry	l6 broken tops L5 leans to east	×	10 10	NO ✓		PRESERVE PRESERVE	Ľ
2	cottonwood	21 offsite; ROW; topped for power 88 viable; codominant from base; 2062 and 2063 are same tree 10 viable		14 25 8	NO		REMOVE REMOVE REMOVE	
5	cottonwood cottonwood cottonwood	9 viable 10 viable 8 listed	x	8	NO	X X X	PRESERVE PRESERVE PRESERVE	
1	sweet cherry Douglas fir	29 mechanical damage to root flares; in pasture 9 viable; in creek		25 8	NO NO	x	OFFSITE PRESERVE	
5	cottonwood cottonwood cottonwood	L5 viable; blackberry 8 viable; 2075 and 2074 are the same tree 8 viable		10 8 8	NO	X X	PRESERVE PRESERVE PRESERVE	
_	cottonwood	7 8 viable 10 viable		8	NO NO	X X X	PRESERVE PRESERVE	
8	cottonwood			8	NO	X X X	PRESERVE PRESERVE PRESERVE	
3) 1	cottonwood cattonwood cattonwood	IO viable 9 viable		8	-			
) 	cottonwood cattonwood cattonwood			8 16 8 8	NO NO	X X	REMOVE REMOVE PRESERVE	
	cottonwood cattonwood cottonwood cottonwood 13,13,11,9, red alder red alder red alder cottonwood	9 viable 9, multiple stems 6 in future roadway 6 Added by FSH district survey, April 2020 6 Added by FSH district survey, April 2020 6 Added by FSH district survey, April 2020		16 8 8 8 8	ND NO NO NO NO		REMOVE REMOVE PRESERVE PRESERVE PRESERVE	
8 9 0 1 3 0 1 2 3 4 5	cottonwood cottonwood cottonwood cottonwood 13,13,11,9, red alder red alder red alder	9 viable 9, multiple stems 6 in future roadway 6 Added by FSH district survey, April 2020 6 Added by FSH district survey, April 2020		16 8 8 8	NO NO NO NO NO NO	х	REMOVE REMOVE PRESERVE PRESERVE	EERING 27 38 current.dwg

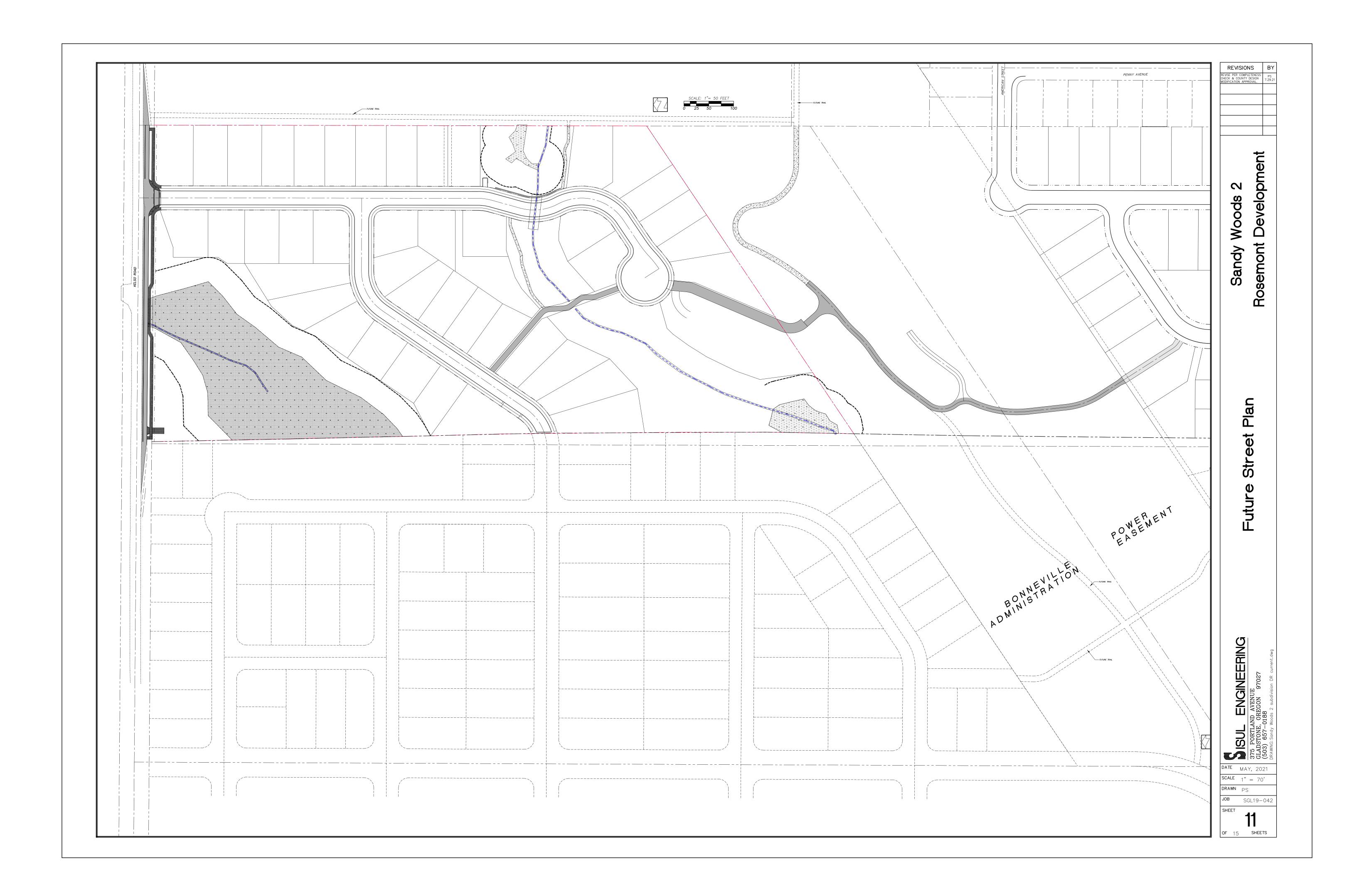


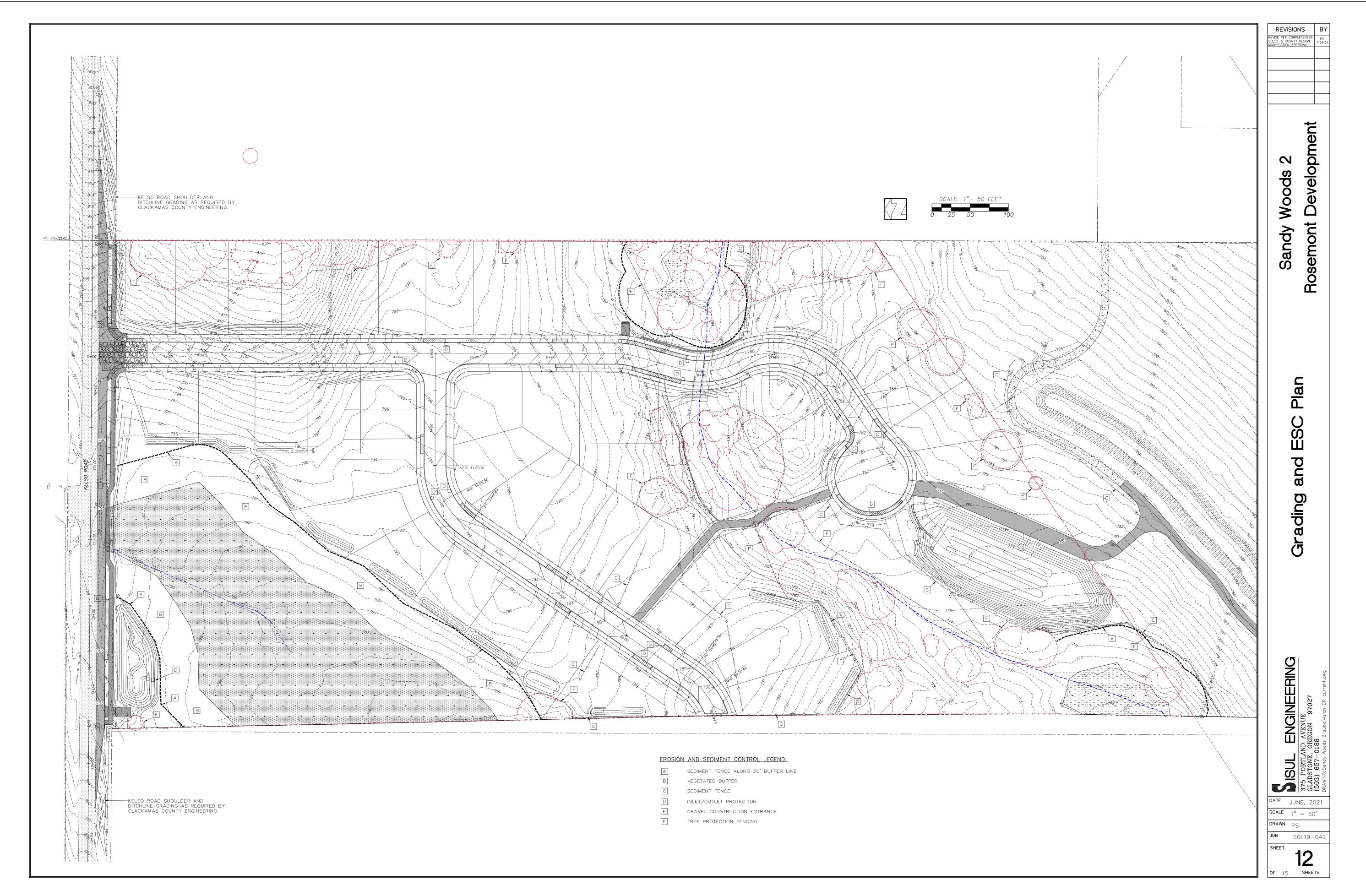


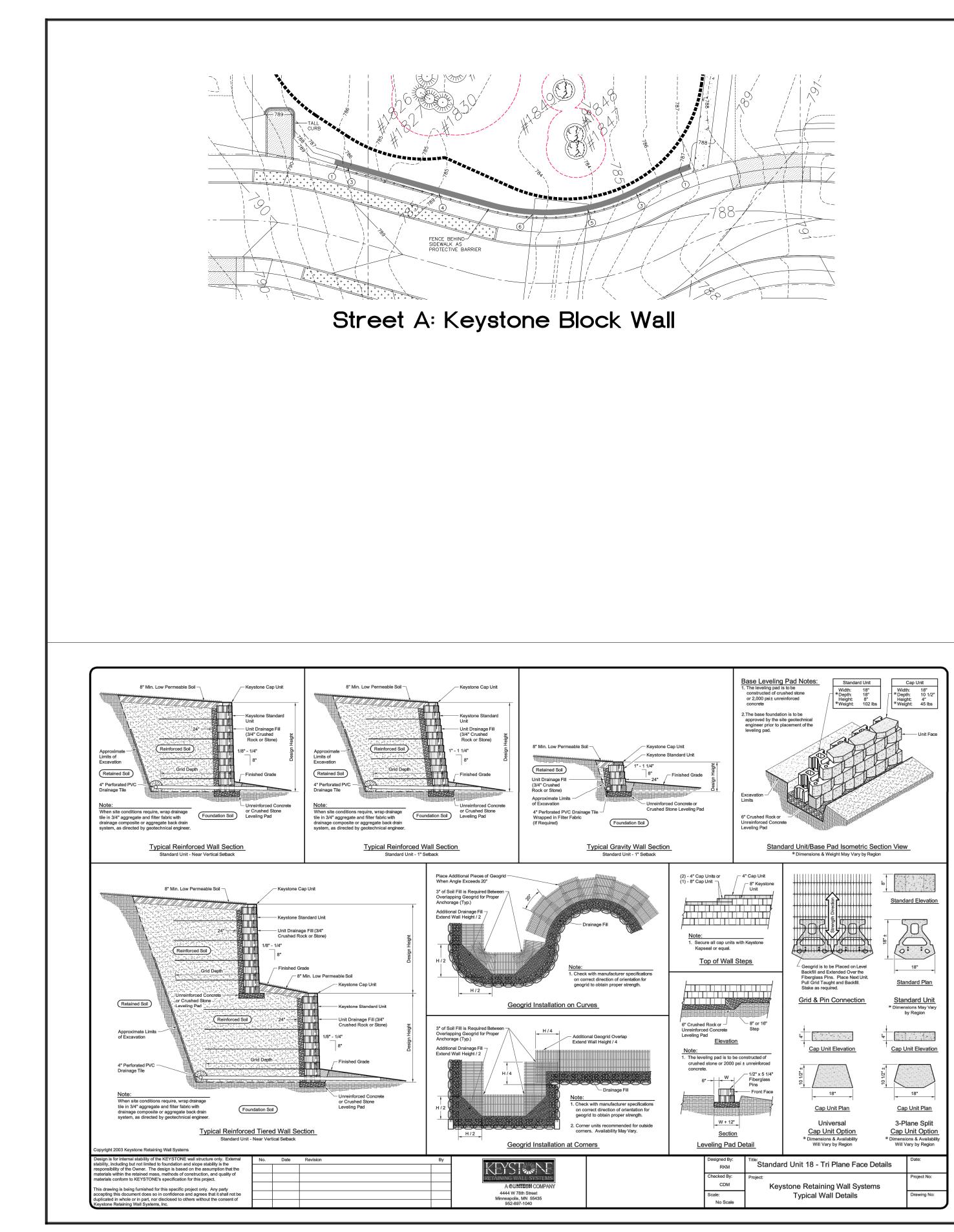






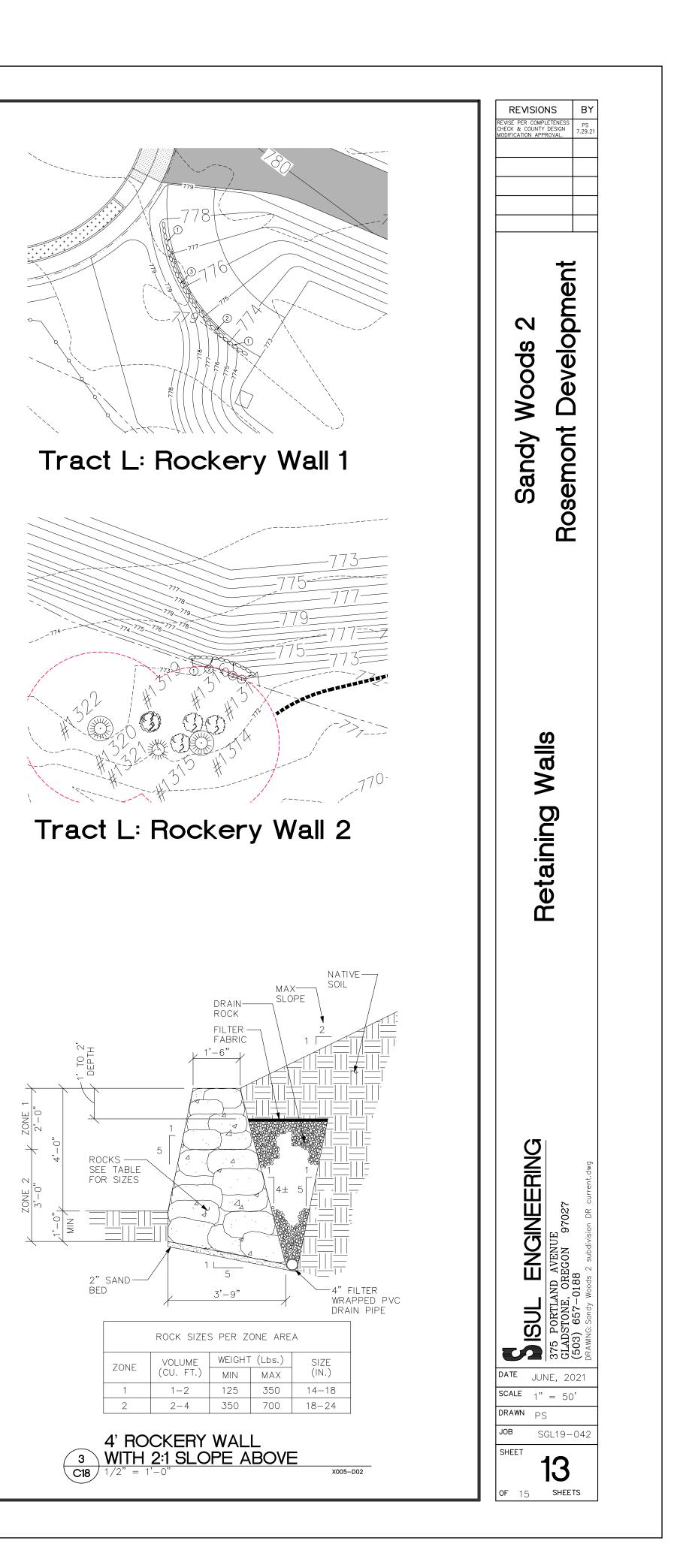


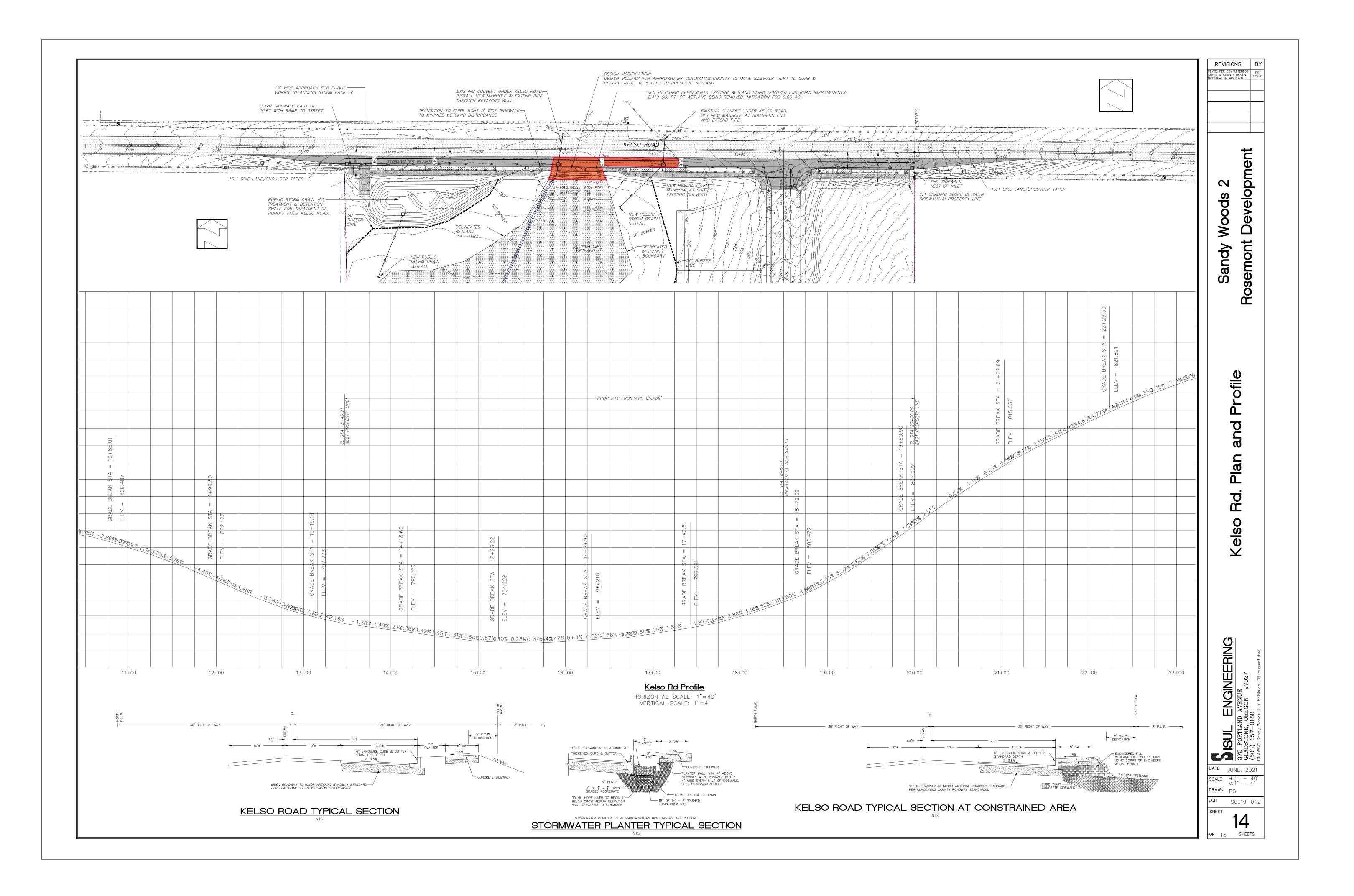




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RETAINING WALL LEGEND: 2 = RETAINING WALL HEIGHT EXAMPLE ROCKERY WALL = KEYSTONE BLOCK WALL





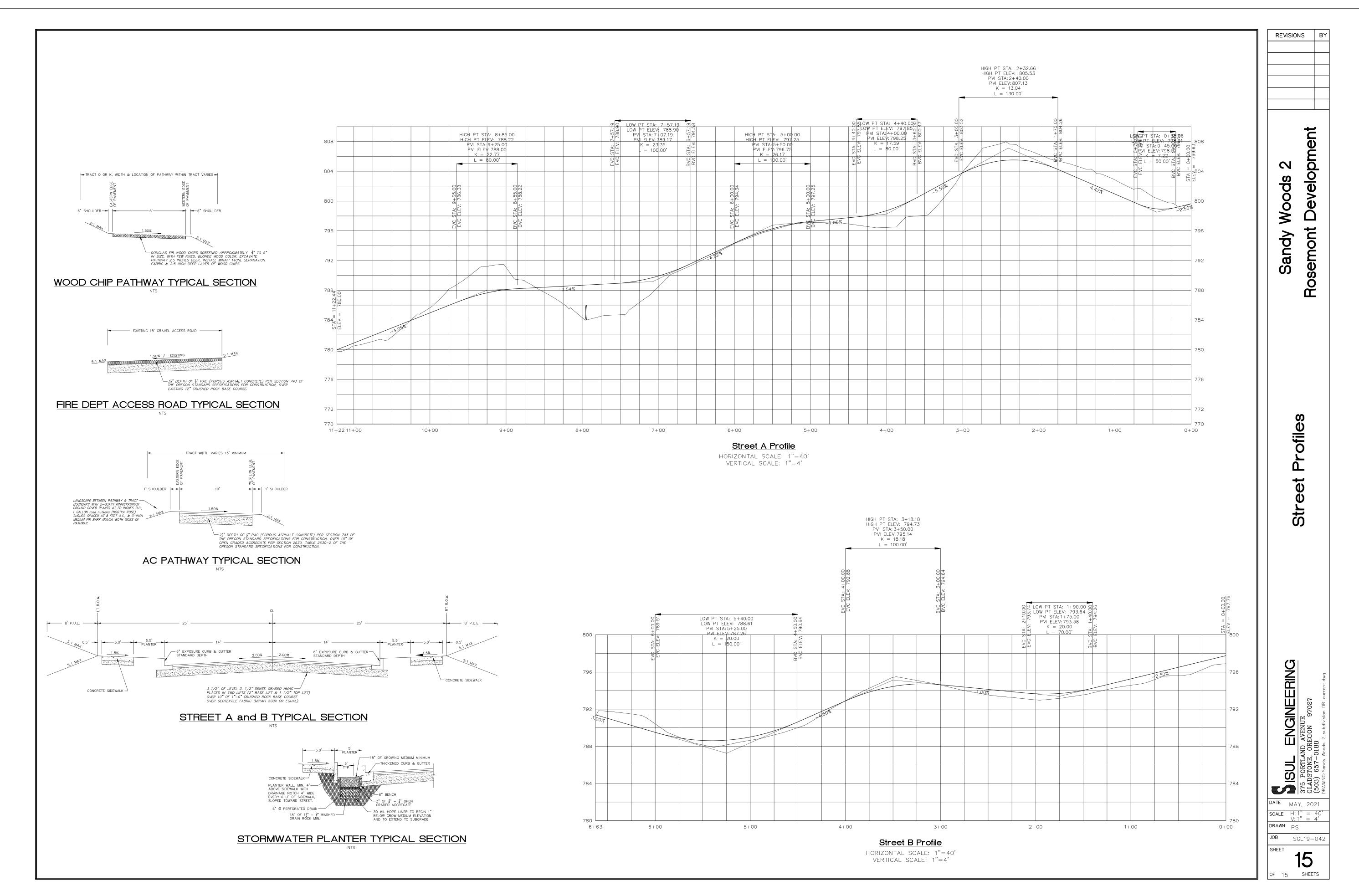


Exhibit D

STORM DRAINAGE REPORT FOR

Sandy Woods 2 Land Use Application

Silver V Construction

J.O. SGL 19-042

June 2021



6/1/2021

SISUL ENGINEERING

A Division of Sisul Enterprises, Inc. 375 Portland Avenue Gladstone, OR 97027 phone: (503) 657-0188 fax: (503) 657-5779

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2

List of Appendices:

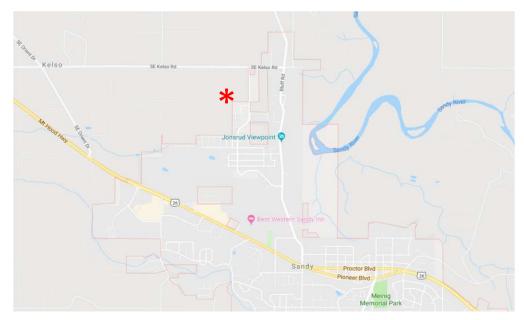
- A. Pre-Development Site Drainage Map
- B. Development Plans
- C. Isopluvials for 24-HR Precipitation
- D. Soil Testing
- E. Curve Number Tables

Objective:

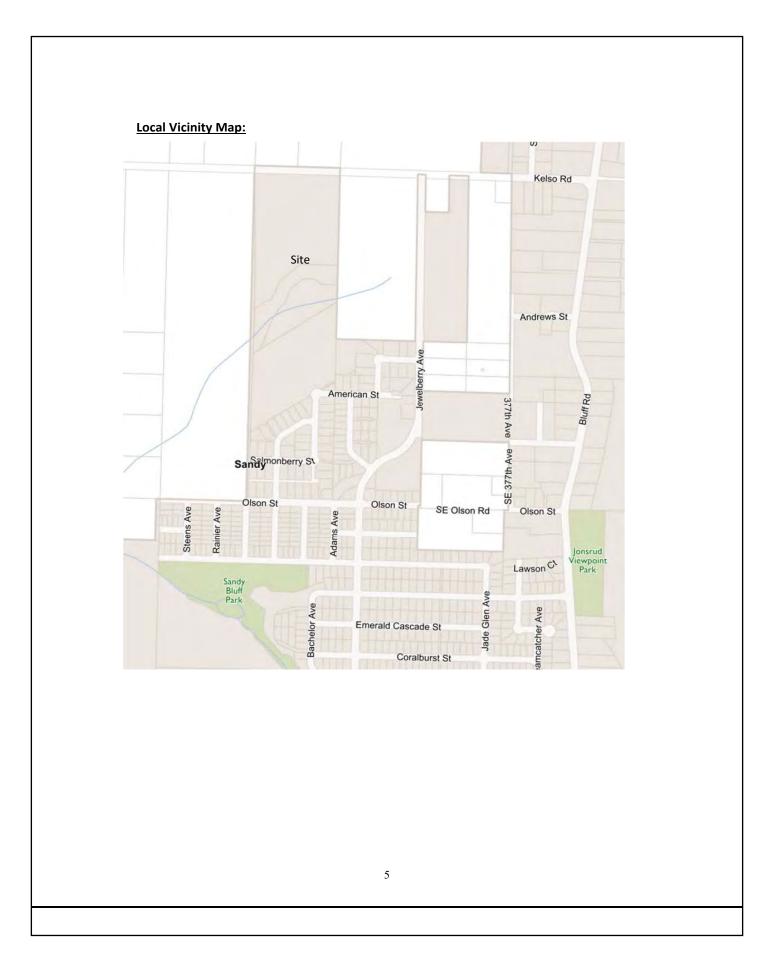
The goal of this stormwater calculation is to demonstrate that the residential subdivision development is meeting City of Sandy's stormwater requirements for the Sandy Woods 2 subdivision on SE Kelso Road, Sandy, OR.

Site Location & Vicinity Map:

The site has no address, although it had an address of 37090 SE Kelso Road until the existing home was removed from the property and the land was re-platted with the first phase of the subdivision. The site is in the City of Sandy, Clackamas County, Oregon and is west of Jewelberry Avenue and south of Kelso Road. Tax lots include 2202, 2203 & 2204 of Sec. 11, T2S, R4E, W.M.



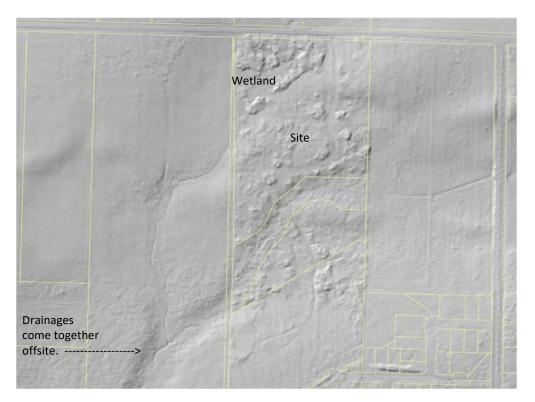
The site area is 769,848 sq. ft. which equals 17.67 acres. The center of the site is located at Latitude: 45°25′00″N, Longitude 122°16′55″W.



Site Terrain & Drainageways:

Generally, the site falls from east to west. A seasonal drainageway runs from east to west across the site, leaving the site at the low point along the western property line. Much of the site drains northerly or southerly toward that seasonal drainageway. Along SE Kelso Road there are roadside ditches on the north and south sides of the roadway. The roadside ditch on the north side of Kelso Road collects runoff from the northern half of the roadway and from the agricultural properties north of the roadway. In front of this site, two culverts move the ditch runoff underneath Kelso Road and into the northwestern corner of this site. The flow spreads out into a wide wetland and flows southwesterly toward Tax Lot 2300 west of this site. The northern portion of this site also drains to that wetland in an east to west direction.

The two drainageways on this site come together on Tax Lot 2300 to the west of this site. The drainages are tributaries to Tickle Creek. The LIDAR map below shows how the two drainageways cross the site and come together on Tax Lot 2300 to the west of the site.



Rainfall Intensity:

Sandy has higher rainfall values than the rest of the Portland urban area. Below is a comparison of rainfall intensities between Portland and Sandy.

24-hour Rainfall Depth		
	24-hour rainfall	24-hour rainfall
Reoccurrence Interval	Portland (inches)	Sandy (inches)
2	2.4	3.5
5	2.9	4.5
10	3.4	4.8
25	3.9	5.5

* Sandy rainfall depth based upon NOAA Isopluvial values listed in the Storm Drainage Master Plan Appendix A

The 10-year event in Portland is approximately equal to the 2-year event in Sandy, while the 100-year event in Portland is approximately equal to the 5-year event in Sandy. The PAC calculator does not have a storm event large enough to approximate a 10-year storm event in Sandy, nor does the WES BMP tool.

We must use HydroCAD to calculate storm drain runoff, as none of the continuous storm modeling programs can simulate Sandy's higher rainfall rates.

Pollutants of Concern:

The contributing impervious area consists of streets, sidewalks, roofs and driveways. Per the 2016 City of Portland Stormwater Management Manual the pollutants of concern are:

- Suspended Solids (sediment)
- Heavy Metals (such as lead, copper, zinc & cadmium)
- Nutrients (such as nitrogen and phosphorus)
- Bacteria & Viruses
- Organics (oil, grease, hydrocarbons, etc.)
- Floatable trash & debris

Stormwater Treatment BMP's:

Stormwater will be treated with vegetated planters, vegetated basins & swales.

According to the City of Portland 2016 Stormwater Management Manual:

Vegetation may be one of the most cost-effective and ecologically efficient means available to improve water quality. Vegetation shades water courses, which lowers water temperature; captures and absorbs water in leaves and roots, which reduces peak flows; and stabilizes soil by providing cover for disturbed soils. Vegetation also provides wildlife habitat and scenic and aesthetic benefits.

As stormwater enters a vegetated facility, the vegetation slows the water down, allowing sediments to be trapped on the surface of the facility. Typically, the surface area of the facility is designed to allow stormwater to pond and evaporate while sediments settle into a layer of mulch and then soil. The mulch prevents soil erosion and retains moisture for plant roots. It also provides a medium for biological growth and the decomposition or decay of organic matter. The soil stores water and nutrients to support plant life. Bacteria, nematodes, and other soil organisms degrade organic pollutants such as petroleum-based compounds. They also help mix organic material, increase aeration, and improve water infiltration and water-holding capacity. Bacteria and other beneficial soil microbes process most pollutants.

As described above, vegetated facilities can treat all of the pollutants of concern above through infiltration through the soil and treatment by the vegetation. Also, per the Oregon DEQ BMP table, vegetated planters (bioretention facilities) are capable of removing all of the pollutants listed above.

Existing site soils:

Onsite soils are a combination of Cazadero silty clay loam and Cottrell silty clay loam. According to the Web Soil Survey, 59.3% of the site is 15B, Cazadero silty clay loam and 40.7% of the site is Cottrell silty clay loam. Both soils are identified as being Hydrologic Soil Group C.

Infiltration rate:

Onsite soil testing was performed in June 2020 by Mia Mahedy, PE, GE of Rapid Soil Solutions, Inc. Onsite testing determined an infiltration rate of 6 inches per hour in the vicinity of future Lots 54 – 64 that back up to the wetland in the NW corner of the property, and a rate of 20 inches per hour in the vicinity of the surface water facility located south the east-west drainageway. A copy of the geotechnical testing from Rapid Soil Solutions, Inc. is contained in the Appendices.

Using Factor of Safety of 2, the design infiltration rate for the facilities located on the rear of Lots 54 - 64 will be 3 inches/hour, while the rate used for the public facility in the southern portion of the site will be 10 inches/hour:

City of Sandy Stormwater Requirements:

Water Quality Treatment:

All developments shall treat 80 percent of the average annual volume of storm water runoff for the site. This standard can be met by installing storm water quality treatment facilities to satisfy the following design criteria:

A. <u>Detention based storm water quality control</u>: The required design volume for detention-based control is equal to the entire runoff volume that would occur from a site with a 1.2–inch, 12-hour storm. The draw-down time for the entire volume must be greater than or equal to 48 hours. For the lower half of the detention volume, the drawdown time must be greater than 36 hours. Additional design criteria for inlet and outlet spacing and design, as well as guidelines for calculating volumes, are contained in the Public Works Department Standards.

B. <u>Flow-through based storm water quality control</u>: the required design flow rate for treatment is the runoff that would be produced from a rainfall intensity of 0.2 inches/hour for on-line facilities, and 0.11 inches/hour for off-line facilities. This rate must be maintainable for a minimum of three hours. Additional design criteria for flow calculation, as well as specific treatment criteria for various types of storm water facilities (e.g., infiltration and storm water filters), are contained in the Public Works Standards.

C. <u>Combination detention based on flow-through based storm water quality</u> <u>control</u>: Detention facilities may be combined with flow-through facilities. The applicant must demonstrate that the combined system could sufficiently treat storm water runoff for the runoff produced by the flow-through treatment rates of 0.2 inches/hour (on-line facilities), occurring for a three-hour period.

<u>Detention</u>: Detain the 2-, 5-, 10-, and 25-year, 24-hour storm events to predevelopment peak release levels.

The calculations will be performed using Santa Barbra Urban Hydrograph methodology.

Pre-Development Site Conditions:

The pre-development site condition is primarily Himalayan blackberries mixed with some grass. The site also includes forest with light underbrush, wetlands, pasture, gravel/dirt driveway/roadway, and structures. The home, barn and shed were recently removed from the property. The highest point of the site is located along the eastern property line approximately 200 feet south of Kelso Road at elevation 820. The lowest point onsite is at elevation 767 along the western property line approximately 35 feet north of the SW corner.

An aerial view of the site is below:



Pre-development site areas and curve numbers are noted below. All soils are Hydrologic Soil Group C:

	Pre-Development Area	(CN)
Woods, protected from grazing	235,225 sf	70
50 – 75% ground cover		
Brush-weed-grass mixture with brush	516,708 sf	70
as the major element		
Gravel / Dirt roadway	15,695 sf	89
Buildings – Home, Barn & Shed	2,220 sf	98
Area along Kelso Road Frontage		
assumed to be pervious	12,778 sf	74

Post-Developed Condition:

The developed site condition is planned as 43 Lots and multiple tracts for stormwater detention, water quality treatment, and water quality protection. 11.26 acres will be developed, and 6.41 acres will remain undeveloped.

The developed portion of the site will consist of new low-density residential lots of 7,500 square feet or larger with new residential homes. New lots are assumed to have

2,640 square feet of impervious area, with the remaining area landscaping in good condition. Stormwater runoff from new lots will be conveyed via piping and grading into a public storm drain in the proposed roads.

Drainage Facilities for this development site:

The Sandy Woods 2 subdivision will widen Kelso Road on the northern end of the site and will construct a subdivision south of Kelso Road. The developed site will drain to the wetland in the north and the seasonal drainageway in the central portion of the site in order to follow existing drainage patterns.

<u>Basin 1 (green)</u> – Basin 1 includes the area of Kelso Road that is widened as well as the curb and sidewalks adjacent to the widening immediately due west of the proposed catch basin near station 17+50. That portion of the Kelso Road improvements will be conveyed to the proposed detention pond to the northwestern corner of the site. The outflow from this facility will release to the existing wetland in the northwestern corner of the site.

<u>Basin 2 (blue)</u> – Basin 2 includes the area of Kelso Road that is widened as well as the curb and sidewalks adjacent to the widening immediately due east of the proposed catch basin near station 17+50. It also includes the on-site improvements consisting of roads, curbs, sidewalks, driveways, and the lot areas of the development. The runoff from the improvements will be conveyed via piping and grading to a detention pond to the south side of the site.

Basin 3 (yellow) -- The undisturbed areas around the drainageways will go directly to the drainageways undetained, yet will still be included in the calculations.



Basin Map

Developed Site Impervious & Pervious Area Breakdown:

Post-development site areas and curve numbers are noted below. All soils are Hydrologic Soil Group C.

New homes on new Lots are estimated to create an impervious area of 2,640 sf per lot, 0.061 acres. The remainder of the lot will be a combination of Landscaping with >75% grass and/or Woods, protected from grazing:

Basin 1:	Kelso Road Improvements (Off-site Impervious Area) 6,172 sf	CN = 98
	Planter Strip	1,146 sf	CN = 74
Basin 2:	On-site Improvements		
	Impervious Area	201,631 sf	CN = 98
	Pervious Area	303,524 sf	CN = 74
Basin 3:	Undetained Areas	255,689 sf	CN = 74
Total Post De	evelopment Area:	768,162 sf = 1	17.63 Ac.

Pre-Development Combined CN Values & Time of Concentration:

Combined CN for Pervious:	Both pervious CN values have a CN of 70,	CN = 70
Combined CN for Impervious:	<u>(15,695 sf)(89) + (2,220 sf)(98)</u> = 90.1, (15,695 sf + 2,220 sf)	CN = 90.1

TIME OF CONCENTRATION: (see supporting pages)

Time of concentration for the pre-development condition will be calculated from the hydraulically most distant point in the property.

Time of Concentration:		
Sheet Flow (dense grass):	$T_{t1} = \frac{0.42(0.24*150')^{0.8}}{(3.50)^{0.5}*(0.0167)^{0.4}} = \frac{20.3 \text{ min}}{20.3 \text{ min}}$	L = 150' S = 0.0167 n _s = 0.24
Shallow Concentrated Flow:	$T_{t2} = \underbrace{215'}_{60* \ 9 \ * \ (0.0256)^{0.5}} = \underbrace{2.5 \ min}_{2.5 \ min}$	L = 215' S = 0.0256 k _s = 9
T _{cu} = 20.3 min + 2.5 min = 22.8 m	nin	•

Post-Development Combined CN Values & Time of Concentration:

BASIN 1:

TIME OF CONCENTRATION:

Due to the nature of this basin and the short distance of flow, it shall be assumed that the time of concentration for this basin is 5 minutes for the post-developed condition.

 $T_c = 5.0 min$

BASIN 2:

TIME OF CONCENTRATION:

Time is based on the time of concentration from the hydraulically most distant point in the basin. Based on the layout of the site, lot 67's front yard will drain toward the street via sheet flow and then transition to gutter flow until it reaches the first catch basin downstream where it will become pipe flow until the release into the detention pond for this basin.

Time of Concentration:		
Sheet Flow (lawn):	$T_{t1} = 0.42(0.15*15.27')^{0.8} = 1.25 min$	L = 15.27'
	(3.50) ^{0.5} * (0.072) ^{0.4}	S = 0.072
		n _s = 0.15
Sheet Flow (sidewalk):	$T_{t1} = 0.42(0.011*10.0')^{0.8} = 0.21 \text{ min}$	L = 10.0'
	$(3.50)^{0.5} * (0.015)^{0.4}$	S = 0.015
		n _s = 0.011
Cuttor Flow	$T = -72.61^{\prime} = -0.28$ m/m	1 - 72 61/
Gutter Flow:	$T_{t2} = \underbrace{72.61'}_{60*\ 27\ *\ (0.014)^{0.5}} = \underbrace{\textbf{0.38 min}}_{0.38\ \text{min}}$	L = 72.61'
	60° 27° (0.014) ³³	S = 0.014
		ks = 27
Pipe Flow:	T _{t3} = 1495' = 8.39 min	L = 1495'
	60* 42 * (0.005) ^{0.5}	S = 0.005
		k _s = 42

*NOTE: For the purposes of the time of concentration calculations, the pipe segments will have an assumed slope of 0.0050 (0.50%).

 $T_{cu} = 1.25 \min + 0.21 \min + 0.38 \min + 8.39 \min = 10.23 \min$

Pre-Development Hydrographs:

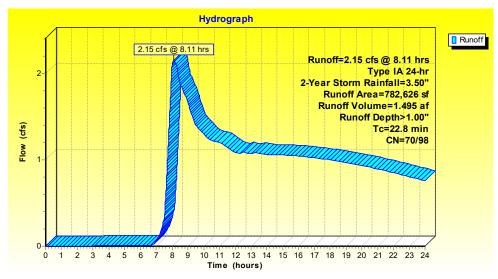
Summary for Subcatchment 7S: Pre-Developed Conditions - Whole Site

Runoff	-	215 cfc @	8.11 hrs. Volume=	1.495 af. Depth> 1.00"
RUHOH	_	Z. 15 CIS (W		1.495 al, Depui / 1.00

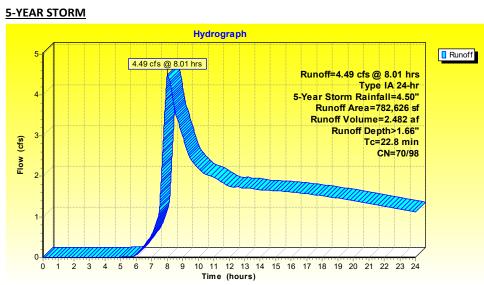
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Type IA 24-hr 2-Year Storm Rainfall=3.50"

	Area (sf)	CN	Description		
*	235,225	70	Voods, protected from grazing (50-75% ground cover)		
*	516,708	70	Brush-weed-grass mixture with brush as the major element		
*	15,695	89	Gravel/dirt roadway		
*	2,220	98	Buildings - Home, barn, and shed		
*	12,778	74	Pervious area near Kelso Road		
_	782,626	71	Weighted Average		
	780,406	70	99.72% Pervious Area		
	2,220	98	0.28% Impervious Area		
(I	Tc Length min) (feet)	Slop (ft/			
	22.8		Direct Entry, Direct Entry		

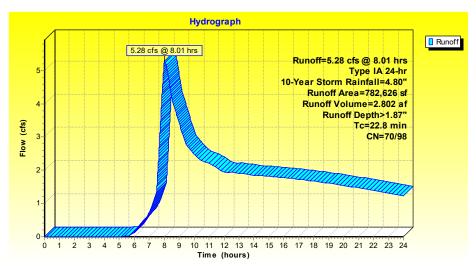
2-YEAR STORM



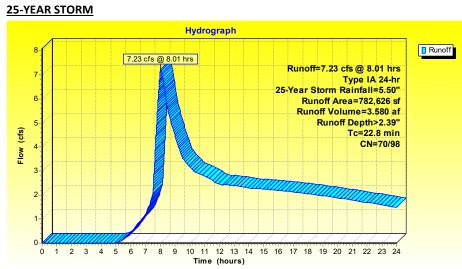
Per the above hydrograph, the runoff generated by the pre-developed conditions of the site is 2.15 cfs.



Per the above hydrograph, the runoff generated by the pre-developed conditions of the site is 4.49 cfs.



Per the above hydrograph, the runoff generated by the pre-developed conditions of the site is 5.28 cfs.



Per the above hydrograph, the runoff generated by the pre-developed conditions of the site is 7.23 cfs.

SUMMARY OF PRE-DEVELOPMENT PEAK FLOWS:

2-YEAR STORM	Q = 2.15 cfs
5-YEAR STORM	Q = 4.49 cfs
10-YEAR STORM	Q = 5.28 cfs
25-YEAR STORM	Q = 7.23 cfs

Post-Development Hydrographs:

Basin 1: The area of Kelso Road that is widened as well as the curb and sidewalks adjacent to the widening. That portion of the Kelso Road improvements will be conveyed to the proposed detention pond to the northwestern corner of the site. The outflow from this facility will release to the existing wetland in the northwestern corner of the site. Below is a design of the detention pond as modeled in HydroCAD.

Basin 1 Detention Pond Design:

)esc	ription:	_	Allow Exhib	ration	Ge	neral Storag	e Outlets Tailwater Adva	anced Notes [
Cush	om Stage Da	ita	Embed Inside:	-	T#	Invert (feet)	Description	Routing	-
			Nothing		1	790.50	12" Outlet	Primary	
5	tage Type:		Storage Multiplier.		2	790.50	3" Orifice	Device 1	5
16	Surface A	rea	1.00	- 4	3	793.00	12" Overflow Riser	Device 1	
R	Increment	al Storage	11:00	*	4	790.50	Exfiltration	Discarded	2
18	Cumulativ		⊻oids:	(%)	5				
100	- and a state of the state of t	e etterage	100.0	-÷	7	-			
			Moves.	-	8	1.1.			
Line	Elevation	Surface-Area	Alexies.	~	8 9				4
Line	Elevation (feet)	Surface-Area (sg-ft)	() · · · ·	*	9	in: For standt	nines and other compound		•
		the second se		*	9	outlets, enter t	pipes and other compound he final outlet device FIRST.	Edit Dutlet	-
1	(feet)	[sa-ft]		*	9		he final outlet device FIRST.	Edit Dutlet	
1	(feet) 790.50	[sq-ft] 1.978		*	9	outlets, enter t	he final outlet device FIRST.	Edit Dutlet	~
1 2 3	(feet) 790.50 791.50	[sq-ft] 1.978 2,992		*	9	outlets, enter t	he final outlet device FIRST.	Edit Dutlet	~
1 2 3 4	(feet) 790.50 791.50 792.50	(sq.ft) 1.978 2,992 3,860			9	outlets, enter t	he final outlet device FIRST.	Edit Dutlet.	
Line 1 2 3 4 5 6	(feet) 790.50 791.50 792.50	(sq.ft) 1.978 2,992 3,860			9	outlets, enter t	he final outlet device FIRST.	Edit Dutlet	
1 2 3 4 5	(feet) 790.50 791.50 792.50	(sq.ft) 1.978 2,992 3,860			9	outlets, enter t	he final outlet device FIRST.	Edit Dutlet	~

Summary for Pond 3P: Basin 1 Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=738)

Inflow Area =	0.175 ac, 81.02% Impervious, Inflow I	Depth > 2.88" for 2-Year Storm event
Inflow =	0.12 cfs @ 7.89 hrs, Volume=	0.042 af
Outflow =	0.08 cfs @ 8.18 hrs, Volume=	0.042 af, Atten= 39%, Lag= 17.3 min
Discarded =	0.07 cfs @ 8.18 hrs, Volume=	0.042 af
Primary =	0.01 cfs @ 8.18 hrs, Volume=	0.000 af

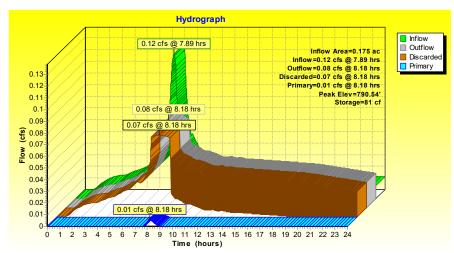
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 790.54' @8.18 hrs Surf.Area= 2,019 sf Storage= 81 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 2.5 min (679.3 - 676.8)

Volume	Inver	t Avail.Sto	orage Storag	ge Description	
#1	790.50	' 10,2	36 cf Custo	m Stage Data (Prismatic) Listed below (Recalc)	
Elevatio (fee 790.9	et)	urf.Area (sq-ft) 1,978	Inc.Store (cubic-feet) 0	Cum.Store (cubio-feet) 0	
791.		2,992	2,485	2,485	
792.		3,860	3,426	5,911	
793.	50	4,790	4,325	10,236	
Device	Routing	Invert	Outlet Devic	es	
#1	Primary	790.50'	12.0" Roun	d 12" Outlet	_
			L=50.0' RC	CP, groove end projecting, Ke=0.200	
			Inlet / Outlet	Invert= 790.50' / 790.00' S= 0.0100 '/' Cc= 0.900	
			n=0.013, Fl	low Area= 0.79 sf	
#2	Device 1	790.50'		3" Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 1	793.00'		"Overflow Riser 2 End Contraction(s)	
#4	Discarded	790.50'	1.500 in/hr E	Exfiltration over Surface area	

Discarded OutFlow Max=0.07 cfs @ 8.18 hrs HW=790.54' (Free Discharge)

Primary OutRow Max=0.01 cfs @ 8.18 hrs HW=790.54' (Free Discharge) 1=12" Outlet (Barrel Controls 0.01 cfs @ 0.84 fps) 1=2=3" Orifice (Passes 0.01 cfs of 0.02 cfs potential flow) 3=12" Overflow Riser (Controls 0.00 cfs)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 0.08 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 2-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.01 cfs.

Summary for Pond 3P: Basin 1 Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=702)

Inflow Area =	0.175 ac, 81.02% Impervious, Inflov	v Depth > 3.82" for 5-Year Storm event
Inflow =	0.16 cfs @ 7.89 hrs, Volume=	0.056 af
Outflow =	0.09 cfs @ 8.23 hrs, Volume=	0.056 af, Atten= 44%, Lag= 20.3 min
Discarded =	0.07 cfs @ 8.23 hrs, Volume=	0.054 af
Primary =	0.02 cfs @ 8.23 hrs, Volume=	0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 790.57' @8.23 hrs Surf.Area= 2,052 sf Storage= 148 cf

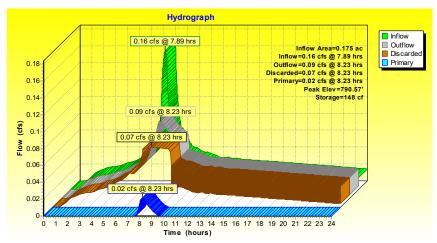
Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 4.7 min (676.3 - 671.5)

Volume	Inver	t Avail.Sto	rage	Storage	e Description	
#1	790.50	' 10,2	36 cf	Custon	n Stage Data (P	rismatic) Listed below (Recalc)
Elevatio	on S	urf.Area	Inc.	Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic	-feet)	(cubic-feet)	
790.5	50	1,978		0	0	
791.5	50	2,992	2	2,485	2,485	
792.5	50	3,860	;	3,426	5,911	
793.5	50	4,790	4	4,325	10,236	
Device	Routing	Invert	Outle	et Device:	s	
#1	Primary	790.50'	12.0	" Round	12" Outlet	
	,		L= 50	0.0' RCF	, groove end p	rojecting, Ke=0.200
			Inlet	/ Outlet Ir	nvert= 790.50' /	790.00' S= 0.0100 '/' Cc= 0.900
					w Area=0.79 s	
#2	Device 1	790.50'				600 Limited to weir flow at low heads
#3	Device 1	793.00'				 2 End Contraction(s)
#4	Discarded	790.50'	1.50	0 in/hr Ex	diltration over	Surface area

Discarded OutFlow Max=0.07 cfs @8.23 hrs HW=790.57' (Free Discharge)

Primary OutFlow Max=0.02 cfs @ 8.23 hrs HW=790.57' (Free Discharge)

1=12" Outlet (Barrel Controls 0.02 cfs @ 1.23 fps) 2=3" Orifice (Passes 0.02 cfs of 0.05 cfs potential flow) 3=12" Overflow Riser (Controls 0.00 cfs)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 0.09 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 5-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.02 cfs.

Summary for Pond 3P: Basin 1 Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=691)

Inflow Area =	0.175 ac, 81.02% Impervious, Inflow I	Depth > 4.11" for 10-Year Storm event
Inflow =	0.18 cfs @ 7.89 hrs, Volume=	0.060 af
Outflow =	0.10 cfs @ 8.23 hrs, Volume=	0.060 af, Atten=44%, Lag=20.5 min
Discarded =	0.07 cfs @ 8.23 hrs, Volume=	0.058 af
Primary =	0.03 cfs @ 8.23 hrs, Volume=	0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 790.58' @ 8.23 hrs Surf.Area= 2,062 sf Storage= 167 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 5.5 min (675.8 - 670.3)

Volume	Invert	Avail.Storage	Storag	ge Description	
#1	790.50'	10,236 cf	Custo	om Stage Data (Prismatic) Listed below (Recalc)	
Elevation	Surf.A	rea Inc.	Store	Cum.Store	

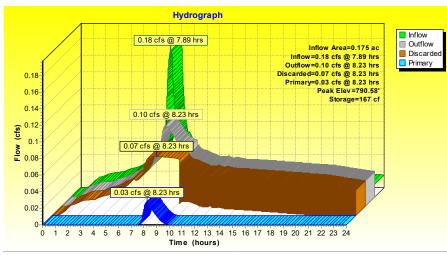
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
790.50	1,978	0	0
791.50	2,992	2,485	2,485
792.50	3,860	3,426	5,911
793.50	4,790	4,325	10,236

Device	Routing	Invert	Outlet Devices
#1	Primary	790.50'	12.0" Round 12" Outlet
			L= 50.0' RCP, groove end projecting, Ke= 0.200
			Inlet / Outlet Invert= 790.50' / 790.00' S= 0.0100 '/ Cc= 0.900
			n= 0.013, Flow Area= 0.79 sf
#2	Device 1	790.50'	3.0" Horiz. 3" Orifice C=0.600 Limited to weir flow at low heads
#3	Device 1	793.00'	3.1' long 12" Overflow Riser 2 End Contraction(s)
#4	Discarded	790.50'	1.500 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.07 cfs @8.23 hrs HW=790.58' (Free Discharge) 14=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.03 cfs @8.23 hrs HW=790.58' (Free Discharge) 1=12" Outlet (Barrel Controls 0.03 cfs @ 1.32 fps) 2=3" Orifice (Passes 0.03 cfs of 0.06 cfs potential flow)

1 2=3" Orifice (Passes 0.03 cts or 0.00 cts p 3=12" Overflow Riser (Controls 0.00 cfs)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 0.10 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 10-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.03 cfs.

Summary for Pond 3P: Basin 1 Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=668)

Inflow Area =	0.175 ac, 8 ⁻	1.02% Impervious, Inflow D	epth > 4.78" for 25-Year Storm event
Inflow =	0.21 cfs @	7.89 hrs, Volume=	0.070 af
Outflow =	0.12 cfs @	8.22 hrs, Volume=	0.070 af, Atten= 44%, Lag= 20.2 min
Discarded =	0.07 cfs @	8.22 hrs, Volume=	0.066 af
Primary =	0.04 cfs @	8.22 hrs, Volume=	0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 790.60' @ 8.22 hrs Surf.Area= 2,084 sf Storage= 211 cf

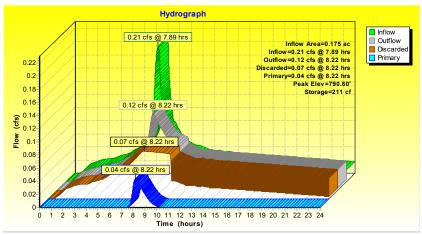
Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 6.8 min (674.4 - 667.6)

\	/olume	١n	ert Avail.St	orage S	torage Descript	ion	
	#1	790.	50' 10,	236 cf C	ustom Stage D	ata (Prism	atic) Listed below (Recalc)
	Elevatic	n	Surf.Area	Inc.Sto	ore Cum.	Store	
_	(fee	et)	(sq-ft)	(cubic-fe	et) (cubic	-feet)	
	790.5	0	1,978		0	Ó	
	791.5	0	2,992	2,4	85 2	2,485	
	792.5	0	3,860	3,4	26 5	5,911	
	793.5	0	4,790	4,3	25 10),236	
D	Device	Routing	Invert	Outlet [Devices		
	#1	Primary	790.50	12.0" F	Round 12" Outle	ət	
				L= 50.0	RCP, groove	end projec	ting, Ke=0.200
				Inlet / C	Outlet Invert= 790).50'/790.0	00' S= 0.0100 '/' Cc= 0.900
				n= 0.01	3, Flow Area= 0).79 sf	
	#2	Device 1	790.50	3.0" Ho	riz. 3" Orifice	C=0.600	Limited to weir flow at low heads

3.0" Horiz 3" Orifice C= 0.600 Limited to weir flow at low heads 3.1' long 12" Overflow Riser 2 End Contraction(s) 1.500 in/hr Exfiltration over Surface area Device 1 Device 1 #3 #4 793.00' Discarded 790.50'

Discarded OutRow Max=0.07 cfs @8.22 hrs HW=790.60' (Free Discharge) **1-4=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.04 cfs @ 8.22 hrs HW=790.60' (Free Discharge) -1=12" Outlet (Barrel Controls 0.04 cfs @ 1.52 fps) -2=3" Ovrifice (Passes 0.04 cfs of 0.08 cfs potential flow) -3=12" Overflow Riser (Controls 0.00 cfs)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 0.12 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 25-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.04 cfs.

Basin 2: This includes the on-site improvements consisting of roads, curbs, sidewalks, driveways, and the lot areas of the development. The runoff from the improvements will be conveyed via piping and grading to a detention pond to the south side of the site. Below is a design of the detention pond as modeled in HydroCAD.

Basin 2 Detention Pond Design:

)esc	ription:		Allow Exfi	Itration	
Cust	om Stage Da	ita	Embed Inside:		
			Nothing	•	
1	tage Type:	- 1	Storage Multiplier		
1	 Surface A 	rea	1.00	-	
	C Increment	al Storage	are tak	_	
1	Cumulativ	e Storage	Voids:	_(%)	
_			100.0	÷	
Line	Elevation	Surface-Area		~	
	(feet)	(sq-ft)			
1	773.00	11.032		- 0	
2	774.00	12,769			
3	775.00	14,540			
4	776.00	16,370			
5	777.00	18,274			
6	778.00	20,273			
	779.00	22,389			
7		and the state of t			

#	Invert (feet)	Description	Routing	-
1	773.00	12" Outlet	Primary	
2	773.00	1" Orifice	Device 1	7
3	778.50	12" Overflow Riser	Device 1	
4	773.00	Exfiltration	Discarded	
5				
6				
7	1			
8				
9				¥

Summary for Pond 6P: Basin 2 Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=253)

Inflow Area =	11.597 ac, 39.91% Impervious, Inflow D	Depth > 2.04" for 2-Year Storm event
Inflow =	5.17 cfs @ 8.00 hrs, Volume=	1.971 af
Outflow =	1.49 cfs @ 9.89 hrs, Volume=	1.971 af, Atten= 71%, Lag= 113.9 min
Discarded =	1.47 cfs @ 9.89 hrs, Volume=	1.953 af
Primary =	0.03 cfs @ 9.89 hrs, Volume=	0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 773.94' @ 9.89 hrs Surf.Area= 12,666 sf Storage= 11,147 cf

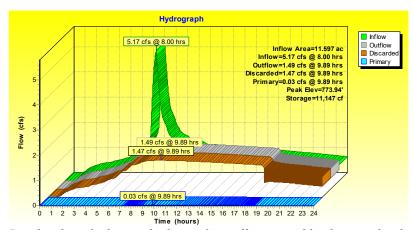
Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 53.3 min (786.5 - 733.3)

Contor		ct. unic= 0	0.0 11111 (7	50.0 - 700	,	
Volume	Inv	vert Ava	ail.Storage	Storag	e Description	
#1	773.	00'	98,937 cf	Custor	n Stage Data (Pr	ismatic) Listed below (Recalc)
Elevatio	on	Surf.Area	Inc	Store	Cum Store	
(fee	et)	(sq-ft)	(cubi	c-feet)	(cubic-feet)	
773.0	00	11,032		Ó	0	
774.0	00	12,769	1	1,901	11,901	
775.0	00	14,540	1	13,655	25,555	
776.0	00	16,370	1	15,455	41,010	
777.0	00	18,274	1	17,322	58,332	
778.0	00	20,273	1	19,274	77,606	
779.0	00	22,389	2	21,331	98,937	
_	_			_		
Device	Routing		nvert Out	et Device	es	
#1	Primary	773	3.00' 12.0)" Round	12" Outlet	
			1 = 4	50.0' RC	P aroove end pro	piecting Ke=0.200

			L= 50.0° RCP, groove end projecting, Ke= 0.200
			Inlet / Outlet Invert= 773.00' / 772.50' S= 0.0100 '/ Cc= 0.900
			n=0.013, Flow Area=0.79 sf
#2	Device 1	773.00'	1.0" Horiz. 1" Orifice C=0.600 Limited to weir flow at low heads
#3	Device 1	778.50'	3.1' long 12" Overflow Riser 2 End Contraction(s)
#4	Discarded	773.00'	5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.47 cfs @ 9.89 hrs HW=773.94' (Free Discharge) ↓4=Exfiltration (Exfiltration Controls 1.47 cfs)

rimary OutFlow Max=0.03 cfs @ 9.89 hrs HW=773.94' (Free Discharge) _1=12" Outlet (Passes 0.03 cfs of 2.60 cfs potential flow) _2=1" Ortfice (Ortfice Controls 0.03 cfs @ 4.67 (ps) _3=12" Overflow Riser (Controls 0.00 cfs)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 1.49 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 2-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.03 cfs.

Summary for Pond 6P: Basin 2 Detention Pond

Inflow Area =	11.597 ac, 39.91% Impervious, Inflow D	epth > 2.87" for 5-Year Storm event
Inflow =	7.49 cfs @ 8.00 hrs, Volume=	2.778 af
Outflow =	1.69 cfs @, 11.45 hrs, Volume=	2.605 af, Atten=77%, Lag=207.4 min
Discarded =	1.65 cfs @ 11.45 hrs, Volume=	2.562 af
Primary =	0.04 cfs @ 11.45 hrs, Volume=	0.043 af

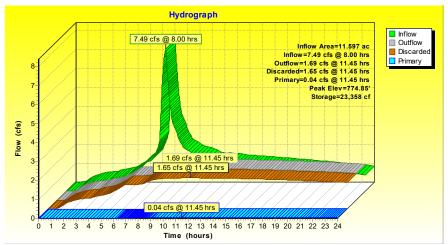
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 774.85' @11.45 hrs Surf.Area= 14,270 sf Storage= 23,358 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 106.5 min (832.7 - 726.2)

Volume	Inver	t Avail.Sto	rage	Storage	Description	
#1	773.00)' 98,9	37 cf	Custom	Stage Data (P	rismatic) Listed below (Recalc)
Elevation		Surf.Area		Store	Cum.Store	
(feet)		(sq-ft)	(cubic	-feet)	(cubic-feet)	
773.00		11,032		0	0	
774.00		12,769	11	,901	11,901	
775.00		14,540	13	3,655	25,555	
776.00		16,370	15	5,455	41,010	
777.00		18,274	17	7,322	58,332	
778.00		20,273	19	9,274	77,606	
779.00		22,389	21	,331	98,937	
Device F	Routing	Invert	Outle	t Devices		
#1 F	Primary	773.00'			12" Outlet	
			L= 50).0' RCP	, groove end p	rojecting, Ke= 0.200
			Inlet/	Outlet In	vert= 773.00' / 1	772.50' S= 0.0100 '/ Cc= 0.900
			n= 0.	013. Flov	v Area= 0.79 st	r
#2 [Device 1	773.00'	1.0"	Horiz. 1"	Orifice C= 0.	600 Limited to weir flow at low heads
#3 [Device 1					
775.00 776.00 777.00 778.00 779.00 <u>Device F</u> #1 F #2 [Routing Primary Device 1	14,540 16,370 18,274 20,273 22,389 Invert	13 15 17 19 21 Outle 12.0" L= 50 Inlet/ n= 0.1 1.0"	3,655 5,455 7,322 9,274 1,331 t Devices ' Round ' 0.0' RCP ' Outlet In 013, Flov Horiz. 1''	25,555 41,010 58,332 77,606 98,937 12" Outlet , groove end pi wert= 773.00 /' w Area= 0.79 si Orifice C= 0.	

#4 Discarded 773.00' 5.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.65 cfs @ 11.45 hrs HW=774.85' (Free Discharge)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 1.69 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 5-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.04 cfs.

Summary for Pond 6P: Basin 2 Detention Pond

Inflow Area =	11.597 ac, 39.91% Impervious, Inflow De	epth > 3.13" for 10-Year Storm event
Inflow =	8.21 cfs @ 8.00 hrs, Volume=	3.028 af
Outflow =	1.75 cfs @, 11.66 hrs, Volume=	2.732 af, Atten= 79%, Lag= 219.8 min
Discarded =	1.71 cfs @, 11.66 hrs, Volume=	2.684 af
Primary =	0.04 cfs @, 11.66 hrs, Volume=	0.048 af

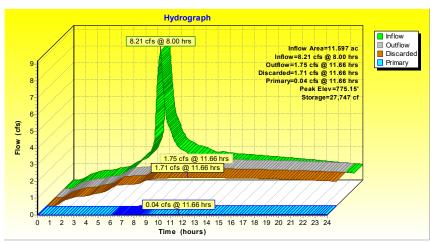
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 775.15' @ 11.66 hrs Surf.Area= 14,813 sf Storage= 27,747 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 109.2 min (833.4 - 724.2)

Volume	Invert	Avail.Stor	rage Storage	e Description		
#1	773.00'	98,93	37 cf Custor	m Stage Data (Prismatic) Listed below (Recalc)		
_						
Elevatio	on Su	ırf.Area	Inc.Store	Cum.Store		
(fee	et)	(sq-ft) ((cubic-feet)	(cubic-feet)		
773.0	00	11,032	0	0		
774.0	00	12,769	11,901	11,901		
775.0	00	14,540	13,655	25,555		
776.0	00	16,370	15,455	41,010		
777.0	00	18,274	17,322	58,332		
778.0	00 :	20.273	19.274	77.606		
779.0	00	22,389	21,331	98,937		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	773.00'	12.0" Round	d 12" Outlet		
			L= 50.0' RC	P, groove end projecting, Ke= 0.200		
			Inlet / Outlet I	Invert= 773.00' / 772.50' S= 0.0100 '/ Cc= 0.900		
			n= 0.013, Flo	ow Area= 0.79 sf		
#2	Device 1	773.00'	1.0" Horiz. 1'	"Orifice C= 0.600 Limited to weir flow at low heads		
#3	Device 1	778.50	3.1' long 12"	Overflow Riser 2 End Contraction(s)		
#4	Discarded	773.00		xfiltration over Surface area		
Discard	Discarded OutFlow Max=1.71 cfs @ 11.66 hrs HW=775.15' (Free Discharge)					

4=Exfiltration (Exfiltration Controls 1.71 cfs)

Primary OutFlow Max=0.04 cfs @ 11.66 hrs HW=775.15' (Free Discharge) 1_1=12" Outlet (Passes 0.04 cfs of 4.86 cfs potential flow) -2=1" Orifice (Orifice Controls 0.04 cfs @ 7.06 fps) -3=12" Overflow Riser (Controls 0.00 cfs)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 1.75 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 10-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.04 cfs.

Summary for Pond 6P: Basin 2 Detention Pond

Inflow Area =	11.597 ac, 39.91% Impervious, Inflow	Depth > 3.75" for 25-Year Storm event
Inflow =	9.94 cfs @ 8.00 hrs, Volume=	3.623 af
Outflow =	1.91 cfs @ 13.44 hrs, Volume=	3.023 af, Atten= 81%, Lag= 326.7 min
Discarded =	1.87 cfs @ 13.44 hrs, Volume=	2.965 af
Primary =	0.04 cfs @ 13.44 hrs, Volume=	0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Peak Elev= 775.88' @ 13.44 hrs Surf.Area= 16,157 sf Storage= 39,115 cf

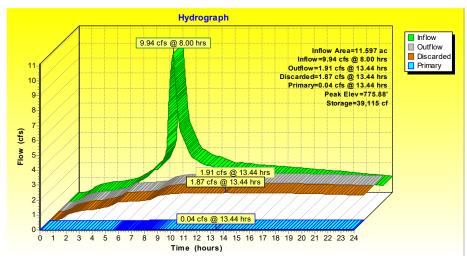
Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 115.2 min (835.1 - 719.8)

Volume	Inver	t Avail.S	Storage	Storage	Description	
#1	773.00	' 98	,937 cf	Custom	Stage Data (P	rismatic) Listed below (Recalc)
Elevatio (fee		urf.Area (sq-ft)		Store -feet)	Cum.Store (cubic-feet)	
773.0		11,032		0	0	
774.0 775.0		12,769 14.540		1,901 3.655	11,901 25,555	
776.0	0	16,370	1	5,455	41,010	
777.0 778.0		18,274		7,322	58,332	
778.0		20,273 22,389		9,274 1,331	77,606 98,937	
Device	Routing	Inve	t Outle	et Devices		

Device	Routing	Invent	Oulier Devices
#1	Primary	773.00'	12.0" Round 12" Outlet
	-		L= 50.0' RCP, groove end projecting, Ke= 0.200
			Inlet / Outlet Invert= 773.00' / 772.50' S= 0.0100 '/' Cc= 0.900
			n= 0.013, Flow Area= 0.79 sf
#2	Device 1	773.00'	1.0" Horiz. 1" Orifice C= 0.600 Limited to weir flow at low he

			n= 0.013, Flow Area= 0.79 st
#2	Device 1		1.0" Horiz. 1" Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	778.50'	3.1' long 12" Overflow Riser 2 End Contraction(s)
#4	Discarded	773.00'	5.000 in/hr Exfiltration over Surface area
D'		4 07 6	

Discarded OutFlow Max=1.87 cfs @ 13.44 hrs HW=775.88' (Free Discharge)



Per the above hydrograph, the total runoff generated by the post-developed conditions of the site is 1.91 cfs. Since the brown hydrograph represents the discarded infiltration outflow which will not be released, this value will be excluded from the total release rate for the 25-year, 24-hour storm of the post-developed conditions. Therefore, the primary outflow from the structure (blue hydrograph) shall be the value for the release rate of this storm. The primary release rate is 0.04 cfs.

Basin 3: The undisturbed areas around the drainageways will go directly to the drainageways undetained, yet will still be included in the calculations.

0.605 af, Depth> 1.24"

2-YEAR STORM

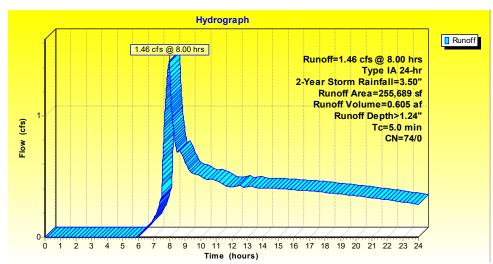
Runoff =

Summary for Subcatchment 5S: Post-Developed Conditions - Basin 3 (Undetained Existing Areas)

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Type IA24-hr 2-Year Storm Rainfall=3.50°

1.46 cfs @ 8.00 hrs, Volume=

	Area (sf)	CN	Description
*	131,301	74	Undetained existing area draining to northwest drainageway
*	124,388	74	Undetained existing area draining to southerly drainageway
	255,689	74	Weighted Average
	255,689	74	100.00% Pervious Area
	Tc Length (min) (feet)	Slop (ft/	e Velocity Capacity Description t) (ft/sec) (cfs)
	5.0		Direct Entry, Direct Entry



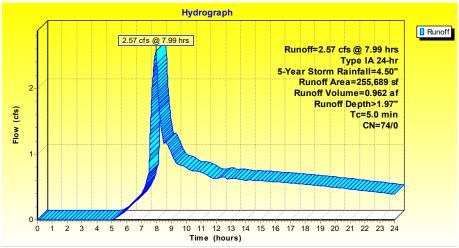
Per the above hydrograph, the total runoff generated by the pre/post-developed conditions of the undisturbed and undetained area is 1.46 cfs.

Summary for Subcatchment 5S: Post-Developed Conditions - Basin 3 (Undetained Existing Areas)

Runoff = 2.57 cfs @ 7.99 hrs, Volume= 0.962 af, Depth> 1.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Type IA24-hr 5-Year Storm Rainfall=4.50"

	Area (sf)	CN	Description	ı	
-	131,301	74	Undetained	d existing a	area draining to northwest drainageway
1	124,388	74	Undetained	d existing a	area draining to southerly drainageway
	255,689	74	Weighted A	werage	
	255,689	74	100.00% P	ervious Are	ea
	Tc Length (min) (feet)	Slop (ft/		Capacity (cfs)	Description
	5.0				Direct Entry, Direct Entry



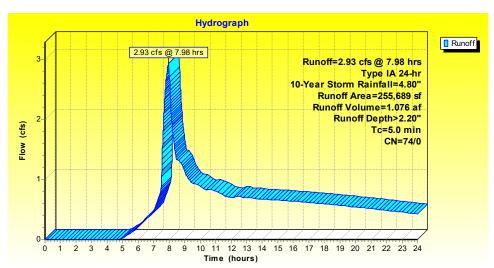
Per the above hydrograph, the total runoff generated by the pre/post-developed conditions of the undisturbed and undetained area is 2.57 cfs.

Summary for Subcatchment 5S: Post-Developed Conditions - Basin 3 (Undetained Existing Areas)

D			7.00 has 1/s has s	4.070 of Doubles 0.00
Runoff	=	2.93 cts @	7.98 hrs, Volume=	1.076 af, Depth> 2.20"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Type IA24-hr 10-Year Storm Rainfall=4.80"

	Area (sf)	CN Description	
*	131,301	74 Undetained existing area draining to northwest drainageway	
*	124,388	74 Undetained existing area draining to southerly drainageway	_
	255,689	74 Weighted Average	
	255,689	74 100.00% Pervious Area	
	Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)	
	5.0	Direct Entry, Direct Entry	-



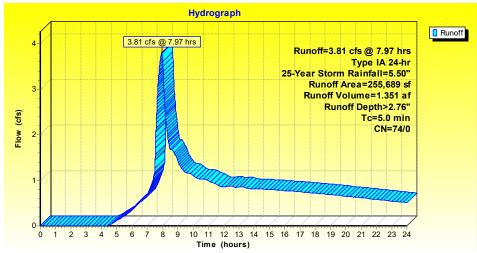
Per the above hydrograph, the total runoff generated by the pre/post-developed conditions of the undisturbed and undetained area is 2.93 cfs.

Summary for Subcatchment 5S: Post-Developed Conditions - Basin 3 (Undetained Existing Areas)

Runoff = 3.81 cfs @ 7.97 hrs, Volume= 1.351 af, Depth> 2.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs Type IA 24-hr 25-Year Storm Rainfall=5.50"

	Area (sf)	CN Description	
	131,301	74 Undetained existing area draining to northwest drainageway	
1	124,388	74 Undetained existing area draining to southerly drainageway	
	255,689	74 Weighted Average	
	255,689	74 100.00% Pervious Area	
_	Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)	
-	5.0	Direct Entry, Direct Entry	



Per the above hydrograph, the total runoff generated by the pre/post-developed conditions of the undisturbed and undetained area is 3.81 cfs.

SUMMARY OF POST-DEVELOPMENT PEAK FLOW FOR EACH BASIN:

Basin	2-YEAR	5-YEAR	10-YEAR	25-YEAR
1	0.01	0.02	0.03	0.04
2	0.03	0.04	0.04	0.04
3	1.46	2.57	2.93	3.81

SUMMARY: PRE-DEVELOPMENT PEAK FLOW vs. POST DEVELOPMENT PEAK FLOW:

STORM	PRE-DEVELOPMENT	POST-DEVELOPMENT
2-YEAR STORM	Q = 2.15 cfs	Q = 1.50 cfs
5-YEAR STORM	Q = 4.49 cfs	Q = 2.63 cfs
10-YEAR STORM	Q = 5.28 cfs	Q = 3.00 cfs
25-YEAR STORM	Q = 7.23 cfs	Q = 3.89 cfs

All Post Development peak flows are at or below pre-development peak flow rates \checkmark

The detention requirements for City of Sandy have been met \checkmark

City of Sandy Water Quality Requirements:

As mentioned earlier in this report, City of Sandy Municipal Stormwater Standards require all developments to treat 80 percent of the average annual volume of storm water runoff for the site. This standard can be met by installing storm water quality treatment facilities to satisfy the following design criteria:

- A. <u>Detention based storm water quality control</u>: The required design volume for detention-based control is equal to the entire runoff volume that would occur from a site with a 1.2–inch, 12-hour storm. The draw-down time for the entire volume must be greater than or equal to 48 hours. For the lower half of the detention volume, the drawdown time must be greater than 36 hours. Additional design criteria for inlet and outlet spacing and design, as well as guidelines for calculating volumes, are contained in the Public Works Department Standards.
- B. <u>Flow-through based storm water quality control</u>: the required design flow rate for treatment is the runoff that would be produced from a rainfall intensity of 0.2 inches/hour for on-line facilities, and 0.11 inches/hour for off-line facilities. This rate must be maintainable for a minimum of three hours. Additional design criteria for flow calculation, as well as specific treatment criteria for various types of storm water facilities (e.g., infiltration and storm water filters), are contained in the Public Works Standards.
- C. <u>Combination detention based on flow-through based storm water quality</u> <u>control</u>: Detention facilities may be combined with flow-through facilities. The applicant must demonstrate that the combined system could sufficiently treat storm water runoff for the runoff produced by the flowthrough treatment rates of 0.2 inches/hour (on-line facilities), occurring for a three-hour period.

Per City of Sandy Municipal Code standards, the following flow-through based storm water quality control design rates are to be used: The required design flow rate for treatment is the runoff that would be produced from a rainfall intensity of 0.2 inches/hour for on-line facilities, and 0.11 inches/hour for off-line facilities. This rate must be maintainable for a minimum of three hours. Additional design criteria for flow calculation, as well as specific treatment criteria for various types of storm water facilities (e.g., infiltration and storm water filters), are contained in the Public Works Standards.

Basin 1:

Basin 1 will utilize a water quality swale within the detention pond to the northwest corner of the site to meet the water quality requirements. The water quality swale will be a 6-foot wide x 144-foot long swale, at 0.5% slope, having 3:1 side slopes. Per ODOT hydraulics manual the Manning's n for a depth of flow up to 0.70 feet and a fair stand of grass in a maintained channel is 0.14 maximum.

The required design flow rate for treatment is the runoff that would be produced from a rainfall intensity of 0.20 inches/hour for 3 hours.

Water Quality Flow (cfs) = 0.60 (in.) x Area (sq.ft.) 12(in/ft)(3 hr)(60 min/hr)(60 sec/min)

Water Quality Flow (cfs) = 0.60 (in) x (0.1417 Acres)(43,560 sf/Ac) 12(in/ft)(3 hr)(60 min/hr)(60 sec/min)

Notes Basin	1 Water Quali	vi
	33	left slope (%) 📃 vertical
	0	bottom width (ft)
	33	right slope (%) 🔲 vertical
	.5	channel slope (%)
	.02857407	flow (cfs)
Grass		channel type
	0.14	Manning's "n"
area = 0	0.23' = 0.17 fp: .17 sq ft width = 1.	
.□		

Water Quality Flow (cfs) = 0.03 cfs

Velocity is 0.17 feet per second. Therefore, the residence time in a 144-foot-long swale would be:

<u>144 feet</u> = 847 seconds = <u>14.12 minutes</u> 0.17 feet/sec

Since the City of Sandy references the City of Portland BES manual, a 9 minute residence time is the threshold for achieving water quality through a grassy swale. Therefore, the facility meets City of Sandy requirements for flow-through based storm water quality control. \checkmark

Basin 2:

Basin 2 will utilize a water quality swale within the detention pond to the southwest corner of the site to meet the water quality requirements. The water quality swale will consist of three 10-foot wide x 135-foot long swales, at 0.5% slope, having 3:1 side slopes. Per ODOT hydraulics manual the Manning's n for a depth of flow up between 0.70 feet and 1.50 feet and a fair stand of grass in a maintained channel is 0.10 maximum.

The required design flow rate for treatment is the runoff that would be produced from a rainfall intensity of 0.20 inches/hour for 3 hours.

Water Quality Flow (cfs) = $\frac{0.60 \text{ (in.) x Area (sq.ft.)}}{12(in/ft)(3 \text{ hr})(60 \text{ min/hr})(60 \text{ sec/min})}$ Water Quality Flow (cfs) = $\frac{0.60 \text{ (in) x (4.63 Acres)(43,560 \text{ sf/Ac})}{12(in/ft)(3 \text{ hr})(60 \text{ min/hr})(60 \text{ sec/min})}$

Water Quality Flow (cfs) = 0.93 cfs

	33	left slope (%) 📃 vertical
	0	bottom width (ft)
	33	right slope (%) 📃 vertical
	.5	channel slope (%)
	.93	flow (cfs)
ass		channel type
	0.10	Manning's "n"
	= 0.53 f .75 sq ft width = 4	

Velocity is 0.53 feet per second. Therefore, the residence time in a 135-foot-long swale would be:

<u>135 feet</u> 0.53 feet/sec = 255 seconds = 4.25 minutes

Since there are three, parallel swales of roughly the same dimensions, the residence time can be multiplied by three to yield a total residence time of <u>12.75</u> <u>minutes.</u>

Since the City of Sandy references the City of Portland BES manual, a 9 minute residence time is the threshold for achieving water quality through a grassy swale. Therefore, the facility meets City of Sandy requirements for flow-through based storm water quality control. \checkmark

Conclusion/Summary:

This report demonstrates compliance with the storm water requirements of the City of Sandy.

Detention:

City of Sandy has detention requirements for storm events ranging from the 2year storm through the 25-year storm.

This report has used the HydroCAD to demonstrate that all storms between the 2-year storm event and the 25-year storm event will release at or below predevelopment release levels.

HydroCAD was used because the rainfall rates for Sandy cannot be modeled using City of Portland's PAC calculator or the Western Washington Model.

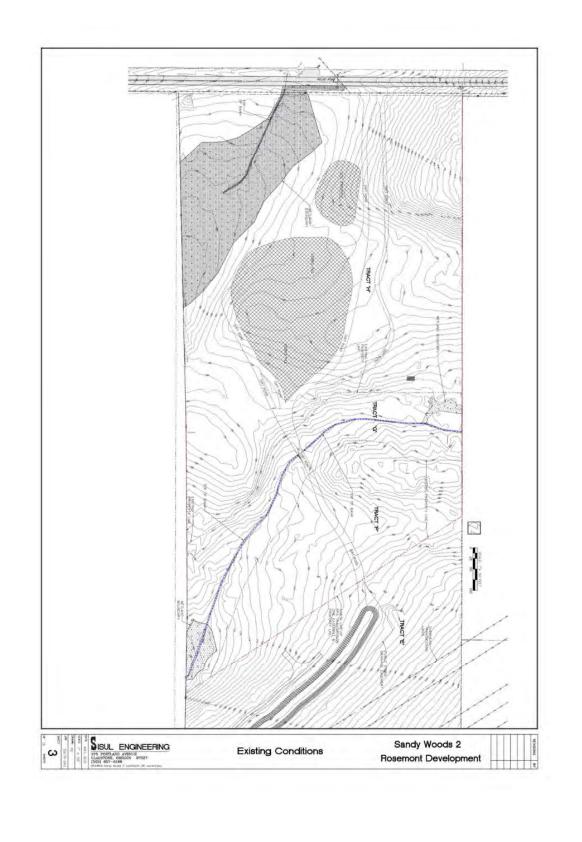
Water Quality Treatment:

The City of Sandy has detention requirements to treat 80% of total annual runoff through either a) detention based water quality treatment, b) flow through based water quality treatment, or c) a combination of detention based and flow through based water quality treatment.

This report has demonstrated that using a water quality swale in the bottom of each detention pond, the water quality treatment will meet City of Sandy's for water quality treatment.

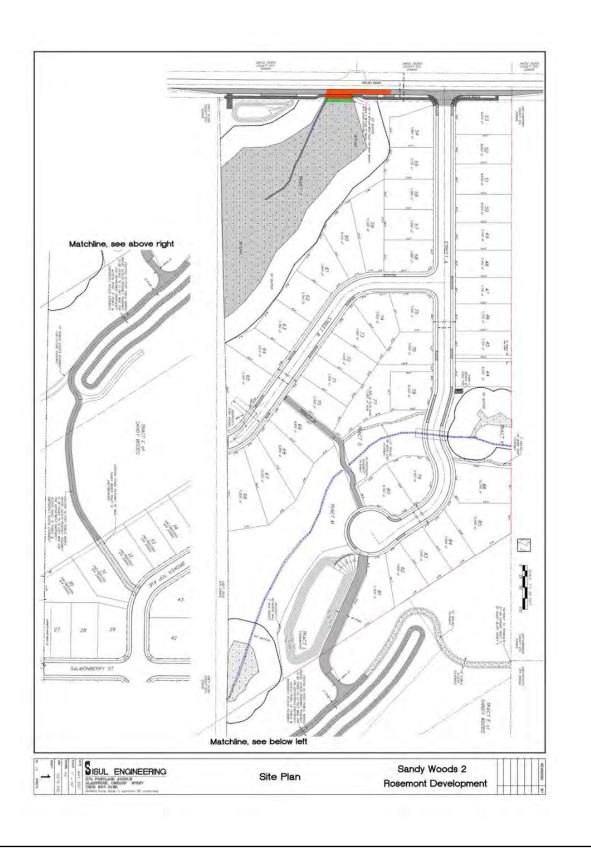
Appendix A:

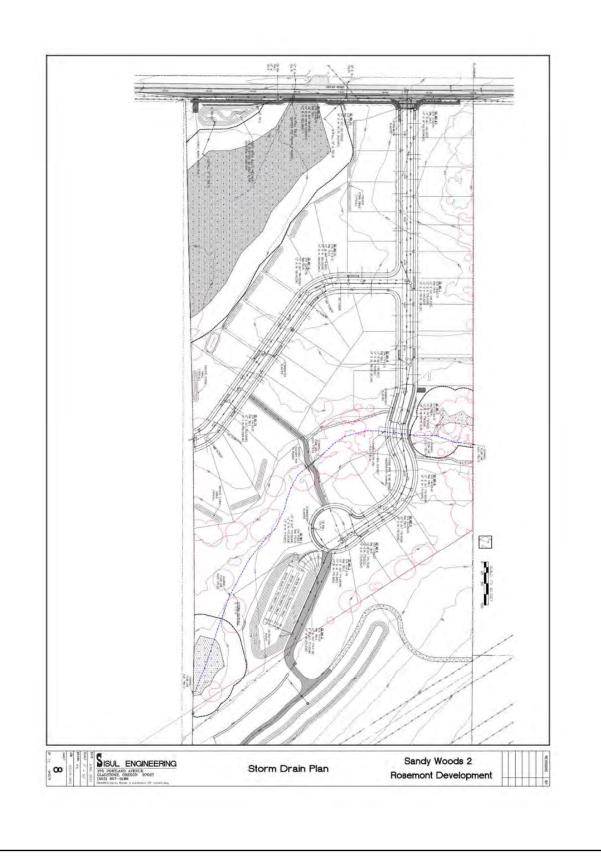
Pre-Development Site Drainage Map



Appendix B:

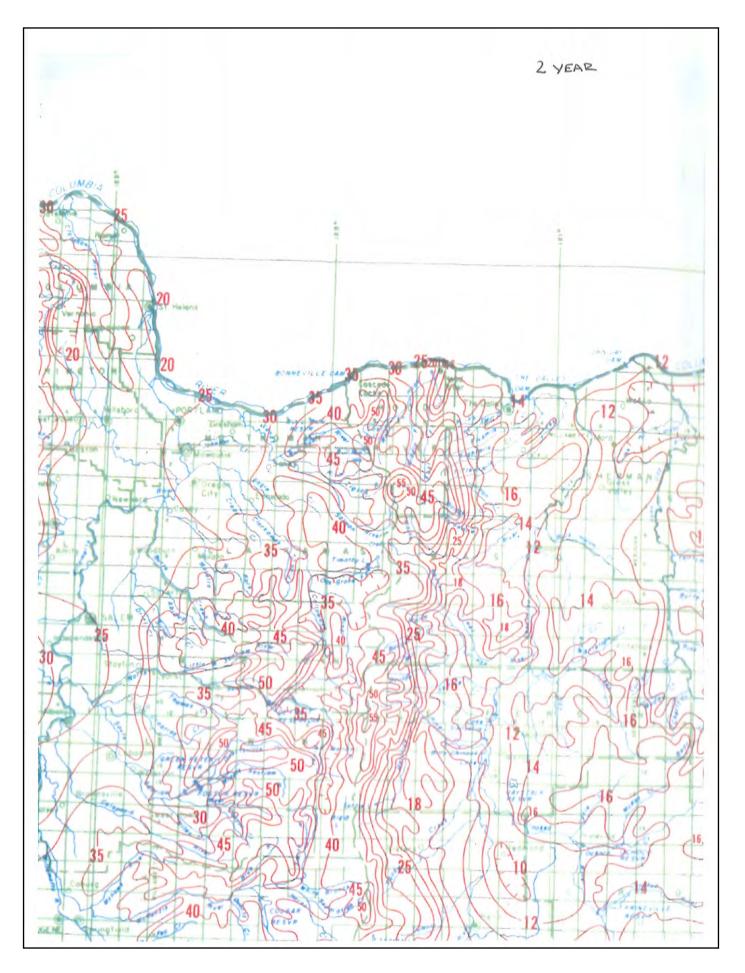
Development Plans

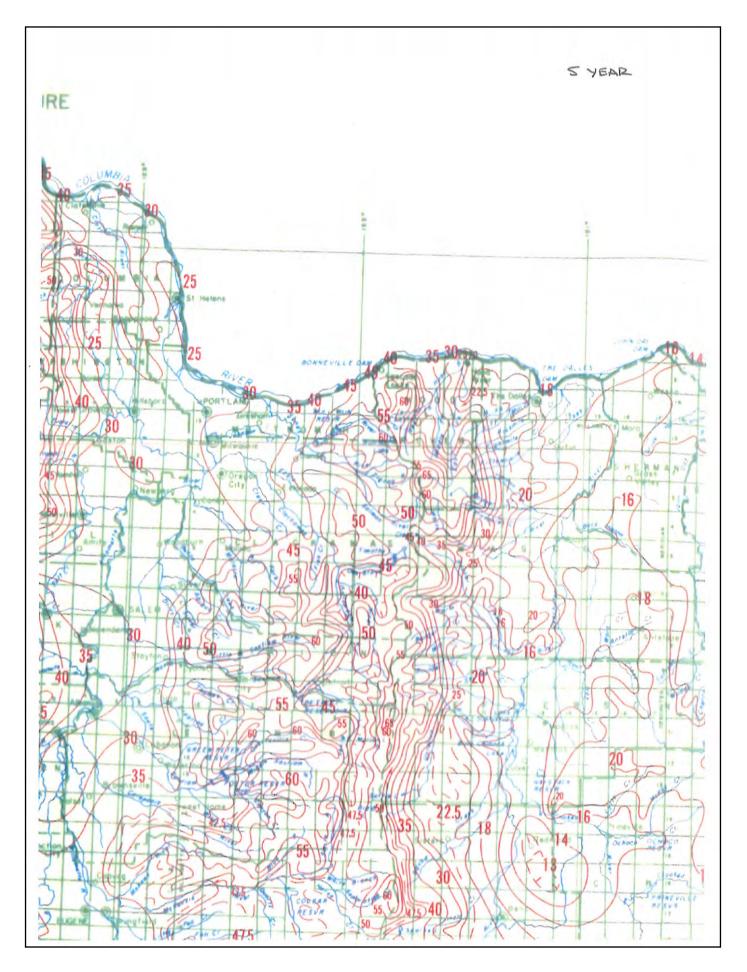


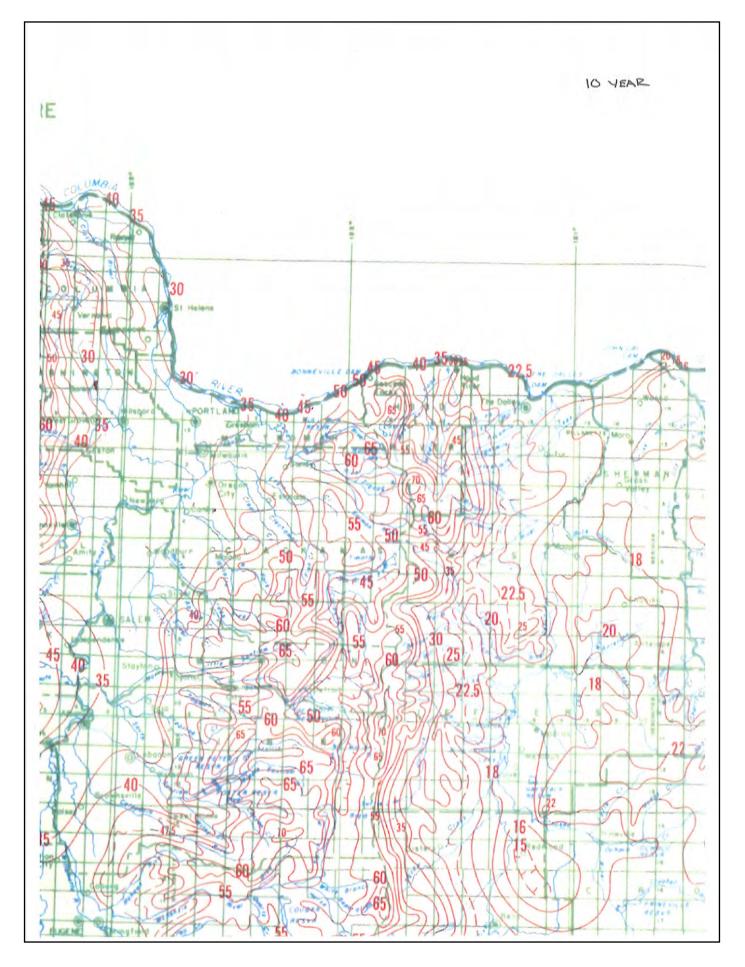


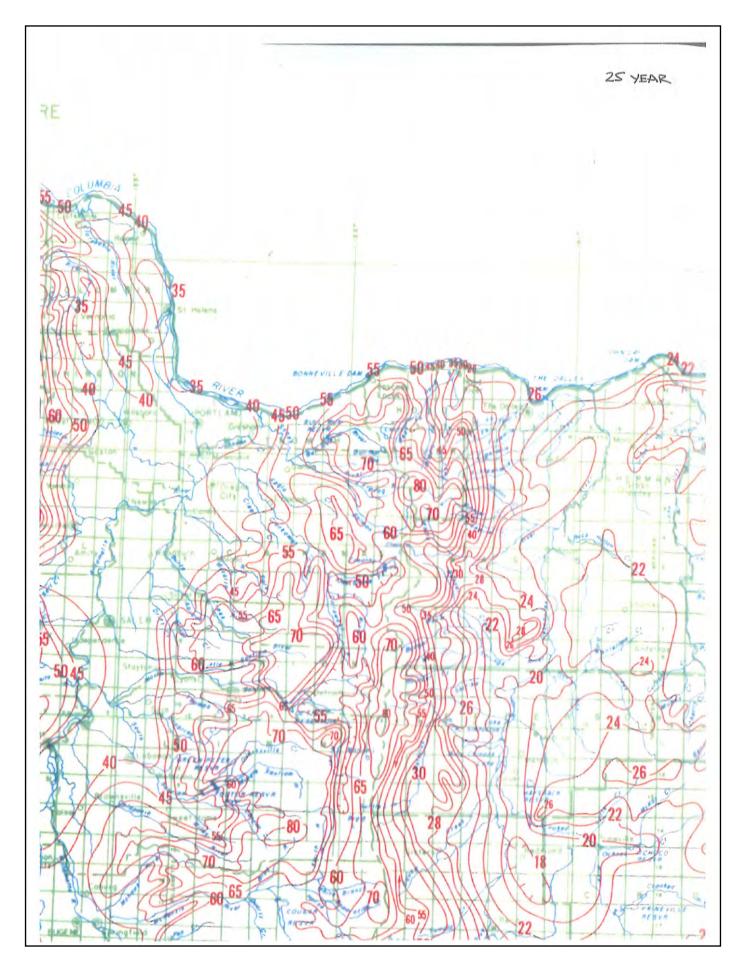
Appendix C:

Isopluvials for 24-HR Precipitation









Appendix D:

Soil Testing

Patrick Sisul, PE Sisul Engineering 503-657-0188 patsisul@sisulengineering.com

1 July 2020

Re: Infiltration testing at 37090 Se Kelso, Boring, OR

Dear Mr. Sisul,

Field Investigation:

Rapid Soil Solutions (RSS) has performed eight (8) infiltration tests at the above-mentioned site. Soils found on site match those in below soils map by the USGS as fine grained Missoula Flood Deposits. Testing was performed for future storm water design.



Infiltration Testing:

Infiltration testing was performed as per the Clackamas County Storm water standards. Testing took place in sleeved hand augur holes and open test pits due to the shallow depth of testing requested. The test was run a total of three times. See table below that summarizes depths and rates. See attached infiltration sheet that shows pre-soak amounts and test durations.

	Depth	
Hole #	(ft)	Rate (in/hr)
1	0.5	3
2	1	6
3	1.5	5.5
4	0.5	3
5	1	5.5
6	1.5	6
7	3	20
8	4	20



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Depth to Ground Water

Ground water not encountered. Using the USGS maps, for depth of ground water in the Portland Metro area then depth is estimated to 20ft below grade depending on the location on the site.



Recommendations

RSS does recommend an infiltration at various depths across the site.

The analysis, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of explorations. Any questions regarding this report please contact me at the below number or email.

Sincerely,



Mia Mahedy, PE GE.



503-816-3689

mia@rapidsoilsolutions.com

	Prelimina 37090 SE Kelso Road, Boring	7 8 ry Information Tester's Name : Wilton A. Roberts, Mahedy, PE, GE	
		Tester's Company: Rapid Soil So	lutions
		HA #1 rofile Detail	
	S011 F1		
Depth (ft)		Description	
-0.3ft	Topsoil	* · · · · · · · · · · · · · · · · · · ·	
.3-0.5ft	Dry to damp, dark reddish brown, n	redium gramed, clayey SiL1	
lo water found			
	/20 9:30 6". Empty @11:34. Refilled to 6 20 13:30, 2.5".	". 3"@12:48. Refilled to 6".	
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger
Weather:	Cloudy, 62 deg.	Depth:	6"
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)
13:30	2.5		
14:00	1.0	6.00	3.0
14:30	4.5		3.0
15:00	3.0		3.0
15:30	1.5	6.00	3.0
16:00	4.5	0.00	3.0
16:30	3.0		
	3.0		3.0
	Infiltration rate at this test site		3.0

Rapid Soil Solutions Infiltration Test Results

	Н	IA #2	
	Soil Pro	ofile Detail	
Depth (ft)		Description	
0-0.3ft	Topsoil		
0.3-1.2ft	Dry to damp, dark reddish brown, m	edium grained, clayey SILT	
No water found			
Presaturation Start Time : 6/30 Presaturation End Time: 6/30/2	20 9:30 12". Empty @ 11:34. Refilled to 10 0 13:30, 5.25".	12". 3.5"@12:48. Refilled to 12".	
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger
Weather:	Cloudy, 62 deg.	Depth:	12"
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)
13:30	5.3		
14:00	1.8	12.00	7.0
14:30	9.0		6.0
15:00	5.5		7.0
15:30	2.0	12.00	7.0
16:00	8.5		7.0
16:30	5.0		7.0
	nfiltration rate at this test site		6.0

HA #3

	Soil Pro	ofile Detail	
Depth (ft)		Description	
0-0.3ft	Topsoil		
0.3-1.5ft	Dry to damp, dark reddish brown, me	edium grained, clayey SILT	
-			
No water found			
Presaturation Start Time : 6/30/ Presaturation End Time: 6/30/2	² 20 9:30 12". Empty @11:34. Refilled to 1 0 13:30, 8".	8". 6"@12:48. Refilled to18".	
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger
Weather:	Cloudy, 62 deg.	Depth:	18"
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)
13:30	8.0		
14:00	5.3	18.00	5.5
14:30	15.0		6.0
15:00	12.0		6.0
15:30	9.0		6.0
16.00	()	18.00	6.0
16:00	6.0	10.00	0.0
16:00	14.8	10.00	6.5

Rapid Soil Solutions Infiltration Test Results

	Н	[A #4	
	Soil Pro	ofile Detail	
Depth (ft)		Description	
0-0.3ft	Topsoil		
0.3-0.5ft	Dry to damp, dark reddish brown, me	edium grained, clayey SILT	
No water found			
Presaturation Start Time : 6/30 Presaturation End Time: 6/30/2	/20 9:30 6". Empty @11:34. Refilled to 6" 20 13:30 3".	. 1"@12:42. Refilled to 6".	
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger
Weather:	Cloudy, 62 deg.	Depth:	6"
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)
13:30	3.0		
14:00	1.3	6.00	3.5
14:30	4.5		3.0
15:00	3.0		3.0
15:30	1.5	6.00	3.0
16:00	4.5		3.0
16:30	3.0		3.0
	nfiltration rate at this test site		3.0

HA #5

Soil Profile Detail Depth (ft) Description 0-0.3ft Topsoil 0.3-1.2ft Dry to damp, dark reddish brown, medium grained, clayey SILT No water found Presaturation Start Time: 6/30/20 9:30 12". Empty @ 11:34. Refilled to 12". Presaturation End Time: 6/30/20 13:30, 4.75". Date & Time: Instrument Used: 6/30/2020 9:30 4" hand auger Weather: Cloudy, 62 deg. Depth: 12" Time Measurement (inches) Level Refilled To (inches) Rate (inches/hour) 13:30 4.8 14:00 2.0 12.00 5.5 14:30 8.8 6.5 15:00 6.0 5.5 15:30 3.0 12.00 6.0 16:00 8.8 6.5 16:30 5.5 6.5 Infiltration rate at this test site 5.5

Rapid Soil Solutions Infiltration Test Results

	Н	IA #6	
	Soil Pro	ofile Detail	
Depth (ft)		Description	
)-0.3ft	Topsoil		
0.3-1.5ft	Dry to damp, dark reddish brown, me	edium grained, clayey SILT	
No water found			
Presaturation Start Time : 6/30 Presaturation End Time: 6/30/2	/20 9:30 12". Empty @11:34. Refilled to 1 20 13:30, 7.75".	8".	
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger
Weather:	Cloudy, 62 deg.	Depth:	18"
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)
13:30	7.8		
14:00	4.8	18.00	6.0
14:30	14.8		6.5
15:00	11.5		6.5
15:30	8.5	18.00	6.0
16:00	14.8		6.5
16:30	11.5		6.5
	infiltration rate at this test site	·	6.0

	Н	A #7		
	Soil Pro	ofile Detail		
Depth (ft)	Depth (ft) Description			
0-0.3ft	Topsoil			
0.3-3.0ft	Dry to damp, dark reddish brown, me	ry to damp, dark reddish brown, medium grained, clayey SILT		
No water found				
Presaturation Start Time: 6/30/	20 9:30 12". Empty @ 11:15. Refilled to 1	2". Empty @11:35. Refilled to 12". En	npty at 12:55.	
Presaturation End Time: 6/30/2	0 12:55 Use 20"/hr. For design.			
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger	
Weather:	Cloudy, 62 deg.	Depth:	4'	
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)	
I	nfiltration rate at this test site		20.0	

	Н	A #8						
	Soil Pro	ofile Detail						
Depth (ft)		Description						
0-0.3ft	Topsoil							
0.3-4ft	Dry to damp, dark reddish brown, me	edium grained, clayey SILT						
No water found								
	20 9:30 12". Empty @ 11:15. Refilled to 1 0 12:55 Use 20"/hr. For design.	12". Empty @11:35. Refilled to 12". Em	apty at 12:55.					
Date & Time:	6/30/2020 9:30	Instrument Used:	4" hand auger					
Weather:	Cloudy, 62 deg.	Depth: 3'					Depth: 3'	3'
Time	Measurement (inches)	Level Refilled To (inches)	Rate (inches/hour)					
I	nfiltration rate at this test site		20.0					

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Appendix E:

Curve Number Tables

TR-55 Curve Number Tables

Appendix 4B

Table 4B-2 Runoff curve numbers for selected agricultural, suburban, and rural areas (western Washington).

		and the second			logic soll	n in mani n
Cover Type and Hydrologic Condition			A	В	C (D
Curve		Conditions				
Pasture, Grassland, or Range - Continuous For	* 4					
Fair condition (ground cover 50% to 75% and no			49	69	79	84
Good condition (ground cover >75% and lightly	or only occasionally grazed)		39	61	74	80
Woods:						
Fair (woods are grazed but not burned, and son	ne forest litter covers the soil}		36	60	73	79
Good (woods are protected from grazing, and li			30	55	70	77
	umbers for Postdevelopment	Conditions				
Open Space (lawns, parks, golf courses, cemete	eries, landscaping, etc.): ⁽¹⁾					
Fair condition (grass cover on 50% to 75% of the	e area)		77	85	90	92
Good condition (grass cover on >75% of the are	a)		68	80	86	90
Impervious Areas:						• •
Open water bodies: lakes, wetlands, ponds, etc.			100	100	100	100
Paved parking lots, roofs, ^{12;} driveways, etc. (excl	uding right of way)		98	98	98	98
Porous Pavers and Permeable Interlocking Con	crete (assumed as 85% imper	vious and 15% la	wn):			
Fair lawn condition (weighted average CNs)			95	96	97	97
Good lawn condition (weighted average CNs)			94	95	96	97
Paved			98	98	98	98
Gravel (including right of way)			76	85	89	91
Dirt (including right of way)			72	82	87	89
Pasture, Grassland, or Range – Continuous Fora	ge for Grazing:					
Poor condition (ground cover <50% or heavily gr			68	79	86	89
air condition (ground cover 50% to 75% and no	•		49	69	79	84
Good condition (ground cover >75% and lightly o	, .		39	61	74	80
Noods:	,					
Poor (forest litter, small trees, and brush are des	troved by heavy grazing or re-	gular hurning)	45	66	77	83
air (woods are grazed but not burned, and some		Earth Datamat	36	60	73	79
Good (woods are protected from grazing, and lit		er the soil)	30	55	70	77
ingle Family Residential; ^[3]	Should only be used for	Average percent		22		
Dwelling Unit/Gross Acre	subdivisions >50 acres	impervious area	3][4]			
1.0 DU/GA	54541051611575626125	15		arate curv	e number	
1,5 DU/GA		20		t be selec	and the	•
2.0 DU/GA		25		ious & im		
2.5 DU/GA		30		ions of th	<u>.</u>	
3.0 DU/GA		34	basi			
3.5 DU/GA	••	38				
4.0 DU/GA	**************************************	42				
4.5 DU/GA		46				
5.0 DU/GA		48				
5.5 DU/GA		50				
6.0 DU/GA		52				
6.5 DU/GA		54				
7.0 DU/GA		56				
7.5 DU/GA		58				
UDs, condos, apartments, commercial businesse		Separate curve				
dustrial areas, and subdivisions <50 acres	must be computed	pervious and in	nperviou	s portion	s of the s	site

For a more detailed and complete description of land use curve numbers, refer to Chapter Two (2) of the Soll Conservation Service's Technical Release No. 55 (210-VI-TR-55, Second Ed., June 1986).

[1] Composite CNs may be computed for other combinations of open space cover type.

[2] Where roof runoff and driveway runoff are infiltrated or dispersed according to the requirements in Chapter 3, the average percent impervious area may be adjusted in accordance with the procedure described under "Flow Credit for Roof Downspout Infiltration" and "Flow Credit for Roof Downspout Dispersion."

[3] Assumes roof and driveway runoff is directed into street/storm system.

[4] All remaining pervious area (lawn) is considered to be in good condition for these curve numbers.

Page 4B-4

WSDOT Highway Runoff Manual M 31-16.04 April 2014

Appendix 4B

Table 4B-5 "n" and "k" values used in time calculations for hydrographs.

"n," Sheet Flow Equation Manning's Values (for the Initial 300 ft. of travel)	
Manning's Values for sheet flow only; from Overton and Meadows 1976 (see TR-55; 1986)	n,
Smooth surfaces (concrete, asphalt, gravel, or bare, hand-packed soil)	0.011
Fallow fields or loose soil surface (no residue)	0.05
Cultivated soil with residue cover <20%	0.06
Cultivated soll with residue cover >20%	0,17
Short prairie grass and lawns	0.15
Dense grasses	0.24
Bermuda grass	0.41
Range (natural)	0.13
Woods or forest with light underbrush	0.40
Woods or forest with dense underbrush	0,80
(210-VI-TR-55, Second Ed., June 1986)	
"K" Values Used in Travel Time/Time of Concentration Calculations	
Shallow Concentrated Flow (after the initial 300 ft: of sheet flow, R = 0.1)	k,
 Forest with heavy ground litter and meadows (n ≈ 0.10) 	3
Brushy ground with some trees (n ≈ 0.060)	5
3. Fallow or minimum tillage cultivation (n = 0.040)	8
4. High grass (n = 0.035)	9
5. Short grass, pasture, and lawns (n ≈ 0.030)	11
6. Nearly bare ground (n = 0.025)	13
7. Paved and gravel areas (n = 0.012)	27
Channel Flow (intermittent) (at the beginning of visible channels, R = 0.2)	Ke
1. Forested swale with heavy ground litter (n = 0.10)	5
2. Forested drainage course/ravine with defined channel bed (n = 0.050)	10
3. Rock-lined waterway (n = 0.035)	15
4. Grassed waterway (n = 0.030)	17
5. Earth-lined waterway (n = 0.025)	20
6. CMP pipe, uniform flow (n = 0.024)	21
7. Concrete pipe, uniform flow (0.012)	42
8. Other waterways and pipe	0.508/n
hannel Flow (continuous stream, R = 0.4)	kc
 Meandering stream with some pools (n = 0.040) 	20
10. Rock-lined stream (n = 0.035)	23
11. Grass-lined stream (n = 0.030)	27
12. Other streams, manmade channels, and pipe	0.807/n

Page 48-7

TR-55 Curve Number Tables

Type of Channel	Manning's	Type of Channel	Manning' "n"
and Description	(Normal)	and Description	(Normal)
A. Constructed Channels		6. Sluggish reaches, weedy	
a. Earth, straight and uniform		deep pools	0.070
1. Clean, recently completed	0.018	7. Very weedy reaches, deep	
2. Gravel, uniform selection,	0.025	pools, or floodways with	
clean		heavy stand of timber and	
3. With short grass, few	0,027	underbrush	0,100
weeds		b. Mountain streams, no vegetation	
b. Earth, winding and sluggish		in channel, banks usually steep,	
1. No vegetation	0.025	trees and brush along banks	
2. Grass, some weeds	0,030	submerged at high stages	
3. Dense weeds or aquatic		 Bottom: gravel, cobbles, and 	
plants in deep channels	0.035	few boulders	0.040
Earth bottom and rubble		Bottom: cobbles with large	
sides	0.030	boulders	0,050
5. Stony bottom and weedy		B-2 Flood plains	
banks	0.035	a. Pasture, no brush	
6. Cobble bottom and clean		1, Short grass	0.030
sides	0.040	2. High grass	0.035
c. Rock-lined		b. Cultivated areas	
1, Smooth and uniform	0,035	1. No crop	0.030
2. Jagged and irregular	0.040	2. Mature row crops	0.035
d. Channels not maintained,		3. Mature field crops	0.040
weeds and brush uncut		c. Brush	
1. Dense weeds, high as flow		1. Scattered brush, heavy	
depth	0,080	weeds	0.050
2. Clean bottom, brush on		2. Light brush and trees	0,060
sides	0.050	3. Medium to dense brush	0.070
3. Same, highest stage of		4. Heavy, dense brush	0.100
flow	0.070	d. Trees	
4. Dense brush, high stage	0,100	1. Dense willows, straight	0.150
4. Dense brush, high stage Natural Streams		2. Cleared land with tree	
B-1 Minor streams (top width at		stumps, no sprouts	0.040
flood stage < 100 ft.)		3. Same as above, but with	
a. Streams on plain		heavy growth of sprouts	0.060
1. Clean, straight, full stage,		4. Heavy stand of timber, a few	
no rifts or deep pools	0.030	downed trees, little	
2. Same as above, but more		undergrowth, flood stage	
stones and weeds	0.035	below branches	0.100
3. Clean, winding, some		5. Same as above, but with	
pools and shoals	0.040	flood stage reaching	
4. Same as above, but some		branches	0,120
weeds	0,040		
5. Same as 4, but more stones	0.050		

Table 4B-6 Values of the roughness coefficient, "n."

*Note: These "n" values are "normal" values for use in analysis of channels. For conservative design for channel capacity, the maximum values listed in other references should be considered. For channel bank stability, the minimum values should be considered.

Exhibit E

TRANSPORTATION IMPACT STUDY

FOR

SANDY WOODS PHASE 2

SOUTH OF KELSO ROAD AND WEST OF JEWELBERRY AVENUE

CITY OF SANDY, OREGON



PREPARED BY

KELLY ENGINEERING

March 2021

TRANSPORTATION IMPACT STUDY

Sandy Woods Phase 2

City of Sandy, Oregon

March 3, 2021

Prepared for:

Rosemont Development Attn: Rob Venema 10117 SE Sunnyside Rd., Suite F1178 Clackamas, OR 97015

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TRANSPORTATION IMPACT STUDY

Sandy Woods Phase 2

March 3, 2021

INTRODUCTION

A transportation impact study (TIS) for the Sandy Woods Phase 2 development was conducted to determine the potential traffic related impacts of the development to the surrounding roadway system. The site is located on the south side of SE Kelso Road and west of SE Jewelberry Avenue in the City of Sandy. Phase 1 of the development is located to the south. A tract of land and the Bonneville Power Administration (BPA) power lines separates the two phases. There will be no roadway connection between the two phases.

The development will consist of 43 single-family detached homes. The Sandy Crest Phase 2 development was based on discussions with staff from the City of Sandy and Clackamas County. SE Kelso Road is within the jurisdiction of Clackamas County.

Land uses in the vicinity of the site consist of single family homes and undeveloped land. A vicinity map, aerial photograph and site plan are shown in Figures 1a, 1b and 1c.

Roadway Characteristics

The site will have access onto SE Kelso Road. SE Kelso Road is a two lane paved roadway with a posted speed limit of 45 mph. The roadway is classified as a Minor Arterial.

The Bluff Road/SE Kelso Road intersection is controlled by stop signs on the SE Kelso Road approaches. The SE Orient Drive/SE Kelso Road intersection was recently converted to all way stop sign control. The lane configurations for the intersections are shown in Figure 2.

Traffic Volumes

The traffic counts in this report were obtained from the Sandy Bluff Annex 6 Subdivision & Future Development Transportation Impact Study. The study was prepared by Lancaster Engineering in 2017 and included an analysis of several intersections in the area. The Sandy Bluff development is located south of the Sandy Woods Phase 2 development.

-1-

The traffic counts in the Sandy Bluff Annex 6 Subdivision & Future Development transportation impact study were conducted from 7:00 to 9:00 am and 4:00 to 6:00 pm during October 2017. The AM peak hour occurred between approximately 7:00 to 8:00 am and the PM peak hour occurred between approximately 4:00 to 5:00 pm at the SE Orient Drive/SE Kelso Road intersection and 4:45 to 5:45 pm at the Bluff Road/SE Kelso Road intersection. The peak hour at the intersections is the one hour time period when traffic on the adjacent streets are the highest and congestion is most likely to occur. The existing traffic volumes for 2017 are shown in Figure 3. The raw traffic count data is shown in Appendix A.

As a result of the current service oriented facility and other required closures there has been a noticeable decline in traffic volumes on the roadway systems. Therefore, the traffic counts used in this report for 2017 were assumed to have an adjustment factor of 2.5% per year to current year. The adjustment factor was based on historical traffic counts obtained from Clackamas County. The historical traffic counts at two locations on SE Kelso Road are included in Appendix B. Data from the permanent count stations on SE Kelso Road were used to evaluate the decline in traffic volumes due to the "Stay Home, Stay Safe" orders associated with the COVID-19 pandemic. The adjusted traffic volumes are shown in Figure 4.

Trip Generation/Distribution

The Sandy Woods Phase 2 development could generate approximately 406 trips per day, ITE Trip Generation Manual, 10th edition. A trip is a one directional vehicle movement. 32 trips could occur during the AM peak hour and 43 trips could occur during the PM peak hour. The trip generation rates are shown in Table 1.

		Fraffic G dy Wood			
Land Use	ITE code	Dwell units	Daily Trips	AM Peak Hour Trips	PM Peak Hour Trips
Proposed Single Family Homes	210	43	406	32 (in-8, out-24)	43 (in-27, out-16)

Table 1

The directional distribution of traffic generated by the development was assigned to the study area intersections. Based on the existing traffic volumes and a survey conducted along the site frontage it was assumed that 55% of the site trips will travel to and from the west on SE Kelso Road and 45% will travel to and from the east towards Bluff Road. At the SE Kelso Road/SE Orient Drive intersection 20% will travel to and from the north on SE Orient Drive and 5% will travel to and from the south. 30% will continue towards the west on SE Kelso Road towards US-26. The site traffic distribution and assignment diagram is shown in Figure 6.

Year 2023 Traffic Volumes

The assumption was made in this report that build out of the Sandy Woods Phase 2 development will occur within two years. A 2.5 percent per year compounded growth rate was used at the study area intersections for the year 2023 planning horizon.

In addition to the traffic growth rate in-process traffic from the Jewelberry Meadows Subdivision was included. In-process traffic is traffic from developments that have been approved, but are not generating full build out traffic volumes. The Jewelberry Meadows Subdivision is a 20 lot subdivision located east of SE Jewelberry Avenue and north of the Penny Street intersection. The in-process traffic was obtained from the City of Sandy's Development Activity Map and correspondence with staff from the City of Sandy.

Peak Hour Traffic Operations

The scope of the transportation impact study was based on discussions with staff from the City of Sandy and Clackamas County. Based on the discussions an analysis was conducted at the following intersections during the weekday AM and PM peak hours:

- (1) SE Kelso Road & SE Orient Drive
- (2) SE Kelso Road. & Bluff Road
- (3) SE Kelso Road & site access

The study area intersections and were analyzed to determine existing, year 2023 without project and year 2023 with project conditions. The year 2023 traffic volumes without and with the project are shown in Figures 5 and 7.

-3-

The intersection operational analysis was conducted using the procedures in the 2010 <u>Highway</u> <u>Capacity Manual</u>. These procedures describe the operation of an intersection in terms of its level of service (LOS). The LOS criteria ranges from "A", which indicates little, if any, delay to "F", which indicates that vehicles experience very long delays. The LOS criteria with the corresponding delay in seconds per vehicle is shown in Table 2. The capacity analysis summary is shown in Table 3.

	Table 2	
Level	of Service	Criteria

Level of Service (LOS)	A	В	С	D	Е	F
Unsignalized intersections	· · · · ·					177
Average Delay (seconds per vehicle)	≤10	>10 - 15	>15 - 25	>25-35	>35 - 50	>50

	AM P	eak Hour	PM P	eak Hour
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
SE Orient Drive & SE Kelso I	Road			
Existing	В	11.0	В	10.8
Year 2022 w/o Project	В	11.5	В	11.4
Year 2022 with Project	В	11.8	в	11.7
Bluff Road & SE Kelso Road				
Existing	В	13.5	в	12.6
Year 2023 w/o Project	В	14.0	В	12.9
Year 2023 with Project	В	14.3	В	13.3
SE Kelso Road & site access				
Existing	n/a			
Year 2022 w/o Project	n/a			
Year 2022 with Project	В	11.2	В	11.3

Table 3 Capacity Analysis Summary

Based on the findings of this TIS the study area intersections will operate at acceptable levels with build out of the Sandy Woods Phase 2 development. The LOS computer printouts are included in Appendix E.

Pedestrian/Bicycle/Transit Considerations

No pedestrian or bicycle activities were observed within the vicinity of the site along SE Kelso Road during field observations. The site is not served by public transit service.

Sight Distance

Sight distance was measured at the proposed site access onto SE Kelso Road. The measured corner sight distance was over 500 feet when looking towards the east and west. Based on the posted speed limit of 45 mph on SE Kelso Road and the criteria in AASHTO, <u>A Policy on Geometric Design of Highways and Streets</u>, 2011 the sight distance requirement is met.

Turn Lanes

A left turn lane improves safety and increases the capacity of the roadway by reducing the speed differential between the through and left turn vehicles. The requirement for a left turn lane was evaluated at the study area intersections as based on ODOT guidelines (ODOT Highway Design Manual, 2012). Based on the findings a southbound left turn at the SE Orient Drive/SE Kelso Road intersection is justified as based on volumes during the PM peak hour under existing conditions. The left turn lane criterion for southbound traffic at the intersection is shown in Appendix D. However, the SE Orient Drive/SE Kelso Road intersection was recently converted to all way stop sign control and a left turn lane is no longer necessary. This issue was also addressed in the Sandy Bluff Annex 6 Subdivision & Future Development Transportation Impact Study prepared by Lancaster Engineering.

Traffic Signal Warrant Analysis

The need for a traffic signal was examined at the study area intersections. Due to the low volume of traffic on the minor and major street approaches traffic signals are not justified.

-5-

Transportation Improvements

The City of Sandy and the Oregon State Department of Transportation are currently updating the Transportation System Plan (TSP). The TSP will review community, business, visitor and stakeholder input to identify and prioritize future transportation projects and investments. The current TSP was last completed in 2011. The 2011 TSP and Transportation Capital Project List identifies no motor vehicle system projects within the vicinity of the Sandy Woods Phase 2 development.

Collision Data

Collision data was obtained from ODOT for the most recent five years of available data. The collision data is shown in Table 4 and Appendix C.

	Carried I			Collision Type	2		
Intersection	Number of Collisions	Angle	Backing	Rear End	Turning Movements	Fixed Object	Rate MEV*
SE Orient Drive/ SE Kelso Road	25	14	1	4	6		1.8
Bluff Road/ SE Kelso Road	3			-1-	- 1	-1	0.4

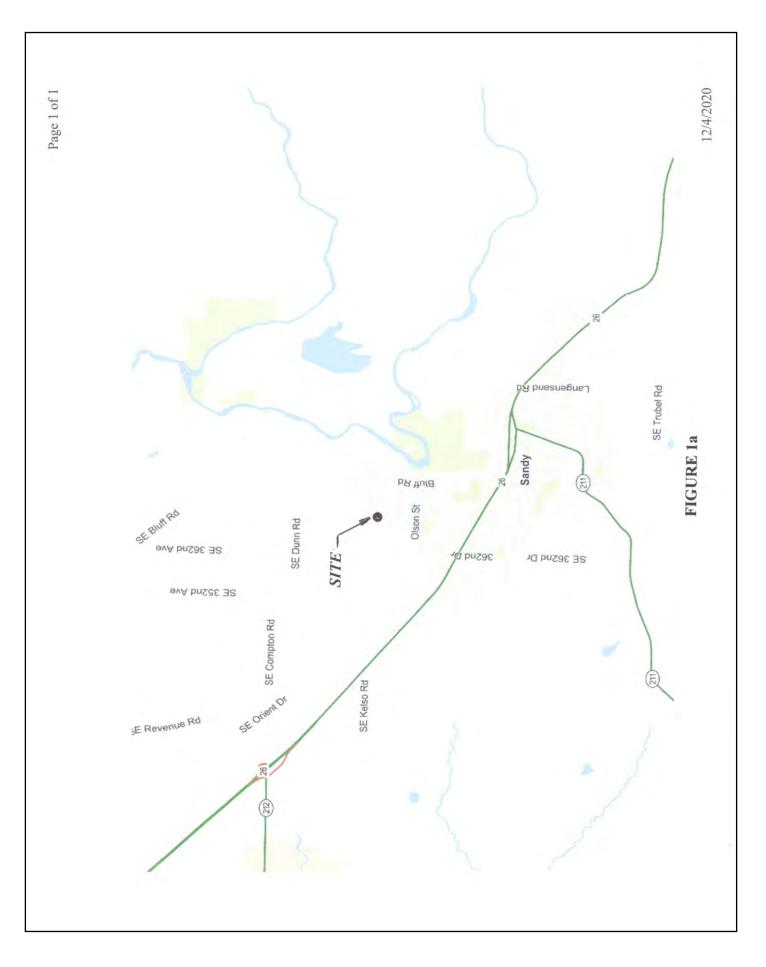
Table 4 Collision Data

Based on the available data 25 accidents have been reported to ODOT at the SE Orient Drive/SE Kelso Road intersection during the previous five years. The 25 accidents equate to an accident rate of 1.8 accidents per million entering vehicles (MEV). This is above the threshold of 1.0 accidents per MEV that usually identifies an intersection with a high accident rate. The majority of accidents at the intersection were angle type collisions. Angle type collisions can be caused by restricted sight distance, a large total intersection volume or a high approach speed. The sight distance at the intersection is adequate and the total entering volumes is also not excessive given the acceptable level of service. The appropriate countermeasure would be to install all way stop sign control at the intersection and this was recently done. Therefore, the accident rate should be significantly reduced.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this transportation impact study the surrounding roadway system can adequately accommodate traffic from the Sandy Woods Phase 2 development. No off site transportation improvements or traffic control devices were identified to accommodate the development.

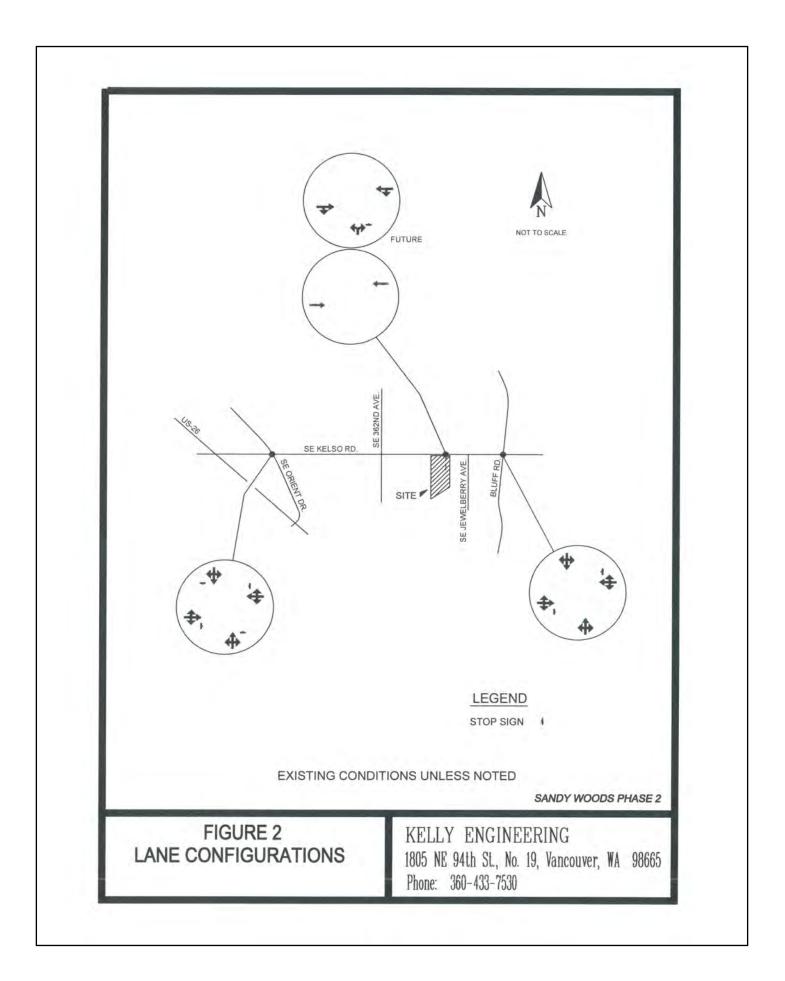
Adequate sight distance should be maintained at the site access onto SE Kelso Road. Obstructions by landscaping, signs or other objects should not be allowed.

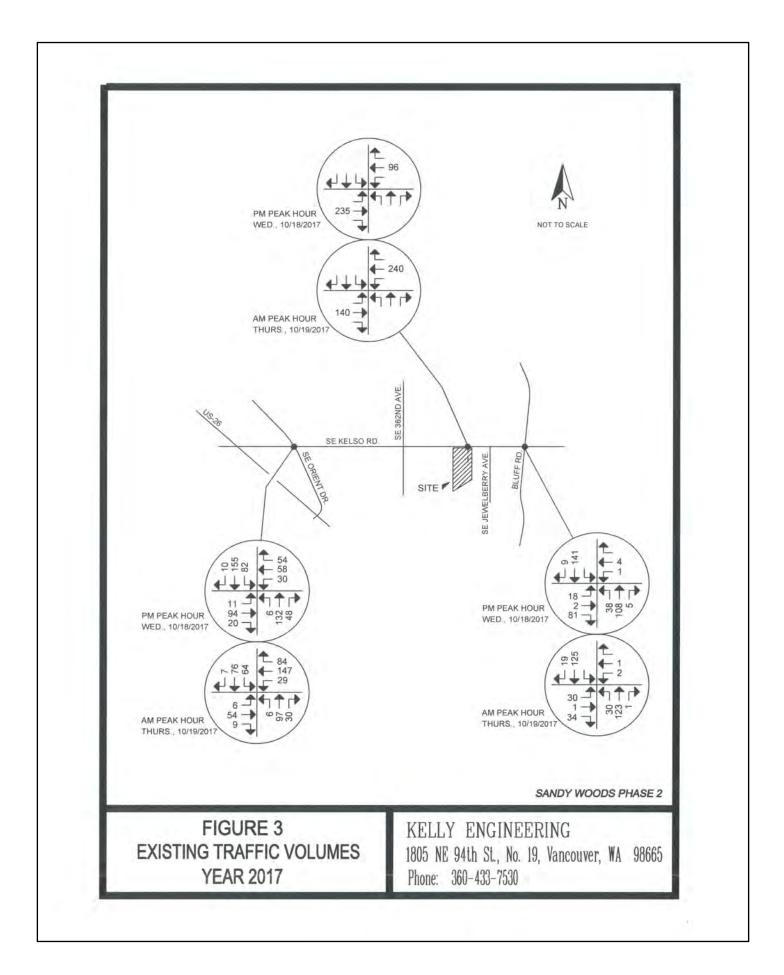


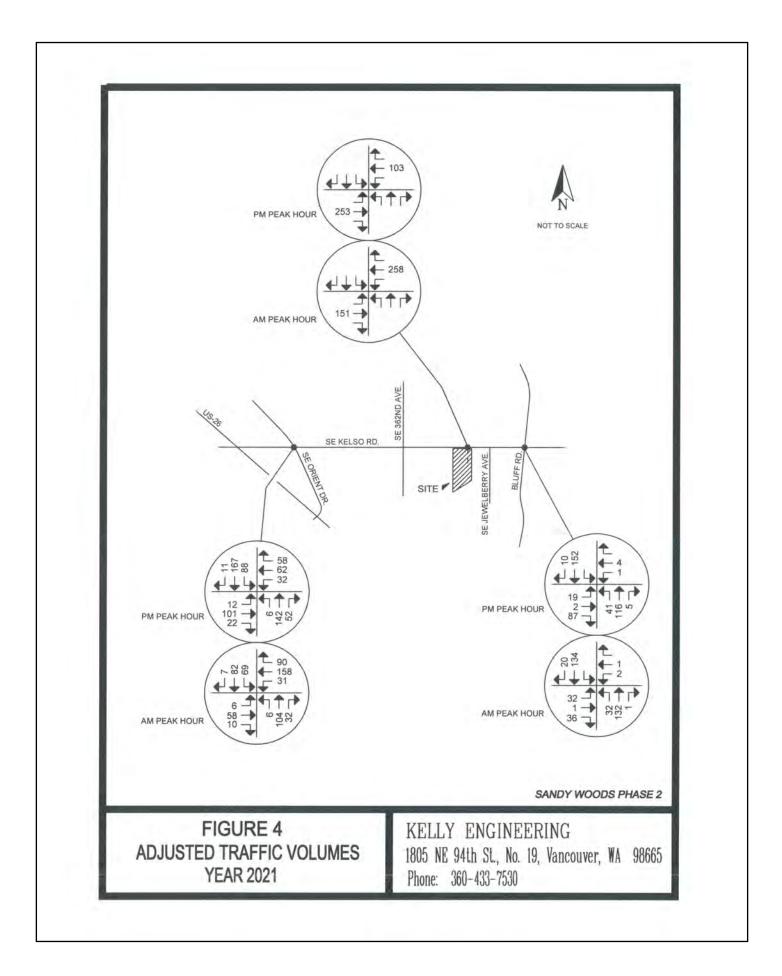


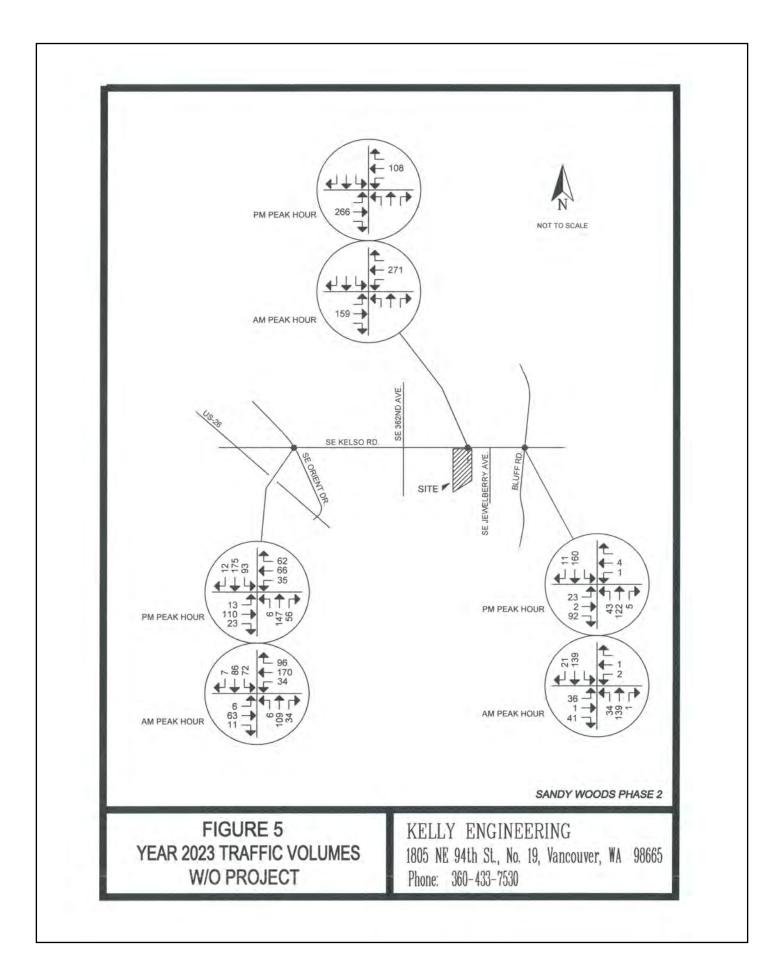


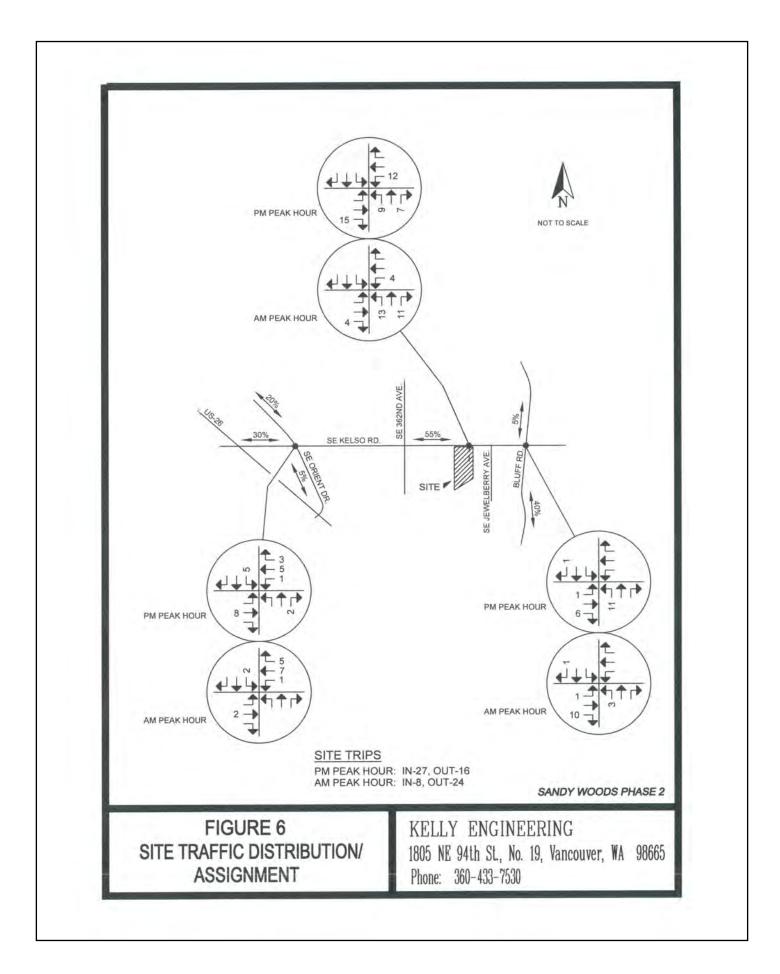


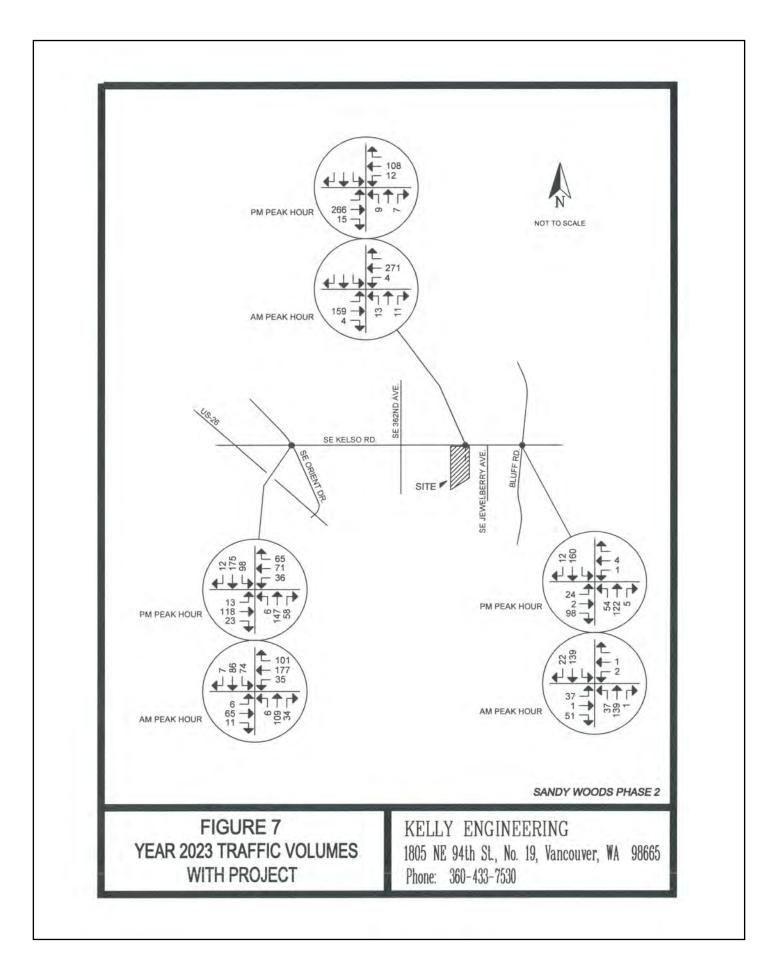




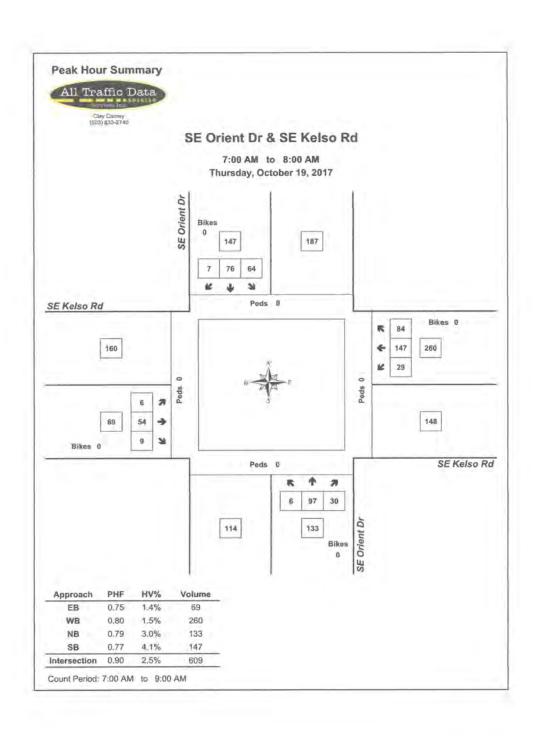




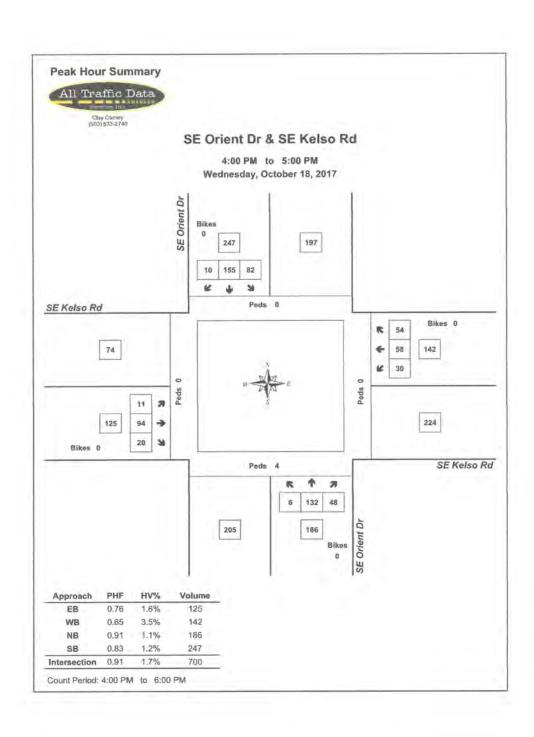




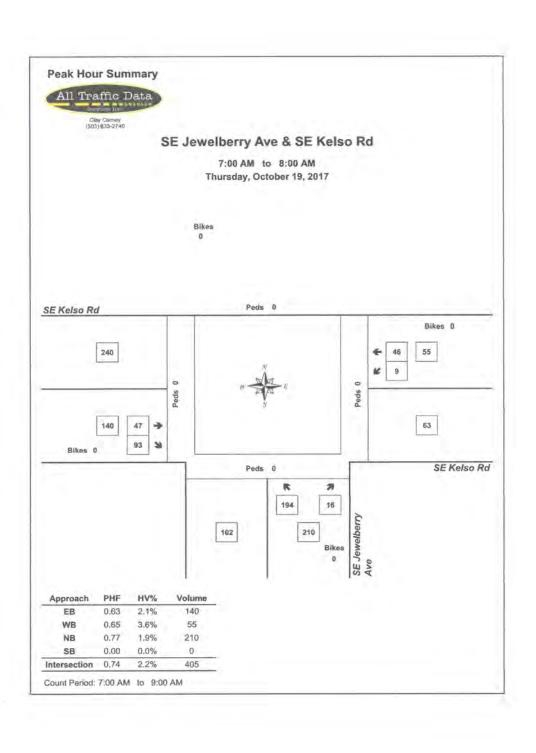
APPENDIX A RAW TRAFFIC COUNT DATA



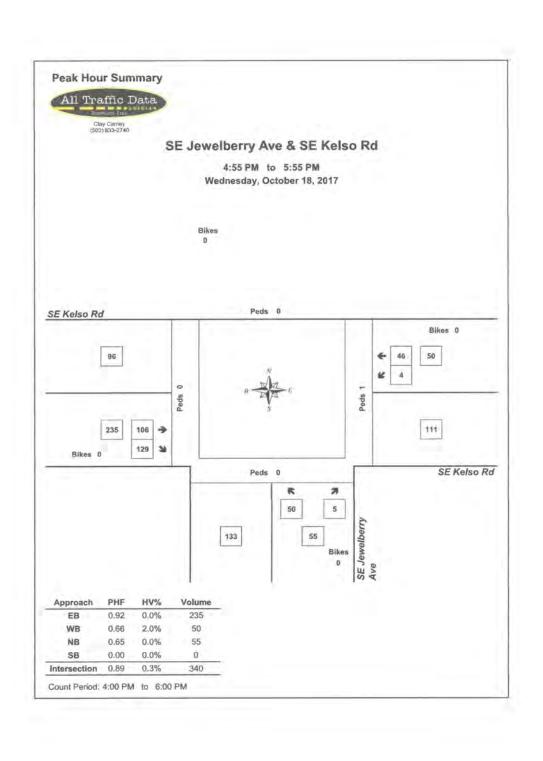
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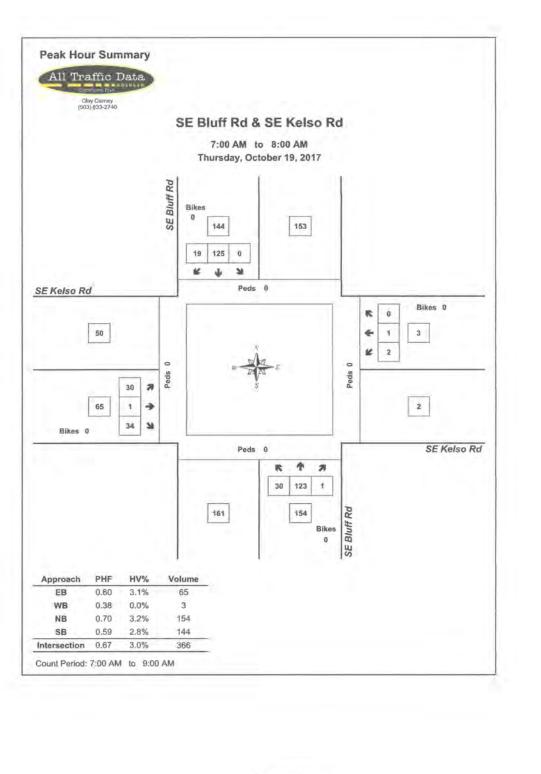
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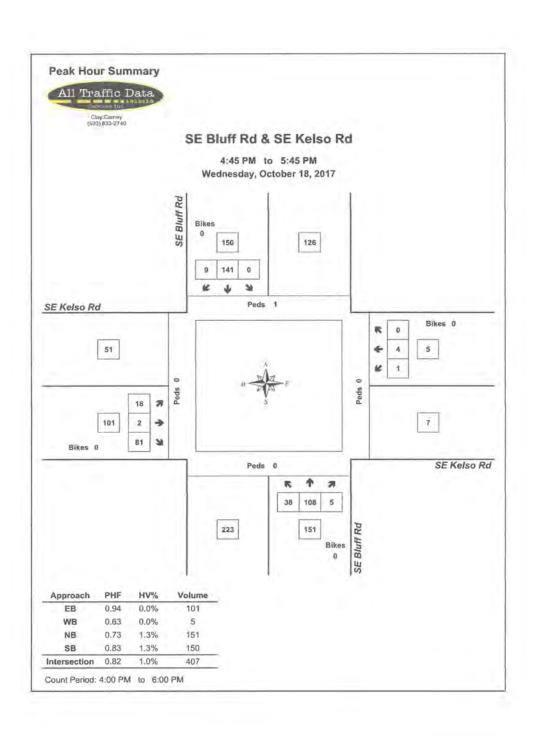
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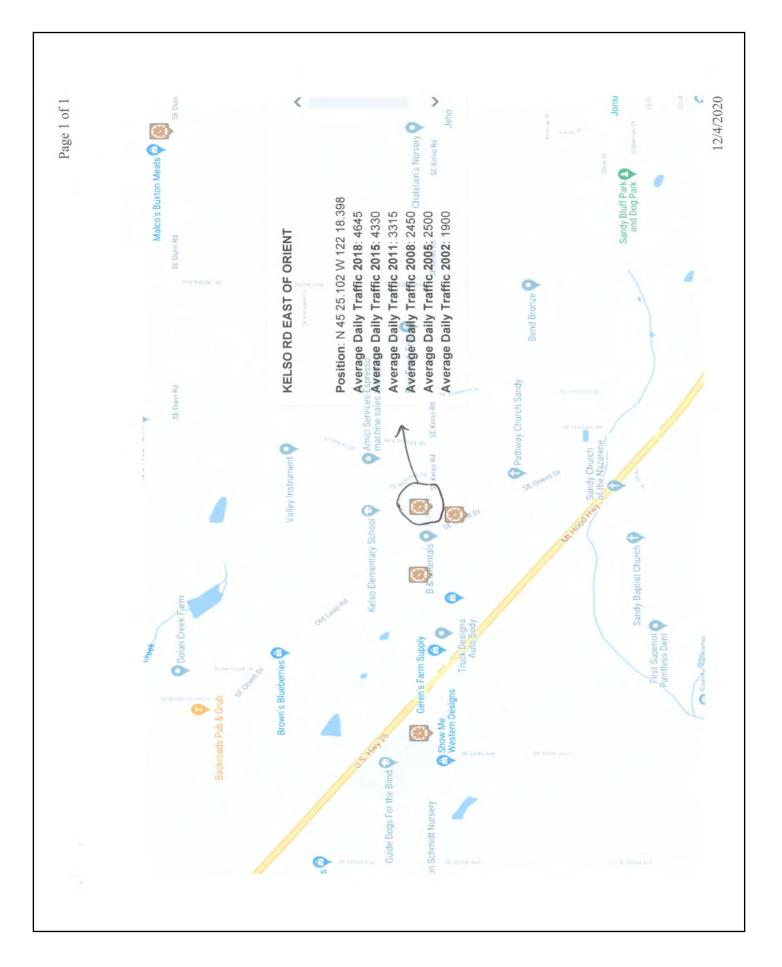


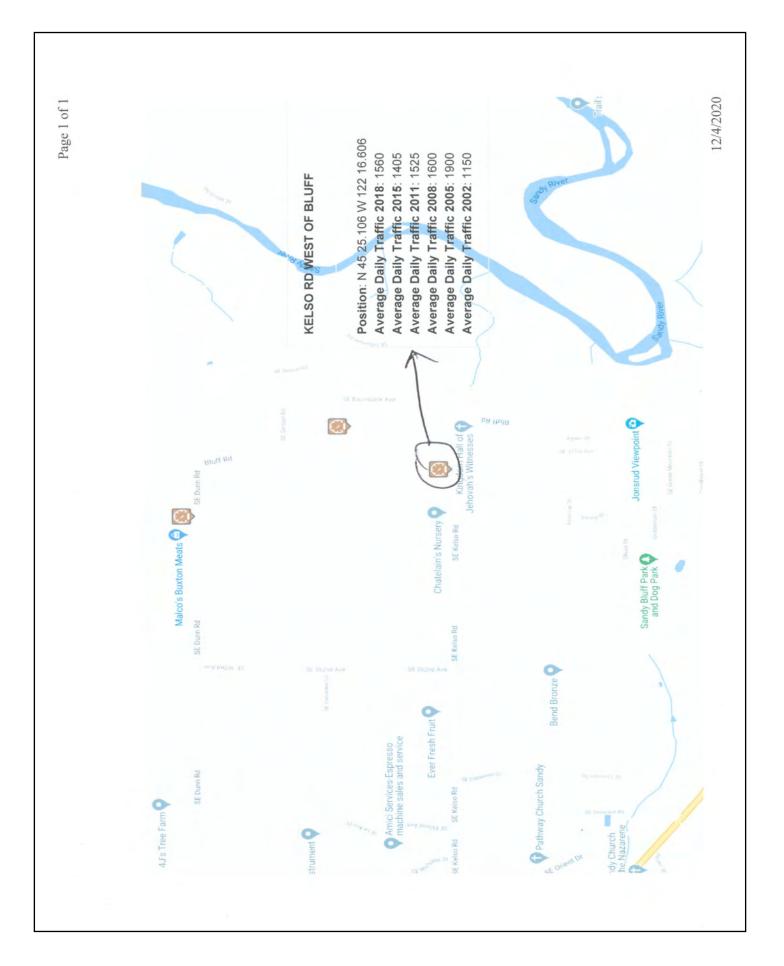
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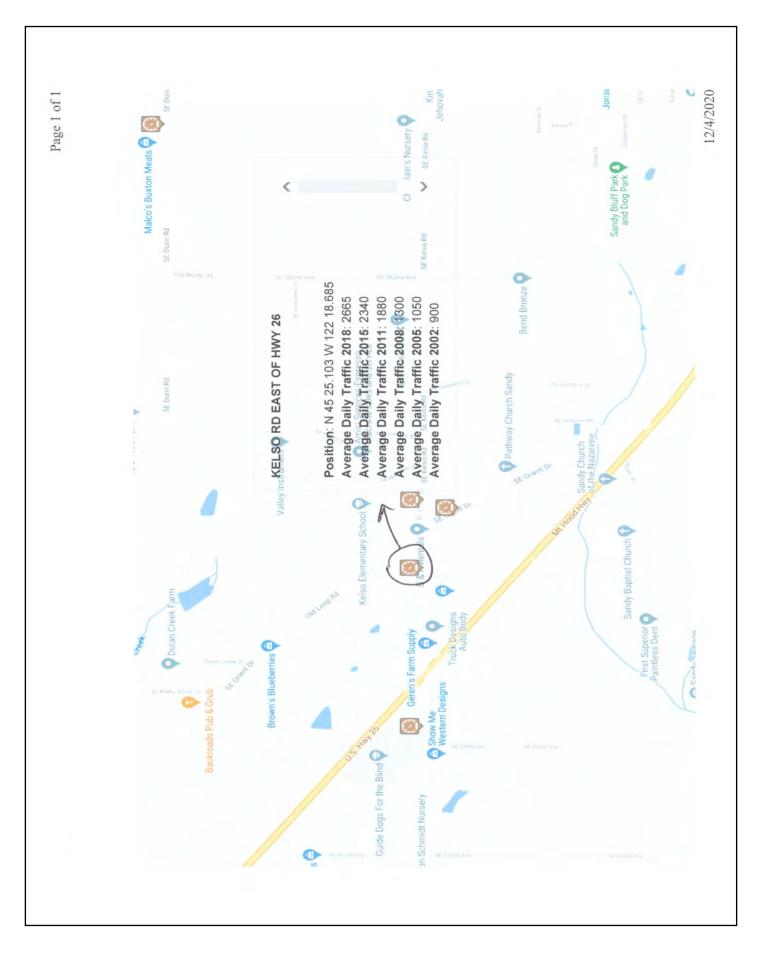


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APPENDIX B HISTORICAL TRAFFIC COUNTS







APPENDIX C COLLISION DATA

PAGE 1

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT CRASH SUMMARIES BY YEAR BY COLLISION TYPE

CDS150 12/09/2020

Intersectional Crashes at SE Kelso Rd & SE Orient Dr January 1, 2014 through December 31, 2018

		NON	PROPERTY	-									INTED	
COLLISION TYPE	FATAL	FATAL		CR	TOTAL PEOPLE ASHES KILLED	PEOPLE	TRUCKS	DRY SURF	WET	DAY	DARK	INTER-	SP	OFF. ROAD
YEAR: 2017											ľ			
ANGLE	0	9	-	4	Q	4	D	2	2	3	÷	4	0	0
BACKING	0	0	-	×7	0	D	0	-	0	0	÷	*	0	a
REAR-END	D	e	0		0	-	0	a	÷	-	0	+	0	0
TURNING MOVEMENTS	0	14	*	0	0	e	0	Č4	÷	N	÷	67	0	0
2017 TOTAL	0	Ð	20	8	0	80	D	ŝ	4	9	0	07	0	0
YEAR: 2016														
ANGLE	0	e	24	12	0	N	0	~	Ý	2	E.	m	0	D
REAR-END	0	*	0	ά	0	2	0		0	F	0	*	0	a
TURNING MOVEMENTS	0	0	4	4	0	0	0	-	0		0	*	0	0
2016 TOTAL	0	~	0	5	0	4	0	4	÷	*	-	40	0	0
YEAR: 2015														
ANGLE	Q	51	e	61	0	10	0	64	÷	-	Ŧ	5	0	D
REAR-END	0	0	f	in the second se	0	D	0	a	D	÷.	0	E	D	a
TURNING MOVEMENTS	0		D	Ť	0	5	0	a	ý.	2	0	٣	a	0
2015 TOTAL	0	6.7	2	5	0	8	0	C4	69	4		5	0	0
YEAR: 2014														
ANGLE	0	0	4	47	0	Ø	0	50	L	*	0	4	Q	a
REAR-END	0	1	0	F	0	1	a	0	D	-	0		0	0
TURNING MOVEMENTS	0	F	0	*	Ø	-	0		0	-	0	*	0	O
2014 TOTAL	ū	ia.	£	9	Ø	8	0	4		60	0	9	0	0
FINAL TOTAL	0	16	0	25	a	28	a	15	8	20	5	25	a	0

License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years. Disclaimers: Effective 2016, collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants. Age, Gender,

numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavaitable, non-fatal A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers. see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

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181	INJA	INJB	NUM		NONE		BUNE	INJE	NONE	DONI
PRPC TMJ	OI DRVR	02 PSNG	01 DRVR	OI DRVR NONE	01 DRVR	01 BRVR NONE	OT DRVR INJE	02 FSNG INJE 01 DRVR NONE	O1 DRVR NONE	OL DRVR INJC
MONS TINU TINU TINU	64	0.0	M THENT	E	STRGHT NW SE	W	RGMT	IRN-L W	STRGHT SE NW	CRGHT
DE DI M				D	9 S N	9 ST E				
ID ANALYSIS) D REPORTING Orient Dr 2018 SPCL USE TRLA OPV	V# CWNER 01 NONE 0 PRVTE PSNGR CAR		02 NONE 0 PRVTE PSNGR CAR	03 NONE PRVTE PSNGR	01 NONE N/R FSNGR	02 NONE N/A FBNGR	01 NONE 0 PRVTE PSNGR CAR	02 NONE 0 FRVTE FSNGR CAR	01 NONE 0 PRVTE PSNGR CAR	02 NONE 0 PRVTE PSNGR CAR
LIS AN IS AN S & SE (31, 2 31, 2 YE			0	0		D.		0		o
ARYNEWT OF THAASEORTAVION - BOLICY, DATA AND AND AN SPORTWILON DATA SECTION - CRASH ANDLYSIS AND HE CONNYY GOAD CRASH LISTING Intersectional Crashes at SE Kalso Rd & SE Oris January 1, 2014 through December 31, 2018 (NT-TYP MEDIAN) NNT-REL OFF-RD WIHR CRASH TYP US MEDIAN) RNT-REL OFF-RD WIHR CRASH TYP US LEGS TRAS- RNDWY SHEF COLL TYPP TR	SVRTY ANGL-OTH ANGL INJ				ANGL-OTH ANGL PDO		O-1 L-TURN TURN INJ		ANGL-OTH ANGL INJ	
N - PC - CRAS D CRAS D CRAS T SCRAS T SCRAS NTHR MTHR	LIGHT CLR DRY DAY				CLD DRY DRY		CLR DRY DAY		CLD WET DAY	
CECTION - FOI SECTION - CRASH WATT BOAD CRASH MADPA at SE Ke 2014 through D 2014 through D OFF-RD WTHR ANTHRT STHFF	N N				zzz		222		225	
ANSFOR TA SEC COUNT COUNT 1, 20 1, 20 1, 20 1, 20	STGN				N FLASHBCN-R		N FLASHBCN-A		NDIE	
OF TRANSP ION DATA S COUN CCLONAL CY SNUARY 1, 2 INT-REL TRAF-	CONTL I				FLASH		N		STOF	
Intersec Intersec Jar INT-TYP (MEDIAN)	(#LANES) CROSS 0				CROSE		CROSS 0		CROSS	
OREGON DEFARIMENT OF THANSPORTATION - POLICY, DATA AND AWATVEIS DIVISION TRANSPORTATION DATA SECTION - CARAN LANLASIS AND REPORTING UNIT COUNTY ROAD CRASH LINTING Intersectional Crashes at SE Kelso Rd & SE Orient Dr January 1, 2014 through December 31, 2018 INT-TYP RD CHAR (MEDIAN) INT-REL OFF-RD WTHR CRASH TYP DEC RD CHAR (MEDIAN) INT-REL OFF-RD WTHR CRASH TYP DEC MCVE					TNTER CN 03		INTER CN 0.1		INTER CR	
MILLERNY RUALS MILLERNY FLORING TROPHY STREET	T INTERSECTION SED #				SE ORIENT DR		SE ORIENT DR		SE DALENT DR	
LE PNT Com CERC	WTERSEC 0+74 0-46				0,74 0,46				0.74 0.46	
IN	11 5 7 18 3 18 3				18 3 18 3		25 25 29 3		-	
CD\$380 12/9/2020 CLACRANAR COUNTY D B SERM P G SERM P G AD TE	UNLOC7 D C J L K LAT/LONG INTERS 04630 N N N N N 11/6/2015 0.74 COUNTY N PCL 4P No 45 25 6.17 -122 18 30.45				N N N N 10/21/2016 0.74 SE ORIENT N FLL LF 45 25 5.1? -122 18 30.46		N N 10/27/2 Fri 6.17 -122		00182 N.N.N.N.1/14/2014 0.74 COUNTY N. TUE 7A No. 45 25 6.17 -122 18 JUL46	
L CD SMAS CO	N N N N N N N M A5 25				N N N N 45 25		N N N N N 45 22		ALC SP	
CD\$380 12/9/ CLACKANN COUNTY CLACKANN COUNTY SLAW E 3 8 SEAW E A C C	UNLOC3 04630 COUNTY No				04871 COUNTY No		04490 COUNTY No		00182 COUNTY Max	

	00.123 × ≪ 121.123	H 09	25 14	ine E	341 	00 00	0.0	22 M	64 92	4.1	A 6. W
	YTRV2		NONE			NONE	NONE				
	PRTC INJ	OI DRVR INJC	01 DRVR 1	O1 DRVR NONE	01 DRVR INJC	DI DRVH	01 DRVH 1	THOM MONE TO	OL DRVR NONE	OI DRVR NONE	OLNI DRVR INJC
TINU	MOVE FROM TO	STRGHT NW SE	STRGHT W E	STRGHT N S	STRGHT W E	STRGHT NW SE	TURN-R W SE	STRGNT S N	JTRGHT W E	TURN-R E N	STRGHT S N
OREGON DEFARTMENT OF THOMSPORTATION - POLICY, DATA AND AMALYSIS DIVISION TRANSPORTATION DATA SECTION - CTARSH ANALYSIS AND REFORTING UNIT COUNTY ROAD CRASH LISTING Intersectional Unashes at SE Kelso Rd 5 SE Orient Dr January 1, 2014 through December 31, 2018	SPCL USE TRLR QTY V# CWNER	NONE D PRVTE PSNGR CAR	02 NONE 0 PRVTE PSNGR CAR	DI NONE D PRVTE. PSNGR CAR	DZ NONE U PRVTE	NONE 9 N/A PSNGA CAR	02 NONE 9 N/A PENGR CAR	0.1 NONE 0 PRVTE PSNGR CAR	02 NONE D PRVTE PSNGR CAR	NOME 0 PRVTE PSNGR CAM	02 NONE 0 PRVTE PSNGR CAR
A AND S AND SE O 31, 20		10	0.5		02	10	05		05	60	02
JLICY, DAT 3H ANALYSI H LISTING Kelso Rd & December	CRASN TYP COLL TYP SVRTY	ANGL-OTH ANGL INJ		ANGL-OTH ANGL INJ		ANGL-OTH TURN PDO		ANGL-DTH ANGL PDO		ANGL-OTH TURN INJ	
N - PC - CRAS D CRAS D CRAS C SE P C SE P C SE P	WTHR SURE LIGHT	CLR DRY DAY		RAIN WET DUSK		CLR DRY DRY		CLR DRY DRY		CLD DRY DRY	
TION TION Y ROAL	OFF-RD WTHR C RNDHT SURF C DRVWY LIGHT 1	2 2 2		222		zzz		zz ż		z z z	
ARTMENT OF THUNSPORTATION - POLICY, DATA AND ANALY SPORTATION DATA SECTION - CRASH ANALYSIS AND REPOR COUNTY ROAD CRASH LISTING Intersectional Crashes at SE Kelso Rd & SE Grient January 1, 2014 through becember 31, 2018	NT-REL O RAF- R SONTL D	N STOP SIGN		NDIS 4015		N FLASHBCN-R		N STOE SIGN		STOP SIGN	
PARTMENT C MSPORTATIC Intersect Jan	INT-TYP (MEDLAN) INT-REL LEGS TRAF- (#LAMES) CONTL	CROSS N		CROSS		CROSE 0		CROSS		CROSS	
DREGON DE	RD CHAR DIRECT LOCTN	INTER CN D3		NTER CD		INTER CN 03		INTER CN 04		INTER CH	
	COUNTY ROADS MILEENT FIRST STREET DIST FROM SECOND STREET INTERSECT INTERSECTION SEQ #	SE ORIENT DR		SE ORIENT DR		0.74 SE DRIENT DR. 30.46		SE ONLENT DR		SE ORIENT DR	
	MILEPNT DIST FROM INTERSECT	0.74 30.46				0.74 30.46		0.74 30.46		0.74	
12/9/2020 DONTY B	S U SERM P SERM P SERM P SUVEST E L M H R DAY/TIME UNLOC? D C J L K LAT/LONG	5/20/2014 0.74 Tue 11A 6.17 -122 18 30.46		N N N N 3/5/2017 0.14 N Sun 58 45 25 6.17 -122 18 30.46		11/18/2017 0.74 Sat 4P 5.17 -122 18 30.46		02383 N N N N 6/21/2014 0.74 COGNTY N Sat IF No 45 25 6.17 -122 38 30.46		N N N N 6/24/2014 0.74 N Tue 11A 45 25 0.17 -122 18 30,46	
CIB5380 12/9/ LLACKAMAS COUNTY B	E E C S E E A C E C M H	N N N N N 25 25				N N N N 45 22		N N N N N N 45 25		N N N N N 45 25	
CIRCKAM	SER# INVEST	01030 NURE No		00871 COUNTY No		04869 NONE.		02383 COUNTY No		92416 COUNTY No	

CDS150 12/09/2020

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT CRASH SUMMARIES BY YEAR BY COLLISION TYPE Intersectional Crashes at Kelso Rd & Bluff Rd January 1, 2014 through December 31, 2018

NON- PROPERTY

PAGE 1

SECTION OFF-RELATED ROAD 0.0 000 D SECTION INTER-- -10 7 7 3 158 $\mathbf{r} \in \mathbf{r}$ 0.-DARK DAY 00 0 SURF 00 - - CV 0 WET SURF ---000 TRUCKS 00 000 0 INJURED NE + 0 ÷ R TOTAL PEOPLE PEOPLE CRASHES KILLED INJURED 0 00 000 ò + e ONLY 00 á DAMAGE FATAL CRASHES 0 -CRASHES 00 000 0 FATAL FIXED / OTHER OBJECT TURNING MOVEMENTS 2016 TOTAL COLLISION TYPE FINAL TOTAL REAR-END YEAR: 2016 YEAR: 2014 2014 TOTAL

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INTER-

-0--

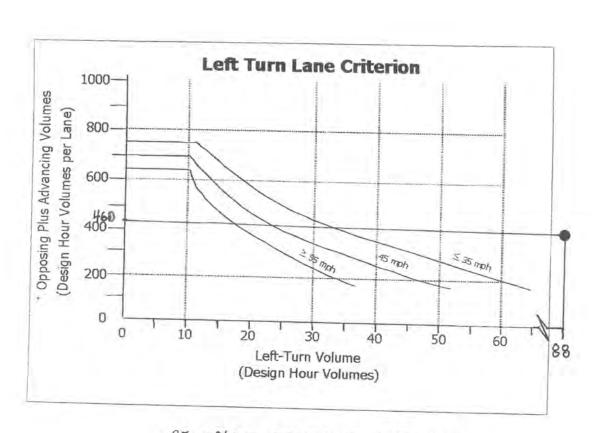
> License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years. Disclaimers: Effective 2016, collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants. Age, Gender,

numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

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		त्व हा ज्व	29 M			53 E		26 F		W		M BE	A BE W OL
		INJ				NONE		NONE		TRON		SNONE	INGC
		BRTC TYPE	DRVB. INJC			DRVR. NONE		DRVB		DRVR		DRVR	PSNG
TSION		10	01			TO		10		ID		10	03
ATING UN	2018	MOVE FROM TO	STRGHT S N	PRKD-P W E	STRGHT W E		STOP W E		STRGHT N S		TURN-L		
A AND ANAL	tso Rd 5 J	SPCL USE TRLR QTY DWNER	NONE 0 PRVTE PSNGR CAR	NONE D PRVTE PSNGR CAR	NONE 0 PRVTE	PSNGR CAR	NONE 0 PRVTE	PSNGP CAR	NONE 0	PSNGR CAR	NONE 0 PRVTE	ESNGR CAR	
ALYSIS LISTIN	at Ke	άų	10 54	02 P3	10	Da	55	D.4		ă1	0.2	10	
ORBOON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT	Intersectional Crashes at Keiso Rd & Bluff Rd January 1, 2014 through December 31, 2018	CRASH TYP COLL TYP SVRTY	THI XI3 FEO XI3		S-1STOP REAR	PDO			D-1 L-TURN 01 TURN	PNI			
ICTION CCTION	iry 1,	WTRR SURE LIGHT	CLLD WET DAY		UNK	DARK			CLE	DLIT			
ALNSEC	Janua		NN		N N	Z			NN	N. I			
NT OF TH	1	INT-REL OFF-RD THAE- RUDHT CONTL DRVWY	NEIS		NEIIS d				NDIS :				
PARTME ISPORT			N		N.				N				
REGON DEF		INT-TYP (MEDIAN) LLGS (#LANES)	CROSS D		CROBS	Q.			CROSS	Ē			
-		RD CHAR DIRECT LOCTH	INTER 5 D5		INTER W	9.6			INTER	10			
		CITY STREET FIRST STREET SECOND STREET INTERSECTION SEQ	BLUFF RD KELSO RD 1		BLUFF RD KELSO RD	T			RELSO BU BLUFF BD	4-1			
	L.K.	FC DISTNC	16 0 3.21		16	12.8			190	3.23			
0	CLACKAMAS COUNTY	DATE DAY/TIME LAT/LONG	D5/10/2014 16 Sat 12P 0 -122 16 23.21		10/14/2014 Tue 11P	-122 16 23.21			09/05/2016 Mon 8E	5.93 -122 16 23.21			
12/9/2020	CLE	N O R H	N N 8			5,93				5.93			
12/	ANDY,	C W ~ G G	Y N N N N N N N N N N N N N N N N N N N		N N N	45 25			N N N	45 25			
CD\$380	CITY OF SANDY,	S SER# E INVEST E UNLOC? D											
CDS	113	SER# INVES	01794 CITY Be		04081 NONE	No			NONE	No			

APPENDIX D LEFT TURN LANE CRITERION



SE ORIENT DRIVE & SE KELSO ROAD EXISTING CONDITIONS PM PEAK HOUR, SB TRAFFIC

LEFT TURN LANE JUSTIFIED

APPENDIX E LEVEL OF SERVICE COMPUTER PRINTOUTS

General Information				Site Inform	nation			
Analyst Agency/Co. Date Performed Analysis Time Period	DSK 3/2/202 AM Pei	1 ak Hour		Intersection Jurisdiction Analysis Year		Kəlso I City of 2021	Road & Orient Dr. Sandy	
Project ID Existing								
East/West Street: Kelso Road				North/South St	reet: Orient Dr.			
Volume Adjustments	and Site Cha							
Approach Movement	L	E	Eastbound T	R	L	We	T	R
Volume (veh/h)	6		58	10	31		158	90
%Thrus Left Lane				10	1			00
Approach		N	Iorthbound		1	Sou	thbound	
Movement	L		T	R	L		T	R
Volume (veh/h)	6	1.22.1	104	32	69		82	7
%Thrus Left Lane								
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR	1	LTR		LTR	-
PHF	0.90		0.90	1	0.90		0.90	
Flow Rate (veh/h)	81		309		156		174	
% Heavy Vehicles	1		15		3		41	
No. Lanes		1	1	1	-	1	1	1
Geometry Group		1		1		1	1	1
Duration, T				0.	25			
Saturation Headway A	Adjustment V	Norksheet						
Prop. Left-Turns	0.1	1	0.1	1	0.0	1	0.4	
Prop. Right-Turns	0.1		0.3	-	0.2		0.0	
Prop. Heavy Vehicle	0.0		0.1	-	0.0		0.4	
hLT-adj	0.0	0.2	0.7	0.2	0.0	0.2	0.4	0.2
	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hRT-adj					1.7	-0.0	1.7	-0.0
hHV-adj	1.7	1.7	1.7	1.7	-	1.7		1.7
hadj, computed	-0.0		0.1	-	-0.1	1	0.8	
Departure Headway a	T	ime	1	-	1			
hd, initial value (s)	3.20		3.20	-	3.20	-	3.20	-
x, initial	0.07		0.27		0.14		0.15	
hd, final value (s)	5.29		5.07	-	5.19		5.96	
x, final value	0.12	0	0.43	20	0.22	0	0.29	0
Move-up time, m (s)	2	0	-	2.0	-	.0	2.	
Service Time, t _s (s)	3.3		3.1		3.2		4.0	
Capacity and Level of	Service						-	
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	LT	L2	L1	L2	L1	L2
Capacity (veh/h)	331		559		406		424	
Delay (s/veh)	9.00		11.91	1	9.68		11.35	
LOS					9.00 A			
		A B				00	B	25
Approach: Delay (s/veh)				1.91		68	11.	
LOS		A		В		4	E	3
Intersection Delay (s/veh)				10	.96			

General Information				Site Inform	nation			
Analyst Agency/Co. Date Performed Analysis Time Períod	3/2/202	nginæering 1 ak Hour		Intersection Jurisdiction Analysis Year			Road & Orient Dr. Sandy	
Project ID Year 2023 w/o Proje								
East/West Street: Kelso Road				North/South St	treet: Orient Dr.			
Volume Adjustments a	and Site Cha				-			
Approach Movement	L		T I	R	L	We	stbound T	R
Volume (veh/h)	6	_	63	11	34		170	96
%Thrus Left Lane			00	,,			110	00
Approach		N	lorthbound		1	Sou	thbound	
Movement	L		T	R	L	1	T	R
Volume (veh/h)	6		109	34	72		86	7
%Thrus Left Lane								
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	L1	12	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.90		0.90		0.90		0.90	
Flow Rate (veh/h)	88		331		164		182	
% Heavy Vehicles	1		15	-	3		41	
No. Lanes		1	10	1		1	1 1	
Geometry Group		1		1	-	1	1	
Duration, T					.25			
Saturation Headway A	diustment V	Norksheet						
Prop. Left-Turns	0.1		0.1	1	0.0	1	0.4	1
Prop. Right-Turns	0.1		0.3	-	0.0		0.0	
							0.4	
Prop. Heavy Vehicle	0.0	0.0	0.1	0.0	0.0	0.0		0.0
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.1		-0.1		0.8	
Departure Headway a	nd Service T	ime						
hd, initial value (s)	3.20		3.20	-	3.20		3.20	
x, initial	0.08	1.	0.29	4	0.15		0.16	
hd, final value (s)	5.40	-	5.15		5.31		6.08	
x, final value	0.13		0.47	1	0.24		0.31	
Move-up time, m (s)		0	-	2.0		0	2.	0
Service Time, t _s (s)	3.4		3.2		3.3		4.1	
Capacity and Level of	Service							
	1	bound	We	estbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	338		581		414		432	
Delay (s/veh)	9.23			-			11.76	
			12.70		9.99			
LOS	A		В	-	A		В	
Approach: Delay (s/veh)	9).23	1	2.70	9.	99	11.	
LOS		A		В	-	4	E	3
Intersection Delay (s/veh)				11	.50			
Intersection LOS					В			

General Information				Site Inform	nation			-
Analyst Agency/Co. Date Performed Analysis Time Period	3/2/202	ngineering ?1 ak Hour		Intersection Jurisdiction Analysis Year			Road & Orient Dr. Sandy	
Project ID Year 2023 with Proje	ect							
East/West Street: Kelso Road				North/South S	treet: Orient Dr.			
Volume Adjustments	and Site Cha		and the second se					
Approach Movement	L	E	astbound	R	L	We	T T	R
Volume (veh/h)	6		65	11	35	-	177	101
%Thrus Left Lane								
Approach	1	N	orthbound		1	Sou	thbound	
Movement	L		т	R	L		T	R
Volume (veh/h)	6		109	34	74		86	7
%Thrus Left Lane					1.1.1			
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.90		0.90		0.90		0.90	
Flow Rate (veh/h)	90		346		164		184	
% Heavy Vehicles	1		15		3		41	
No. Lanes	1	1		1	1	1	1	1
Geometry Group		1		1		1	1	n
Duration, T			(0	.25			
Saturation Headway A	djustment \	Norksheet						
Prop. Left-Turns	0.1		0.1		0.0		0.4	
Prop. Right-Turns	0.1		0.3		0.2		0.0	
Prop. Heavy Vehicle	0.0		0.1		0.0		0.4	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		0.1		-0.1		0.8	
Departure Headway a	1	Time						
hd, initial value (s)	3.20		3.20	1	3.20		3.20	
x, initial	0.08		0.31	1	0.15		0.16	
hd, final value (s)	5.45		5.17		5.37		6.14	
x, final value	0.14		0.50		0.24		0.31	
Move-up time, m (s)	2	.0		2.0	2	.0	2.	0
Service Time, t _s (s)	3.5		3.2		3.4		4.1	
Capacity and Level of	Service	1	1	1	1	1	1	
and and a start of	1	bound	1Me	stbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
0		LZ	-	12		LZ		12
Capacity (veh/h)	340		596		414		434	
Delay (s/veh)	9.31	-	13.17		10.10		11.92	
LOS	A		В		В		В	
Approach: Delay (s/veh)	9.31 13			3.17	10	.10	11.	92
LOS		A		B B				
Intersection Delay (s/veh)			-	11	1.79			
Intersection LOS					В			

General Information				Site Inform	nation			
Analyst Agency/Co. Date Performed Analysis Time Period	3/2/202	nginæering 1 ak Hour		Intersection Jurisdiction Analysis Year			Road & Orient Dr. ' Sandy	
Project ID Existing								
East/West Street: Kelso Road				North/South S	treet: Orient Dr.			
Volume Adjustments	and Site Cha							
Approach Movement	L		Eastbound T	R	L	We	stbound T	R
Volume (veh/h)	12		101	22	32		62	58
%Thrus Left Lane			101	~~				
Approach		N	lorthbound		1	Sou	thbound	
Movement	L		T	R	L		т	R
Volume (veh/h)	6		142	52	88		167	11
%Thrus Left Lane								
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.91		0.91		0.91	1	0.91	
Flow Rate (veh/h)	147		166		219	1	291	
% Heavy Vehicles	2	-	4		1		2	
No. Lanes	1	1		1		1	1	
Geometry Group		1		1		1	1	
Duration, T			·	0	.25			
Saturation Headway A	Adjustment N	Vorksheet						
Prop. Left-Turns	0.1		0.2		0.0		0.3	
Prop. Right-Turns	0.2		0.4		0.3		0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		-0.1		-0.1		0.1	
Departure Headway a	-	ime	1	-	1		1	
hd, initial value (s)	3.20		3.20	T	3.20	1	3.20	1
x, initial	0.13		0.15		0.19		0.26	
hd, final value (s)	5.50		5.40		5.10		5.20	1
x, final value	0.22		0.25		0.31		0.42	
Move-up time, m (s)		0		2.0		0	2.	0
Service Time, t _s (s)	3.5		3.4		3.1		3.2	
Capacity and Level of			1	1	1	1	1	
oapacity and Level Of	1			athound		haved	0	hound
	-	bound		stbound	-	bound	-	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	397		416	_	469		541	
Delay (s/veh)	10.09		10.18		10.39	1	11.90	
LOS	В		В		В		В	
Approach: Delay (s/veh)	1	0.09	1	0.18	10	39	11.	90
LOS		В		В	E	3		
Intersection Delay (s/veh)	1				0.83	3		
Intersection LOS					В			

General Information				Site Inform	nation			
Analyst Agency/Co. Date Performed Analysis Time Period	3/2/202	ngineering 1 ak Hour		Intersection Jurisdiction Analysis Year		Kelso I City of 2023	Road & Orient Dr Sandy	
Project ID Year 2023 w/o Proje	ect							
East/West Street: Kelso Road				North/South S	treet: Orient Dr.			
Volume Adjustments	and Site Cha							
Approach Movement	L		Eastbound T	R	1	Wes	T T	R
Volume (veh/h)	13		110	23	35		66	62
%Thrus Left Lane			110					02
Approach	1		Northbound		1	Sou	thbound	
Movement	L		T	R	L		T	R
Volume (veh/h)	6		147	56	93	1	175	12
%Thrus Left Lane								
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.91		0.91		0.91		0.91	
Flow Rate (veh/h)	159		178	-	228		307	
% Heavy Vehicles	2		4		1		2	
No. Lanes		1	1	1		1	1	1
Geometry Group		1		1		1	1	
Duration, T		_		0.	.25			
Saturation Headway A	Adjustment V	Vorksheet	1					
Prop. Left-Turns	0.1		0.2	1	0.0		0.3	1
Prop. Right-Turns	0.2		0.4		0.3		0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0	1.1	-0.1	1.1	-0.1	1+1	0.1	1.1
		limo	-0.1	1	-0.1		0.1	
Departure Headway a	1	inte	1 0.00	1	1 0.00	1	1 2 00	
hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.14		0.16		0.20		0.27	
hd, final value (s) x, final value	0.25		0.27		0.33		0.45	
Move-up time, m (s)		0		2.0		.0	0.45	0
	3.6	ľ	3.5	1	3.2		3.3	ř
Service Time, t _s (s)			3.5		3.2		0.5	
Capacity and Level of	Service		1		1			
	East	bound	We	stbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	409		428		478		557	
Delay (s/veh)	10.50		10.60		10.82		12.65	
LOS	В		B		В		В	
Approach: Delay (s/veh)		0.50		0.60		.82	12.	65
LOS	1	B	1	B		8	E	
		D			.36		6	
Intersection Delay (s/veh) Intersection LOS					.30 B			

General Information				Site Inform	nation			
Analyst Agency/Co. Date Performed Analysis Time Period	3/2/202 PM Pea			Intersection Jurisdiction Analysis Year		Kelso I City of 2023	Road & Orient Dr. Sandy	
Project ID Year 2023 with Project								
East/West Street: Kelso Road				North/South S	treet: Orient Dr.			
Volume Adjustments	and Site Cha		the second s					
Approach Movement	L	E	Eastbound	R	L	Wes	tbound T	R
Volume (veh/h)	13		118	23	36		71	65
%Thrus Left Lane	10		110	20		-		
Approach		1	lorthbound		1	Sou	thbound	
Movement	L		T	R	L		T	R
Volume (veh/h)	6	12 11 11	147	58	98	1.1.1.1.1	175	12
%Thrus Left Lane								
	East	bound	We	estbound	North	bound	South	bound
	L1	L2	L1	12	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.91		0.91		0.91		0.91	
Flow Rate (veh/h)	168		188		230		312	
% Heavy Vehicles	2		4		1		2	
No. Lanes	1			1	1		1	
Geometry Group	1			1	1	1	1	
Duration, T				0	.25			
Saturation Headway A	Adjustment V	Vorksheet						
Prop. Left-Turns	0.1		0.2	1	0.0		0.3	
Prop. Right-Turns	0.1		0.4	1	0.3		0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hHV-adj		1.7		1.7		1.7		1.1
hadj, computed	-0.0		-0.1		-0.1		0.1	
Departure Headway a	1	ime	1		1		1 0.55	
hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.15		0.17		0.20		0.28	
hd, final value (s)	5.71		5.60		5.33		5.40	
x, final value	0.27	0	0.29	20	0.34	0	0.47	0
Move-up time, m (s)	2.		-	2.0	2.		1	
Service Time, t _s (s)	3.7		3.6		3.3		3.4	
Capacity and Level of	Service				-			
	East	bound	We	estbound	North	bound	South	bound
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	418		438	1	480		562	_
Delay (s/veh)	10.78		10.90		11.05		13.07	
LOS	B		B	1	B		B	
Approach: Delay (s/veh)		10.78 10.90 11.05		13.	07			
LOS		P)
Intersection Delay (s/veh)				11	1.67			

1		Site Information						
DSK Kelly Eng 3/2/2021		Jurisdic	tion				Road	
sting								
Road		North/Sc	outh Stree	et: Bluff Ro	bad			
North-South		Study Period (hrs): 0.25						
d Adjustme	nts							
1	Northbound				Southbo	und		
1	2	3		4	5		6	
L	T	R		L	T		R	
32	132	1		0	134		20	
0.67	0.67	0.67		0.67	0.67		0.67	
47	197	1		0	199		29	
3		-		3	-		-	
			Undivide	d				
11		0	- 111		1		0	
0	1	0		0	1		0	
LTR	1	1		LTR	1			
	0	1			0			
1	Eastbound				Westbou	und		
7	8	9		10	11		12	
L	Т	R		L	T		R	
	1			2	1	-	0	
0.67	0.67	0.67		0.67	0.67		0.67	
47	1	53		2	1	1	0	
3	0	0		0	0		0	
1	0				0			
	N				N			
	0				0			
-		0					0	
0	1			0	1		0	
0		-		0			0	
ad Lovel of Co					1 6/1			
		14	Veethours	4	1	Easthound		
		-		1		T	10	
		1		9	10		12	
				-	-			
47	0		3			101		
1334	1369		427			601		
0.04	0.00	11 11 11	0.01			0.17		
0.11	0.00		0.02		1	0.60		
7.8	7.6		13.5		12.2			
					1 1			
						1		
	Kelly Eng. 3/2/2021 AM Peak sting Road North-South d Adjustmen 1 L 32 0.67 47 3 0 LTR 0 47 32 0.67 47 32 0.67 47 32 0.67 47 32 0.67 47 32 0.067 47 33 0 1 LTR 47 33 0 0 0 1 LTR 47 1334 0.04 0.11	Kelly Engineering 3/2/2021 AM Peak Hour sting Road North-South d Adjustments Image: Sting Colspan="2">Road North-South d Adjustments Image: Sting Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Northbound Adjustments North-South Image: Sting Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colsp	Kelly Engineering 3/2/2021 AM Peak Hour Jurisdic Analysis sting North/South North/South Road North/South Study Property d Adjustments Northbound 1 2 3 L T R 32 132 1 0.67 0.67 0.67 0.67 0.67 47 197 1 3 - - 0 0 1 0 0 L T R 9 1 33 - - 0 0 0 1 0 0 0 L T R 32 1 36 0.67 0.67 0.67 0.67 0.67 47 1 53 3 0 0 0 0 0 0 0 0 0 0 1 0 0 0 1 4 7	Kelly Engineering 3/2/2021 AM Peak Hour Jurisdiction Analysis Year Sting Road North/South Street Study Period (hrs d Adjustments Northbound Image: Study Period (hrs d Adjustments Northbound Image: Study Period (hrs d Adjustments Northbound Image: Study Period (hrs d Adjustments Image: Study Period (hrs Image: Study Period (hrs d Adjustments Image: Study Period (hrs Image: Study Period (hrs d Adjustments Image: Study Period (hrs Image: Study Period (hrs d Adjustments Image: Study Period (hrs Image: Study Period (hrs d Adjustments Image: Study Period (hrs Image: Study Period (hrs d Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs d Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs d Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs d Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs Image: Study Period (hrs d Image: Study Period (hrs Image: Study P	Kelly Engineering 3/2/2021 AM Peak Hour Jurisdiction Analysis Year Sting North/South Street: Bluff Reveal North-South Study Period (hrs): 0.25 d Adjustments North/South Street: Bluff Reveal Image: Constraint of the street of the	Kelly Engineering 3/2/2021 AM Peak Hour Jurisdiction Analysis Year City of Sa 2021 sting Road North/South Street: Bluff Road 2021 North-South Study Period (hrs): 0.25 0.25 d Adjustments North/South Street: Bluff Road Southbound 1 2 3 4 5 L T R L T 32 132 1 0 134 0.67 0.67 0.67 0.67 0.67 47 197 1 0 199 3 - - 3 - Undivided 0 1 1 0 199 3 - - 3 - 0 1 LTR 0 0 11 1 0 11 1 T R 9 10 11 LTR 0 0 0 0 0 1 0.67 0.67 0.67	Kelly Engineering 3/2/2021 AM Peak Hour Jurisdiction Analysis Year City of Sandy 2021 sting Road North/South Street: Study Period (hrs): 0.25 Durity South Street: Bluff Road North-South Study Period (hrs): 0.25 0.25 d Adjustments Southbound Southbound 1 2 3 4 5 d.Adjustments North/South Southbound Southbound 1 2 3 4 5 d.Adjustments 0 134 5 0.67 0.67 0.67 0.67 0.67 47 197 1 0 199 1 3 - - 3 - - 0 1 0 0 1 1 1 0 0 1 1 1 2 1 36 2 1 1 1 0 0 0 0 1 1 0 0 0 1	

General Information	1		Site In	formatio	on			
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 AM Peak		Intersec Jurisdic Analysis	tion		Kelso Ro City of Sa 2023	ad & Bluff F andy	Road
Project Description Yea	ar 2023 w/o Pro	iect						
East/West Street: Kelso	Road		North/So	outh Stree	t: Bluff Re	bad		
Intersection Orientation:	North-South		Study Pe					
Vehicle Volumes an	d Adjustmer	nts						
Major Street		Northbound				Southbox	und	
Movement	1	2	3		4	5	5	
	L	Т	R		L	T		R
Volume (veh/h)	34	139	1		0	139		21
Peak-Hour Factor, PHF	0.67	0.67	0.67		0.67	0.67		0.67
Hourly Flow Rate, HFR (veh/h)	50	207	1		0	207		31
Percent Heavy Vehicles	3	-	-		3	-		-
Median Type				Undivide	d			
RT Channelized	1.		0					0
Lanes	0	1	0		0	1		0
Configuration	LTR				LTR			
Upstream Signal		0				0		
Minor Street		Eastbound				Westbou	Ind	
Movement	7	8	9		10	11		12
	L	Т	R		L	Т		R
Volume (veh/h)	36	1	41		2	1		0
Peak-Hour Factor, PHF	0.67	0.67	0.67		0.67	0.67		0.67
Hourly Flow Rate, HFR (veh/h)	53	1	61		2	1		0
Percent Heavy Vehicles	3	0	0		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N		1.1		N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		LTR				LTR		-
Delay, Queue Length, a	nd Level of Ser							
Approach	Northbound	Southbound	V	Vestbound	ł		Eastbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	4 LTR	,	LTR	9	10	LTR	12
						+	1	-
v (veh/h)	50	0		3			115	-
C (m) (veh/h)	1323	1357		405			586	-
v/c	0.04	0.00		0.01			0.20	-
95% queue length	0.12	0.00		0.02		0.72		
Control Delay (s/veh)	7.8	7.7		14.0	4.0 12.0		12.6	
LOS	A	A		В			В	
Approach Delay (s/veh)		-		14.0	-		12.6	
Approach LOS	4			В	B			

General Information	1		Site In	formatio	on			
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 AM Peak		Intersec Jurisdic Analysis	tion tion		Kelso Ro City of Sa 2023	ad & Bluff R andy	Road
Project Description Yea	ar 2023 with Pro	ject						
East/West Street: Kelso					t: Bluff Ro	ad		
Intersection Orientation:	North-South		Study Period (hrs): 0.25					
Vehicle Volumes an	d Adjustmer	nts						
Major Street		Northbound				Southbou	und	
Movement	1	2	3		4	5		
A set and a set of	L	Т	R		L	Т		R
Volume (veh/h)	37	139	1		0	139		22
Peak-Hour Factor, PHF	0.67	0.67	0.67		0.67	0.67	- (0.67
Hourly Flow Rate, HFR (veh/h)	55	207	1		0	207		32
Percent Heavy Vehicles	3	-	-		3	-		-
Median Type				Undivided	d			
RT Channelized			0		_			0
Lanes	0	1	0		0	1		0
Configuration	LTR				LTR		- 11 H. K.	
Upstream Signal		0				0		_
Minor Street		Eastbound	-			Westbou	ind	
Movement	7	8	9		10	11		12
	L	T	R		L	T		R
Volume (veh/h)	37	1	51		2	1		0
Peak-Hour Factor, PHF	0.67	0.67	0.67		0.67	0.67	(0.67
Hourly Flow Rate, HFR (veh/h)	55	1	76		2	1		0
Percent Heavy Vehicles	3	0	0	111	0	0		0
Percent Grade (%)	1	0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		LTR				LTR		
Delay, Queue Length, a	nd Level of Ser	vice						
Approach	Northbound	Southbound	V	Vestbound	1	1	Eastbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		10	LTR	
	55	0		3		1	132	
v (veh/h)						-	595	
C (m) (veh/h)	1322	1357		389		-		
v/c	0.04	0.00		0.01			0.22	-
95% queue length	0.13	0.00		0.02		0.84		
Control Delay (s/veh)	7.8	7.7		14.3		12.8		-
LOS	A	A		В			В	
Approach Delay (s/veh)	0-0-0	-		14.3			12.8	
Approach LOS	-	-		В				

General Information			Site In	formatio	on				
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 PM Peak		Intersec Jurisdic Analysis	tion tion		Kelso Ro City of Sa 2021	ad & Bluff R andy	Road	
Project Description Exi	sting								
East/West Street: Kelso			North/So	outh Stree	t: Bluff Ro	ad			
Intersection Orientation:	North-South		Study Period (hrs): 0.25						
Vehicle Volumes an	d Adjustmer	nts							
Major Street	1	Northbound				Southbou	und		
Movement	1	2	3		4	5		6	
	L	т	R		L	Т		R	
Volume (veh/h)	41	116	5		0	152		10	
Peak-Hour Factor, PHF	0.82	0.82	0.82		0.82	0.82	(0.82	
Hourly Flow Rate, HFR (veh/h)	50	141	6		0	185		12	
Percent Heavy Vehicles	1		-		1			-	
Median Type				Undivided	d				
RT Channelized	1		0					0	
Lanes	0	1	0		0	1		0	
Configuration	LTR				LTR				
Upstream Signal		0				0			
Minor Street	1	Eastbound				Westbou	Ind		
Movement	7	8	9	-	10	11		12	
	L	Т	R		L	T		R	
Volume (veh/h)	19	2	87		1	4		0	
Peak-Hour Factor, PHF	0.82	0.82	0.82		0.82	0.82		0.82	
Hourly Flow Rate, HFR (veh/h)	23	2	106		1	4		0	
Percent Heavy Vehicles	0	0	0		0	0		0	
Percent Grade (%)	1 1 1 1 1 1 1 1	0				0			
Flared Approach		N				N			
Storage		0				0			
RT Channelized			0					0	
Lanes	0	1	0	-	0	1	-	0	
Configuration		LTR				LTR		-	
Delay, Queue Length, a	nd Level of Ser						-		
Approach	Northbound	Southbound	V	Vestbound	1	1	Eastbound		
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	LTR	LTR		LTR	5	10	LTR	12	
								-	
v (veh/h)	50	0		5			131		
C (m) (veh/h)	1382	1441		476			759		
v/c	0.04	0.00		0.01			0.17		
95% queue length	0.11	0.00		0.03	-		0.62	_	
Control Delay (s/veh)	7.7	7.5		12.6		10.7			
LOS	A	A		В			В		
Approach Delay (s/veh)	÷			12.6			10.7		
Approach LOS	-	-		В					

General Information	1		Site In	formatio	on				
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 PM Peak		Intersec Jurisdic Analysis	ction tion		Kelso Ro City of Sa 2023	ad & Bluff F andy	Road	
Project Description Ye	ar 2023 w/o Pro	ject							
East/West Street: Kelso	Road		North/So	outh Stree	t: Bluff Ro	bad			
Intersection Orientation:	North-South		Study Period (hrs): 0.25						
Vehicle Volumes an	d Adjustme	nts							
Major Street		Northbound				Southbo	und		
Movement	1	2	3		4	5		6	
	L	T	R		L	T		R	
Volume (veh/h)	43	122	5		0	160	1	11	
Peak-Hour Factor, PHF	0.82	0.82	0.82		0.82	0.82		0.82	
Hourly Flow Rate, HFR (veh/h)	52	148	6		0	195		13	
Percent Heavy Vehicles	1	1			1	-		-	
Median Type				Undivide	d				
RT Channelized			0			2		0	
Lanes	0	1	0		0	1		0	
Configuration	LTR				LTR				
Upstream Signal		0				0			
Minor Street		Eastbound				Westbou	Ind		
Movement	7	8	9		10	11		12	
the second second	L	Т	R		L	T	1.1.1	R	
Volume (veh/h)	13	2	92		1	4		0	
Peak-Hour Factor, PHF	0.82	0.82	0.82	1.1	0.82	0.82		0.82	
Hourly Flow Rate, HFR (veh/h)	15	2	112		1	4		0	
Percent Heavy Vehicles	0	0	0		0	0		0	
Percent Grade (%)	1.1.1	0				0			
Flared Approach		N				N			
Storage		0				0			
RT Channelized	1	11	0					0	
Lanes	0	1	0		0	1	-	0	
Configuration		LTR				LTR			
Delay, Queue Length, a	nd Level of Ser	vice							
Approach	Northbound	Southbound	V	Vestbound	1		Eastbound		
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	LTR	LTR	-	LTR		10	LTR	12	
						-	1	-	
v (veh/h)	52	0		5	-		129		
C (m) (veh/h)	1369	1433		460		-	772		
v/c	0.04	0.00		0.01			0.17		
95% queue length	0.12	0.00		0.03			0.60		
Control Delay (s/veh)	7.7	7.5		12.9		10.6			
LOS	А	A		В		В			
Approach Delay (s/veh)	-	-		12.9			10.6		
Approach LOS	-	-		B			B		

General Information	1		Site In	formatio	on			
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 PM Peak		Intersec Jurisdic Analysis	tion City of Sandy				Road
Project Description Yea	ar 2023 with Pro	oject						
East/West Street: Kelso	Road		North/So	outh Stree	t Bluff Ro	oad		
Intersection Orientation:	North-South		Study P	eriod (hrs)	: 0.25			
Vehicle Volumes an	d Adjustmer	nts						
Major Street		Northbound				Southbou	und	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)	54	122	5		0	160		12
Peak-Hour Factor, PHF	0.82	0.82	0.82		0.82	0.82		0.82
Hourly Flow Rate, HFR (veh/h)	65	148	6		0	195		14
Percent Heavy Vehicles	1	-	-		1			-
Median Type				Undivided	d			
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration	LTR				LTR			
Upstream Signal		0	7			0		
Minor Street		Eastbound				Westbou	ind	
Movement	7	8	9		10	11		12
	L	T	R		L	Т	1.0	R
Volume (veh/h)	14	2	98		1	4		0
Peak-Hour Factor, PHF	0.82	0.82	0.82		0.82	0.82		0.82
Hourly Flow Rate, HFR (veh/h)	17	2	119		1	4		0
Percent Heavy Vehicles	0	0	0		0	0	1.11	0
Percent Grade (%)		0				0	1	
Flared Approach	1. J	N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		LTR				LTR		
Delay, Queue Length, a	nd Level of Ser	vice		-				
Approach	Northbound	Southbound	V	Vestbound	1	1	Eastbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		10	LTR	1.0
		0		5		1	138	1
v (veh/h)	65							
C (m) (veh/h)	1368	1433		437			761	
v/c	0.05	0.00		0.01	-		0.18	-
95% queue length	0.15	0.00		0.03			0.66	-
Control Delay (s/veh)	7.8	7.5		13.3			10.8	
LOS	A	A		В			В	
Approach Delay (s/veh)	-	-		13.3			10.8	
Approach LOS		-		В			В	

General Information	1		Site In	formatio	on			
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 AM Peak		IntersectionKelso RoaJurisdictionCity of SauAnalysis Year2023			ad & site access andy		
	ar 2023 with Pro	oject						
East/West Street: Kelso	Road				et: site acc	Cess		
Intersection Orientation:	East-West		Study Pe	eriod (hrs)	: 0.25			
Vehicle Volumes an	d Adjustmer	nts						
Major Street		Eastbound				Westbour	nd	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)		159	4		4	271		
Peak-Hour Factor, PHF	0.82	0.80	0.80		0.80	0.80	-	0.82
Hourly Flow Rate, HFR (veh/h)	0	198	4		4	338		0
Percent Heavy Vehicles	0	-	-		0			-
Median Type				Undivide	d			
RT Channelized	-	1.	0			-		0
Lanes	0	1	0		0	1		0
Configuration			TR		LT			
Upstream Signal		0				0		
Minor Street		Northbound			-	Southbou	nd	
Movement	7	8	9		10	11		12
	L	Т	R		L	T		R
Volume (veh/h)	13		11					
Peak-Hour Factor, PHF	0.80	0.82	0.80		0.82	0.82		0.82
Hourly Flow Rate, HFR (veh/h)	16	0	13		0	0		0
Percent Heavy Vehicles	0	0	0		1	0	1.1	0
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	0		0	0		0
Configuration		LR						
Delay, Queue Length, a	nd Level of Ser	vice						
Approach	Eastbound	Westbound	N	lorthbound	d	S	outhbound	1
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR		10		14
								-
v (veh/h)		4		29	-			-
C (m) (veh/h)		1382		613				-
v/c		0.00		0.05				-
95% queue length	_	0.01		0.15				
Control Delay (s/veh)		7.6		11.2	-	· · · · · · · · · · · · · · · · · · ·		
LOS		A		В			L	1
Approach Delay (s/veh)	-	-	1	11.2				
Approach LOS		5		В				

General Information	1		Site In	formati	on			
Analyst Agency/Co. Date Performed Analysis Time Period	DSK Kelly Eng 3/2/2021 PM Peak		Intersec Jurisdic Analysis	tion tion	ion City of Sandy			
Project Description Yea	ar 2023 with Pro	oject						
East/West Street: Kelso					et: site acc	Cess		
Intersection Orientation:	East-West		Study Pe	eriod (hrs): 0.25			
Vehicle Volumes an	d Adjustme	nts						
Major Street		Eastbound		- 1		Westboun	d	
Movement	1	2	3		4	5		6
	L	T	R		Ļ	Т		R
Volume (veh/h)		266	15		12	108	-	
Peak-Hour Factor, PHF	0.82	0.80	0.80		0.80	0.80	-	0.82
Hourly Flow Rate, HFR (veh/h)	0	332	18		14	134		0
Percent Heavy Vehicles	0	-	-		0	-	-	-
Median Type				Undivide	d			
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		-	TR		LT			
Upstream Signal		0				0	_	
Minor Street	-	Northbound	1.00			Southbour	nd	
Movement	7	8	9		10	11		12
	L	T	R		L	Т		R
Volume (veh/h)	9		7		_			
Peak-Hour Factor, PHF	0.80	0.82	0.80		0.82	0.82	-	0.82
Hourly Flow Rate, HFR (veh/h)	11	0	8		0	0		0
Percent Heavy Vehicles	0	0	0		1	0		0
Percent Grade (%)		0				0		_
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	0	0		0	0		0
Configuration		LR			S			
Delay, Queue Length, a	nd Level of Sei	rvice						
Approach	Eastbound	Westbound	N	lorthboun	d	Sc	uthbound	1
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				1
v (veh/h)		14		19	1	1		1
C (m) (veh/h)		1220		589	1	+ +		1
		0.01		0.03		+		
V/C					+	++		
95% queue length		0.03		0.10	+	+		-
Control Delay (s/veh)	·	8.0		11.3				-
LOS		A		В	1	-		
Approach Delay (s/veh)		÷		11.3				
Approach LOS	-	+	B					

APPPENDIX F REFERENCES

References

- 1. Trip Generation Manual, 10th Edition, 2017, Institute of Transportation Engineers.
- Highway Capacity Manual, 2000 and 2010, Transportation Research Board, National Research Council.
- 3. Discussions with staff from Clackamas County.
- 4. Discussions with staff from the City of Sandy.
- The City of Sandy, Pre-Application Conference Notes, Sandy Woods Phase 2, March 11, 2020.
- Clackamas County Memorandum, Department of Transportation and Development, March 11, 2020.
- Sandy Bluff Annex 6 Subdivision & Future Development, Transportation Impact Study, Lancaster Engineering, 321 SW 4th Ave., Suite 400, Portland, OR 97204.

Exhibit F

6/3/2021

Tree Preservation Plan for Sandy Woods Phase 2

This Arborist Report pertains to a Type 2 Permit for a subdivision at 37090 SE Kelso Rd., Sandy, Oregon. There are 494 trees that are 6 inches DBH or larger listed in the attached Tree Table. Trees were tagged, measured, and evaluated for preservation potential. The site is 39 acres and 152 trees of 11-inch diameter and larger will be preserved. There are 86 conifers and 66 deciduous trees being preserved. There are also 91 trees between 6 inches DBH and 11 inches DBH being preserved. This satisfies the criteria listed in City Code below.

17.102.50 TREE RETENTION AND PROTECTION REQUIREMENTS

A. Tree Retention: The landowner is responsible for retention and protection of trees required to be retained as specified below:

1. At least three trees 11 inches DBH or greater are to be retained for every one-acre of contiguous ownership.

2. Retained trees can be located anywhere on the site at the landowner's discretion before the harvest begins. Clusters of trees are encouraged.

3. Trees proposed for retention shall be healthy and likely to grow to maturity, and be located to minimize the potential for blow-down following the harvest.

4. If possible, at least two of the required trees per acre must be of conifer species.

5. Trees within the required protected setback areas may be counted towards the tree retention standard if they meet these requirements.

Trees being preserved have been assigned root protection zones (RPZs) and RPZ radii are listed in the Tree Table. City Code requires that RPZ radii be a minimum of 10 ft. from tree trunks. Protected trees will be cordoned off with fencing a minimum of six feet tall supported with metal posts placed no farther than ten feet apart. Root protection zones may be entered by pedestrians only for tasks like surveying, measuring and sampling.

Except as otherwise determined by the Planning Director, all tree protection measures shall be instituted prior to any development activity including, but not limited to, tree removal, clearing, grading, excavation, and demolition work. Fencing shall be removed only after completion of all construction activity. City Code requires that trees to be protected be marked with yellow flagging tape.

Tree protection measures must be inspected and approved by the City before construction activity, including tree removal, begins. Without the owner's authorization and the project arborist's supervision, none of the following is allowed within a root protection zone:

- 1. New buildings;
- 2. Grade change or cut and fill, during or after construction;
- 3. New impervious surfaces;
- 4. Utility or drainage field placement;

5. Staging or storage of materials and equipment during construction;

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6. Vehicle maneuvering during construction.

Any activity within a root protection zone, including adjustment of the tree protection fence, must be approved by the project arborist and the City Planning Director. It is usually feasible to build within the protected area with special construction techniques and limitations.

The goal of this tree preservation plan is to satisfy the tree preservation code, and to observe all laws, rules, and regulations. All trees to be removed should be verified and marked before any clearing begins. It is the owner's responsibility to implement this tree preservation plan and to monitor the construction process to its conclusion. Deviations can result in tree damage, liability, and violations of the City Code.

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Portland, OR 97280 CCB 230301

- 1. Client warrants any legal description provided to the Consultant is correct and titles and ownerships to property are good and marketable. Consultant shall not be responsible for incorrect information provided by Client.
- 2. Consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
- 3. The Consultant shall not be required to give testimony or attend court or hearings unless subsequent contractual arrangements are made, including additional fees.
- 4. The report and any values expressed therein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
- 5. Sketches, drawings, and photographs in the report are intended as visual aids and may not be to scale. The reproduction of information generated by others will be for coordination and ease of reference. Inclusion of such information does not warrant the sufficiency or accuracy of the information by the Consultant.
- 6. Unless expressed otherwise, information in the report covers only items that were examined and reflects the condition at the time of inspection. The inspection is limited to visual examination of accessible items without laboratory analysis, dissection, excavation, probing, or coring, unless otherwise stated.
- 7. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.
- 8. The report is the completed work product. Any additional work, including production of a site plan, addenda and revisions, construction of tree protection measures, tree work, or inspection of tree protection measures, for example, must be contracted separately. Loss or alteration of any part of the report invalidates the entire report.
- 9. Any action or proceeding seeking to enforce any provision of this Agreement shall be brought against any of the parties in Multnomah County Circuit Court of the State of Oregon, or, when applicable, in the United States District Court for the District of Oregon. Each party consents to the jurisdiction of such courts (and of the appropriate appellate courts) and waives any objection to such venue.

Ryan Neumann 503.548.3119 <u>neighborhoodtree.llc@gmail.com</u> ISA Certified Arborist PN-5539A TRAQ Qualified

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						17.102.50		
Tag	Species	DBH	Remarks	DDDD	RPZ	Retention Tree	Undersize	Action
1312	Douglas fir	51	viable; blackberries		24	√ √		PRESERVE
1313	western red ce		size estimated due to blackberries; dead top; terminal decline	Х	12	NO		PRESERVE
1314	western red ce		viable		24	$\checkmark\checkmark$		PRESERVE
1315	big leaf maple	10	suppressed		8	NO	Х	PRESERVE
1316	big leaf maple		suppressed		9	NO	Х	PRESERVE
1317	sweet cherry		excessive lean	Х	12	NO	Х	PRESERVE
1318	red alder	12	viable		8	NO		REMOVE
1319	big leaf maple	7			8	NO	Х	PRESERVE
1320	big leaf maple	7			8	NO	Х	PRESERVE
1321	western red ce	7			8	NO	Х	PRESERVE
1322	Douglas fir	42	viable; codominant @ 50'		25	$\checkmark\checkmark$		PRESERVE
1323	Douglas fir	47	viable; trunk swoop		25	$\checkmark\checkmark$		PRESERVE
1324	Douglas fir	32	viable		22	$\checkmark\checkmark$		PRESERVE
1325	Douglas fir	30	viable		22	$\checkmark\checkmark$		PRESERVE
1326	western red ce	10	viable		8	NO	Х	PRESERVE
1327	Douglas fir	36	viable		24	$\checkmark\checkmark$		PRESERVE
1328	Douglas fir	33	viable		24	$\checkmark\checkmark$		PRESERVE
1329	sweet cherry	8	viable		8	NO	Х	PRESERVE
1330	red alder	8	viable	Х	8	NO	Х	PRESERVE
1331	Douglas fir	16	viable		12	$\checkmark\checkmark$		PRESERVE
1332	snag	n/a	dead; approx. 19' tall; habitat	Х	8	NO		PRESERVE
1333	sweet cherry	10	viable		8	NO	Х	PRESERVE
1334	sweet cherry	9	viable		8	NO	Х	PRESERVE
1335	sweet cherry	7	viable		8	NO	Х	PRESERVE
1336	western hemlo	19	viable		14	$\checkmark\checkmark$		PRESERVE
1337	Douglas fir	44	viable		24	$\checkmark\checkmark$		PRESERVE
1338	big leaf maple	8	viable		8	NO	Х	PRESERVE
1339	Douglas fir	17	suppressed		12	$\checkmark\checkmark$		PRESERVE
1340	Douglas fir		viable		24	$\checkmark\checkmark$		PRESERVE
1341	Douglas fir	25	viable		24	$\checkmark\checkmark$		PRESERVE
1342	Douglas fir	27	viable		16	NO		REMOVE
1343	big leaf maple	18	stem decay	Х	18	NO		REMOVE
1344	Douglas fir		viable		24	$\checkmark\checkmark$		PRESERVE

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							1	
						17.102.50		
Tag	Species		Remarks	DDDD	RPZ	Retention Tree	Undersize	
1345	bitter cherry		viable		8	NO	Х	PRESERVE
1346	big leaf maple		viable		12	✓		PRESERVE
1347	red alder		viable		8	✓		PRESERVE
1348	red alder		viable		8	NO	Х	PRESERVE
1349	red alder		viable		8	NO	Х	PRESERVE
1350	red alder		viable		10	\checkmark		PRESERVE
1351	blue spruce		viable		8	NO	Х	REMOVE
1352	Douglas fir		viable		24	NO		REMOVE
1353	Douglas fir		viable		12	NO		REMOVE
1354	Douglas fir		viable		24	NO		REMOVE
1355	western red ce	43	viable		25	NO		REMOVE
1356	big leaf maple	27	viable		18	NO		REMOVE
1357	big leaf maple	9	excessive lean	Х	8	NO	Х	REMOVE
1358	Douglas fir	35	viable		24	NO		REMOVE
1359	red alder	9	viable		8	NO	Х	REMOVE
1360	red alder	11	viable		8	NO		REMOVE
1361	red alder	7			8	NO	Х	REMOVE
1362	red alder	10	viable		8	NO	Х	REMOVE
1363	red alder	11	viable		8	NO		REMOVE
1364	red alder	7			8	NO	Х	REMOVE
1365	red alder	6			8	NO	Х	REMOVE
1366	Douglas fir	15	viable		10	NO		REMOVE
1367	red alder	6			8	NO	Х	REMOVE
1368	red alder	6			8	NO	Х	REMOVE
1369	red alder	7			8	NO	Х	REMOVE
1370	big leaf maple	8	viable		8	NO	Х	REMOVE
1371	red alder	6			8	NO	Х	REMOVE
1372	big leaf maple	6			8	NO	Х	REMOVE
1373	big leaf maple	8	viable		10	NO	Х	REMOVE
1374	red alder	15	viable		8	NO		REMOVE
1375	big leaf maple	6			8	NO	Х	REMOVE
1376	big leaf maple	6			8	NO	Х	REMOVE
1377	red alder	6			8	NO	Х	REMOVE

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						17.102.50		
Tea	Creation	DBH	Domosilia	DDDD	007	Retention Tree	Undersize	Action
Tag 1378	Species	UBH 7	Remarks					REMOVE
1378	red alder	/	viable		8	NO NO	X	
1379	red alder red alder		viable		8	NO	X X	REMOVE REMOVE
1381	red alder	8	VIable		ہ 8	NO	X	REMOVE
1381	red alder	6			8	NO	X	REMOVE
1383	red alder		viable		8	NO	^	REMOVE
1384	red alder	11	VIable		8	NO	Х	REMOVE
1385	red alder	/	viable		8	NO	^	REMOVE
1385	red alder	7	VIADLE		8	NO	Х	REMOVE
1387	red alder	6			ہ 8	NO	X	REMOVE
1387	red alder	-	viable		ہ 8	NO	X	REMOVE
1389	red alder	9	VIADLE		8	NO	X	REMOVE
1389	red alder	•	listed	Х	ہ 8	NO	X	REMOVE
1390	western red ce		viable	^	25	NO	^	REMOVE
1391	big leaf maple		suppressed		25	NO	Х	REMOVE
1392	big leaf maple		suppressed		8	NO	X	REMOVE
1393	big leaf maple		viable		ہ 8	NO	^	REMOVE
1394	big leaf maple	6	VIable		8	NO	Х	REMOVE
1395	big leaf maple	-	viable; shares stump with T1397		22	NO	^	REMOVE
1396	big leaf maple		viable; shares stump with T1397		22	NO		REMOVE
1397			viable		25			PRESERVE
1398	Douglas fir western red ce		viable; grown over wire fence		22	<u> </u>		PRESERVE
1399	Douglas fir		viable		20	 		PRESERVE
1401	western red ce		viable; shares stump with T1403		25	<u> </u>		PRESERVE
1402				_	18	 		PRESERVE
1403 1404	Douglas fir Douglas fir		viable; shares stump with T1402 viable		20	<u> </u>		PRESERVE
-		-	viable		20	 		-
1405	Douglas fir	27	VIADIE		20		V	PRESERVE
1406 1407	big leaf maple	,	viable		22	NO ✓✓	Х	PRESERVE PRESERVE
-	Douglas fir					 ✓		-
1440 1441	red alder red alder		viable viable		8 10	NO		PRESERVE REMOVE
							V	-
1442 1443	red alder Douglas fir		viable viable		8 25	NO V V	Х	REMOVE PRESERVE

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_						17.102.50		
Tag	Species		Remarks	DDDD		Retention Tree	Undersize	
1444	Douglas fir		trunk swoop @ 50'; re-grown top		25	NO		REMOVE
1445	red alder		clump; stump suckers	Х	12	NO VV		REMOVE
1486	Douglas fir		viable		25	$\overline{\checkmark}$		PRESERVE
1487	Douglas fir		viable		24			PRESERVE
1488	big leaf maple		stem decay; decline; broken top	X	25	NO		REMOVE
1489	big leaf maple		basal decay; multiple stems; inclusions	Х	25	NO		REMOVE
1490	Douglas fir		viable		24	<u> </u>		PRESERVE
1491	scouler willow		viable		12	 ✓ 		PRESERVE
1492	Douglas fir		viable		22	$\checkmark\checkmark$		PRESERVE
1493	big leaf maple		viable		0	NO	Х	PRESERVE
1494	big leaf maple		viable		10	✓		PRESERVE
1495	big leaf maple		viable		10	✓		PRESERVE
1496	Douglas fir		viable		24	$\checkmark\checkmark$		PRESERVE
1497	red alder		viable		8	✓		PRESERVE
1498	red alder	10	viable		8	NO	Х	PRESERVE
1499	red alder		viable		8	✓		PRESERVE
1500	red alder	13	viable; same as T1501		10	\checkmark		PRESERVE
1502	red alder	15	viable		10	\checkmark		PRESERVE
1503	red alder	11	viable		8	\checkmark		PRESERVE
1504	western red ce	43	viable; shares stump with T1507 and T1506		25	$\checkmark\checkmark$		PRESERVE
1506	western red ce	46	viable; shares stump with T1504 and T1507		25	$\checkmark\checkmark$		PRESERVE
1507	western red ce	31	viable; shares stump with T1504 and T1506		20	$\checkmark\checkmark$		PRESERVE
1508	big leaf maple	16	viable		10	\checkmark		PRESERVE
1509	red alder	10	viable		8	NO	Х	REMOVE
1510	big leaf maple	26	viable		18	NO		REMOVE
1511	Douglas fir	39	viable		25	NO		REMOVE
1512	Douglas fir	43	viable		25	NO		REMOVE
1513	big leaf maple	11	viable		8	NO		REMOVE
1514	big leaf maple	30	viable		20	NO		REMOVE
1515	Douglas fir	18	suppressed		12	NO		REMOVE
1516	sweet cherry		viable		8	NO	Х	REMOVE
1517	big leaf maple		viable		12	NO		REMOVE
1518	Douglas fir		red-ring rot	Х	24	NO		REMOVE

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						17.102.50		
Tag	Species	DBH	Remarks	DDDD	RPZ	Retention Tree	Undersize	Action
1519	Douglas fir	12	terminal decline	Х	8	NO		REMOVE
1520	big leaf maple	31	basal decay; trunk decay	Х	20	NO		REMOVE
1521	Douglas fir	37	viable		24	NO		REMOVE
1522	western hemlo	22	dead	Х	14	NO		REMOVE
1523	Douglas fir	29	viable		18	NO		REMOVE
1524	Douglas fir	20	viable		14	NO		REMOVE
1525	big leaf maple	19			12	NO		REMOVE
1526	Douglas fir	23	viable		16	NO		REMOVE
1527	western hemlo	20	basal decay	Х	14	NO		REMOVE
1528	Douglas fir	25	viable		16	NO		REMOVE
1529	sweet cherry	10	decline	Х	0	NO	Х	REMOVE
1530	Douglas fir	29	viable		22	$\checkmark\checkmark$		PRESERVE
1531	western hemlo	17	grows out of old stump		12	$\checkmark\checkmark$		PRESERVE
1532	Douglas fir	25	viable		18	$\checkmark\checkmark$		PRESERVE
1533	Douglas fir	34	viable		24	$\checkmark\checkmark$		PRESERVE
1534	sweet cherry	7			8	NO	Х	REMOVE
1535	sweet cherry	6			8	NO	Х	REMOVE
1536	Douglas fir	35	viable		24	$\checkmark\checkmark$		PRESERVE
1537	big leaf maple	16	viable		12	\checkmark		PRESERVE
1538	Douglas fir	n/a	dead; on ground	Х	0	NO		REMOVE
1539	Douglas fir	43	viable		24	$\checkmark\checkmark$		PRESERVE
1540	Douglas fir	28	viable; grows out of nurse log		20	$\checkmark\checkmark$		PRESERVE
1541	Douglas fir	35	viable		24	$\checkmark\checkmark$		PRESERVE
1542	red alder	14	viable		10	\checkmark		PRESERVE
1543	red alder	16	viable		12	\checkmark		PRESERVE
1544	Douglas fir	32	viable; on bank		22	$\checkmark\checkmark$		PRESERVE
1545	red alder	10	viable; in creek		8	NO	Х	PRESERVE
1546	red alder	10	viable; in creek		8	NO	Х	PRESERVE
1547	red alder	9	viable; in creek		8	NO	Х	PRESERVE
1548	red alder	11	viable; in creek		8	\checkmark		PRESERVE
1549	red alder	14	viable; in creek		10	✓		PRESERVE
1550	red alder	12	viable; in creek		8	\checkmark		PRESERVE
1551	red alder	9	viable; in creek		8	NO	Х	PRESERVE

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Tag	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
1552	red alder	14	viable; in creek		10	√		PRESERVE
L553	red alder	18	viable; in creek		12	✓		PRESERVE
1554	red alder	16	viable		12	√		PRESERV
1555	red alder	11	viable		10	\checkmark		PRESERVI
1556	red alder	14	viable		10	√		PRESERV
1557	red alder	19	terminal decline	Х	12	NO		REMOVE
1558	red alder	10	viable		8	NO	Х	PRESERVI
1559	red alder	14	viable		10	✓		PRESERV
1560	red alder	14	viable; in creek		10	\checkmark		PRESERV
1561	red alder	21	viable; codominant @8'		14	\checkmark		PRESERV
1562	red alder		terminal decline	Х	8	NO		REMOVE
1563	red alder	13	viable		8	\checkmark		PRESERV
1564	red alder	14	dead	Х	8	NO		REMOVE
1565	red alder	15	trunk decay	Х	10	NO		REMOVE
1566	red alder	11	viable		8	√		PRESERV
1567	red alder	15	viable		10	\checkmark		PRESERV
1568	red alder	22	dead	Х	14	NO		REMOVE
1569	Douglas fir	49	trunk swoop @ 45'		24	$\checkmark\checkmark$		PRESERV
1570	red alder	19	terminal decline	Х	12	NO		REMOVE
1571	red alder	16	terminal decline	Х	10	NO		REMOVE
1572	red alder	16	viable		10	√		PRESERV
1573	red alder	16	viable		10	✓		PRESERV
1574	red alder	10	dead	Х	8	NO	Х	REMOVE
1575	red alder	16	decline	Х	10	✓		PRESERV
1576	Douglas fir	41	viable; swollen trunk		24	$\checkmark\checkmark$		PRESERV
1577	big leaf maple	22	viable		16	✓		PRESERV
1578	big leaf maple	21	viable		14	\checkmark		PRESERV
1579	big leaf maple	16	viable		0	NO		REMOVE
1580	big leaf maple	11	terminal decline	Х	0	NO		REMOVE
1581	big leaf maple	11	viable		0	NO		REMOVE
1582	Douglas fir	53	viable		0	NO		REMOVE
1583	big leaf maple	8	viable		8	NO	Х	PRESERV
1584	big leaf maple	16	viable		12	√		PRESERV

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Tag	Species	DBH	Remarks	DDDD	RP7	17.102.50 Retention Tree	Undersize	Action
1585	big leaf maple		viable		12	√	Ondersize	PRESERVE
1586	big leaf maple	-	viable		8	NO	Х	PRESERVE
1587	big leaf maple		viable		8	NO	X	PRESERVE
1588	big leaf maple	7			8	NO	X	PRESERVE
1590	red alder	15	viable; same as T1589		12	✓		PRESERVE
1591	red alder		viable		14	✓		PRESERVE
1592	red alder	20	viable		14	\checkmark		PRESERVE
1593	big leaf maple	29,14,13	viable; multiple stems; same as T1594, T1595, and T1596		24	✓		PRESERVE
1597	red alder		viable; same as T1598		14	\checkmark		PRESERVE
1599	big leaf maple	32	trunk decay; decline; broken tops	Х	20	NO		REMOVE
1704	Douglas fir		viable; codominant @ 25'		24	$\checkmark\checkmark$		PRESERVE
1709	Douglas fir	28	crook in stem @ 30'		18	NO		REMOVE
1712	big leaf maple	6			8	NO	Х	PRESERVE
1742	red alder	10	viable		8	NO	Х	PRESERVE
1746	western red ce	34	viable		22	NO		REMOVE
1751	red alder	9	viable		8	NO	Х	PRESERVE
1755	Douglas fir	33	viable		22	NO		REMOVE
1769	Douglas fir	35	viable		24	NO		REMOVE
1770	Douglas fir	35	viable		24	NO		REMOVE
1771	Douglas fir	22	viable		14	NO		REMOVE
1775	red alder	18	viable		12	\checkmark		PRESERVE
1776	big leaf maple	38	viable		25	NO		REMOVE
1777	big leaf maple	16	viable		10	NO		REMOVE
1778	big leaf maple	34	viable		24	NO		REMOVE
1779	big leaf maple	20,18,16	terminal decline	Х	24	NO		REMOVE
1780	Douglas fir	34	viable; codominant @ 25'		22	NO		REMOVE
1781	Douglas fir	29	viable		20	NO		REMOVE
1782	Douglas fir		viable		20	NO		REMOVE
1783	Douglas fir		viable; ivy		16	NO		REMOVE
1785	Douglas fir		trunk swoop		20	NO		REMOVE
1786	western red ce		viable		25	NO		REMOVE
1787	big leaf maple		basal decay; terminal decline; one dead stem	Х	20	NO		REMOVE
1789	Douglas fir	40	viable		25	NO		REMOVE

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Tag	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
1790	Douglas fir		viable		20	NO		REMOVE
1793	big leaf maple		viable		24	 ✓ 		PRESERVE
1800	red alder		viable		10	✓		PRESERVE
1801	red alder	11	viable		8	\checkmark		PRESERVE
1802	Douglas fir	45	viable		24	$\checkmark\checkmark$		PRESERVE
1803	Douglas fir	37	viable		24	$\checkmark\checkmark$		PRESERVE
1805	Douglas fir	32	viable		22	$\checkmark\checkmark$		PRESERVE
1806	big leaf maple	8	viable		8	NO	Х	PRESERVE
1808	Douglas fir	32	viable		20	$\checkmark\checkmark$		PRESERVE
1809	Douglas fir	34	viable		22	NO		REMOVE
1810	Douglas fir	8	viable		8	NO	Х	PRESERVE
1811	big leaf maple	28,14,12	viable; 6" dead stem		20	NO		REMOVE
1812	Douglas fir	50	viable		25	NO		REMOVE
1813	Douglas fir	26	viable		16	NO		REMOVE
1814	Douglas fir	19	viable		12	NO		REMOVE
1815	Douglas fir	34	viable		22	NO		REMOVE
1816	Douglas fir	26	viable; shares stump with T1817		16	NO		REMOVE
1817	Douglas fir	29	viable; shares stump with T1816		20	NO		REMOVE
1818	Douglas fir	11	viable		8	NO		REMOVE
1819	big leaf maple	20	viable		14	NO		REMOVE
1820	western hemlo	18	viable		12	NO		REMOVE
1821	Douglas fir	10	viable		8	NO	Х	REMOVE
1822	Douglas fir	31	viable		20	NO		REMOVE
1823	big leaf maple	36	basal decayl trunk decay; terminal decline	Х	24	NO		REMOVE
1825	big leaf maple	27	basal decay; decline; same as T1824	Х	18	NO		REMOVE
1826	western red ce	10	viable		8	NO	Х	PRESERVE
1827	western red ce	21	viable		14	$\checkmark\checkmark$		PRESERVE
1828	western red ce		viable		10	$\checkmark\checkmark$		PRESERVE
1829	western red ce	66	viable; small dead top		24	$\checkmark\checkmark$		PRESERVE
1830	western red ce		viable		10	$\checkmark\checkmark$		PRESERVE
1831	red alder	17	viable		12	NO		REMOVE
1832	red alder		dead	Х	10	NO		REMOVE
1833	big leaf maple	17	viable		12	NO		REMOVE

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Tag	Species	DBH	Remarks	DDDD		Retention Tree	Undersize	
1834	big leaf maple		viable		10	NO		REMOVE
1836	big leaf maple		multiple stems; decline; dead stem; same as T1835	Х	10	NO ✓		REMOVE
1837	big leaf maple		viable		8	•		PRESERVE
1838	Douglas fir		viable		25	NO		REMOVE
1839	western hemlo		viable		8	NO		REMOVE
1840	western hemlo		viable; grows out of nurse stump		8	NO	Х	PRESERVE
1841	red alder		viable; in creek		10	NO		REMOVE
1842	red alder		40 degree lean		10	NO		REMOVE
1843	big leaf maple		retrenched; large dead branches		25	NO		REMOVE
1844	red alder		viable; in creek		8	NO		REMOVE
1845	red alder		viable; in creek		8	NO	Х	REMOVE
1846	red alder		trunk decay	Х	8	NO		REMOVE
1847	red alder		viable; in creek		10	✓		PRESERVE
1848	red alder	14	viable; in creek		10	\checkmark		PRESERVE
1849	red alder	11	leans over creek		8	\checkmark		PRESERVE
1850	western hemlo	24	dead	Х	16	NO		REMOVE
1851	western hemlo	19	dead	Х	12	NO		REMOVE
1852	Douglas fir	28	viable		18	NO		REMOVE
1853	Douglas fir	36	viable; codominant @ 50'		24	$\checkmark\checkmark$		PRESERVE
1854	Douglas fir	24			16	$\checkmark\checkmark$		PRESERVE
1855	Douglas fir	16			10	$\checkmark\checkmark$		PRESERVE
1856	Douglas fir	35	viable		24	$\checkmark\checkmark$		PRESERVE
1857	Douglas fir	18	viable		12	NO		REMOVE
1858	Douglas fir	19	viable		12	NO		REMOVE
1859	Douglas fir	6			8	NO	Х	REMOVE
1860	Douglas fir	28	viable		18	NO		REMOVE
1861	big leaf maple	18	decline	Х	12	NO		REMOVE
1862	big leaf maple	30	viable		20	NO		REMOVE
1863	western hemlo	33	dead	Х	22	NO		REMOVE
1864	western hemlo		viable; grows out of nurse stump; codominant from base	1	20	NO		REMOVE
1865	Douglas fir	-	viable		25	NO		REMOVE
1866	western red ce	-	viable	1	16	NO		REMOVE
1867	Douglas fir		viable		25	NO		REMOVE

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Гад	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
1868	big leaf maple	34	viable; soil eroded around stump		24	NO		REMOVE
1869	western hemlo		viable		20	NO		REMOVE
1870	Douglas fir		viable		25	NO		REMOVE
1871	Douglas fir	12	viable		8	$\checkmark\checkmark$		PRESERV
1872	red alder	12	viable		8	\checkmark		PRESERV
1873	red alder	15	viable		10	\checkmark		PRESERV
1874	red alder	10	viable		8	NO	Х	PRESERV
1875	Douglas fir	41	viable		24	$\checkmark\checkmark$		PRESERV
1876	red alder	9	viable; hard lean		8	NO	Х	PRESERV
1877	red alder	8	viable		8	NO	Х	PRESERV
1878	big leaf maple	13	basal decay; soil eroded around stump	Х	8	NO		PRESERV
1879	red alder	9	viable		8	NO	Х	PRESERV
1880	red alder	8	viable		8	NO	Х	PRESERV
1881	Douglas fir	23	viable		16	$\checkmark\checkmark$		PRESERV
1882	Douglas fir	42	viable		24	$\checkmark\checkmark$		PRESERV
1883	Douglas fir	6			8	NO	Х	PRESERV
1884	Douglas fir	19	dead	Х	0	NO		REMOVE
1885	big leaf maple	19	viable		14	\checkmark		PRESERV
1886	western red ce	11	viable; grows out of large nurse-log		8	$\checkmark\checkmark$		PRESERV
1887	big leaf maple		viable; standing water; soil eroded around stump		18	\checkmark		PRESERV
1888	red alder	13	viable; in creek		10	√		PRESERV
1889	red alder	12	viable; in creek		8	\checkmark		PRESERV
1890	red alder	6			8	NO	Х	PRESERV
1891	red alder	12	viable		8	\checkmark		PRESERV
1892	red alder	16	viable		10	✓		PRESERV
1893	red alder		viable		8	NO	Х	PRESERV
1894	red alder	9	viable		8	NO	Х	PRESERV
1895	red alder	15	viable		10	\checkmark		PRESERV
1896	red alder		viable		8	√		PRESERV
1897	red alder		viable		8	\checkmark		PRESERV
1898	red alder		viable		8	NO	Х	PRESERV
1899	red alder		viable; labled 1890 on map; Tagged 1899 in field		10	NO		PRESERV
1900	Douglas fir		viable		25	NO	1	REMOVE

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Гад	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
1901	big leaf maple	12	viable		8	NO		REMOVE
1903	western red ce	1,18,9,9	viable; hedgerow; same as T1902, T1904, and T1905		24	NO		REMOVE
1906	western red ce	8,7	viable; hedgerow; same as T1907		8	NO		REMOVE
1908	western red ce	19	viable; hedgerow; same as T1909		12	NO		REMOVE
1910	western red ce	7,6	viable; hedgerow; same as T1911		8	NO		REMOVE
1912	western red ce	13,10,9	viable; hedgerow; same as T1913 and T1914		16	NO		REMOVE
1915	western red ce	16,13	viable; hedgerow; same as T1916		16	NO		REMOVE
1917	western red ce	17	viable; hedgerow		12	NO		REMOVE
1918	western red ce	19	viable; hedgerow		12	NO		REMOVE
1919	western red ce	60	basal and trunk decay; hollow; cavity @ 10'	X	25	NO		REMOVE
1920	big leaf maple	7			8	NO	Х	PRESERVE
1923	big leaf maple	11	viable; same as T1922		8	✓		PRESERVE
1924	sweet cherry		viable		8	NO	Х	PRESERVE
1925	big leaf maple	7			8	NO	Х	PRESERVE
1926	dead	17	dead	Х	12	NO		REMOVE
1927	plum	7			8	NO	Х	REMOVE
1928	plum	7	trunk decay		8	NO	Х	REMOVE
1929	Douglas fir		viable		12	√√		PRESERVE
1930	Douglas fir	10	viable		8	NO	Х	PRESERVE
1931	sweet cherry		viable		8	NO	Х	PRESERVE
1933	big leaf maple		viable; multiple stems; sames as T1932 and T1934		16	✓		PRESERVE
1935	Douglas fir		viable		24	√ √		PRESERVE
1938	-	30. 24. 6	viable; same as T1937, and T1936		24	$\checkmark\checkmark$		PRESERVE
1939	apple		terminal decline	Х	10	NO		REMOVE
1940	apple	10	terminal decline	Х	8	NO	Х	REMOVE
1941	Douglas fir		viable		10	NO		REMOVE
1942	sweet cherry	7			8	NO	Х	REMOVE
1943	sweet cherry	7			8	NO	X	REMOVE
1944	sweet cherry	10	viable; same as T1945		8	NO	X	REMOVE
1946	sweet cherry	6			8	NO	X	REMOVE
1947	apple	-	basal decay; cavity	Х	12	NO		REMOVE
1948	apple		terminal decline	X	8	NO		REMOVE
1949	Douglas fir		viable; ivy; shares stump with T1950		24	NO		REMOVE

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Tag	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
1950	Douglas fir	31	viable; ivy; shares stump with T1949		20	NO		REMOVE
1951	plum	12	terminal decline	Х	8	NO		REMOVE
1952	plum	8	viable		8	NO	Х	REMOVE
1953	big leaf maple	7	broken	Х	8	NO	Х	REMOVE
1954	big leaf maple	9	broken	Х	8	NO	Х	REMOVE
1955	big leaf maple	12	viable		8	NO		REMOVE
1956	big leaf maple	14	viable		8	NO		REMOVE
1957	big leaf maple	10	viable		8	NO	Х	REMOVE
1958	big leaf maple	11	viable		8	NO		REMOVE
1959	big leaf maple	13	viable		8	NO		REMOVE
1960	big leaf maple	10	viable		8	NO	Х	REMOVE
1961	western red ce	12	viable		8	$\checkmark\checkmark$		PRESERV
1963	western red ce	16	viable; same as T1962		10	$\checkmark\checkmark$		PRESERV
1964	western red ce	11	viable		8	$\checkmark\checkmark$		PRESERV
1965	western red ce	6			8	NO	Х	PRESERV
1966	Douglas fir	12	viable		8	$\checkmark\checkmark$		PRESERV
1967	Douglas fir	6			8	NO	Х	PRESERV
1968	western red ce	6			8	NO	Х	PRESERV
1969	western red ce	7			8	NO	Х	PRESERV
1970	Douglas fir	14	viable		10	$\checkmark\checkmark$		PRESERV
1971	big leaf maple	6			8	NO	Х	REMOVE
1972	cherry	14	terminal decline	Х	8	NO		REMOVE
1973	Douglas fir	46	viable		24	$\checkmark\checkmark$		PRESERV
1974	big leaf maple	13	terminal decline	Х	8	NO		REMOVE
1975	big leaf maple	17	terminal decline	Х	10	NO		REMOVE
1976	big leaf maple	14	broken tops	Х	8	NO		REMOVE
1977	Douglas fir	8	viable		8	NO	Х	PRESERV
1978	Douglas fir	14	viable		8	$\checkmark\checkmark$		PRESERV
1979	apple	9	terminal decline	Х	8	NO	Х	REMOVE
1980	big leaf maple	6			8	NO	Х	REMOVE
1981	western red ce	43	broken @ 20'	Х	25	NO		REMOVE
1982	big leaf maple	8	viable		8	NO	Х	REMOVE
1983	big leaf maple	13	viable		8	NO		REMOVE

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Tag	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
1984	big leaf maple		broken	Х	8	NO		REMOVE
1985	big leaf maple		viable		8	NO	Х	PRESERVE
1986	western red ce		viable		8	NO	Х	PRESERVE
1987	Douglas fir		viable; codominant @ 40'		22	$\checkmark\checkmark$		PRESERVE
1988	western red ce		viable		8	NO	Х	PRESERVE
1989	big leaf maple		viable		8	NO	Х	PRESERVE
1990	Douglas fir	17	viable; ivy		12	$\checkmark\checkmark$		PRESERVE
1991	big leaf maple		viable		8	✓		PRESERVE
1992	big leaf maple	8	viable; ivy		8	NO	Х	PRESERVE
1993	Douglas fir	26	viable; ivy		18	$\checkmark\checkmark$		PRESERVE
1994	big leaf maple	6			8	NO	Х	PRESERVE
1995	Douglas fir	6			8	NO	Х	PRESERVE
1996	Douglas fir	10	viable		8	NO	Х	PRESERVE
1997	Douglas fir	25	viable		18	$\checkmark\checkmark$		PRESERVE
1998	big leaf maple	18	viable		12	NO		REMOVE
2000	western red ce	17	viable; same as T1999		12	NO		REMOVE
2001	Douglas fir	9	viable		8	NO	Х	REMOVE
2002	Douglas fir	11	viable		8	NO		REMOVE
2003	Douglas fir	48	viable; ivy		25	NO		REMOVE
2004	Douglas fir	24	viable		16	NO		REMOVE
2005	Douglas fir	6			8	NO	Х	REMOVE
2006	juniper	.0,10,8,8	viable; multiple stems from base		12	NO		REMOVE
2007	big leaf maple	8	viable		8	NO	Х	REMOVE
2008	Douglas fir	22	viable		14	NO		REMOVE
2009	big leaf maple	6	topped @ 10'		8	NO	Х	REMOVE
2010	Douglas fir	14	viable		8	NO		REMOVE
2011	Douglas fir	36	viable		24	NO		REMOVE
2012	Douglas fir	9	viable		8	NO	Х	REMOVE
2013	Douglas fir	8	viable		8	NO	Х	REMOVE
2014	European birch	6	terminal decline	Х	8	NO	Х	REMOVE
2015	Douglas fir		viable		12	NO		REMOVE
2016	big leaf maple	4			8	NO	Х	REMOVE
2017	big leaf maple	10	viable		8	NO	Х	REMOVE

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Tee	Creation	DBU	Desseyls	0000	007	17.102.50	Undersite	Antion
Гад	Species	DBH	Remarks	DDDD		Retention Tree	Undersize	
2018	Douglas fir		viable; ivy	V	24 24			PRESERVE
2019	big leaf maple		basal decay; root disease; misplaced on map	Х	24	NO		REMOVE
2020	Douglas fir		viable viable		20	NO		REMOVE
2021	western red ce		viable			NO	X	REMOVE
2022	western red ce		viable		8 20	NO V V	Х	PRESERVE
2023	Douglas fir		viable			 ✓ ✓		PRESERVE
2024	Douglas fir		viable		20 10	<u> </u>		PRESERVE
2025	western red ce		VIdDIE				V	PRESERVE PRESERVE
2026	Douglas fir	6	. Salata		8	NO V V	X	
2027	Douglas fir	-	viable viable		16		X	PRESERVE
2028	western red ce				8	NO	Х	PRESERVE
2029	big leaf maple		viable; same as T2036 viable		8	NO NO	X	PRESERVE
2030	Douglas fir				8 10	NU V V	X	PRESERVE
2031	Douglas fir		viable; ivy viable				X	PRESERVE
2032	western red ce				8 24	NO V V	X	PRESERVE
2033	western red ce		viable			<u> </u>		PRESERVE
2034	western red ce		viable		14	 ✓ ✓		PRESERVE
2035	western red ce		viable; ivy		14	<u> </u>		PRESERVE
2037	Douglas fir		viable		22	<u> </u>	V	PRESERVE
2038	Douglas fir	7	vieleles inno energia energia e		8		Х	PRESERVE
2039	Douglas fir		viable; ivy; near power line		24 24	NO		REMOVE
2042			viable; multiple stems; same as T2041 and T2040		16	NO		REMOVE
2043	Douglas fir		viable; near power line	N N		NO		REMOVE
2044	big leaf maple		topped for power	X	8	NO	N N	REMOVE
2045	big leaf maple		topped for power	X	8	NO	X	REMOVE
2046	big leaf maple		topped for power	Х	8	NO	X	REMOVE
2047	western red ce				8	NO	Х	REMOVE
2048	big leaf maple		viable; near power line		10	NO	V	REMOVE
2049	western red ce	-			8	NO	X	REMOVE
2050	big leaf maple		viable; near power line		8	NO	Х	REMOVE
2051	plum		stump suckers	X	10	NO	X	REMOVE
2052	Douglas fir		offsite; ROW; topped for power		8	NO	Х	REMOVE
2053	Douglas fir	19	offsite; ROW; topped for power		12	NO		REMOVE

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Sandy	Woods Phase 2		Page 15 of 16					6/3/20
Гаg	Species	DBH	Remarks	DDDD	RPZ	17.102.50 Retention Tree	Undersize	Action
<u> </u>	Douglas fir		offsite; ROW; topped for power		8	NO	Х	REMOVE
	Douglas fir		offsite; ROW; topped for power		12	NO		REMOVE
056	Douglas fir		offsite; ROW; topped for power		14	NO		REMOVE
057	sweet cherry	-	broken tops	Х	10	NO		PRESERVE
058	sweet cherry	-	leans to east		10	\checkmark		PRESERVE
059	big leaf maple	21	offsite; ROW; topped for power		14	NO		REMOVE
062	cottonwood	38	viable; codominant from base; 2062 and 2063 are same tree		25	NO		REMOVE
063	cottonwood	10	viable		8	NO		REMOVE
064	cottonwood	9	viable		8	NO	Х	PRESERVE
065	cottonwood	10	viable		8	NO	Х	PRESERVE
067	cottonwood	8	listed	Х	8	NO	Х	PRESERVE
071	sweet cherry	29	mechanical damage to root flares; in pasture		25	NO		OFFSITE
072	Douglas fir		viable; in creek		8	NO	Х	PRESERVE
073	cottonwood	15	viable; blackberry		10	√		PRESERVE
075	cottonwood	8	viable; 2075 and 2074 are the same tree		8	NO	Х	PRESERVE
076	cottonwood	8	viable		8	NO	Х	PRESERVE
077	cottonwood	7			8	NO	Х	PRESERVE
078	cottonwood	8	viable		8	NO	Х	PRESERVE
079	cottonwood	10	viable		8	NO	Х	PRESERVE
080	cottonwood	10	viable		8	NO	Х	PRESERVE
081	cottonwood	9	viable		8	NO	Х	PRESERVE
.083	cottonwood	3,11,9,9,	multiple stems		16	NO		REMOVE
000	red alder	6	in future roadway		8	NO	Х	REMOVE
001	red alder	6	Added by FSH district survey, April 2020		8	NO	Х	PRESERVE
002	red alder	6	Added by FSH district survey, April 2020		8	NO	Х	PRESERVE
003	cottonwood	6	Added by FSH district survey, April 2020		8	NO		PRESERVE
004	cottonwood	6	Added by FSH district survey, April 2020		8	NO		PRESERVE
005	cottonwood	6	Added by FSH district survey, April 2020		8	NO		PRESERVE
006	cottonwood	6	Added by FSH district survey, April 2020		8	NO		PRESERVE
007	Douglas fir	6	Added by FSH district survey, April 2020		8	NO		REMOVE
800	Douglas fir	6	Added by FSH district survey, April 2020		8	NO		REMOVE
009	Douglas fir	6	Added by FSH district survey, April 2020		8	NO		REMOVE

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					17.102.50		
Tag Species	DBH	Remarks	DDDD	RPZ	Retention Tree	Undersize	Action
= Trees 11 inches	or larger dbh	, coniferous species. 86 total.					
= Trees 11 inches	or larger dbh	, deciduous species. 66 total.					
2 of the 3 shall be	conifer spec	ies = 86 conifer trees ✓✓					
3 Trees per acre. 3	3 x 39 acres =	117 total trees 🗸					
Total trees retaine	ed 11 inches o	or larger dbh = 152					
Total trees retaine	ed between 6	inches and 11 inches $dbh = 91$					

Trees in this group that have been marked in the DDDD are conidered hazardous to the existing properties.

Trees within thirty feet of the existing homes bordering the southeast corner of the property are included in the tree inventory.

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Sandy Woods Phase 2, 21-037 SUB/VAR/TREE Arborist responses

Exhibit G

7/13/2021

Addendum 1 Tree Preservation Plan for Sandy Woods Phase 2

The purpose of this addendum is to provide additional information in answer to the bullet points listed in an incomplete letter from the City of Sandy, file number 21-037SUB/VAR/TREE.

- Additional information from the project arborist on the definition of "viable." Are all viable trees healthy and likely to grow to maturity? Typically, an arborist's tree health/condition evaluation assesses trees as being in very good, good, fair, poor, or dead/dying condition.
- Additional information from the project arborist detailing why the standard critical root zone (CRZ) of 1 foot per 1-inch DBH is not being proposed.

For the purposes of the submitted Tree Preservation Plan and Tree Table the working definition of "viable" is a healthy tree that is in fair to very good condition and is expected to be reasonably healthy and provide benefits to the community for ten to twenty years. Additional information for individual trees is provided in the "remarks" column of the tree table.

The modified root protection zones (RPZS) listed in the Tree Table were established by an ISA Certified Arborist after evaluating the subject trees, the grading plan, and proposed layout. Critical root zones (CRZs) have been reduced based on individual basic assessments of subject trees, working knowledge of species characteristics, and working knowledge of root crown characteristics. Modified RPZs have been used on the site to protect the health and long-term viability of trees being preserved, while providing reasonable workspace and movement of equipment and personnel on the site. Tree protection fence (TPF) will be installed at the radii listed in the "RPZ" column of the tree table. All encroachments or grade disturbances within the RPZs of trees being preserved will be reviewed and supervised by the project arborist.

The project arborist will be available to monitor tree related issues during the development of the site and provide recommendations, supervision, and assistance in the preservation of the protected trees. The project arborist will document and report on site visits and will be prepared to conduct root pruning when visiting the site.

Sandy Woods Phase 2, 21-037 SUB/VAR/TREE Arborist responses

7/13/2021

Portland Tree ConsultingPO Box 19042503.421.3883info@pdxtreeconsulting.com

Portland, OR 97280 CCB 230301

- Client warrants any legal description provided to the Consultant is correct and titles and ownerships to
 property are good and marketable. Consultant shall not be responsible for incorrect information provided
 by Client.
- 2. Consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
- 3. The Consultant shall not be required to give testimony or attend court or hearings unless subsequent contractual arrangements are made, including additional fees.
- 4. The report and any values expressed therein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
- 5. Sketches, drawings and photographs in the report are intended as visual aids and may not be to scale. The reproduction of information generated by others will be for coordination and ease of reference. Inclusion of such information does not warrant the sufficiency or accuracy of the information by the Consultant.
- 6. Unless expressed otherwise, information in the report covers only items that were examined and reflects the condition at the time of inspection. The inspection is limited to visual examination of accessible items without laboratory analysis, dissection, excavation, probing, or coring, unless otherwise stated.
- 7. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.
- 8. The report is the completed work product. Any additional work, including production of a site plan, addenda and revisions, construction of tree protection measures, tree work, or inspection of tree protection measures, for example, must be contracted separately. Loss or alteration of any part of the report invalidates the entire report.
- 9. Any action or proceeding seeking to enforce any provision of this Agreement shall be brought against any of the parties in Multnomah County Circuit Court of the State of Oregon, or, when applicable, in the United States District Court for the District of Oregon. Each party consents to the jurisdiction of such courts (and of the appropriate appellate courts) and waives any objection to such venue.

Ryan Neumann 503.548.3119 <u>neighborhoodtree.llc@gmail.com</u> ISA Certified Arborist PN-5539A TRAQ Qualified

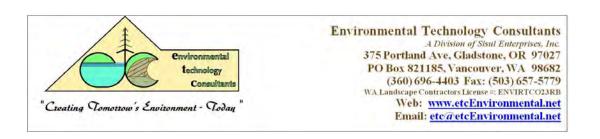
WETLAND DELINEATION / DETERMINATION REPORT This form must be included with any wetland delineation report su A wetland delineation report submittal is not "complete" unless the are submitted. Attach this form to the front of an unbound report ncludes a single PDF file of the report cover form and report (min State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97 and report may be e-mailed to Wetland_Delineation@dsl.state. Instructions on how to access the file from your ftp or other file sh check payable to the Oregon Department of State Lands. To pay	bmitted to the Department of State Lands for review and a e fully completed and signed report cover form and the requ or include a hard copy of the completed form with a CD/DV imum 300 dpi resolution) and submit to: Oregon Departm 301-1279. A single PDF attachment of the completed cov or.us. For submittal of PDF files larger than 10 MB, e-mail aring website. Fees can be paid by check or credit card. M the fee by credit card, call 503-986-5200.	uired fee ′D that ent of ′er from I
Applicant Owner Name, Firm and Address: Great American Development, Joe Spaziani	Business phone # 503-860-2501 Mobile phone #	
16287 S. Forsythe Road	E-mail: joeandpenny@hotmail.com	
Oregon City, Óregon, 97045		
Authorized Legal Agent, Name and Address:	Business phone # 360-696-4403	
Environmental Technology Consultants	Mobile phone # 503-580-2465	
375 Portland Ave, Gladstone, OR 97027	E-mail: JohnM@etcEnvironmental.net	
I either own the property described below or I have legal authority property for the purpose of confirming the information in the report Typed/Printed Name: Joe Spaziani	rt, after prior notification to the primary contact. Signature:	nt to access the
Date: April 20, 2017 Special instructions regarding site		
Project and Site Information (using decimal degree		1 2 7
Project Name: 37090 SE Kelso Road Proposed Use: New Subdivision (Sandy Woods)	Latitude: N 45.245314 Longitude: W -1 Tax Map # 032S4E11	22.165512
Project Street Address (or other descriptive location): 37090 SE Kelso Road	Township T2S Range R4E Section 2 Tax Lot(s) 24E1102200, 24E11AC00828 & 24E1	QQ AC 1AC00832
	Waterway: No name River Mile:	
City: Boring, OR County: Clackamas	NWI Quad(s): Sandy, Oregon	
Wetland Consultant Name, Firm and Address: John McConnaughey, PWS & Annakate Martin NRS Environmental Technology Consultants 375 Portland Ave, Gladstone, OR 97027	Phone # 360-696-4403 Mobile phone # 503-580-2465 E-mail: JohnM@etcEnvironmental.net	t
The information and conclusions on this form and in the at Consultant Signature:	ached report are true and correct to the best of my k Date: May, 2017 updated October 2018	nowledge.
Primary Contact for report review and site access is	Consultant Applicant/Owner Authorized A	gent
Wetland/Waters Present? Xes No Study Ar	ea size: 21.08 acres Total Wetland Acreag	je: 1.078 AC
Check Box Below if Applicable:	Fees: \$437 (2018)	
R-F permit application submitted NWP2018-473	Fee payment submitted \$437	
Mitigation bank site	Fee (\$100) for resubmittal of rejected	d report
Wetland restoration/enhancement project (not mitigatio		an expired
Industrial Land Certification Program Site	report	
Reissuance of a recently expired delineation Previous DSL # Expiration date		
Other Information:	Y N	
Has previous delineation/application been made on parcel	?	'-0410 &
Does LWI, if any, show wetland or waters on parcel?		
	ffice Use Only	
DSL Reviewer: Fee Paid Date:		
Scanned: Final Scan: DSL V	VN # DSL App. #	

DELINEATION REPORT WD2018-0656 FOR PERMITS NWP2018-473 AND 61489-RF 37090 SE Kelso Road Boring, OR



Evaluated by: Annakate Martin, NRS John McConnaughey PWS# 2009 May, 2017

> Prepared for: Joe Spaziani Great American Development 37090 SE Kelso Road Boring, OR 97009



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Cover Photo.

Photo of stream on property shortly after blackberries were mowed. ETC Photo 3/13/2017

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INTRODUCTION

This report is to be attached to remove/fill permits NWP2018-473 and 61489-RF.

This report is in response to the Corps request for a resubmittal to WD2017-0410 which only included the south end of 37090 SE Kelso Road. However, in that request they also requested the study area boundary be increased to include a small previously delineated offsite wetland who's delineation had expired. And they also requested the North end of the lot be included in the study area as the applicant had used the north part of the lot as an access road that crossed an NWI mapped stream.

ETC prepared such a report which became numbered WD2018-0656. Reviewers requested that we remove areas described by WD2017-0410, which we have done in this resubmittal. Reviewers also found fault with data points that defined Wetland "A" in the NW corner of lot 2200. Because no impacts or activities are being considered in that area at the present time, we removed the NW corner of the lot from the study in order to obtain concurrence with the rest of the report.

Originally ETC prepared a delineation report covering the entire lot 2200 (37090 SE Kelso Road). The applicant then decided only to develop the South end of the lot, and requested that ETC remove the northern portion of the lot from the study area. We did that, and submitted a report for the South end only which was accepted and numbered WD2017-0410.

However, then the City of Sandy required that Olson Road be widened, and that widening caused impacts to both onsite and offsite wetlands. The applicant also used an old road for access, and that road entered the North end of the lot from Kelso Road. DSL then requested a delineation for the North portion of lot due to the road access, and also required updated delineations for the offsite wetlands, as the existing delineations had expired for those areas.

Study Area: This report includes the northern portions of lot 2200, except for the NW corner of the lot containing a sloped wetland area we are calling Wetland "A". The southern study boundary of this report is the northern study boundary of WD2017-0410.

Also included in this report are areas that will be impacted the widening of Olson Road, except for those areas described in WD2017-0410. That includes two wetland tracks known as Track "A", and Track "E". Track "A" is a wetland preservation track created when the original lot was partitioned for a subdivision. Track "E" is an adjoining track used for a wetland mitigation project required by the remove/fill permit 26209-FP.

There are no Tracks "B", "C", or "D" as far as we know.

The relevant previously submitted delineations and reports for the study area of this report are:

- WD2017-0414 The south portions of lot 2200 (37090 SE Kelso Road).
- WD2000-0612 A delineation done for a subdivision known as Sandy Bluff 3, and this delineation determined a wetland area now known as "Track A" that is East of the SE corner of lot 2200.
- Mitigation 26209-FP A mitigation project required by Sandy Bluff 3 that created

All the field work on lot 2200 was done in March-May of 2017. Some additional field work was done in October of 2018 in Tracks "A" and "E" for the Olson Road Widening portion of the project.

This report is intended to assist the permittee, the City of Sandy, and the State of Oregon to evaluate the application and determine what environmental conditions or mitigations may be required to move this project forward.

QUALIFICATIONS OF JOHN MCCONNAUGHEY, PWS

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I earned a Bachelor of Science degree from the University of Oregon in 1978 and in 1984 I earned a Masters of Fisheries Science degree from the University of Alaska at Juneau, (since renamed as the University of Alaska, Southeast). The Juneau curriculum specializes in the study of Pacific salmon. I held positions with agencies tasked with salmon research and management beginning with summer jobs in 1979 in Rogue River, the Oregon Dept of Fish and Wildlife, and then with the Alaska Department of Fish and Game in Ketchikan Alaska, in 1980. I worked on salmon projects with ADF&G in Anchorage and Juneau for 5 years before moving to American Samoa to serve as a fisheries projects leader for the Department of Marine and Wildlife Resources. Upon returning stateside, I worked for the Yakama/Klickitat Fisheries Project out of Yakima Washington for 5 years leading four research projects studying aspects of salmon supplementation projects in the Yakima River.

I have been employed with Environmental Technology Consultants since 2006. In 2010 I earned certification as a Professional Wetland Scientists, (PWS) from the Society of Wetlands Scientists, (SWS).

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

QUALIFICATIONS OF ANNAKATE MARTIN

I earned a Bachelor of Science degree in Natural Resources from Washington State University in 2002. In 2002 I worked for the University of Idaho on MAP tracking steelhead and salmon on the Snake River out of Clarkston, Washington.2002-2003 I worked for Idaho Fish and Game as a field technician for identifying fish in remote streams in Idaho. In 2004 I worked for Environmental Technology Consultants conducting wetland delineations and Phase I ESA reports. From 2007-2014 I worked for 3 Kings Environmental conducting Phase I ESA reports, asbestos and lead surveys. In 2011 I started my own company primarily providing erosion control services (CESCL Certified) and Phase I ESA reports.

I have been re-employed with Environmental Technology Consultants in 2015 for wetland delineation consulting.

A) Landscape Setting and Land Use:

The subject property is a 38.95 Acre parcel in a rural residential area that is on a valley floor at approximately 787' in elevation. It is in the Sandy River watershed. The terrain is gently rolling in the general north to south direction on the majority of the property. The property is surrounded primarily by agricultural land, and partially by roads, rural single-family residences, and single-family residences in subdivisions. The property was a mixture of mature forests, grassy fields, and had a stream cutting through it. There is an easement with powerlines running through the middle of the property running northeast and southwest, and the powerline easement is also the high point of the property.

The area is zoned EFU Exclusive Farm Use district.

B) Site Alterations:

The subject site had a single-family residence, that has been demolished, and according to the Assessors information was built in 1915. Northern portions of the property have been used for agriculture uses such as a plant nursery, and possibly a raspberry farm. The center portion of the lot is used for a BPA powerline, and vegetation has been periodically mowed to prevent interference with the power lines. The south portion of the lot was forested with large 2nd growth coniferous trees when we first observed it. In 2017 the applicant used a brush hog to mow the blackberries on most of the site in order that surveyors could gain access. Much of the property that was historically farmed now has a dense cover of blackberries.

C) Precipitation Data and Analysis:

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Page 5/20 360-258-7154 This wet season through March has been above average which makes using hydrology somewhat helpful, except it can make wetland areas appear larger than they are. The overall rainfall was above average for the area for the wet season.

Table 1. Recent observed precipitation data compared to the Wetland Evaluation Technique (WETS) tables.					
	NOAA observed	WETS	WETS Precipitation averages for PDX Airport		
	monthly			ice will have	Compared
	precipitation	Avg			to WETS
MONTH	at PDX	(inches)	Less than	More Than	avg
March 2016	4.73	3.71	2.85	4.31	Above
April 2016	1.96	2.64	1.93	3.1	Below
May 2016	1.72	2.38	1.44	2.88	Average
June 2016	1.42	1.59	0.94	1.93	Average
July 2016	0.66	0.72	0.31	0.89	Below
August 2016	0.09	0.93	0.33	1.13	Below
September 2016	1.69	1.65	0.65	2.06	Above
October 2016	8.31	2.88	1.57	3.52	Above
November 2016	6.83	5.61	3.72	6.73	Above
December 2016	4.61	5.71	3.89	6.82	Average
January 2017	4.13	5.07	2.98	6.16	Average
February 2017	10.26	3.56	0.72	10.03	Above
March 2017	7.26	3.68	1.10	7.89	Above
Past 12 Months	65	44.31	25.27	62.43	Above
Water year thru March 2017	43.09	41.01	25.86	58.35	Above
March 2017	7.26	3.68	1.10	7.89	Above
Shading represents the 2016 water year beginning October 1, 2016.					

Approximately 6.99" of rain fell at the site in the 14 days prior to our first field visit, there was 5.34" of rain fall at the site 14 days prior to the second site visit.

The table below shows the recent precipitation data using Farmlogs.com:

Table 2. Precipitation data at the site as estimated by Farmlogs.com using Dopplerradar. Dates 14 days prior to the field visits are shown.						
DATE	RAINFALL	YEAR- TO- DATE	Field Activities			
15-Mar-17	1.03"	24.33"				
16-Mar-17	0.58"	24.91"				
17-Mar-17	0.04"	24.95"				
18-Mar-17	0.38"	25.33"				
19-Mar-17	0.80"	26.34"				
20-Mar-17	0	31.71"				
21-Mar-17	0.20"	26.34"				
22-Mar-17	0.41"	26.74"				
23-Mar-17	0.17"	26.92"				
24-Mar-17	0.88"	27.80"				

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25-Mar-17	0.74"	28.55"	I
26-Mar-17	0.11"	28.66"	
27-Mar-17	0.69"	29.34"	
28-Mar-17	0.03	29.58"	
29-Mar-17	0.25	29.93"	
23-Ividi-17	0.55	29.95	First field day, started delineation studies
30-Mar-17	0.38"	30.30"	First field day-started delineation studies, hydrology observed
31-Mar-17	0.23	30.53"	
01-Apr-17	0	30.53"	
02-Apr-17	0.09"	30.63"	
03-Apr-17	0	30.63	
04-Apr-17	0	30.63	
05-Apr-17	0.03"	30.66	
06-Apr-17	0.16"	30.82"	
07-Apr-17	0.23"	31.05"	
08-Apr-17	0.13"	31.17"	
09-Apr-17	0.20"	31.38"	
10-Apr-17	0.11"	31.49"	
11-Apr-17	0.04"	31.52"	
12-Apr-17	0.36"	31.88"	
13-Apr-17	0.32"	32.20"	
14-Apr-17	0.19"	32.39"	
15-Apr-17	0.18"	32.57"	
16-Apr-17	0	32.57"	
17-Apr-17	0.11"	32.68"	
18-Apr-17	0.60"	33.27"	
19-Apr-17	0.03"	33.30"	
20-Apr-17	0.41"	33.72"	
21-Apr-17	0.13"	33.85"	
22-Apr-17	0	33.85"	
23-Apr-17	0.13"	33.98"	
24-Apr-17	0.70"	34.68"	
25-Apr-17	0.88"	35.56"	
26-Apr-17	0.69"	36.24"	
27-Apr-17	0.94"	37.18"	
28-Apr-17	0.35"	37.54"	Second field day-continued delineation studies, hydrology was observed, wetlands and stream were flagged, site was GPSed

<u>Deductions of Recent Weather Data</u>: The precipitation in 2017 was above average for the site when the delineation was conducted, there were saturated soils and shallow water tables at or above levels where hydric soils were observed.

The additional field work done for the Olson Road Widening was done in October 2018 following a long dry period. The area was dry at this time. This field work used plants, soils, and topography to make inferences about wetland hydrology for Track A and for the mitigation area for 26209-FP.

D) Methods: (site-specific methods for field investigation)

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Page 7/20 360-258-7154 Wetland determinations and delineations discussed in this report were conducted in accordance with the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual ("the manual"), including regional supplements and applicable guidance, and supporting technical or guidance documents issued by the Department of State Lands.

We traversed the site to determine upland areas and wetland areas. We determined there were four wetland areas, two streams and a road side ditch. We named the wetlands Wetland "A", Wetland "B", Wetland "C", and Wetland "D" to be able to differentiate between the four.

The subject site was a mixture of abandoned agricultural areas, wetland areas, mature forested areas, and a mowed BPA right of way. There were areas that were over run by Himalayan blackberries especially in Wetland "A" and Wetland "B" which was at approximately 90%.

We dug soil test pits to a general depth of 18" bgs. The soils on this site was primarily a red parent color, about 7.5YR 3/2. We relied on hydric soils, hydrology and vegetation to make our wetland determinations.

We set wetland flags around the wetlands, Streams 1 and 2, and the drainage ditch.

E) Description of All Wetlands and Other Non-Wetland Waters:

NOTE: Descriptions for wetlands "A" and "D" and stream #1 are removed from this report as they were removed from the study areas as described above.

Offsite water comes onto this property from at least five locations, and is responsible for most of the wetland hydrology seen on the property:

1. Two culverts convey water from the North side of Kelso road to a ditch along the North end of the subject property. These are old concrete culverts.

2. Stream 2 enters the property on east side between Kelso Road and the BPA powerline easement. It appears that Stream 2 is a natural drainage way that has been substantially ditched and re-routed from its original course. It flows west and south across the property and leaves the property near the middle of the west property line.

3. Water flows through a culvert under SE Jewelberry Road and enters the study area at the East end of Track "A". That water flows East to West across Track "A" which is contiguous with small wetland area known as "Wetland D" in WD2017-0410.

4. Stormwater from SE Jewelberry Road is piped into a reverse French drain on the East side of the mitigation area for 26209-FP, and some of the hydrology for 26209-FP is supplied by that French drain, and some of it comes from Track "A".

5. Roofs on houses on the North side of Track "A" have been piped and discharge into Track "A". This was done as part of a wetland enhancement project to increase the hydrology of Track "A".

A storm drain under Olson Road drains Track "A", Wetland "D", and 26209-FP, and the elevation of the inlet for that drain determines the amount of ponding in the depressional wetland areas behind it.

Kelso Road Ditch, 2,439 SQFT, 0.056 Acres, 252 Feet long. Two culverts convey water under Kelso Road from the North side and bring the great majority of water that feeds this ditch. It is believed to be temporarily flooded during wet weather and for relatively short periods of time afterwards. There is little vegetation, other than blackberries, and water quality appears to be quite low. The Cowardin classification is Riverine, Intermittent, Unconsolidated Bottom, Mud, Temporarily Flooded, R4UBA.

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Page 8/20 360-258-7154 Stream #2, 3,560 SQFT, 0.082 Acres, 1,017 Feet Long. Stream #2 is a natural drainage that has been ditched and straightened. It enters the property on the eastern boundary and flows across in a South-West direction, leaving the property on the west side. Its average width is about 3', though the upper area broadens out a bit into an area we called Wetland "B", and the lower end also broadens out into an area we called Wetland "C". The bottom is mud and debris, and a lot of blackberry mulch when we saw it. Considering its position high in the drainage, small size and low flow when we saw it during some pretty wet weather, we suspect it is has only seasonal flows and dries up in the summer. The Cowardin classification is Riverine, Intermittent, Unconsolidated Bottom, Mud, Seasonally Flooded, Partly Drained/Ditched, or R4UB3Cd.

Wetland "B", 2,225 SQFT, 0.051 Acres. Wetland "B" is a small depressional wetland next to Stream #1. Some water enters from the property to the East as part of the same basin that Stream #2 runs through. Most of the wetland appear to be caused by high groundwater tables. Although the lower end connects to Stream #1, water exchange is mostly subsurface, and from the wetland to the stream. Areas of the wetland that are inundated or saturated to the surface have little vegetation. The area is densely shaded by trees rooted both in and outside of the wetland area. The Cowardin classification is Palustrine, Unconsolidated Bottom, Mud, Seasonally flooded/saturated. HGM classification is depressional wetland.

Wetland "C", 5,669 SQFT, 0.191 Acres. Wetland "C" spans Stream #2 on both sides, it is generally sloped throughout. There are some small puddled areas on the North side that are probably old tire ruts, and holes created by trees toppling over, and some very shallow inundated areas on the South side, perhaps up to 1/2 inch deep. The hydrology appears to be supported by high ground water tables, and poor drainage.

The Cowardin classification is Palustrine, Scrub Shrub, Broad-Leaved Deciduous, Saturated, or PSS1B. The HGM classification is sloped wetland.

Track "A", 22,601 SQFT, 0.520 Acres. Track "A" is the remainder of the wetland delineated by WD2000-0612. The name is taken from the plat map of the Sandy Bluff Anex. Portions of this wetland were covered when Jewelberry Road was extended around 2001, and it's size reduced from 30,299 to it's current 22,601 SQFT. The area (22,601 SQFT) is recorded as a deed in Book 124 page 020 in Clackamas County.

A portion of Track "A" was enhanced as part of a mitigation required by permit 26209-FP, (about 5,278 SQFT). No impacts in this enhanced area are required by the Olson Road Widening project.

ETC conducted hydrology and plant monitoring studies in 2005, 2006 and 2007, and concluded that the wetland footprint was at least as large as when we delineated the area in 2000. Permit 26209-FP also provides that roof drains from the new housing development be directed to the wetland to provide additional hydrology.

Track "A" wetland is sloped in the upper northeastern part, but then becomes more of a depressional wetland its lower southwestern part due primarily to some impounding caused by the height of the outlet under Olson Road. The impound is caused by the outlet that drains under Olson Road.

The Cowardin Classification is Palustrine Forested Broadleaf Deciduous Seasonally Flooded, or PFO1C. The HGM classification ranges from sloped to depressional.

Track "E" Mitigation area for 26209-FP, 10,236 SQFT, 0.235 Acres. Track "E" is 13,882 SQFT in area, and permit 26209-FP required that 10,236 SQFT be converted to a wetland area. The name "Track "E"", is also taken from the plat map for the Sandy Bluff Anex.

A hydrology monitoring study conducted by ETC in the Spring of 2007 confirmed that at least 10,236 SQFT met the hydrology standard for being considered a wetland. We have used the 10,236 SQFT figure as the area of wetland as it is both close to reality, and because that particular figure is relevant to the remove/fill permits NWP2018-473 and 61489-FP.

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Page 9/20 360-258-7154 Stormwater from Jewelberry Road is piped into a reverse French drain that was constructed on the east side of Track "E". The purpose of this was to deliver additional water to the mitigation area.

A small shallow horse shoe shaped pond about 4,267 SQFT in area was excavated in about the middle of Track "E", and the hydrology monitoring study conducted in 2007 found it to be flooded to a depth of about 6".

We observed this area from the roads in 2017 when performing the delineation on lot 2200, and most of the areas that were not ponded were covered by a very robust growth of blackberries. At that time we did not know we needed to survey the area for the Olson Road Widening project, and so we did not attempt to penetrate the blackberries for a closer look. The horse shoe pond was still ponded, and it was fringed with Carex and Juncus, at least from what we could tell peering through the blackberries form the road.

In October 2018 when we were told to include Track "E" in our delineation report, the blackberries and any other vegetation mixed in with them had been mowed down in preparation for the road work. The mowing was roughly a 40' strip along Olson Road that would become the new roadway, plus some additional blackberries up into Track "A". Unfortunately this mowing and that our observations were in October following a dryer than normal summer, made it difficult to delineate the exact boundaries of the wetland based on Corps criteria. In our opinion there is no reason to believe that the boundaries were any different than determined in the 2007 hydrology monitoring study. We are therefore reporting the same wetland areas as were reported then, which are also the same as those in the permit documents.

The Cowardin classification is Palustrine, Scrub Shrub, Broad-Leaved Evergreen, Saturated, (PSS3B), and Palustrine, Emergent, Persistent, Seasonally Flooded, (PEM1C). The HGM classification is depressional.

Table 3. Summary of wetland areas included in this study, WD2018-0656.						
Wetland or Waterway	Cowardin	Length	Area SQFT	Area Acres		
Stream #2	R4UB3	1,017	3,560	0.082		
Wetland "B"	PUB3E		2,225	0.051		
Wetland "C"	PSS1B		8,336	0.191		
Track "A" wetland	PFO1C		22,601	0.519		
Track "E" wetland	PFO1C		10,236	0.235		
TOTAL		1,017	46,958	1.078		

SUMMARY: The table below summarizes the wetlands within the study area boundary of this report:

F) Deviation from LWI or NWI:

The NWI map only shows Stream 2 on the map. The other streams and wetlands discussed in Section E are not shown on the NWI. We did not find a LWI for this area.

Stream 2 may have been re-routed from it's original course. We think the stream may have been moved North about 200 feet, and that it probably used to enter the east boundary of Lot 2200 about 200' South of it's current location. NWI maps also show the stream about 200' south of where it is. We have not surveyed the lot to the east, this is conjecture based on topo maps and what can be seen from the fence line. Stream 2 exits the property on the West property line probably where it always did, the exit is controlled by topography, it would have required some considerable reshaping of the terrain to change the drainage on the west side.

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G) Mapping Method:

A property boundary survey and topographic survey was conducted by Tony Bolden, PLS 60377LS of Centerline Concepts. Centerline Concepts also located many of our wetland data plots and wetland boundary flags.

We used the TopCon GRS-1 GPS with a Topcon BR-1 beacon receiver for DGPS corrections for mapping some flags and plots either missed by the surveyors or added after their survey. These and other information shown in the figures were mapped as described in Section G.

H) Additional Information: (i.e., if needed to establish state jurisdiction)

None. All wetlands and waters described in this report are presumed to be jurisdictional.

I) Results and Conclusions:

<u>Hydrology</u>. The Hydrology on this site has been altered substantially from the historical conditions a long history of land use on this and neighboring properties, and by changes caused by road ways and their associated ditches and culverts. Stream 1 and Wetland "A" are thought to be created, or at least greatly enlarged by stormwater from higher in the drainage collected and concentrated into roadside ditches that discharge onto the Northern end of the property.

Wetland "D", and Track "A" have been altered extensively due to impounding created by Olson Road, and due to the intentional diversion of roof and road runoff to the area in order to increase the hydrology in Track "E". This has increased the wetland footprint, especially in the Wetland "D" area.

The wetlands in Track "E" are manmade, as discussed in the mitigation proposal in 26209-FP.

Plants. With exception of the forested areas, the plants in or near the wetlands were Blackberries with some herbaceous plants, mostly grasses, in the wettest areas. P13 represented a small wallow recently created by machinery which had water in it when we saw it. This was the only non-wetland plot determined not to be wetland based on vegetation only.

Soils. Soils in the many areas are red in color, about 5YR3/3, which tended to mask hydric soil features in the margin of the wetland. There was a presence of what appeared to be manganese. Distinct differences were apparent between the soils south of the stream which tended to be 10YR 3/2 a darker less red soil and in the disturbed pasture grasses area.

Disclaimer: OAR141-090-0035(12)(j) :

"This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055."

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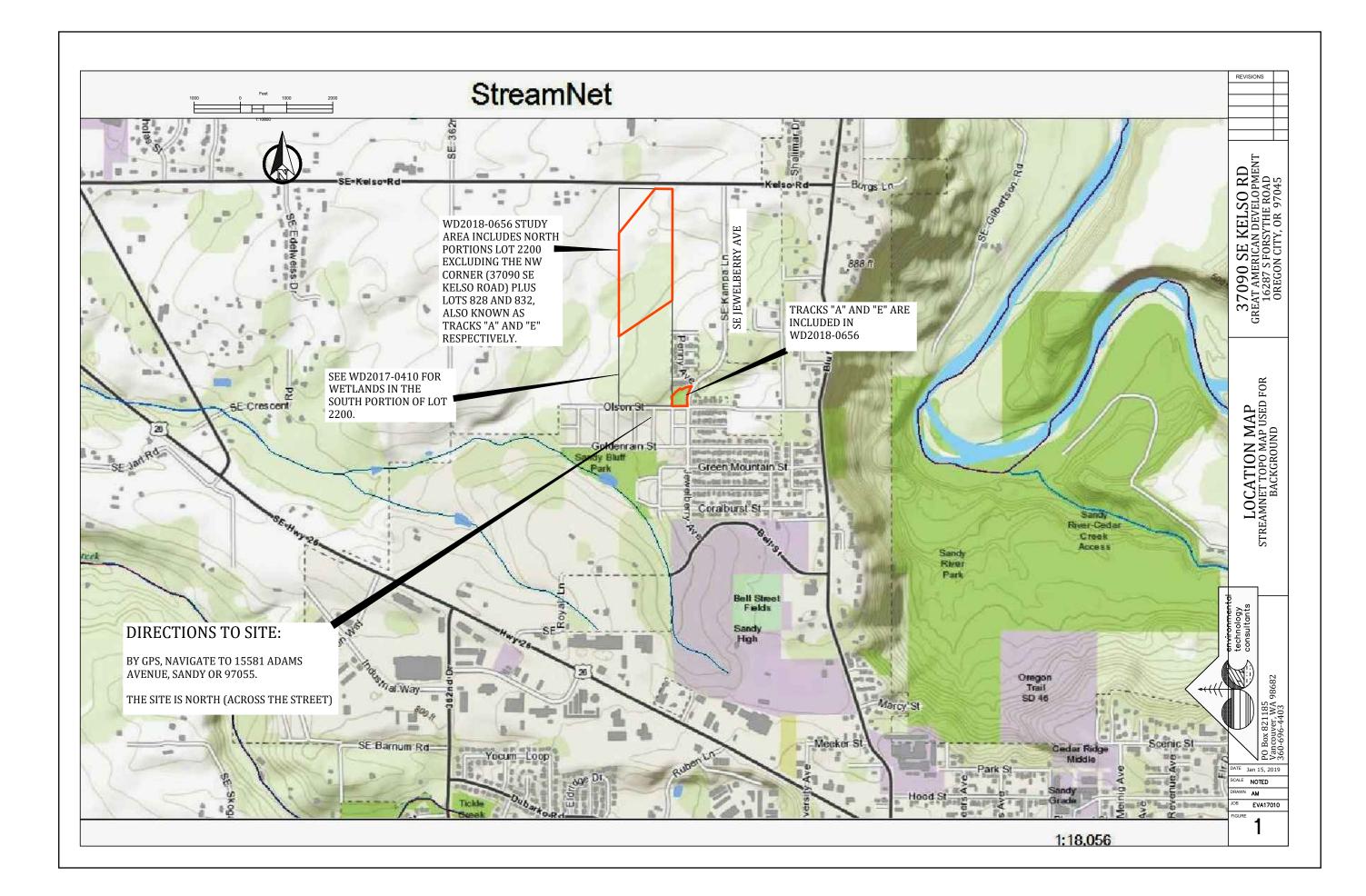
APPENDIX A - Maps:

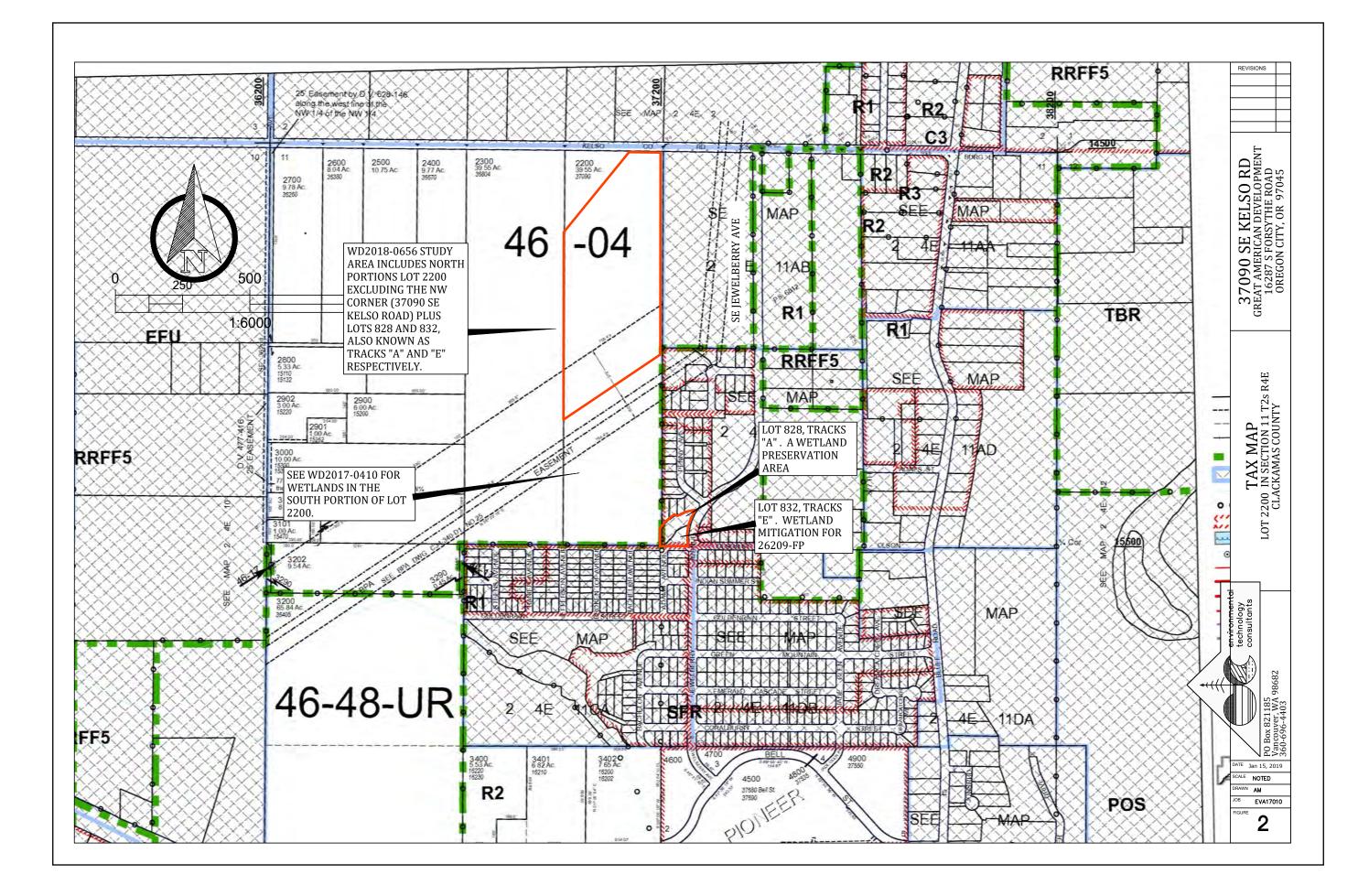
- Location Map (Streamnet)
- Tax Map NWI Map Soil Map

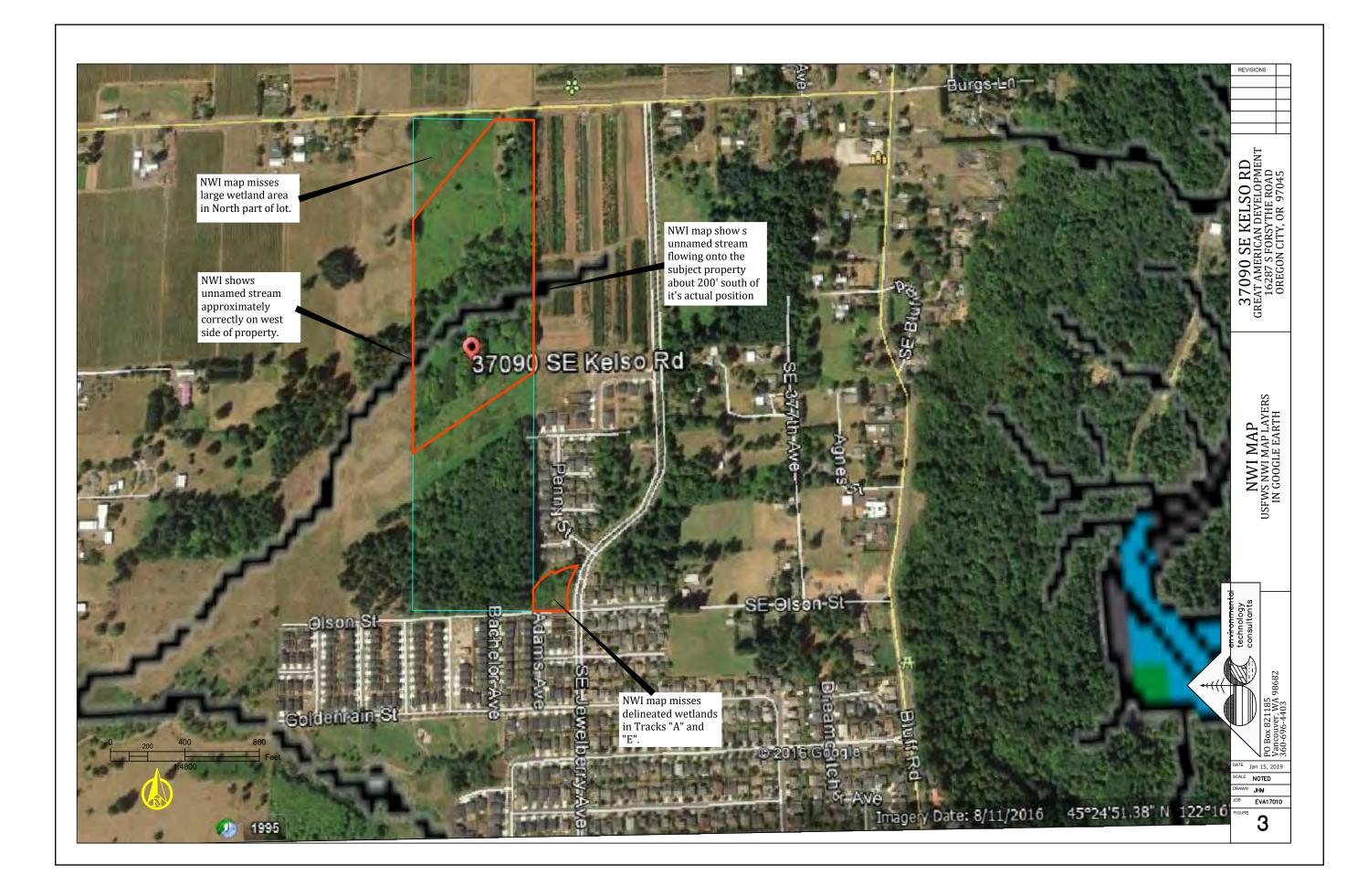
- Figure 1: Figure 2: Figure 3: Figure 4: Figure 5: Figure 6A Figure 6B
 - Aerial Photo (Google Earth 2017) Wetlands (Entire Study Area) Wetlands (Detail of Olson Road Area)

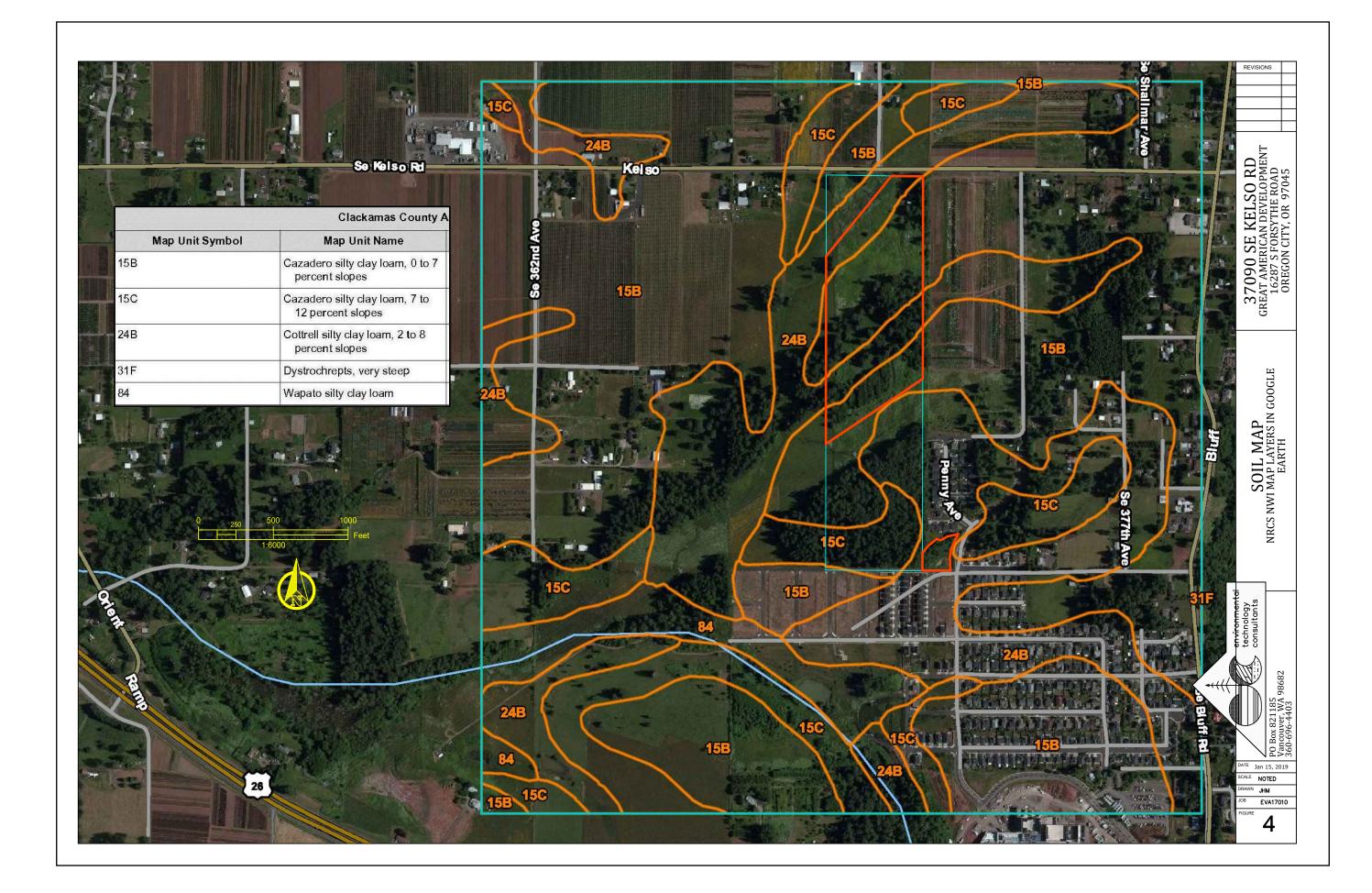
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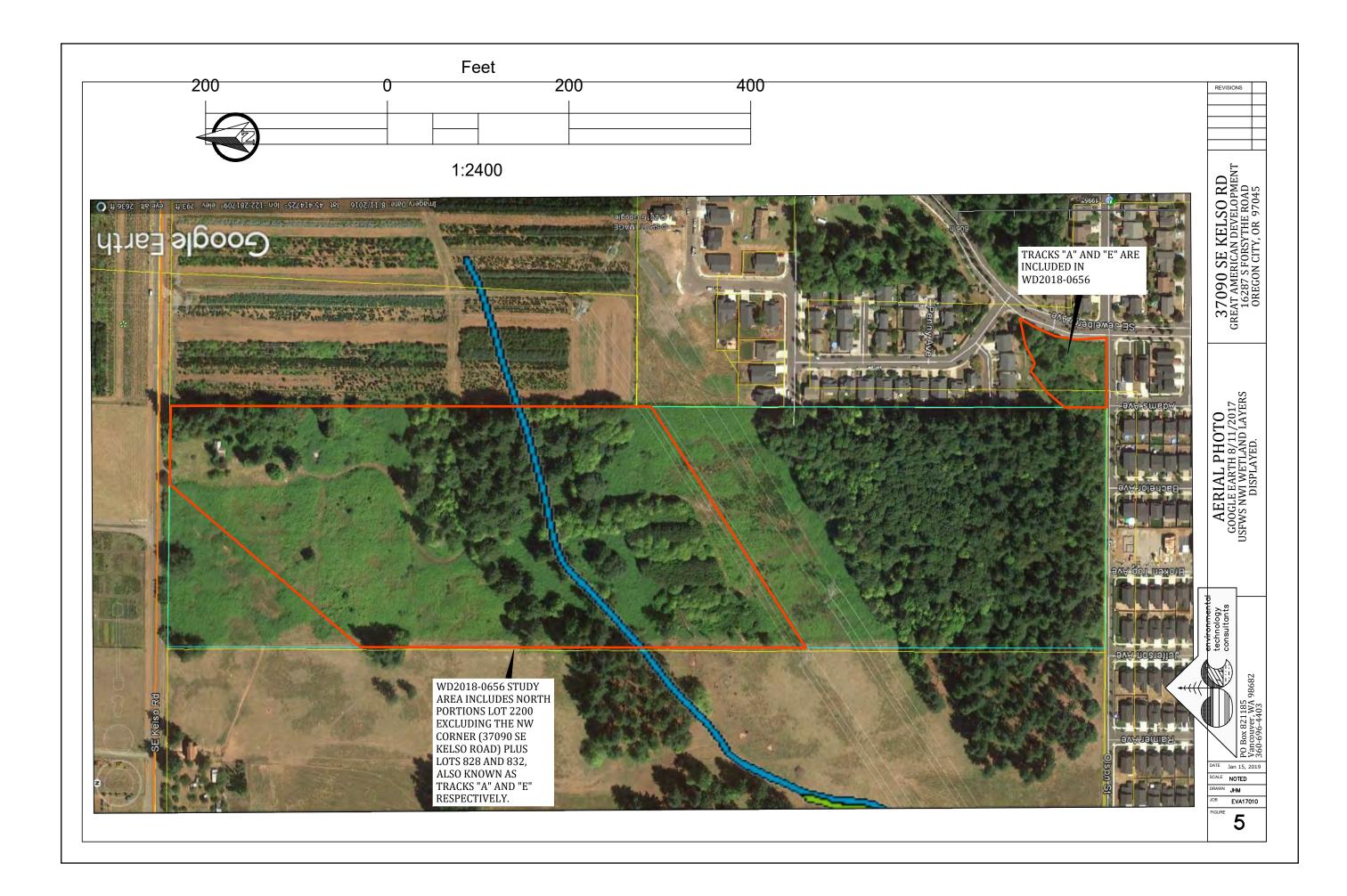
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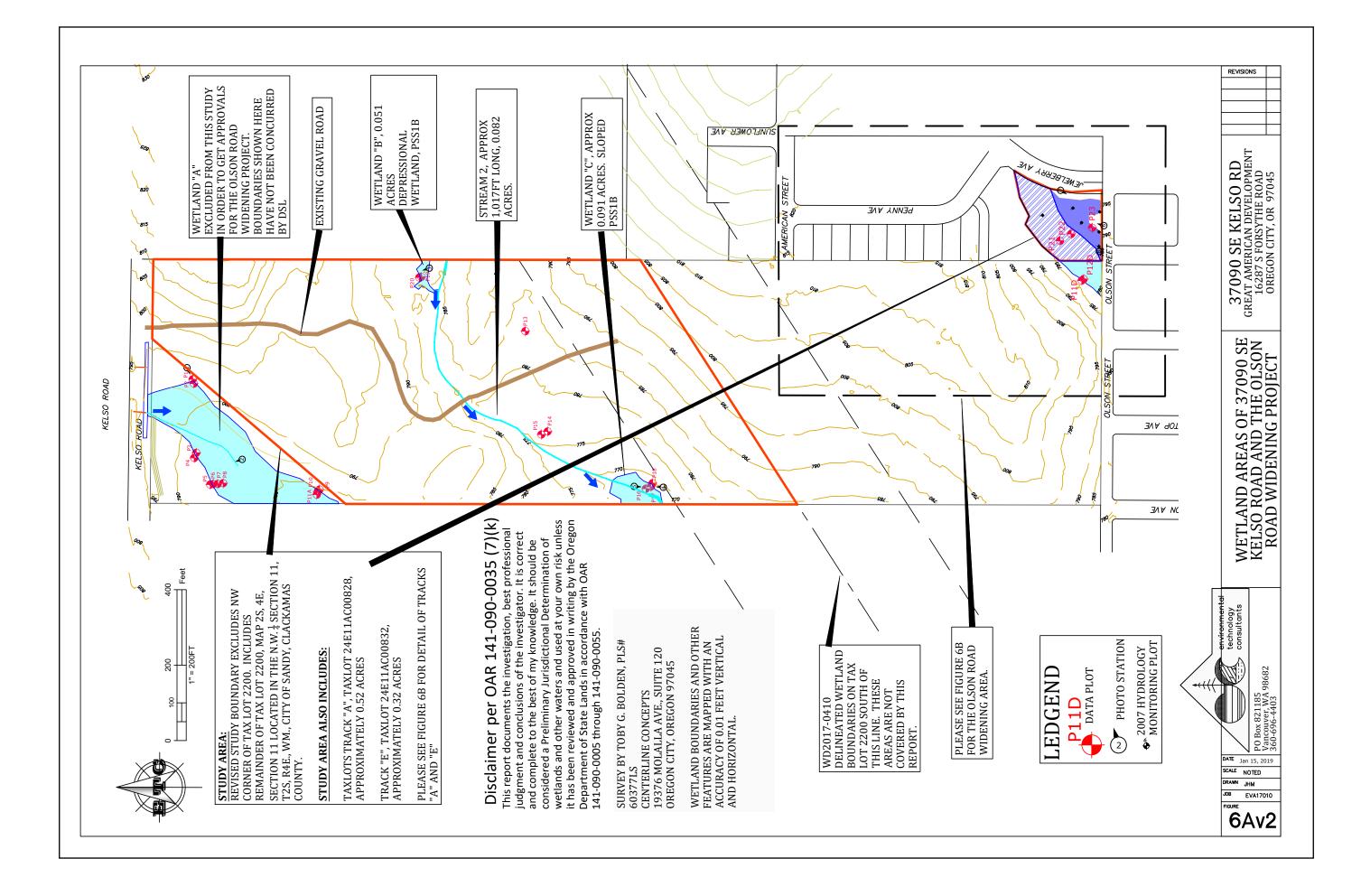


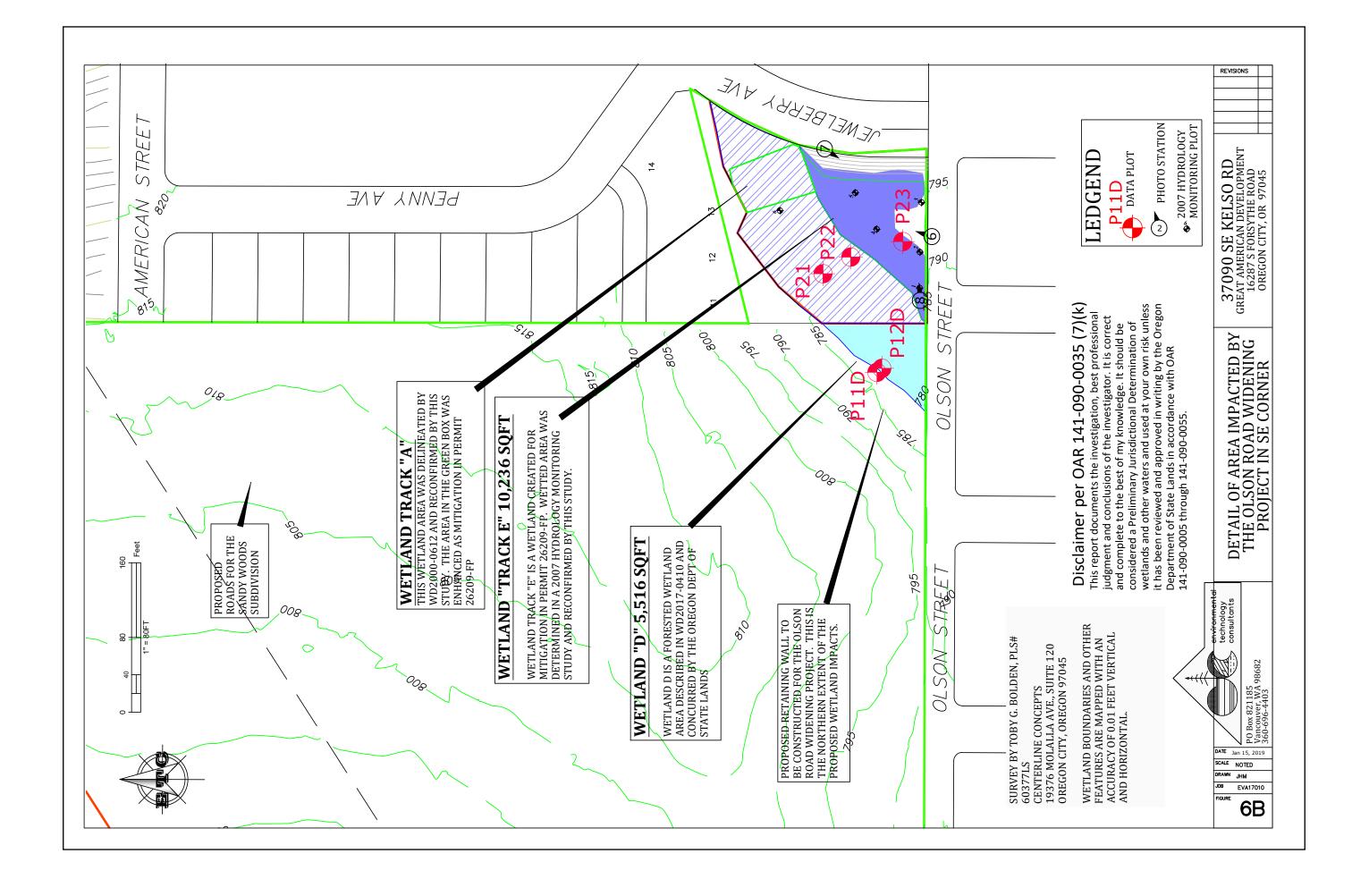












APPENDIX B - Data Forms

Plots:

P13-Upland P14-Upland P15-Upland P15-Wetland P17-Wetland P18-Upland P19-Wetland P20-Upland P21-Wetland by Best Professional Judgement (BPJ) P22-Wetland P23-Wetland

NOTE: Plots 1 through 12 describe the boundaries of wetlands "A" and "D", which have been removed from this study.

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	_City/County: <u>Sandy/Clackamas</u>	Sampling Date: <u>4/28/2017</u>
Applicant/Owner: Joe Spaziani	State: OR	Sampling Point: P13
Investigator(s): John McConnaughey, PWS# 2009	Section, Township, Range: <u>1</u>	2S R4E S11
Landform (hillslope, terrace, etc.): Broad swale	Local relief (concave, convex, none): <u>C</u>	oncave Slope (%): <u>9%</u>
Subregion (LRR): LRR-A Lat: 45.	24934 Long: <u>-122.168</u>	89 Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam	NWI c	lassification: Not mapped
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes 🔲 No 🖾 (If no, explain in Re	marks.)
Are Vegetation, Soil <u>YES</u> , or Hydrology <u>YES</u> significantly distu	rbed? Are "Normal Circumstances"	present? Yes 🗌 No 🖂
Are Vegetation, Soil, or Hydrology naturally probl	ematic? (If needed, explain any ar	swers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing	g sampling point locations, tran	sects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes □ No ⊠ Yes ⊠ No □ Yes ⊠ No □	Is the Sampled Area within a Wetland?	Yes 🗌 No 🛛		
Pemarka: A small depression in a forested areas where large machinery has besidely areated a wellow that new avhibits watland bydrolegy and					

Remarks: A small depression in a forested areas where large machinery has basically created a wallow that now exhibits wetland hydrology and soils. In our opinion this was not a wetland until the machinery removed some of the topsoil exposing the hydric soils and a rather large tire rut that filled with water.

VEGETATION – Use scientific names of plants.

	Absolute		t Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30' cir</u>)		Species		Number of Dominant Species
1. Acer macrophylum		<u>Y</u>		That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Thuja plicata</u>				Total Number of Dominant
3				Species Across All Strata: <u>9</u> (B)
4				Percent of Dominant Species
	45	= Total C	Cover	That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' cir</u>)				
1. <u>Sambucus racemosa</u>		<u>Y</u>		Prevalence Index worksheet:
2. <u>Corylus cornuta</u>		<u>Y</u>	FACU	Total % Cover of: Multiply by:
3. <u>Rubus idaeus</u>	2	<u>N</u>	FACU	OBL species 0 x 1 = 0
4				FACW species $\underline{0}$ x 2 = $\underline{0}$
5				FAC species 0 x 3 = 0
	47	= Total C	Cover	FACU species <u>0</u> x 4 = <u>0</u>
Herb Stratum (Plot size: <u>30' cir</u>)				UPL species <u>0</u> x 5 = <u>0</u>
1. <u>Streptopus amplexifolius</u>	20	<u>Y</u>	FACU	Column Totals: <u>0</u> (A) <u>0</u> (B)
2. <u>Symphoricarpos albus</u>	<u>30</u>	<u>Y</u>	FACU	
3. Rubus armeniacus	10	Y	FAC	Prevalence Index = $B/A = 0$
4. Rubus spectabilis	10	Y	FAC	Hydrophytic Vegetation Indicators:
5. Polystichum munitum	10	Y	FACU	□ Dominance Test is >50%
6. <u>Adiantum aleuticum</u>	5	N	FAC	□ Prevalence Index is ≤3.0 ¹
7. <u>Juncus sp</u>		<u>N</u>	FAC	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8				Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	88	= Total C	Jover	
1				¹ Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
2	180	= Total (Cover	Hydrophytic
	160		Jover	Vegetation
% Bare Ground in Herb Stratum 0 % Co	over of Biotic	Crust <u>0%</u>		Present? Yes 🗌 No 🖂
Remarks:				

Arid West – Version 2.0

SOIL

nches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	
6	7.5YR3/3	100					Silt loam			
10	7.5YR2.5/2	100					silty clay lo	am		
-18	7.5YR4/4	80	7.5YR2.5/2	20	С	М	Silty clay lo	am		
		- <u> </u>								
/pe: C=Cc	oncentration, D=De	pletion. RN	/=Reduced Matrix	CS=Covered	d or Coa	ted Sand G	rains. ² l	ocation: PL=	Pore Lining, M=M	latrix.
	ndicators: (Appli								lematic Hydric S	
Black His Hydroger Stratified 1 cm Muc	ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) (LRR k (A9) (LRR D)		Sandy Redo Stripped Ma Loamy Muci Loamy Gleye Depleted Ma Redox Dark	atrix (S6) ky Mineral (F1 ed Matrix (F2) atrix (F3) Surface (F6)			□ 2 □ Re □ Re	cm Muck (A9) cm Muck (A10 educed Vertic ed Parent Mate her (Explain in) (LRR B) (F18) erial (TF2)	
Thick Dai Sandy Mi	Below Dark Surfac rk Surface (A12) ucky Mineral (S1) leyed Matrix (S4)	æ (A11)	Depleted Da Redox Depr	ark Surface (F ressions (F8)	7)		we	tland hydrolog	ohytic vegetation y must be preser or problematic.	
estrictive L	ayer (if present):									
Type										
турс			_							
Depth (inc	ches): mpled in standing v			colors			Hydric S	oil Present?	Yes 🛛 No 🗌]
Depth (inc emarks: Sa DROLOG /etland Hyc rimary Indic	npled in standing v T Trology Indicators ators (minimum of	vater maki	- ing it hard to read ed; check all that a	apply)			Sec	condary Indica	tors (2 or more re	
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Depth (inc emarks: Sa PROLOG etland Hyc imary Indic Surface V High Wat Saturation Water Mat Sediment Sediment Drift Depu Surface S Inundation Water-Sta eld Observ urface Wate ater Table aturation Pr icludes cap	hes): mpled in standing v if drology Indicators ators (minimum of Water (A1) ter Table (A2) n (A3) arks (B1) (Non rive t Deposits (B2) (No osits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial I ained Leaves (B9) vations: er Present?	vater maki <u>one requir</u> rine) n riverine erine) magery (B Yes \lambda N Yes \lambda N Yes \lambda N	- ing it hard to read ed; check all that a Salt Cr Salt Cr Aquatic Hydrog Oxidize Preser Recent 7) Drhin M Other (Other (Depth (ind No Depth (ind)	apply) rust (B11) Crust (B12) c Invertebrates gen Sulfide Od ed Rhizospher ince of Reduces t Iron Reduction fuck Surface (i (Explain in Ref ches): 0 ches):	dor (C1) res along d Iron (C on in Tille C7) marks)	(Ce Soils (Ce Wet	See S	condary Indica Water Marks Sediment Dep Drift Deposits Drainage Patt Dry-Season Crayfish Burro Saturation Vis Shallow Aquit FAC-Neutral	tors (2 or more re (B1) (Riverine) posits (B2) (River (B3) (Riverine) terns (B10) Vater Table (C2) pows (C8) sible on Aerial Im- ard (D3) Test (D5)	equired) ine) agery (C9)
Depth (inc emarks: Sa DROLOG etland Hyc imary Indic Surface V High Wat Saturation Water Ma Sediment Sediment Drift Dep Surface S Inundation Water-Sta eld Observ urface Wate fater Table	shes): mpled in standing v frology Indicators ators (minimum of Vater (A1) ter Table (A2) n (A3) arks (B1) (Non rive t Deposits (B2) (No osits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial I ained Leaves (B9) vations: er Present? resent? isllary fringe)	vater maki <u>one requir</u> rine) n riverine erine) magery (B Yes \lambda N Yes \lambda N Yes \lambda N	- ing it hard to read ed; check all that a Salt Cr Salt Cr Aquatic Hydrog Oxidize Preser Recent 7) Drhin M Other (Other (Depth (ind No Depth (ind)	apply) rust (B11) Crust (B12) c Invertebrates gen Sulfide Od ed Rhizospher ince of Reduces t Iron Reduction fuck Surface (i (Explain in Ref ches): 0 ches):	dor (C1) res along d Iron (C on in Tille C7) marks)	(Ce Soils (Ce Wet	See S	condary Indica Water Marks Sediment Dep Drift Deposits Drainage Patt Dry-Season Crayfish Burro Saturation Vis Shallow Aquit FAC-Neutral	tors (2 or more re (B1) (Riverine) posits (B2) (River (B3) (Riverine) terns (B10) Vater Table (C2) pows (C8) sible on Aerial Im- ard (D3) Test (D5)	equired) ine) agery (C9)
Depth (inc emarks: Sa PROLOG etland Hyo imary Indic Surface V High Wat Saturation Water Ma Sediment Surface S Inundation Surface S Inundation Water-Sta eld Observ urface Wate ater Table aturation Pr iccludes cap	shes): mpled in standing v frology Indicators ators (minimum of Vater (A1) ter Table (A2) n (A3) arks (B1) (Non rive t Deposits (B2) (No osits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial I ained Leaves (B9) vations: er Present? resent? isllary fringe)	vater maki <u>one requir</u> rine) n riverine erine) magery (B Yes \lambda N Yes \lambda N Yes \lambda N	- ing it hard to read ed; check all that a Salt Cr Salt Cr Aquatic Hydrog Oxidize Preser Recent 7) Drhin M Other (Other (Depth (ind No Depth (ind)	apply) rust (B11) Crust (B12) c Invertebrates gen Sulfide Od ed Rhizospher ince of Reduces t Iron Reduction fuck Surface (i (Explain in Ref ches): 0 ches):	dor (C1) res along d Iron (C on in Tille C7) marks)	(Ce Soils (Ce Wet	See S	condary Indica Water Marks Sediment Dep Drift Deposits Drainage Patt Dry-Season Crayfish Burro Saturation Vis Shallow Aquit FAC-Neutral	tors (2 or more re (B1) (Riverine) posits (B2) (River (B3) (Riverine) terns (B10) Vater Table (C2) pows (C8) sible on Aerial Im- ard (D3) Test (D5)	equired) ine) agery (C9)
Depth (inc emarks: Sa PROLOG etland Hyo imary Indic Surface V High Wat Saturation Water Ma Sediment Surface S Inundation Surface S Inundation Water-Sta eld Observ urface Wate ater Table aturation Pr iccludes cap	shes): mpled in standing v frology Indicators ators (minimum of Vater (A1) ter Table (A2) n (A3) arks (B1) (Non rive t Deposits (B2) (No osits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial I ained Leaves (B9) vations: er Present? resent? isllary fringe)	vater maki <u>one requir</u> rine) n riverine erine) magery (B Yes \lambda N Yes \lambda N Yes \lambda N	- ing it hard to read ed; check all that a Salt Cr Salt Cr Aquatic Hydrog Oxidize Preser Recent 7) Drhin M Other (Other (Depth (ind No Depth (ind)	apply) rust (B11) Crust (B12) c Invertebrates gen Sulfide Od ed Rhizospher ince of Reduces t Iron Reduction fuck Surface (i (Explain in Ref ches): 0 ches):	dor (C1) res along d Iron (C on in Tille C7) marks)	(Ce Soils (Ce Wet	See S	condary Indica Water Marks Sediment Dep Drift Deposits Drainage Patt Dry-Season Crayfish Burro Saturation Vis Shallow Aquit FAC-Neutral	tors (2 or more re (B1) (Riverine) posits (B2) (River (B3) (Riverine) terns (B10) Vater Table (C2) pows (C8) sible on Aerial Im- ard (D3) Test (D5)	equired) ine) agery (C9)

WETLAND DETERMINATION DATA FORM – Arid West Region

oject/Site: <u>37090 Kelso RD</u>		City/County	: <u>Sandy/Cla</u>	ckamas	Sampling Date:4/28/2017
oplicant/Owner: <u>Joe Spaziani</u>				State: OR	Sampling Point: P14
vestigator(s): John McConnaughey, PWS# 2009			Section, Tov	wnship, Range: <u>T2S R4E</u>	S11
ndform (hillslope, terrace, etc.): <u>Broad swale</u>		Local relief	f (concave,	convex, none): <u>Concave</u>	Slope (%): <u>9%</u>
ubregion (LRR): <u>LRR-A</u>	Lat: <u>45.2</u> 4	4927		Long: <u>-122.16948</u>	Datum:
oil Map Unit Name: <u>Cazado silt Ioam, Cottrell silty clay I</u>	oam			NWI classifica	tion:
e climatic / hydrologic conditions on the site typical for	this time of yea	ar?Yes 🗌	No 🛛 (If	no, explain in Remarks.)	
e Vegetation <u>Y</u> , Soil <u>Y</u> , or Hydrology <u>Y</u> significantly dis	turbed?	Are "Norma	al Circumsta	ances" present? Yes 🗌	No 🖂
e Vegetation, Soil, or Hydrology n	aturally probler	matic?	(If neede	d, explain any answers ir	n Remarks.)
UMMARY OF FINDINGS – Attach site ma					,
			<u> </u>		•
Hydrophytic Vegetation Present? Yes ⊠ No Hydric Soil Present? Yes □ No	_		he Sampleo		
Wetland Hydrology Present? Yes ⊠ No		with	nin a Wetla	nd? Yes 🗌	No 🖂
Remarks: Above average rainfall in March and April. with a hydro-ax to clear the blackberries for surveyors	Area is gently s . The machine	sloped towa ery left many	rd Stream " v tire ruts no	B". When we observed in w filled with water in this	t, it had recently been brushed wet weather.
EGETATION – Use scientific names of pla	ants.				
Tree Stratum (Plot size: <u>30' S semi-cir</u>)	Absolute % Cover	Dominan	t Indicator Status	Dominance Test wor	
1. Acer macrophylum		Y		Number of Dominant S That Are OBL, FACW	
2. Thuja plicata					、 ,
3				Total Number of Domi Species Across All Str	
4				Percent of Dominant S	
Sapling/Shrub Stratum (Plot size: 30' S semi-cir)	<u>25</u>	_ = Total C	Cover	That Are OBL, FACW,	
1				Prevalence Index wo	
2					Multiply by:
3					x 1 = <u>0</u>
4					x 2 = <u>0</u>
5		= Total C			x 3 = 0 x 4 = 0
Herb Stratum (Plot size: <u>30' S semi-cir</u>)	0	Total C	Jover		x 5 = <u>0</u>
1. <u>Rubus armeniacus</u> 2					(A) <u>0</u> (B)
3				Prevalence Inde	x = B/A = <u>0</u>
4.				Hydrophytic Vegetat	ion Indicators:
5				Dominance Test is	s >50%
6				Prevalence Index	is ≤3.0 ¹
7					eptations ¹ (Provide supporting
8					ks or on a separate sheet) http://www.separate.com/separates/
Woody Vine Stratum (Plot size:)	80	= Total C	Cover		
1)				¹ Indicators of hydric so	bil and wetland hydrology must
2				be present, unless dis	
		= Total C	Cover	Hydrophytic Vegetation	
	Cover of Biotic			Present? Y	es 🛛 No 🗌
Remarks: Blackberries recently mowed, origionally the	ey were at leas	st 80% cover			

Arid West – Version 2.0

SOIL

(inches))-7	Matrix Color (moist)	% (Color (moist)	<u>dox Feature</u> %	Type ¹	Loc ²	Texture	Remarks
	7.5YR3/2	100					Silt loam	Lot's of roots
12	7.5YR3/3							
-12		<u>100</u>					Silty loam	
2-18	7.5YR3/3	<u>95</u>	5YR4/4	5		<u>M</u>	<u>Silt loam</u>	
					- <u> </u>			
	oncentration, D=De Indicators: (Appl					ed Sand G		² Location: PL=Pore Lining, M=Matrix. cators for Problematic Hydric Soils ³ :
			Sandy Redox		ieu.)			cm Muck (A9) (LRR C)
	oipedon (A2)	_	Stripped Matri					2 cm Muck (A10) (LRR B)
Black His	,		Loamy Mucky	. ,	1)			Reduced Vertic (F18)
Hydroge	n Sulfide (A4)	[Loamy Gleyed	Matrix (F2)		🗌 R	ed Parent Material (TF2)
	Layers (A5) (LRR	,	Depleted Matri	. ,			0 🗆	ther (Explain in Remarks)
	ck (A9) (LRR D) d Bolow Dork Surfa	-	Redox Dark S	,				
	d Below Dark Surfa ark Surface (A12)	· · ·	Depleted Dark Redox Depres		- ()		³ Indi	cators of hydrophytic vegetation and
	lucky Mineral (S1)	L						etland hydrology must be present,
_ Sandy G	Bleyed Matrix (S4)							nless disturbed or problematic.
Restrictive	Layer (if present):							
Туре:								
Depth (in	ches):						Hydric S	Soil Present? Yes 🗌 No 🛛
DROLOG	GY drology Indicators	s:						
Primary India	cators (minimum of	f one required	check all that ap	ply)			Se	econdary Indicators (2 or more required)
Surface	. ,		Salt Crus					Water Marks (B1) (Riverine)
	iter Table (A2)		Biotic Cru					Sediment Deposits (B2) (Riverine)
Saturatio	. ,		Aquatic I				_	Drift Deposits (B3) (Riverine)
	arks (B1) (Non riv	,						e ()
	nt Deposits (B2) (Non riv	-		•	•	•	nts (C3) □	
	oosits (B3) (Non riv Soil Cracks (B6)	/enne)	Presence Recent Ir			,		Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9
-		Imagery (B7)					·	Shallow Aquitard (D3)
Surface					. ,			FAC-Neutral Test (D5)
Surface	tained Leaves (B9)		Other (Ex		ana kaj			
Surface II Inundatio	tained Leaves (B9)							
Surface	tained Leaves (B9) rvations: ter Present?	Yes No	Depth (inch	es):				
Surface Inundatio Water-Si Field Obser Surface Wat Water Table Saturation P	tained Leaves (B9) vations: ter Present? Present? tresent?		Depth (inch	es): es): <u>12"_</u>		Wet	land Hydro	logy Present? Yes □ No ⊠
Surface Inundatio Water-Si Field Obser Surface Wat Water Table Saturation P (includes cap	tained Leaves (B9) vations: ter Present? Present?	Yes □ No Yes ⊠ No Yes ⊠ No	Depth (inch Depth (inch Depth (inch	es): es): <u>12"</u> es): <u>12"_</u>				logy Present? Yes □ No ⊠
Surface Inundatio Water-St Field Obser Surface Wat Water Table Saturation P (includes cap Describe Re	tained Leaves (B9) vations: ter Present? Present? pillary fringe)	Yes □ No Yes ⊠ No Yes ⊠ No m gauge, mor	 Depth (inch Depth (inch Depth (inch Depth (inch itoring well, aeria 	es): es): <u>12"_</u> es): <u>12"_</u> Il photos, p	revious in	spections),	if available	logy Present? Yes 🗌 No 🛛
Surface Inundatio Water-St Field Obser Surface Wat Water Table Saturation P (includes cap Describe Re	tained Leaves (B9) vations: ter Present? Present? pillary fringe) corded Data (strea	Yes □ No Yes ⊠ No Yes ⊠ No m gauge, mor	 Depth (inch Depth (inch Depth (inch Depth (inch itoring well, aeria 	es): es): <u>12"_</u> es): <u>12"_</u> Il photos, p	revious in	spections),	if available	logy Present? Yes 🗌 No 🛛

WETLAND DETERMINATION DATA FORM

Project/Site: 37090 Kelso RD	City/County: Sandy/Cla	ickamas	Sampling Date: <u>4/28/2017</u>
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: P15
Investigator(s): John McConnaughey, PWS# 2009	Section, To	wnship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave,	convex, none): <u>concave</u>	Slope (%): <u>1%</u>
Subregion (LRR): LRR-A	at: <u>45.24927</u>	Long: <u>-122.16948</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classification	tion:
Are climatic / hydrologic conditions on the site typical for this time	e of year? Yes 🗌 No 🛛 (If	no, explain in Remarks.)	
Are Vegetation Y, Soil Y, or Hydrology significantly distu	rbed? Are "Normal Circu	umstances" present? Yes	s 🗌 No 🖾
Are Vegetation, Soil, or Hydrology naturally	v problematic? (If neede	ed, explain any answers in	Remarks.)
SUMMARY OF FINDINGS – Attach site map sho	owing sampling point lo	ocations, transects,	important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes □ No ⊠ Yes ⊠ No □	Is the Sampled Area within a Wetland?	Yes 🗌 No 🛛
Remarks: Above average rainfall in Mar weather.	ch and April. Wallow made by brus	h hog working in wet weather v	when he should have been waiting for dryer

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30' cir</u>) 1		Species? Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2			Total Number of Dominant Species Across All Strata: <u>1</u> (B)
4Sapling/Shrub Stratum (Plot size: <u>30' cir</u>)		= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>Rubus armeniacus</u>	100	Y FAC	Prevalence Index worksheet:
2			Total % Cover of: Multiply by:
3			OBL species 0 x 1 = 0
4			FACW species 0 x 2 = 0
5			FAC species 0 x 3 = 0
	100		FACU species 0 x 4 = 0
Herb Stratum (Plot size: <u>30' S semi-cir</u>)			UPL species 0 x 5 = 0
1			Column Totals: 0 (A) 0 (B)
2			
3			Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			Dominance Test is >50%
6			□ Prevalence Index is ≤3.0 ¹
7			Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8		= Total Cover	Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:) 1.			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2	100	= Total Cover	Hydrophytic Vegetation
	Cover of Biotic (-	Present? Yes 🛛 No 🗌
Remarks: Data plots 14 & 15 are located where we could	uld find relativel	y undistrubed soils, the	at's why they aer so far apart

SOIL

(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
-8	7.5YR2.5/3	100					Silt loam	Lot's of roots
-13	7.5YR2.5/3	100					Silt loam	
3-18	7.5YR3/4	99	2.5N	1	С	М	Silt loam	
ype: C=C ydric Soil	Concentration, D=De	pletion, RI	M=Reduced Matri	x, CS=Covere	ed or Coa	ted Sand G		Location: PL=Pore Lining, M=Matrix. ators for Problematic Hydric Soils ³ :
Histosol	. ,		Sandy Red					cm Muck (A9) (LRR C)
	pipedon (A2)		Stripped Ma	. ,	- 4 \			cm Muck (A10) (LRR B)
Black Hi	istic (A3) en Sulfide (A4)		Loamy Muc Loamy Gley					educed Vertic (F18) ed Parent Material (TF2)
	d Layers (A5) (LRR	C)	Depleted Ma		-)			ther (Explain in Remarks)
	ck (A9) (LRR D)	- /	Redox Darl	()	5)			
_	d Below Dark Surfa	ce (A11)	Depleted D	ark Surface (F7)			
	ark Surface (A12)		Redox Dep	ressions (F8))			ators of hydrophytic vegetation and
	Aucky Mineral (S1)							etland hydrology must be present,
	Gleyed Matrix (S4) Layer (if present):						un	less disturbed or problematic.
	ah ao):		_				Liveria C	
Depth (ir	icnes):		_					oil Present? Yes 🗌 No 🛛
Remarks: M	lowing of blackberrie	es has dist	urbed this area le	aving it more	or less de	enuded with		
Remarks: M DROLO(Wetland Hy		5:			or less de	enuded with	n lots of tire r	
Remarks: M DROLO(Vetland Hy Primary Indi	GY /drology Indicators	5:	ed; check all that		or less de	enuded with	n lots of tire n	uts.
Remarks: M DROLOC Vetland Hy Primary Indi	GY /drology Indicators	5:	r <u>ed; check all that</u> □ Salt C	apply)	or less de	enuded with	n lots of tire n	condary Indicators (2 or more required)
Remarks: M DROLOC Vetland Hy Primary Indi Surface	GY (drology Indicators icators (minimum of Water (A1) ater Table (A2)	5:	red; check all that □ Salt C □ Biotic	apply) rust (B11)		enuded with	n lots of tire n	condary Indicators (2 or more required) Water Marks (B1) (Riverine)
Remarks: M DROLOC Vetland Hy Primary Indi Surface High Wa Saturati	GY (drology Indicators icators (minimum of Water (A1) ater Table (A2)	: one requir	r <u>ed; check all that</u> □ Salt C □ Biotic □ Aquat	apply) rust (B11) Crust (B12)	es (B13)	enuded with	n lots of tire n	<u>condary Indicators (2 or more required)</u> Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Remarks: M DROLOG Vetland Hy Irimary Indi Surface High Wa Saturati Water M	GY (drology Indicators icators (minimum of Water (A1) ater Table (A2) on (A3)	one requir	red; check all that ☐ Salt C ☐ Biotic ☐ Aquat ☐ Hydro	apply) rust (B11) Crust (B12) ic Invertebrate	es (B13))dor (C1)		<u>Se</u>	condary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Remarks: M DROLOO Wetland Hy Primary Indi Surface High Wa Saturatio Saturatio Saturatio Saturatio Saturatio Drift Dej	GY drology Indicators icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non rive nt Deposits (B2) (Non rive posits (B3) (Non rive	one requir one requir erine) on riverine	red; check all that Salt C Biotic Aquat Hydro Oxidiz Prese	apply) rust (B11) Crust (B12) ic Invertebrate gen Sulfide C ed Rhizosphe nce of Reduc	es (B13) Ddor (C1) eres along ed Iron (C	Living Roo 4)	Se	<u>condary Indicators (2 or more required)</u> Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Remarks: M DROLOO Vetland Hy Primary Indi Surface High Wa Saturatio Saturatio Saturatio Saturatio Drift Dep Surface	GY drology Indicators icators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) (Non rive nt Deposits (B2) (No posits (B3) (Non riv Soil Cracks (B6)	s: one requir erine) on riverine erine)	red; check all that Salt C Biotic Aquat Hydro Oxidiz Prese Recer	apply) rust (B11) Crust (B12) ic Invertebrate gen Sulfide C ed Rhizosphe nce of Reduc tt Iron Reduct	es (B13) Odor (C1) eres alon <u>c</u> ed Iron (C tion in Tille	Living Roo 4)	Se	condary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Remarks: M DROLOO Vetland Hy Primary Indi Surface High Wa Saturatio Saturatio Saturatio Saturatio Drift Dej Surface Inundatio	GY drology Indicators icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non rive nt Deposits (B2) (Non rive posits (B3) (Non rive	s: one requir erine) on riverine erine)	red; check all that Salt C Biotic Aquat Hydro Oxidiz Prese Recer 37) Thin N	apply) rust (B11) Crust (B12) ic Invertebrate gen Sulfide C ed Rhizosphe nce of Reduc	es (B13) Dor (C1) eres alonç ed Iron (C tion in Tille (C7)	Living Roo 4)		<u>condary Indicators (2 or more required)</u> Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
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Remarks: M DROLOC Vetland Hy Primary Indi Surface High Wa Saturation Water M Sedimen Confit Del Drift Del Drift Del Unift Confit Water-S Field Obsent	GY drology Indicators icators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) (Non rive nt Deposits (B2) (No posits (B3) (Non rive Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations:	erine) on riverine erine) lmagery (E	red; check all that Salt C Biotic Aquat Hydro Oxidiz Prese Recer 37) Thin N Other	apply) rust (B11) Crust (B12) ic Invertebrate gen Sulfide C ed Rhizosphe nce of Reduc tl Iron Reduct fuck Surface	es (B13) Jdor (C1) eres along ed Iron (C tion in Tille (C7) emarks)	Living Roo 4)		condary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
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WETLAND DETERMINATION DATA FORM

Project/Site: 37090 Kelso RD	City/County: Sandy/	Clackamas	Sampling Date: <u>4/28/2017</u>
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: P16
Investigator(s): John McConnaughey, PWS# 2009	Section,	Township, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): hillslope	Local relief (conca	ve, convex, none): <u>Toe slope</u>	Slope (%): <u>3%</u>
Subregion (LRR): LRR-A	Lat: <u>45.24877</u>	Long: <u>-122.16980</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classifica	tion:
Are climatic / hydrologic conditions on the site typical for this tin	me of year? Yes 🗌 🛛 No 🖾	(If no, explain in Remarks.)	
Are Vegetation \underline{Y} , Soil \underline{Y} , or Hydrology significantly dist	urbed? Are "Normal C	ircumstances" present? Ye	s 🔲 No 🖾
Are Vegetation, Soil, or Hydrology natural	ly problematic? (If ne	eded, explain any answers ir	Remarks.)
SUMMARY OF FINDINGS – Attach site map sh	owing sampling point	locations, transects,	important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ Yes ⊠ Yes ⊠	No 🗌	Is the Sampled Area within a Wetland?	Yes 🛛 No 🗌
Remarks: Above average rainfall in Marc	h and Ap	oril. Brush hog went throu	gh and chopped down veg. sou	th of stream

VEGETATION – Use scientific names of plants.

% Bare Ground in Herb Stratum 0 Remarks: Brush hog mowed down vegetation	% Cover of Biotic	Grust <u>U%</u>	
	<u>80</u>		Hydrophytic Vegetation Present? Yes ⊠ No □
1			¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size:)	70	= Total Cover	Problematic Hydrophytic Vegetation ¹ (Explain)
7			Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
6			□ Prevalence Index is ≤3.0 ¹
5			☑ Dominance Test is >50%
4			Hydrophytic Vegetation Indicators:
3. Adiantum aleuticum	5	N FAC	Prevalence Index = $B/A = 0$
2. Polystichum munitum		N FACU	
1. <u>Rubus armeniacus</u>	60	Y FAC	Column Totals: 0 (A) 0 (B)
Herb Stratum (Plot size: 30' S semi-cir)	<u>0</u>	= Total Cover	FACU species 0 $x 4 = 0$ UPL species0 $x 5 = 0$
5			
4			FACW species 0 $x 2 = 0$ FAC species 0 $x 3 = 0$
3			OBL species 0 $x = 0$
2			Total % Cover of: Multiply by:
1			Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 10' NW)		= Total Cover	That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4		· ·	Percent of Dominant Species
3			Total Number of Dominant Species Across All Strata: 2 (B)
2			
1. <u>Alnus rubra</u>		Y FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Tree Stratum (Plot size: <u>10' NW</u>)	Absolute % Cover	Dominant Indicator Species? Status	Dominance Test worksheet:

US Army Corps of Engineers

Arid West – Version 2.0

SOIL

Depth (inches)	Matrix Color (moist)	%	Colo	or (moist)	dox Feature %	Type ¹	Loc ²	Texture	Remarks
-5	7.5YR2.5/3	100						Silt loam	Lot's of roots
-11	7.5YR2.5/1	97	7.5	′R4/10	3	С	М	Clay	Restrictive layer
1-18	7.5YR2.5/2	90	5YF		10	С	М	Clay	
	Concentration, D=D Indicators: (App						ed Sand C		.ocation: PL=Pore Lining, M=Matrix. tors for Problematic Hydric Soils ³ :
				Sandy Redox					cm Muck (A9) (LRR C)
	pipedon (A2)			Stripped Matr	. ,				cm Muck (A10) (LRR B)
Black Hi	istic (A3)			Loamy Mucky	/ Mineral (F	1)		🗌 Re	educed Vertic (F18)
	en Sulfide (A4)			oamy Gleyed		2)			d Parent Material (TF2)
	d Layers (A5) (LRF ck (A0) (LRP D)	Κ C)		Depleted Matr	. ,	`		∐ Oth	ner (Explain in Remarks)
_	ck (A9) (LRR D) d Below Dark Surfa			Redox Dark S Depleted Darl		,			
•	ark Surface (A12)	100 (ATT)		Redox Depres		,		³ Indica	ators of hydrophytic vegetation and
	/ucky Mineral (S1)								tland hydrology must be present,
Sandy C	Bleyed Matrix (S4)								ess disturbed or problematic.
Restrictive	Layer (if present)	:							
Type: <u>Cla</u>	ау								
	ches): 5								
Depth (ir	iones). <u>o</u>							Hydric So	oil Present? Yes 🛛 No 🗌
								Hydric So	oil Present? Yes 🛛 No 🗌
Remarks: W	/et soil							Hydric So	oil Present? Yes ⊠ No 🗌
Remarks: W	/et soil	rs:						Hydric So	oil Present? Yes ⊠ No 🗌
Remarks: W DROLOC Wetland Hy	/et soil GY rdrology Indicator		uired: ch	eck all that ar	(vlgc				
Remarks: W DROLO(Wetland Hy Primary Indi	/et soil GY rdrology Indicator cators (minimum c		uired; ch					<u>Sec</u>	condary Indicators (2 or more required)
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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	City/County: Sandy/Clac	kamas	Sampling Date: <u>4/28/2017</u>
Applicant/Owner: <u>Joe Spaziani</u>		State: OR	Sampling Point: P17
Investigator(s): John McConnaughey, PWS# 2009	Section, Tow	nship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, c	onvex, none): <u>concave</u>	Slope (%): <u>7%</u>
Subregion (LRR): LRR-A Lat:	45.24878	Long: <u>-122.16978</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	lion:
Are climatic / hydrologic conditions on the site typical for this time o	f year? Yes 🗌 🛛 No 🖾 (If r	no, explain in Remarks.)	
Are Vegetation Y, Soil, or Hydrology significantly dist	urbed? Are "Normal C	Circumstances" present?	Yes 🗌 No 🖾
Are Vegetation, Soil, or Hydrology naturally pro	oblematic? (If needed	l, explain any answers in	Remarks.)
SUMMARY OF FINDINGS – Attach site map show	ing sampling point lo	cations, transects,	important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ Yes ⊠ Yes ⊠	No 🗌	Is the Sampled Area within a Wetland?	Yes 🛛 No 🗌	
Remarks: Above average rainfall in March and April. small wetland next to stream					

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>10' NW</u>)		Species? Status	Number of Dominant Species
1. <u>Alnus rubra</u>		Y FAC	That Are OBL, FACW, or FAC: 2 (A)
2			Total Number of Dominant
3			Species Across All Strata: 2 (B)
4			Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: 10' NW)	<u>10</u>	= Total Cover	That Are OBL, FACW, or FAC: 100 <u>%</u> (A/B)
	100	Y FAC	Prevalence Index worksheet:
			Total % Cover of: Multiply by:
2			$\frac{1}{10000000000000000000000000000000000$
3			FACW species 0 $x^2 = 0$
4			· <u> </u>
5			FAC species 0 x 3 = 0
Herb Stratum (Plot size: 30' S semi-cir)	100	= Total Cover	FACU species $0 x4 = 0$
1. <u>herb</u>	3	NNOL	UPL species 0 x 5 = 0
2. <u>Carex dewyana</u>			Column Totals: 0 (A) 0 (B)
			Prevalence Index = $B/A = 0$
3			Hydrophytic Vegetation Indicators:
4			Dominance Test is >50%
5			\square Prevalence Index is ≤3.0 ¹
6			Morphological Adaptations ¹ (Provide supporting
7			data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	4	= Total Cover	
1,			¹ Indicators of hydric soil and wetland hydrology must
2			be present, unless disturbed or problematic.
۲		= Total Cover	Hydrophytic
	<u>114</u>		Vegetation
	% Cover of Biotic (Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: Brush hog mowed down vegetation			

Arid West – Version 2.0

SOIL

(inches)	<u>Matrix</u> Color (moist)	%	Color	(moist)	ox Features %	Type ¹	Loc ²	Texture	Remarks
-6	7.5YR2.5/2	100						Silt loam	Lot's of roots
-9	5YR3/3	100						Clay	odd mix of dark and red colors
.18	5YR3/4	90	5YR2.	5/2	10				depleted along root channels
				512				<u>Clay</u>	
	concentration, D=De	pletion. R	M=Redu	ced Matrix. C	S=Covered	or Coate	d Sand G	rains. ² Lo	ocation: PL=Pore Lining, M=Matrix.
ydric Soil	Indicators: (Appli	cable to a	all LRRs,	unless othe	erwise note	d.)		Indicat	tors for Problematic Hydric Soils ³ :
Black Hi Hydroge Stratified 1 cm Mud Depleted Thick Da Sandy M	bipedon (A2) stic (A3) en Sulfide (A4) d Layers (A5) (LRR ck (A9) (LRR D) d Below Dark Surfac ark Surface (A12) Mucky Mineral (S1)		St Lo: Lo: De Re De	andy Redox (ripped Matrix amy Mucky I amy Gleyed I pleted Matrix edox Dark Su epleted Dark edox Depress	(S6) Mineral (F1) Matrix (F2) (F3) Irface (F6) Surface (F7			☐ 2 c ☐ Red ☐ Red ☐ Oth ³ Indica wet	m Muck (A9) (LRR C) m Muck (A10) (LRR B) duced Vertic (F18) d Parent Material (TF2) er (Explain in Remarks) tors of hydrophytic vegetation and land hydrology must be present,
	Bleyed Matrix (S4)							unle	ess disturbed or problematic.
Type: <u>Cla</u> Depth (in Remarks: W	ches): <u>5</u>		_					Hydric So	il Present? Yes 🛛 No 🗌
	GY drology Indicators	•							
-	cators (minimum of		red: chec	k all that app	olv)			Sec	ondary Indicators (2 or more required)
	Water (A1)	0110 10401] Salt Crust					Water Marks (B1) (Riverine)
High Wa Saturatio Water M Sedimer Drift Dep Surface	ater Table (A2)	n riverine erine)	[[]]]]]]]]]]]]]]]]]]	 Biotic Cru Aquatic In Hydrogen Oxidized I Presence Recent Irc Thin Muck 		or (C1) es along L I Iron (C4) n in Tilled	Ū	Image: state	Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
ield Obser	vations:								
Surface Wat Water Table Saturation P includes ca	ter Present? Present?	Yes ⊠ Yes ⊠	No 🗌 No 🔲	Depth (inche Depth (inche Depth (inche g well, aerial	es): es):			_	gy Present? Yes 🛛 No 🗌

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast

Project/Site: 37090 Kelso RD	City/County: Sandy/Clackar	Sampling Date: <u>4/28/2017</u>			
Applicant/Owner: Joe Spaziani	{	State: <u>OR</u>	Sampling Point: P18		
Investigator(s): John McConnaughey, PWS# 2009	Section, Township, Range: <u>T2S R4E S11</u>				
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, conv	vex, none): <u>concave</u>	Slope (%): <u>9%</u>		
Subregion (LRR): LRR-A Lat: 45	5.24871 Lo	ng: <u>-122.16977</u>	Datum:		
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classifica	tion:		
Are climatic / hydrologic conditions on the site typical for this time of year? Yes 🗌 No 🛛 (If no, explain in Remarks.)					
Are Vegetation Y, Soil, or Hydrology significantly distur	bed? Are "Normal Circ	umstances" present?	Yes 🗌 No 🖾		
Are Vegetation, Soil, or Hydrology naturally prob	lematic? (If needed, e	xplain any answers in	Remarks.)		
SUMMARY OF FINDINGS – Attach site map showin	g sampling point loca	tions, transects,	important features, etc.		

Hydrophytic Vegetation Present?	Yes 🗌 No 🖾	Is the Sampled Area	
Hydric Soil Present?	Yes 🗌 No 🖾	within a Wetland?	Yes 🗍 No 🖾
Wetland Hydrology Present?	Yes 🗌 No 🛛		
Remarks: Above average rainfall in Mar			

VEGETATION – Use scientific names of plants.

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' S semi-cir</u>)		Species?		Number of Dominant Species
1. <u>Pseudotsuga menziesii</u>		<u>Y</u>		That Are OBL, FACW, or FAC: <u>1</u> (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>4</u> (B)
4				Percent of Dominant Species
	<u>30</u>	= Total C	over	That Are OBL, FACW, or FAC: 25% (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' S semi-cir</u>)				
1. Prunus laurocerasus	30	<u>Y</u>	NOL	Prevalence Index worksheet:
2. <u>Rubus armeniacus</u>	30	Y	FAC	Total % Cover of:Multiply by:
3				OBL species <u>0</u> x 1 = <u>0</u>
4				FACW species <u>0</u> x 2 = <u>0</u>
5				FAC species 0 x 3 = 0
	60			FACU species 0 x 4 = 0
Herb Stratum (Plot size: <u>30' S semi-cir</u>)				UPL species 0 x 5 = 0
1				Column Totals: 0 (A) 0 (B)
2. Polystichum munitum	20	Y	FACU	
3				Prevalence Index = $B/A = 0$
4				Hydrophytic Vegetation Indicators:
5				☑ Dominance Test is >50%
6				□ Prevalence Index is ≤3.0 ¹
7				Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8				Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	50	= Total C	over	
				¹ Indicators of hydric soil and wetland hydrology must
1		·		be present, unless disturbed or problematic.
2		= Total C	over	Hydrophytic
% Bare Ground in Herb Stratum 0 % C	over of Biotic	Cruct 0%		Vegetation Present? Yes □ No ⊠
		GIUST 070		
Remarks: Laurel on edge of plot, thick hedge to the sou	101			

inches)	Matrix Color (moist)	%	Cold	or (moist)	<u>dox Featur</u> %	Type ¹	Loc ²	Texture	Remarks
-7	7.5YR3/2	100		· · ·				Silt loam	
-12	7.5YR3/3	100						Clay	
2-18	5YR4/4	95	5YR	1/6	5	С	M	Clay	Restrictive layer
				4/0			<u></u>		
Type: C=C	Concentration, D=De	epletion, F	 	uced Matrix, (CS=Covere	ed or Coat	ed Sand G	Grains. ² L	Location: PL=Pore Lining, M=Matrix.
ydric Soil	Indicators: (Appl	icable to	all LRR	s, unless oth	nerwise no	oted.)		Indica	ators for Problematic Hydric Soils ³ :
Black H Hydroge Stratifie 1 cm Mu Deplete Thick D Sandy M Sandy C	pipedon (A2) istic (A3) en Sulfide (A4) d Layers (A5) (LRR lck (A9) (LRR D) d Below Dark Surfa ark Surface (A12) Mucky Mineral (S1) Sleyed Matrix (S4)	ce (A11)		Sandy Redox Stripped Matri .oamy Mucky oamy Gleyed Depleted Matri Redox Dark S Depleted Dark Redox Depres	ix (S6) Mineral (F Matrix (F2 ix (F3) Gurface (F6 Surface (2) 5) F7)		2 c Re D Re D Oth ³ Indica we	cm Muck (A9) (LRR C) cm Muck (A10) (LRR B) educed Vertic (F18) d Parent Material (TF2) her (Explain in Remarks) ators of hydrophytic vegetation and tland hydrology must be present, less disturbed or problematic.
estrictive	Layer (if present):								
Type: <u>Cl</u>	ау								
Depth (ir	nches): <u>12</u>							Hydric So	oil Present? Yes 🗌 No 🖂
Remarks:									
	GY ydrology Indicators	5:							
Wetland Hy	-		iired; ch	eck all that ap	oply)			Sec	condary Indicators (2 or more required)
Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface Inundatio	ydrology Indicators icators (minimum of Water (A1) ater Table (A2)	one requ erine) on riverir erine) Imagery (ie)	Salt Crus Biotic Cru Aquatic Ii Hydroger Oxidized Presence Recent Ir Thin Muc	st (B11)	Odor (C1) eres along ed Iron (C tion in Tille (C7)	4)	ots (C3)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
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WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys & Coast

Project/Site: 37090 Kelso RD	City/County: Sandy/Cla	ckamas	Sampling Date: <u>4/28/2017</u>
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: P19
Investigator(s): John McConnaughey, PWS# 2009	Section, Tov	wnship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave,	convex, none): <u>concave</u>	Slope (%): <u>2%</u>
Subregion (LRR): LRR-A Lat: 45	5.24980	Long: <u>-122.16851</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion: <u>PUB3E</u>
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes 🗌 No 🛛 (If	no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Nor	rmal Circumstances" prese	ent? Yes 🛛 No 🗌
Are Vegetation, Soil, or Hydrology naturally prob	plematic? (If neede	d, explain any answers in	Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes ⊠ No □ Yes ⊠ No □	Is the Sampled Area within a Wetland?	Yes 🛛 No 🗌
Remarks: Wetland "B". A small depress	sional wetland next to Stream #2.	Above average rainfall in March	and April. Bare spot in vegetation, off

stream to north in a depression. This is clearly a small depressional wetland, although the soils do not fit nicely into one of the accepted hydric soil catagories.

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>15' cir</u>)		Species? Status	Number of Dominant Species
1. <u>Alnus rubra</u>		Y FAC	That Are OBL, FACW, or FAC: <u>3</u> (A)
2			Total Number of Dominant
3		<u> </u>	Species Across All Strata: <u>3</u> (B)
4			Percent of Dominant Species
	20	= Total Cover	That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>15' cir</u>)			
1. <u>Rubus spectabilis **</u>		Y FAC	Prevalence Index worksheet:
2. <u>Rosa nutkana</u>	15	Y FAC	Total % Cover of: Multiply by:
3			OBL species <u>0</u> x 1 = <u>0</u>
4			FACW species $\underline{0}$ x 2 = $\underline{0}$
5			FAC species <u>0</u> x 3 = <u>0</u>
		= Total Cover	FACU species <u>0</u> x 4 = <u>0</u>
Herb Stratum (Plot size: <u>15' cir</u>)			UPL species $\underline{0}$ x 5 = $\underline{0}$
1			Column Totals: <u>0</u> (A) <u>0</u> (B)
2			
3			Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			Dominance Test is >50%
6			□ Prevalence Index is ≤3.0 ¹
7			Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)		= Total Cover	
1			¹ Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
2		= Total Cover	Hydrophytic
			Vegetation
% Bare Ground in Herb Stratum 35	% Cover of Biotic (Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: ** Much of the Salmonberry in the lower	st parts of the wetlar	nd are dead, probably	died last year (?).

Depth	Matrix				lox Featur				
inches)	Color (moist)	%	Colo	or (moist)	%	Туре	¹ Loc ²	Texture	Remarks
6	7.5YR2.5/1	100						Silt loam	
12	<u>7.5YR4/6</u>	100						Clay	
2-18	2.5YR4/6	90	2.5	′R4/1	10	С	М	Clay	
	Concentration, D=D						ated Sand G		cation: PL=Pore Lining, M=Matrix.
-	Indicators: (App	licable to				oted.)			ors for Problematic Hydric Soils ³ :
] Histosol] Histic F	I (A1) pipedon (A2)			Sandy Redox Stripped Matri:	. ,				m Muck (A9) (LRR C) m Muck (A10) (LRR B)
Black H				Loamy Mucky	. ,	1)			duced Vertic (F18)
	en Sulfide (A4)			.oamy Gleyed		'			Parent Material (TF2)
	d Layers (A5) (LRF	R C)	_	Depleted Matri					er (Explain in Remarks)
_	ick (A9) (LRR D)		_	Redox Dark S	urface (F6)			
_ '	d Below Dark Surfa	ace (A11)		Depleted Dark		,		-	
	ark Surface (A12)			Redox Depres	sions (F8)				ors of hydrophytic vegetation and
	Mucky Mineral (S1)								and hydrology must be present,
-	Gleyed Matrix (S4) Layer (if present)							unie	ss disturbed or problematic.
Type: <u>cla</u>									
								Hudria Sai	il Bressent? Ves 🖂 No 🗔
DROLO	lard to get a good o		n becau	se the soil was	s so satura	ited		Hydric Soi	il Present? Yes 🛛 No 🗌
Remarks: H DROLO(Vetland Hy Primary Ind Surface High Wa	GY drology Indicator icators (minimum o Water (A1) ater Table (A2)	·s:			<u>ply)</u> t (B11) ust (B12)			Secc	il Present? Yes ⊠ No □ ondary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
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WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast

Project/Site: 37090 Kelso RD	City	//County: <u>Sandy/Clac</u>	kamas	Sampling Date: <u>4/28/2017</u>
Applicant/Owner: Joe Spaziani			State: <u>OR</u>	Sampling Point: P20
Investigator(s): John McConnaughey, PWS# 20	09	Section, Tow	nship, Range: <u>T2S I</u>	R4E S11
Landform (hillslope, terrace, etc.): <u>hillslope</u>	La	cal relief (concave, c	onvex, none): <u>conca</u>	ave Slope (%): <u>12%</u>
Subregion (LRR): <u>LRR-A</u>	Lat: <u>45.2497</u>	8	Long: <u>-122.16853</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell s	ilty clay loam		NWI class	ification:
Are climatic / hydrologic conditions on the site ty Are Vegetation, Soil, or Hydrology Are Vegetation, Soil, or Hydrology SUMMARY OF FINDINGS – Attach s	significantly disturb	ed? Are "Norn ic? (If needed	nal Circumstances" , explain any answe	present? Yes ⊠ No □ ers in Remarks.)
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes Remarks: Above average rainfall in March ar	s □ No ⊠ s □ No ⊠	Is the Sampled within a Wetlan Shovel refusal 12" d	d? Yes	□ No ⊠
VEGETATION – Use scientific name	•	Dominant Indicator	Dominance Test	worksheet:

Tree Stratum (Plot size: <u>30' N</u>)	<u>% Cover Species?</u>	Status Number of Dominant Species
1. <u>Alnus rubra</u>	<u> 15 Y </u>	
2. Acer macrophylum	<u> </u>	ACU Total Number of Dominant
3		
4		Percent of Dominant Species
Conling/Chrub Stratum (Diataiza: 20' N)	45 = Total Cov	That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' N</u>)		Prevalence Index worksheet:
1		
2		
3		
4		
5	0 = Total Cov	
Herb Stratum (Plot size: <u>30' N</u>)		UPL species 0 $x5 = 0$
1. <u>Rubus spectabilis</u>	90 Y F	
2. Polystichum munitum		
3		
4		
5.		
6		Description of the description of the
7		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8		I I Proplematic Hydrophytic Vedetation' (Explain)
Woody Vine Stratum (Plot size:)	<u>110</u> = Total Cov	/er
1		De present Uniess disturbed or proplematic
2	<u>155</u> = Total Cov	ver Hydrophytic
		Vegetation
% Bare Ground in Herb Stratum	% Cover of Biotic Crust 0%	Present? Yes 🗌 No 🖂

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inches)	Matrix Color (moist)	%	Color (moist)	dox Features %	Type ¹	Loc ²	Texture		Remarks	
12	7.5YR2.5/3	100					Silt loam			
	oncentration, D=De Indicators: (Applic					d Sand Gr			ore Lining, M=Ma ematic Hydric S	
Histosol			Sandy Redox		,		_	Muck (A9) (-	0113 .
	oipedon (A2)		Stripped Matr					Muck (A9) (Muck (A10)		
Black Hi	,		Loamy Mucky	. ,				iced Vertic (F		
	n Sulfide (A4)		Loamy Gleyed					Parent Mater		
_ , .	Lavers (A5) (LRR	C)	Depleted Matr					(Explain in I		
	ck (A9) (LRR D)	,	Redox Dark S	· · /				、 1	,	
_	Below Dark Surfac	e (A11)	Depleted Darl	. ,)					
	ark Surface (A12)	. ,	Redox Depres	. ,			³ Indicator	rs of hydroph	nytic vegetation a	nd
] Sandy M	lucky Mineral (S1)		_ ·				wetlar	nd hydrology	must be present	,
] Sandy G	leyed Matrix (S4)						unless	s disturbed c	r problematic.	
estrictive	Layer (if present):									
Type: <u>Ro</u>	ots		_							
Depth (in	ches): <u>12"</u>						Hydric Soil	Present?	Yes 🗌 No 🖂	
Remarks: Sh	novel refusal at 12" o	due to laro	e tree roots.				-			
DROLOG	SY drology Indicators	:								
Primary India	cators (minimum of	one requir	ed; check all that ap	(ylq			Secon	dary Indicate	ors (2 or more red	quired)
Surface			Salt Crus						B1) (Riverine)	· · ·
	iter Table (A2)		Biotic Cr					-	osits (B2) (Riveri	ne)
☐ Ingit Wa ☐ Saturation				nvertebrates	(B13)			-	B3) (Riverine)	
_	. ,	rino)		n Sulfide Odo						
	arks (B1) (Non rive	-				iuina Deei		ainage Patte	ater Table (C2)	
	nt Deposits (B2) (No			Rhizosphere	-	-	· · _ ·	-		
	osits (B3) (Non rive	erine)		e of Reduced	• • •			ayfish Burrov	()	
	Soil Cracks (B6)	(5)		ron Reduction		Solis (Co	·		ble on Aerial Ima	gery (C9)
	n Visible on Aerial I	magery (B		ck Surface (C				allow Aquita	. ,	
_ Water-St	tained Leaves (B9)		Other (E	xplain in Rem	arks)		LI FA	C-Neutral T	est (D5)	
ield Obser	vations:					1				
Surface Wat	er Present?	Yes 🗌 🛛 N	lo 🛛 🛛 Depth (inch	es): <u>0</u>						
	Present?	Yes 🗌 🛛 N	lo 🛛 🛛 Depth (inch	es):						
Vater Table		Yes 🗌 🛛 N	lo 🛛 🛛 Depth (inch	es):		Wetla	and Hydrology	Present?	Yes 🗌 🛛 No 🖂	
Saturation P	pillary fringe)		.,							
Saturation P includes ca		n gauge, n	onitoring well, aeria	al photos, prev	lous ins	pections),	if available: No	indicators		
Saturation P includes ca	corded Data (stream									
Saturation P includes ca Describe Re	corded Data (strean									
Saturation P includes ca	corded Data (stream									
Saturation P includes ca Describe Re	corded Data (strean									

WETLAND DETERMINATION DATA FORM - WESTERN MOUNTAINS VALLEYS & COAST

Project/Site: 37090 Kelso RD	City/County: Sandy/Clack	amas	Sampling Date: <u>10/10/2018</u>
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: P14/P21
Investigator(s): John McConnaughey, PWS# 2009	Section, Town	ship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): hillslope	Local relief (concave, co	nvex, none): <u>concave</u>	Slope (%): <u>1%</u>
Subregion (LRR): LRR-A Lat: 4	15.411500 L	ong: <u>-122.280760</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion:
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes 🗌 No 🖾 (If no	o, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Norm	al Circumstances" pres	ent? Yes 🛛 No 🗌
Are Vegetation, Soil, or Hydrology naturally pro	blematic? (If needed,	explain any answers in	Remarks.)
			• • • • • • •

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes □ No ⊠ Yes □ No ⊠	Is the Sampled Area within a Wetland?	Yes 🛛 BY BPJ
Remarks: In Track "A" on fringe of g	raded area. In the field put as P14	but realized that we had already	used that number so changed it to P21. This

area was determined to be a wetland in WD2000-0612. P21 is outside of the disturbed area for the Olson Road Widening project. Although the absence of hydrology and soil indicators, and the presence of Beaked Hazelnut which is usually associated with upland conditions, we decided to map it as wetland as the surrounding area and previous studies support this conclusion.

VEGETATION – Use scientific names of plants.

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	Absolute		Dominance Test worksheet:
Tree Stratum (Plot size: <u>/4/30' N</u>)		Species? Status	Number of Dominant Species
1. <u>Corylus cornuta</u>		Y FACU	That Are OBL, FACW, or FAC: 2 (A)
2			Total Number of Dominant
3			Species Across All Strata: <u>3</u> (B)
4			Percent of Dominant Species
Conting (Chryth Stratum (Dist size: 20! N))	10	= Total Cover	That Are OBL, FACW, or FAC: <u>66%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' N</u>)			Prevalence Index worksheet:
1			Total % Cover of: Multiply by:
2			
3			OBL species 0 x 1 = 0
4			FACW species 0 x 2 = 0
5			FAC species 0 x 3 = 0
Herb Stratum (Plot size: <u>10' N</u>)	0	= Total Cover	FACU species 0 x 4 = 0
	20	Y FAC	UPL species $\underline{0}$ x 5 = $\underline{0}$
1. <u>Rubus armeniacus</u>			Column Totals: 0 (A) 0 (B)
2. <u>Rosa gymnocarpa</u>	_		Prevalence Index = $B/A = 0$
3			Hydrophytic Vegetation Indicators:
4			\boxtimes Dominance Test is >50%
5			\square Prevalence Index is $\leq 3.0^{1}$
6			
7			Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8		= Total Cover	Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)			
1		· ·	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2		· <u> </u>	be present, unless disturbed of problematic.
		= Total Cover	Hydrophytic Vegetation
% Bare Ground in Herb Stratum % C	over of Biotic	Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: vegetation has been cut down.			

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Depth	Matri	х		Redox Featu	ires			
inches)	Color (moist)	%	Color (mois		Туре	e ¹ Loc ²	Texture	Remarks
-4	7.5YR3/3	100					Silt loam	
-12	7.5YR3/3	95	5YR4/6	5	С	М		
2-16	7.5YR3/2	90	5YR4/6	10	С	M	Silt clay I	loam
	1.011012		011(4/0					
	Concentration, D=[pated Sand G		² Location: PL=Pore Lining, M=Matrix.
-	Indicators: (App	plicable to a			oted.)			icators for Problematic Hydric Soils ³ :
Histosol	. ,		Sandy F					1 cm Muck (A9) (LRR C)
	pipedon (A2)			l Matrix (S6) Mucky Mineral ((E1)			2 cm Muck (A10) (LRR B)
Black H	en Sulfide (A4)			Bleyed Matrix (F	. ,			Reduced Vertic (F18) Red Parent Material (TF2)
	d Layers (A5) (LR	R C)		Matrix (F3)	~)			Other (Explain in Remarks)
	ick (A9) (LRR D)		· ·	Dark Surface (F	6)			
	d Below Dark Sur	face (A11)		d Dark Surface	'			
	ark Surface (A12)	· · ·		Depressions (F8			³ Ind	licators of hydrophytic vegetation and
Sandy N	Mucky Mineral (S1)					١	wetland hydrology must be present,
Sandy C	Gleyed Matrix (S4))					i	unless disturbed or problematic.
Restrictive	Layer (if present	:):						
Туре:			_					
Depth (ir Remarks: T	nches): he 4-12 inch layer	-	_	, however the n	natrix was	s not a chrom	-	Soil Present? Yes ☐ No ⊠ er, and so does not meet the standard for a
Depth (ir Remarks: T Jepleted ma	nches): he 4-12 inch layer atrix. GY	had redox c	_	however the n	natrix was	s not a chrom	-	
Depth (ir Remarks: T depleted ma DROLO Wetland Hy	nches): he 4-12 inch layer atrix. GY ydrology Indicato	had redox c	 concentrations		natrix was	s not a chrom	na 2 or lowe	er, and so does not meet the standard for a
Depth (ir Remarks: T depleted ma DROLOO Wetland Hy Primary Ind	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum)	had redox c	red; check all t	hat apply)	natrix was	s not a chrom	na 2 or lowe	er, and so does not meet the standard for a
Depth (ir Remarks: T depleted ma DROLOO Vetland Hy Primary Ind Surface	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum - Water (A1)	had redox c	red; check all t	hat apply) It Crust (B11)		s not a chrom	<u>na 2 or lowe</u> <u><u>S</u></u>	er, and so does not meet the standard for a <u>Secondary Indicators (2 or more required)</u>] Water Marks (B1) (Riverine)
Depth (ir Remarks: T depleted ma DROLOO Vetland Hy Primary Ind Surface High Wa	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum Water (A1) ater Table (A2)	had redox c	red; check all t	hat apply) It Crust (B11) tic Crust (B12)			<u>a</u> 2 or lowe	er, and so does not meet the standard for a <u>Secondary Indicators (2 or more required)</u>] Water Marks (B1) (Riverine)] Sediment Deposits (B2) (Riverine)
Depth (ir Remarks: T depleted ma DROLOO Wetland Hy Primary Ind Surface High Wa Saturati	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	had redox c	red; check all t Sancentrations	hat apply) It Crust (B11) tic Crust (B12) uatic Invertebra	ates (B13)	<u>a</u> 2 or lowe	er, and so does not meet the standard for a <u>Secondary Indicators (2 or more required)</u>] Water Marks (B1) (Riverine)] Sediment Deposits (B2) (Riverine)] Drift Deposits (B3) (Riverine)
Depth (ir Remarks: T depleted ma DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) (Non ri	had redox c ors: of one requir verine)	red; check all t Sancentrations	hat apply) It Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide	ates (B13 Odor (C1)	<u>s</u> <u>na</u> 2 or lowe <u><u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u></u>	er, and so does not meet the standard for a <u>Secondary Indicators (2 or more required)</u>] Water Marks (B1) (Riverine)] Sediment Deposits (B2) (Riverine)] Drift Deposits (B3) (Riverine)] Drainage Patterns (B10)
Depth (ir Remarks: T depleted ma DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime	hches): he 4-12 inch layer atrix. GY /drology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) /larks (B1) (Non ri nt Deposits (B2) (I	had redox c ors: of one requir verine) Non riverine	red; check all t Bit Bit Hy B) Corrections	hat apply) It Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide idized Rhizospi	ates (B13 Odor (C1 heres alo))) ng Living Ro	<u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u> <u>s</u>	er, and so does not meet the standard for a Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
Depth (ir Remarks: T depleted ma DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De	hches):he 4-12 inch layer atrix. GY /drology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) /larks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r	had redox c ors: of one requir verine) Non riverine	red: check all t Bid Bid Bid Bid Bid Bid Bid Bid Bid Bid	hat apply) It Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide idized Rhizospi esence of Redu	ates (B13 Odor (C1 heres alo iced Iron))) ng Living Roo (C4)	S	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Depth (ir Remarks: T Jepleted ma DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface	hches):he 4-12 inch layer atrix. GY /drology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6)	had redox c ors: of one requir verine) Non riverine iverine)	red: check all t Bid Bid Bid Bid Bid Bid Bid Bid Bid Bid	hat apply) It Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide idized Rhizospi esence of Redu cent Iron Redu	ates (B13 Odor (C1 heres alo iced Iron ction in T))) ng Living Roo (C4)	2 or lowe	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
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Depth (ir Remarks: T depleted ma Depleted	hches):he 4-12 inch layer atrix. GY /drology Indicator icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6)	had redox c rs: of one requir verine) Non riverine iverine) al Imagery (B	red: check all t red: check all t Sa Bio Hy Ox Pri Re 37)	hat apply) It Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide idized Rhizospi esence of Redu cent Iron Redu	ates (B13 Odor (C1 heres alo iced Iron ction in T e (C7)))) ng Living Ro (C4) illed Soils (C	a 2 or lowe	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
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Depth (ir Remarks: T depleted ma DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface Inundatio Water-S Field Obse Surface Wa Water Table Saturation F (includes ca	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria Stained Leaves (B5) rvations: tter Present? a Present? apillary fringe)	verine) Non riverine) al Imagery (B 9) Yes [] N Yes [] N		hat apply) It Crust (B11) otic Crust (B12) uatic Invertebra drogen Sulfide idized Rhizospi esence of Redu cent Iron Redu in Muck Surfac ner (Explain in I n (inches): n (inches): n (inches):	ates (B13 Odor (C1 heres alo iced Iron ction in T e (C7) Remarks)) ng Living Roi (C4) illed Soils (Cr)	a 2 or lowe	er, and so does not meet the standard for a Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) Sology Present? Yes No ⊠
Depth (ir Remarks: T depleted ma Depleted ma Depleted ma Depleted ma Definition Definiti	hches): he 4-12 inch layer atrix. GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria Stained Leaves (B5) rvations: tter Present? a Present? apillary fringe)	verine) Non riverine) al Imagery (B 9) Yes [] N Yes [] N		hat apply) It Crust (B11) otic Crust (B12) uatic Invertebra drogen Sulfide idized Rhizospi esence of Redu cent Iron Redu in Muck Surfac ner (Explain in I n (inches): n (inches): n (inches):	ates (B13 Odor (C1 heres alo iced Iron ction in T e (C7) Remarks)) ng Living Roi (C4) illed Soils (Cr)	a 2 or lowe	er, and so does not meet the standard for a Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) Sology Present? Yes No ⊠
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WETLAND DETERMINATION DATA FORM - WESTERN MOUNTAINS, VALLEYS & COAST

Project/Site: <u>37090 Kelso RD</u>		C	ity/Count	ty: <u>Sandy/Clac</u>	kamas	Sampling Date:10/10/2018
Applicant/Owner: <u>Joe Spaziani</u>					Sampling Point: <u>P22 (was P15)</u>	
nvestigator(s): <u>John McConnaughey, PWS# 2</u>				Section, Tow		
_andform (hillslope, terrace, etc.): <u>hillslope</u>						
Subregion (LRR): LRR-A						
Soil Map Unit Name: <u>Cazado silt Ioam, Cottrel</u>						
Are climatic / hydrologic conditions on the site						
Are Vegetation, Soil, or Hydrolog					mal Circumstances" pre	
Are Vegetation, Soil, or Hydrolog					l, explain any answers i	
SUMMARY OF FINDINGS – Attach						
				•	·	,
, , , , ,	es⊠ No 🗌 es⊠ No 🗌		w	the Sampled ithin a Wetlan	nd? Yes 🛛	No 🗌
5	es 🗌 No 🖾			Determined w dicators.	etland by BPJ in spite o	of weak vegetation and hydrology
Remarks: In the wetland mitigation area. L Appears as P22 on the maps. Vegetation w problematic, but we are calling it a wetland.	ath was labeled vas disturbed by	"P15", but	we renui	mbered the plo		
/EGETATION – Use scientific nam	es of plants					
Tree Stratum (Plot size: <u>30' N</u>)				nt Indicator	Dominance Test wor	
1. Alnus rubra				FAC	Number of Dominant That Are OBL_FACW	Species /, or FAC: 2 (A)
2. Acer macrophylum						
3					Total Number of Dom Species Across All St	
4						、 ,
		<u>30</u>	= Tota	Cover	Percent of Dominant That Are OBL, FACW	Species /, or FAC: <u>66%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' N</u>)						
1. <u>Rubus americanus</u>				FAC	Prevalence Index wo	
2. <u>Rosa gymnocarpa</u>						<u> </u>
3						x = 0
4 5						x 3 =
··		0			-	x 4 =
Herb Stratum (Plot size: <u>10' N</u>)		<u> </u>		0010.		x 5 = <u>0</u>
1						(A) (B)
2						
3					Prevalence Inde	
4					Hydrophytic Vegetat	
5					Dominance Test i	
6					Prevalence Index Morphological Adv	aptations ¹ (Provide supporting
/						ks or on a separate sheet)
8		05	- Total	Caucar	Problematic Hydro	ophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)		95	= Total	Cover		
1						oil and wetland hydrology must
2					be present, unless dis	sturbed or problematic.
		125		Cover	Hydrophytic Vegetation	
% Bare Ground in Herb Stratum		r of Biotic (Crust <u>0%</u>		Present? Y	′es 🛛 No 🗌
Remarks: vegetation has been cut in some	areas.					
IS Army Corps of Engineers						

Depth	Matrix			Redox Featu	103					
inches)	Color (moist)	%	Color (moist) %	Type ¹	Loc ²	Textu	re	Re	marks
-6	10YR2/2	100					Silt loa	Im		
-10	7.5YR3/2	95	5YR4/6	5	С	М				
0-16	7.5YR4/4	60								
0-10							0:14 1			
	<u>7.5YR3/2</u>	40					<u>Slity ci</u>	ay loam		
	Concentration, D=D					ated Sand C				Lining, M=Matrix.
-	Indicators: (App	icable to a			oted.)					atic Hydric Soils ³ :
Histosol	. ,		Sandy F				_	_	Muck (A9) (LRI	
_ Histic E Black H	pipedon (A2)		Stripped	Matrix (S6) /lucky Mineral ((E1)				Muck (A10) (LF ced Vertic (F18	-
	en Sulfide (A4)		-	ileyed Matrix (F					Parent Material (,
	d Layers (A5) (LRF	C)			7				(Explain in Ren	,
	ick (A9) (LRR D)		Redox D	ark Surface (F	6)					,
	d Below Dark Surfa	ice (A11)		d Dark Surface	. ,					
	ark Surface (A12)		Redox D	epressions (F8	8)		3			c vegetation and
	Mucky Mineral (S1)								nd hydrology mu s disturbed or pr	
	Gleyed Matrix (S4)							uniesa		oblematic.
Restrictive	Laver (if present)									
_	Layer (if present)									
Type: Depth (ir	Layer (if present)		_				Hydr	ic Soil ∣	Present? Ye	s 🛛 No 🗌
Type: Depth (ir Remarks: M	nches):		_				Hydr	ic Soil ∣	Present? Ye	s 🛛 No 🗌
Type: Depth (ir Remarks: M DROLOO	nches): lixed matrix below ⁻ GY /drology Indicator	10", redox 6	<u>-</u> 3-10				Hydr			
Type: Depth (ir Remarks: M DROLOO Vetland Hy Primary Ind	inches): lixed matrix below GY rdrology Indicator icators (minimum o	10", redox 6	 				Hydr	Secon	dary Indicators	(2 or more required)
Type: Depth (ir Remarks: M DROLO(Wetland Hy Primary Ind Surface	inches): lixed matrix below f GY /drology Indicator icators (minimum o Water (A1)	10", redox 6		t Crust (B11)			Hydr	Secon	dary Indicators ater Marks (B1)	(<u>2 or more required)</u> (Riverine)
Type: Depth (ir Remarks: M DROLOO Vetland Hy Primary Ind Surface High Wa	aches): lixed matrix below * GY /drology Indicator icators (minimum o Water (A1) ater Table (A2)	10", redox 6		t Crust (B11) tic Crust (B12)			Hydr	Secon	<u>dary Indicators</u> ater Marks (B1) diment Deposit:	(<u>2 or more required)</u> (Riverine) s (B2) (Riverine)
Type: Depth (ir Remarks: M DROLOO Vetland Hy Primary Ind Surface High Wa Saturati	The structure of the st	10", redox 6 s: f one requir	 5-10 red: check all ti Sal Bic Aq	t Crust (B11) tic Crust (B12) uatic Invertebra	ates (B13)		Hydr	Secon	<u>dary Indicators</u> ater Marks (B1) diment Deposits ft Deposits (B3)	(<u>2 or more required)</u> (Riverine) s (B2) (Riverine)) (Riverine)
Type: Depth (ir Remarks: M DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M	GY drology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv	10", redox 6 s: f one requir erine)	- 5-10 red; check all th Sal Bio Aq Hyo	t Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide	ates (B13) Odor (C1))		Secon	<u>dary Indicators</u> ater Marks (B1) diment Deposits ift Deposits (B3) ainage Patterns	(2 or more required) (Riverine) s (B2) (Riverine)) (Riverine) (B10)
Type: Depth (ir Remarks: M DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime	The second secon	10", redox 6 s: f one requir erine) on riverine		t Crust (B11) tic Crust (B12) uatic Invertebra drogen Sulfide dized Rhizospl	ates (B13) Odor (C1) heres alon	ng Living Ro		Secon Wa Se Dri Dra Dra	dary Indicators ater Marks (B1) diment Deposits ift Deposits (B3) ainage Patterns y-Season Water	(2 or more required) (Riverine) s (B2) (Riverine) (Riverine) (B10) r Table (C2)
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WETLAND DETERMINATION DATA FORM - WESTERN MOUNTAINS, VALLEYS & COAST

Project/Site: <u>37090 Kelso RD</u>	City/County:	Sandy/Clackamas	Sampling Date:10/10/2018			
Applicant/Owner: <u>Joe Spaziani</u>		State: OR	Sampling Point: P23			
Investigator(s): John McConnaughey, PWS# 2009	S	ection, Township, Range: <u>T2S R4E</u>	S11			
Landform (hillslope, terrace, etc.): <u>hillslope</u>	Local relief	(concave, convex, none): <u>concave</u>	Slope (%): <u>4%</u>			
Subregion (LRR): <u>LRR-A</u>	Lat: <u>45.24978</u>	Long: <u>-122.16853</u>	Datum:			
Soil Map Unit Name: <u>Cazado silt loam, Cottrell silty clay lo</u>	bam	NWI classifica	ation:			
Are climatic / hydrologic conditions on the site typical for the	his time of year? Yes 🗌	No 🛛 (If no, explain in Remarks.))			
Are Vegetation, Soil, or Hydrology si	gnificantly disturbed?	Are "Normal Circumstances" pre-	sent? Yes 🛛 No 🗌			
Are Vegetation, Soil, or Hydrology na	turally problematic?	(If needed, explain any answers i	n Remarks.)			
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.						
Hydrophytic Vegetation Present? Yes ⊠ No Hydric Soil Present? Yes ⊠ No Wetland Hydrology Present? Yes ⊠ No	u is the within	e Sampled Area in a Wetland? Yes ⊠	No 🗌			

Remarks: A constructed shallow pond area for a wetland mitigation project.

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' N</u>)		Species? Status	Number of Dominant Species
1. <u>Alnus rubra</u>		Y FAC	That Are OBL, FACW, or FAC: 2 (A)
2		·	Total Number of Dominant
3			Species Across All Strata: <u>2</u> (B)
4		<u> </u>	Demonstrat Demoissant Oracian
		= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' N</u>)			
1		·	Prevalence Index worksheet:
2		·	Total % Cover of: Multiply by:
3			OBL species <u>0</u> x 1 = <u>0</u>
4			FACW species $\underline{0}$ x 2 = $\underline{0}$
5			FAC species <u>0</u> x 3 = <u>0</u>
		= Total Cover	FACU species 0 x 4 = 0
Herb Stratum (Plot size: 30' N)		-	UPL species 0 x 5 = 0
1		·	Column Totals: 0 (A) 0 (B)
2. Juncus effusus			
3			Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			☑ Dominance Test is >50%
6			□ Prevalence Index is ≤3.0 ¹
			Morphological Adaptations ¹ (Provide supporting
7			data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	65%	= Total Cover	
1,			¹ Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
2	50		Hydrophytic
	<u>50</u>		Vegetation
% Bare Ground in Herb Stratum 50% % Co	ver of Biotic	Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: Alnus rubra on the fringe of ponded wetland.			

US Army Corps of Engineers

inches) Color (moist) %	<u>Redox Features</u> Color (moist) % Type ¹	Loc ² Textur	e Remarks
NABLE TO COLLECT SOIL SAMPLE	DUE TO INUNDATION OVER MUDDY SOILS	S	
Sype: C=Concentration, D=Depletion, ydric Soil Indicators: (Applicable to	RM=Reduced Matrix, CS=Covered or Coated		² Location: PL=Pore Lining, M=Matrix. dicators for Problematic Hydric Soils ³ :
] Histosol (A1)	Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
] Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)		Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)		Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	_	
Depleted Below Dark Surface (A11)			
Thick Dark Surface (A12)	Redox Depressions (F8)	³ lı	ndicators of hydrophytic vegetation and
] Sandy Mucky Mineral (S1)			wetland hydrology must be present,
Sandy Gleyed Matrix (S4)			unless disturbed or problematic.
estrictive Layer (if present):			
Туре:			
Depth (inches):		Hydri	c Soil Present? 🛛 Yes 🖂 No 🗌
emarks: Water was 4" deep and soil sa	amples were difficult to get due to the muddine	ess of the soil. S	oil presumed to be hydric.
Vetland Hydrology Indicators: rimary Indicators (minimum of one requ	uired: check all that apply)		Secondary Indicators (2 or more required)
_			
Surface Water (A1)	Salt Crust (B11)		Water Marks (B1) (Riverine)
High Water Table (A2)	Biotic Crust (B12)		Sediment Deposits (B2) (Riverine)
Saturation (A3)	Aquatic Invertebrates (B13)		Drift Deposits (B3) (Riverine)
Water Marks (B1) (Non riverine)	Hydrogen Sulfide Odor (C1)		Drainage Patterns (B10)
Sediment Deposits (B2) (Non riveri	ne) 🔲 Oxidized Rhizospheres along Liv	ving Roots (C3)	Dry-Season Water Table (C2)
Drift Deposits (B3) (Non riverine)	Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
Surface Soil Cracks (B6)	Recent Iron Reduction in Tilled S	Soils (C6)	Saturation Visible on Aerial Imagery (C9)
Inundation Visible on Aerial Imagery	(B7) Thin Muck Surface (C7)		Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Other (Explain in Remarks)		FAC-Neutral Test (D5)
		T	
ield Observations:		1	
ield Observations: urface Water Present? Yes 🕅	No Depth (inches): 4"		
urface Water Present? Yes 🛛	No Depth (inches): <u>4"</u>		
urface Water Present? Yes ⊠ Vater Table Present? Yes □	No Depth (inches):	Wotland Luc	Irology Present? Vec 🕅 No 🗖
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APPE	C - Gro	und Level	hotogra	phs:
				•

Photos of Wetland "A" and areas covered by WD2017-0410 are removed from this revision.

Photo 1. REMOVED Wetland "A" data plots P1 Upland (left), and P2 Wetland (right). The blackberries had been recently mowed to give surveyors access. The wetland determination was based on soils and hydrology. ETC Photo 4/28/2017.

Photo 2. REMOVED Lower portion of Wetland "A" showing excessive algal growth due to fertilizers washed down from farms and nurseries upslope. ETC Photo 4/28/2017

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Photo 3. Wetland "B", a small depressional wetland in a forested area adjacent to Stream 2 in a forested area near where Stream 2 enters the subject property on the East border. ETC Photo 4/28/2017



Photo 4, (left) and 5 (right). Wetland "C". Photo 4 looks down toward the stream, and 5 looks up from the stream. P18 had dry non-hydric soils, and saturated hydric soils were found at P17 which is slightly lower and closer to the stream.

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Photo 7 Track "E" mitigation area in April 2007. Olson Road had not been constructed, it would be later be built along the far side of the pond. ETC Photo 4/4/2007.

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Photo 9 - Access road decommissioned January 2018, and erosion control measures complete.

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APPENDIX D - Sensitive Area Certification:

Fish Presence:

No fish are thought to be present on the subject property, nor would they be expected.

Endangered Species:

No endangered species of plants or animals were observed or reported.

Critical Habitat Features:

The property was surveyed for the following critical habitat features. Not all of these features are considered rare or critical by the City Sandy:

Talus slopes – none
Caves, cliffs, crevasses, rock outcrops – none
Large oak trees, or oak groves or oak savanna – none
Snags – Several in the South forested area.
Large woody debris – Several large downed trees and logs, particularly in the forested area near Stream 2. The forested area in the South part of the lot had a few fallen trees and logs, but constant with 2nd growth timber areas there were far fewer downed trees than older stands of trees.
Springs, seeps - None.
Deep water habitat – None
Vernal pool wetlands – None.
Old growth forest – None.
Wetlands – Described above.
Fish spawning or rearing habitat – none. It is believed that there is no fish access to this property.

APPENDIX E - WD2000-0612

8 PAGES FOLLOW THIS PAGE

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Division of State Lands

775 Summer Street NE, Suite 100 Salem, OR 97301-1279 (503) 378-3805 FAX (503) 378-4844 http://statelands.dsl.state.or.us

State Land Board

John A. Kitzhaber Governor

Bill Bradbury Secretary of State

Randall Edwards State Treasurer

Re: Wetland Delineation Report for Sandy Bluff 3 Subdivision, Sandy Clackamas County; T2S R4E Sec.11 Tax Lot 800; Det. #00-0612

Dear Mr. Spaziano:

August 14, 2001

Joe Spaziano

Great American Development

16500 SE Forsythe Road

Oregon City, OR 97045

I have reviewed the wetland delineation report prepared by David Waterman of ETC consultants for the project referenced above. Based on the information presented in the report, I concur with the wetland and waterway boundaries as mapped in Figure 1 of the report. These wetlands and waterways are subject to the permit requirements of the state Removal-Fill Law. A state permit is required for fill or excavation of 50 cubic yards or more in a wetland area or below the top of bank of a waterway.

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will review the report and make a determination of jurisdiction for purposes of the Clean Water Act at the time that a permit application is submitted. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

In evaluating a permit application, our agency will first consider whether there is an analysis of alternatives that avoid or minimize wetland or waterway impacts. State law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Division staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. Should additional information be brought to our attention or should site conditions change, we would consider the new information and re-evaluate the site and our jurisdictional determination as needed. Thank you for your report. I apologize for the delay in reviewing it.

k:/wetlands/dama/detietters/00-0612.doc

APPENDIX E

Site TCD on the City of Sandy Local Wetland Inventory should now be revised or annotated to show these more accurate wetland boundaries.

Sincerely,

feld ang

Dana Field Wetlands Planner

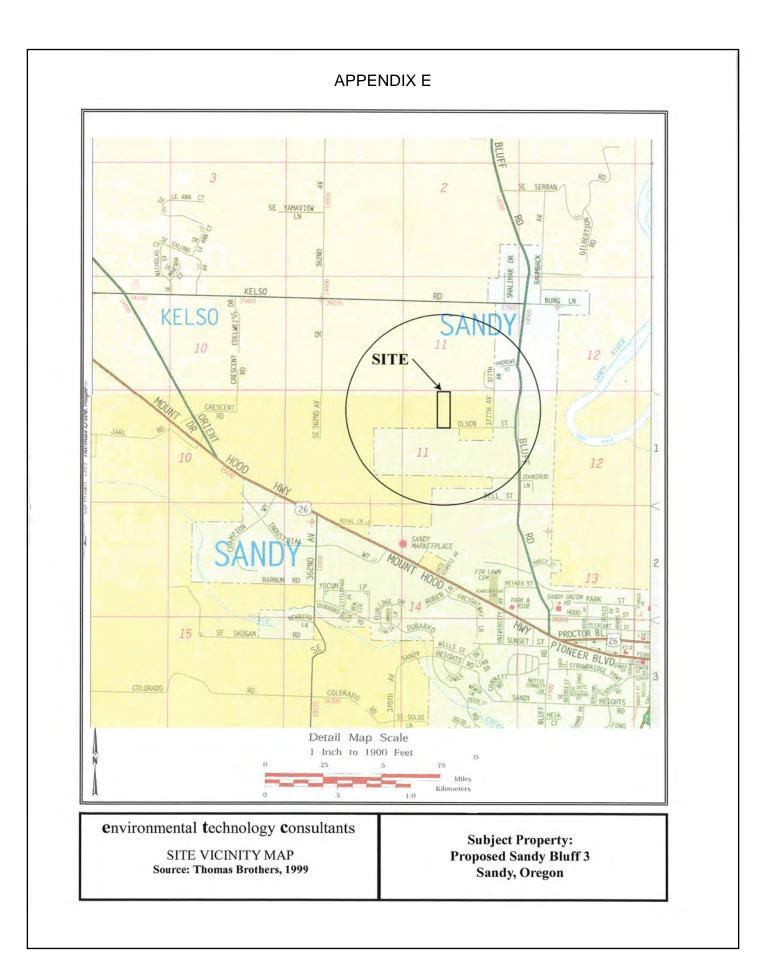
Approved John E. Lilly Assistant Director

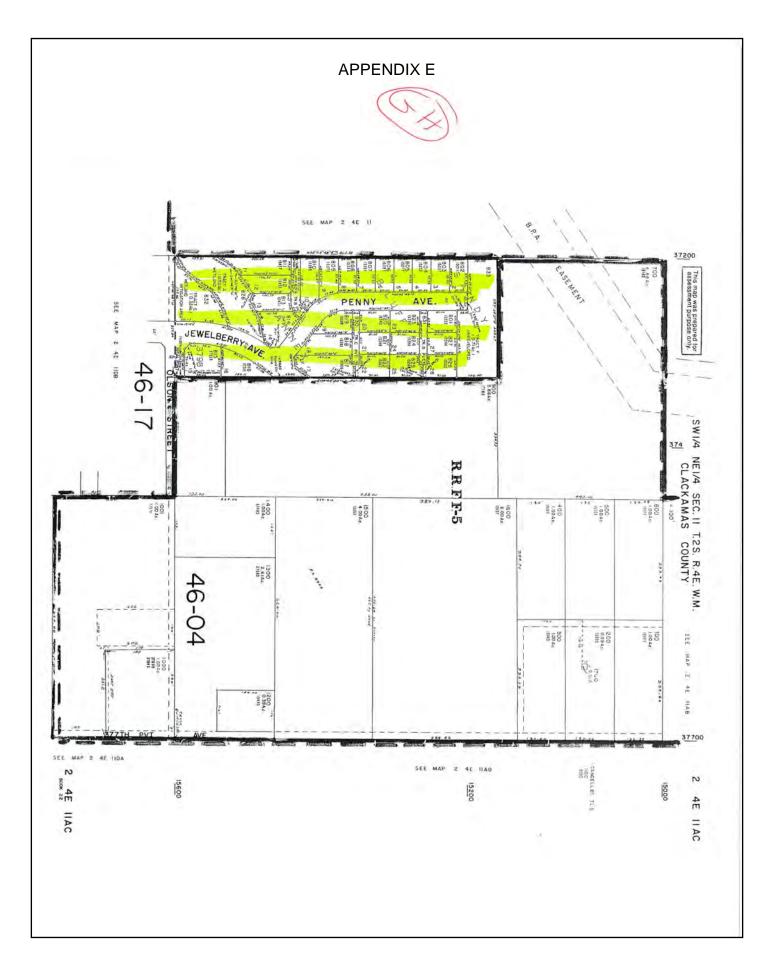
cc: David Waterman, E.T.C. City of Sandy Planning Department Jim Goudzwaard, Corps of Engineers Steve Moser, DSL

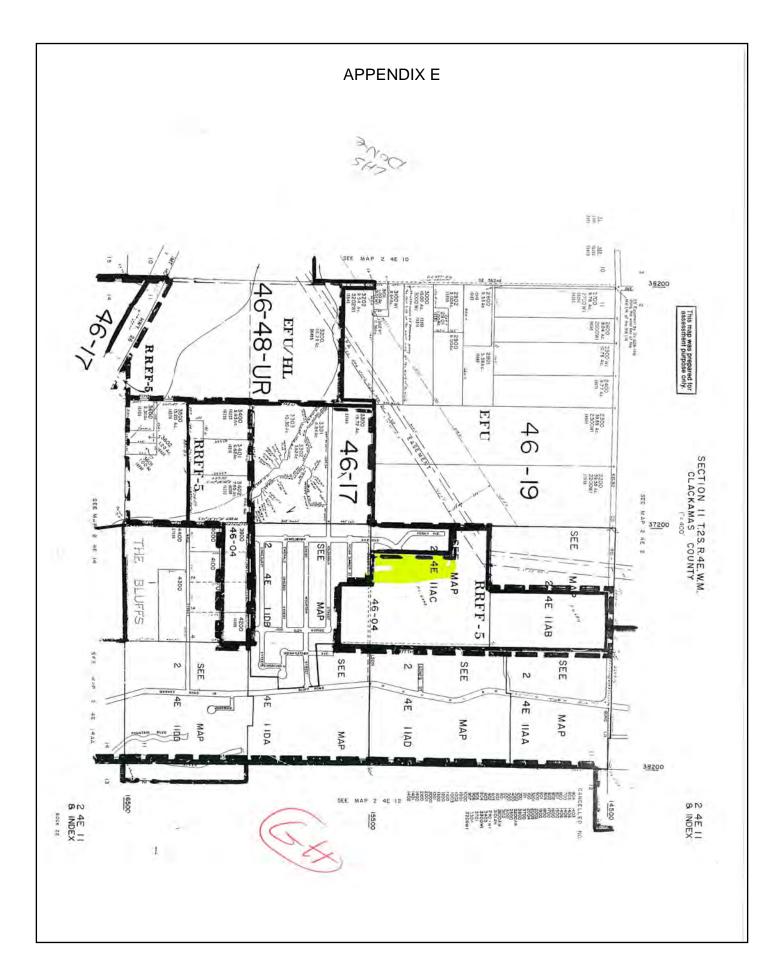
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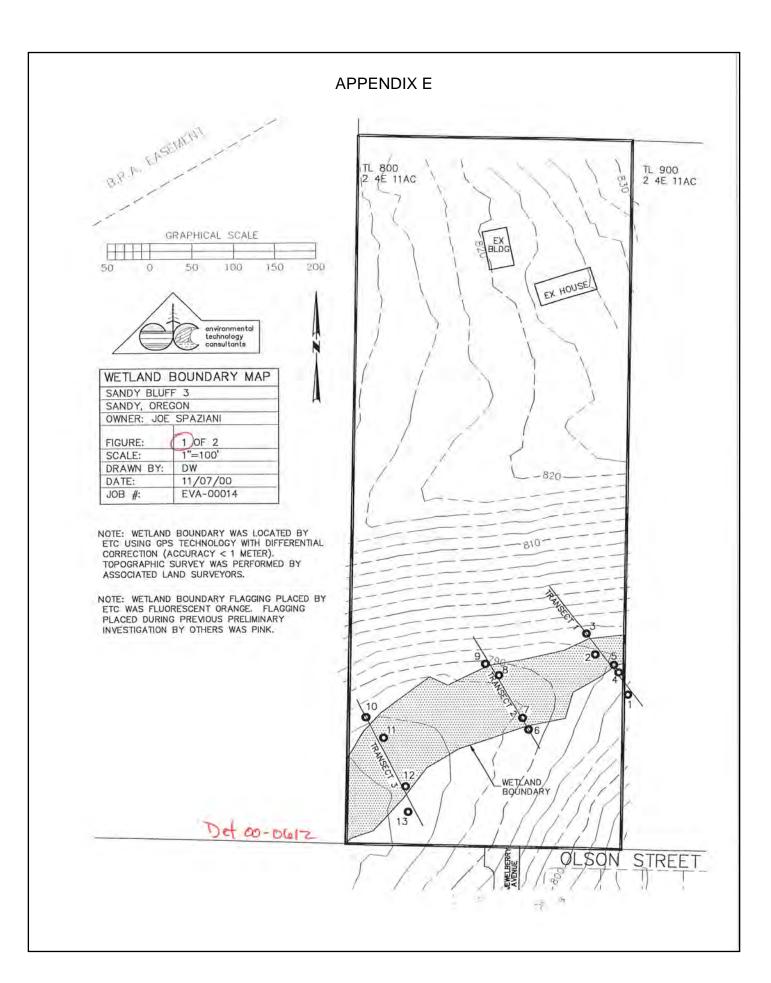
(This form must be attached to reports submitted to the Division for review and approval)

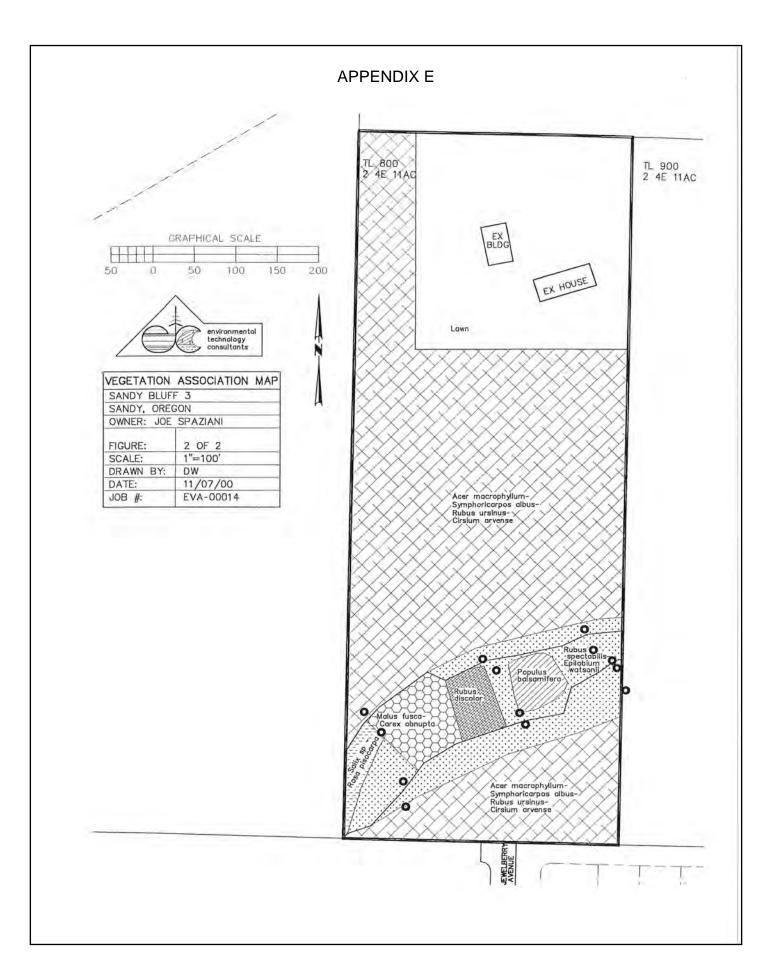
Attn.: Wetl 775 Summe Salem, C	vision of State ands Program er Street NE, S Dregon 97301- 3) 378 - 3805	n Leader Suite 100		
Applicant Owner Name, Firm and Address: Great American Development 16500 SE Forsythe Road Oregon City, OR 97045			e # (50) (optional)	3) 655-6494
Authorized Agent:		ness Phor		
Name and Address: Joe Spaziono	Hom FAX	ie Phone# #		-
The information contained in the attached report is true authorizes the Division to conduct a site visit to confirm Landowner, Date: 12-13.00	the information or Authoriz Date:	provided		. My signature below
Project Name: Sandy Bluff 3	Latitude: 45	0.04141 ²²	Longitude: 122	16147
Proposed Use: ~32 lot single family residential subdivision	Tax Map #	24 41	Tax Lot # 800	10 47
Project Street Address (or other descriptive location): ~1/4 mile west of Bluff Road at Olson Street	Township 2S	Range 4E	Section 11	QQ AC
City: near Sandy County: Clackamas	Waterway:			River Mile: N/A
2400 Broadway Vancouver, WA 98663-3229 Primary Contact for report review is ⊠ Consultant [Date of Delineation Report: Wetland/Waters Present?	E-ma	ail address wner 🔲 /	696 - 4089 etc@teleport Authorized Agent 6.67 ac.	
11/20/00 Xes No	Total Wet		ge: 0.70 ac.	
Is any of the property crop land? If yes, is applicant /Owner a USDA Program Participant? If yes, has a NRCS Form 026 been completed for the sil Is the site zoned Exclusive Farm Use? Does site show as wetland on Local Wetlands Inventory Has a previous Delineation/Application been made for p If yes, Division of State Lands # NWI Quad Name(s): Sandy Site Zoning: Residential, 10,000 sq ft	re? ?	Yes		Unknown
For O	ffice Use Only	y		
Corps Project Mgr.: DSL Wet	land Mgr.:	ER		D# 2000 - 06/2
Date Delineation Received://	DSL Project	A STREET		ps #
Date Review Completed: / /	Rolated C	no Number	r(s):	











APPENDIX F - WD2017-0410

7 PAGES FOLLOW THIS PAGE

WD2018-0656 for the Olson Road project www.etcEnvironmental.net Page 20/20 360-258-7154 APPENDIX F



December 4, 2017

Great American Development Attn: Joe Spaziani 16287 S. Forsythe Road Oregon City, OR 97045

Re: WD #2017-0410 Wetland Delineation Report for a Proposed Subdivision Development, Clackamas County; T 2S R 4E S 11 Portion of TL 2200;

Department of State Lands

775 Summer Street NE, Suite 100 Salem, OR 97301-1279 (503) 986-5200 FAX (503) 378-4844 www.oregon.gov/dsl State Land Board

> Kate Brown Governor

Dennis Richardson Secretary of State

> Tobias Read State Treasurer

Dear Mr. Spaziani:

The Department of State Lands has reviewed the wetland delineation report prepared by Environmental Technology Consultants for the site referenced above. Please note that the study area includes only a portion of the tax lot described above (see the attached maps). Based upon the information presented in the report and additional information submitted upon request, we concur with the wetland boundary as mapped in Figures 6A and 6B of the report. Within the study area, one wetland was identified, totaling approximately 0.127 acres. The wetland is subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands.

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will review the report and make a determination of jurisdiction for purposes of the Clean Water Act at the time that a permit application is submitted. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete

APPENDIX F

permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5232 if you have any questions.

Sincerely,

Ne

Peter Ryan, PWS Jurisdiction Coordinator

Approved by

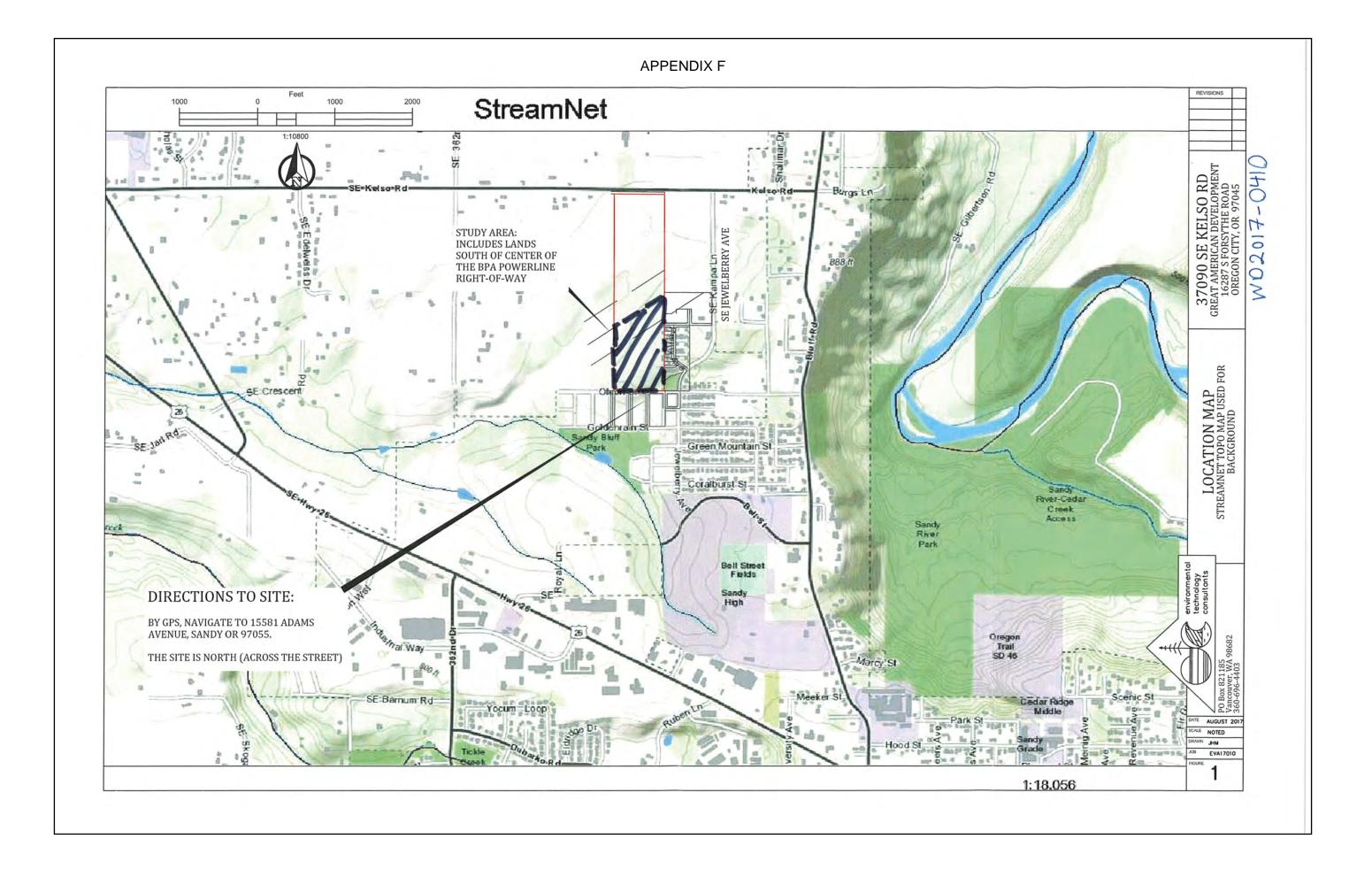
Kathy Verble, CPSS Aquatic Resource Specialist

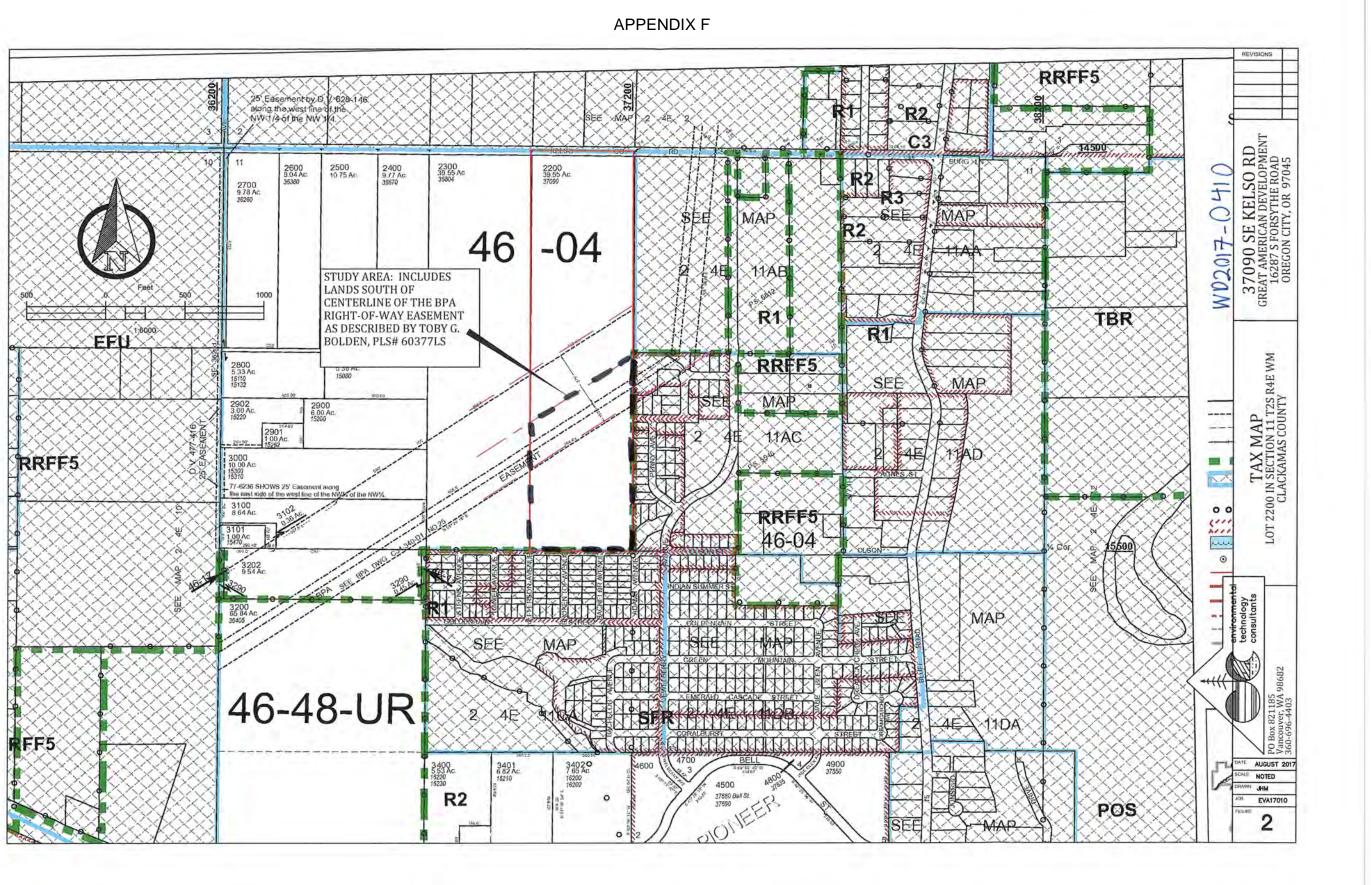
Enclosures

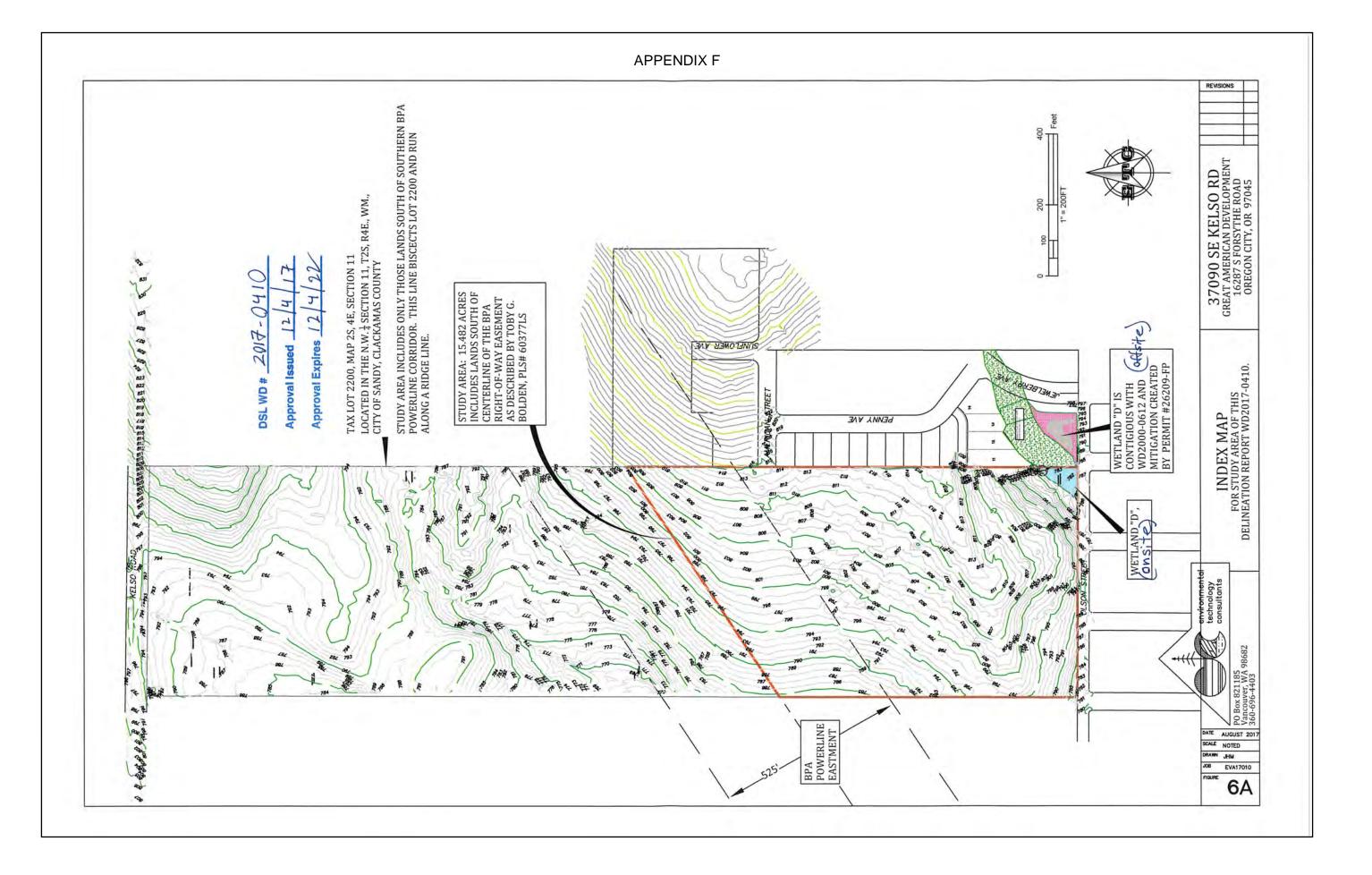
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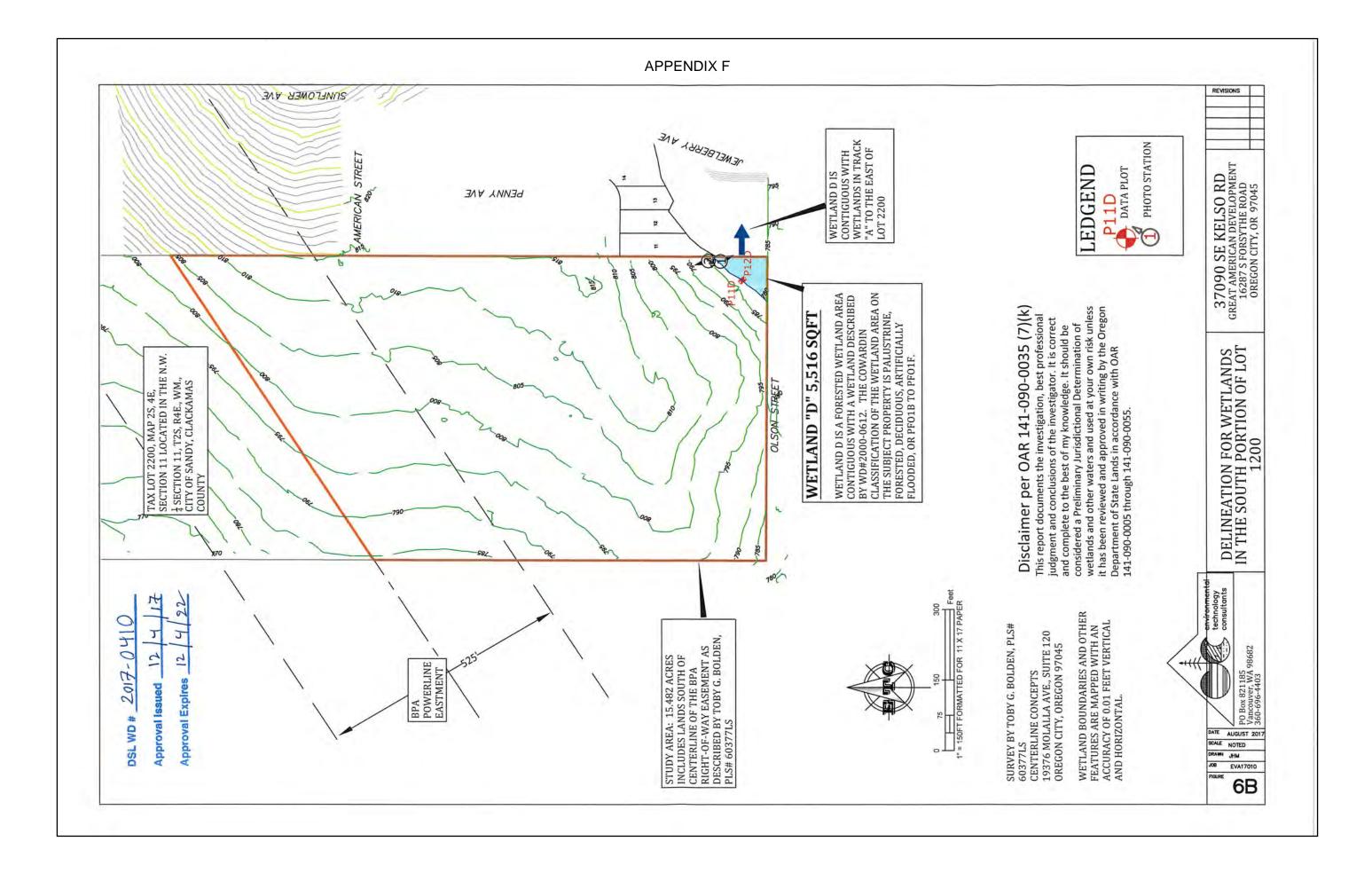
 John McConnaughey, Environmental Technology Consultants Clackamas County Planning Department Dominic Yballe, Corps of Engineers Anita Huffman, DSL

includes a single PDF file of the report cover form and report (min State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97 and report may be e-mailed to Wetland_Delineation@dsl.state.or instructions on how to access the file from your ftp or other file sha check payable to the Oregon Department of State Lands. To pay	7301-1279. A single PDF attachment of the completed cover from or.us. For submittal of PDF files larger than 10 MB, e-mail aring website. Fees can be paid by check or credit card. Make the the fee by credit card, call 503-986-5200.
Applicant Owner Name, Firm and Address: Great American Development, Joe Spaziani 16287 S. Forsythe Road Oregon City, Oregon, 97045	Business phone # 503-860-2501 Mobile phone # E-mail: joeandpenny@hotmail.com
Authorized Legal Agent, Name and Address: Environmental Technology Consultants 375 Portland Ave, Gladstone, OR 97027	Business phone # 360-696-4403 Mobile phone # 503-580-2465 E-mail: JohnM@etcEnvironmental.net
I either own the property described below or I have legal authority property for the purpose of confirming the information in the repor Typed/Printed Name: <u>Joe Spaziani</u> Date: April 20, 2017 Special instructions regarding site	Signature: A Restation
	format for lat/long of site or start & and points of linear project)
Project Name: 37090 SE Kelso Road	Latitude: N-45.245314 Longitude: W -122.165512
Proposed Use: New Subdivision	Tax Map # 24E1102200 45.411972 -122.282.006
Project Street Address (or other descriptive location): 37090 SE Kelso Road	Township T2S Range R4E Section 2 // QQ AC Tax Lot(s) 00653705- 2200 portion
City: Boring, OR County: Clackamas	Waterway: NONE River Mile: NWI Quad(s):
John McConnaughey, PWS & Annakate Martin NRS Environmental Technology Consultants 375 Portland Ave, Gladstone, OR 97027 The information and conclusions on this form and in the atta Consultant Signature:	Mobile phone # 503-580-2465 E-mail: JohnM@etcEnvironmental.net ached report are true and correct to the best of my knowledge. Date: September, 2017
Primary Contact for report review and site access is	
	a size: 15.428 acres Total Wetland Acreage: 0.127 acres
Check Box Below if Applicable:	Fees: \$419 (2017)
R-F permit application submitted	Fee payment submitted \$419
Mitigation bank site	Fee (\$100) for resubmittal of rejected report
] Wetland restoration/enhancement project (not mitigation)] Industrial Land Certification Program Site] Reissuance of a recently expired delineation) No fee for request for reissuance of an expired report
revious DSL # Expiration date	
other Information: las previous delineation/application been made on parcel?	
oes LWI, if any, show wetland or waters on parcel?	ice use only
For Off	1317 DSI WD # 2017-040
For Off SL Reviewer:R Fee Paid Date:0	_1_3_1]7 DSL WD # 2017-0410 oject # DSL Site #

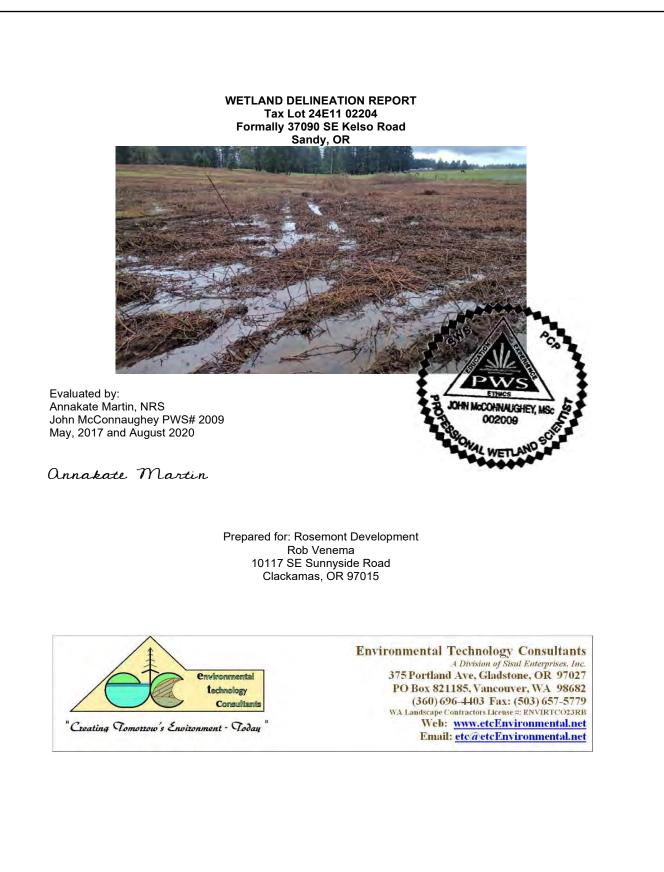








A wetland delineation report submittal is not "complete" unless that are submitted. Attach this form to the front of an unbound report ncludes a single PDF file of the report cover form and report (m State Lands, 775 Summer Street NE, Suite 100, Salem, OR S and report may be e-mailed to Wetland_Delineation@dsl.state nstructions on how to access the file from your ftp or other file s check payable to the Oregon Department of State Lands. To pa	submitted to the Department of State Lands for review and approval. he fully completed and signed report cover form and the required fee t or include a hard copy of the completed form with a CD/DVD that inimum 300 dpi resolution) and submit to: Oregon Department of 97301-1279. A single PDF attachment of the completed cover from e.or.us . For submittal of PDF files larger than 10 MB, e-mail haring website. Fees can be paid by check or credit card. Make the ay the fee by credit card, call 503-986-5200.			
Applicant Owner Name, Firm and Address:	Business phone # 503-351-4747			
Rosemont Development 10117 SE Sunnyside Road	Mobile phone #			
Clackamas, Oregon, 97015	E-mail: rosemontdevelopment@gmail.com			
Authorized Legal Agent, Name and Address: Environmental Technology Consultants	Business phone # 360-696-4403 Mobile phone # 360-984-8767			
375 Portland Ave, Gladstone, OR 97027	E-mail: AnnakateM@etcEnvironmental.net			
property for the purpose of confirming the information in the rep Typed/Printed Name: Annakate Martin	Signature: <u>Annabate</u> , Martin			
Date: August 2020 Special instructions regarding site				
	e format for lat/long of site or start & end points of linear project)			
Project Name: 37090 SE Kelso Road Proposed Use: SUBDIVISION, SINGLE FAMILY HOME:	Latitude: N 45.417907 Longitude: W -122.2831 S Tax Map # 24E11 Lot 24E11 02204			
Proposed Use. SUBDIVISION, SINGLE PAIVILT HOWE	Parcel Number 05034843			
Project Street Address (or other descriptive location): No Situs Address	Township T2S Range R4E Section 11 QQ			
(Formally known as 37090 SE Kelso Road)	Tax Lot(s) 24E1102204			
City: Sandy, OR County: Clackamas	Waterway: No name River Mile: NWI Quad(s): Sandy, Oregon			
	Delineation Information			
Wetland Consultant Name, Firm and Address: John McConnaughey, PWS & Annakate Martin NRS Environmental Technology Consultants 375 Portland Ave, Gladstone, OR 97027	Phone # 360-696-4403 Mobile phone # 360-984-8767 E-mail: <u>AnnakateM@etcEnvironmental.net</u> JohnM@etcEnvironmental.net			
	attached report are true and correct to the best of my knowledge. Date: May, 2017 updated April 2020			
Primary Contact for report review and site access is	Consultant			
	Area size: 2.69 acres Total Wetland Acreage: 1.69 AC			
Check Box Below if Applicable:	Fees: \$466 (2020)			
R-F permit application	Fee payment submitted \$466			
Mitigation bank site	Fee (\$100) for resubmittal of rejected report			
Wetland restoration/enhancement project (not mitigati	ion)			
Industrial Land Certification Program Site	report			
Reissuance of a recently expired delineation				
Previous DSL # Expiration date				
Other Information:	Y N			
Has previous delineation/application been made on parce				
Does LWI, if any, show wetland or waters on parcel?				
	Office Use Only			
DSL Reviewer: Fee Paid Date: _				
	Project # DSL Site #			
Scanned: Final Scan: DSL	WN # DSL App. #			



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Cover Photo.

Photo of Wetland A shortly after blackberries were mowed, looking west at the first wetland investigation. ETC Photo 3/13/2017

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INTRODUCTION

This report delineates the wetlands and waterways of lot 24E11 02204. There used to be a house on this lot with the address of 37090 SE Kelso Road, Sandy Oregon. The house and address no longer exist. Lot 2204 is the northern portion of a larger piece of property known as lot 2200 that was subdivided in the process of building the Sandy Woods subdivision.

Originally ETC prepared a delineation report covering the entire lot 2200 (37090 SE Kelso Road). The applicant then decided only to develop the southern portion of the property and requested that ETC remove the North portion of the property from the study area. Accordingly, ETC authored and submitted a report for areas South of the BPA powerline ROW which bisected lot 2200. That delineation was numbered WD2017-0410 and was concurred with by DSL for Joe Spaziani.

In the process of permitting the Sandy Woods subdivision, the City of Sandy required the applicant to widen Olson Road, and this necessitated fills to a wetland area known as Track "A" and Track "E". DSL also required the applicant to delineate the remainder of the property due to the usage of an access road coming in from Kelso Road. Accordingly, ETC authored and submitted a report numbered WD2018-0656 that included the remainder of lot 2200 and Tracks "A" and "E". In the course of reviewing WD2018-0656, DSL determined that there may be errors in the wetland boundary plots that defined what we are calling Wetland "A" of lot 2200, (not to be confused the wetland in Track "A" next to Olson Road). Because the project at that time did not impact Wetland "A", we elected to remove the area from the study boundary of WD2018-0656. The report was subsequently concurred with by DSL.

The applicant sold the property to Rosemont development and now is planning a subdivision development for the areas North of the BPA Powerline on lots 2204 and 2202. Lot 2203 is a conservation track for a stream and small wetland. Lots 2202 and 2203 were included in WD2018-0656.

The study area of WD2018-0656 included the upland portions of lot 2204, which included the former house and some farmed areas.

In conversations with DSL, ETC requested guidance on defining the study boundary for this report. We requested that it include the entire lot 2204 in order to make a clean report with a study boundary defined by lot lines. DSL disagreed and instructed ETC to include only those portions of lot 2204 that were not previously delineated by WD2018-0656. This is the reason the study boundary in this report bisects lot 2204 close to the Wetland "A" boundary.

Lot 2205 is a sliver of land between the old western boundary of the original lot 2200, and a fence separating lot 2200 and lot 2300. Rather than move the fence or argue with the owner of lot 2300 over this land, the applicant has deeded lot 2205 to the owner of lot 2300. For this reason, lot 2205 is not included in any of the delineation studies mentioned in this report.

The ditches of Kelso Road that are in the Kelso Road ROW are not included in this report. Water from these ditches is the primary source of water that creates wetland "A".

Study Area: This report includes only those portions of lot 2204 not previously delineated by WD2018-0656, basically an area containing a sloped wetland area we are calling Wetland "A". Some of the field work was done in 2017 and revisited in 2020 for this report.

The relevant previously submitted delineations and reports for the original lot 2200 and Tracks "A" and "E" are:

 WD2017-0410 - The south portions of the parent parcel Tax Lot 2200 (37090 SE Kelso Road), which has since been subdivided. The wetland study included the entire tax lot 2200, however in the process of developing the subdivision submittals the applicant decided to remove the North half of lot 2200 from the study boundary.

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Page 4/13 360-984-8767 • WD2018-0656- This report included northern portions of tax lot 2200 (except Wetland "A"). The reason for removing Wetland "A" from the study boundary is discussed above.

The timing of site visits and writing of this report was affected by shutdowns in response to the COVID-19 pandemic. The shutdowns delayed the production of this report.

This report is intended to assist the permittee, the City of Sandy, and the State of Oregon to evaluate the application and determine what environmental conditions or mitigations may be required to move this project forward.

QUALIFICATIONS OF JOHN MCCONNAUGHEY, PWS

I earned a Bachelor of Science degree from the University of Oregon in 1978 and in 1984 I earned a Masters of Fisheries Science degree from the University of Alaska at Juneau, (since renamed as the University of Alaska, Southeast). The Juneau curriculum specializes in the study of Pacific salmon. I held positions with agencies tasked with salmon research and management beginning with summer jobs in 1979 in Rogue River, the Oregon Dept of Fish and Wildlife, and then with the Alaska Department of Fish and Game in Ketchikan Alaska, in 1980. I worked on salmon projects with ADF&G in Anchorage and Juneau for 5 years before moving to American Samoa to serve as a fisheries project's leader for the Department of Marine and Wildlife Resources. Upon returning stateside, I worked for the Yakama/Klickitat Fisheries Project out of Yakima Washington for 5 years leading four research projects studying aspects of salmon supplementation projects in the Yakima River.

I have been employed with Environmental Technology Consultants since 2006. In 2010 I earned certification as a Professional Wetland Scientists, (PWS) from the Society of Wetlands Scientists, (SWS).

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

QUALIFICATIONS OF ANNAKATE MARTIN

I earned a Bachelor of Science degree in Natural Resources from Washington State University in 2002. In 2002 I worked for the University of Idaho on MAP tracking steelhead and salmon on the Snake River out of Clarkston, Washington.2002-2003 I worked for Idaho Fish and Game as a field technician for identifying fish in remote streams in Idaho. In 2004 I worked for Environmental Technology Consultants conducting wetland delineations and Phase I ESA reports. From 2007-2014 I worked for 3 Kings Environmental conducting Phase I ESA reports, asbestos and lead surveys. In 2011 I started my own company primarily providing erosion control services (CESCL Certified) and Phase I ESA reports. I worked for Clark Public Utilities as a Restoration Specialist Supervisor and decided to return to ETC.

I have been re-employed with Environmental Technology Consultants in 2015 for wetland delineation consulting.

A) Landscape Setting and Land Use:

The subject property is a 11.88 Acre parcel in a rural residential area. that is on a hillslope at approximately 787' in elevation. It is in the Clackamas River watershed. The terrain is gently rolling in the general north to south direction on the majority of the property. The property is surrounded primarily by agricultural land, and partially by roads, rural single-family residences, and single-family residences in subdivisions. The property was a sloped area that had a 100% cover of Himalayan Blackberry.

The area is zoned SFR.

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B) Site Alterations:

The subject site had a single-family residence, that has been demolished, and according to the Assessors information was built in 1915. Portions of the property have been used for agriculture uses such as a plant nursery, and possibly a raspberry farm. In 2017 the applicant used a brush hog to mow the blackberries on most of the site in order that surveyors could gain access. Much of the property that was historically farmed now has a dense cover of blackberries. The property was divided up into different tax lots in 2019, the portion containing Wetland "A" is now tax lot 2204 and 11.88 acres in size. The site was revisited April 15,2020 to re-delineate Wetland "A".

C) Precipitation Data and Analysis:

This wet season was above average in January 2020, but below average in February and March. The table below shows the precipitation from the WETS table:

Table 1. Wetland B	Evaluation	a Tachnia			rison of 20	18 and 2010 proc	initation to WE	TS avora	70	
precipitation at the			•	· ·	15011 01 20	18 and 2019 prec		15 dverd	ge	
precipitation at the		memat								
WETS Station:								Obse	erved	
PORTLAND INTL					Avg			Compa	ared to	
AIRPORT, OR		Observe	d Precip		Precip		30% chance	WETS A	Average	
					1971-	30% chance	precip more			
Month	2017	2018	2019	2020	2000	precip less than	than	2018	2019	2020
Jan		5.36	2.79	9.83	5.07	2.98	6.15	Avg	Below	Above
Feb		1.86	4.10	2.45	4.18	2.84	4.98	Below	Avg	Below
Mar		2.50	1.54	2.75	3.71	2.85	4.31	Below	Below	Below
Apr		3.34	2.98		2.64	1.93	3.10	Above	Avg	
May		0.17	1.51		2.38	1.44	2.88	Below	Avg	
Jun		1.03	0.45		1.59	0.94	1.93	Avg	Below	
Jul		0.02	0.80		0.72	0.33	0.86	Below	Avg	
Aug		0.06	1.23		0.93	0.35	1.09	Below	Above	
Sep		1.59	3.85		1.65	0.72	1.93	Avg	Above	
Oct		3.43	1.51		2.88	1.57	3.52	Avg	Below	
Nov		2.86	1.52		5.61	3.72	6.73	Below	Below	
Dec		5.08	4.39		5.71	3.89	6.82	Avg	Avg	
TOTAL		27.30	26.67		37.07	32.85	40.58	Below	Below	

Deductions of Recent Weather Data: The precipitation in 2017 was above average for the site when the delineation was first conducted, there were saturated soils and shallow water tables at or above levels where hydric soils were observed. In Spring 2020 we made two visits, January 10 when conditions were wet, and April 15 when conditions were fairly dry. On the April 15 visit the precipitation was below average and the area was dry, no water in the stream and no water in the soil pits. On all other visits Kelso Road ditches were flooded and water was seen flowing through Wetland "A".

D) Methods: (site-specific methods for field investigation)

Wetland determinations and delineations discussed in this report were conducted in accordance with the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual ("the manual"), including regional supplements and applicable guidance, and supporting technical or guidance documents issued by the Department of State Lands.

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In 2017 our investigations followed the mowing of the blackberries, and we were able to observe and traverse the site with ease. In 2020 the blackberries were again removed and the vegetation more or less the same as 2017 - recently mowed blackberries in the Wetland "A" area.

We dug soil test pits to a general depth of 16"-18" bgs. The soils in the area of Wetland "A" are often very reddish in color, particularly in the Northern end. However, we were able to discern hydric features in the soil.

We set wetland flags around the Wetland "A".

E) Description of All Wetlands and Other Non-Wetland Waters:

<u>Wetland "A", 75,839 SQFT, 1.741 Acres</u>. Wetland "A" starts at the Kelso Road Ditch and extends downslope and widens in a South West direction until crossing the West property boundary. As it is fed mainly by ditch flows, and is high up in its drainage, it probably dries out early in the summer.

The middle of the wetland has some shallow ponding created by the shallow ditch that runs through the center of the wetland becoming clogged with blackberry rubble and tire ruts from the mowing of the blackberries. In these puddles we observed bright green bubbly algae, the vigorous growth of which suggested fertilizer enrichment, probably fertilizer runoff from the nursery on the North side of SE Kelso Road.

West of the subject property, the wetland broadens out considerably, and flows onto lot 2300, where it is utilized as a horse pasture. About 1,000 feet to the south in Lot 2300, it connects with the stream that flows through lot 2203. The dominant vegetation in the upper portion is blackberries, and this transitions to pasture grasses in the lower section.

The Cowardin classification is Palustrine, Scrub Shrub, broad-leaved deciduous, Saturated, to Palustrine, Emergent, Persistent, Saturated, PSS1B to PEM1B. The HGM classification is sloped wetland.

F) Deviation from LWI or NWI:

The NWI map does not show any wetlands or waterways on lot 2204.

G) Mapping Method:

A property boundary survey and topographic survey was conducted by Toby Bolden, PLS 60377LS of Centerline Concepts. Centerline Concepts also located many of our wetland data plots and wetland boundary flags.

We used the TopCon GRS-1 GPS with a Topcon BR-1 beacon receiver for DGPS corrections for mapping some flags and plots either missed by the surveyors or added after their survey. These and other information shown in the figures were mapped as described in Section G.

H) Additional Information: (i.e., if needed to establish state jurisdiction)

None. All wetlands and waters described in this report are presumed to be jurisdictional.

I) Results and Conclusions:

<u>Hydrology</u>. The Hydrology on this site has been altered substantially from the historical conditions a long history of land use on this and neighboring properties, and by changes caused by roadways and

17-010 Wetland A project www.etcEnvironmental.net

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their associated ditches and culverts. Wetland "A" is thought to be created, or at least greatly enlarged by stormwater from higher in the drainage collected and concentrated into roadside ditches that discharge onto the Northern end of the property from the Kelso Road ditch.

<u>Plants.</u> Wetland "A" had Blackberries with some herbaceous plants, mostly grasses, in the wettest areas. There is also some mixed aged cottonwood and alder trees in the North part of the wetland.

<u>Soils.</u> Soils in the many areas are red in color, about 5YR3/3, which tended to mask hydric soil features in the margin of the wetland. There was a presence of what appeared to be manganese. Distinct differences were apparent between the soils south of the stream which tended to be 10YR 3/2 a darker less red soil and in the disturbed pasture grasses area.

Disclaimer: OAR141-090-0035(12)(j) :

"This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055."

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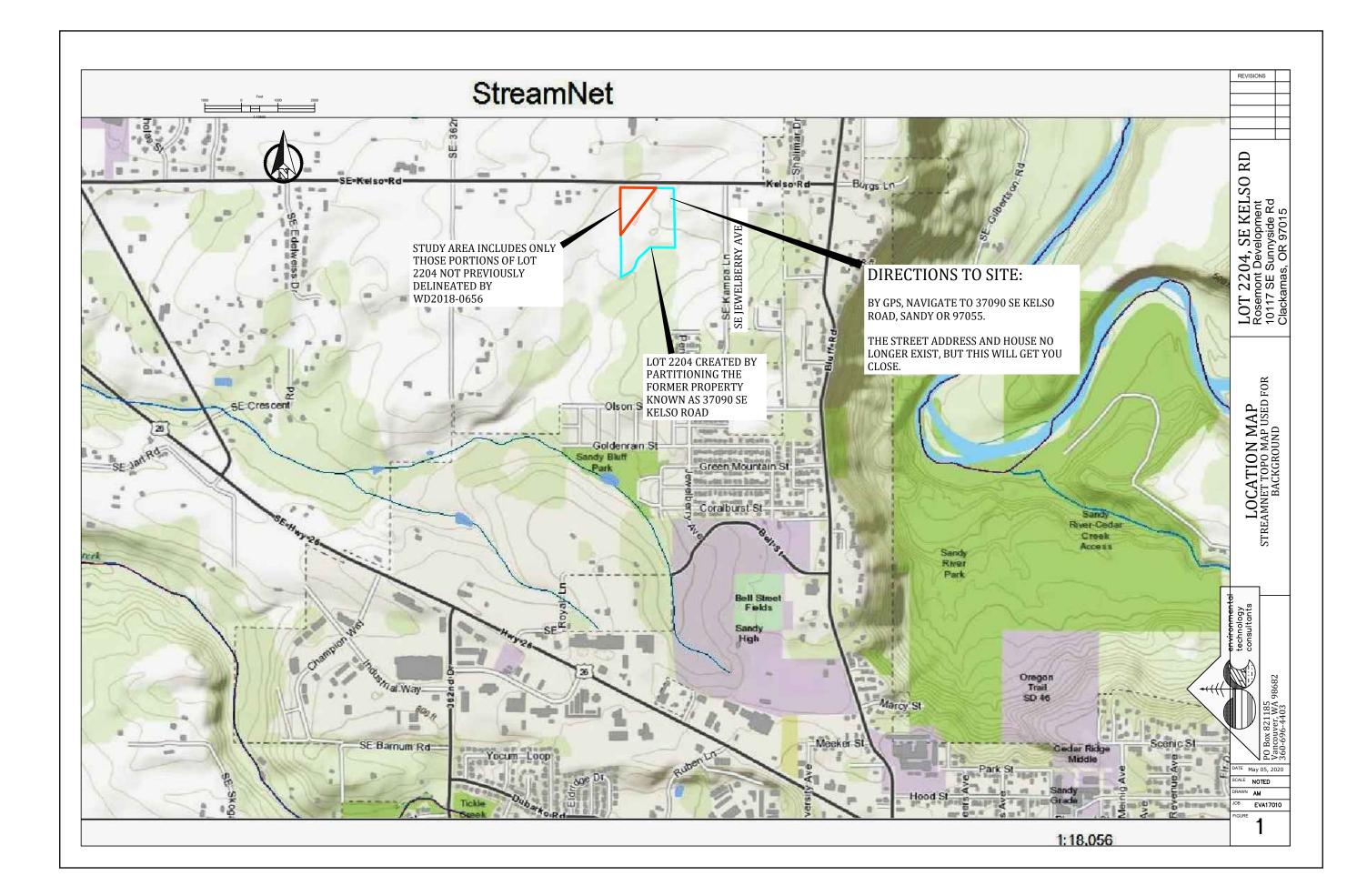
APPENDIX A - Maps:

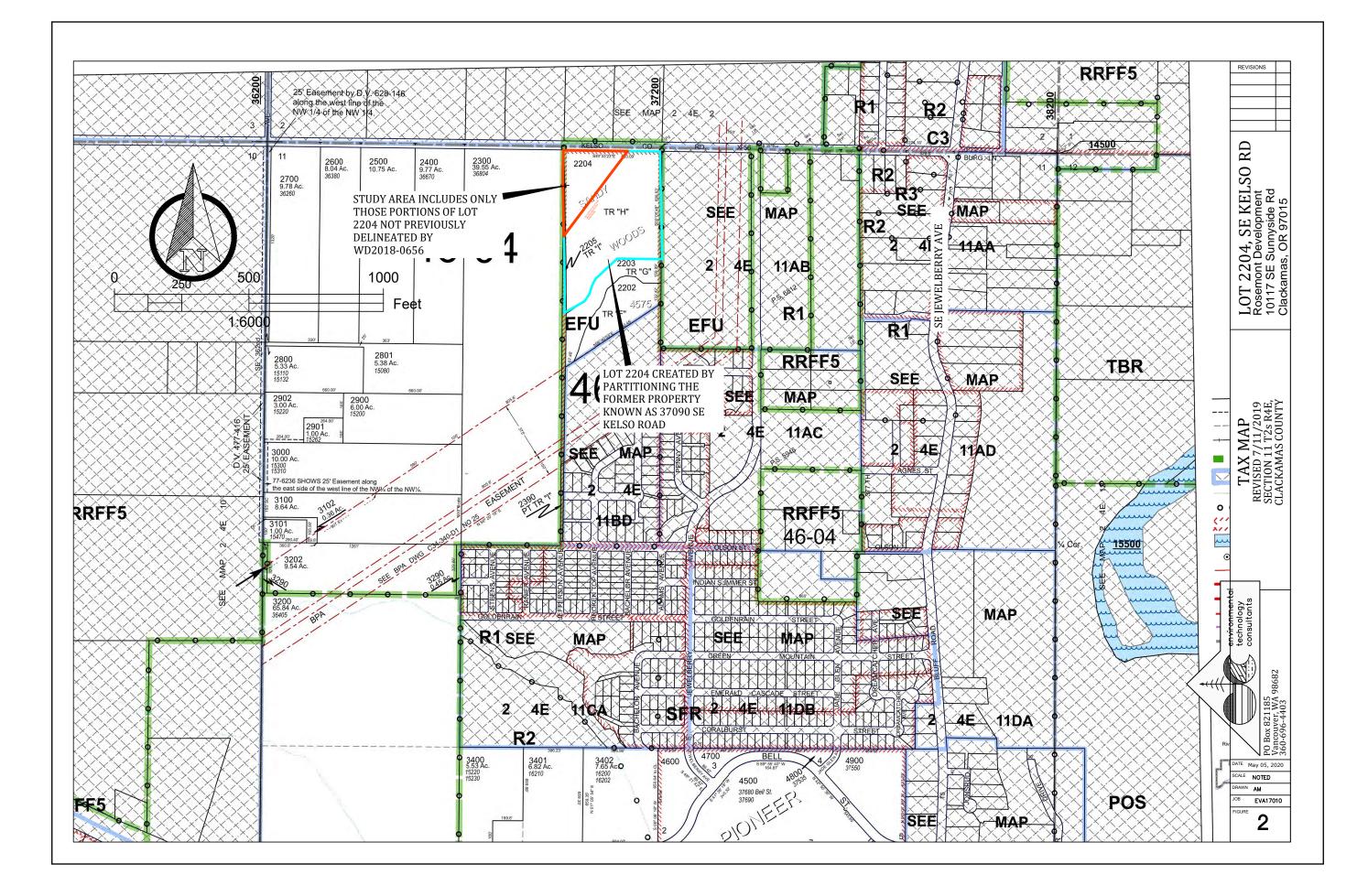
- Figure 1: Figure 2: Figure 3: Figure 4: Figure 5: Figure 6A: Figure 6B:

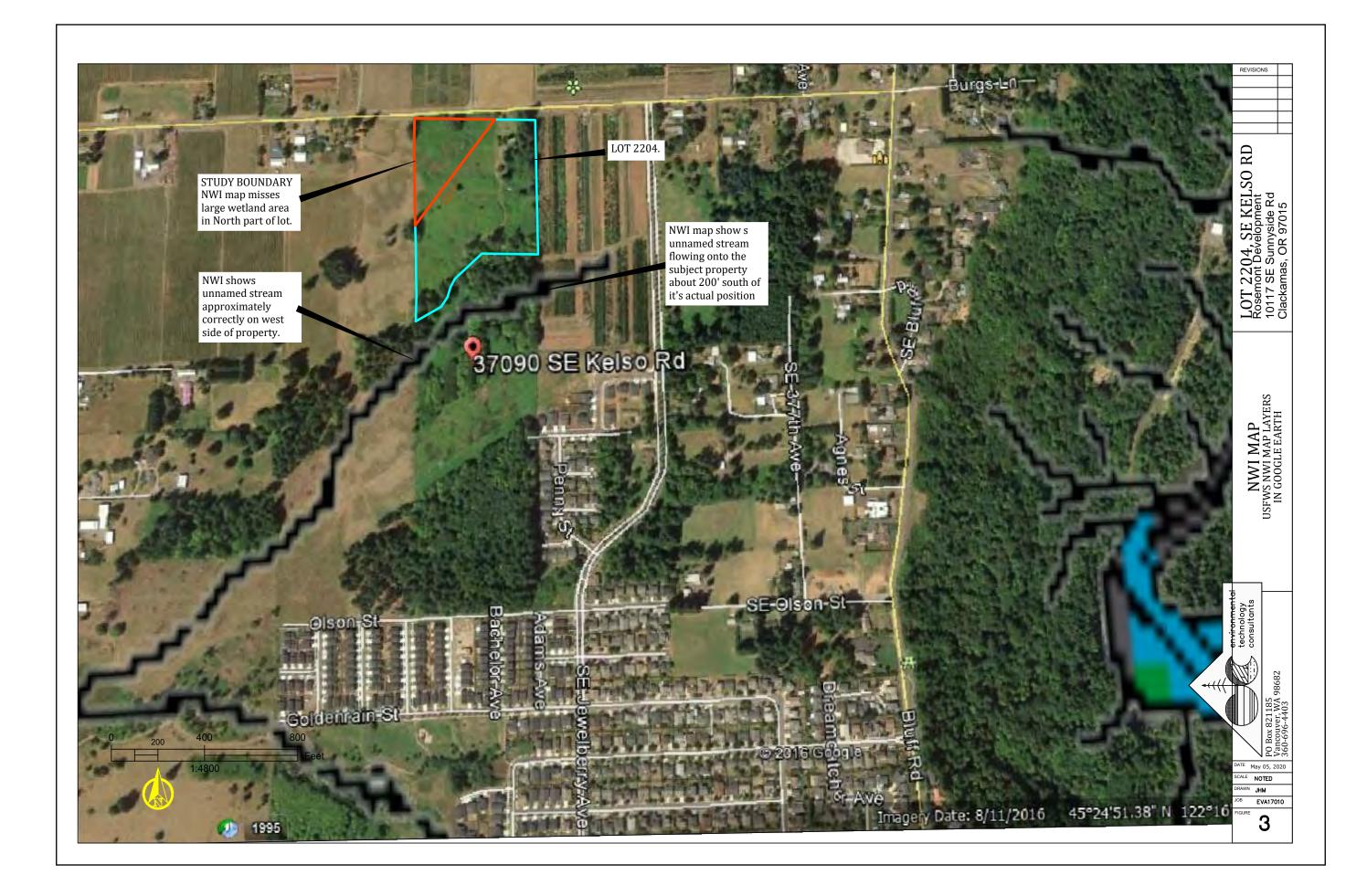
- Location Map (Streamnet) Tax Map NWI Map Soil Map Aerial Photo (Google Earth 2017) Wetland "A" Wetland "A" enlarged

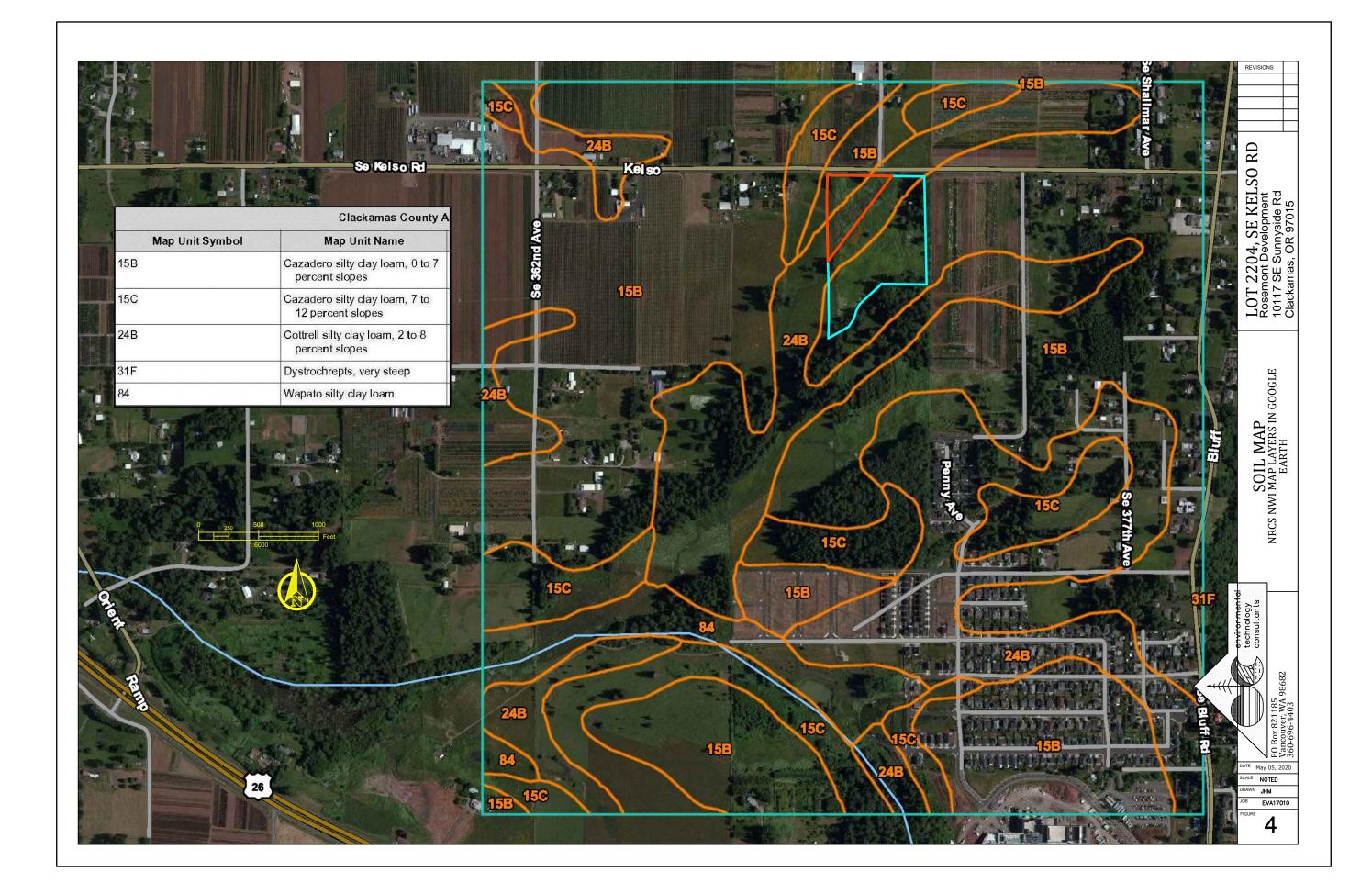
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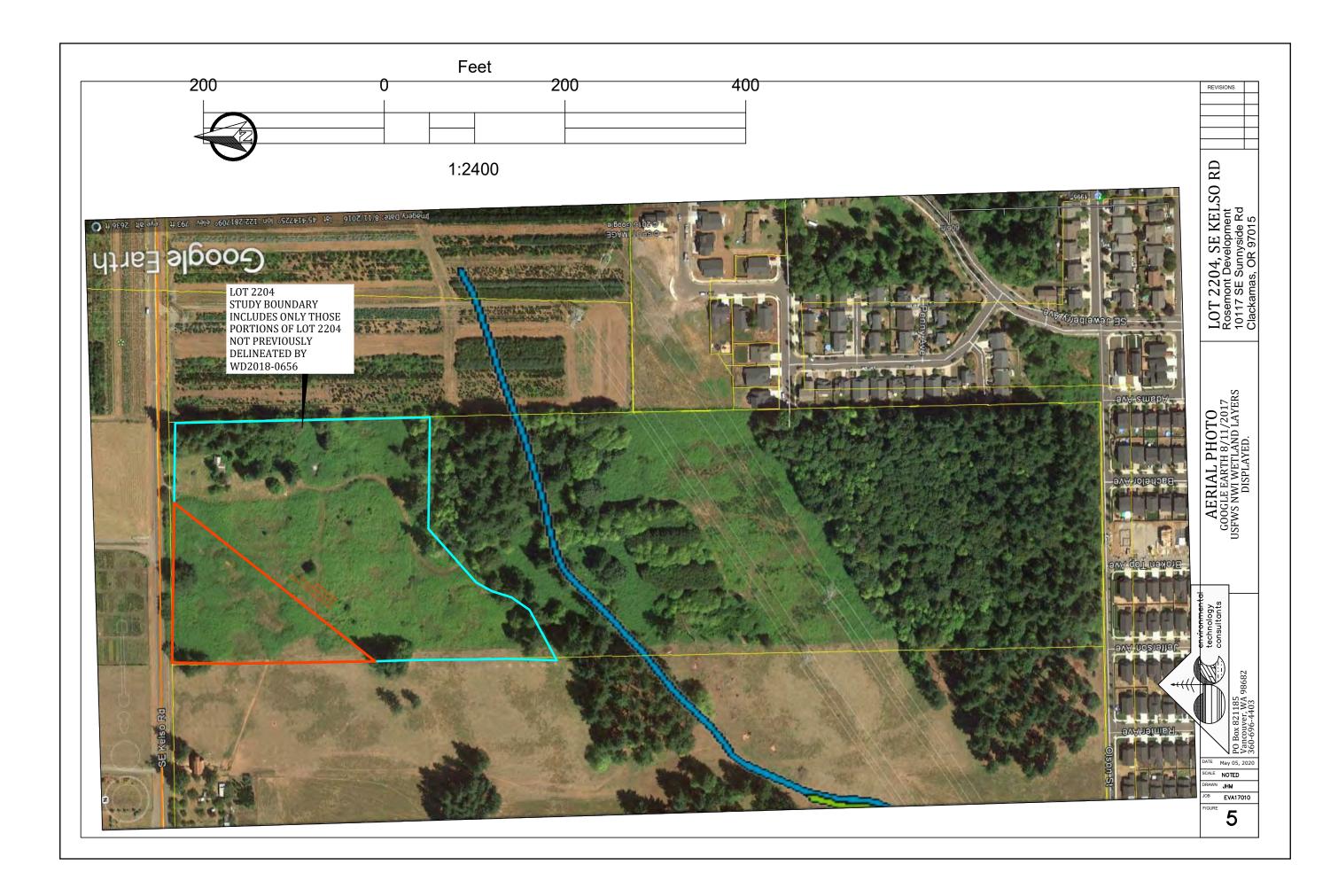
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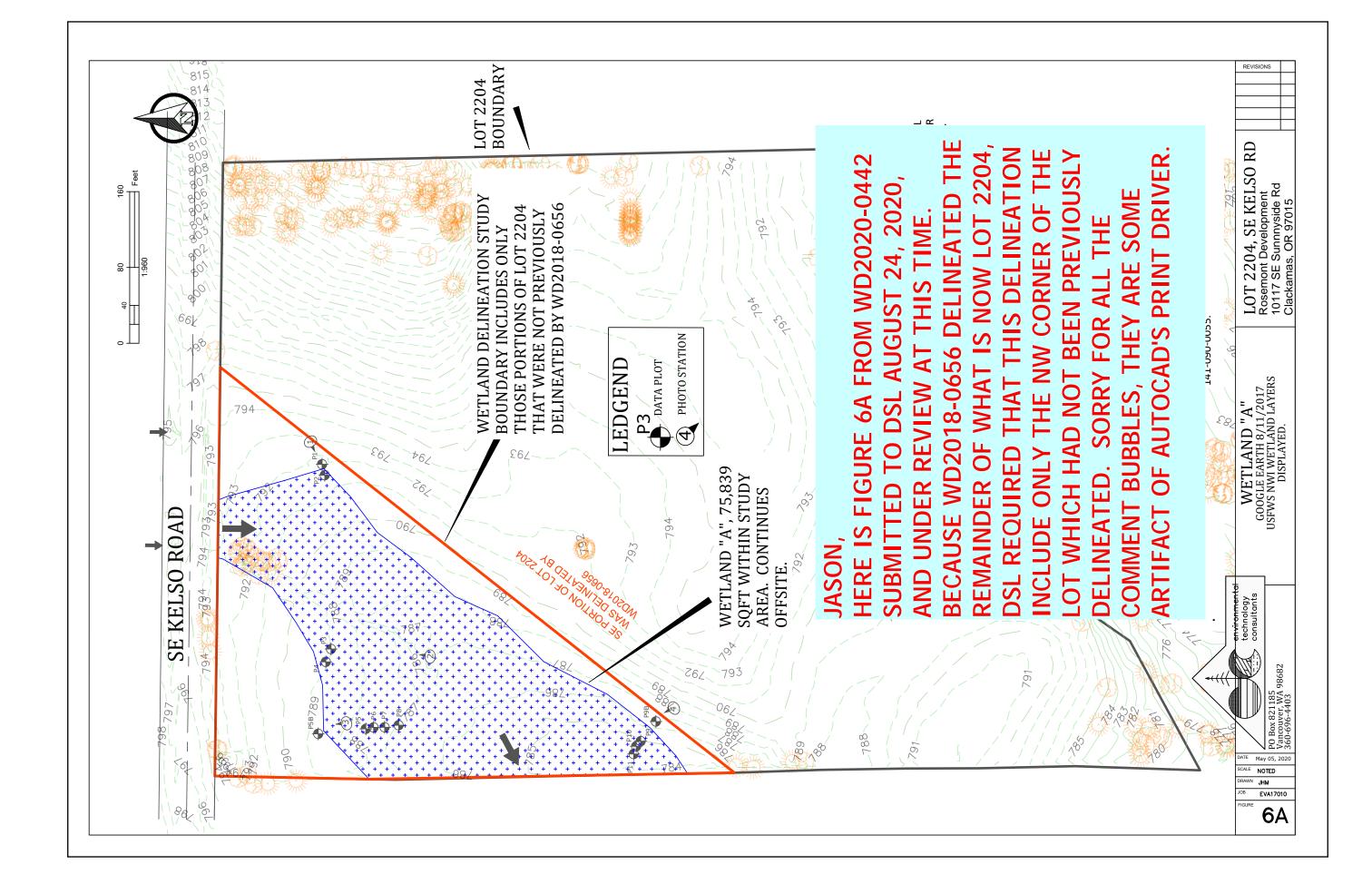


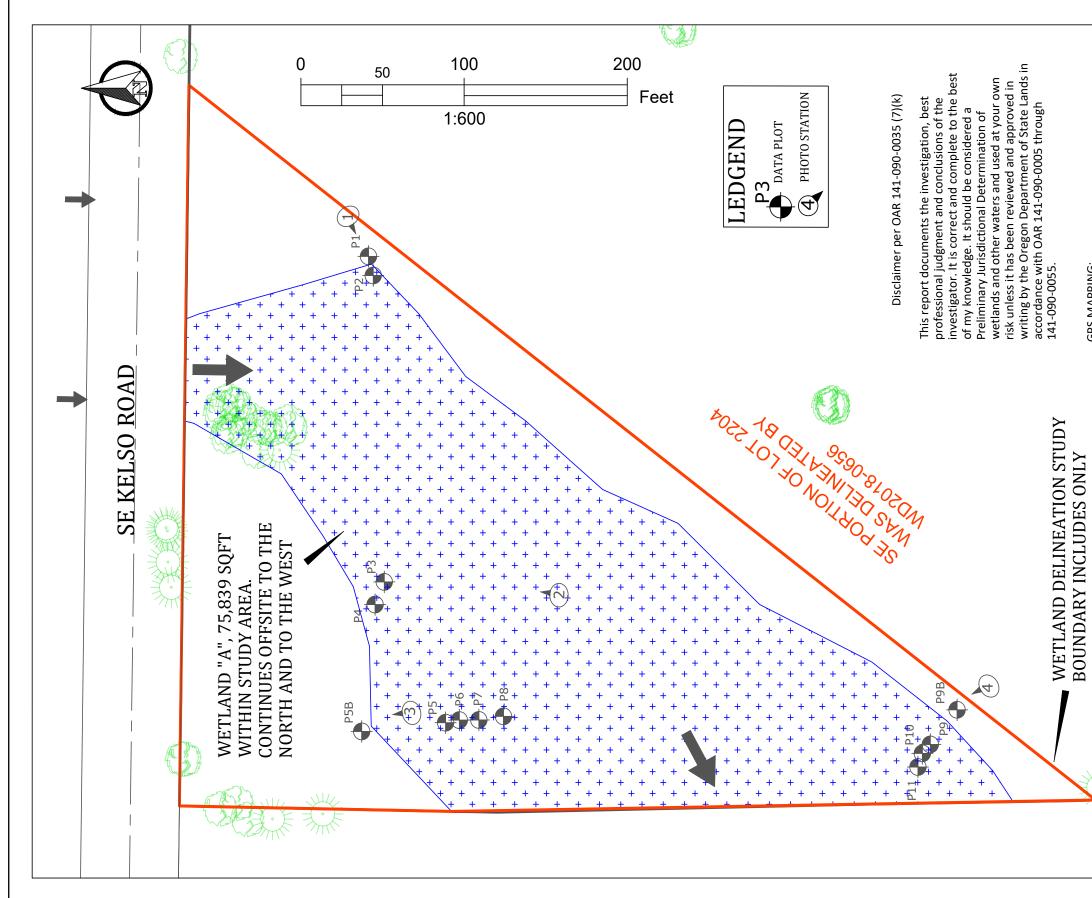












		REVISIONS
NAL VER DN.	T	
GPS MAPPING: TOPCON GRS-1 RECEIVER USED WITH EXTERNAL ANTENNA, AND TOPCON BR1 BEACON RECEIVER USED FOR REAL TIME DGPS DATA CORRECTION. ACCURACY = ±3FT HORIZONTAL ACCURACY = ±3FT HORIZONTAL EXPORT USING PROJECTION = SPC83-OREGON (NORTH) , DATUM = NAD83 GEOID = G2009U01 COORD TYPE = GRID	A.A.	LOT 2204, SE KELSO RD Rosemont Development 10117 SE Sunnyside Rd Clackamas, OR 97015
		L7 ERS
DRTIONS OF LOT 2204 RE NOT PREVIOUSLY TED BY WD2018-0656		WETLAND "A" GOOGLE EARTH 8/11/2017 USFWS NWI WETLAND LAYERS DISPLAYED.
THOSE PORTIONS OF LOT 2204 THAT WERE NOT PREVIOUSLY DELINEATED BY WD2018-0656		consultants consultants
		DATE May 05, 2020 SCALE NOTED DRAWN JHM JOB EVA17010 FIGURE 668

APPENDIX B - Data Forms

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WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast

Project/Site: 37090 Kelso RD	City/County: Sandy/Clac	City/County: Sandy/Clackamas		
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: P1	
Investigator(s): John McConnaughey, PWS# 2009	Section, Tow	nship, Range: <u>T2S R4E</u>	S11	
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave, c	onvex, none): <u>Flat</u>	Slope (%): <u>1%</u>	
Subregion (LRR): LRR-A Lat: 4	5.25078	Long: <u>-122.16916</u>	Datum:	
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion:	
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes 🗌 No 🛛 (If n	io, explain in Remarks.)		
Are Vegetation <u>YES</u> , Soil, or Hydrology <u>YES</u> significantly dis	turbed? Are "Normal	Circumstances" present	? Yes 🗌 No 🛛	
Are Vegetation <u>YES</u> , Soil, or Hydrology naturally probl	lematic? (If needed, e	explain any answers in R	emarks.)	

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes □ No ⊠ Yes ⊠ No □	Is the Sampled Area within a Wetland?	Yes 🗌 No 🛛
Remarks: Above average rainfall in Mar along Kelso Road.	ch and April. This plot is in a mow	ed down blackberry field with h	ydrology coming in from drainage ditch

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' East</u>)		Species? Status	Number of Dominant Species
1		·	That Are OBL, FACW, or FAC: <u>1</u> (A)
2. <u>NO TREES</u>			Total Number of Dominant
3		·	Species Across All Strata: <u>1</u> (B)
4		·	Percent of Dominant Species
		= Total Cover	That Are OBL, FACW, or FAC: 100% (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' East</u>)			
1			Prevalence Index worksheet:
2		·	Total % Cover of: Multiply by:
3	. <u> </u>	·	OBL species 0 x 1 = 0
4		·	FACW species $\underline{0}$ x 2 = $\underline{0}$
5		·	FAC species 0 x 3 = 0
		= Total Cover	FACU species <u>0</u> x 4 = <u>0</u>
Herb Stratum (Plot size:)			UPL species <u>0</u> x 5 = <u>0</u>
1. <u>Rubus Armeniacus</u>	<u>100</u>	Y FAC	Column Totals: <u>0</u> (A) <u>0</u> (B)
2		·	
3			Prevalence Index = $B/A = 0$
4		·	Hydrophytic Vegetation Indicators:
5		·	☑ Dominance Test is >50%
6			Prevalence Index is ≤3.0 ¹
7	. <u> </u>		Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	100	= Total Cover	
1			¹ Indicators of hydric soil and wetland hydrology must
		·	be present, unless disturbed or problematic.
2		= Total Cover	Hydrophytic
	100		Vegetation
% Bare Ground in Herb Stratum 0 % Co	ver of Biotic	Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: minimal vegetation for identification because fin	eld was mow	ved.	

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Depth		ix		Re	edox Featu	res				
(inches)	Color (moist)	%	Colo	or (moist)	<u>%</u>	Туре	¹ Loc ²	Texture	e	Remarks
-5	7.5YR3/2	100						Silt loan	n	Lot's of roots
·10	7.5YR4/4	90	7.5	(R4/3	10	<u>C</u>	M	Silty cla	y loam	1
0-18	7.5YR4/4	<u>75</u>	7.5	(R4/3	25	<u>C</u>	<u>M</u>	Silty cla	y loam	1
								. <u> </u>		
ype: C=C	Concentration, D=	Depletion, I	RM=Rec	luced Matrix,	CS=Cove	red or Co	ated Sand (Grains.	² Loc	ation: PL=Pore Lining, M=Matrix.
	I Indicators: (Ap									rs for Problematic Hydric Soils ³ :
] Histosol	l (A1)			Sandy Redox	k (S5)				1 cm	Muck (A9) (LRR C)
	pipedon (A2)			Stripped Mat	. ,					Muck (A10) (LRR B)
	listic (A3)			Loamy Muck		,				iced Vertic (F18)
	en Sulfide (A4)			oamy Gleye	,	2)		=		Parent Material (TF2)
-	d Layers (A5) (LF	KR C)		Depleted Mat		C)			Other	(Explain in Remarks)
_	ıck (A9) (LRR D) d Below Dark Sui	rfaco (A11)		Redox Dark Depleted Da		,				
	ark Surface (A12)	. ,		Redox Depre		• •		³ In	dicato	rs of hydrophytic vegetation and
_	Mucky Mineral (S			Redux Depic	,5510115 (1 0	<i>'</i>)				nd hydrology must be present,
	Gleyed Matrix (S4	-								s disturbed or problematic.
estrictive	Layer (if presen	it):								
Type: <u>Cl</u>	ay									
	l <u>ay</u> nches): <u>10</u>		<u> </u>					Hydrid	c Soil ∣	Present? Yes 🗌 No 🛛
Depth (ir remarks: DROLOO Vetland Hy rimary Indi Surface High Wa Saturati Water M Sedime Drift De Surface	GY gdrology Indicate icators (minimum Water (A1) ater Table (A2)	of one requ iverine) (Non riverin riverine)	ne)	 Salt Cru Biotic C Aquatic Hydroge Oxidized Presend Recent 	ist (B11) rust (B12) Invertebra en Sulfide (d Rhizosph ce of Redu	Odor (C1 neres alor ced Iron (ction in Ti) ng Living Ro C4)	pots (C3)	Secon UVa Se Dri Dri Dri Cra Sa	dary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8)
Depth (ir remarks: DROLOO Vetland Hy imary Indi Surface High Wa Saturati Water M Sedimei Drift De Surface Inundatid Water-S	GY ydrology Indicate icators (minimum e Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non r int Deposits (B2) (posits (B3) (Non e Soil Cracks (B6) on Visible on Aeri Stained Leaves (B	of one requ iverine) (Non riverin riverine) al Imagery	ne)	Salt Cru Biotic C Aquatic Hydroge Oxidized Presend Recent Thin Mu	ist (B11) rust (B12) Invertebra en Sulfide (d Rhizosph ce of Reduc Iron Reduc	Odor (C1 neres alor ced Iron (ction in Ti e (C7)) ng Living Ro C4)	pots (C3)	Secon Secon Se Se Se C Dri C Cri Sa Sa Sh	dary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9
Depth (ir remarks: DROLOO Vetland Hy rimary Indi Surface High Wa Saturati Water M Sedimei Drift De Surface Inundatio Water-S ield Obse	GY ydrology Indicate icators (minimum e Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non r ent Deposits (B2) (posits (B3) (Non e Soil Cracks (B6) on Visible on Aeri Stained Leaves (B prvations:	of one requ iverine) (Non riverin riverine) al Imagery (9)	ne) (B7)	Salt Cru Biotic C Aquatic Hydroge Oxidized Presend Recent Thin Mu Other (B)	ist (B11) rust (B12) Invertebra en Sulfide (d Rhizosph ce of Reduc Iron Reduc ick Surface Explain in F	Odor (C1 neres alor ced Iron (ction in Ti e (C7)) ng Living Ro C4)	pots (C3)	Secon Secon Se Se Se C Dri C Cri Sa Sa Sh	dary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) turation Visible on Aerial Imagery (C9 allow Aquitard (D3)
Depth (ir Remarks: DROLOO Vetland Hy Immary Indi Surface High Wa Saturati Water M Sedimei Drift Dej Surface Inundatio Water-S ield Obse	GY ydrology Indicate icators (minimum e Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non r ent Deposits (B2) (posits (B3) (Non e Soil Cracks (B6) on Visible on Aeri Stained Leaves (B prvations: ater Present?	of one requ iverine) (Non riverin riverine) al Imagery (9) Yes []	ne) (B7) No ⊠	Salt Cru Biotic C Aquatic Aquatic Oxidized Oxidized Presend Recent Thin Mu Other (E	ist (B11) rust (B12) Invertebra en Sulfide (d Rhizosph ce of Reduc Iron Reduc ick Surface Explain in F	Odor (C1 neres alor ced Iron (ction in Ti e (C7)) ng Living Ro C4)	pots (C3)	Secon Secon Se Se Se C Dri C Cri Sa Sh	dary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9 allow Aquitard (D3)
Depth (ir emarks: DROLOO /etland Hy rimary Indi Surface Saturati Saturati Water N Sedime Drift De Surface Inundatio Water-S ield Obse urface Wa Vater Table	GY ydrology Indicate licators (minimum e Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non r int Deposits (B3) (Non e Soil Cracks (B6) on Visible on Aeri Stained Leaves (B rvations: ater Present? e Present?	of one requiverine) (Non riverin riverine) (al Imagery (9) Yes Yes Yes Xes Xes Xes Xes Xes Xes Xes X	ne) (B7) No ⊠ No □	Salt Cru Biotic C Aquatic Hydroge Oxidized Presend Recent Thin Mu Other (E Depth (inc) Depth (inc)	ist (B11) rust (B12) Invertebra en Sulfide (d Rhizosph ce of Reduc Iron Reduc ick Surface Explain in F hes):	Odor (C1 neres alor ced Iron (ction in Ti e (C7)) ng Living Ro C4) Iled Soils (C	oots (C3)	Secon Wa Se Dri Dri Cra Sa Sh	dary Indicators (2 or more required) ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9 iallow Aquitard (D3) iC-Neutral Test (D5)
Depth (ir Remarks: DROLOO Vetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Surface Inundatio Unift De Surface Inundatio Water-S Field Obse Surface Wa Vater Table Saturation F includes ca	GY ydrology Indicate icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non r int Deposits (B2) (posits (B3) (Non Soil Cracks (B6) on Visible on Aeri Stained Leaves (B vrvations: ater Present? Present? apillary fringe)	of one requiverine) (Non riverin riverine) (al Imagery (39) Yes Yes Yes Yes Yes Yes Yes Yes	ne) (B7) No ⊠ No □ No □	Salt Cru Biotic C Aquatic Hydroge Oxidize Presend Recent Thin Mu Other (B Depth (inc) Depth (inc)	Invertebra en Sulfide (d Rhizosph ce of Reduc Iron Reduc iron Reduc Explain in F hes): hes): 10"	Odor (C1 heres alor ced Iron (ttion in Ti e (C7) Remarks)) ng Living Ro C4) Iled Soils (C	oots (C3) 6) tland Hyd	Secon U Wa Se D Dri D Dri Cri Sa Sh FA	dary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) turation Visible on Aerial Imagery (C9 allow Aquitard (D3)
Depth (ir Remarks: DROLOO Vetland Hy Primary Indi Surface High Wa Saturati Water M Sedime Surface Inundatio Unift De Surface Inundatio Water-S Field Obse Surface Wa Vater Table Saturation F includes ca	GY ydrology Indicate icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non r int Deposits (B2) (posits (B3) (Non Soil Cracks (B6) on Visible on Aeri Stained Leaves (B vrvations: ater Present? Present? apillary fringe)	of one requiverine) (Non riverin riverine) (al Imagery (39) Yes Yes Yes Yes Yes Yes Yes Yes	ne) (B7) No ⊠ No □ No □	Salt Cru Biotic C Aquatic Hydroge Oxidize Presend Recent Thin Mu Other (B Depth (inc) Depth (inc)	Invertebra en Sulfide (d Rhizosph ce of Reduc Iron Reduc iron Reduc Explain in F hes): hes): 10"	Odor (C1 heres alor ced Iron (ttion in Ti e (C7) Remarks)) ng Living Ro C4) Iled Soils (C	oots (C3) 6) tland Hyd	Secon U Wa Se D Dri D Dri Cri Sa Sh FA	dary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9 iallow Aquitard (D3) iC-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast

Project/Site: 37090 Kelso RD	City/County: Sandy/Cla	City/County: Sandy/Clackamas		
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: <u>P2</u>	
Investigator(s): John McConnaughey, PWS# 2009	Section, Tov	wnship, Range: <u>T2S R4E</u>	S11	
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave,	convex, none): <u>Flat</u>	Slope (%): <u>6%</u>	
Subregion (LRR): LRR-A Lat: 4	15.41800	Long: <u>-122.28202</u>	Datum:	
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	tion: <u>No</u>	
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes 🗌 No 🛛 (If	no, explain in Remarks.)		
Are Vegetation <u>YES</u> , Soil, or Hydrology <u>YES</u> significantly dis	turbed? Are "Norma	I Circumstances" present	? Yes 🗌 No 🛛	
Are Vegetation YES, Soil, or Hydrology naturally probl	lematic? (If needed,	, explain any answers in F	Remarks.)	
CUMMARY OF FINDINGS Attach site man about		antiona transata	immentent footunes ato	

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Нy	/drophytic Vegetation Present? /dric Soil Present? etland Hydrology Present?	Yes 🛛	No 🗌 No 🔲 No 🔲	Is the Sampled Area within a Wetland?	Yes 🛛 No 🗌
	emarks: Above average rainfall in Maro elso Road.	ch and Ap	oril. This plot is in a mow	ed down blackberry field, hydro	ology changed due to drainage ditch along

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30'</u>) 1		Species? Status	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2. NO TREES			Total Number of Dominant
3		· ·	Species Across All Strata: <u>1</u> (B)
4			
Sapling/Shrub Stratum (Plot size: <u>30'</u>)		= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1			Prevalence Index worksheet:
2			Total % Cover of: Multiply by:
3			OBL species <u>0</u> x 1 = <u>0</u>
4			FACW species 0 x 2 = 0
5			FAC species 0 x 3 = 0
		= Total Cover	FACU species 0 x 4 = 0
Herb Stratum (Plot size: 30')			UPL species 0 x 5 = 0
1. <u>Rubus Armeniacus</u>			Column Totals: 0 (A) 0 (B)
23			Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			☑ Dominance Test is >50%
6			□ Prevalence Index is ≤3.0 ¹
7		· ·	 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation ¹ (Explain)
	100	= Total Cover	
<u>Woody Vine Stratum</u> (Plot size:) 1		· ·	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2		· ·	
	<u>100</u>	= Total Cover	Hydrophytic Vegetation
		Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: minimal vegetation for identification because	field was mow	ed.	

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Depth (inches)	Matri	iv			lox Featu					of indicators.)
(inches)	Color (moist)	%	Colo	or (moist)	<u>%</u>		Loc ²	Textur	re	Remarks
)-4	7.5YR3/2	100						Silt loa	m	
-11	7.5YR3/2	95	5YR	4/6	4	С	М	Silty cla	ay loan	1
			<u>2.5n</u>	I	1	<u> </u>	M	Silty cla	ay loan	1
1-18	<u>5YR2.5/1</u>	95	5YR	4/6	5	C	М	Clav		
	01112.0/1							<u>olay</u>		
								<u> </u>		
Type: C=C	Concentration, D=	Depletion, RI	M=Red	uced Matrix, C	CS=Cove	red or Co	ated Sand (Grains.	² Loc	ation: PL=Pore Lining, M=Matrix.
ydric Soil	Indicators: (Ap	plicable to a	all LRR	s, unless oth	erwise n	oted.)		In	idicato	rs for Problematic Hydric Soils ³ :
] Histosol	l (A1)			Sandy Redox	(S5)] 1 cm	Muck (A9) (LRR C)
] Histic E	pipedon (A2)			Stripped Matriz	x (S6)] 2 cm	Muck (A10) (LRR B)
Black H	. ,			Loamy Mucky		,			_	uced Vertic (F18)
	en Sulfide (A4)			oamy Gleyed		2)				Parent Material (TF2)
	d Layers (A5) (LR	(K C)		Depleted Matri		C)		L	J Other	(Explain in Remarks)
	ick (A9) (LRR D)	face (A11)		Redox Dark S	`	'				
	d Below Dark Sur ark Surface (A12)	. ,		Depleted Dark Redox Depres				31	ndicato	rs of hydrophytic vegetation and
	Mucky Mineral (S1			Redux Depres	5015 (F0	<i>)</i>)				nd hydrology must be present,
	Gleyed Matrix (S4	,								s disturbed or problematic.
	Layer (if presen	-								·
	ay	1								
Type: <u>Cl</u>	ay nches): <u>10</u>	•	_					Hydri	ic Soil	Present? Yes 🛛 No 🗌
Type: <u>Cl.</u> Depth (ir Remarks: DROLO(nches): <u>10</u>		_					Hydri	ic Soil	Present? Yes 🛛 No 🗌
Type: <u>Cl.</u> Depth (ir Remarks: DROLOG	GY	ors:		eck all that ap	ply)			Hydri		Present? Yes No
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind	GY grology Indicate	ors:	red; ch					Hydri	Secor	ndary Indicators (2 or more required)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind Surface	GY grology Indicato icators (minimum	ors:	red; ch	eck all that ap	t (B11)			Hydri	Secor	
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind Surface High Wa	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2)	ors:	red; ch	Salt Crus	t (B11) ıst (B12)	tes (B13)		Hydri	Secor	<u>ndary Indicators (2 or more required)</u> ater Marks (B1) (Riverine)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Vetland Hy <u>Primary Ind</u> Surface High Wa Saturati	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2)	ors: of one requir	red; ch	Salt Crus	t (B11) ıst (B12) nvertebra	• •		Hydri	Secor	<u>ndary Indicators (2 or more required)</u> ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3)	ors: of one requir		Salt Crus Biotic Cru Aquatic Ir	t (B11) ust (B12) nvertebra n Sulfide (Odor (C1)			Secor	<u>adary Indicators (2 or more required)</u> ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedimen	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri	ors: of one requir iverine) Non riverine		Salt Crus Biotic Cru Aquatic In Hydroger	t (B11) ust (B12) nvertebra n Sulfide (Rhizosph	Odor (C1) neres alor	g Living Ro		Secor	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (ors: of one requir iverine) Non riverine		 Salt Crus Biotic Cru Aquatic In Hydroger Oxidized 	t (B11) ust (B12) nvertebra n Sulfide (Rhizosph of Reduc	Odor (C1) neres alor ced Iron (g Living Ro C4)	pots (C3)	Secor W Se Dr Dr Dr Cr	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri	ors: of one requir iverine) Non riverine riverine)	∍)	 Salt Crus Biotic Cru Aquatic In Hydroger Oxidized Presence 	t (B11) ust (B12) nvertebra Sulfide (Rhizosph of Reduction on Reduction	Odor (C1) neres alor ced Iron (ction in Til	g Living Ro C4)	pots (C3)	Secor W Se D D D C C Sa	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Primary Indi Surface High Wa Saturati Water M Sedimel Drift De Inundatio	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri Soil Cracks (B6)	ors: of one requir iverine) Non riverine riverine) al Imagery (E	∍)	 Salt Crus Biotic Cru Aquatic In Hydroger Oxidized Presence Recent In 	t (B11) ust (B12) nvertebra n Sulfide (Rhizosph of Reduc on Reduc k Surface	Odor (C1) neres alor ced Iron (ction in Til e (C7)	g Living Ro C4)	pots (C3)	Secor W Se Dr Dr Dr Cr Se St	adary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) 'ayfish Burrows (C8) aturation Visible on Aerial Imagery (C9
Type: <u>Cl</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Drift De High Water-S Field Obse	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri soil Cracks (B6) on Visible on Aeri Stained Leaves (B rvations:	ors: of one requir iverine) (Non riverine) riverine) al Imagery (E 9)	9) 37)	Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent Ir Thin Muc Other (Extended)	t (B11) ist (B12) nvertebra n Sulfide (Rhizosph e of Reduc on Reduc k Surface splain in F	Odor (C1) neres alor ced Iron (ction in Til e (C7)	g Living Ro C4)	pots (C3)	Secor W Se Dr Dr Dr Cr Se St	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) rainage Patterns (B10) y-Season Water Table (C2) rayfish Burrows (C8) aturation Visible on Aerial Imagery (C9 nallow Aquitard (D3)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Indi Surface Water M Saturati Water M Sedimei Drift Dei Drift Dei Inundatio Water-S Field Obsee Surface Wa	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri soil Cracks (B6) on Visible on Aeria Stained Leaves (B rvations: ater Present?	ors: of one requir iverine) (Non riverine riverine) al Imagery (E 9) Yes 1	≆) 37) No ⊠	Salt Crus Side Crus Side Crus Aquatic In Aquatic In Oxidized Oxidized Presence Recent In Other (Ex Depth (inched	t (B11) Ist (B12) Invertebra a Sulfide (Rhizosph e of Reduc on Reduc k Surface (plain in F	Odor (C1) neres alor ced Iron (ction in Til e (C7)	g Living Ro C4)	pots (C3)	Secor W Se Dr Dr Dr Cr Se St	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) rainage Patterns (B10) y-Season Water Table (C2) rayfish Burrows (C8) aturation Visible on Aerial Imagery (C9 nallow Aquitard (D3)
Type: <u>Cl.</u> Depth (ir Remarks: DROLOO Wetland Hy Primary Indi Surface High Wa Saturati Water M Sedimei Drift Dei Drift Dei Surface High Water S Field Obse Surface Wa Water Table	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri soil Cracks (B6) on Visible on Aeria Stained Leaves (B rvations: ater Present? e Present?	ors: of one requir iverine) (Non riverine riverine) al Imagery (E 9) Yes □ 1 Yes □ 1	≆) 37) No ⊠ No □	Salt Crus Biotic Cru Aquatic Ir Aquatic Ir Oxidized Presence Recent Ir Other (Ex Depth (incher	t (B11) ist (B12) nvertebra a Sulfide (Rhizosph e of Reduc on Reduc k Surface cplain in F ess): ess):	Odor (C1) neres alor ced Iron (ction in Til e (C7)	g Living Ro C4) led Soils (C		Secor W D D D D D D D D Set Set Set Set Set Set Set Set Set Set	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) rainage Patterns (B10) y-Season Water Table (C2) rayfish Burrows (C8) aturation Visible on Aerial Imagery (C9 nallow Aquitard (D3) AC-Neutral Test (D5)
Type: <u>Cl.</u> Depth (ir Remarks: (DROLOO Wetland Hy Primary Ind Surface Water M Sedime Drift De Drift De Surface Inundatio Water S Field Obse Surface Wa Water Table Saturation F (includes ca	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri Soil Cracks (B6) on Visible on Aeria Stained Leaves (B rvations: ater Present? Present? apillary fringe)	iverine) Non riverine riverine) al Imagery (E 9) Yes □ 1 Yes □ 1 Yes □ 1	∍) 37) No ⊠ No □ No □	Salt Crus Solution S	t (B11) ist (B12) hvertebra a Sulfide (Rhizosph e of Reduc on Reduc k Surface cplain in F ess): ess): ess):	Odor (C1) neres alor ced Iron (ction in Til e (C7) Remarks)	g Living Ro C4) led Soils (C	pots (C3) (C3) (C3) (C3) (C3) (C3) (C3) (C3)	Secor W Se Dr Dr Dr Cr Sa St St St St St St	adary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) aturation Visible on Aerial Imagery (C9 hallow Aquitard (D3) AC-Neutral Test (D5)
Type: <u>Cl.</u> Depth (ir Remarks: (DROLOO Wetland Hy Primary Ind Surface Water M Sedime Drift De Drift De Surface Inundatio Water S Field Obse Surface Wa Water Table Saturation F (includes ca	GY ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (posits (B3) (Non ri Soil Cracks (B6) on Visible on Aeria Stained Leaves (B rvations: ater Present? Present? apillary fringe)	iverine) Non riverine riverine) al Imagery (E 9) Yes □ 1 Yes □ 1 Yes □ 1	∍) 37) No ⊠ No □ No □	Salt Crus Solution S	t (B11) ist (B12) hvertebra a Sulfide (Rhizosph e of Reduc on Reduc k Surface cplain in F ess): ess): ess):	Odor (C1) neres alor ced Iron (ction in Til e (C7) Remarks)	g Living Ro C4) led Soils (C	pots (C3) (C3) (C3) (C3) (C3) (C3) (C3) (C3)	Secor W Se Dr Dr Dr Cr Sa St St St St St St	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) rainage Patterns (B10) y-Season Water Table (C2) rayfish Burrows (C8) aturation Visible on Aerial Imagery (C9 nallow Aquitard (D3) AC-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast

Project/Site: 37090 Kelso RD City/	County: Sandy/Clackamas Sandy/Clackamas	ampling Date: <u>3/30/2017</u>
Applicant/Owner: Joe Spaziani	State: <u>OR</u> St	ampling Point: <u>P3</u>
Investigator(s): John McConnaughey, PWS# 2009	Section, Township, Range: <u>T2S R4E S1</u>	1
Landform (hillslope, terrace, etc.): Valley Floor Loc	cal relief (concave, convex, none): <u>Flat</u>	Slope (%): <u>4%</u>
Subregion (LRR): LRR-A Lat: 45.25079	Description Long: <u>-122.16961</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam	NWI classification	n: <u>Not mapped</u>
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes 🗌 No 🖾 (If no, explain in Remarks.)	
Are Vegetation <u>YES</u> , Soil, or Hydrology <u>YES</u> significantly disturbed?	Are "Normal Circumstances" present?	Yes 🔲 No 🖾
Are Vegetation <u>YES</u> , Soil, or Hydrology naturally problematic?	(If needed, explain any answers in Rer	narks.)
SUMMARY OF FINDINGS – Attach site map showing san	npling point locations, transects, in	nportant features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes ⊠ No □ Yes ⊠ No □	Is the Sampled Area within a Wetland? Yes ⊠ No □	
Remarks: Above average rainfall in Mar	ch and April. This plot is in a mowe	ed down blackberry field, hydrology altered by roadside ditch.	

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indica	
<u>Tree Stratum</u> (Plot size: <u>30' East</u>) 1		Species? Statu	- Number of Dominant Species
2. NO TREES			Total Number of Dominant
3			
4			
		= Total Cover	 Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' East</u>)			
1. Rubus Armeniacus (recently mowed)	100	Y FAC	Prevalence Index worksheet:
2		·	Total % Cover of: Multiply by:
3		·	OBL species <u>0</u> x 1 = <u>0</u>
4			FACW species <u>0</u> x 2 = <u>0</u>
5			FAC species <u>0</u> x 3 = <u>0</u>
	100	= Total Cover	FACU species $\underline{0}$ x 4 = $\underline{0}$
Herb Stratum (Plot size:)			UPL species $\underline{0}$ x 5 = $\underline{0}$
1			Column Totals: 0 (A) 0 (B)
2. Polystichum munitum	3	N FACU	_
3		· ·	Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			☑ Dominance Test is >50%
6			
7		· ·	 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	3	= Total Cover	
			¹ Indicators of hydric soil and wetland hydrology must
1			be present, unless disturbed or problematic.
2		= Total Cover	Hydrophytic
		- Total Cover	Vegetation
% Bare Ground in Herb Stratum 0 % Cov	er of Biotic	Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks: minimal vegetation for identification because fie	ld was mow	ed.	· ·

(inches) 1-5 i-8	Color (moist) 7.5YR3/2	%	Color	(moist)	%	Type ¹	Loc ²	Textur	e	Remarks	;
	7.5YR3/2					Турс		1 0/1101	<u> </u>		
-8		100						<u>Silt loar</u>	m		
	7.5YR3/2	97	<u>5YR4</u>	6	3	<u>C</u>	M	Silty cla	ay loam		
			<u>2.5n</u>		1	<u>c</u>	<u>M</u>	Silty cla	ay loam		
-18	<u>5YR2.3/3</u>	<u>90</u>	<u>5YR4</u>	/6	5	<u>C</u>	<u>M</u>	<u>Clay</u>			
			<u>5YR2</u>	.5/1	5	C	M				
Type: C=Co	oncentration, D=D	Depletion, R	M=Redu	ced Matrix, CS	S=Covere	ed or Coa	ted Sand G	Grains.	² Locatior	n: PL=Pore Linin	g, M=Matrix.
ydric Soil I	Indicators: (App	licable to a	III LRRs	, unless othe	rwise no	ted.)		In	dicators fo	or Problematic H	ydric Soils ³ :
Histosol (. ,			andy Redox (S	-					ck (A9) (LRR C)	
Histic Ep				ripped Matrix						ck (A10) (LRR B)	
Black His	. ,			amy Mucky M		-			_	Vertic (F18)	
	n Sulfide (A4)		_	amy Gleyed N)				nt Material (TF2)	\ \
	Layers (A5) (LR	(()		pleted Matrix		`		L	J Other (EX	plain in Remarks	1
	:k (A9) (LRR D) I Below Dark Surf:	ace (Δ11)		edox Dark Sur epleted Dark S							
	rk Surface (A12)			edox Depressi	•	'		³ Ir	ndicators of	hydrophytic veg	etation and
	ucky Mineral (S1))		Saon Dopicoo						drology must be	
	leyed Matrix (S4)								-	turbed or problem	-
-	Layer (if present)):									
Type: <u>Cla</u>	У.		_								
Depth (ind	ches): <u>10</u>		_					Hydri	c Soil Pres	sent? Yes 🖂	No 🗌
Remarks: So	oil is brittle										
Primary Indic	drology Indicato		_	_					_	Indicators (2 or	
Surface \	. ,			Salt Crust	. ,					Marks (B1) (Rive	-
-	ter Table (A2)			Biotic Crus	• •					ent Deposits (B2)	
Saturatio			L	Aquatic In						eposits (B3) (Riv	-
	arks (B1) (Non ri v t Donosits (B2) (N		N I	Hydrogen		• • •		ote (Ca)		ge Patterns (B10	-
	t Deposits (B2) (N osits (B3) (Non ri		*) L r	Oxidized R Presence of				015 (03)	_ '	ason Water Tabl h Burrows (C8)	c (02)
	Soil Cracks (B6)		L r	Recent Iro		`	,	6)		tion Visible on Ae	rial Imagery (CO
	n Visible on Aeria	l Imagery (F		Thin Muck				~)	=	w Aquitard (D3)	nai inagery (09
	ained Leaves (B9		[Other (Exp						eutral Test (D5)	
ield Observ	vations:										
Surface Wate	er Present?	Yes 🗌 🛛	No 🛛	Depth (inches	s):						
Vater Table	Present?	Yes 🛛 🛛	No 🗌	Depth (inches	s): <u>6"</u>						
Saturation Pr	resent? pillary fringe)	Yes 🛛 I	No 🗌	Depth (inches	s): <u>6"</u>		Wet	land Hyd	irology Pre	esent? Yes 🖂	No 🗌
	corded Data (strea	am gauge, i	monitorir	ıg well, aerial	photos, p	orevious ir	spections)	, if availal	ble: 4/17/17	no water, 5/1/17	9" bgs water
Remarks:											

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast Region

Project/Site: 37090 Kelso RD	City/County: Sandy/Cla	ckamas	Sampling Date:3/30/2017		
Applicant/Owner: Joe Spaziani		State: OR			
Investigator(s): John McConnaughey, PWS# 2009	Section, Tov	wnship, Range: <u>T2S R4E</u>	S11		
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave,	convex, none): <u>Flat</u>	Slope (%): <u>3%</u>		
Subregion (LRR): LRR-A I	Lat: <u>45.41796</u>	Long: <u>-122.20262</u>	Datum:		
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	tion: <u>Not mapped</u>		
Are climatic / hydrologic conditions on the site typical for this tin	ne of year? Yes 🗌 No 🖾 (If	no, explain in Remarks.)			
Are Vegetation <u>YES</u> , Soil, or Hydrology <u>YES</u> significant	ly disturbed? Are "Norma	I Circumstances" present?	? Yes 🗌 No 🛛		
Are Vegetation <u>YES</u> , Soil, or Hydrology naturally	problematic? (If needed,	, explain any answers in R	(emarks.)		
			• • • • • •		

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes ⊠ No □ Yes ⊠ No □	Is the Sampled Area within a Wetland?	Yes 🛛 No 🗌
			av altered by readaide ditab draining water

Remarks: Above average rainfall in March and April. This plot is in a mowed down blackberry fied, hydology altered by roadside ditch draining water onto property. This was to be a boundary plot in the 2017 delineation, but we are now considering it just a wetland plot.

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30'</u>) 1		Species? Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. NO TREES		·	Total Number of Dominant
3		·	Species Across All Strata: <u>1</u> (B)
4			Percent of Dominant Species
		= Total Cover	That Are OBL, FACW, or FAC: 100% (A/B)
Sapling/Shrub Stratum (Plot size: <u>30'</u>)			
1. Rubus Armeniacus (recently mowed)	<u>100</u>	Y FAC	Prevalence Index worksheet:
2		·	Total % Cover of: Multiply by:
3		·	OBL species <u>0</u> x 1 = <u>0</u>
4		·	FACW species <u>0</u> x 2 = <u>0</u>
5			FAC species <u>0</u> x 3 = <u>0</u>
		= Total Cover	FACU species $\underline{0}$ x 4 = $\underline{0}$
Herb Stratum (Plot size: <u>30'</u>)			UPL species $\underline{0}$ x 5 = $\underline{0}$
1		·	Column Totals: <u>0</u> (A) <u>0</u> (B)
2		·	
3		·	Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			☑ Dominance Test is >50%
6			□ Prevalence Index is ≤3.0 ¹
7			Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8		·	Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	<u>103</u>	= Total Cover	
			¹ Indicators of hydric soil and wetland hydrology must
1			be present, unless disturbed or problematic.
2			Hydrophytic
% Bare Ground in Herb Stratum 0 % Cov	ver of Biotic	Crust 0%	Vegetation Present? Yes 🖂 No 🗌
Remarks: minimal vegetation for identification because fie			
Remarke. minimal vegetation for identification because it			

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(inches)	Matrix Color (moist)	%	Color (moist)	dox Featur %	es Type ¹	Loc ²	Texture	Remarks
-5	7.5YR3/2	100					Silt loam	
-11	7.5YR3/2	97	5YR4/6	3	С	М	Silty clay loa	am
			2.5n	1	С	М	Silty clay loa	am
4.40			7 5/100/0					
1-18	<u>5YR2.4/4</u>	<u>50</u>	7.5YR3/2	50			<u>Clay</u>	Mixed matrix
<u> </u>	. <u> </u>							
			M=Reduced Matrix,			ed Sand G		pocation: PL=Pore Lining, M=Matrix.
_		icable to a	III LRRs, unless ot		oted.)			tors for Problematic Hydric Soils ³ :
Histosol	. ,		Sandy Redo					m Muck (A9) (LRR C)
] Histic E] Black H	pipedon (A2) istic (A3)		Stripped Mat	()	(1)			m Muck (A10) (LRR B) duced Vertic (F18)
	en Sulfide (A4)		Loamy Muck		,			l Parent Material (TF2)
	d Layers (A5) (LRR	C)	Depleted Mat	•	,			er (Explain in Remarks)
_	ck (A9) (LRR D)	,	Redox Dark)			(
	d Below Dark Surfa	ce (A11)	Depleted Dar	rk Surface (, F7)			
Thick D	ark Surface (A12)		Redox Depresentation	essions (F8)			³ Indica	tors of hydrophytic vegetation and
☐ Sandy N	/lucky Mineral (S1)							land hydrology must be present,
	Gleyed Matrix (S4)						unle	ess disturbed or problematic.
	Layer (if present):							
estrictive	Euger (in precent)							
Type: <u>Cl</u>			_					
Type: <u>Cl</u> Depth (ir	ay nches): <u>11</u>		 3% redox features				Hydric So	il Present? Yes 🛛 No 🗌
Type: <u>Cl</u> Depth (ir Remarks: T DROLO(ay Inches): <u>11</u> he F6 indicator is n	ot met with	 3% redox features				Hydric So	il Present? Yes 🛛 No 🗌
Type: <u>Cl</u> Depth (ir Remarks: T DROLOG	ay Inches): <u>11</u> he F6 indicator is n GY rdrology Indicator	ot met with	-	noly)				
Type: <u>Cl</u> Depth (ir Remarks: T DROLO(Vetland Hy Primary Ind	ay Inches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of	ot met with	red; check all that a				<u>Sec</u>	ondary Indicators (2 or more required)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface	ay Inches): <u>11</u> The F6 indicator is n GY Indrology Indicator Incators (minimum of Water (A1)	ot met with	red; check all that a	ıst (B11)			Sec	ondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Type: <u>Ci</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface ⊠ High Wa	ay Inches): <u>11</u> The F6 indicator is n GY Indrology Indicator Incators (minimum of Water (A1) ater Table (A2)	ot met with	red; check all that a □ Salt Cru □ Biotic C	ıst (B11) rust (B12)	es (B13)			ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati	ay inches): <u>11</u> the F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3)	ot met with	red; check all that a Salt Cru Biotic C Aquatic	ist (B11) rust (B12) Invertebrate	. ,			ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) (Non riv	s: i one requir erine)	red; check all that a Salt Cru Biotic C Aquatic Hydroge	ist (B11) rust (B12) Invertebrate en Sulfide C	dor (C1)	Living Bo		ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) larks (B1) (Non riv nt Deposits (B2) (N	ot met with s: i one requir erine) on riverine	red; check all that a Salt Cru Biotic C Aquatic Hydroge) Cxidized	ist (B11) rust (B12) Invertebrati en Sulfide C d Rhizosphe	dor (C1) eres along	-	Sec.	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) 1arks (B1) (Non riv nt Deposits (B2) (Non riv posits (B3) (Non riv	ot met with s: i one requir erine) on riverine	red; check all that a Salt Cru Biotic C Aquatic Hydroge) Oxidized Presence	ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduc	odor (C1) eres along ed Iron (C	4)	Sec.	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (Non posits (B3) (Non riv Soil Cracks (B6)	ot met with s: cone requir erine) on riverine rerine)	red; check all that a Salt Cru Biotic C Aquatic Hydroge Oxidized Presenc Recent	ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduc Iron Reduct	odor (C1) eres along ed Iron (C ion in Tille	4)	Sec. Sec. S	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface Inundatio	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) 1arks (B1) (Non riv nt Deposits (B2) (Non riv posits (B3) (Non riv	ot met with s: one requir erine) on riverine rerine) Imagery (B	red; check all that a Salt Cru Biotic C Aquatic Hydroge Oxidizer Presenc Recent 37) Thin Mu	ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduc Iron Reduct	odor (C1) eres along ed Iron (C ion in Tille (C7)	4)	Sec. S	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface Unundatic Water-S	ay hches): <u>11</u> he F6 indicator is n GY /drology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9)	ot met with s: one requir erine) on riverine rerine) Imagery (B	red; check all that a Salt Cru Biotic C Aquatic Hydroge Oxidized Presenc Recent 37) Thin Mu Other (E	ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduct Iron Reduct ick Surface	odor (C1) eres along ed Iron (C ion in Tille (C7)	4)	Sec. S	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Drift De Surface High Water-S Field Obse	ay hches): <u>11</u> he F6 indicator is n GY /drology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9)	ot met with s: one requir erine) on riverine rerine) Imagery (B	red; check all that a Salt Cru Biotic C Aquatic Hydroge Oxidizer Presenc Recent 37) Thin Mu	ist (B11) rust (B12) Invertebrati en Sulfide C d Rhizospho ce of Reduc Iron Reduct ick Surface Explain in R	odor (C1) eres along ed Iron (C ion in Tille (C7)	4)	Sec. S	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface Hundatic Surface Surface Wa	ay hches): <u>11</u> he F6 indicator is n GY vdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations: ter Present?	erine) on riverine rerine) Imagery (B	red; check all that a Salt Cru Biotic C Aquatic Hydroge Oxidized Presenc Recent 37) Thin Mu Other (E	ist (B11) rust (B12) Invertebrati en Sulfide C d Rhizospho ce of Reduct Iron Reduct ick Surface Explain in R	odor (C1) eres along ed Iron (C ion in Tille (C7)	4)	Sec. S	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Drift De Surface High Water S Sedime Surface Water S Field Obse Surface Water Table Saturation F	Ay hches): <u>11</u> he F6 indicator is n GY drology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (No riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations: ter Present?	erine) on riverine erine) Imagery (B Yes	ed; check all that a Salt Cru Biotic C Aquatic Hydroge Oxidized Presenc Recent 37) Thin Mu Other (E	ist (B11) rust (B12) Invertebrati en Sulfide C d Rhizosphi ce of Reduct liron Reduct liron Reduct ck Surface Explain in R hes):	odor (C1) eres along ed Iron (C ion in Tille (C7)	4) ed Soils (C	Sec.	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface Water A Saturati Drift De Surface Inundatid Water-S Field Obse Surface Wa Vater Table Saturation F includes ca Describe Re	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations: ter Present? Present? pillary fringe)	erine) on riverine erine) Imagery (B Yes I N Yes I N	red; check all that a Salt Cru Biotic C Aquatic Hydroge Presenc Recent Thin Mu Other (E No Depth (incl No Depth (incl	Ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduct Iron Reduct Iron Reduct ick Surface Explain in R hes): hes): <u>9"</u> hes): <u>9"</u>	odor (C1) eres along ed Iron (C ion in Tille (C7) emarks)	4) ed Soils (C	Sec. 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface Water M Saturati Drift De Drift De Surface High Water S Field Obse Surface Wa Nater Table Saturation F includes ca Describe Ro able.	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations: ter Present? Present? Present? pillary fringe) pecorded Data (streaged)	ot met with s: one requir erine) on riverine rerine) Imagery (B Yes □ N Yes ⊠ N Yes ⊠ N Yes ⊠ N	red; check all that a Salt Cru Biotic C Aquatic Hydroge Presenc Recent 37) Drhin Mu Other (E No Depth (incl No Depth (incl monitoring well, aeri	Ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduce Iron Reduce Iron Reduce inck Surface Explain in R hes): hes): <u>9"</u> hes): <u>9"</u> hes): <u>9"</u>	odor (C1) eres along ed Iron (C ion in Tille (C7) emarks)	4) ed Soils (C Wet	Sec. 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Crimary Ind Surface High Wa Saturati Water M Sedime Drift De Drift De Surface Hundatid Water S Field Obse Surface Wa Vater Table Saturation F includes ca Describe Ro	ay hches): <u>11</u> he F6 indicator is n GY rdrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations: ter Present? Present? Present? pillary fringe) pecorded Data (streaged)	ot met with s: one requir erine) on riverine rerine) Imagery (B Yes □ N Yes ⊠ N Yes ⊠ N Yes ⊠ N	red; check all that a Salt Cru Biotic C Aquatic Hydroge Presenc Recent 37) Drhin Mu Other (E No Depth (incl No Depth (incl monitoring well, aeri	Ist (B11) rust (B12) Invertebrate en Sulfide C d Rhizosphe ce of Reduce Iron Reduce Iron Reduce inck Surface Explain in R hes): hes): <u>9"</u> hes): <u>9"</u> hes): <u>9"</u>	odor (C1) eres along ed Iron (C ion in Tille (C7) emarks)	4) ed Soils (C Wet	Sec. 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) gy Present? Yes ⊠ No □

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast Region

Project/Site: <u>37090 Kelso RD</u>	c	ity/Co	ounty: <u>Sandy/Clac</u>	kamas	Sampling Date: <u>3/30/2017</u>
Applicant/Owner: <u>Joe Spaziani</u>				State: OR	Sampling Point: P5
Investigator(s): John McConnaughey, PWS# 2009			Section, Tow	nship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): <u>Valley Floor</u>	I	Local	relief (concave, c	onvex, none): <u>Flat</u>	Slope (%): 4%
Subregion (LRR): LRR-A					
Soil Map Unit Name: <u>Cazado silt Ioam, Cottrell silty clay Io</u> a					
Are climatic / hydrologic conditions on the site typical for thi					
	-				
Are Vegetation <u>YES</u> , Soil, or Hydrology <u>YES</u> signific				Circumstances" presen	
Are Vegetation <u>YES</u> , Soil, or Hydrology natura	ally problemat	ic?	(If needed,	explain any answers in l	Remarks.)
SUMMARY OF FINDINGS – Attach site map	showing s	amp	oling point lo	cations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes ⊠ No ⊡ Hydric Soil Present? Yes □ No ⊠	3		Is the Sampled within a Wetlar		No 🖂
Wetland Hydrology Present? Yes No 🗵 Remarks: Above average rainfall in March and April. Th Road that drains onto property.	-	nowe	d down blackberi	y field, hydrology altered	d by roadside ditch along Kelso
VEGETATION – Use scientific names of plan	its.				
••		Dom	ninant Indicator	Dominance Test wor	ksheet:
Tree Stratum (Plot size: <u>30' north</u>) 1.			cies? Status	Number of Dominant S That Are OBL, FACW	
2. <u>NO TREES</u>				Total Number of Domi	inant
3				Species Across All Str	
4				Percent of Dominant S	Species
Sapling/Shrub Stratum (Plot size: <u>30' north</u>)			otal Cover	That Are OBL, FACW	, or FAC: <u>100%</u> (A/B)
1				Prevalence Index wo	
2					Multiply by:
3				-	x 1 = <u>0</u>
4					x 2 = <u>0</u>
5				-	x 3 = <u>0</u>
Herb Stratum (Plot size: 30' north)		= T	otal Cover		x 4 = <u>0</u>
1. <u>Rubus Armeniacus</u>	95	v	FAC	· ·	x 5 = 0 (D)
2. Poa sp.				Column Lotals: 0	(A) <u>0</u> (B)
3				Prevalence Inde	x = B/A = <u>0</u>
4				Hydrophytic Vegetat	ion Indicators:
5				Dominance Test is	s >50%
6				Prevalence Index	is ≤3.0 ¹
7					aptations ¹ (Provide supporting
8					ks or on a separate sneet) ophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	<u>103</u>	= T	otal Cover		priyuc vegetation (Explain)
1					oil and wetland hydrology must turbed or problematic.
2		= T	otal Cover	Hydrophytic	
% Bare Ground in Herb Stratum <u>0</u> % Co	over of Biotic (Vegetation Present? Y	es 🛛 No 🗌
Remarks: minimal vegetation for identification because f	ield was mow	ed.			

Depth (inches)	Matrix Color (moist)	%	Colo	or (moist)	lox Feature %	Type ¹	Loc ²	Textur	e	Remarks
-4	7.5YR3/2	100						Silt loa	m	
-10	7.5YR3/2	<u>96</u>	<u>5YR</u>	84/6	3	С	<u>M</u>	Silty cla	ay loan	1
0-18	5YR2.3/3	60	<u>10Y</u>	R3/1	40			Clay		 Mixed matrix
	Concentration, D=D Indicators: (Appl						ed Sand G			ation: PL=Pore Lining, M=Matrix. rs for Problematic Hydric Soils ³ :
] Histosol				Sandy Redox		,				Muck (A9) (LRR C)
	pipedon (A2)			Stripped Matrix					-	Muck (A10) (LRR B)
Black H	istic (A3)			Loamy Mucky	Mineral (F	1)] Redu	uced Vertic (F18)
	en Sulfide (A4)			oamy Gleyed)				Parent Material (TF2)
_	d Layers (A5) (LRR	C)		Depleted Matrix	· · ·] Other	r (Explain in Remarks)
	ick (A9) (LRR D) d Bolow Dark Surfa	CO (A 1 1)		Redox Dark Sı Depleted Dark	• • •					
	d Below Dark Surfa ark Surface (A12)	ce (A11)		Depleted Dark Redox Depres		,		31,	ndicato	rs of hydrophytic vegetation and
	Aucky Mineral (S1)			Redux Depres	30113 (1 0)					nd hydrology must be present,
-	Gleyed Matrix (S4)									s disturbed or problematic.
Sandy										
_ ,	Layer (if present)									
_ ,	Layer (if present)									
Restrictive Type: <u>Cl</u> Depth (ir	Layer (if present)		 th 3% re	dox features				Hydri	c Soil	Present? Yes 🛛 No 🗌
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLO(Vetland Hy	Layer (if present) av nches): <u>10</u> he F6 indicator is n GY /drology Indicator	ot met wi						Hydri		
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o	ot met wi		eck all that ap				Hydri	Secor	ndary Indicators (2 or more required)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1)	ot met wi		eck all that ap	t (B11)			Hydri	Secor	ndary Indicators (2 or more required) ater Marks (B1) (Riverine)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1) ater Table (A2)	ot met wi		eck all that apj ☐ Salt Crus ☐ Biotic Cru	t (B11) ıst (B12)	es (B13)		Hydri	Secor	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3)	ot met wi s:		eck all that ap ☐ Salt Crus ☐ Biotic Cru ☐ Aquatic Ir	t (B11) ıst (B12) nvertebrate	• •		Hydri	Secor	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Water M	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1) ater Table (A2)	ot met wi s: i one requ erine)	uired; ch	eck all that ap Salt Crus Biotic Cru Aquatic Ir Hydroger	t (B11) ıst (B12)	dor (C1)	Living Ro		Secor	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv	ot met wi s: i one requ erine) on riverin	uired; ch	eck all that ap Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized	t (B11) ist (B12) nvertebrate n Sulfide O	dor (C1) eres along	-		Secor	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Saturati Saturati Sedime Drift De	Layer (if present) av inches): <u>10</u> he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (N	ot met wi s: i one requ erine) on riverin	uired; ch	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence	t (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe	dor (C1) eres along ed Iron (C	4)	ots (C3)	Secor W Se D D D D D C	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Saturati Sedime Drift De Surface	Layer (if present) av inches): <u>10</u> the F6 indicator is in GY /drology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv	ot met wi s: cone requ erine) on riverin verine)	uired; ch	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence	t (B11) ist (B12) nvertebrate n Sulfide O Rhizosphe of Reduce on Reducti	dor (C1) eres along ed Iron (C ion in Tille	4)	ots (C3)	Secor W Se D D D D C C C Secor	adary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8)
Restrictive Type: <u>CI</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface High Wa Saturati Saturati Water M Sedime Drift De Surface	Layer (if present) av inches): 10 he F6 indicator is n GY /drology Indicator icators (minimum o Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6)	ot met wi s: c one requ erine) on riverin rerine) Imagery	uired; ch	eck all that ap Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent In	t (B11) ist (B12) nvertebrate a Sulfide O Rhizosphe of Reduce on Reducti k Surface	dor (C1) eres along ed Iron (C ion in Tille (C7)	4)	ots (C3)	Secor	adary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) aturation Visible on Aerial Imagery (C
Restrictive Type: <u>CI</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface Migh Wa Saturati Saturati Drift De Drift De Surface High Water-S Field Obse	Layer (if present) av hches): 10 he F6 indicator is n GY /drology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (No posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial Stained Leaves (B9) rvations:	ot met wi s: f one requ erine) on riverin verine) Imagery	uired; ch ne) (B7)	eck all that ap Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent Ir Thin Muc Other (Ex	t (B11) ist (B12) ivertebrate a Sulfide O Rhizosphe of Reduce on Reducti k Surface (splain in Re	dor (C1) eres along ed Iron (C ion in Tille (C7)	4)	ots (C3)	Secor	adary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) aturation Visible on Aerial Imagery (C nallow Aquitard (D3)
Restrictive Type: <u>CI</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface Water N Saturati Water N Sedime Drift De Surface Water-S Field Obsee	Layer (if present) av hches): 10 he F6 indicator is n GY /drology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) farks (B1) (Non riv not Deposits (B2) (No posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial Stained Leaves (B9) rvations: ter Present?	ot met wi s: i one requ erine) on riverin rerine) Imagery	uired; ch ne) (B7) No 🖂	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent Ir Thin Muc Other (Ex Depth (incher	t (B11) ist (B12) ivertebrate a Sulfide O Rhizosphe of Reduce on Reducti k Surface (splain in Re	dor (C1) eres along ed Iron (C ion in Tille (C7)	4)	ots (C3)	Secor	adary Indicators (2 or more required) ater Marks (B1) (Riverine) adiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) aturation Visible on Aerial Imagery (C nallow Aquitard (D3)
Restrictive Type: <u>CI</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface X High Wa Saturati Water N Sedime Drift De Surface Nater S Field Obse Surface Wa Water Table	Layer (if present) ay haches): 10 he F6 indicator is n GY varology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (No posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial itained Leaves (B9) rvations: ter Present?	erine) on riverin /erine) Imagery Yes Yes X	<u>uired; ch</u> ne) (B7) No ⊠ No □	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent Ir Chin Muc Other (Ex Depth (inche	t (B11) ist (B12) nvertebrate a Sulfide O Rhizosphe of Reduct on Reducti k Surface splain in Re es):	dor (C1) eres along ed Iron (C ion in Tille (C7)	4) d Soils (C	ots (C3)	Secon W Se Dr Dr Dr Se Se Se Se Se FF	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) aturation Visible on Aerial Imagery (C nallow Aquitard (D3) AC-Neutral Test (D5)
Restrictive Type: <u>Cl</u> Depth (ir Remarks: T DROLOO Vetland Hy Primary Ind Surface A High Wa Saturati Water M Sedime Drift De Surface Hinundatio Water-S Field Obse Surface Wa Vater Table Saturation F includes ca	Layer (if present) ay haches): 10 he F6 indicator is n GY ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial Stained Leaves (B9) rvations: ter Present? Present? pillary fringe)	erine) on riverin verine) Imagery Yes Yes Yes Yes Yes Yes Yes Yes	uired; ch ne) (B7) No ⊠ No □ No □	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent In Thin Muc Other (Ex Depth (inche Depth (inche	t (B11) ist (B12) ivertebrate a Sulfide O Rhizosphe e of Reduce on Reducti k Surface (plain in Re es): es): es): 9"	dor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	4) d Soils (C	ots (C3) 6)	Secon W Se Di Di Ci Si Si F/	adary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) rainage Patterns (B10) y-Season Water Table (C2) rayfish Burrows (C8) aturation Visible on Aerial Imagery (C nallow Aquitard (D3) AC-Neutral Test (D5)
Restrictive Type: CI Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface Migh Wa Saturati Water M Sedime Drift De Surface Inundatio Water-S Field Obse Surface Wa Water Table Saturation F includes ca	Layer (if present) ay haches): 10 he F6 indicator is n GY ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial Stained Leaves (B9) rvations: ter Present? Present? pillary fringe)	erine) on riverin verine) Imagery Yes Yes Yes Yes Yes Yes Yes Yes	uired; ch ne) (B7) No ⊠ No □ No □	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent In Thin Muc Other (Ex Depth (inche Depth (inche	t (B11) ist (B12) ivertebrate a Sulfide O Rhizosphe e of Reduce on Reducti k Surface (plain in Re es): es): es): 9"	dor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	4) d Soils (C	ots (C3) 6)	Secon W Se Di Di Ci Si Si F/	ndary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) aturation Visible on Aerial Imagery (C nallow Aquitard (D3) AC-Neutral Test (D5)
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Restrictive Type: <u>CI</u> Depth (ir Remarks: T DROLOO Wetland Hy Primary Ind Surface High Wa Saturati Water M Sedime Drift De Surface Inundatio Water-S Field Obse Surface Wa Water Table Saturation F includes ca Describe Re able.	Layer (if present) ay haches): 10 he F6 indicator is n GY ydrology Indicator icators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) (Non riv nt Deposits (B2) (N posits (B3) (Non riv Soil Cracks (B6) on Visible on Aerial Stained Leaves (B9) rvations: ter Present? Present? pillary fringe)	erine) on riverin verine) Imagery Yes Yes Yes Yes Yes Yes Yes Yes	uired; ch ne) (B7) No ⊠ No □ No □	eck all that app Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent In Thin Muc Other (Ex Depth (inche Depth (inche	t (B11) ist (B12) ivertebrate a Sulfide O Rhizosphe e of Reduce on Reducti k Surface (plain in Re es): es): es): 9"	dor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	4) d Soils (C	ots (C3) 6)	Secon W Se Di Di Ci Si Si F/	adary Indicators (2 or more required) ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) rainage Patterns (B10) y-Season Water Table (C2) rayfish Burrows (C8) aturation Visible on Aerial Imagery (C nallow Aquitard (D3) AC-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys & Coast Region

Project/Site: <u>37090 Kelso RD</u>	C	ity/Co	unty: <u>Sandy/Clac</u>	ckamas	Sampling	Date:4/15/2	0
Applicant/Owner: <u>Joe Spaziani</u>				State: OR	Sampling	Point: <u>P5B</u>	
nvestigator(s): John McConnaughey, PWS# 2009			Section, Tow	vnship, Range: <u>T2S R4</u>	E S11		
_andform (hillslope, terrace, etc.): <u>Valley Floor</u>		Local i	relief (concave, c	convex, none): <u>Flat</u>		Slope (%): <u>4%</u>
Subregion (LRR): <u>LRR-A</u>			-	-			
Soil Map Unit Name: <u>Cazado silt Ioam, Cottrell silty clay Ioar</u>							
Are climatic / hydrologic conditions on the site typical for this							
				Circumstances" prese			
Are Vegetation <u>YES</u> , Soil, or Hydrology <u>YES</u> significa	-						
Are Vegetation <u>YES</u> , Soil, or Hydrology natura	lly problema	tic?	(If needed,	explain any answers in	Remarks.)		
SUMMARY OF FINDINGS – Attach site map s	showing s	samp	ling point lo	cations, transects	s, importa	ant feature	es, etc.
Hydrophytic Vegetation Present? Yes ⊠ No □			is the Sampled	Aroa			
Hydric Soil Present? Yes ⊠ No □			Is the Sampled within a Wetlar		No 🕅		
Wetland Hydrology Present? Yes 🗌 No 🖂			within a wettai				
Remarks: Moved upland plot approximately 10' up the hil time that wetland hydrology is absent.					w since 201	7 and conclu	ided each
VEGETATION – Use scientific names of plant							
•	Absolute	Dom	inant Indicator	Dominance Test wo	rksheet:		
Tree Stratum (Plot size: <u>30' north</u>)			cies? Status	Number of Dominant	Species		
1				That Are OBL, FACV	V, or FAC:	4	(A)
2. <u>NO TREES</u>				Total Number of Don	ninant		
3				Species Across All S	trata:	4	(B)
4				Percent of Dominant	Species		
Sapling/Shrub Stratum (Plot size: <u>30' north)</u>		_ = To	otal Cover	That Are OBL, FACV	V, or FAC:	100	(A/B)
1				Prevalence Index w	orksheet:		
2				Total % Cover of		Multiply by:	
3.				OBL species 0			
4				FACW species 0	x	2 = <u>0</u>	
5				FAC species 0	X	3 = <u>0</u>	
			otal Cover	FACU species 0	x	4 = <u>0</u>	
Herb Stratum (Plot size: <u>30' north</u>)				UPL species 0	x	5 = <u>0</u>	
1. <u>Rubus Armeniacus</u>	-			Column Totals: 0	(A) <u>0</u>	(B)
2. <u>Poa sp.</u>							
3. <u>Cirsium arvense</u>	-			Prevalence Ind			
4. Agrostis sp	<u>20</u>	Y	FAC	Hydrophytic Vegeta		tors:	
5. <u>Plantain lanceolata</u>	<u>15</u>	N	FACU	Dominance Test			
6				Prevalence Index		Duessiel	aution
7				Morphological Ac data in Rema			
8				Problematic Hydr			-
Woody Vine Stratum (Plot size:)	105	= To	otal Cover		. , 0	, , , , , , , , , , , , , , , , , , ,	,
1				¹ Indicators of hydric s			ly must
2.				be present, unless di			-
		= To	otal Cover	Hydrophytic			
% Bare Ground in Herb Stratum 0				Vegetation Present?	Yes 🛛 No		
				110301111		· 🖵	

(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
)-7	10YR3/3	97	7.5YR4/6	3	С	М	Silt loam	
7-16	10YR3/3	90	7.5YR4/6	10	<u>C</u>	М	Silty clay	/ loam
	oncentration, D=Dep	oletion RI	I=Reduced Mat				Praine	² Location: PL=Pore Lining, M=Matrix.
	Indicators: (Applic					eu Sanu G		icators for Problematic Hydric Soils ³ :
_ Histosol			☐ Sandy Re		,			1 cm Muck (A9) (LRR C)
] Histic Ep	ipedon (A2)		Stripped N					2 cm Muck (A10) (LRR B)
Black Hi	stic (A3)		🔲 Loamy Mu	icky Mineral (F	1)			Reduced Vertic (F18)
	n Sulfide (A4)			yed Matrix (F2	2)			Red Parent Material (TF2)
	Layers (A5) (LRR	C)		. ,				Other (Explain in Remarks)
	ck (A9) (LRR D) I Below Derk Surfee	o (A11)		rk Surface (F6	,			
	l Below Dark Surfac ark Surface (A12)	e (ATT)		Dark Surface (I pressions (F8)	-		³ Inc	licators of hydrophytic vegetation and
	lucky Mineral (S1)			pressions (FO)				wetland hydrology must be present,
-	leyed Matrix (S4)							unless disturbed or problematic.
-	Layer (if present):							·
Type:								
	ches):		_				Hydric	Soil Present? Yes 🛛 No 🗌
Depth (in	ches):		_	rological condi	tions that e	existed wh		Soil Present? Yes No D
Depth (in Remarks: Th	ches): nese soils may be re		_	rological condi	tions that e	existed wh		
Depth (in Remarks: Th configuration	ches): lese soils may be re l. S Y	ilic, perhap	_	rological condi	tions that e	existed wh		
Depth (in Remarks: Th configuration DROLOG Wetland Hy	ches): nese soils may be re n. GY drology Indicators	ilic, perhap	 os reflecting hyd		tions that e	existed wh	en the road	d and ditches upslope were in some other
Depth (in Remarks: Th configuration DROLOG Wetland Hy	ches): lese soils may be re l. S Y	ilic, perhap	 os reflecting hyd		tions that e	existed wh	en the road	
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indi	ches): nese soils may be re n. SY drology Indicators cators (minimum of e	ilic, perhap	ed; check all tha		tions that e	existed wh	en the road	d and ditches upslope were in some other
Depth (in Remarks: Th configuration DROLOG Netland Hy Primary India Surface	ches): nese soils may be re n. SY drology Indicators cators (minimum of e	ilic, perhap	ed; check all tha	t apply)	tions that o	existed wh	en the road	d and ditches upslope were in some other
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary India Surface High Wa	ches): hese soils may be re h. SY drology Indicators cators (minimum of of Water (A1) ter Table (A2)	ilic, perhap	ed; check all tha	t apply) Crust (B11) c Crust (B12) tic Invertebrate	es (B13)	existed wh	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary India Surface High Wa Saturatio	ches): hese soils may be re h. SY drology Indicators cators (minimum of of Water (A1) ter Table (A2)	ilic, perhap	ed; check all tha	t apply) Crust (B11) c Crust (B12)	es (B13)	existed wh	en the road	d and ditches upslope were in some other <u>Secondary Indicators (2 or more required)</u> Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary India Surface High Wa Saturatic Water M Sedimer	ches): hese soils may be re h. Grology Indicators cators (minimum of e Water (A1) ter Table (A2) on (A3) arks (B1) (Non river it Deposits (B2) (No	lic, perhap : one requir rine) n riverine	ed; check all tha Salt (Biotic Aqua Hydr	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe	es (B13) odor (C1) eres along	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
Depth (in Remarks: Th configuration /DROLOG Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep	ches): hese soils may be re h. Grology Indicators cators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1) (Non river at Deposits (B2) (Non posits (B3) (Non river at Deposits (B3) (Non river)	lic, perhap : one requir rine) n riverine	ed; check all tha Salt (Salt (Salt (Aqua Hydr) Qxidi Prese	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduce	es (B13) odor (C1) eres along ed Iron (C4	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Depth (in Remarks: Th configuration /DROLOG Wetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Drift Dep	ches): hese soils may be re h. Grology Indicators cators (minimum of e Water (A1) ter Table (A2) on (A3) arks (B1) (Non river it Deposits (B2) (No	lic, perhap : one requir rine) n riverine	ed; check all tha Salt (Salt (Salt (Salt (Aqua Hydr) Qxidi Press Rece	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct	es (B13) Idor (C1) eres along ed Iron (C4 ion in Tille	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Depth (in Remarks: Th configuration DROLOC Wetland Hy Primary India Surface High Wa Saturatic Water M Sedimer Drift Dep Surface Inundatic	ches): hese soils may be re h. drology Indicators cators (minimum of e Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive it Deposits (B2) (No posits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial II	lic, perhap : one requir rine) n riverine prine) magery (B	ed; check all tha ed; check all tha Salt (Biotic Aqua Hydr) Oxidi Prese Rece 7) Thin	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct Muck Surface	es (B13) Idor (C1) eres along ed Iron (C- ion in Tille (C7)	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Depth (in Remarks: Th configuration DROLOC Wetland Hy Primary India Surface High Wa Saturatic Water M Sedimer Drift Dep Surface Inundatic	ches): lese soils may be re h. drology Indicators cators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive arks (B2) (Non posits (B2) (Non rive Soil Cracks (B6)	lic, perhap : one requir rine) n riverine prine) magery (B	ed; check all tha ed; check all tha Salt (Biotic Aqua Hydr) Oxidi Prese Rece 7) Thin	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct	es (B13) Idor (C1) eres along ed Iron (C- ion in Tille (C7)	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Depth (in Remarks: Th configuration /DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S	ches): lese soils may be re h. drology Indicators cators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive to Deposits (B2) (Non posits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial II tained Leaves (B9)	lic, perhap : one requir rine) n riverine prine) magery (B	ed; check all tha ed; check all tha Salt (Biotic Aqua Hydr) Oxidi Prese Rece 7) Thin	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct Muck Surface	es (B13) Idor (C1) eres along ed Iron (C- ion in Tille (C7)	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser	ches): lese soils may be re h. drology Indicators cators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1) (Non river to Deposits (B2) (No posits (B3) (Non river Soil Cracks (B6) in Visible on Aerial II tained Leaves (B9) vations:	lic, perhap : one requir n riverine erine) magery (B	ed; check all that additional state of the	t apply) Crust (B11) Crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct Muck Surface	es (B13) dor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Depth (in Remarks: Th configuration /DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser Surface Wat	ches): lese soils may be re drology Indicators cators (minimum of e Water (A1) ter Table (A2) on (A3) arks (B1) (Non river th Deposits (B2) (No posits (B3) (Non river Soil Cracks (B6) n Visible on Aerial II tained Leaves (B9) vations: er Present?	rine) n riverine erine) Magery (B	- 	t apply) Crust (B11) crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct muck Surface r (Explain in Re	es (B13) dor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	Living Roo	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser Surface Wat Water Table Saturation P (includes ca	ches): lese soils may be re drology Indicators cators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1) (Non river th Deposits (B2) (No posits (B3) (Non river Soil Cracks (B6) in Visible on Aerial II tained Leaves (B9) vations: er Present?	rine) n riverine erine) Magery (B	- 	t apply) Crust (B11) c Crust (B12) titic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct Muck Surface r (Explain in Re inches): nches):	es (B13) Idor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	Living Rod I) d Soils (Cr	en the road [[[[[[[[[[[[[[[[[[[d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) ology Present? Yes □ No ⊠
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser Surface Wat Water Table Saturation P (includes ca	ches): hese soils may be re h. drology Indicators cators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive to Deposits (B2) (Non posits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial II tained Leaves (B9) vations: er Present? Present? Soil Cracks (B6) N Soil Cracks (B9) Notice (B9) Not	rine) n riverine erine) Magery (B	- 	t apply) Crust (B11) c Crust (B12) titic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct ent Iron Reduct Muck Surface r (Explain in Re inches): nches):	es (B13) Idor (C1) eres along ed Iron (C- ion in Tille (C7) emarks)	Living Rod I) d Soils (Cr	en the road [[[[[[[[[[[[[[[[[[[d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) ology Present? Yes No ⊠
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	ches): hese soils may be re h. Grology Indicators cators (minimum of 4 Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive it Deposits (B2) (No posits (B3) (Non rive Soil Cracks (B6) in Visible on Aerial II tained Leaves (B9) vations: er Present? Present? pillary fringe) corded Data (stream	rine) n riverine erine) Magery (B r(es N r(es N r(es N r(es N r(es N r(es N r(es N)	- 	t apply) Crust (B11) crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct more of Reduct Muck Surface r (Explain in Re- nches): nches): aerial photos, p	es (B13) bdor (C1) eres along ed Iron (C- ion in Tille (C7) emarks) previous in	Living Rod) d Soils (Cd wet spections)	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) ology Present? Yes No ⊠
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	ches): hese soils may be re h drology Indicators cators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive to Deposits (B2) (Non posits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial II tained Leaves (B9) vations: er Present? Present? pillary fringe) corded Data (stream powater table or satu	rine) n riverine erine) Magery (B r(es N r(es N r(es N r(es N r(es N r(es N r(es N)	- 	t apply) Crust (B11) crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct more of Reduct Muck Surface r (Explain in Re- nches): nches): aerial photos, p	es (B13) bdor (C1) eres along ed Iron (C- ion in Tille (C7) emarks) previous in	Living Rod) d Soils (Cd wet spections)	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5) ology Present? Yes No e: No indicators
Depth (in Remarks: Th configuration DROLOG Wetland Hy Primary Indii Surface High Wa Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	ches): hese soils may be re h drology Indicators cators (minimum of Water (A1) ter Table (A2) on (A3) arks (B1) (Non rive to Deposits (B2) (Non posits (B3) (Non rive Soil Cracks (B6) n Visible on Aerial II tained Leaves (B9) vations: er Present? Present? pillary fringe) corded Data (stream powater table or satu	rine) n riverine erine) Magery (B r(es N r(es N r(es N r(es N r(es N r(es N r(es N)	- 	t apply) Crust (B11) crust (B12) tic Invertebrate ogen Sulfide O zed Rhizosphe ence of Reduct more of Reduct Muck Surface r (Explain in Re- nches): nches): aerial photos, p	es (B13) bdor (C1) eres along ed Iron (C- ion in Tille (C7) emarks) previous in	Living Rod) d Soils (Cd wet spections)	en the road	d and ditches upslope were in some other Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5) ology Present? Yes No e: No indicators

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	City/County: Sandy/Clackamas	Samp	ling Date: <u>3/30/2017</u>
Applicant/Owner: Joe Spaziani	State	: <u>OR</u> Samp	ling Point: <u>P6</u>
Investigator(s): John McConnaughey, PWS# 2009	Section, Township, F	Range: <u>T2S R4E S11</u>	
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave, convex, r	none): <u>Flat</u>	Slope (%): <u>4%</u>
Subregion (LRR): LRR-A Lat: 45.	.41796 Long: -	122.20262	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classification: N	ot mapped
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes 🗌 No 🛛 (If no, expla	ain in Remarks.)	
Are Vegetation, Soil, or Hydrology YES significantly dis	turbed? Are "Normal Circur	mstances" present? Ye	es 🔲 No 🖾
Are Vegetation, Soil, or Hydrology naturally probl	ematic? (If needed, explain	n any answers in Rema	ırks.)
SUMMARY OF FINDINGS – Attach site map showing	g sampling point location	s, transects, impo	ortant features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes □ No ⊠ Yes ⊠ No □	Is the Sampled Area within a Wetland? Yes ⊠ No □
Remarks: Above average rainfall in I	March and April. Vegetated patch nc	t mowed, hydrology fed by roadside ditch

VEGETATION – Use scientific names of plants.

	Absolute		t Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>3' cir</u>) 1			? <u>Status</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. NO TREES				Total Number of Dominant
3				Species Across All Strata: <u>3</u> (B)
4	<u></u>	= Total (Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: <u>3' cir</u>)		10tai (Jover	That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. Rubus Armeniacus	30	Y	FAC	Prevalence Index worksheet:
2				Total % Cover of: Multiply by:
3				OBL species <u>0</u> x 1 = <u>0</u>
4				FACW species <u>0</u> x 2 = <u>0</u>
5				FAC species <u>0</u> x 3 = <u>0</u>
	30	= Total (Cover	FACU species 0 x 4 = 0
Herb Stratum (Plot size: <u>3' cir</u>)		-		UPL species 0 x 5 = 0
1. Agrostis sp	40	<u>Y</u>	FAC	Column Totals: 0 (A) 0 (B)
2. <u>Poa sp.</u>	40	Y	FAC	
3. Moss	80			Prevalence Index = $B/A = 0$
4. <u>Galium aparine</u>	2	N	FACU	Hydrophytic Vegetation Indicators:
5. <u>Herb 1</u>	2	N	NA	☑ Dominance Test is >50%
6. <u>Herb 2</u>	2	N	NA	□ Prevalence Index is ≤3.0 ¹
7				Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8	86	= Total (Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)				4
1				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2				
	<u>116</u>	= Total (Cover	Hydrophytic Vegetation
% Bare Ground in Herb Stratum <u>0</u> % Co	ver of Biotic	Crust <u>0%</u>		Present? Yes 🛛 No 🗌
Remarks:				

)epth	Matr	IX		Redox Featu	ures			
nches)	Color (moist)	%	Color (moist		Туре	¹ Loc ²	Texture	Remarks
8	7.5YR3/2	100					Silt loam	
11	7.5YR3/2	95	<u>5YR4/6</u>	5	<u>C</u>	M	Silty clay	loam
-18	7.5YR3/2	50					clay	
	5YR4/6	50						Mixed matrix
ype: C=C	oncentration, D=	Depletion, R	M=Reduced Ma	atrix, CS=Cove	ered or Co	pated Sand G	Grains.	² Location: PL=Pore Lining, M=Matrix.
dric Soil	Indicators: (Ap	plicable to a	ll LRRs, unles	s otherwise r	noted.)		India	cators for Problematic Hydric Soils ³ :
Histosol	(A1)		Sandy R	edox (S5)			□ 1	cm Muck (A9) (LRR C)
	oipedon (A2)		Stripped	. ,				2 cm Muck (A10) (LRR B)
Black Hi	. ,		-	lucky Mineral				Reduced Vertic (F18)
	n Sulfide (A4)			leyed Matrix (F	-2)		_	ed Parent Material (TF2)
-	d Layers (A5) (LR ck (A9) (LRR D)	(n U)	Depleted	ark Surface (F	6)			ther (Explain in Remarks)
	d Below Dark Sur	face (A11)		I Dark Surface (F				
	ark Surface (A12)			epressions (F	• •		³ Indi	cators of hydrophytic vegetation and
	ucky Mineral (S1							etland hydrology must be present,
Sandy G	leyed Matrix (S4)					u	nless disturbed or problematic.
estrictive	Layer (if presen	t):						
Type: <u>Cla</u>	ау		_					
Depth (in	ches): <u>11</u>		_				Hydric \$	Soil Present? Yes 🛛 No 🗌
emarks:								
ROLOG								_
-	drology Indicate						0	
	cators (minimum	of one requi						econdary Indicators (2 or more required)
	Water (A1)			t Crust (B11)				Water Marks (B1) (Riverine)
•	iter Table (A2)			tic Crust (B12)		\		Sediment Deposits (B2) (Riverine)
Saturatio		ive all a c \		atic Invertebra		-		
	larks (B1) (Non r i ht Donocito (B2) (-	Irogen Sulfide		-	eta (C2)	5 (-)
	nt Deposits (B2) (posits (B3) (Non i			dized Rhizosp sence of Redu			ots (C3)	
	Soil Cracks (B6)	inverine)		cent Iron Redu		. ,		• • • •
_	on Visible on Aeri	al Imagery (F		n Muck Surfac			0) L	
	tained Leaves (B	•••	,	er (Explain in I	• •)		1 ()
	COC	-,				,	L	
eld Obser	vations:							
urface Wat	ter Present?	Yes 🗌 🛛	No 🛛 🛛 Depth	(inches):				
/ater Table	Present?	Yes 🛛 🛛	No 🗌 🛛 Depth	(inches): <u>7"</u>	_			
	pillary fringe)		_	(inches): <u>7"</u>			,	logy Present? Yes 🛛 No 🗌
escribe Re ble.	corded Data (stre	eam gauge, i	nonitoring well,	aerial photos,	, previous	inspections)	, if available	: 4/17/17 no water, 5/1/17 9" bgs water
emarks:								

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	_City/County: Sandy/Clacka	mas	Sampling Date: <u>3/30/2017</u>
Applicant/Owner: <u>Joe Spaziani</u>		State: <u>OR</u>	Sampling Point: <u>P7</u>
Investigator(s): John McConnaughey, PWS# 2009	Section, Towns	hip, Range: <u>T2S R4E s</u>	S11
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave, con	vex, none): <u>Flat</u>	Slope (%): <u>2%</u>
Subregion (LRR): LRR-A Lat: 45.	. <u>25066</u> Lo	ong: <u>-122.16981</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion: <u>Not mapped</u>
Are climatic / hydrologic conditions on the site typical for this time of y	ear? Yes 🗌 No 🖾 (If no,	explain in Remarks.)	
Are Vegetation, Soil, or Hydrology YES significantly dis	turbed? Are "Normal (Circumstances" presen	t? Yes 🗌 No 🖂
Are Vegetation, Soil, or Hydrology naturally problem	ematic? (If needed, e	explain any answers in	Remarks.)
SUMMARY OF FINDINGS – Attach site map showing	g sampling point loca	tions, transects,	important features, etc.

	Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes ⊠ No □ Yes ⊠ No □	Is the Sampled Area within a Wetland? Yes ⊠ No □		
Remarks: Above average rainfall in March and April. Vegetated patch not mowed, hydrology fed by roadside ditch along Kelso Road.					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30° East) % Cover Species? Status 1.		Absolute	Dominant Indicator	Dominance Test worksheet:
3.		-		
3.	2. NO TREES		·	Total Number of Dominant
Sapling/Shrub Stratum (Plot size: 30' East) = Total Cover Fact Are OBL, FACW, or FAC: 33% (A/B) 1.	3		·	
Sapling/Shrub Stratum (Plot size: 30' East) = Total Cover Fact Are OBL, FACW, or FAC: 33% (A/B) 1.	4		<u> </u>	Demonst of Deminent Creation
2.				
2.	1			Prevalence Index worksheet:
3.				Total % Cover of: Multiply by:
4				OBL species <u>0</u> x 1 = <u>0</u>
5.				FACW species <u>0</u> x 2 = <u>0</u>
Herb Stratum (Plot size:) = Total Cover FACU species 80 x 4 = 320 UPL species 0 x 5 = 0 Column Totals: 110 (A) 410 (B) 2. Anthoxanthum odoratum 55 Y FACU 3. Rubus armeniacus 5 N FAC 4. Taraxacum officinale 20 Y FACU 5. Hieracium albiforum 5 N NA 6. Galium aparine 5 N FACU 7.				
Herb Stratum (Plot size:) UPL species 0				·
1. Agrostis sp 25 Y FAC Column Totals: 110 (A) 410 (B) 2. Anthoxanthum odoratum 55 Y FACU Prevalence Index = B/A = 3.7 3. Rubus armeniacus 5 N FAC Prevalence Index = B/A = 3.7 4. Taraxacum officinale 20 Y FACU Hydrophytic Vegetation Indicators: 5. Hieracium albiflorum 5 N NA Dominance Test is >50% 6. Galium aparine 5 N FACU Prevalence Index is ≤3.01 7.	Herb Stratum (Plot size:)			UPL species 0 x 5 = 0
2. Anthoxanthum odoratum 55 Y FACU Prevalence Index = B/A = 3.7 3. Rubus armeniacus 5 N FAC Prevalence Index = B/A = 3.7 4. Taraxacum officinale 20 Y FACU Hydrophytic Vegetation Indicators: 5. Hieracium albiflorum 5 N NA Dominance Test is >50% 6. Galium aparine 5 N FACU Prevalence Index is ≤3.01 7.	1. <u>Agrostis sp</u>	25	Y FAC	· <u> </u>
4. Taraxacum officinale 20 Y FACU Hydrophytic Vegetation Indicators: 5. Hieracium albiflorum 5 N NA Dominance Test is >50% 6. Galium aparine 5 N FACU Prevalence Index is ≤3.01 7.	2. Anthoxanthum odoratum	55	Y FACU	
5. Hieracium albiflorum 5 N NA □ Dominance Test is >50% 6. Galium aparine 5 N FACU □ Prevalence Index is ≤3.01 7.	3. <u>Rubus armeniacus</u>	5	N FAC	Prevalence Index = $B/A = 3.7$
6. Galium aparine 5 N FACU □ Prevalence Index is ≤3.01 7	4. <u>Taraxacum officinale</u>	20	Y FACU	Hydrophytic Vegetation Indicators:
6. Galium aparine 5 N FACU □ Prevalence Index is ≤3.01 7	5. <u>Hieracium albiflorum</u>	5	N NA	Dominance Test is >50%
8.				□ Prevalence Index is ≤3.0 ¹
Woody Vine Stratum (Plot size:) 103 = Total Cover □				
Woody Vine Stratum (Plot size:) 1.	8			Problematic Hydrophytic Vegetation ¹ (Explain)
1.	Woody Vine Stratum (Plot size:	<u>103</u>	= Total Cover	
2.				¹ Indicators of hydric soil and wetland hydrology must
= Total Cover Hydrophytic Vegetation Vegetation Present? Yes □ No ⊠ Remarks: Prevalence test is 3.6 and 33% for Dominance test therefore not hydrophytic vegetation.Anthoxanthum odoratum is a problematic No ⊠				
% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0% Vegetation Remarks: Prevalence test is 3.6 and 33% for Dominance test therefore not hydrophytic vegetation.Anthoxanthum odoratum is a problematic No I	2			Hydrophytic
Remarks: Prevalence test is 3.6 and 33% for Dominance test therefore not hydrophytic vegetation.Anthoxanthum odoratum is a problematic				Vegetation
	% Bare Ground in Herb Stratum 0 %	Cover of Biotic	Crust <u>0%</u>	Present? Yes 🗌 No 🖾
aggressive invasive.		nce test therefor	e not hydrophytic veg	etation.Anthoxanthum odoratum is a problematic
	aggressive invasive.			

Depth (inches)	N 4 - 4						m the absence	
	Matri Color (moist)	×%	Color (moist)	Redox Featur %	res Type ¹	Loc ²	Texture	Remarks
-9	7.5YR3/2	100					Silt loam	Nomano
11	7.5YR3/1	90	5YR4/6	10	С	M	Silty clay loam]
1-18	7.5YR2.5/2	95	<u>5YR4/6</u>	5	<u> </u>	M	<u>Silty clay loam</u>	1
ype: C=C	Concentration, D=I	Depletion, RM	Reduced Mat	rix, CS=Cover	ed or Coa	ated Sand (Grains. ² Loc	ation: PL=Pore Lining, M=Matrix.
/dric Soil	Indicators: (App	plicable to al	l LRRs, unless	otherwise no	oted.)		Indicator	rs for Problematic Hydric Soils ³ :
] Histosol	. ,		Sandy Re	dox (S5)				Muck (A9) (LRR C)
Histic Ep	pipedon (A2)		Stripped I	Matrix (S6)				Muck (A10) (LRR B)
Black Hi	. ,			ucky Mineral (F	,			iced Vertic (F18)
	en Sulfide (A4)			eyed Matrix (F2	2)			Parent Material (TF2)
-	d Layers (A5) (LR	(R C)	Depleted I	. ,			Other	(Explain in Remarks)
-	ick (A9) (LRR D)			rk Surface (F6	,			
	d Below Dark Sur	· · ·		Dark Surface (2	
	ark Surface (A12)		Redox De	pressions (F8)			rs of hydrophytic vegetation and
	Mucky Mineral (S1	-						nd hydrology must be present,
	Gleyed Matrix (S4)						unies	s disturbed or problematic.
		():						
Type: <u>Cla</u>	-		-					
Depth (in	nches): <u>11</u>		-				Hydric Soil	Present? Yes 🛛 No 🗌
ROLOG	GY							
	GY ydrology Indicato	ors:						
etland Hy	-		ed; check all the	at apply)			Secon	dary Indicators (2 or more required)
etland Hy	ydrology Indicato			at apply) Crust (B11)				dary Indicators (2 or more required) ater Marks (B1) (Riverine)
etland Hy imary Indi Surface	ydrology Indicato		☐ Salt					ater Marks (B1) (Riverine)
etland Hy imary Indi Surface High Wa	ydrology Indicato icators (minimum Water (A1) ater Table (A2)		☐ Salt ☐ Bioti	Crust (B11)	es (B13)		U Wa	· · · · ·
etland Hy imary Indi Surface High Wa Saturatio	ydrology Indicato icators (minimum Water (A1) ater Table (A2)	of one require	☐ Salt ☐ Bioti ☐ Aqua	Crust (B11) c Crust (B12)			U Wa Se Dri	ater Marks (B1) (Riverine) diment Deposits (B2) (Riverine)
etland Hy rimary Indi Surface High Wa Saturatid Water M	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3)	of one require iverine)	☐ Salt ☐ Bioti ☐ Aqua ☐ Hydi	Crust (B11) c Crust (B12) atic Invertebrat	Odor (C1)		U Wa Se Dri Dri	ater Marks (B1) (Riverine) diment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine)
etland Hy rimary Indi Surface High Wa Saturatid Water M Sedimer	ydrology Indicato icators (minimum : Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri	of one require iverine) Non riverine	Salt Salt Solution So	Crust (B11) c Crust (B12) atic Invertebrat	Odor (C1) eres alon	g Living Ro	□ ₩a □ Se □ Dri □ Dri ots (C3) □ Dr	ater Marks (B1) (Riverine) diment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10)
Vetland Hy rimary Indi Surface High Wa Saturation Water M Sedimer Drift Dep	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r	of one require iverine) Non riverine	Salt Salt Solution So	Crust (B11) c Crust (B12) atic Invertebrat rogen Sulfide C ized Rhizosph ence of Reduc	Odor (C1) eres alon ced Iron (C	g Living Ro C4)		ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8)
Vetland Hy rimary Indi Surface High Wa Saturatio Saturatio Saturatio Saturatio Difit Dep Drift Dep Surface	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6)	of one require iverine) Non riverine riverine)	Salt Salt Sioti Sioti Aqua Sioti O Siot O S	Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc	Odor (C1) eres alon ced Iron (C tion in Till	g Living Ro C4)	ots (C3) [Sa	ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8)
Yetland Hy rimary Indi Surface High Wa Saturatid Water M Sedimer Drift Dep Surface Inundatio	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r	of one require iverine) Non riverine riverine) al Imagery (B	Salt Bioti Aquation Hydri Oxid Press Record T) Thin	Crust (B11) c Crust (B12) atic Invertebrat rogen Sulfide C ized Rhizosph ence of Reduc	Odor (C1) eres alon ced Iron (C tion in Till (C7)	g Living Ro C4)	- - Wa - Se - Dr - Dr ots (C3) Dr - Cr 6) Sa - Sh	ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9)
Vetland Hy rimary Indi Surface High Wa Saturatia Water M Sedimer Drift Dep Surface Inundatic Water-S	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria Stained Leaves (B5	of one require iverine) Non riverine riverine) al Imagery (B	Salt Bioti Aquation Hydri Oxid Press Record T) Thin	Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc Muck Surface	Odor (C1) eres alon ced Iron (C tion in Till (C7)	g Living Ro C4)	- - Wa - Se - Dr - Dr ots (C3) Dr - Cr 6) Sa - Sh	ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Vetland Hy rimary Indi Surface High Wa Saturatia Water M Sedimer Drift Dep Surface Inundatic Water-S	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria Stained Leaves (B5	of one require iverine) Non riverine iverine) al Imagery (B [.] 9)	Salt Bioti Aqua Hyda Oxid Pres Recc T) Othe	Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc Muck Surface	Odor (C1) eres alon ced Iron (C tion in Till (C7)	g Living Ro C4)	- - Wa - Se - Dr - Dr ots (C3) Dr - Cr 6) Sa - Sh	ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Vetland Hy rimary Indi Surface High Wa Saturatia Water M Sedimer Drift Dep Surface Inundatic Water-S Held Obser	ydrology Indicato icators (minimum 2 Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r 2 Soil Cracks (B6) on Visible on Aeria Stained Leaves (B9 rvations: ater Present?	of one require iverine) Non riverine iverine) al Imagery (B [:] 9) Yes N	Salt Bioti Aqua Aqua O Oxid Pres Recc 7) Dot Dot Dot Dot Dot Contect O Depth (Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc Muck Surface er (Explain in R	Odor (C1) eres alon ced Iron (C tion in Till (C7)	g Living Ro C4)	- - Wa - Se - Dr - Dr ots (C3) Dr - Cr 6) Sa - Sh	ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Vetland Hy rimary Indi Surface High Wa Saturatia Water M Sedimer Drift Dep Drift Dep Surface Inundatic Water-S Vater Cable Vater Table aturation F ncludes ca	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non ri Soil Cracks (B6) on Visible on Aeria Stained Leaves (B3) rvations: ater Present? e Present? present? apillary fringe)	of one require iverine) Non riverine riverine) al Imagery (B 9) Yes □ N Yes ⊠ N Yes ⊠ N	Salt Bioti Aqua Aqua Aqua Aqua Aqua Pres Reca 7) Depth (Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc Muck Surface er (Explain in R inches): inches): 5"	Odor (C1) eres alon eres alon ced Iron (C tion in Till (C7) eemarks)	g Living Ro C4) ed Soils (C		ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9) iallow Aquitard (D3) iC-Neutral Test (D5) Present? Yes No
Vetland Hy rimary Indi Surface High Wa Saturatia Water M Sedimer Drift Dep Surface Inundatic Water-S Water-S Nater Table aturation F ncludes ca escribe Re	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non ri Soil Cracks (B6) on Visible on Aeria Stained Leaves (B3) rvations: ater Present? e Present? present? apillary fringe)	of one require iverine) Non riverine riverine) al Imagery (B 9) Yes □ N Yes ⊠ N Yes ⊠ N	Salt Bioti Aqua Aqua Aqua Aqua Aqua Pres Reca 7) Depth (Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc Muck Surface er (Explain in R inches): inches): 5"	Odor (C1) eres alon eres alon ced Iron (C tion in Till (C7) eemarks)	g Living Ro C4) ed Soils (C		ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9 iallow Aquitard (D3) ic-Neutral Test (D5)
imary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Drift Dep Surface Inundatic Water-S ield Obser urface Wa Vater Table aturation F ncludes ca	ydrology Indicato icators (minimum Water (A1) ater Table (A2) ion (A3) Marks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non ri Soil Cracks (B6) on Visible on Aeria Stained Leaves (B3) rvations: ater Present? e Present? present? apillary fringe)	of one require iverine) Non riverine riverine) al Imagery (B 9) Yes □ N Yes ⊠ N Yes ⊠ N	Salt Bioti Aqua Aqua Aqua Aqua Aqua Pres Reca 7) Depth (Crust (B11) c Crust (B12) atic Invertebrat ogen Sulfide C ized Rhizosph ence of Reduc ent Iron Reduc Muck Surface er (Explain in R inches): inches): 5"	Odor (C1) eres alon eres alon ced Iron (C tion in Till (C7) eemarks)	g Living Ro C4) ed Soils (C		ater Marks (B1) (Riverine) idiment Deposits (B2) (Riverine) ift Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) ayfish Burrows (C8) ituration Visible on Aerial Imagery (C9) iallow Aquitard (D3) iC-Neutral Test (D5) Present? Yes No

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	City/County: Sandy/Clack	amas	Sampling Date:3/30/2017
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: P8
Investigator(s): John McConnaughey, PWS# 2009	Section, Towr	nship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave, co	onvex, none): <u>Flat</u>	Slope (%): <u>3%</u>
Subregion (LRR): LRR-A Lat: 45	5.25067 I	_ong: <u>-122.16979</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion: <u>Not mapped</u>
Are climatic / hydrologic conditions on the site typical for this time of y	/ear? Yes 🗌 No 🛛 (If no	o, explain in Remarks.)	
Are Vegetation YES, Soil, or Hydrology significantly dis	sturbed? Are "Norma	I Circumstances" preser	nt? Yes 🛛 No 🗌
Are Vegetation YES, Soil, or Hydrology naturally proble	matic? (If needed, e	xplain any answers in R	emarks.)
SUMMARY OF FINDINGS – Attach site map showin	g sampling point loc	ations, transects,	important features, etc.

Hydrophytic Vegetation Present? Yes No Is the Sampled Area Hydric Soil Present? Yes ⊠ No within a Wetland? Yes ⊠ No Wetland Hydrology Present? Yes ⊠ No

Remarks: Above average rainfall in March and April. Vegetated patch not mowed, hydrology altered by roadside ditch along Kelso Road

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indi	
<u>Tree Stratum</u> (Plot size: <u>5'cir</u>) 1.		Species? Sta	Number of Dominant Species That Are OBL, FACW, or FAC: 1(A)
2. NO TREES			Total Number of Dominant
3			
4		·	Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: 5'cir)		= Total Cover	That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
1			Prevalence Index worksheet:
2			
3			
4.			
5			FAC species <u>45</u> x 3 = <u>135</u>
		= Total Cover	FACU species <u>83</u> x 4 = <u>332</u>
Herb Stratum (Plot size: 5' cir)			UPL species <u>0</u> x 5 = <u>0</u>
1. <u>Agrostis sp</u>	40	<u>Y</u> <u>FAC</u>	Column Totals: <u>128</u> (A) <u>467</u> (B)
2. Anthoxanthum odoratum	58	Y FAC	
3. <u>Holcus lanatus</u>	5	N FAC	Prevalence Index = $B/A = 3.6$
4. <u>Taraxacum officinale</u>	10	N FAC	Hydrophytic Vegetation Indicators:
5. <u>Hypochaeris radicata</u>	15	N FAC	CU Dominance Test is >50%
6		· ·	☑ Prevalence Index is $\leq 3.0^1$
7		·	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8			
Woody Vine Stratum (Plot size:)	128	= Total Cover	
			¹ Indicators of hydric soil and wetland hydrology must
1			be present, unless disturbed or problematic.
2		= Total Cover	Hydrophytic
			Vegetation
		Crust <u>0%</u>	Present? Yes 🗌 No 🛛
Remarks: Prevalence Index test is 3.6 and Dominance	is 50% (not gr	eater) so not hyd	Irophytic vegetation. Anthoxanthum is an problematic
aggressive invasive.			

	Matrix Color (moist)	%	Redox Features Color (moist) % Ty	pe ¹ Loc ² Tex	ture Remarks
-8	7.5YR5/3	100		Silt I	oam
	7.5YR2.5/1	100			clay loam
2-18	<u>5YR3/4</u>	<u> 100 </u>		<u>Silty</u>	clay loam
		- <u> </u>			
			Reduced Matrix, CS=Covered or	Coated Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
ydric Soil lı	ndicators: (Appli	cable to all I	RRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
Histosol (,		Sandy Redox (S5)		1 cm Muck (A9) (LRR C)
] Histic Epi	,		Stripped Matrix (S6)		2 cm Muck (A10) (LRR B)
Black Hist	()		Loamy Mucky Mineral (F1)		Reduced Vertic (F18)
	Sulfide (A4)		□ Loamy Gleyed Matrix (F2)		Red Parent Material (TF2)
	Layers (A5) (LRR k (A9) (LRR D)	•)	☑ Depleted Matrix (F3) ☑ Redox Dark Surface (F6)		Other (Explain in Remarks)
_	Below Dark Surfac	ce (A11)	Depleted Dark Surface (F0)		
	k Surface (A12)	(****)	Redox Depressions (F8)		³ Indicators of hydrophytic vegetation and
	ucky Mineral (S1)				wetland hydrology must be present,
	eyed Matrix (S4)				unless disturbed or problematic.
	ayer (if present):				
Type: <u>Clay</u>	/				
Depth (inc	hes): <u>12</u>			Hy	dric Soil Present? Yes 🛛 No 🗌
Remarks: Ext	remely wet. Hard	to see indica	tors		
	Y Irology Indicators				
			check all that apply)		Secondary Indicators (2 or more required)
·····	•		Salt Crust (B11)		☐ Water Marks (B1) (Riverine)
Surface W					Sediment Deposits (B2) (Riverine)
	or Table (A2)		Biotic Cruet (B12)		
High Wate	er Table (A2)		Biotic Crust (B12)	13)	
 ☑ High Wate ☑ Saturation 	n (A3)	vrine)	Aquatic Invertebrates (B		Drift Deposits (B3) (Riverine)
 ☑ High Wate ☑ Saturation ☑ Water Ma 	n (A3) urks (B1) (Non rive	,	Aquatic Invertebrates (B Hydrogen Sulfide Odor (C1)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
 ☑ High Wate ☑ Saturation ☑ Water Ma ☑ Sediment 	n (A3) Irks (B1) (Non rive Deposits (B2) (No	on riverine)	 Aquatic Invertebrates (B Hydrogen Sulfide Odor (I Oxidized Rhizospheres a 	C1) along Living Roots (C3	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
 High Wate Saturation Water Ma Sediment Drift Depo 	n (A3) Irks (B1) (Non rive Deposits (B2) (No osits (B3) (Non riv	on riverine)	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc	C1) along Living Roots (C3 on (C4)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
 High Wate Saturation Water Ma Sediment Drift Depo Surface S 	n (A3) Irks (B1) (Non rive Deposits (B2) (No Disits (B3) (Non riv Goil Cracks (B6)	on riverine) erine)	 Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in 	C1) along Living Roots (C3 on (C4)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
High Wate Saturatior Water Ma Sediment Drift Depo Surface S	n (A3) Irks (B1) (Non rive Deposits (B2) (No Dosits (B3) (Non riv Soil Cracks (B6) In Visible on Aerial I	on riverine) erine)	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7)	C1) along Living Roots (C3 on (C4) i Tilled Soils (C6)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
High Wate Saturatior Water Ma Sediment Drift Depo Surface S	n (A3) Irks (B1) (Non rive Deposits (B2) (No Disits (B3) (Non riv Goil Cracks (B6)	on riverine) erine)	 Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in 	C1) along Living Roots (C3 on (C4) i Tilled Soils (C6)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
 High Wate Saturation Water Ma Sediment Drift Depo Surface S Inundation Water-Sta 	n (A3) Irks (B1) (Non rive Deposits (B2) (No Dosits (B3) (Non riv soil Cracks (B6) In Visible on Aerial I ained Leaves (B9)	on riverine) erine)	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7)	C1) along Living Roots (C3 on (C4) i Tilled Soils (C6)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
 High Wate Saturation Water Ma Sediment Drift Depc Surface S Inundation Water-State 	n (A3) Irks (B1) (Non rive Deposits (B2) (No posits (B3) (Non riv soil Cracks (B6) n Visible on Aerial I ained Leaves (B9) Pations:	on riverine) erine)	 Aquatic Invertebrates (B) Hydrogen Sulfide Odor (i) Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark 	C1) along Living Roots (C3 on (C4) i Tilled Soils (C6)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
High Wate Saturation Water Ma Sediment Drift Depo Unift Depo Unundation Water-Sta	n (A3) rrks (B1) (Non rive Deposits (B2) (No posits (B3) (Non riv coil Cracks (B6) n Visible on Aerial I ained Leaves (B9) rations: pr Present?	on riverine) erine) Imagery (B7)	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Iro Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u>	C1) along Living Roots (C3 on (C4) i Tilled Soils (C6) ks)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
High Wate Saturation Water Ma Sediment Drift Depo Surface S Inundation Water-Sta Field Observ Surface Wate Vater Table F Saturation Pro-	n (A3) rrks (B1) (Non rive Deposits (B2) (No posits (B3) (Non riv coil Cracks (B6) n Visible on Aerial I ained Leaves (B9) rations: present? Present?	on riverine) erine) Imagery (B7) Yes 🛛 No	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Iro Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u>	C1) along Living Roots (C3 on (C4) i Tilled Soils (C6) ks)	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
High Wate Saturatior Water Ma Sediment Drift Depc Surface S Inundation Water-Sta Field Observ Surface Wate Vater Table F Saturation Pre-	n (A3) arks (B1) (Non rive Deposits (B2) (No posits (B3) (Non rive Goil Cracks (B6) a Visible on Aerial I ained Leaves (B9) pations: ar Present? Present? esent? illary fringe)	on riverine) erine) Imagery (B7) Yes ⊠ No Yes ⊠ No Yes ⊠ No	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u> Depth (inches):	C1) along Living Roots (C3 nn (C4) i Tilled Soils (C6) ks) Wetland H	 □ Drift Deposits (B3) (Riverine) □ Drainage Patterns (B10) 3) □ Dry-Season Water Table (C2) □ Crayfish Burrows (C8) □ Saturation Visible on Aerial Imagery (C9) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5)
High Wate High Water Ma Saturation Unift Depo Surface S Inundation Water-Sta Field Observ Surface Water Saturation Pro Includes cap Describe Rec	n (A3) arks (B1) (Non rive Deposits (B2) (No posits (B3) (Non rive Goil Cracks (B6) a Visible on Aerial I ained Leaves (B9) pations: ar Present? Present? esent? illary fringe)	on riverine) erine) Imagery (B7) Yes ⊠ No Yes ⊠ No Yes ⊠ No	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u> Depth (inches):	C1) along Living Roots (C3 nn (C4) i Tilled Soils (C6) ks) Wetland H	 Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
High Wate Saturation Water Ma Sediment Drift Depc Surface S Inundation Water-Sta Field Observ Surface Wate Vater Table F Saturation Pro includes capi Describe Rec vater	n (A3) arks (B1) (Non rive Deposits (B2) (No posits (B3) (Non rive Goil Cracks (B6) a Visible on Aerial I ained Leaves (B9) pations: ar Present? Present? esent? illary fringe)	on riverine) erine) Imagery (B7) Yes ⊠ No Yes ⊠ No Yes ⊠ No	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u> Depth (inches):	C1) along Living Roots (C3 nn (C4) i Tilled Soils (C6) ks) Wetland H	 □ Drift Deposits (B3) (Riverine) □ Drainage Patterns (B10) 3) □ Dry-Season Water Table (C2) □ Crayfish Burrows (C8) □ Saturation Visible on Aerial Imagery (C9) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5)
Saturation Water Ma Sediment Dift Depc Surface S Inundation Water-Sta Field Observ Surface Water Cater Table F Saturation Pr includes capi	n (A3) arks (B1) (Non rive Deposits (B2) (No posits (B3) (Non rive Goil Cracks (B6) a Visible on Aerial I ained Leaves (B9) pations: ar Present? Present? esent? illary fringe)	on riverine) erine) Imagery (B7) Yes ⊠ No Yes ⊠ No Yes ⊠ No	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u> Depth (inches):	C1) along Living Roots (C3 nn (C4) i Tilled Soils (C6) ks) Wetland H	 □ Drift Deposits (B3) (Riverine) □ Drainage Patterns (B10) 3) □ Dry-Season Water Table (C2) □ Crayfish Burrows (C8) □ Saturation Visible on Aerial Imagery (C9) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5)
High Wate Saturation Water Ma Sediment Drift Depc Surface S Inundation Water-Sta Field Observ Surface Wate Vater Table F Saturation Pro- includes capi Describe Rec vater	n (A3) arks (B1) (Non rive Deposits (B2) (No posits (B3) (Non rive Goil Cracks (B6) a Visible on Aerial I ained Leaves (B9) pations: ar Present? Present? esent? illary fringe)	on riverine) erine) Imagery (B7) Yes ⊠ No Yes ⊠ No Yes ⊠ No	Aquatic Invertebrates (B Hydrogen Sulfide Odor (Oxidized Rhizospheres a Presence of Reduced Irc Recent Iron Reduction in Thin Muck Surface (C7) Other (Explain in Remark Depth (inches): <u>1/4"</u> Depth (inches):	C1) along Living Roots (C3 nn (C4) i Tilled Soils (C6) ks) Wetland H	 □ Drift Deposits (B3) (Riverine) □ Drainage Patterns (B10) 3) □ Dry-Season Water Table (C2) □ Crayfish Burrows (C8) □ Saturation Visible on Aerial Imagery (C9) □ Shallow Aquitard (D3) □ FAC-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	City/County: Sandy/Clacka	imas	Sampling Date:3/30/2017
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: <u>P9</u>
Investigator(s): John McConnaughey, PWS# 2009	Section, Towns	ship, Range: <u>T2S R4E s</u>	S11
Landform (hillslope, terrace, etc.): Valley Floor	_Local relief (concave, con	ivex, none): <u>slope</u>	Slope (%): <u>2%</u>
Subregion (LRR): LRR-A Lat: 45.2	<u>25023</u> Lo	ong: <u>-122.16985</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion: <u>Not mapped</u>
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes 🗌 No 🖾 (If no,	, explain in Remarks.)	
Are Vegetation YES, Soil, or Hydrology significantly dist	urbed? Are "Normal	Circumstances" preser	nt? Yes 🛛 No 🗌
Are Vegetation <u>YES</u> , Soil, or Hydrology naturally problem	natic? (If needed, ex	plain any answers in R	emarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hyd	Irophytic Vegetation Present? Iric Soil Present? tland Hydrology Present?	Yes⊠ No □ Yes⊠ No □ Yes⊠ No □	Is the Sampled Area within a Wetland?	Yes 🖾 No 🗌
_			n an an tation. This is a fair as a late	and the state of contained. The broadward broads

Remarks: Above average rainfall in March and April 2017. Mowed down vegetation. This is a fringe plot on the side of upland. The hydrophytic vegetation is problematic invasive and can be argued that they are found in uplands. The observed hydrology between three different days was upland, this plot was taken at 12" but with the amount of rainfall the week of the survey it was higher than normal.

VEGETATION – Use scientific names of plants.

	Absolute	Dominant		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30'ese</u>)		Species?		Number of Dominant Species
1. <u>Pseudotsuga menziesii</u>				That Are OBL, FACW, or FAC: <u>3</u> (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>4</u> (B)
4				Percent of Dominant Species
	5	= Total C	over	That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>30' ese</u>)				
1. Rubus armeniacus (mowed, probably was higher %)	25	<u>Y</u>	FAC	Prevalence Index worksheet:
2				Total % Cover of: Multiply by:
3				OBL species <u>0</u> x 1 = <u>0</u>
4				FACW species $\underline{0}$ x 2 = $\underline{0}$
5				FAC species 0 x 3 = 0
		= Total C	over	FACU species 0 x 4 = 0
Herb Stratum (Plot size: <u>30' ese</u>)				UPL species 0 x 5 = 0
1				Column Totals: 0 (A) 0 (B)
2. Anthoxanthum odoratum			FACU	(-)
3. <u>Agrostis sp.</u>		Y		Prevalence Index = $B/A = 0$
4. Cirsium arvense		Y	FAC	Hydrophytic Vegetation Indicators:
5				☑ Dominance Test is >50%
6				□ Prevalence Index is ≤3.0 ¹
7				Morphological Adaptations ¹ (Provide supporting
				data in Remarks or on a separate sheet)
8		= Total C		Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	05		over	
1				¹ Indicators of hydric soil and wetland hydrology must
2				be present, unless disturbed or problematic.
L	95	= Total C	over	Hydrophytic
	90		Over	Vegetation
% Bare Ground in Herb Stratum 0 % Cov	er of Biotic (Crust <u>0%</u>		Present? Yes 🛛 No 🗌
Remarks:				

US Army Corps of Engineers

nches)	Matrix Color (moist)	%	Color (moist)	edox Featur %	Type ¹	Loc ²	Texture	Remarks
5	7.5YR3/2	100			<u> </u>		Silt loam	Kemano
12	7.5YR3/2	90	5YR4/6	10	С	М	Silty clay loam	
-18	7.5YR3/2	97	5YR4/6	3	С	М	Silty clay loam	
	<u>·····</u>							
			M=Reduced Matrix			ted Sand G		on: PL=Pore Lining, M=Matrix.
		licable to	all LRRs, unless o		oted.)			for Problematic Hydric Soils ³ :
Histosol	. ,		Sandy Redo					uck (A9) (LRR C)
Black Hi	pipedon (A2) istic (A3)		Stripped Ma Loamy Muck		=1)			uck (A10) (LRR B) ed Vertic (F18)
	en Sulfide (A4)		Loamy Gleye		,			rent Material (TF2)
	d Layers (A5) (LR	R C)	Depleted Ma	-				Explain in Remarks)
-	ck (A9) (LRR D)		Redox Dark		,			
	d Below Dark Surf	ace (A11)	Depleted Da		, ,		31	- f la sela a la dia sera a da dia se a se
	ark Surface (A12) /lucky Mineral (S1)	Redox Depr	essions (F8)			of hydrophytic vegetation and hydrology must be present,
-	Gleyed Matrix (S4)							listurbed or problematic.
	Layer (if present							•
Type: <u>Cla</u>	ay							
Depth (ir	nches): <u>12</u>		_				Hydric Soil Pr	esent? Yes 🛛 No 🗌
-	drology Indicato							
_		of one requi	red; check all that a					ry Indicators (2 or more required)
	Water (A1) ater Table (A2)		☐ Salt Cri ☐ Biotic C					er Marks (B1) (Riverine) ment Deposits (B2) (Riverine)
				Invertebrat	oc (B13)			
-	on (Δ3)							Deposits (B3) (Rivarina)
Saturati		verine)					_	Deposits (B3) (Riverine) hage Patterns (B10)
Saturatio	larks (B1) (Non ri	-	Hydrog	en Sulfide C	Odor (C1)	ı Livina Ro	Drain	nage Patterns (B10)
Saturation Water M Sedimen		Non riverin	e) 🗌 Hydrog		Ddor (C1) eres along	-	ots (C3) □ Drair	
Saturation Water M Sedimen Drift Dep	larks (B1) (Non ri nt Deposits (B2) (I	Non riverin	e) Hydrog Doxidize Presen	en Sulfide (d Rhizosph	Odor (C1) eres along ced Iron (C	4)	ots (C3) Drain	nage Patterns (B10) Season Water Table (C2)
Saturation Water M Sedimen Drift Den Surface	larks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r	Non riverin iverine)	Hydrog Hydrog Oxidize Presen Recent	en Sulfide (d Rhizosph ce of Reduc	Ddor (C1) eres along ed Iron (C tion in Tille	4)	□ Drair □ Drair ots (C3) □ Dry-{ □ Cray 6) □ Satu	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8)
Saturation Water M Sedimen Drift Dep Surface	larks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6)	Non riverin iverine) Il Imagery (I	Hydrog Oxidize Presen Recent 37) Thin M	en Sulfide (d Rhizosph ce of Reduc Iron Reduc	Odor (C1) eres along ced Iron (C tion in Tille (C7)	4)	□ Drair ots (C3) □ Dry-5 □ Cray 6) □ Satu □ Shal	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9)
Saturatio Water M Sedimen Drift Deg Surface Inundatic Water-S	larks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (B9 rvations:	Non riverin iverine) Il Imagery (I	 Hydrog Oxidize Presen Recent Thin M Other (en Sulfide (d Rhizosph ce of Reduc Iron Reduc uck Surface Explain in R	Odor (C1) eres along ed Iron (C tion in Tille (C7) emarks)	4)	□ Drair ots (C3) □ Dry-5 □ Cray 6) □ Satu □ Shal	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9) ow Aquitard (D3)
Saturatio Vater M Sedimen Drift Dep Surface Inundatic Water-S	larks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (BS rvations: ter Present?	Non riverin iverine) Il Imagery (I 9) Yes 🗌	 Hydrog Oxidize Presen Recent Thin M Other (en Sulfide (d Rhizosph ce of Reduc Iron Reduc uck Surface Explain in R	Odor (C1) eres along ed Iron (C tion in Tille (C7) emarks)	4)	□ Drair ots (C3) □ Dry-5 □ Cray 6) □ Satu □ Shal	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9) ow Aquitard (D3)
Saturation Water M Sediment Drift Deg Surface Inundation Water-S ield Obsent urface Water Table aturation F	tarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (BS rvations: ter Present? Present? Present?	Non riverin iverine) Il Imagery (I 3) Yes Yes Yes Yes Xes Xes Xes Xes Xes Xes Xes X	Hydrog Oxidize Oxidize Presen Recent 37) Thin M Other (No \ Depth (inc No \ Depth (inc)	en Sulfide (d Rhizosph ce of Reduc Iron Reduc uck Surface Explain in R	Odor (C1) eres along ced Iron (C tion in Tille (C7) cemarks)	4) ed Soils (C	Drain Drain Drain Dry-3 Cray Satu Shal FAC	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9) ow Aquitard (D3)
Saturation Sediment Sediment Drift Dept Surface Inundation Water-S Sediment Sedimen	tarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? Present? pillary fringe)	Non riverine) iverine) il Imagery (I)) Yes □ Yes ⊠ Yes ⊠	 Hydrog Oxidize Presen Recent Thin Mi Other (No Depth (inc No Depth (inc	en Sulfide (d Rhizosph ce of Reduc Iron Reduc uck Surface Explain in R hes): hes): hes):	Ddor (C1) eres along eed Iron (C tion in Tille (C7) eemarks)	4) ed Soils (Co	Drain Drain Drain Cray Cray 6) Satu FAC	hage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9) iow Aquitard (D3) -Neutral Test (D5)
Saturation Water M Sedimen Drift Dep Surface Inundation Water-S ield Obsen wrface Wa Vater Table aturation F ncludes ca vescribe Re emarks: D	tarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? Present? pre	Non riverine) iverine) il Imagery (I)) Yes □ Yes ⊠ Yes ⊠ am gauge, tes observa	Hydrog Oxidize Oxidize Presen Recent 37) Thin M Other (No \ Depth (inc No \ Depth (inc No \ Depth (inc monitoring well, aei	en Sulfide (d Rhizosph ce of Reduc Iron Reduc uck Surface Explain in R hes): hes): hes): ial photos, j 2" or not the	Ddor (C1) eres along eed Iron (C tion in Tille (C7) temarks)	4) ed Soils (C Wet spections) nd the high	Drain Drain Drain Drain Drain Drain Drain Drain Drain Cray Satu Shal FAC	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9) low Aquitard (D3) -Neutral Test (D5)
Saturation Water M Sedimen Drift Dep Surface Inundation Water-S ield Obsen urface Wa /ater Table aturation F nocludes ca escribe Reference emarks: D	tarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? Present? pre	Non riverine) iverine) il Imagery (I)) Yes □ Yes ⊠ Yes ⊠ am gauge, tes observa	Hydrog Oxidize Presen Recent 37) Thin Mi Other (No Depth (inc No Depth (inc monitoring well, aer tions being below 1	en Sulfide (d Rhizosph ce of Reduc Iron Reduc uck Surface Explain in R hes): hes): hes): ial photos, j 2" or not the	Ddor (C1) eres along eed Iron (C tion in Tille (C7) temarks)	4) ed Soils (C Wet spections) nd the high	Drain Drain Drain Drain Drain Drain Drain Drain Drain Cray Satu Shal FAC	nage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9) low Aquitard (D3) •Neutral Test (D5) resent? Yes ⊠ No □ 17 no water, 5/1/17 15" bgs

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	City/County: Sandy/Clack	Sampling Date:4/15/20	
Applicant/Owner: Joe Spaziani		State: OR	Sampling Point: <u>P9B</u>
Investigator(s): John McConnaughey, PWS# 2009	Section, Towr	nship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave, co	onvex, none): <u>slope</u>	Slope (%): <u>2%</u>
Subregion (LRR): LRR-A Lat: 45	5.25023	Long: <u>-122.16985</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion: <u>Not mapped</u>
Are climatic / hydrologic conditions on the site typical for this time of y	year? Yes 🗌 No 🛛 (If n	o, explain in Remarks.)	
Are Vegetation YES, Soil, or Hydrology significantly dis	sturbed? Are "Norma	I Circumstances" preser	nt? Yes 🛛 No 🗌
Are Vegetation <u>YES</u> , Soil, or Hydrology naturally proble	matic? (If needed, e	explain any answers in R	emarks.)
SUMMARY OF FINDINGS – Attach site map showin	g sampling point loc	ations, transects,	important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes □ No ⊠ Yes □ No ⊠ Yes □ No ⊠	Is the Sampled Area within a Wetland?	Yes 🗌 No 🛛	
Remarks: 15' north of plot 9				1

VEGETATION – Use scientific names of plants.

	Absolute	Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30'ese</u>)	% Cover	Species? Status	Number of Dominant Species
1. <u>Pseudotsuga menziesii</u>	5	Y FACU	That Are OBL, FACW, or FAC: 1 (A)
2			Total Number of Densin and
3			Total Number of Dominant Species Across All Strata: 2 (B)
4			
			Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: 30' ese)	5	= Total Cover	That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
	100	Y FAC	Prevalence Index worksheet:
	-		
2			Total % Cover of: Multiply by:
3		·	OBL species 0 x 1 = 0
4		·	FACW species <u>0</u> x 2 = <u>0</u>
5			FAC species <u>0</u> x 3 = <u>0</u>
	100		FACU species 0 x 4 = 0
Herb Stratum (Plot size: <u>30' ese</u>)			UPL species 0 x 5 = 0
1			Column Totals: 0 (A) 0 (B)
2			
3			Prevalence Index = $B/A = 0$
4			Hydrophytic Vegetation Indicators:
5			□ Dominance Test is >50%
6			□ Prevalence Index is ≤3.0 ¹
7			Morphological Adaptations ¹ (Provide supporting
		·	data in Remarks or on a separate sheet)
8		- Total Osuan	Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	<u>100</u>	= Total Cover	
			¹ Indicators of hydric soil and wetland hydrology must
1		·	be present, unless disturbed or problematic.
2		·	
	<u>105</u>	= Total Cover	Hydrophytic Vegetation
% Bare Ground in Herb Stratum 0 % Cov	er of Biotic	Crust <u>0%</u>	Present? Yes 🗌 No 🖂
Remarks:			1

Depth (inches)		be to the d	eptn need	ed to docui	ment the	indicato	r or confirm	m the absend	e of indicators.)
incnes)	Matrix		0.1		x Feature		1 2	T t	Demonster
	Color (moist)	%	Color (r	noist)	%	Type ¹	Loc ²	Texture	Remarks
-9	<u>10YR3/2</u>	70					·	Silt loam	Mixed matrix
	7.5YR4/6	30							
-11	7.5YR4/6	96	10YR3/	2	4	С	М	Clay layer	
1-16	10YR3/2	50						· · ·	Mixed matrix
1-10							·		Mixed matrix
	7.5YR4/6	50					·		
							·		
	Concentration, D=E Indicators: (App						ted Sand G		ocation: PL=Pore Lining, M=Matrix. tors for Problematic Hydric Soils ³ :
] Histosol				ndy Redox (S		,			m Muck (A9) (LRR C)
	pipedon (A2)			pped Matrix	-				m Muck (A10) (LRR B)
Black Hi				my Mucky N	. ,	1)			duced Vertic (F18)
	en Sulfide (A4)			ny Gleyed N		-			d Parent Material (TF2)
Stratified	d Layers (A5) (LR	R C)	🗌 Dep	leted Matrix	(F3)			🗌 Oth	er (Explain in Remarks)
1 cm Mu	ck (A9) (LRR D)		🗌 Red	lox Dark Su	rface (F6)				
	d Below Dark Surf	ace (A11)		leted Dark S		7)		<u>^</u>	
	ark Surface (A12)	、 、	🗌 Red	lox Depress	ions (F8)				tors of hydrophytic vegetation and
	Aucky Mineral (S1	-							land hydrology must be present,
-	Bleyed Matrix (S4) Layer (if present							unle	ess disturbed or problematic.
)-							
Type: <u>Cla</u>									
• •	nches): <u>12</u>		_					-	il Present? Yes ☐ No ⊠ " solid reddish color. We speculate this
DROLOC Wetland Hy	drology Indicato	rs:							
Primary Indi	icators (minimum o	of one requi	red; check	all that appl	ly)			Sec	ondary Indicators (2 or more required)
Surface	Water (A1)			Salt Crust	(B11)				Water Marks (B1) (Riverine)
	ter Teble (AQ)			Biotic Crus	st (B12)				
	ater Table (A2)				. ,				Sediment Deposits (B2) (Riverine)
-				Aquatic Inv		es (B13)			Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Saturatio		verine)			vertebrate				
Saturatio	on (A3)	-		Hydrogen	vertebrate Sulfide O	dor (C1)	Living Roc		Drift Deposits (B3) (Riverine)
Saturatio	on (A3) Iarks (B1) (Non ri	Non riverin		Hydrogen	vertebrate Sulfide Oo Rhizosphe	dor (C1) res along		□ : □ □ □	Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Saturatio	on (A3) 1arks (B1) (Non ri nt Deposits (B2) (f	Non riverin		Hydrogen Oxidized F	vertebrate Sulfide Oo Rhizosphe of Reduce	dor (C1) res along ed Iron (C	4)	□ : □ □ □ □ □ □ □ □	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Saturatio Water M Sedimer Drift Dep Surface	on (A3) Iarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r	Non riverin iverine)	e)	Hydrogen Oxidized F Presence o	vertebrate Sulfide Oo Rhizosphe of Reduce n Reducti	dor (C1) res along ed Iron (C on in Tille	4)	Image: state	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Saturatio	on (A3) larks (B1) (Non ri nt Deposits (B2) (i posits (B3) (Non r Soil Cracks (B6)	Non riverine) iverine) al Imagery (I	e)	Hydrogen Oxidized F Presence o Recent Iro	vertebrate Sulfide Oo Rhizosphe of Reduce n Reducti Surface (dor (C1) res along ed Iron (C on in Tille (C7)	4)	□ : □ □ □ □ □ □ □ □ □ □ 0) □ :	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9
Saturatio Water M Sedimer Drift Dep Surface Inundatio Water-S	on (A3) flarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (B6	Non riverine) iverine) al Imagery (I	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck	vertebrate Sulfide Oo Rhizosphe of Reduce n Reducti Surface (dor (C1) res along ed Iron (C on in Tille (C7)	4)	□ : □ □ □ □ □ □ □ □ □ □ 0) □ :	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Saturatic Vater M Sedimer Drift Deg Surface Inundatic Water-S Field Obser	on (A3) flarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (B6	Non rivering iverine) al Imagery (I	e) [[B7) [Hydrogen Oxidized F Presence o Recent Iro Thin Muck	vertebrate Sulfide O Rhizosphe of Reduce n Reducti Surface (blain in Re	dor (C1) res along ed Iron (C on in Tille (C7) emarks)	4)	□ : □ □ □ □ □ □ □ □ □ □ 0) □ :	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Saturatic Vater M Sedimer Drift Deg Surface Inundatic Water-S Field Obser Surface Water	on (A3) flarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (BS rvations: ter Present?	Non rivering iverine) al Imagery (I 3) Yes	e) []	Hydrogen Oxidized R Presence o Recent Iro Thin Muck Other (Exp	vertebrate Sulfide Od Rhizosphe of Reduce n Reducti Surface (olain in Re	dor (C1) res along ed Iron (C on in Tille (C7) emarks)	4)	□ : □ □ □ □ □ □ □ □ □ □ 0) □ :	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Saturatic Vater M Sedimer Drift Deg Surface Inundatic Water-S Field Obser Surface Water	on (A3) flarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non ri Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present?	Non rivering iverine) al Imagery (I 3) Yes Yes Yes Yes	e) [] B7) [] No 🛛 [] No 🖾 []	Hydrogen Oxidized R Presence of Recent Iro Thin Muck Other (Exp Depth (inchest	vertebrate Sulfide Oc khizosphe of Reduce n Reducti Surface (plain in Re s): s):	dor (C1) res along ed Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	bts (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Saturatio Sedimer Surface Inundatic Water-S Field Obser Surface Wat Vater Table Saturation P includes ca	on (A3) farks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? pillary fringe)	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (olain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Saturatio Sedimer Surface Inundatic Water-S Field Obser Surface Wat Vater Table Saturation P includes ca	on (A3) flarks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria stained Leaves (B5 rvations: ter Present? Present?	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (olain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
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Saturatic Kater M Sedimer Drift Deg Surface Inundatic Water-S Field Obser Surface Wat Water Table Saturation P includes ca Describe Re	on (A3) farks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? pillary fringe)	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (olain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Saturatio Sedimer Sedimer Inundatic Water-S Field Obser Surface Water Table Saturation P (includes ca	on (A3) farks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? pillary fringe)	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (slain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Saturatic Kater M Sedimer Drift Deg Lurface Inundatic Water-S Field Obser Surface Wat Water Table Saturation P (includes ca Describe Re	on (A3) farks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? pillary fringe)	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (slain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Saturatic Vater M Sedimer Drift Deg Surface Inundatic Water-S Field Obser Surface Wat Nater Table Saturation P includes ca Describe Re	on (A3) farks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? pillary fringe)	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (slain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3) FAC-Neutral Test (D5)
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Saturation Water M Sedimer Drift Dep Surface Inundatic Water-S Gurface Water-S Surface Water Vater Table Saturation P Includes ca Describe Re	on (A3) farks (B1) (Non ri nt Deposits (B2) (I posits (B3) (Non r Soil Cracks (B6) on Visible on Aeria itained Leaves (B5 rvations: ter Present? Present? Present? pillary fringe)	Non riverine) al Imagery (I a) Yes Ye	e)	Hydrogen Oxidized F Presence o Recent Iro Thin Muck Other (Exp Depth (inchest Depth (inchest	vertebrate Sulfide Or Rhizosphe of Reduce n Reducti Surface (slain in Re s): > 16" s):	dor (C1) res along ad Iron (C on in Tille (C7) emarks)	4) ed Soils (C6	Dots (C3)	Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C8 Shallow Aquitard (D3) FAC-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 37090 Kelso RD	_City/County: Sandy/Clacka	amas	Sampling Date:3/30/2017
Applicant/Owner: <u>Joe Spaziani</u>		State: OR	Sampling Point: P10
Investigator(s): John McConnaughey, PWS# 2009	Section, Towns	ship, Range: <u>T2S R4E</u>	S11
Landform (hillslope, terrace, etc.): Valley Floor	Local relief (concave, cor	nvex, none): <u>slope</u>	Slope (%): <u>3%</u>
Subregion (LRR): LRR-A Lat: 45.	.41777 L	.ong: <u>-122.28298</u>	Datum:
Soil Map Unit Name: Cazado silt loam, Cottrell silty clay loam		NWI classificat	ion: <u>Not mapped</u>
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes 🗌 🛛 No 🖾 (If no	, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly d	isturbed? Are "Norma	al Circumstances" pres	ent? Yes 🛛 No 🗌
Are Vegetation, Soil, or Hydrology naturally probl	ematic? (If needed,	explain any answers in	Remarks.)
		_	

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ⊠ No □ Yes □ No ⊠ Yes ⊠ No □	Is the Sampled Area within a Wetland?	Yes 🛛 No 🗌
Remarks: Above average rainfall in M	larch and April.		

VEGETATION – Use scientific names of plants.

	Absolute		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>5' cir</u>) 1.		Species? Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2		·	Total Number of Dominant
3		·	Species Across All Strata: <u>3</u> (B)
4			Percent of Dominant Species
Sapling/Shrub Stratum (Plot size: <u>5' cir</u>)		= Total Cover	That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>Rubus armeniacus</u>	40	Y FAC	Prevalence Index worksheet:
2			Total % Cover of: Multiply by:
3			OBL species 0 x 1 = 0
4			FACW species 0 x 2 = 0
5			FAC species 0 x 3 = 0
	40		FACU species 0 x 4 = 0
Herb Stratum (Plot size: <u>30' ese</u>)	10		UPL species 0 x 5 = 0
1. <u>Poa sp.</u>	40	Y FAC	Column Totals: 0 (A) 0 (B)
2. <u>moss</u>		Y NA	
3. Agrostis sp.		Y FAC	Prevalence Index = $B/A = 0$
4. Cirsium arvense	10	N FAC	Hydrophytic Vegetation Indicators:
5. <u>Herb 1</u>		N NA	☑ Dominance Test is >50%
6			□ Prevalence Index is $\leq 3.0^1$
7		· ·	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
8	80		Problematic Hydrophytic Vegetation ¹ (Explain)
<u>Woody Vine Stratum</u> (Plot size:) 1		·	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2	120	= Total Cover	Hydrophytic Vegetation
% Bare Ground in Herb Stratum 0	% Cover of Biotic	Crust <u>0%</u>	Present? Yes 🛛 No 🗌
Remarks:			

Arid West – Version 2.0

SOIL

DROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required) Surface Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Non riverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Non riverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Non riverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3) Water-Stained Leaves (B9) Other (Explain in Remarks) FAC-Neutral Test (D5) Vater Table Present? Yes No Depth (inches): <u>#</u> Water Table Present? Yes No Depth (inches): <u>8</u> Water Arable Present? Yes No Depth (inches): B'' Water able Present? Yes No Depth (inches): S'	Depth (inches) Color	Matrix (moist)	%	Color	r (moist)	dox Features	Type ¹	Loc ²	Texture	e		Remarks	;
3.18 7.5YR3/4 100 Silty clay loam 3.18 7.5YR3/4 100 Silty clay loam	-6 7.5YF	R3/3	100						Silt loar	n			
3-18 7.5YR3/4 100 Silly clay loam 3-18 7.5YR3/4 100 Silly clay loam ypa: C-Concentration, D-Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL-Pore Lining, M-Matrix, Yafri Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL-Pore Lining, M-Matrix, Yafri Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL-Pore Lining, M-Matrix, Yafri Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS Covered Sand Grains. *Location: PL-Pore Lining, M-Matrix, Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS Covered Sand Grains. *Location: PL-Pore Lining, M-Matrix, Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS Covered Sand Grains. *Location: PL-Pore Lining, M-Matrix, Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS Covered Sand Grains. *Location: PL-Pore Lining, M-Matrix, Soils* yrig: C-Concentration, D-Depletion, RM-Reduced Matrix, CS Covered Sand Sands* Covered Sand Sands* yrig: Covered Sand Sands* Covered Sand Sands* Covered Sand Sands* Covered Sands* yrig:	-13 7.5YF	R3/2	100						Silty cla	ay loam			
ype: C-Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix, ydfric Solis* ydric Soli Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solis* 1 Histosol (A1) Sandy Redox (S5) 1 cm Muck (A9) (LRR C) 1 Bistok Flagodon (A2) Stripped Matrix (S6) 2 cm Muck (A10) (LRR B) 1 cm Muck (A10) (LRR C) Depleted Matrix (F2) Red Parent Material (TF2) 2 transface (A12) Depleted Darks Surface (F7) Depleted Darks Surface (F7) 1 thick Dark Surface (A11) Depleted Dark Surface (F7) Parent Material (TF2) 1 cm Muck (A9) (LRR O) Depleted Dark Surface (F7) Parent Material (TF2) 1 cm Muck (A9) (LRR O) Depleted Dark Surface (F7) Parent Material (TF2) 1 cm Muck (A9) (LRR O) Depleted Dark Surface (F7) Parent Material (TF2) 1 cm Muck (A9) (LRR O) Depleted Dark Surface (F7) Parent Material (TF2) 1 cm Muck (A9) (LRR O) Depleted Matrix (F2) Parent Material (TF2) 2 sandy Gleyed Matrix (S4) Water Marks (S1) unless disturbed or problematic. Stricture Layer (If present): Tree Tree Tree 1 Sandry Gleyed Matrix (S4) Sait Crust (B11)<													
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ 1 Histo Epipedon (A2) Sandy Redox (S5) 1 cm Muck (A9) (LRR C) 1 Histo Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A10) (LRR B) 1 Back Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) 1 Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) 2 Stratified Layers (A5) (LRR C) Depleted Dark Surface (F7) 1 rom Muck (A9) (LRR C) Depleted Dark Surface (F7) 3 Endy Mucky Mineral (S1) Redox Dark Surface (F7) 9 Sandy Gleyed Matrix (S4) unless disturbed or problematic. estrictive Layer (if present): Type: Clay Type: Clay Hydro Soil Present? Yes No 9 Sandy Gleyed Matrix (S1) Salt Crust (B11) 9 Saturation (A3) Aquatic Invertebrates (B13) 9 Surface Water (A1) Salt Crust (B11) 9 Surface S(B1) (Non riverine) Hydroice Soils (C3) 9 Water Marks (B1) (Non riverine) Hydroice Soils (C6) 9 Surface S(B1) (Non riverine) Hydroice Reduced Iron (C4) Crayfish Burrows (C3) 9 Surface S(B3) (Non riverine) Presence of Reduced Iron (C4) Crayfish Burrow	<u>3-18 7.5YF</u>	83/4	<u>100</u>				·		Silty cla	ay loam			
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ 1 Histo Epipedon (A2) Sandy Redox (S5) 1 cm Muck (A9) (LRR C) 1 Histo Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A10) (LRR B) 1 Back Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) 1 Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) 2 Stratified Layers (A5) (LRR C) Depleted Dark Surface (F7) 1 rom Muck (A9) (LRR C) Depleted Dark Surface (F7) 3 Endy Mucky Mineral (S1) Redox Dark Surface (F7) 9 Sandy Gleyed Matrix (S4) unless disturbed or problematic. estrictive Layer (if present): Type: Clay Type: Clay Hydro Soil Present? Yes No 9 Sandy Gleyed Matrix (S1) Salt Crust (B11) 9 Saturation (A3) Aquatic Invertebrates (B13) 9 Surface Water (A1) Salt Crust (B11) 9 Surface S(B1) (Non riverine) Hydroice Soils (C3) 9 Water Marks (B1) (Non riverine) Hydroice Soils (C6) 9 Surface S(B1) (Non riverine) Hydroice Reduced Iron (C4) Crayfish Burrows (C3) 9 Surface S(B3) (Non riverine) Presence of Reduced Iron (C4) Crayfish Burrow							· <u> </u>	·					
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ 1 Histo Epipedon (A2) Sandy Redox (S5) 1 cm Muck (A9) (LRR C) 1 Histo Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A10) (LRR B) 1 Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) 1 Hydrogen Suffide (A4) Deamy Gleyed Matrix (F2) Red Parent Material (TF2) 2 Stratified Layers (A5) (LRR C) Depleted Dark Surface (F7) Thick Dark Surface (A11) Depleted Dark Surface (F7) 1 Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. 2 Sandy Gleyed Matrix (S4) unless disturbed or problematic. estricitive Layer (if present): Type: Clay Popth (inches): 13 Hydrology Indicators: imary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required) 1 Surface Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) 2 Surfue Water (A13) Aquatic Invertebrates (B13) Drift Deposits (B2) (Riverine) 3 Saurd Side (B1) (Non riverine) Hydroigen Sulfide Odor (C1) Dranage Patterns (B10) 3 Surface Sid (B1) (Non riverine)									. <u></u>				
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APPENDIX C - Ground Level Color Photographs: Photos of Wetland "A" are from the 2017 wetland delineation and new photos from the 2020 delineation.



Photo 2. Lower portion of Wetland "A" showing excessive algal growth due to fertilizers washed down from farms and nurseries upslope. ETC Photo 4/28/2017

17-010 Wetland A project www.etcEnvironmental.net

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Photo 3. New P5B upland plot, photo looking into upland to the southeast. ETC Photo 4/15/2020



Photo 4:.Looking the south at P5B into Wetland "A". ETC Photo 4/15/2020

17-010 Wetland A project www.etcEnvironmental.net Page 12/13 360-984-8767

APPENDIX D - Sensitive Area Certification:

Fish Presence:

No fish are thought to be present on the subject property, nor would they be expected.

Endangered Species:

No endangered species of plants or animals were observed or reported.

Critical Habitat Features:

The property was surveyed for the following critical habitat features. Not all of these features are considered rare or critical by the City Sandy:

Talus slopes – none Caves, cliffs, crevasses, rock outcrops – none Large oak trees, or oak groves or oak savanna – none Snags – none Large woody debris – none Springs, seeps - None. Deep water habitat – None Vernal pool wetlands – None Old growth forest – None. Wetlands – Described above. Fish spawning or rearing habitat – none. It is believed that there is no fish access to this property.

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Exhibit J



Department of State Lands 775 Summer Street NE, Suite 100 Salem, OR 97301-1279 (503) 986-5200 FAX (503) 378-4844 www.oregon.gov/dsl

January 29, 2019

Great American Development Attn: Joe Spaziani 16287 S. Forsythe Road Oregon City, OR 97045

Kate Brown Governor

State Land Board

Dennis Richardson Secretary of State

Re: WD #2018-0656 Wetland Delineation Report for 37090 SE Kelso Road, Clackamas County; T 2S R 4E S 11 portion of TL 2200; S 11AC TL 828 & 832;

Tobias Read State Treasurer

Dear Mr. Spaziani:

The Department of State Lands has reviewed the wetland delineation report prepared by Environmental Technology Consultants for the site referenced above. Please note that the two study areas include only a portion of the tax lots described above (see the attached maps). Based upon the information presented in the report, and additional information submitted upon request, we concur with the wetland and waterway boundaries as mapped in revised Figures 6A and 6B of the report. Please replace all copies of the preliminary wetland maps with these final Department-approved maps.

Within the two study areas, four wetlands (Wetland B, C, Wetland Track A and Wetland Tract E) totaling approximately 0.997 acres, and Stream 2 were identified. All features are subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in Wetlands B and C or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined). However, Wetland Tract A and Wetland Tract E are part of a mitigation site. Therefore, any impact to these wetlands may require a permit.

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will determine jurisdiction for purposes of the Clean Water Act. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5246 if you have any questions.

Sincerely,

Chris Stevenson Jurisdiction Coordinator

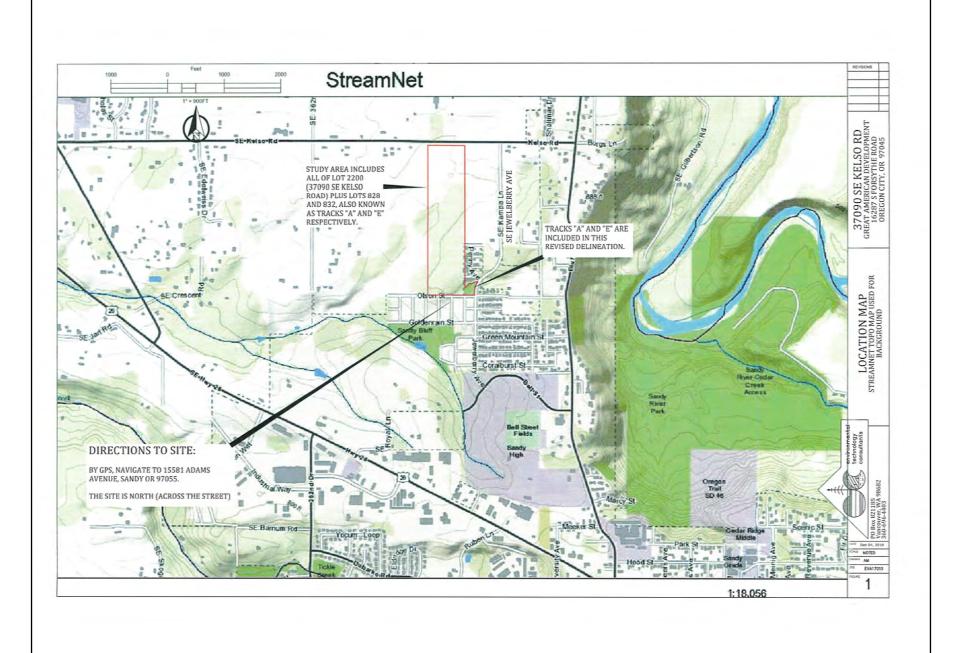
Enclosures

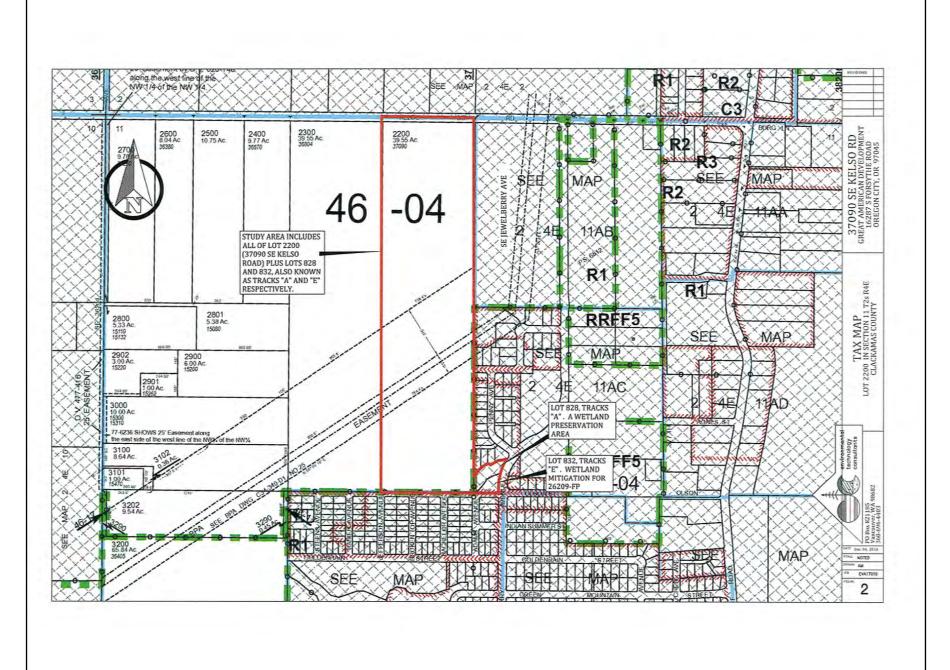
Approved by Peter Ryan, PWS

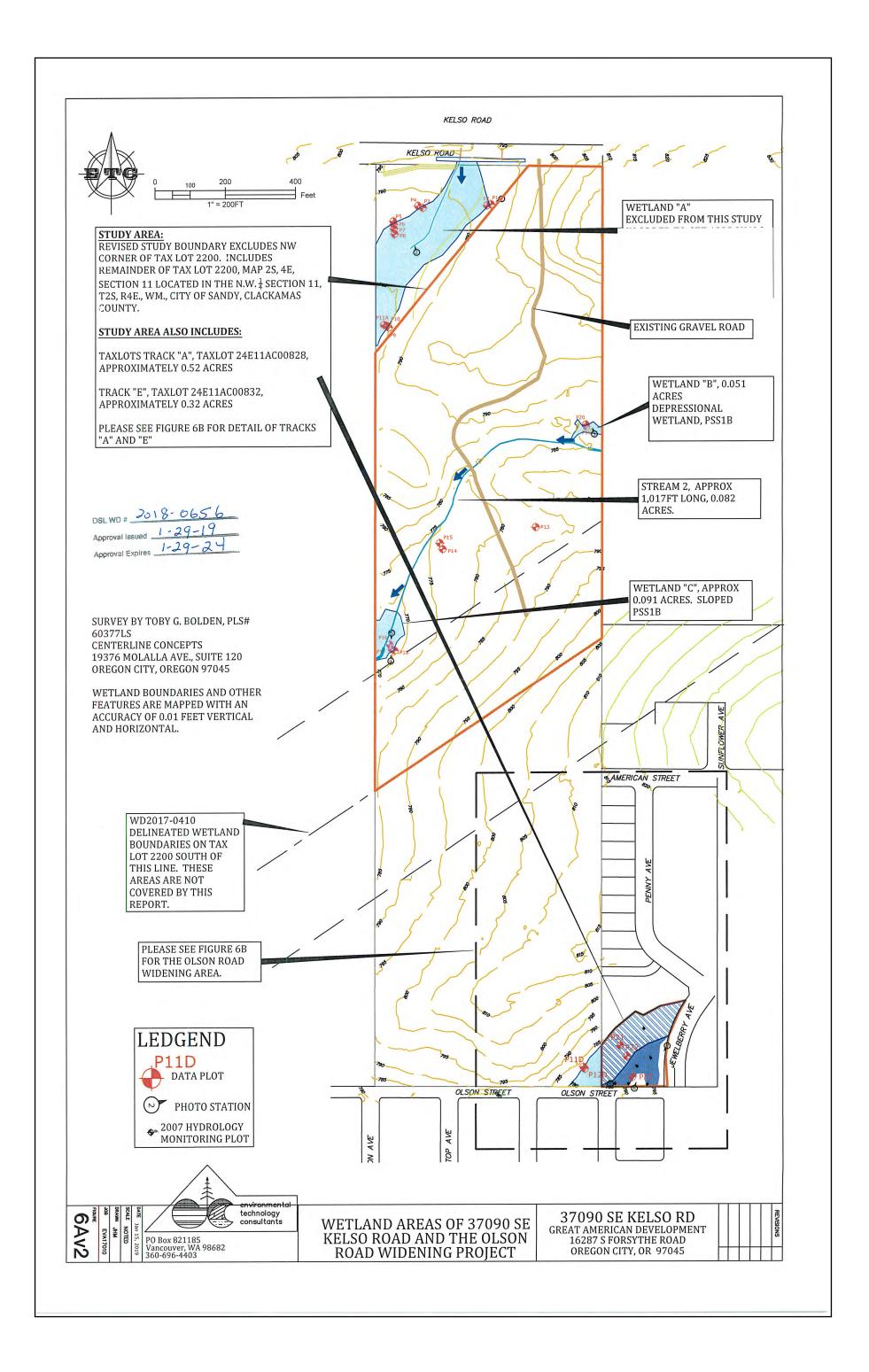
Peter Ryan, PWS Aquatic Resource Specialist

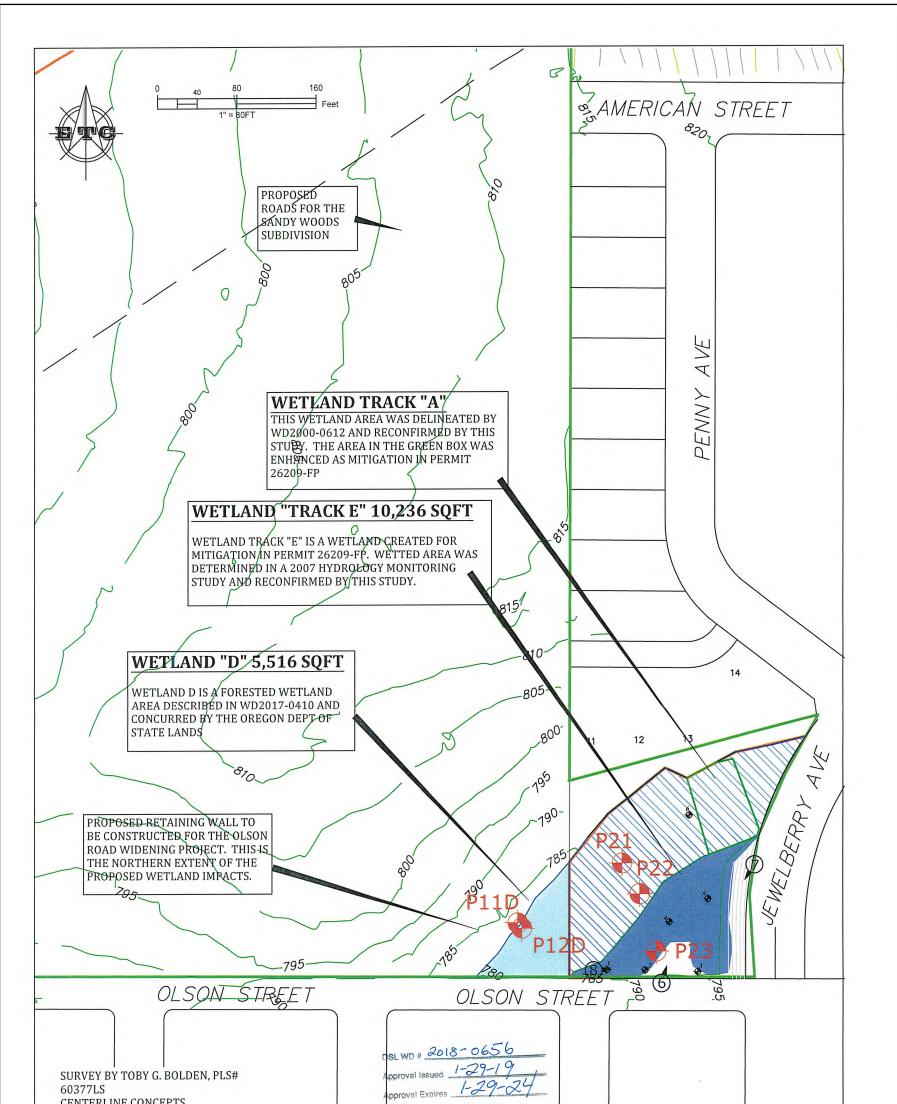
ec: John McConnaughey, PWS Environmental Technology Consultants Annakate Martin, NRS Environmental Technology Consultants Clackamas County Planning Department (Maps enclosed for updating LWI) Jessica Menichino, Corps of Engineers Anita Huffman, DSL

are submitted. Attach this form to the front of an unbou- includes a single PDF file of the report cover form and in State Lands, 775 Summer Street NE, Suite 100, Sale and report may be e-mailed to Wetland_Delineation@ instructions on how to access the file from your fip or of check payable to the Oregon Department of State Land	report (minin em, OR 973 odsl.state.or ther file shar ds. To pay th	num 300 dpi resol 01-1279. A single .us. For submitta ing website. Fees ne fee by credit ca	ution) and submit to PDF attachment of of PDF files larger can be paid by ch rd, call 503-986-52	b: Oregon Department of if the completed cover from r than 10 MB, e-mail eck or credit card. Make the 00.	
Applicant Owner Name, Firm and Address Great American Development, Joe Spaziani 16287 S. Forsythe Road Oregon City, Oregon, 97045	5:	Mobi	ness phone # 503 le phone # ill: joeandpenny@		
Authorized Legal Agent, Name and Address: Environmental Technology Consultants 375 Portland Ave, Gladstone, OR 97027		Mobi E-ma	ness phone # 360 le phone # 503-5 iil: JohnM@etcEr	80-2465 Ivironmental.net	
l either own the property described below or I have leg property for the purpose of confirming the information i Typed/Printed Name: <u>Joe Spaziani</u> Date: April 20, 2017 Special instructions rega	in the report, irding site a	after prior notifica Signature: ccess:	ontact owner or	consultant.	
Project and Site Information (using decima	al degree fo		the second		-
Project Name: 37090 SE Kelso Road Proposed Use: New Subdivision (Sandy Wood)	c)	Latitude: N 45 Tax Map # 03		Longitude: W -122.4655	
Proposed Use. New Subdivision (Sandy Wood	5)	Tax Map # 03	234211	282,2	296
Project Street Address (or other descriptive locati 37090 SE Kelso Road	ion):	Township T2S Tax Lot(s) 24E Waterway: No	1102200, 24E11	Section 2 QQ AC00828 & 24E11AC0083 River Mile:	
City: Boring, OR County: Clackan	nas		Sandy, Oregon	raiver mile.	
John McConnaughey, PWS & Annakate Marti Environmental Technology Consultants 375 Portland Ave, Gladstone, OR 97027 The information and conclusions on this term and Consultant Signature:		E-ma		nvironmental.net o the best of my knowledge	e.
1-	- t- 17 0		12. Sec. 19 (12)		-
Primary Contact for report review and site acces Wetland/Waters Present? ⊠ Yes ☐ No		size: 39.79 a		Authorized Agent Wetland Acreage: 2.700	0 00
Check Box Below if Applicable:	olddy Alea		s: \$437 (2018)	ar Weitand Acreage. 2.700	TAU
R-F permit application submitted NWP2018-4	73		e payment subm	itted \$437	
Mitigation bank site		E Fe	e (\$100) for resu	bmittal of rejected report	
 Wetland restoration/enhancement project (not Industrial Land Certification Program Site Reissuance of a recently expired delineation 	mitigation)		o fee for request t port	for reissuance of an expired	d
Previous DSL # Expiration date					
Other Information:	on parcel?		lf known, previou WD2000-0612	s DSL # WD2017-0410 &	
Has previous delineation/application been made o	110	M			-
Does LWI, if any, show wetland or waters on parc	For Offi	ice Use Only	Del	WD # 2018-06-56	-
Has previous delineation/application been made of Does LWI, if any, show wetland or waters on parce DSL Reviewer: Fee Paid Date Delineation Received; 12 / 7 / 18	For Offi Date:			WD # 2018-0656	-









CENTERLINE CONCEPTS 19376 MOLALLA AVE., SUITE 120 OREGON CITY, OREGON 97045

WETLAND BOUNDARIES AND OTHER FEATURES ARE MAPPED WITH AN ACCURACY OF 0.01 FEET VERTICAL AND HORIZONTAL.

> PO Box 821185 Vancouver, WA 98682 360-696-4403

JOB

NOTED JHM EVA17010

6B

environmental technology consultants

Disclaimer per OAR 141-090-0035 (7)(k)

This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

DETAIL OF AREA IMPACTED BY THE OLSON ROAD WIDENING PROJECT IN SE CORNER

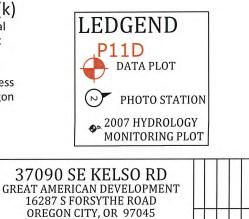


Exhibit K



Department of State Lands

775 Summer Street NE, Suite 100 Salem, OR 97301-1279 (503) 986-5200 FAX (503) 378-4844 www.oregon.gov/dsl State Land Board

> Kate Brown Governor

Bev Clarno Secretary of State

> Tobias Read State Treasurer

October 29, 2020

Rosemont Development Attn: Rob Venema 10117 SE Sunnyside Road Clackamas, OR 97015

Re: WD # 2020-0442 **Approved** Wetland Delineation Report for 37090 SE Kelso Road Clackamas County; 2S 4E S11 TL2204 (Portion)

Dear Mr. Venema:

The Department of State Lands has reviewed the wetland delineation report prepared by Environmental Technology Consultants for the site referenced above. Please note that the study area includes only a portion of the tax lot described above (see the attached maps). Based upon the information presented in the report, we concur with the wetland boundary as mapped in Figure 6A of the report. Please replace all copies of the preliminary wetland map with this final Department-approved map.

Within the study area, one wetland was identified, totaling approximately 1.74 acres. This wetland is subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined).

This concurrence is for purposes of the state Removal-Fill Law only. We recommend that you attach a copy of this concurrence letter to any subsequent state permit application to speed application review. Federal or local permit requirements may apply as well. The U.S. Army Corps of Engineers will determine jurisdiction under the Clean Water Act, which may require submittal of a complete Wetland Delineation Report.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Since measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction. Individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. If you have any questions, please contact Chris Stevenson, the Jurisdictional Coordinator for Clackamas County at (503) 986-5246.

Sincerely,

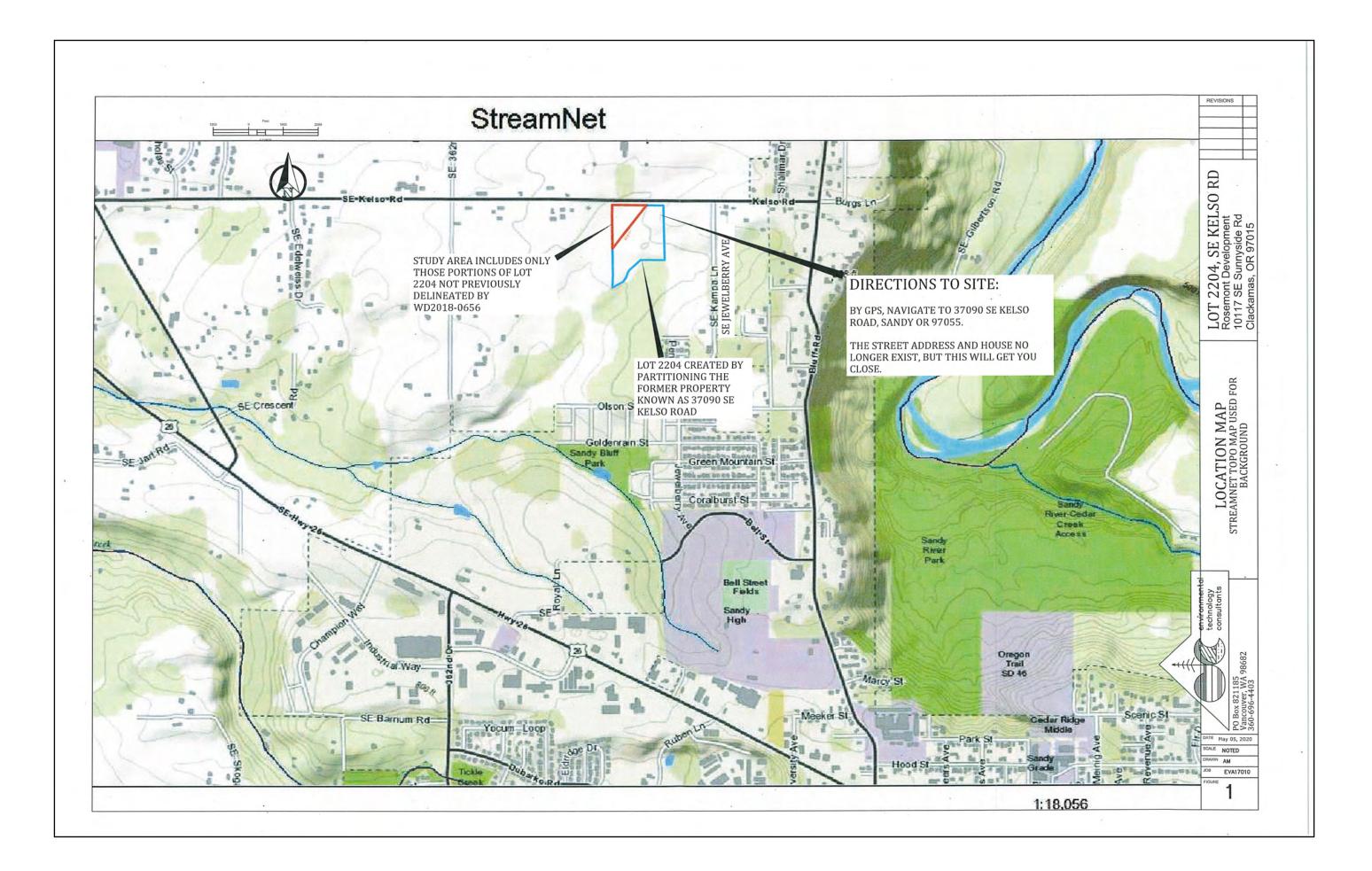
Both Ryan

Peter Ryan, SPWS Aquatic Resource Specialist

Enclosures

ec: AnnaKate Martin, Environmental Technology Consultants Clackamas County Planning Department Robert Fraley, Corps of Engineers Anita Huffman, DSL

A wetland delineation report are submitted. Attach this for includes a single PDF file of State Lands, 775 Summer and report may be e-mailed instructions or how to access check payable to the Oregor	submittal is not "complete" unless the rm to the front of an unbound report or the report cover form and report (minin Street NE, Suite 100, Salem, OR 973 to Wetland_Delineation@dsl.state.or to Wetland_Delineation@dsl.state.or s the file from your ftp or other file shar Department of State Lands. To pay to	mitted to the Department of State Lands for review and approval. fully completed and signed report cover form and the required fee r include a hard copy of the completed form with a CD/DVD that num 300 dpi resolution) and submit to: Oregon Department of 101-1279 . A single PDF attachment of the completed cover from r.us . For submittal of PDF files larger than 10 MB, e-mail ing website. Fees can be paid by check or credit card. Make the he fee by credit card, call 503-986-5200.
Applicant Owner N Rosemont Developmer 10117 SE Sunnyside Ro Clackamas, Oregon, 97 Rob Venema	Name, Firm and Address: ad 015 AUto 24	Business phone # 503-351-4747 Mobile phone # E-mail: rosemontdevelopment@gmail.com
property for the purpose of o Typed/Printed Name:	nt, Name and Address: ogy Consultants stone, OR 97027 BEPARTMENT OF before a duthority confirming the information in the report	Business phone # 360-696-4403 A Commo Development # 360-984-8767 STATE LANDS To allow access to the property. I authorize the Department to access the after prior notification to the primary contact. Signature: On prochast. Market
Project and Site Int	formation (using decimal degree for	ormat for lat/long of site or start & end points of linear project)
Project Name: 37090 SE Proposed Use: SUBDIVI	Kelso Road SION, SINGLE FAMILY HOMES	Latitude: N 45.417907 Longitude: W -122.2831 Tax Map # 24E11 Lot 24E11 02204 Parcel Number 05034843
Project Street Address (o No Situs Address (Formally known as 370	r other descriptive location): 90 SE Kelso Road)	Township T2S Range R4E Section 11 QQ Tax Lot(s) 24E1102204 Q Waterway: No name River Mile:
City: Sandy, OR	County: Clackamas	Waterway: No name River Mile: NWI Quad(s): Sandy, Oregon neation Information
Environmental Technolog 375 Portland Ave, Gladst The information and conc	one, OR 97027	Mobile phone # 360-984-8767 E-mail: <u>AnnakateM@etcEnvironmental.net</u> JohnM@etcEnvironmental.net ached report are true and correct to the best of my knowledge. Date: May, 2017 updated April 2020
Wetland/Waters Present		Consultant Applicant/Owner Authorized Agent a size: 2.69 acres Total Wetland Acreage: 1.74 AC
Check Box Below if A		Fees: \$466 (2020)
R-F permit application		Fee payment submitted \$466
Mitigation bank site		Fee (\$100) for resubmittal of rejected report
Wetland restoration/er Industrial Land Certific Reissuance of a recer	tly expired delineation	
	Expiration date	Y N
	application been made on parcel? etland or waters on parcel?	The second se
		fice Use Only
DSL Reviewer: CS	Fee Paid Date: 8	_/ <u>24</u> _/ <u>20</u> DSL WD # 2020-0442
Data Dalingation Dessing	d: <u>8 / 24 / 20</u> DSL Pr	oject # <u>39715</u> DSL Site #
Date Delineation Receive		



୍ଷି 37200 25' Easement by B.V. 628-146 along the west line of the NW 1/4 of the NW 14. RI **B2** SEE MAP 2 4E 2 X 63 0 00 KELSO 10 11 2500 10.75 Ac. 2600 8.04 Ac. 36380 2300 39.55 Ac. 36804 2400 9.77 Ac. 2204 **R2** 2700 9.78 Ac. 36260 R3 STUDY AREA INCLUDES ONLY SEE MAP THOSE PORTIONS OF LOT TR "H" SEE MAP 2204 NOT PREVIOUSLY **R2** WOODS DELINEATED BY 2205 TR -11AA 4 WD2018-0656 . ~ 2203 21 4E 11AB TR "G" D' 1000 2202 6312 Ē Feet 457 R1 1:600 EFU EF/U R1× 2801 5.38 Ac. 15080 2800 5.33 Ac. 15110 15132 RRFF5 LOT 2204 CREATED BY PARTITIONING THE SEE MAP 4 SEE 2902 3.00 Ac. 15220 FORMER PROPERTY MAP 2900 6.00 Ac 15200 ≤ KNOWN AS 37090 SE < KELSO ROAD ATT-416 2901 1.00 Ac 11AC 4E XXXXX 264.00 SEE MAP 4E 2 11AD 3000 10.00 Ac. 15300 15310 VII X AGNES S EASEMENT 77-6236 SHOWS 25' Easement along the east side of the west line of the NW% of the NW 2390 PTTR 3100 8.64 Ac. 1025 HEE TO INE RRFF5 RRFF5 46-04 XX SEE BPA DWG C34 NOIAN SUMMER 3202 9.54 Ac 12 3290 2454 3200 65.84 Ac. XXXXXXXX CKXX SEE MAP 36405 SEE MAP R1 SEE MAP XMXMX NAKAKAKAK 2 4E 11CA XXXX \$// 2 4EX 11DA R2 CKKR 4700 BELL 5 89' 55' 40" 3400 5.53 Ac 16220 16230 3401 6.82 Ac. 16210 3402 7.65 Ac**O** 16200 16202 4900 4600 4500 37680 Bell St. 37690 VEE

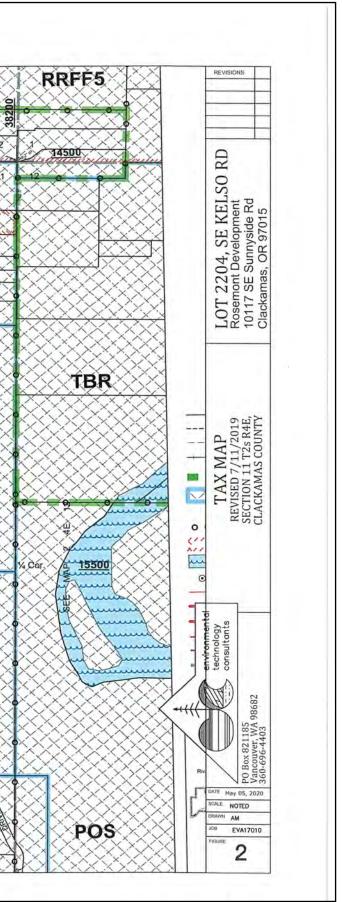
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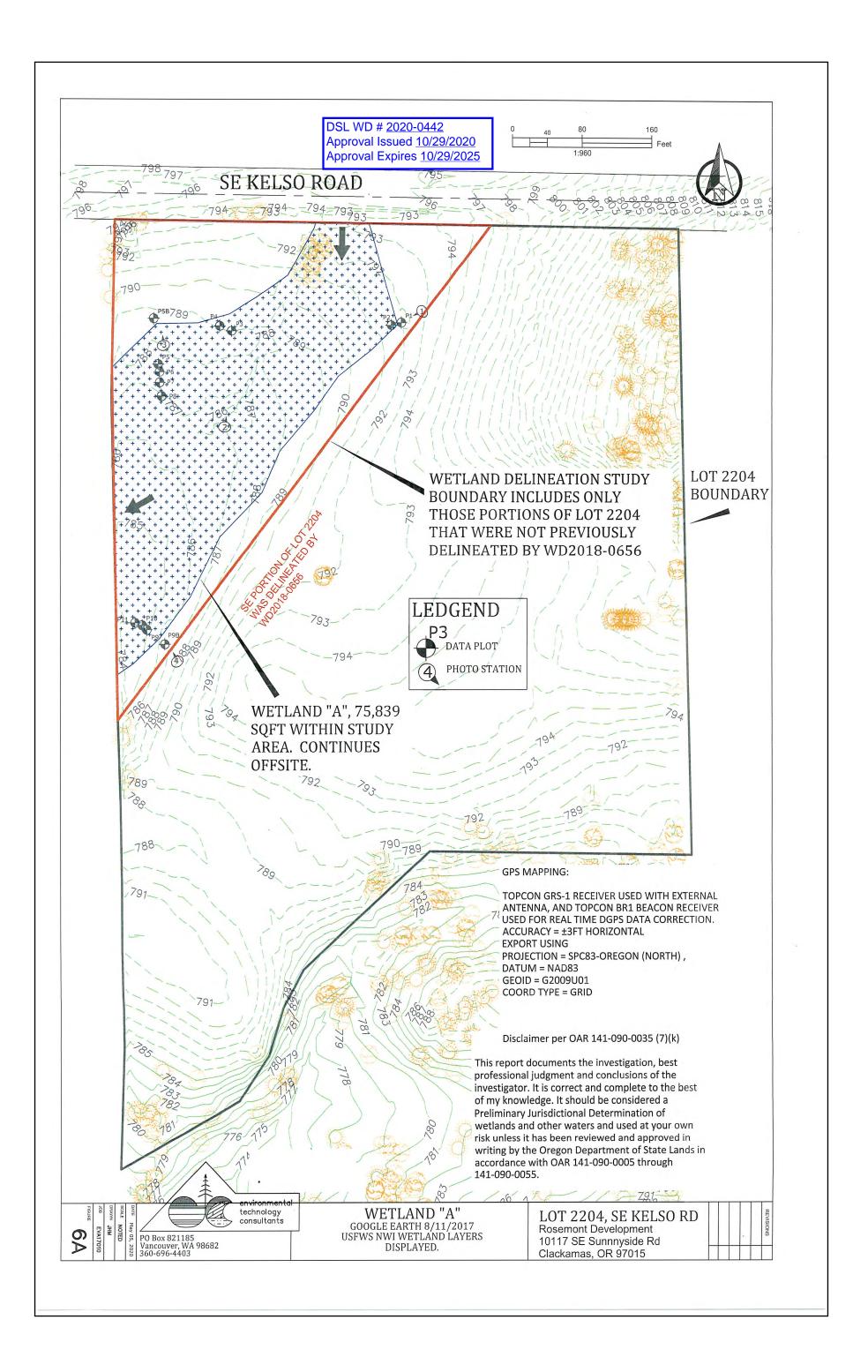
2101

SEE

MAP

FE5





Design Modifica	-
Per Roadway Standa	
CLACKAMAS Exhib	it L
Todays date:	Type 1 - \$ <u>500</u> Type 2 - \$ <u>400</u> :
PROJECT IN	FORMATION
Project name: Sandy Woods Subdivision Phase	2; SE Kelso Road
Nearest address or intersection: South of 37117 SE \Bbbk	Kelso Road; west of Jewelberry Ave, Sandy
Functional classification of road: Minor Arterial	
Posted speed:45 mph	
Applicable roadway standard: Cross section, including plante	r strip, sidewalk width, & retaining wall within the ROW.
	risdictional wetlands south of the existing roadway ss section elements area proposed to be modified on the attached sheet.
Supporting documentation: See attached	
Mitigation for modification: See attached	
Public Benefit: See attached	
APPLICANT	
Name: Patrick Sisul, PE, Sisul Engineering	
Day phone: (503)657-0188	
Email:patsisul@sisulengineering.com	
PROPERTY OWNER	
Name:Silver "V" Construction, Inc., Rob Vene	ma
Address: 10117 SE Sunnyside Road, F1178	
City: Clackamas State:OR	ZIP Code:97015
Phone: (503)351-4747	
Email: rosemontdevelopment@gmail.com	
Effects on modified standards:	NG STAFF USE ONLY
Land use decision issued?	Related to condition of approval?
Traffic impact and speed study? YES INO	Submitted?
Average Daily Traffic:	Calculated at (N S E W) of cross steet:
Crash history of potential: Staff discussion:	
Decision: Partial Approval Denial	Approved by:
Conditions:	· · · ·
• Geometric design (horizontal, vertical curve design)	Type II Sight distance, clear zone, acccess spacing, number of access
 Alteration of roadway cross section element 	points, intersection angle

Design Modification Request, SE Kelso Rd:

Description of Modification:

Modify the roadway cross sectional element of Standard Drawing C140 requiring the planter strip and a 6-foot-wide sidewalk for a portion of the site frontage. The applicant is requesting to eliminate the planter strip and reduce the width of the public sidewalk to 5-feet over a 120-foot-long area between Kelso Road stations 15+55 and 16+75. In addition, modify roadway standard 5 c) regarding locating a retaining wall on private property when feasible. The applicant is requesting to place a retaining wall within the public right of way over a 210-foot-long section between Kelso Road stations 14+95 and 17+05, as indicated on the attached plan.

Reason for the Request:

Existing jurisdictional wetlands are located within the southern portion of the SE Kelso right-of-way and immediately south of the right-of-way on Tax Lot 24E11 02204. Oregon Department of State Lands (DSL) has approved wetland delineation studies prepared for the SE Kelso Road right-of-way and for Tax Lot 24E11 02204, which is part of the Sandy Woods 2 site. The wetlands in the right-of-way and on Tax Lot 24E11 02204 are part of larger jurisdictional wetland that extends southwest of the Sandy Woods 2 site and north of Kelso Road. Eliminating the planter strip, reducing the sidewalk width, and minimizing grading by building a retaining wall within the public right-of-way will reduce the impacts to the wetland by 523 sq. ft. Reduction in impacts to wetlands is a priority of the Oregon Department of State Lands.

Supporting Documentation:

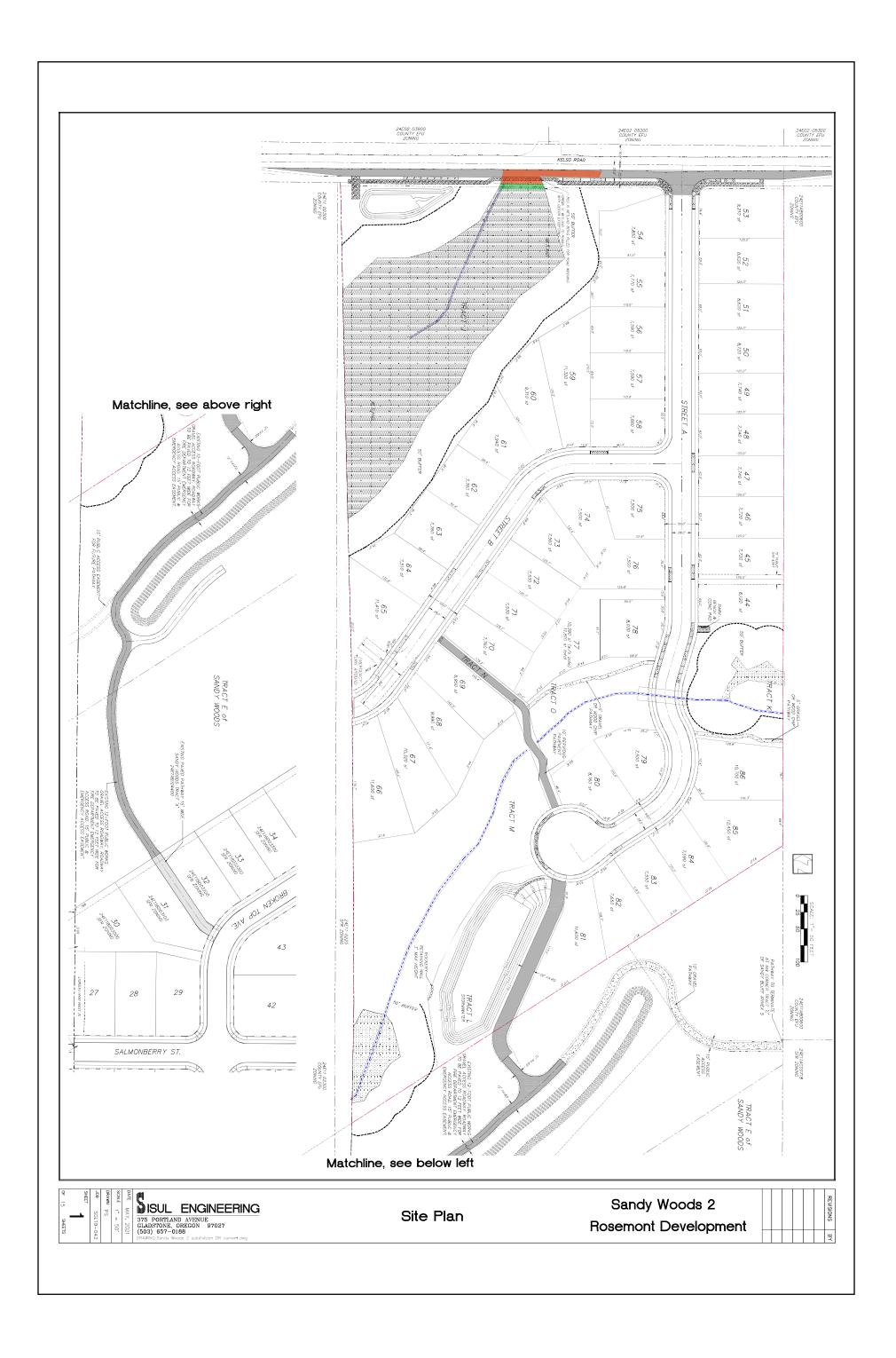
Portions of two wetland determinations approved by the Department of State Lands are attached. WD #2020-0272, approved July 2020, is the wetland delineation approved for the wetland in the Kelso Road right-of-way. WD #2020-0442, approved October 2020 is the wetland delineation approved for the NW corner of Tax Lot 24E11 02204 south of Kelso Road. Also attached is a plan showing the relationship of the existing wetlands to the Kelso Road right-of-way and the proposed improvements.

Mitigation for Modification:

The proposed modifications would eliminate the planter strip and reduce the sidewalk width to 5 feet along a 120-foot-long section of SE Kelso Road and would place a retaining wall within the right-of-way over a 210-foot distance. Existing trees and vegetation remaining within the wetland would mitigate the for the loss of the vegetation between the curb and sidewalk. To mitigate for the retaining wall being within the right-of-way and the vertical drop behind the sidewalk, a protective guard, compliant with Section 1015 of the Oregon Structural Specialty Code, would be placed along the rear of the sidewalk. Both the retaining wall and the protective guard would be owned and maintained by the Sandy Woods 2 Homeowners Association. Having the retaining wall and the protective guard owned and maintained by the HOA would relieve Clackamas County Roadway Department from any maintenance expense associated with the wall or guard and would mitigate for the retaining wall and protective guard being within the public right-of-way.

Public Benefit:

Widening the roadway and providing improvements for alternative transportation modes such as bicycles and pedestrians benefits the local community in that the roadway system will support a multimodal transportation system. Preservation of the existing wetlands will provide benefits such as natural water quality improvement, erosion protection, fish and wildlife habitat, and flood storage. Finding a way to do both, without compromising safety or requiring more work or expense to the County Roadway Department creates a win-win scenario benefitting the nature, the local neighborhood, and the community. The wetlands on this site are existing habitat for insects and birds and are part of a larger wetland extending north and south of SE Kelso Road. Five hundred twenty-three sq. ft. of existing wetland could be preserved with the proposed design modifications. The wetlands that would be preserved would be natural and would not require irrigation as opposed to a new street side planter strip that would require irrigation, frequent mowing, and weed control. Reduction of expenses associated with irrigation and maintenance of the planter strip could also be seen as a minor benefit to the homeowners within the Sandy Woods 2 subdivision who will pay for maintenance of the Kelso Road planter strip through an HOA.





DAN JOHNSON Director

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT DEVELOPMENT SERVICES BUILDING 150 BEAVERCREEK ROAD OREGON CITY, OR 97045

7/28/2021

From: Jonny Gish, Engineering Technician 4

To: Pat Sisul, PE Sisul Engineering

RE: Sandy Woods Design Modification SC004521

The applicant has applied for a three-part design modification for a subdivision along SE Kelso Rd, which is classified as an urban minor arterial. The adjacent parcel with frontage along the south side of SE Kelso Rd has been annexed into the City of Sandy, therefore this subdivision application will be processed thru the City of Sandy Planning Department.

The applicant is requesting a modification of standard detail C140 to allow for a 5-foot curb-tight sidewalk along SE Kelso Rd for approximately 120-foot duration from station 15+55 to 16+75. Staff has reviewed the application and found that the allowance of the 5-foot curb-tight sidewalk along the delineated wetland would be in the best interest of the public with minimal disturbance of the adjacent delineated wetland and therefore approved.

In addition to the sidewalk the applicant has requested the allowance of a retaining wall within the county right-of-way at two locations. The first location would from station 14+95 to 17+05 and the second would be at station 19+95. Chapter 5 of the Clackamas County Roadway Standards states that retaining wall should be located on private property and easements shall be provided as necessary. Staff has determined that the allowance of the retaining wall within the county right-of-way is <u>not</u> in the best interest of the public and both retaining walls can be constructed and maintained within the adjacent private property and within an easement. Therefore, the applicant's request for the retaining walls to be located within the county right-of-way is <u>not</u> approved. All private structures, including supporting devices, shall be located within the public utility, sidewalk and slope easement and completely outside the county right-of-way. Increased width of the public easements may also be required if deemed necessary.

Subsequently due to the existing grading for half-street improvements and right-of-way dedication requirements, the applicant has requested to allow the sidewalk to end approximately 5-feet short of the easterly property line. This allowance would allow grading to occur within existing county right-of-way without slope easements or grading on adjacent properties. This design modification is approved.

P. 503.742.4400 F. 503.742.4272 WWW.CLACKAMAS.US

As a whole, this design modification is partially approved for sidewalk width and length and not approved for private structures within the county right-of-way.

Please feel free to contact me if you have any questions

Sincerely,

Jonny Gish Clackamas County Department of Transportation and Development 150 Beavercreek Rd Oregon City, OR 97045 503-753-2009 jgish@clackamas.us

Page 2 of 3

Exhibit M

Date: August 3, 2021 To: City of Sandy Attn: Emily Meharg RE: 21-037 SUB/VAR/TREE

To whom it may concern,

An incomplete letter was received from the City of Sandy for File No. 21-037 SUB/VAR/TREE. This letter includes responses and additional information regarding the items mentioned in said letter. Included with this resubmittal for completeness check are: a revised plan set, revised Project Narrative (revised sections highlighted, revised to match the correct acreages), Partial Approval for a Design Modification from Clackamas County, Arborist Report Addendum, and the additional check requested.

 Additional information from the project arborist on the definition of "viable." Are all viable trees healthy and likely to grow to maturity? Typically, an arborist's tree health/condition evaluation assesses trees as being in very good, good, fair, poor, or dead/dying condition.

RESPONSE: Please refer to the addendum prepared by the arborist further explaining this.

- Additional information from the project arborist detailing why the standard critical root zone (CRZ) of 1 foot per 1 inch DBH is not being proposed.
 RESPONSE: Please refer to the addendum prepared by the arborist further explaining this.
- Plan Set sheet that details building footprints, retention trees, and standard critical root zone (1 foot per 1 inch DBH) around all proposed retention trees.

RESPONSE: Building footprints have been added on the plans. Please refer to the revised plans.

- Revise Sheet 11, future street plan, to detail trail connections to the east.
 RESPONSE: Detail trail connections have been added on the plans. Please refer to the revised plans.
- \$1,250 third party review fee for review of arborist report and tree retention plan. You submitted \$250; however, given the size of the project and proposed deviations from the industry standards, paying the full \$1,500 third party review fee is necessary.

RESPONSE: Check included with resubmittal.

Clarification on the dashed lines and sidewalk proposal along Kelso Road detailed on Sheet 1. Are
you proposing right-of-way dedication along Kelso Road? The sidewalk will need to extend to the
furthest extent of the property.

RESPONSE: The applicant has collaborated extensively with Clackamas County on the desired sidewalk design. A design modification partial approval has been issued by Clackamas County and included with this resubmittal. Please refer to this document for more detail. The sidewalk design has been revised with the County's guidance to stop the sidewalk 5' short of each property line

and having a 2:1 graded slope within the ROW. This is only one panel short of the property line and will not be a significant burden should neighboring development occurs.

 Clarification on the proposed retaining wall along Tract K on Street A. The wall is located in the front yard along Street A so the maximum height is 4 feet. A 6 foot tall wall would require a variance or special variance. Is the wall at grade or sunken? Will it require a fence on top?

RESPONSE: The additional information on the retaining wall along Tract K on Street A has been included in the revised plan set. Please refer to the plan set for these additional details. Regarding the height of the wall, per the City's definition for Front Yard refers to a building and there is no building on Tract K. This tract is reserved for open space, a perennial stream, wetland and buffers. Therefore the wall height does not apply as there is no building on this parcel.

Clarification on the area of the tracts and the net site area calculation. Is Tract P in the table on
page 1 of the narrative supposed to be Tract M? Are Tracts K and L labeled correctly in the table
on page 1? The areas listed for the tracts in the table do not add up to the total tract area listed
in the project narrative. Does the right-of-way dedication in the project narrative include a rightof-way dedication along Kelso Road?

Tract	Size (square feet)	Use
J	137,121	Open Space, Wetland & Buffer, Stormwater Easement
L	34,622	Public Storm Drain Facility
Μ	79,544	Open Space, Perennial Stream, Wetland & Buffer
Ν	5,306	Public Walkway and Sanitary Sewer Tract/Easement
0	20,205	Perennial Stream & Buffer
К	24,940	Open Space, Perennial Stream, Wetland, and Buffers

RESPONSE: Please refer to the updated table below with the correct tract assignments and square footage. The ROW dedication to the City is 95,180 and County is 3,265. Total is 98,445.

Exhibit N

REPLINGER & ASSOCIATES LLC TRANSPORTATION ENGINEERING

October 14, 2021

Ms. Emily Meharg City of Sandy 39250 Pioneer Blvd. Sandy, OR 97055

SUBJECT: REVIEW OF TRANSPORTATION IMPACT STUDY – SANDY WOODS 2 SUBDIVISION

Dear Emily:

In response to your request, I have reviewed materials submitted in support of the Sandy Woods 2 Subdivision in the northwest part of Sandy. The Transportation Impact Study (TIS), dated March 3, 2021, was prepared under the direction of David Kelly, PE of Kelly Engineering. A tentative plan set, dated 7/29/2021, was also provided.

The site is located south of SE Kelso Road and west of SE Jewelberry Avenue. Sandy Woods Phase 1 is located to the south. The two phases are separated by a powerline corridor; there will be no street connection between them. The proposal involves development of a 43-lot residential subdivision.

Overall

I find the TIS addresses the city's requirements and provides an adequate basis to evaluate impacts of the proposed development.

Comments

1. Study Area. The study addresses the appropriate intersections. It includes analyses of:

- SE Kelso Road and SE Orient Drive;
- SE Kelso Road and SE Bluff Road; and
- SE Kelso Road and proposed site access.

Because the subdivision does not propose connections to any existing local streets, the TIA does not evaluate the impact on local streets.

Ms. Emily Meharg October 14, 2021 Page 2

- 2. Traffic Counts. The engineer used counts conducted for the Sandy Bluff Annex 6 Subdivision from October 2107 as the basis for his analysis. The engineer correctly points out that reductions in travel have occurred due to the COVID-19 pandemic. He used the 2017 AM and PM peak hour traffic counts as the base and adjusted them upward by 2.5 percent per year to account for regional traffic growth and to offset the effect of the pandemic. The adjusted counts appear reasonable.
- 3. Trip Generation. The TIS uses trip generation for single-family dwellings (land use code 210) from the Institute of Transportation Engineers' (ITE) Trip Generation Manual. The engineer calculates that the subdivision would produce 32 total AM peak hour trips; 43 total PM peak hour trips; and 406 total daily trips. The calculation of trips generated by the development appears reasonable.
- 4. Trip Distribution. The TIS provided information about trip distribution from the site. The engineer assumed 55 percent of site trips would travel to and from the west on Kelso Road while 45 percent would travel to and from the east on Kelso Road toward Bluff Road. The trip distribution seems reasonable.
- **5.** *Traffic Growth.* The TIS uses a 2.5 percent annual growth rate for two years to account for regional growth. In addition, the TIS accounts for background traffic growth by including traffic from the nearby Jewelberry Meadows Subdivision. These assumptions account for future traffic and appear reasonable.
- 6. Analysis. Traffic volumes were calculated for the intersections cited in #1, above. Intersection level-of-service (LOS) was calculated for all intersections. The intersection of Kelso Road and Orient Drive is all-way stop-controlled; the other two intersections are stop-controlled with stop signs on the minor street approaches. The analyses were conducted for existing 2021 conditions, 2023 background conditions, and 2023 with the development.

The engineer calculates that the intersection of Kelso Road with Orient Drive and the intersection of Kelso Road and Bluff Road operate at LOS B under existing conditions and will operate at LOS B under 2023 conditions with or without the development. The new proposed access and Kelso Road is calculated to operate at LOS B under 2023 conditions with the subdivision. All three intersections are calculated to meet the city's LOS D operational standard with the development of the subdivision.

Ms. Emily Meharg October 14, 2021 Page 3

7. Crash Information. The TIA provides information from ODOT on crashes for the five-year period from 2014 through 2018. There were three reported crashes at the intersection of Kelso Road and Bluff Road. The crash rate is low with no evident patterns.

The intersection of Kelso Road and Orient Drive has a high historical crash rate with 25 reported crashes in the five-year period. The engineer notes that the intersection has recently been changed to all-way stop-control. He predicts a reduction in the crash rate. He does not recommend any other mitigation for safety issues.

- 8. Site Plan and Access. The site plan provides for one new access on Kelso Road and a stub street to the adjacent property to the west. No vehicular connection to the earlier phase of the subdivision to the south is proposed. The locations proposed for access appear appropriate.
- **9.** Sight Distance. The engineer analyzed sight distance at the proposed access to Kelso Road. Based on the posted speed of 45 mph, sight distance of 500 feet is required. The engineer states that sight distance in both directions exceeds 500 feet and that sight distance is adequate.
- 10. Left-Turn Lane and Signal Warrants. The engineer also evaluated the need for turn lanes and addressed traffic signal warrants.

The engineer's analysis indicates turn lane warrants and traffic signal warrants are not met for the subject intersections.

11. Conclusions and Recommendations. The engineer concludes that the study area intersections are projected to operate acceptably per City of Sandy standards through 2023 either with or without the addition of site trips from the proposed development.

He notes that the intersection of Kelso Road and Orient Drive has a high crash rate but that it has recently been converted to all-way stop-control. He concludes that sight distance is adequate for the new access to Kelso Road. He recommends no mitigation but cautions that obstructions such as signs and landscaping should not be permitted to interfere with adequate sight distance. Ms. Emily Meharg October 14, 2021 Page 4

Conclusion and Recommendations

Based on the information provided by the applicant, I find the TIS meets City requirements. The engineer uses appropriate data and methods in his analysis and makes reasonable conclusions and recommendations.

The TIS indicates that the study area intersections will meet applicable city operational standards. No safety mitigation is proposed. Sight distance is adequate.

If you have any questions or need any further information concerning this review, please contact me at <u>replinger-associates@comcast.net</u>.

Sincerely,

John Keplinger

John Replinger, PE Principal

SandyWoods2TIS101421



Exhibit O SANDY FIRE DISTRICT NO. 72 Fire Prevention Division

E-mail Memorandum

To: Emily Meharg
From: Gary Boyles
Date: October 26, 2021
Re: Fire District Comments for Sandy Woods Phase II – 43 Lot Subdivision

Review and comments are based upon the current version of the Oregon Fire Code (OFC) as adopted by the Oregon Office of State Fire Marshal. The scope of this review is typically limited to fire apparatus access and water supply, although the applicant shall comply with all applicable OFC requirements. When buildings are completely protected with an approved automatic fire sprinkler system, the requirements for fire apparatus access and water supply may be modified as approved by the fire code official. References, unless otherwise specified, include provisions found in the Metro Code Committee's Fire Code Applications Guide, OFC Chapter 5 and appendices B, C and D.

COMMENTS:

<u>General</u>

- 1. Construction documents detailing compliance with fire apparatus access and fire protection water supply requirements shall be provided to Sandy Fire District for review and approval upon building permit submittal.
- 2. Approved fire apparatus access roadways and an approved water supply for fire protection, either temporary or permanent, shall be installed and operational prior to any combustible construction or storage of combustible materials on site in accordance with OFC Chapter 33.
- 3. Buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property.

Fire Apparatus Access

FIRE APPARATUS ACCESS ROAD (as defined by the OFC). A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as *fire lane*, public street, private street, parking lot lane and access roadway.

1 | Page

- 1. Fire apparatus access roads shall be within 150 feet of all portions of the exterior wall of the first story of any building as measured by an approved route around the exterior of the building. An approved turnaround will be required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet.
- 2. Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet and an unobstructed vertical clearance of 13 feet 6 inches.
- 3. Facilities, buildings, or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an approved fire apparatus access road with an asphalt, concrete or other approved driving surface capable of supporting the imposed load of fire apparatus weighing up to 75,000 pounds (gross vehicle weight). Documentation from a registered engineer that the final construction is in accordance with approved plans, or the requirements of the OFC may be requested.
- 4. The inside turning radius and outside turning radius for fire apparatus access roads shall be not less than 28 feet and 48 feet respectively, measured from the same center point.
- 5. Streets and roads shall be identified with approved signs. Temporary signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles.
- 6. Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "NO PARKING-FIRE LANE" signs shall be placed on one or both sides of the roadway and in turnarounds as needed.

Firefighting Water Supplies

- 1. The minimum available fire flow for one- and two-family dwellings served by a municipal water supply shall be 1,000 gpm at 20 psi residual provided the fire area of the dwelling(s) does not exceed 3,600 square feet. For dwellings that exceed 3,600 square feet, the required fire-flow shall be determined in accordance with OFC Appendix B, Table B105.1(2).
- 2. Fire flow testing will be required to determine available fire flow. Testing will be the responsibility of the applicant. Applicant to contact the City of Sandy Public Works for testing information and requirements and notify the Fire Marshal prior to fire flow testing.
- 3. For one- and two-family dwellings served by a municipal water system, all portions of the dwellings shall be located within 600 feet from a fire hydrant on a fire apparatus access road, as measured in an approved route that is approved by the fire code official (The intent is that not more than 600 feet of hose will have to be laid out to reach all portions of the exterior grade level of a structure).
- 4. Prior to the start of combustible construction, required fire hydrants shall be operational and accessible.

2|Page

- 5. Fire hydrants installed within the Sandy Fire District shall comply with the following requirements:
 - a. Flow requirements and location of fire hydrants will be reviewed and approved by Sandy Fire upon building permit submittal.
 - b. Each new fire hydrant installed shall be ordered in an OSHA safety red finish and have a 4-inch non-threaded metal faced hydrant connection with cap installed on the steamer port. If a new building, structure, or dwelling is already served by an existing hydrant, the existing hydrant shall also be OSHA safety red and have a 4-inch non-threaded metal faced hydrant connection with cap installed.
- 6. The minimum number and distribution of fire hydrants shall be in accordance with City of Sandy requirements and OFC Appendix C.

NOTE:

Sandy Fire District comments may not be all inclusive based on information provided. A more detailed review may be needed for future development to proceed.

Please do not hesitate to contact Fire Marshal Gary Boyles at 503-891-7042 or <u>fmboyles.sandyfire@gmail.com</u> should you have any questions or concerns.

3|Page



Exhibit P

Staff Report City of Sandy 39250 Pioneer Blvd., Sandy, OR 97055

To: Planning Commission Date: October 27, 2021 From: Sarah Richardson, Staff Liaison Parks and Trails Advisory Board Subject: Sandy Woods Phase II

Attachments: None

I am sending this communication on behalf of the Sandy Parks and Trails Advisory Board.

The board met on August 11th, 2021 and reviewed the proposed Sandy Woods Phase II development proposal.

The 2021 Parks and Trails Master Plan states as a goal that *"Residential areas should be served by the ¼-mile service area of a mini park or the ½- mile service area of a neighborhood park"*.

In their discussion the board noted that Sandy Woods Phase II is close to the ½ mile goal in its proximity to Sandy Bluff Park, which meets the criteria for a neighborhood park.

The board strongly endorses the requirement to provide pedestrian access connecting Phases I and II as it will result in a safe and direct route to Sandy Bluff Park for residents of the proposed development.

As a result of their discussion the board recommends accepting a Fee in Lieu of land dedication for the Sandy Woods Phase II development.

The board's formal recommendation, unanimously passed, reads as follows:

Motion to accept a Fee in Lieu of land dedication for the Sandy Woods Phase II proposed development. Includes the support for the requirement of the access points connecting Phase 1 and Phase II which provides direct access to Bluff Park and future trail connections.

We thank you for your consideration in this matter.

Staff Contact: Sarah Richardson 503-489-2150 srichardson@cityofsandy.com

Exhibit Q

MEMORADUM

TO: EMILY MEHARG, SENIOR PLANNER FROM: MIKE WALKER, DIRECTOR OF PUBLIC WORKS RE: PUBLIC WORKS COMMENTS - FILE NO. 21-037 SUB/VAR TREE DATE: OCTOBER 29, 2021

The following are Public Works' comments on the above-referenced application.

Transportation

The sole access to and from the site is via the intersection of Kelso Rd and proposed Street A. Kelso Rd. is a Clackamas County facility, the County's design standards apply to improvements adjacent to and within Kelso Rd.

The applicant's traffic impact analysis has been reviewed by the City's traffic engineer, Replinger and Associates.

The Applicant submitted a design modification request to Clackamas County to reduce sidewalk and planter strip width to minimize impacts to existing delineated wetlands on the Kelso Rd. frontage of the site west of proposed street A. The County approved the design modification to allow a five-foot-wide curb tight sidewalk adjacent to the wetland. The County also approved a design modification allowing the Kelso Rd. frontage sidewalk to terminate short of the east of the site boundary adjacent to proposed lot 53.

The County's narrative response to the design modification request indicates that the applicant requested that the sidewalk improvements on Kelso Rd. terminate five feet from the eastern property line of the site due to grading required to construct the sidewalk. The County approved this modification even though there is no mention of the sidewalk terminating short of the site boundary in the design modification request or the land use application narrative submitted by the applicant. The site plan submitted with the application shows the Kelso Rd. sidewalk improvements terminating approximately 30 feet from the eastern boundary of the site and about 10 feet from the western boundary of the site. Based on the contours shown on the existing conditions plan it does not appear that any slope easement or grading on adjacent property would be necessary to allow Kelso Rd. street frontage improvements to extend to the <u>east</u> boundary of the site per the requirements in section 17.84.60 Sandy Municipal Code. It does however appear that retaining walls or grading outside the right-of-way would be required to extend the Kelso Rd. sidewalk to the <u>west</u> boundary of the site.

The applicant shall clarify if a request to terminate the Kelso Rd. sidewalk improvements was included with the design modification request submitted to the County and if so clarify whether it was for the east or west end of the development site.

Modifications proposed to the existing pedestrian path and stormwater facility maintenance roadway in the adjacent Sandy Woods development include placing

asphalt pavement over the existing crushed rock surfacing to provide a 12-foot-wide emergency vehicle access route for Sandy Woods 2.

The existing pedestrian path and stormwater facility maintenance roadway includes locked bollards at the intersection of the path with Broken Top Ave to prevent unauthorized vehicle access. The applicant shall submit a proposal to secure the new pedestrian path/stormwater maintenance and emergency vehicle access roadway from unauthorized vehicle use while still allowing emergency vehicle access.

The proposed pedestrian path/stormwater maintenance and emergency vehicle access roadway will be more than 1,000 feet long between Broken Top Ave. and the cul-de-sac bulb of proposed street A. There is pedestrian-scale lighting on the portion of the path between existing lots 30 and 31 in Sandy Woods but no illumination on the rest of the proposed route. The applicant shall submit a design for City and Fire District review to mitigate risks to pedestrians and emergency vehicles due to the lack of illumination along the route. Possible mitigation steps include reflective pavement edge striping and/or delineators; curve and chevron signage to define changes in horizontal alignment or illumination.

The pedestrian path/stormwater maintenance and emergency vehicle access roadway design shall comply with Clackamas County Interagency Fire Code Access Guide standards for width, grade, vertical clearance, load capacity, turning radii and gates. The applicant shall submit turning template diagrams for the intersection of the existing pedestrian path/stormwater maintenance roadway and Broken Top Ave. and the proposed pedestrian path/stormwater maintenance and emergency vehicle access roadway and Street A to demonstrate that the existing driveway approach at Broken Top is wide enough and to define any No Parking zones that would need to be posted to allow emergency and service vehicle access.

Utilities

The development site is proposed to be served by a single 8" diameter dead-end water line connected to the existing 12" water line in Kelso Rd. The applicant shall submit calculations demonstrating that the proposed water line will be able to furnish the required fire and domestic flows for the development.

The proposed sanitary sewer extension between Tract L and the existing sanitary sewer in Olson St. is over 1,600 feet long and includes four manholes. There is no all-weather access to the proposed sewer line. The applicant shall construct a 12-foot-wide crushed rock access roadway over the existing and proposed sewer easement between Tract L and manhole F-8 and between Olson St. and manhole F-6 to provide maintenance access for the off-site sewer line.

The stormwater management plan depicts fourteen separate flow-through planters in the proposed City right-of-way adjacent to lots 44, 45, 47, 53, 54, 63, 64, 65, 71 through 74, 76, 78, 80, 82, 83 and Tracts K, M and O. The street frontage of these lots shall include Vehicle Non-Access Reserve (VNAR) strips coincident with the flow-through

planter locations to prevent the construction of driveway approaches over these areas upon development of the lots.

The stormwater detention pond in Tract L shall be fenced per the requirements in the City of Portland SWMM.

Plans for public and private sewer collection and conveyance facilities shall be submitted to the Oregon Department of Environmental Quality for review and approval per ORS Chapters 454, 468 and 4868B and OAR 340-052 and in particular OAR 340-052-0040(2).

Public utility and street plans for land use applications are submitted to comply with the requirements in 17.100.60 SMC. Land use approval does not connote approval of utility or street construction plans which are subject to a separate submittal and review process.

General

Tract L shall be dedicated to the City for stormwater management, emergency vehicle and pedestrian access. Tracts J, K, M and O shall be dedicated to the City as open space and pedestrian easements.



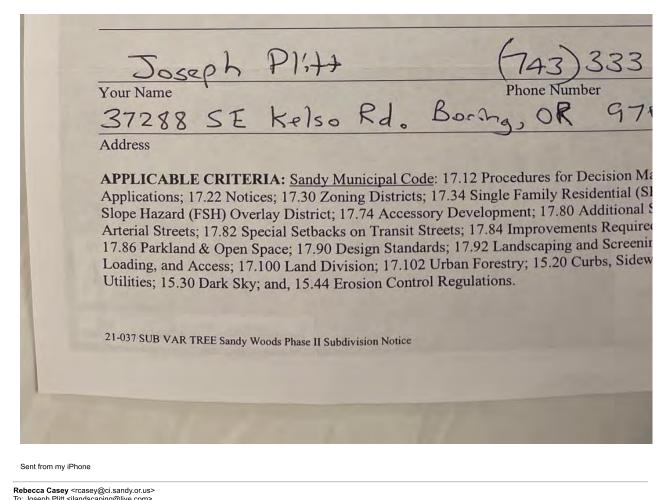
Exhibit R

Rebecca Casey <rcasey@ci.sandy.or.us>

21-037 SUB/VAR/TREE 2 messages

Joseph Plitt <jlandscaping@live.com> To: "planning@ci.sandy.or.us" <planning@ci.sandy.or.us>

COMMENT SHEET for File No. 21-037 SUB/VAR/TREE: -tons. RE: approve Wi 00 proposed 0 over re In looking top of 90 On am Favor I 20 SUL nh py 0 ev e 0 9 on 0 511 no 5 01 10 ra en 0 hul 0 0 on 707 0 S 20 0 Won 5 1005. d Sower 9 nea 45 ne and to nnsha)) 2 On be insta 15% 0 9 E as ナ ou 7 20 eph my



Rebecca Casey <rcasey@ci.sandy.or.us> To: Joseph Plitt <jlandscaping@live.com> Cc: "planning@ci.sandy.or.us" <planning@ci.sandy.or.us>

Received. I'll get your comment added to the record. Thanks Joseph

On Thu, Nov 4, 2021 at 10:18 PM Joseph Plitt < jlandscaping@live.com> wrote:

COMMENT SHEET for File No. 21-037 SUB/VAR/TREE: RE: approve with condi In looking over the proposed I am in favor of approving

WSII owners not new property +ba+ children 20 a S 20 Imos WO 27 nen an nec be 9 mu P1:++ Joseph Your Name Phone Number 37288 SE Kelso Rd. Borna, OR G-Address APPLICABLE CRITERIA: Sandy Municipal Code: 17.12 Procedures for Decision N Applications; 17.22 Notices; 17.30 Zoning Districts; 17.34 Single Family Residential (S Slope Hazard (FSH) Overlay District; 17.74 Accessory Development; 17.80 Additional Arterial Streets; 17.82 Special Setbacks on Transit Streets; 17.84 Improvements Require 17.86 Parkland & Open Space; 17.90 Design Standards; 17.92 Landscaping and Screen Loading, and Access; 17.100 Land Division; 17.102 Urban Forestry; 15.20 Curbs, Side Utilities; 15.30 Dark Sky; and, 15.44 Erosion Control Regulations. 21-037 SUB VAR TREE Sandy Woods Phase II Subdivision Notice

Sent from my iPhone

--Rebecca Casey Administrative Assistant

City of Sandy Development Services Department 39250 Pioneer Blvd Sandy, OR 97055 503-489-2160 (Direct) rcasey@ci.sandy.or.us Office Hours: Tuesday - Friday 9am - 4pm



MEMORANDUM

DATE:	October 16, 2021
TO:	Emily Meharg (City of Sandy)
FROM:	Todd Prager, RCA #597, ISA Board Certified Master Arborist
RE:	Tree Preservation and Removal Review for Sandy Woods Phase 2

This memorandum is a summary of my review of the tree preservation and removal plan for the Sandy Woods Phase 2 project.

The City of Sandy requested a third-party review of the tree preservation and removal plan for the Sandy Woods Phase 2 project to address the following items:

- Adequacy of the proposed tree protection zones; and
- General conditions of the trees to be retained. •

My review is based on the excerpted plan set dated July 29, 2021 in Attachment 1 as well as the June 3 and July 13, 2021 arborist reports for the project. While I completed a site visit on October 13, 2021 to generally assess the site and trees, I did not complete a detailed assessment of individual trees at the site.

Adequacy of Proposed Tree Protection Zones

The tree protection requirements in the City of Sandy Code range from *at least* 10 feet from the trunks of retained trees (SDC 17.102.50.B.1) to five feet beyond the driplines (SDC 17.92.10.C).

The City of Sandy's administrative practice is to limit construction disturbances to no closer than a radius from a tree of .5 feet per inch of trunk diameter (DBH) if no more than 25 percent of the critical root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept. This tree protection zone is widely accepted in the

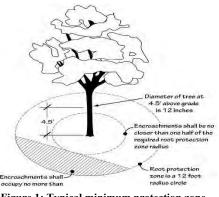


Figure 1: Typical minimum protection zone

Willamette Valley to provide adequate tree protection.

Teragan & Associates, Inc. 3145 Westview Circle • Lake Oswego, OR 97034 Phone: 971.295.4835 • Fax: 503.697.1976 Email: todd@teragan.com • Website: teragan.com Review of Sandy Woods Phase 2 Emily Meharg, City of Sandy

Many of the trees to be retained do not meet the City's administrative tree protection zone shown Figure 1. However, it appears that the trees to be retained can be protected using this standard while allowing for the proposed development of the site by placing tree protection fencing in the locations shown on the plan sheets in Attachment 1.

I recommend that the applicant review the feasibility of the proposed tree protection fencing, and substantively implement the protection zones in accordance with Figure 1. The following items should be addressed if a revised tree protection plan is required:

- Will the stumps of trees to be removed that are within the tree protection zones be left in place or carefully stump ground to protect the root systems of the adjacent trees to be retained?
- Evaluate if there is adequate space for excavation of the house foundations and construction access between the proposed houses and tree protection fences on lots 47, 48, 49, 52, 53, 66, 68, 71, 82, 83, 84, and 85 as noted in Attachment 1.
- If there is not adequate space, can building envelopes be reduced to accommodate the tree protection zones? Alternatively, can the tree protection zones be modified to allow for adequate space while providing the minimum protection zones in accordance with Figure 1?
- The proposed grading appears to conflict with the protection zone of tree 2057. Can the grading be adjusted using retaining walls or other strategies to protect the tree in accordance with Figure 1?
- Evaluate if there is space for sewer line and path construction between trees 1504 and 1542 as noted in Attachment 1. If there is not space, can strategies such as boring and/or reduction of pathway width and associated grading be implemented to protect the trees in accordance with Figure 1?

Conditions of the Trees to be Retained

Section 17.102.50.A.3 of the City of Sandy Code requires:

3. Trees proposed for retention shall be healthy and likely to grow to maturity, and be located to minimize the potential for blow-down following the harvest.

The City of Sandy's administrative practice has been to require retention trees to be in "good" or "very good" health condition on a scale of very good, good, fair, poor, or dead/dying.

The tree plan rates trees as either "viable" or not viable, and the July 13, 2021 arborist report defines viable trees as "…in fair to very good condition…" However, the City's administrative practice has been to exclude trees in fair condition from eligibility as retention trees. Based on my general review of the trees during my site visit, I observed trees in less than good health condition that would not meet the City's typical preservation tree standards. In particular, there are red alders (*Alnus*

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rubra) and other species that have struggled with extreme weather events that may have occurred following the initial tree assessment for the project.

Therefore, the City may require a reassessment of the tree conditions to ensure there are at least 117 retention trees that are in good condition. If a reassessment of tree conditions is required, I recommend focusing the reassessment on the trees to be retained of the edges of the lots to be occupied by houses. In addition to a health assessment, I recommend including an assessment of the structural conditions of the trees to evaluate their stability considering adjacent tree removals and potential increased wind exposure.

Conclusion

Based on my review of the proposed tree plan for the Sandy Woods Phase 2 project, I recommend the following:

- Provide a revised tree protection plan that meet's the City's typical tree protection zone requirements in Figure 1; and
- Reassess the health and structural conditions of the trees to be retained adjacent to the proposed lots to be developed to ensure there are at least 117 retention trees in good health condition that are structurally sound.

Please contact me if you have questions, concerns, or need any additional information.

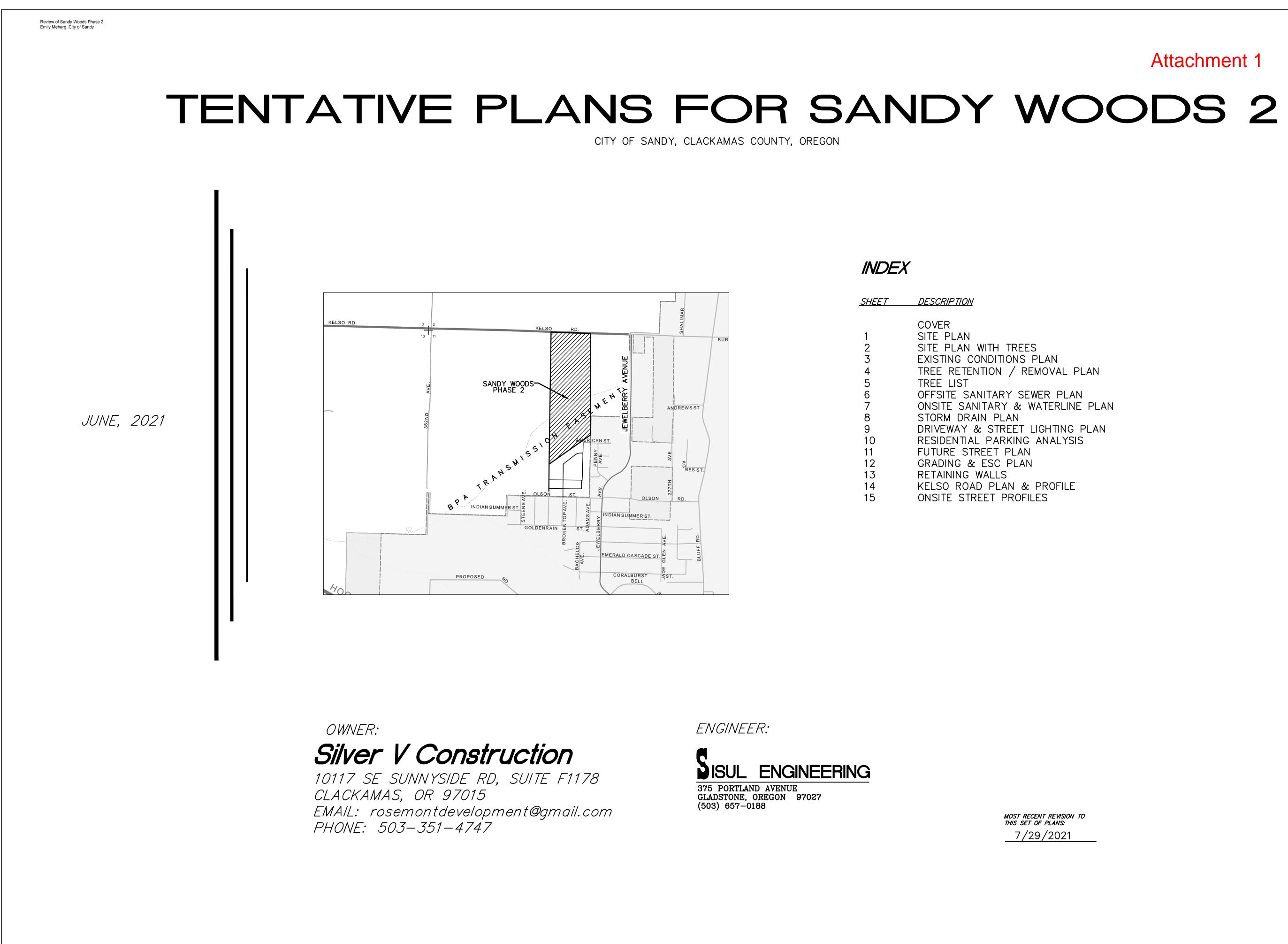
Sincerely,

Todd Prager

Todd Prager ASCA Registered Consulting Arborist ISA Board Certified Master Arborist, WE-6723B ISA Qualified Tree Risk Assessor AICP, American Planning Association

Attachment 1 – Excerpted Site Plans with Redlines

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<i>.T</i>	DESCRIPTION
	COVER SITE PLAN SITE PLAN WITH EXISTING CONDITI TREE RETENTION TREE LIST OFFSITE SANITAR ONSITE SANITARY STORM DRAIN PL DRIVEWAY & STR RESIDENTIAL PAR FUTURE STREET GRADING & ESC RETAINING WALLS KELSO ROAD PLA ONSITE STREET F

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Attachment 1

TREES TIONS PLAN / REMOVAL PLAN

RY SEWER PLAN Y & WATERLINE PLAN _AN REET LIGHTING PLAN RKING ANALYSIS PLAN PLAN

AN & PROFILE PROFILES

MOST RECENT REVISION TO THIS SET OF PLANS: 7/29/2021

