

White Paper: State/Local/Tribal Use of WRAP's Fire Emission Tracking System (FETS)

to Calculate Emissions from Wildfires

August 28, 2009 Discussion Draft

Purpose

To investigate the feasibility of using FETS (<http://wrapfets.org/>) as a data repository and tool for State, local and tribal emission inventory personnel in the WRAP region to report, analyze, and calculate emissions from wildfires to support accurate and complete emissions reporting and tracking.

Background

EPA's Air Emissions Reporting Rule (AERR; 73 FR 76539; December 17, 2008) outlines the emission reporting requirements for state/local governments, and prescribes procedures and timetables for the electronic reporting of county-level emissions from all source categories, which are compiled into EPA's National Emissions Inventory (NEI). In general, emissions for most source categories are required to be reported once every 3 years, while major stationary point sources are reported annually. Wildfires may be reported either as Non-point sources or, as of 2008, Event sources following EPA reporting requirements outlined in the rule and the 2008 NEI/EIS Implementation Plan.

The NEI database is a central repository of inventory data that is used by EPA and by states for national emissions trends analysis, answering questions from the public, air quality modeling, tracking progress in meeting CAA requirements, and setting policy.

In addition, the Maricopa County Air Quality Department (MCAQD) is currently developing 2008 emission inventories for the Phoenix metro PM₁₀ nonattainment area (NAA), ozone NAA, and CO maintenance area. These periodic emissions inventory reports are required every three years to meet provisions of the 1990 Clean Air Act Amendments related to attainment of the National Ambient Air Quality Standards (NAAQS). Areas designated nonattainment for failing to meet the NAAQS are required to develop periodic emission inventories. Portions of Maricopa County are classified as serious nonattainment for PM₁₀ and Subpart I nonattainment for 8-hour ozone. The table below summarizes the geographic and temporal scope of Maricopa County's periodic emission inventory reports as well as the pollutants covered.

Table 1. Overview of Emission Inventory (EI) Reporting Requirements for Maricopa County (AZ).

		Reporting Timeframes and Pollutants																		
		Annual								Average Day							O ₃ Season Day			CO S.D.
Inventory	Geographic Area(s):	PM ₁₀	PM _{2.5}	NO _x	SO _x	VOC	CO	NH ₃	Pb	PM ₁₀	PM _{2.5}	NO _x	SO _x	VOC	CO	NH ₃	NO _x	VOC	CO	CO
NEI:	-Maricopa Co. total	X	X	X	X	X	X	X	X											
PM ₁₀ NAAQS SIP:	-Maricopa Co. total	X	X	X	X			X		X	X	X	X			X				
	-PM ₁₀ NAA ¹	X	X	X	X			X		X	X	X	X			X				
Ozone NAAQS SIP:	-Maricopa Co. total			X		X	X										X	X	X	
	-8-hr ozone NAA ¹			X		X	X										X	X	X	
Carbon Monoxide NAAQS maint. plan:	-Maricopa Co. total						X												X	X
	-CO Maint. Area						X												X	X

1. includes parts of Pinal Co.

One of FETS' stated goals is to support air quality planning tasks by providing comprehensive fire activity and emissions data, MCAQD is interested in using the FETS to develop its 2008 wildfire emission estimates for reporting and tracking. FETS capability to define a fuel loading following the FCCS 1.1 fuel classification scheme and to provide fuel moisture for every fire event and then use these and other inputs to calculate emissions using CONSUME 3.0 appears to be an improved method of estimating wildfire emissions. Unfortunately, FETS only captures large federal land fires. For 2008, only three fires were captured by FETS for Maricopa County. However, wildfire data gathered by MCAQD from the Arizona State Land Department, the Arizona State Department of Fire, Building, and Life Safety, and the Federal Fire Occurrence website (<http://wildfire.cr.usgs.gov/firehistory/data.html>) indicate a large number (90+) of small wildfires occurred in Maricopa County in 2008 (see Appendix 1 for details on data sources). FETS would be useful for calculating wildfire emissions for periodic emissions inventory and NEI reporting if it captured the smaller wildfires. Further, using previous methodologies to calculate emissions from wildfires will result in inconsistencies in wildfire emissions reported in WRAP FETS and in the NEI.

Proposed Approach

The FETS can accommodate any non-structure (i.e. non-building) fire event that has a minimal set of characteristics: date, location, size and source type (wildfire, WFU, prescribed, agricultural, or rangeland). Currently, the FETS can accept location information in decimal degrees (latitude/longitude) or the PLSS format (township/range/section). An assumption is made for every event that it occurs on a single day. Multi-day fires are grouped into a series of single-day events.

In addition to small (< 100 acres) wildfires, Maricopa County receives fire information with low spatial and temporal resolution and occasionally with no reported acres. To properly handle such data, an annotation system will need to be implemented in the FETS indicating the resolution, in time and space, of each stored event. Additionally, acreage values will need to be gap filled for fires with no reported acres.

Maricopa County will prepare datasets for to submittal to the FETS as follows:

- Datasets including wildfires on Federal lands will be compared with existing data in the FETS. Fires with the same name will be removed from the County dataset.

- Fires with the location reported as an address will be converted to decimal degrees.
- Fires with no reported acres must be given an acreage value. Possible solutions to this include,
 - Average the acreage of similar fire events and assign the average to event missing a value.
 - Use information about similar events (such as time to contain the event, notes, etc) to estimate an acreage for each event missing a value.
- The following types of data will be flagged for temporal resolution:
 - Multi-day fires that include only the Start and End (or “Out”) dates
 - Aggregated fire information, such as monthly acreage totals, not associated with a single event.
- The following types of fires will be flagged for spatial resolution:
 - Aggregated fire information, such as a monthly total, summarized by geographic region rather than the event. The location supplied will be the centroid of the geographic region.

The annotation system for the FETS will consist of:

- Temporal resolution flags
 - Daily event
 - Multi-day event smoothed over start and end date
 - Multiple, discrete events aggregated over a period of time
- Spatial resolution flags
 - Decimal Degrees
 - Decimal Degrees of the origin of a large, multi-day event
 - PLSS
 - Other geographic region (city/town, district, county, Tribal area, State)

The prepared dataset will be sent to the FETS Administrator, who will perform a second round of quality control. Data may then be imported directly to the FETS like any other dataset.

The table below contains brief descriptions of the various data sources (and formats) for 2008 wildfires in Maricopa County. The appendix (following) contains further details on the structure and content of the various data bases.

Table 2. Comparative Overview of Data Bases for Maricopa Co. (AZ) Wildfires.

	FETS	AZ State Land Dept.	AZ Dept of Fire, Building & Life Safety	Federal Fire Occurrence Website
# fires reported	3	25	10	81
Total acreage	7,377	747	4 (acreage data gaps)	6,888
Geographic resolution	Lat/Long	Lat/Long	Address	Lat/Long
Temporal resolution	Daily	Incident Date; Containment Date; Control Date	Alarm Date; Arrival Date; Last Unit Cleared Date	Start Date; Control Date; Out Date

Appendix 1: Overview of Data Sources and Formats re: Wildfires and Prescribed Fires in Maricopa Co., AZ

Arizona State Land Department (ASLD) Forestry Division:

The ASLD Forestry Division provides for the prevention and suppression of wildfires on state and private lands located outside of incorporated municipalities. The wildfire data provided by ASLD includes wildfires that ASLD dispatch center was involved with. In Maricopa County, this includes wildland fires that occur outside of local fire districts and municipalities on State, private, and U.S. Bureau of Land Management (BLM) land in 2008. The ASLD reported Maricopa County wildland fire data gaps as Tonto National Forest, Bureau of Indian Affairs/Gila River and Fort McDowell tribal lands, and military areas and the Goldwater Range. The ASLD reported 25 wildfires in 2008 in Maricopa County which encompassed nearly 750 acres. These are shown in Table A-1 below:

Table A-1. 2008 Maricopa County Wildfire Data Provided by Arizona State Land Department, Forestry Division.

Incident_Name	Inc_date	Agency	Fire_Number	Acres	Land	Stat_Cause	Lat	Long	Contain_Date	Control_Date
SOUTHERN	03/22/2008	PHD	AZ-A1S-080109	200.00	MIXED	Miscellaneous	33.3845	-112.3331	03/23/2008	03/28/2008
INITIAL	03/25/2008	A1S	AZ-A1S-080117	0.10	STATE	Not Determined	33.3858	-112.2716	03/25/2008	03/25/2008
PAINTED ROCK	04/02/2008	A1S	AZ-A1S-08128	5.00	PVT	Miscellaneous	32.9772	-112.8986	04/02/2008	04/02/2008
GILA	04/19/2008	A1S	AZ-A1S-080182	0.10	PVT	Not Determined	32.9197	-112.8269	04/19/2008	04/21/2008
GILA BEND BARRY	04/23/2008	A1S	AZ-A1S-080199	0.10	AZS	Not Determined	32.9537	-112.6954	04/23/2008	04/23/2008
GOLDWATER	04/25/2008	PHD	AZ-PHD-080205	0.10	BLM	Miscellaneous	32.6836	-112.3419	04/25/2008	04/26/2008
BOULDER	05/03/2008	PHD	AZ-PHD-08-0240	0.10	BLM	Campfire	33.8427	-112.4410	05/03/2008	05/03/2008
DAISY	05/18/2008	A1S	AZ-A1S-080288	1.00	STATE	Miscellaneous	33.9125	-112.1039	05/18/2008	05/18/2008
INSTITUTIONAL	06/01/2008	PHD	AZ-PHD-080346	6.00	BLM/STATE	Not Determined	33.8349	-112.1602	06/01/2008	06/02/2008
MIRAGE	06/07/2008	A1S	AZ-A1S-080376	0.25	PVT	Not Determined	33.3861	-112.3336	06/08/2008	06/08/2008
SCOUT	06/10/2008	A1S	AZ-A1S-080386	3.00	PVT	Not Determined	33.9490	-112.1338	06/11/2008	06/11/2008
ROCK SPRINGS	06/17/2008	PHD	AZ-PHD-080413	0.25	BLM	Not Determined	34.0276	-112.1399	06/18/2008	06/18/2008
RIVER BOTTOM	06/20/2008	A1S	AZ-A1S-080424	0.50	PVT	Not Determined	33.3753	-112.3528	06/20/2008	06/20/2008
PLEASANT	06/28/2008	PHD	AZ-PHD-08-0501	2.00	BLM	Not Determined	33.8478	-112.3356	06/28/2008	06/28/2008
ESTRELLA	06/29/2008	PHD	AZ-PHD-08-0504	0.10	BLM	Not Determined	32.9973	-112.5008	06/29/2008	06/29/2008
TANK	06/30/2008	PHD	AZ-PHD-08-0522	0.10	BLM	Not Determined	32.9123	-112.6126	06/30/2008	06/30/2008
JOMAX	07/01/2008	A1S	AZ-A1S-080532	1.00	PVT	Not Determined	33.7500	-112.1256	07/03/2008	07/03/2008
RAINBOW	07/04/2008	A1S	AZ-A1S-08-0559	3.50	PVT	Not Determined	33.4065	-112.3568	07/04/2008	07/04/2008
COTTON	07/05/2008	PHD	AZ-PHD-08-0564	0.25	BLM	Smoking	33.0981	-112.6485	07/05/2008	07/05/2008
ESTRELLA PARK	07/08/2008	A1S	AZ-A1S-080587	5.00	PVT	Not Determined	33.3847	-112.3482	07/09/2008	07/10/2008
ROBBINS	08/08/2008	PHD	AZ-PHD-080720	517.00	MULTI	Lightning	33.3264	-112.6933	08/15/2008	
BIG HORN	08/24/2008	PHD	AZ-PHD-080762	1.50	BLM	Not Determined	32.8450	-112.2783	08/24/2008	08/24/2008
LITTLE HORN	08/24/2008	PHD	AZ-PHD-08765	0.10	BLM	Not Determined	32.8461	-112.2864	08/24/2008	08/24/2008
SAND TANK	09/03/2008	PHD	080785	0.10	BLM	Equipment Use	32.8767	-112.4514	09/03/2008	09/03/2008
BIG HORN 2	11/24/2008	PHD	AZ-PHD-08-0889	0.10	BLM	Miscellaneous	32.8672	-112.4211	12/03/2008	12/03/2008

Arizona Department of Fire, Building, and Life Safety (DFBLS):

The DFBLS coordinates reporting to the National Fire Incident Reporting System (NFIRS) for Arizona fire departments. NFIRS is a national reporting system used by fire departments to report fires and other incidents to which they respond and to maintain records of these incidents in a uniform manner. Twenty-one of thirty-six fire departments in Maricopa County reported over 10,000 fires to NFIRS in 2008. This included ten “forest, woods or wildland fires”. These are shown in Table A-2 below:

Table A-2. 2008 Maricopa County Forest, Woods, or Wildland Fire Data Provided by Arizona State Department of Fire, Building, and Life Safety.

IncidentID	IN_Num	FD Name	Location Address	City	ZIP	Type Incident	FD Action	Alarm Date/Time	Arrival Date	Last Unit Cleared Date	Prop Type/Use	Wildland Acres
405966	-109359	Buckeye Fire Department	S AIRPORT RD	BUCKEYE VALLEY	85326	Forest, woods or wildland fire	Extinguish	04/19/2008 22:09	04/19/2008 22:16	04/19/2008 22:40	Open land or field	
405735	179861	Buckeye Valley RVFD	s of Litchfield and Broadway	Avondale-Goodyear	85323	Forest, woods or wildland fire	Fire, other	06/30/2008 13:28	06/30/2008 13:50	06/30/2008 17:10	Water area, other	
414248	8030859	Gilbert Fire Dept	S 2400 RECKER RD	GILBERT	85295	Forest, woods or wildland fire	Salvage & overhaul	05/29/2008 18:53	05/29/2008 18:55	05/29/2008 19:16	Open land or field	
405329	8179861	Goodyear Fire Department	W BROADWAY RD	Avondale	85323	Forest, woods or wildland fire	Extinguish	06/30/2008 12:24	06/30/2008 12:33	06/30/2008 20:58	Open land or field	
330763*	8080056	Goodyear Fire Department	S EL MIRAGE RD	MARICOPA COUNTY	85323	Forest, woods or wildland fire	Control fire (wildland)	03/22/2008 13:03	03/22/2008 13:11	03/22/2008 20:35		
496376	0038297	Mesa fire	E 10434 BASELINE RD	Mesa	85201	Forest, woods or wildland fire	Contain fire (wildland)	07/08/2008 15:16	07/08/2008 16:06	07/14/2008 18:00	Open land or field	2
426961	0021740	Mesa fire	E 10434 BASELINE RD	Mesa	85201	Forest, woods or wildland fire	Control fire (wildland)	04/14/2008 17:29	04/14/2008 17:30	04/17/2008 15:06	Open land or field	2
356802	0010597	Mesa fire	N 2000 GILBERT RD	Mesa	85201	Forest, woods or wildland fire	Salvage & overhaul	02/22/2008 7:42	02/22/2008 7:50	02/22/2008 8:35	Open land or field	0.1
356777	0010559	Mesa fire	E 2056 MCDOWELL RD	Mesa	85201	Forest, woods or wildland fire	Extinguish	02/21/2008 23:35	02/21/2008 23:44	02/22/2008 0:15	Open land or field	0.1
518064	09094	Wickenburg Fire	S Tegner ST	Wickenburg	85390	Forest, woods or wildland fire	Extinguish	09/09/2008 16:35	09/09/2008 16:41	09/09/2008 19:25	Outside or special property, other	

*Indicates possible duplicate fires in other fire data sets

Federal Fire Occurrence Website (FFOW)

The Federal Fire Occurrence Website is an official government web site that provides users with the ability to query, research, and download wildland fire occurrence data. The data available through this web site contains over 548,000 fire records collected by Federal land management agencies for fires that occurred from 1980 through 2008 in the United States. The FFOW included eighty-one wildland fires in Maricopa County in 2008. These are shown in Table A-3 below:

Table A-3. 2008 Maricopa County Wildland Fire Data Downloaded from the Federal Fire Occurrence Website.

STATE	ORGANIZATI	FIRENAME	DLATITUDE	DLONGITUDE	TOTALACRES	YEAR_	STARTDATED	CONTRDATED	OUTDATED
Arizona	FS	DIAMOND	33.87	-111.464722	0.01	2008	01/03/2008	01/03/2008	01/04/2008
Arizona	BIA	PECOS	33.28983	-112.0012	0.2	2008	01/23/2008	01/23/2008	01/23/2008
Arizona	FS	DEBRIS	33.666389	-111.474167	0.01	2008	02/09/2008	02/10/2008	02/11/2008
Arizona	FS	GOLDFIELD	33.575	-111.622778	0.01	2008	02/10/2008	02/10/2008	02/11/2008
Arizona	BIA	27 AVE	33.28982	-112.14568	0.3	2008	02/18/2008	02/18/2008	02/18/2008
Arizona	BIA	BASELINE	33.3759	-112.2568	0.1	2008	03/04/2008	03/04/2008	03/05/2008
Arizona	FS	BUTCHER	33.575278	-111.514444	0.01	2008	03/15/2008	03/15/2008	03/16/2008
Arizona	BLM	Southern*	33.38458	-112.3331	200	2008	03/22/2008	03/28/2008	03/31/2008
Arizona	FS	CAST	33.630556	-111.463056	0.01	2008	03/29/2008	03/29/2008	03/30/2008
Arizona	FS	NAVIGATOR	33.858611	-111.773056	0.1	2008	04/01/2008	04/01/2008	04/02/2008
Arizona	BLM	FA TABLE MESA	34.0378	-112.1432	0	2008	04/03/2008		
Arizona	FS	SYCAMORE	33.848333	-111.468889	0.03	2008	04/07/2008	04/07/2008	04/08/2008
Arizona	BIA	ESTRELLA	33.3759	-112.2568	0.1	2008	04/08/2008	04/08/2008	04/08/2008
Arizona	FS	ISLAND	33.546667	-111.66	0.01	2008	04/09/2008	04/09/2008	04/10/2008
Arizona	FS	PEAK	33.67	-111.485278	0.01	2008	04/12/2008	04/12/2008	04/13/2008
Arizona	FS	JOE	33.905833	-111.449722	0.01	2008	04/23/2008	04/23/2008	04/24/2008
Arizona	BLM	Barry Goldwater*	32.6837	-112.3426	0.1	2008	04/25/2008	04/26/2008	04/26/2008
Arizona	BIA	CARVER	33.34513	-112.2136	0.1	2008	04/27/2008	04/27/2008	04/27/2008
Arizona	FS	JUNCTION	33.627222	-111.558333	0.01	2008	04/28/2008	04/28/2008	04/29/2008
Arizona	BIA	ESTRELLA 2	33.33493	-112.18448	0.5	2008	05/03/2008	05/03/2008	05/03/2008
Arizona	BLM	Boulders*	33.8428	-112.4418	0.1	2008	05/03/2008	05/03/2008	05/03/2008
Arizona	FS	LOAF	33.682778	-111.531111	0.01	2008	05/03/2008	05/03/2008	05/04/2008
Arizona	BIA	16TH STREET	33.21983	-112.06067	0.2	2008	05/09/2008	05/09/2008	05/09/2008
Arizona	BLM	FA SENTINEL	32.8595	-113.2066	0	2008	05/21/2008		
Arizona	FS	MEMORIAL	33.665278	-111.565556	0.1	2008	05/26/2008	05/26/2008	05/27/2008
Arizona	BIA	53RD AVE	33.3112	-112.1754	0.1	2008	05/27/2008	05/27/2008	05/28/2008
Arizona	BIA	GILA CROSSING	33.2706	-112.1685	0.1	2008	05/27/2008	05/27/2008	05/28/2008

STATE	ORGANIZATI	FIRENAME	DLATITUDE	DLONGITUDE	TOTALACRES	YEAR_	STARTDATED	CONTRDATED	OUTDATED
Arizona	BIA	GC SCHOOL NORTH	33.2898	-112.1532	0.1	2008	05/29/2008	05/29/2008	05/30/2008
Arizona	BLM	INSTITUTIONAL*	33.8414	-112.1619	6	2008	06/01/2008	06/02/2008	06/18/2008
Arizona	FS	BULLDOG	33.469167	-111.531389	0.1	2008	06/04/2008	06/04/2008	06/05/2008
Arizona	BIA	LAVEEN	33.3317	-112.1765	1	2008	06/05/2008	06/05/2008	06/05/2008
Arizona	BIA	91ST AVE	33.37184	-112.25691	1	2008	06/06/2008	06/06/2008	06/07/2008
Arizona	FS	LOWER	33.547778	-111.604167	0.1	2008	06/07/2008	06/07/2008	06/08/2008
Arizona	FS	GRANITE	33.516389	-111.677778	0.1	2008	06/07/2008	06/07/2008	06/08/2008
Arizona	BLM	Scout*	33.9489	-112.1346	3	2008	06/10/2008		
Arizona	FS	LONG	33.778056	-111.493333	2	2008	06/13/2008	06/14/2008	06/15/2008
Arizona	BIA	ESTRELLA PARK	33.3345	-112.2071	0.3	2008	06/15/2008	06/15/2008	06/15/2008
Arizona	BLM	Rock Springs	34.03	-112.00304	0.3	2008	06/17/2008	06/18/2008	06/20/2008
Arizona	BIA	CRUSADER	33.29055	-112.17201	0.1	2008	06/18/2008	06/18/2008	06/19/2008
Arizona	BLM	FA RIVER BOTTOM	33.3753	-112.3535	0	2008	06/20/2008		
Arizona	BIA	DOBBINS	33.3612	-112.2427	0.2	2008	06/21/2008	06/22/2008	06/22/2008
Arizona	BIA	ETHAN*	33.3481	-112.2802	6660	2008	06/25/2008	07/01/2008	07/12/2008
Arizona	BIA	POWERLINE	33.2837	-112.1199	0.1	2008	06/26/2008	06/26/2008	06/26/2008
Arizona	BIA	FA/ KOMATKE	33.2948	-112.1796	0	2008	06/28/2008		
Arizona	BLM	PLEASANT*	33.8508	-112.3383	0.3	2008	06/28/2008	06/28/2008	06/28/2008
Arizona	BIA	BOTTLE	33.3627	-112.24257	3.1	2008	06/29/2008	06/29/2008	06/29/2008
Arizona	BLM	Tank*	32.9122	-112.6125	0.1	2008	06/30/2008	06/30/2008	06/30/2008
Arizona	BIA	FA/ 51ST PECOS	33.29	-112.1354	0	2008	07/01/2008		
Arizona	BIA	FA/ ST. JOHNS	33.2975	-112.1846	0	2008	07/01/2008		
Arizona	BLM	Cotton*	33.0981	-112.6486	0.3	2008	07/05/2008	07/05/2008	07/07/2008
Arizona	BIA	FA / LAVEEN	33.3789	-112.2346	0	2008	07/05/2008		
Arizona	FS	BLACK MOUNTAIN	33.7275	-111.511389	1.5	2008	07/10/2008	07/10/2008	07/11/2008
Arizona	FS	ROUND 2	33.7975	-111.492222	0.1	2008	07/13/2008	07/13/2008	07/14/2008
Arizona	BIA	ALF	33.27991	-112.10943	0.1	2008	07/19/2008	07/19/2008	07/19/2008
Arizona	BIA	91ST AVE #2	33.3778	-112.2729	0.1	2008	07/26/2008	07/26/2008	07/27/2008
Arizona	FS	POBO	33.616389	-111.541944	0.1	2008	07/26/2008	07/26/2008	07/27/2008
Arizona	FS	RATTLESNAKE	33.841944	-111.621667	0.1	2008	08/18/2008	08/18/2008	08/22/2008
Arizona	BLM	Big Horn*	32.845	-112.2864	0.8	2008	08/24/2008	08/24/2008	09/01/2008
Arizona	BLM	Little Horn*	32.8461	-112.2864	0.3	2008	08/24/2008	08/24/2008	09/01/2008
Arizona	BIA	VEE QUIVA	33.3148	-112.1601	0.1	2008	09/07/2008	09/07/2008	09/07/2008
Arizona	FS	BUSH	33.623889	-111.556944	0.1	2008	09/18/2008	09/18/2008	09/19/2008
Arizona	FS	JONES	33.577778	-111.518889	0.1	2008	09/21/2008	09/21/2008	09/22/2008

STATE	ORGANIZATI	FIRENAME	DLATITUDE	DLONGITUDE	TOTALACRES	YEAR_	STARTDATED	CONTRDATED	OUTDATED
Arizona	BIA	I-10 & MP 164	33.2578	-111.9488	0.1	2008	09/26/2008	09/26/2008	09/26/2008
Arizona	FS	BLACK	33.815556	-111.481389	0.25	2008	09/27/2008	09/27/2008	09/28/2008
Arizona	BIA	HEAVY BRUSH	33.2787	-112.0404	0.3	2008	10/02/2008	10/02/2008	10/02/2008
Arizona	FS	PALO	33.530833	-111.432778	0.25	2008	10/12/2008	10/12/2008	10/13/2008
Arizona	BIA	SOUTH 91	33.3698	-112.2565	0.3	2008	10/20/2008	10/20/2008	10/20/2008
Arizona	BIA	WHP TREE	33.2742	-111.9818	0.1	2008	10/21/2008	10/22/2008	10/22/2008
Arizona	BIA	CAT'S CLAW GC	33.2709	-111.9832	0.1	2008	10/22/2008	10/22/2008	10/22/2008
Arizona	BIA	WHP PILE	33.275	-111.9832	0.1	2008	10/22/2008	10/22/2008	10/22/2008
Arizona	BIA	83RD & BASELINE	33.3767	-112.2388	0.1	2008	10/23/2008	10/23/2008	10/23/2008
Arizona	BIA	RIVERBED	33.38488	-112.26846	0.3	2008	10/24/2008	10/24/2008	10/27/2008
Arizona	BIA	HUNT-ALMA	33.2031	-111.8601	0.1	2008	10/29/2008	10/29/2008	10/29/2008
Arizona	FS	WILLOW	33.539722	-111.452778	0.25	2008	10/29/2008	10/29/2008	10/30/2008
Arizona	FS	TORTILLA	33.525833	-111.318611	0.1	2008	11/01/2008	11/01/2008	11/02/2008
Arizona	FS	WOLVERINE	33.473056	-111.532222	0.1	2008	11/03/2008	11/03/2008	11/03/2008
Arizona	BIA	SMALLS	33.2906	-112.1685	0.1	2008	11/12/2008	11/12/2008	11/12/2008
Arizona	FS	ROUND VALLEY	33.817222	-111.478611	1.5	2008	11/15/2008	11/15/2008	11/16/2008
Arizona	FS	RUBBLE	33.575833	-111.515	0.01	2008	11/22/2008	11/22/2008	11/24/2008
Arizona	FS	LAST	33.520556	-111.315278	0.2	2008	11/25/2008	11/25/2008	11/26/2008
Arizona	BLM	Bighorn 2*	32.86742	-112.4211	0.1	2008	12/03/2008	12/03/2008	12/04/2008

*Indicates possible duplicate fires in other fire data sets