

Oregon Smoke Management Annual Report

2010



"STEWARDSHIP IN FORESTRY"

**OREGON DEPARTMENT OF FORESTRY
FIRE PROTECTION DIVISION
SMOKE MANAGEMENT AND FUELS**

OREGON SMOKE MANAGEMENT
ANNUAL REPORT
2010

Prepared By:

FIRE PROTECTION DIVISION
OREGON DEPARTMENT OF FORESTRY
2600 STATE STREET
SALEM, OREGON 97310

(Annual Report available online at <http://oregon.gov/ODF/FIRE/SMP/SMR2010.pdf>)

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OREGON DEPARTMENT OF FORESTRY

SMOKE MANAGEMENT 2010 ANNUAL REPORT

2010 SUMMARY

- **Acres burned** – Statewide 157,224 acres were ignited. The 10 year average is 149,085 acres.
- **Intrusions** – There were eight smoke intrusions into smoke sensitive receptor areas. Three of those intrusions entered newly created SSRAs from the 2008 Plan revision. The 10 year average is five intrusions.
- **Smoke impacts** – All but two intrusions lasted seven hours or less. Two impacts were of significant length – 18 and 72 hours. There were two light intrusions, four moderate intrusions, one heavy intrusion, and one of unknown length or intensity.
- **Emissions** -- Emissions were 10,329 tons of PM 2.5, which was the 2nd least amount of emissions during the previous 11 year period and only two-thirds of average.

PROGRAM OVERVIEW

The Oregon Smoke Management Plan was developed as a voluntary program in 1969 and adopted as a regulatory program by the State Forester and the Environmental Quality Commission (EQC) in 1972. The plan has gone through several major revisions since then. The last major revision to the plan was completed in 2007.

The plan's overall purpose is to keep the smoke from forestland prescribed burning from being carried to SSRAs and other areas sensitive to smoke. The plan is a framework through which emission reduction goals are achieved. The State Forester administers the plan, in cooperation with landowners, land management agencies and air quality agencies. The plan applies to all lands classified as forestland and all federally managed forestland, whether or not classified, within a forest protection district. In general all federal forestland and Class 1 forestland in western Oregon is regulated at a higher level but all forestland owners and managers must comply with aspects of the program.

The Oregon Smoke Management Plan contains six principle objectives. These objectives are to:

1. Protect public health,

2. Minimize smoke intrusions into designated population areas,
3. Reduce emissions from prescribed burning,
4. Protect visibility in Class 1 wilderness areas during the summer months,
5. Maximize burning opportunities while minimizing emissions, and
6. Coordinate with other state smoke management programs.

PROGRAM SUMMARY

Audits:

The Oregon Smoke Management Plan goal is an annual audit of approximately one-percent of the prescribed burns conducted in the Regulated Area. Approximately one-half of the audits are conducted on the day of the burn and one-half are conducted prior to the burn. The purpose of these audits is to help maintain consistent data reporting and monitor the

effectiveness of the Oregon Smoke Management Program.

Pre-burn audits were conducted on randomly selected, registered units before burning. Twelve pre-burn audits were desired but only three were completed. Burn day audits were conducted on the day the units were burned. The auditors randomly selected units for burn day audits. Twelve burn day audits were desired and two were completed.

Audited units were burned in a manner consistent with the burn permits, burn plans, and written and verbal instructions in regard to air quality. For the most part, units audited were fairly close in tonnage calculation to what was reported.

Meteorological Services:

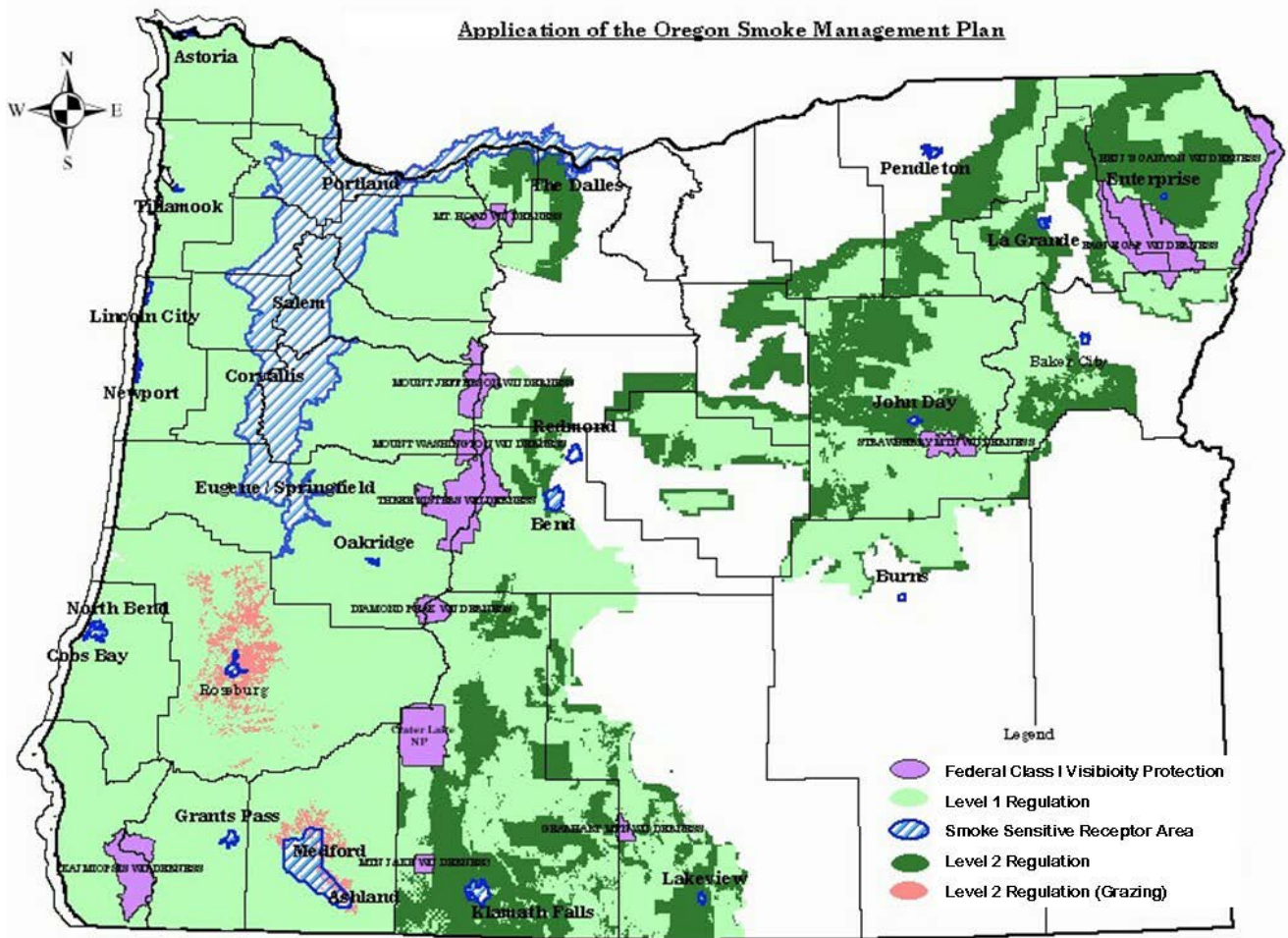
Oregon Department of Forestry meteorologists originate three smoke management forecasts and burning instructions for western Oregon, northeast Oregon, and south central Oregon. ODF meteorologists provided limited assistance to the Lakeview and Klamath Falls wood stove smoke control program. Through a cooperative agreement with DEQ they are making the open burning forecast for the Willamette Valley north of Lane County throughout the year. In addition, ODF entered into an agreement with the Department of Agriculture to issue field burning forecasts for the north Willamette Valley, Jefferson, and Union Counties during the summer field burning season (July 1- October 15).

Other forecast services included weather support for significant weather events (heavy rain, wind, etc.) and for weather events that may increase the chances for wildfire and its spread. In addition, the meteorologists provide daily quality control, data, and charts for the National Fire Danger Rating System.

PROGRAM ACCOMPLISHMENT
DATA

The following tables and figures provide detailed information of the smoke management program. The data details accomplishments for 2010 and comparative information with previous years.

Figure 1



**TABLE 1
2001-2010 ACCOMPLISHMENT SUMMARY**

Year	Total No. Units	No. Units Burned	Acres Burned	Tons Burned	No. Intrusions
2001	4,202	2,909	111,377	1,394,655	4
2002	4,539	3,125	196,265	1,565,640	1
2003	4,839	2,979	138,696	1,452,500	2
2004	4,992	3,518	155,366	1,787,170	10
2005	4,813	3,286	144,137	1,723,335	6
2006	4,204	3,565	145,258	1,967,202	6
2007	4,548	3,582	141,122	1,759,778	6
2008	3,270	2,608	162,405	1,231,210	6*
2009	3,222	2,492	139,000	1,117,650	5
2010	3,471	2,451	157,224	1,171,239	8
Average	4,210	3,052	149,085	1,517,038	5

* Number of smoke sensitive receptor areas increased from 11 to 23.

Figure 2A

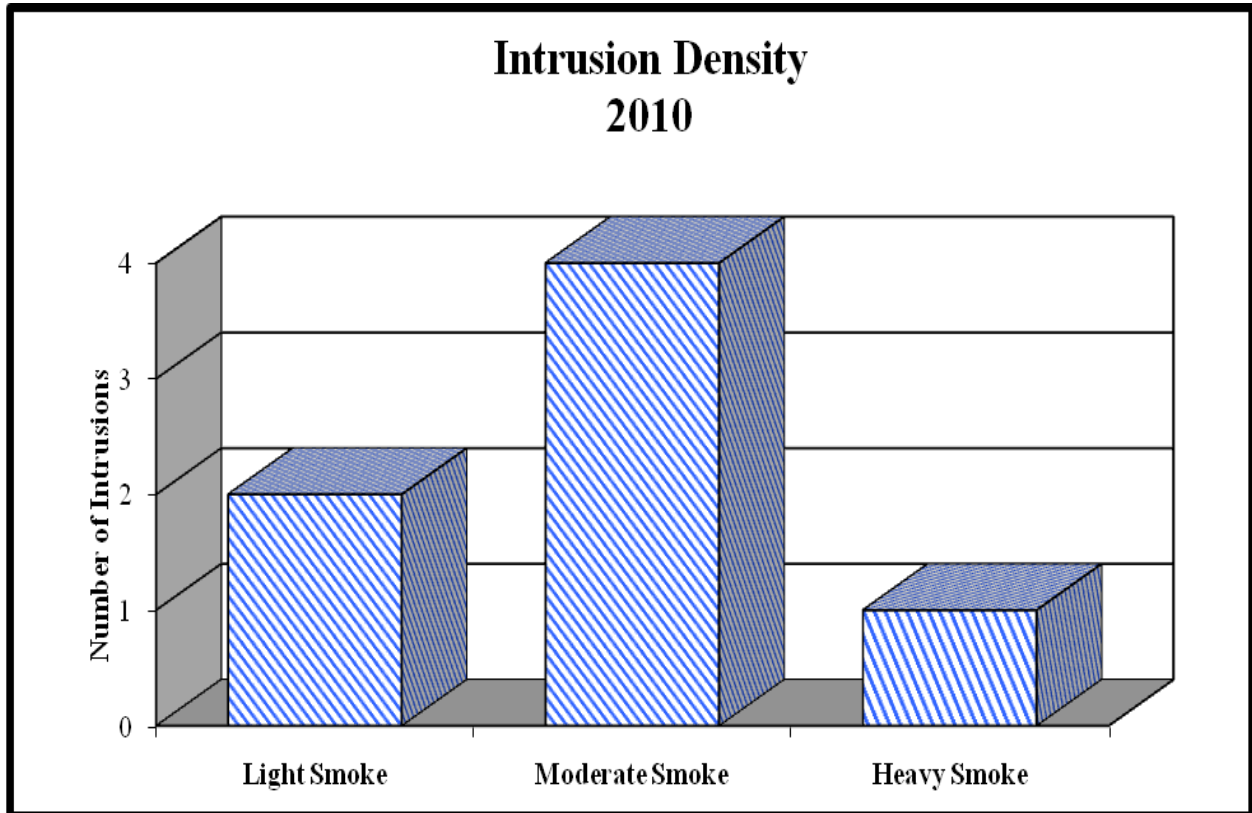


Figure 2B

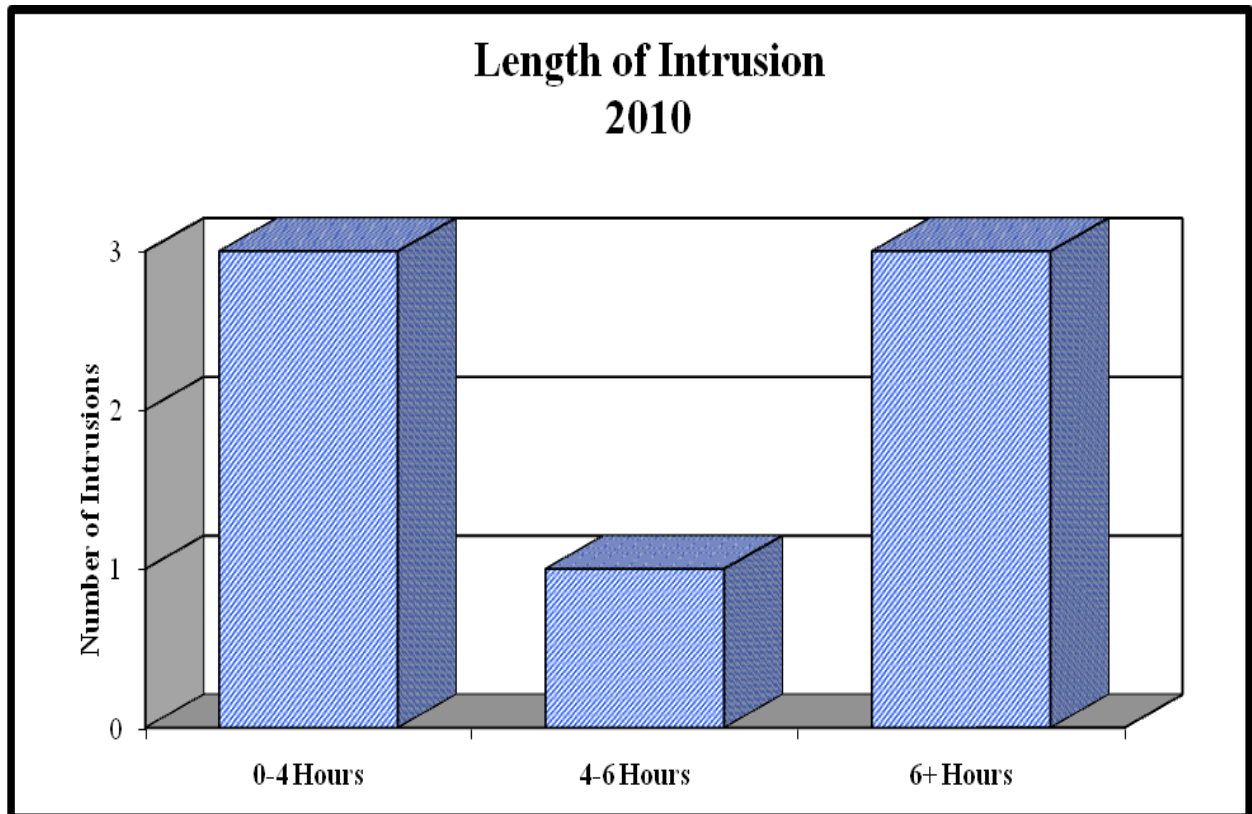


Figure 3A

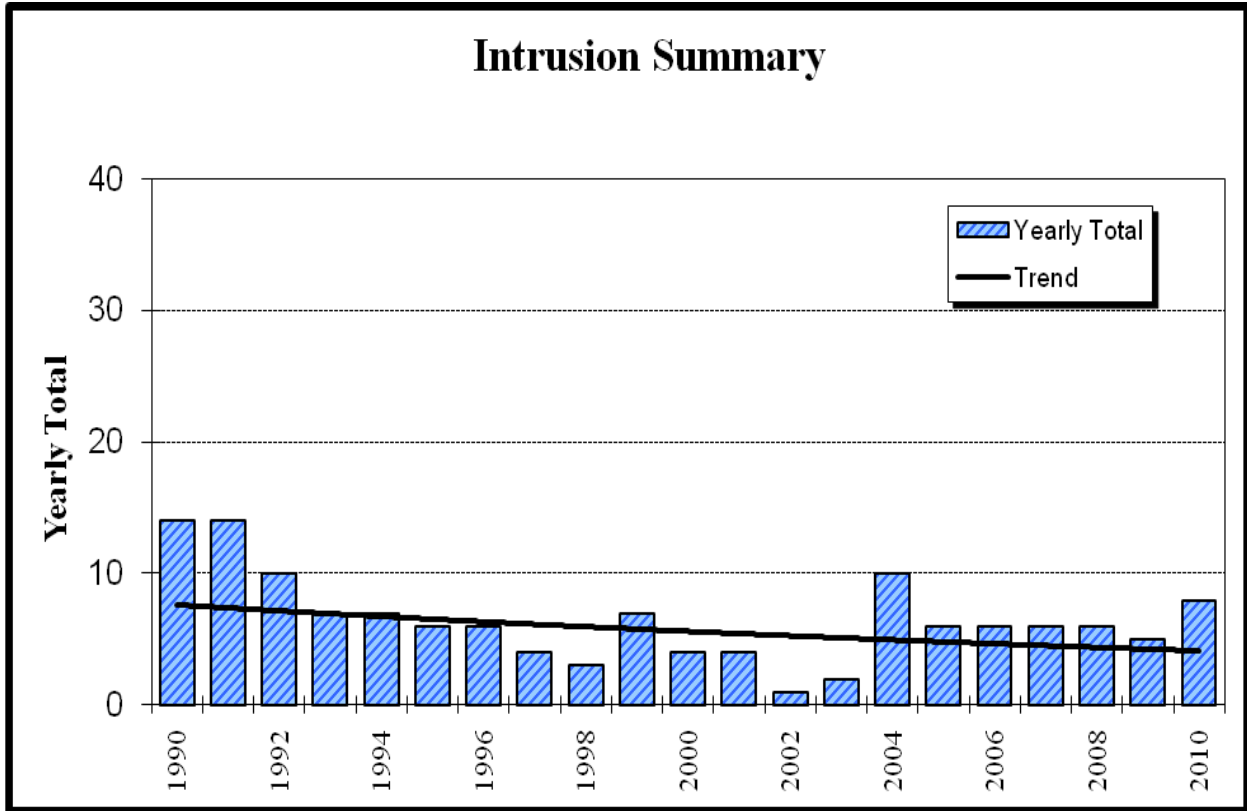
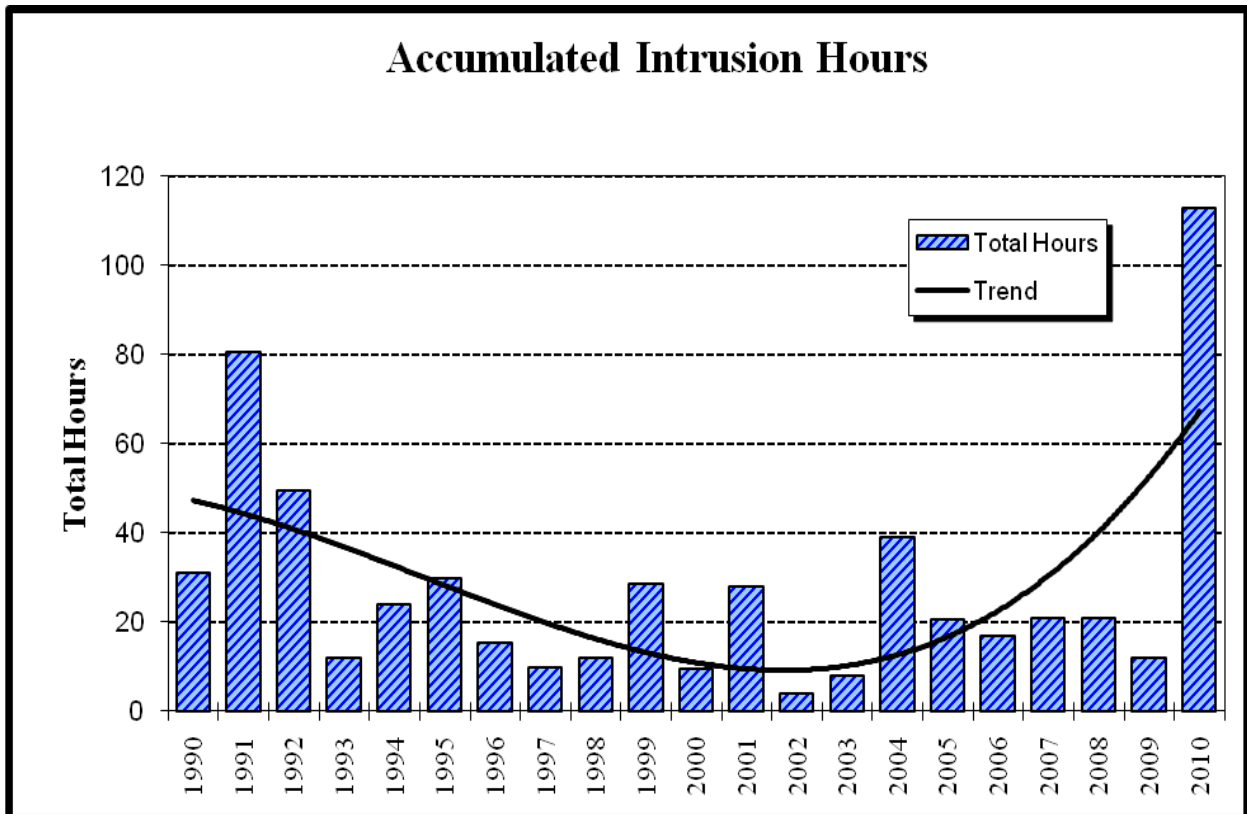


Figure 3B



**TABLE 2
SMOKE INTRUSION SUMMARY – 2010**

Date	District/ Forest	Primary Area Affected	Unit No.	Owner Class	Intensity	Length
Mar 20	CFPA	Eugene/Springfield	08-740-61448-93	Private	Light	3 hours
Jun 15	CFPA	Roseburg	08-740-60782-93	Private	Light	3 hours
Jun 18	CFPA	Medford/Grants Pass	09-740-60127-93 08-740-61094-03	Private	Moderate	6 hours
Sep 28	Deschutes NF	Bend	10-406-01100-21 10-406-01100-18	Forest Service	Moderate	7 hours
Sep 29 – Oct 2	Umatilla NF	LaGrande/ Enterprise	10-406-14600-02	Forest Service	Moderate	72 hours
Sep 30	Fremont- Winema NF	Lakeview	10-406-02200-02	Forest Service	Moderate	4 hours
Nov 4	Northeast	Enterprise	10-974-00117-00	Private	Heavy	18 hours
Dec 16	Western Lane	Veneta	10-781-00873-01	Private	Unknown	Unknown

Figure 4

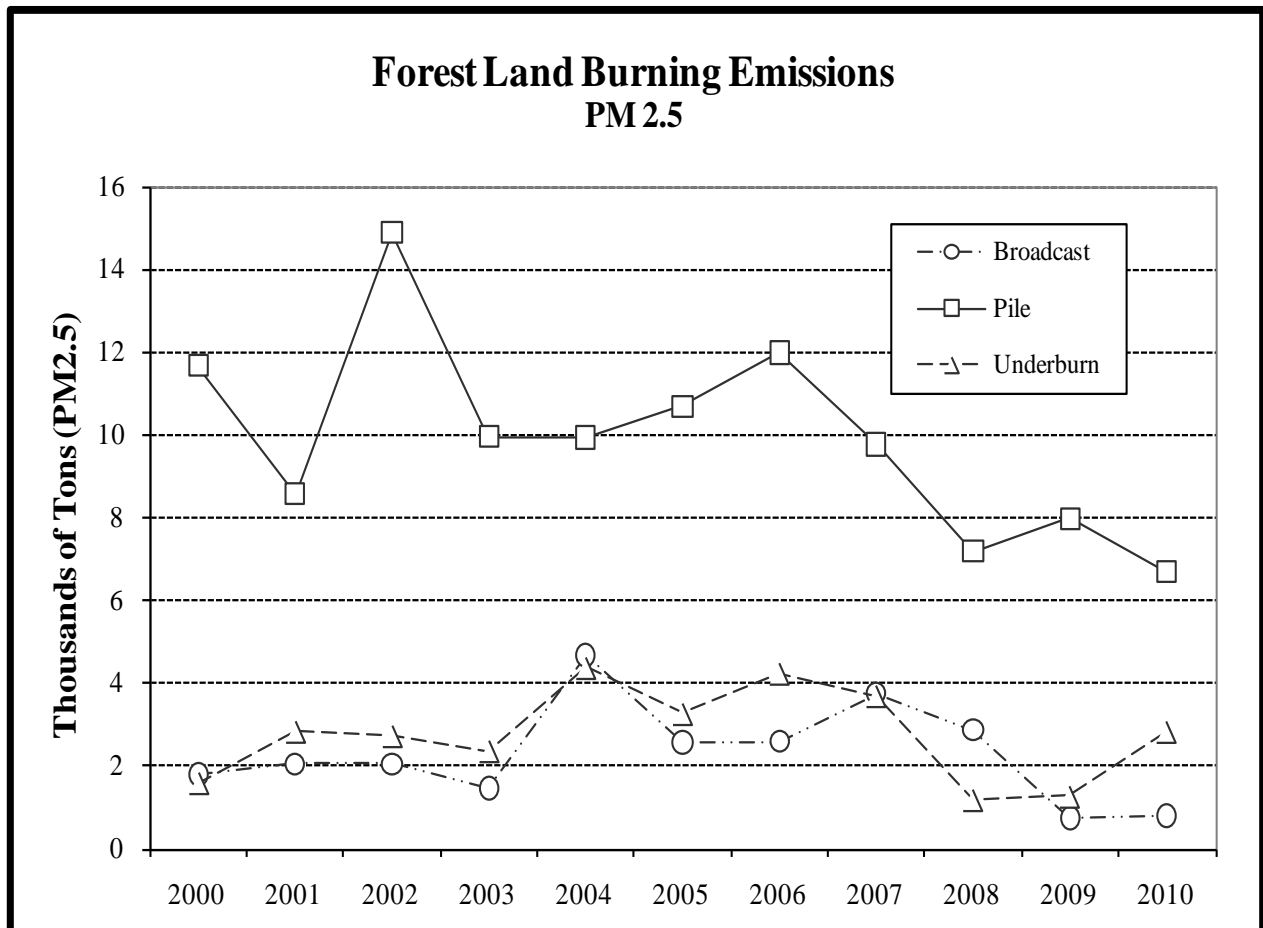


Figure 5

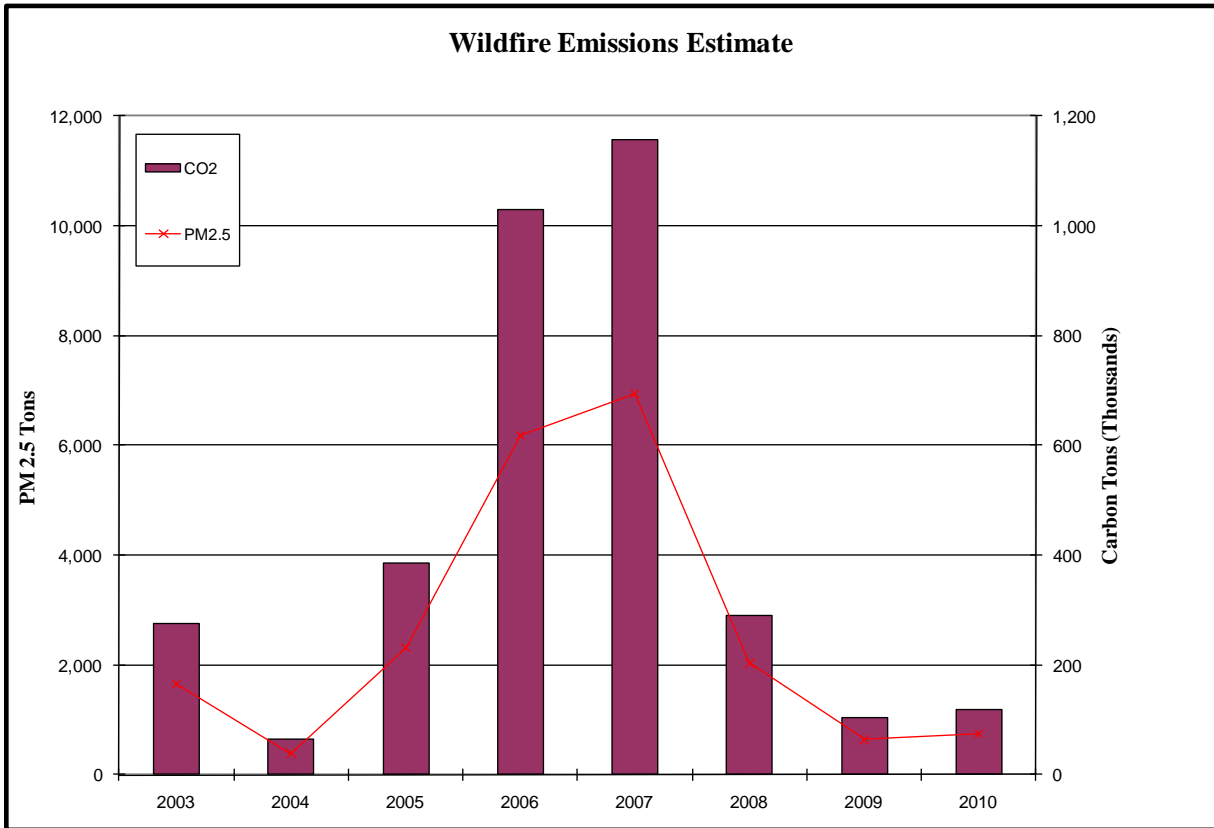


Table 3A

PM 2.5 Emissions (Tons) Broadcast											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Astoria	1	0	0	0	0	0	0	9	28	5	0
Central Oregon	296	0	508	235	2246	301	585	339	365	0	0
Clackamas-Marion	98	19	0	0	0	0	0	0	0	0	0
Coos FPA	748	764	583	369	1066	666	704	1092	879	398	340
Crater Lake NP	0	0	0	0	0	0	0	0	0	0	11
Columbia Gorge SA										1	0
Deschutes NF	1	1	1	0	34	93	26	0	82	4	3
Douglas FPA	137	140	88	58	131	96	50	22	13	65	21
Eastern Lane	32	3	0	0	0	0	0	0	0	0	0
Forest Grove	33	22	14	24	25	3	14	11	0	28	5
Fremont NF	0	54	11	0	0	0	290	1342	6	0	0
Klamath NF	0	0	0	0	0	0	0	0	0	0	0
Klamath-Lake	0	502	0	102	0	1065	0	175	20	26	40
Linn	4	4	0	0	0	0	0	0	0	0	0
Malheur NF	0	69	11	4	94	0	117	188	523	4	0
Mt. Hood NF	0	0	0	39	147	29	0	0	0	0	0
North Cascade			4	169	4	0	0	52	2	0	0
Northeast Oregon	0	0	11	51	0	0	0	62	18	29	204
Ochoco NF	12	24	82	6	17	0	0	0	12	0	0
Rogue/Siskiyou NF	0	9	0	0	0	0	0	73	17	1	0
Siskiyou NF	32	0	0	0	138	9	28	0	0	0	0
Siuslaw NF	0	0	18	3	2	0	1	3	0	0	0
South Cascade			22	0	26	0	460	0	0	11	0
Southwest Oregon	17	87	3	2	25	103	16	34	66	0	18
Tillamook	0	0	0	0	1	0	0	0	10	0	0
Umatilla NF	2	51	83	0	258	0	47	0	373	0	31
Umpqua NF	1	12	36	4	7	0	0	1	28	1	4
Walker Range	0	0	0	0	0	0	0	0	2	0	0
Wallowa-Whitman NF	29	43	165	11	15	52	0	27	243	0	9
West Oregon	254	165	265	190	242	55	123	179	81	114	81
Western Lane	106	72	143	105	200	98	99	92	83	57	25
Willamette NF	3	0	4	0	8	1	34	50	15	1	2
Winema NF	0	7	0	0	0	7	0	0	0	0	0
Total	1806	2048	2052	1372	4686	2578	2594	3751	2866	745	794

Table 3B

PM 2.5 Emissions (Tons) Pile											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Astoria	261	539	325	435	407	525	279	255	113	121	142
Central Oregon	503	312	522	164	303	216	120	175	25	121	128
Clackamas-Marion	387	446	0	0	0	0	0	0	0	0	0
Coos FPA	1146	1152	1078	1290	1294	1338	1488	1786	1319	801	748
Crater Lake NP	0	0	0	0	0	0	0	0	0	0	0
Columbia Gorge SA									0	1	0
Deschutes NF	268	106	92	42	71	39	1140	170	40	100	312
Douglas FPA	353	537	443	606	841	520	936	579	821	1173	720
Eastern Lane	727	528	0	0	0	0	0	0	0	0	0
Forest Grove	535	640	612	590	742	520	474	555	244	282	273
Fremont NF	1	0	1	0	6	8	0	2	4	1	7
Klamath NF	0	0	0	0	0	0	0	5	3	10	2
Klamath-Lake	478	34	542	1939	641	652	484	467	115	62	107
Linn	1233	1169	0	0	0	0	0	0	0	0	0
Malheur NF	76	24	189	43	174	63	268	273	394	203	127
Mt. Hood NF	196	3	210	1	22	27	15	37	23	6	33
North Cascade			233	67	497	248	408	439	262	144	164
Northeast Oregon	581	368	471	230	124	518	518	352	603	1075	288
Ochoco NF	130	7	10	3	0	0	0	0	0	0	0
Rogue/Siskiyou NF	39	2	150	123	194	141	100	362	376	527	599
Siskiyou NF	23	32	25	43	309	478	173	0	0	0	0
Siuslaw NF	8	0	3	2	1	4	9	22	21	36	29
South Cascade			1847	1368	1647	2367	1533	1568	1011	896	994
Southw est Oregon	461	268	399	480	683	812	1012	596	295	703	411
Tillamook	115	84	73	137	184	248	225	263	180	278	114
Umatilla NF	11	10	50	4	16	2	0	8	26	0	26
Umpqua NF	27	93	19	8	56	39	46	44	17	81	153
Walker Range	1559	107	448	504	13	25	743	17	0	0	1
Wallow a-Whitman NF	159	83	171	35	69	3	18	45	132	319	200
West Oregon	1128	1053	1038	1106	1023	1160	1260	1203	814	788	873
Western Lane	757	625	316	513	412	499	559	469	319	159	195
Willamette NF	121	26	61	63	60	144	96	59	20	20	38
Winema NF	388	323	145	165	156	99	76	22	0	82	12
Total	11671	8571	9470	9961	9945	10695	11980	9773	7177	7989	6696

Table 3C

PM 2.5 Emissions (Tons) Underburn											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Astoria	0	0	0	0	0	0	0	0	0	0	0
Central Oregon	0	30	36	0	0	8	148	243	0	6	277
Clackamas-Marion	0	0	0	0	0	0	0	0	0	0	0
Coos FPA	0	0	0	0	0	0	0	0	0	0	0
Crater Lake NP	0	0	22	0	0	0	0	0	0	0	0
Columbia Gorge SA									0	0	0
Deschutes NF	104	283	105	178	323	178	233	279	91	159	174
Douglas FPA	0	0	1	0	0	0	0	0	0	0	0
Eastern Lane	0	0	0	0	0	0	0	0	0	0	0
Forest Grove	0	0	0	0	0	0	0	0	0	0	0
Fremont NF	78	501	586	483	1341	171	590	339	381	430	677
Klamath NF	0	0	0	0	0	0	0	0	0	0	0
Klamath-Lake	0	129	0	20	0	11	123	50	56	35	1
Linn	0	0	0	0	0	0	0	0	0	0	0
Malheur NF	11	356	251	265	851	405	67	732	91	214	541
Mt. Hood NF	3	4	0	0	31	8	36	26	0	2	61
North Cascade			0	0	0	0	9	0	0	0	0
Northeast Oregon	0	0	0	0	0	35	11	66	18	7	0
Ochoco NF	330	412	306	0	218	95	46	0	0	14	46
Rogue/Siskiyou NF	11	12	42	117	5	24	18	29	36	30	103
Siskiyou NF	71	8	62	6	20	1	2	0	0	0	0
Siuslaw NF	0	0	0	0	0	0	0	3	0	0	0
South Cascade			0	0	0	0	0	0	0	0	0
Southw est Oregon	123	103	178	95	97	109	122	32	95	21	22
Tillamook	0	0	0	0	0	0	0	0	0	0	0
Umatilla NF	394	59	293	144	168	358	850	527	103	0	247
Umpqua NF	83	155	140	17	92	58	489	130	40	48	106
Walker Range	0	0	0	0	0	0	0	0	0	0	0
Wallow a-Whitman NF	313	561	557	901	1011	1391	996	795	186	207	320
West Oregon	0	0	0	0	0	0	0	0	0	0	0
Western Lane	0	0	0	0	0	0	0	0	0	0	0
Willamette NF	67	91	28	67	40	61	138	267	100	95	37
Winema NF	18	138	130	80	180	355	362	182	0	10	227
Total	1606	2842	2736	2373	4377	3268	4240	3700	1197	1278	2839

Figure 6

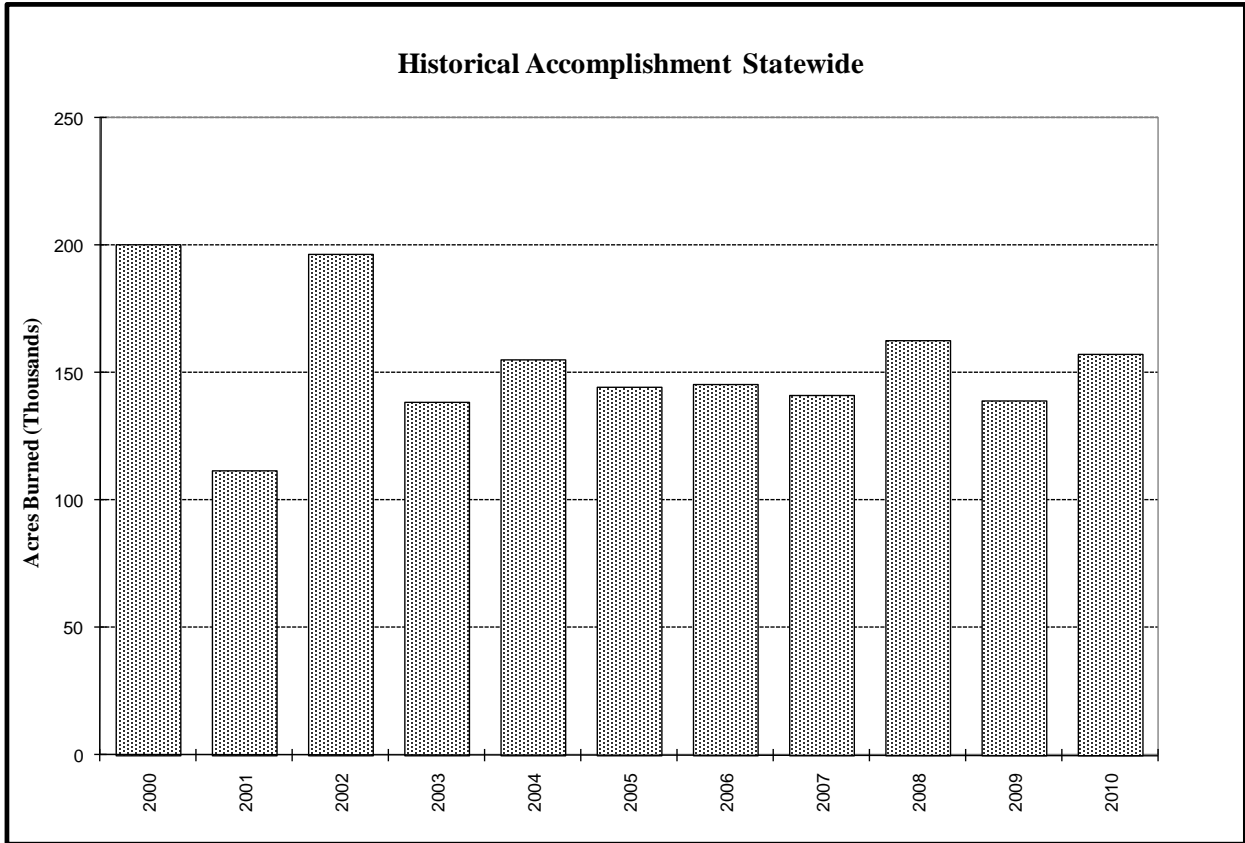


Figure 7

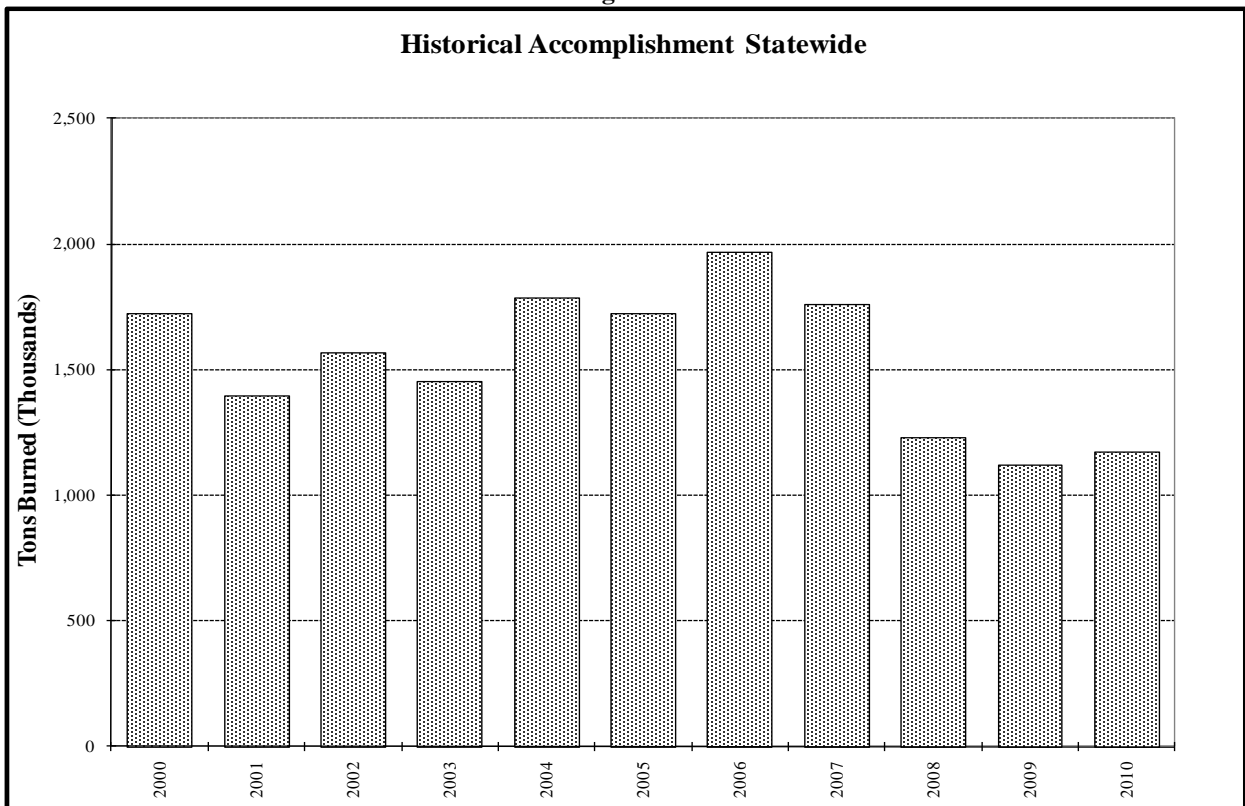


Figure 8

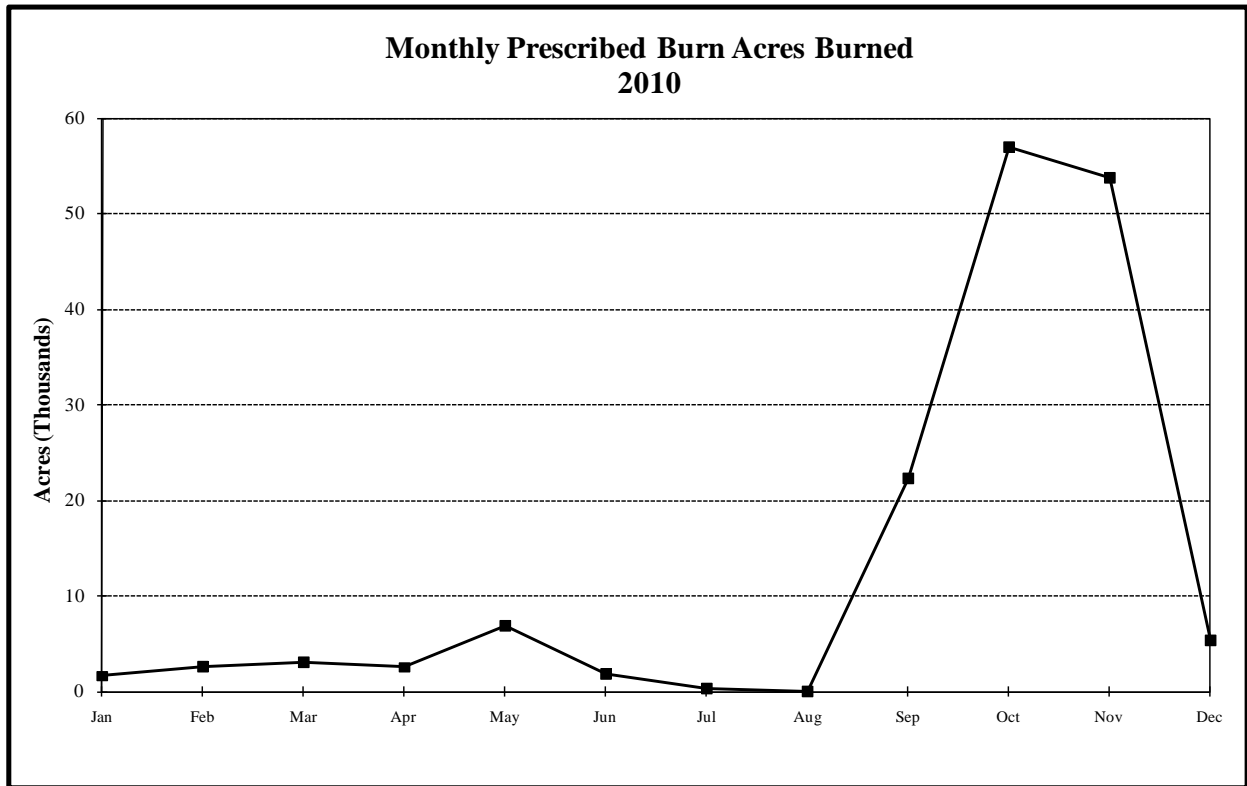


Figure 9

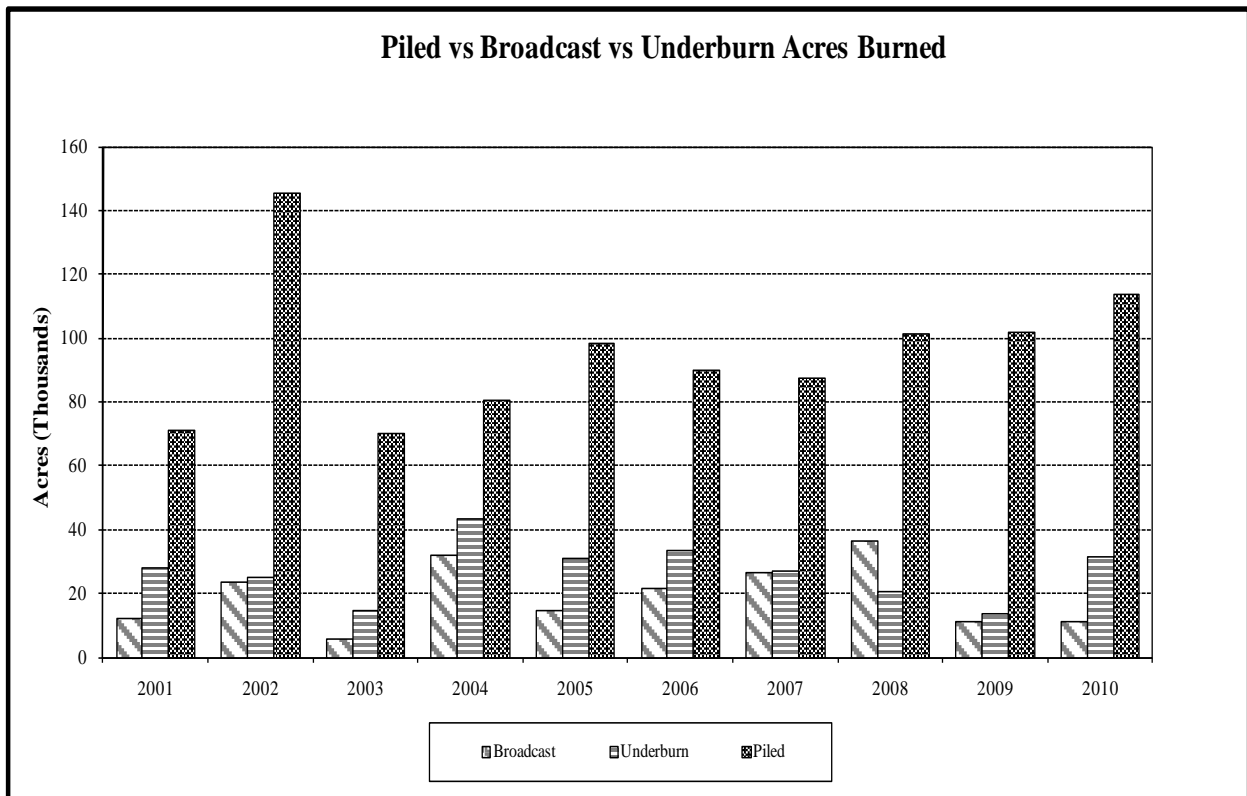


Table 4
BURN SUMMARY BY DISTRICT -- 2010

District/Forest	Units Burned	Acres Burned	Tons Burned
Astoria	67	2,554	13,980
Central Oregon	73	23,823	90,993
Columbia Gorge SA	0	0	0
Coos FPA	327	16,041	141,953
Douglas FPA	185	8,516	75,357
Forest Grove	102	3,686	28,150
Klamath-Lake	24	4,561	29,600
North Cascade	86	3,579	23,235
Northeast	72	6,222	57,385
South Cascade	186	9,737	90,631
Southwest	158	8,508	53,101
Tillamook	43	2,143	12,659
Walker Range	1	14	108
Western Lane	70	2,112	20,695
West Oregon	246	8,449	92,930
Crater Lake NP	2	68	1,218
Deschutes NF	140	12,922	46,528
Fremont NF	9	8,413	71,774
Klamath NF	1	31	217
Malheur NF	114	9,139	65,722
Mt Hood NF	34	935	9,363
Ochoco NF	7	1,027	4,255
Rogue River\Siskiyou NF	149	6,741	87,735
Siuslaw NF	46	1,342	2,935
Umatilla NF	41	4,883	33,240
Umpqua NF	80	1,643	28,960
Wallowa-Whitman NF	90	6,257	58,250
Willamette NF	72	1,836	7,695
Winema NF	26	2,042	22,570
TOTAL	2,451	157,224	1,171,239

Table 5
Tons Burned by Month by District
2010

District	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total by District
Astoria	1,500	2,039								4,523	3,678	2,240	13,980
Central Oregon	39	3,739	306	990		400			11,400	39,057	34,234	828	90,993
Coos	872	5,126	5,689	2,821	11,036	10,846	172		308	50,249	51,903	2,931	141,953
Douglas	30	314	546		1,590					22,431	50,129	317	75,357
Forest Grove	588									14,243	11,023	2,296	28,150
Klamath-Lake	10	7,095	11,047	1,274					1,548	4,473	4,128	25	29,600
North Cascade										15,037	8,198		23,235
Northeast	117	377		6,268	16,015	52				2,993	31,419	144	57,385
South Cascade										42,678	47,953		90,631
Southwest	868	4,414	1,580	8	805				1,304	15,803	25,777	2,542	53,101
Tillamook			682						50	7,843	4,084		12,659
Walker Range											108		108
Western Lane	50	324			1,509	525				9,544	7,496	1,247	20,695
West Oregon		3,865	1,000			190	2,300			57,491	27,469	615	92,930
Crater Lake NP					3					1,215			1,218
Deschutes NF	167			3,046	6,388	400			4,307	7,617	23,881	722	46,528
Fremont NF			5,410	3,150	28,165				26,600	7,661	788		71,774
Klamath NF		14								84	119		217
Malheur NF						6,540	20		4,000	39,909	15,253		65,722
Mt Hood NF										7,087	1,981	295	9,363
Ochoco NF			720						200	3,335			4,255
Rogue/Siskiyou NF	11,033	1,975	6	1,735	20				15,113	15,914	29,191	12,748	87,735
Siuslaw NF	142									2,793			2,935
Umatilla NF							942	3	26,886	2,782	2,627		33,240
Umpqua NF	1,000	1,045	438	2	75	5,145	612		2,524	4,771	7,325	6,023	28,960
Wallow-Whitman NF	20		354	246	2,325				12,080	26,445	10,600	6,180	58,250
Willamette NF					49	3,171			295	2,807	1,373		7,695
Winema NF					976				6,316	14,025	1,253		22,570
District Total	4,074	27,293	20,850	11,361	30,955	12,013	2,472	0	14,610	286,365	307,599	13,185	730,777
Forest Total	12,362	3,034	6,928	8,179	38,001	15,256	1574	3	98,321	136,445	94,391	25,968	440,462
Grand Total	16,436	30,327	27,778	19,540	68,953	27,269	4,046	3	112,931	421,595	401,990	39,153	1,171,239

**Table 6
Acres Burned by Month by District
2010**

District	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total by District
Astoria	132	195								846	1,060	321	2,554
Central Oregon	6	161	220	121		400			10,200	9,732	2,802	181	23,823
Coos	256	218	178	109	486	454	100		30	6,831	6,031	1,348	16,041
Douglas	30	50	46		82					2,571	5,680	57	8,516
Forest Grove	58									2,218	1,300	110	3,686
Klamath-Lake	5	785	1,471	705					129	1,160	301	5	4,561
North Cascade										2,153	1,426		3,579
Northeast	78	82		171	555	17				721	4,536	62	6,222
South Cascade										3,838	5,899		9,737
Southwest	144	631	392	4	197				403	2,269	4,044	424	8,508
Tillamook	90								1	1,242	810		2,143
Walker Range											14		14
Western Lane	16	27			108	35				976	872	78	2,112
West Oregon		317	35			10	115			5,257	2,643	72	8,449
Crater Lake NP					2					66			68
Deschutes NF	38			779	2,206	200			1,180	1,629	6,282	608	12,922
Fremont			420	350	2,835				3,750	445	613		8,413
Klamath NF		2								12	17		31
Malheur NF						424	4		350	5,069	3,292		9,139
Mt Hood NF										371	482	82	935
Ochoco NF			180						200	647			1027
Rogue/Siskiyou NF	677	67	6	172	2				437	1,739	2,167	1,474	6,741
Siuslaw NF	27									1,315			1,342
Umatilla NF							53	2	3,964	363	501		4,883
Umpqua NF	50	64	26	2	5	183	18		97	414	549	235	1,643
Wallowa-Whitman NF	1		33	123	347				1,164	2,968	1,298	323	6,257
Willamette NF					7	139			55	892	743		1,836
Winema NF					72				309	1,251	410		2,042
District Total	815	2,466	2,342	1,110	1,428	916	215	0	10,763	39,814	37,418	2,658	99,945
Forest Total	793	133	665	1,426	5,476	946	75	2	11,506	17,181	16,354	2,722	57,279
Grand Total	1,608	2,599	3,007	2,536	6,904	1,862	290	2	22,269	56,995	53,772	5,380	157,224

Table 7
Burn Data by Owner Type
2010

	Private			State			Federal (Except USFS)			USFS		
District/Forest	Units	Acres	Tons	Units	Acres	Tons	Units	Acres	Tons	Units	Acres	Tons
Astoria	42	1,331	7,133	25	1,223	6,847	0	0	0			
Central Oregon	36	293	4,056	10	148	4,085	27	23,382	82,852			
Coos FPA	265	13,438	125,235	7	285	3,812	55	2,318	12,906			
Douglas FPA	154	8,275	70,143	2	43	208	29	198	5,006			
Forest Grove	92	2,724	24,950	10	962	3,200	0	0	0			
Klamath-Lake	7	1,326	4,284	4	394	3,155	13	2,841	22,161			
North Cascade	79	3,220	20,454	7	359	2,781	0	0	0			
Northeast	66	5,656	35,379	0	0	0	6	566	22,006			
South Cascade	171	7,586	88,038	1	7	186	14	2,144	2,407			
Southwest	41	2,169	17,433	3	150	1,900	114	6,189	33,768			
Tillamook	32	1,558	10,151	11	585	2,508	0	0	0			
Walker Range	1	14	108	0	0	0	0	0	0			
West Lane	66	1,979	20,241	4	133	454	0	0	0			
West Oregon	240	8,273	91,970	6	176	960	0	0	0			
Crater Lake NP	0	0	0	0	0	0	2	68	1,218			
Deschutes NF										140	12,922	46,528
Fremont NF										9	8,413	71,774
Klamath NF										1	31	217
Malheur NF										114	9,139	65,722
Mt Hood NF										34	935	9,363
Ochoco NF										7	1,027	4,255
Rogue/Siskiyou NF										149	6,741	87,735
Siuslaw NF										46	1,342	2,935
Umatilla NF										41	4,883	33,240
Umpqua NF										80	1,643	28,960
Wallowa-Whitman NF										90	6,257	58,250
Willamette NF										72	1,836	7,695
Winema NF										26	2,042	22,570
Totals	1,292	57,842	519,575	90	4,465	30,096	260	37,706	182,324	809	57,211	439,244