

Annual Report on Emergency Fire Expenditures

06 - 0581

FY 2006

Purpose

The purpose of this Report is to address the requirements of Minnesota Laws of 2005, First Special Session, Chapter 1, Article 2, Section 3, subd. 4, which states in part:

“By November 15, each year, the commissioner of natural resources shall submit a report to the chairs of the house of representatives Ways and Means Committee, the senate Finance Committee, the Environment and Agriculture Budget Division of the senate Finance Committee, and the house of representatives Agriculture, Environment and Natural Resources Finance Committee, identifying all firefighting costs incurred and reimbursements received in the prior fiscal year.”

Funding Sources for Emergency Firefighting

Emergency Fire Fighting - Direct Appropriation: Laws of 2005 appropriated \$7,217,000 ⁽¹⁾ for prevention, presuppression and suppression costs of emergency firefighting, and other costs incurred under Minnesota Statutes, section 88.12.

(Laws of 2005, First Special Session, Chapter 1, Article 2, Section 3, subd. 4)

Emergency Fire Fighting – Open Appropriation: Under the authority of this appropriation, during FY 2006, \$8,424,271 was expended.

(Laws of 2005, First Special Session, Chapter 1, Article 2, Section 3, subd. 4, further states in part that “If the appropriation for either year is insufficient to cover all costs of presuppression and suppression, the amount necessary to pay for emergency firefighting expenses during the biennium is appropriated from the general fund.”)

Attachment 1 shows the costs from the fire appropriations by object of expenditure.

⁽¹⁾ Actual expenditure in FY 2006 is \$7,084,432 to date. Some additional spending in both appropriations may occur as encumbrances are settled through December 1st, 2006.

Uses of the Emergency Firefighting Appropriations

Collections and Reimbursements to the General Fund: The DNR collects costs for certain fire related activities. These include reimbursement for supplies sold to local government units (e.g. fire departments) from the Inter-agency Fire Cache (Cache Sales – authorized under M.S. § 88.065), and charges against responsible parties for starting illegal or negligent fires, (Fire Cost Collections – authorized under M.S. § 88.75). These collections are deposited directly to the general fund and are not used by the DNR.

In FY 2006, collections came from the following sources:

- Cache Sales - \$ 135,150
- Fire Cost Collections- \$ 255,402
- **Total Collections - \$ 390,552**

Additionally, the Special Revenue Fund (see below) may over-recover costs reimbursed from out-of-state deployments, mostly from use of the CL-215 airtankers, but also from other equipment such as wildland engines. This is because the state charges cooperators a portion of the fixed costs associated with this equipment, but pays those fixed costs out of the emergency firefighting appropriation. As receipts to this account exceed anticipated charges, the excess is transferred to the General Fund. In FY 2006 \$585,579 accrued and will be transferred to the general fund.

National Mobilization: The DNR sends firefighters and the CL-215 airtankers out of state to respond to national wildfire emergencies. The federal government reimburses these costs. These costs are charged to the Emergency Fire Special Revenue Fund. Federal reimbursements are deposited to the account to cover the costs. During FY 2006 the DNR expended \$3,997,900 in reimbursable costs incurred for national mobilizations. Approximately \$3.22mm is due to firefighter mobilizations and \$0.78mm is due to CL-215 mobilizations. This is not a use of the state emergency fire appropriations, direct or open, but is included here due to perennial interest on this topic.

Suppression and Presuppression Costs

The success of the DNR's fire suppression strategy is largely due to aggressive initial attack. The goal is to keep fires small. Once a fire escapes initial attack, costs and damages increase exponentially.

The following discussion is offered to explain how preparedness and suppression activities work together to reduce wildfire damages. Presuppression levels move on a continuum that is proportional to fire danger. Presuppression costs include activities undertaken in advance of fire occurrence to ensure more effective suppression. These activities include overall planning, recruitment and training of personnel, procurement of firefighting equipment and contracts, and maintenance of equipment and supplies. Suppression costs include activities that directly support and enable the DNR to suppress wildfires during times when fires are likely to occur, including the pre-positioning of resources. As fire danger and fire occurrence increase, the resources that must be positioned for immediate response also increase.

Presuppression costs amounted to 20.5% of the direct and open fire appropriations in FY 2006. Historically, presuppression has composed 25% or less of the fire account.

The DNR uses a cost coding system to provide accountability for emergency fire account expenditures. This detailed system captures all fire account expenditures and enables managers to identify costs charged to individual fires. Local supervisors are held accountable for expenditures in their areas.

Attachment 2 shows the percentages of fire expenditures spent on prevention, presuppression and suppression.

Planning

Base costs for wildfire response are affected by general weather and precipitation patterns, in addition to actual fire occurrence. A system for determining potential wildfire risks and establishing fire planning levels is used to guide the level of readiness week to week.

Attachment 3 shows the criteria and planning levels currently in use.

These planning level guidelines are reviewed and implemented at weekly conference calls with fire managers from all of the agencies that cooperate in Minnesota wildfire suppression efforts. Planning levels are set for each region of the state, and for the state as a whole. The planning level, combined with daily fire danger indices, establish the preparedness level needed to effectively respond to wildfires. Historically, about 80% of wildfires in the state occur during planning level 2. Major fires also can and do occur at this level.

In FY 2006 there were 217 days of possible wildfire danger. (i.e. at least one region at planning level 1 or higher). Of the possible wildfire days, 121 were at Planning Level 1, 69 were at Planning Level 2 and 27 were at Planning Level 3. On 50 days, one region was at a higher level than the rest of the state due to local conditions. On 45 days, at least one area was at Planning Level 2 while the rest of the state was at Planning Level 1. This type of variance occurs when rains are spotty, leaving some areas with insufficient moisture levels. This year a developing drought in the north-central part of the state resulted in more days at Planning Levels 2 and 3, which required more personnel and equipment to be positioned for response throughout much of the season.

Attachment 4 shows the ten-year fire expenditure history.

FY 2006 Fire Season

General Activity: In FY 2006, 1,265 fires occurred burning 16,604 acres. Historically, the state experienced a 20-year average of about 1677 fires burning just over 49,000 acres.

# Fires By Cause				
	FY 2006	%	20 Yr. Ave.	%
Lightning	39	3	31	2
Campfires	43	3	47	3
Smoking	23	2	55	3
Debris Burning	465	37	637	38
Incendiary/Arson	365	29	475	28
Equipment Use	143	11	136	8
Railroad	22	2	82	5
Misc./Unknown	165	13	213	13
Total	1265		1676	

Overall, FY 2006 turned out to have higher than average percentages of lightning and equipment fires, which is consistent with dry summer conditions.

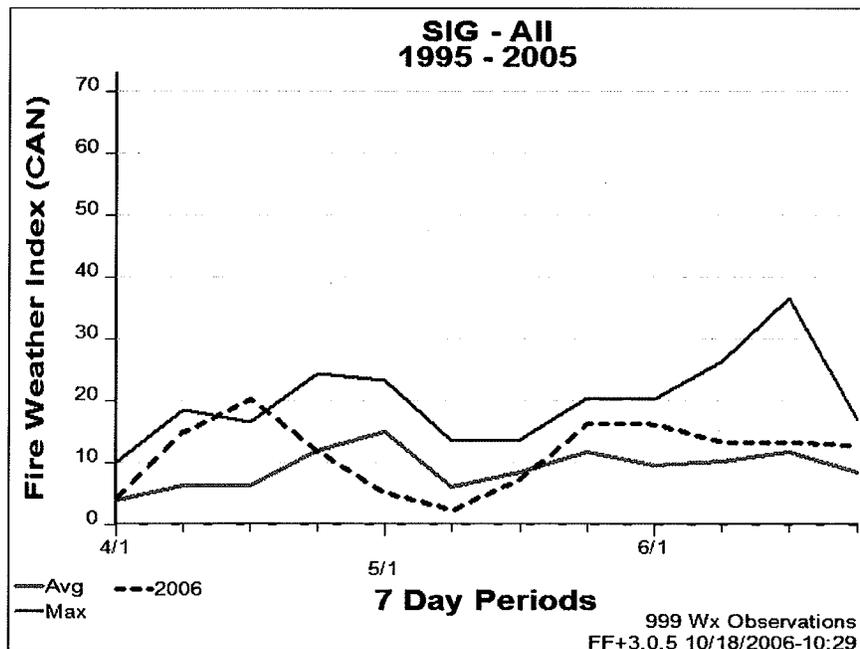
Attachments 5a and 5b graphically illustrate fire history and causes.

Discussion of Fire Behavior and Danger Levels: July and August 2005 rainfall amounts ranked among the lowest on record, with temperatures warmer than normal for much of north central and northeast Minnesota. This resulted in increased fire danger during this period. Dry conditions continued into September over northeast Minnesota, with relief coming in October and November rainfalls.

The winter of 2005-2006 started out unusually warm and dry with average January temperatures 15 to 17 degrees above normal; the warmest January on record back to 1895. Due to light snowfall over the winter, central Minnesota started out the spring season with a 1 to 2 inch moisture deficit, which resulted in an earlier than normal start to the wildfire season.

April continued warm and dry over much of northern and central Minnesota. By mid-month fire danger indices approached record levels for this early in the year. But beginning the last week of April and into early May rainfall was well above normal, effectively ending the spring fire season. However, by the middle of May the wet trend reversed itself and dry weather set in once again. Moderate drought conditions had already developed over central and northern Minnesota by the end of June, setting up for a busy summer fire season for the start of fiscal year 2007.

The chart below compares the spring 2006 statewide seven-day average FWI (Fire Weather Index) with the previous 10 years. FWI is an indicator of fire intensity and can be used as a guide for fire preparedness. The chart shows that statewide, FWI was above average for the first two weeks of April 2006 and actually exceeded the 10-year average by mid-month. The wet period from late April through early May lowered fire danger, but FWI levels began to rise again by mid-May as the summer drought took hold of the State.



Major Incidents in FY 06

The Alpine Lake Fire was detected on August 6, 2005 in the BWCAW, near the Gunflint Trail. The fire was caused by a lightning strike, and threatened to burn into the Gunflint corridor for a time. With the assistance of a Minnesota Incident Command System (MNICS) Incident Management Team, the fire was contained within the wilderness at just over 1300 acres. The NE MN Integrated Response Plan, which was developed in the wake of a 1999 windstorm that blew down much of the BWCA Wilderness Area, was successfully activated. Coordinated fire management, information sharing, and equipment and personnel mobilization were cooperatively and effectively put into action. Since this fire originated in a federal protection zone, the federal government paid all suppression costs.

CL - 215 Aircraft

The DNR purchased two Canadair CL-215 water scooping aircraft in FY 2001. The cost for both aircraft was \$6,390,000. The purchase was financed by borrowing at the direction of the Department of Finance. Annual payments for the two aircraft are \$1,528,991 for five years. This debt was retired in December 2005.

The two state-owned CL-215 aircraft are each capable of dropping 1,400 gallons of water per pass over a wildland fire. Scoopable water sources in the forested areas of Minnesota are plentiful; aircraft turnaround times between a water source and the wildfire can be as short as three minutes, enabling each aircraft to deliver up to 28,000 gallons of water every hour.

In FY 2006 these aircraft made 919 water drops, delivering 1,286,600 gallons of water on 31 wildfires in Minnesota. During times of low fire danger the tankers may be temporarily sent to other states under cooperative contracts. In FY 2006, they were deployed to Alaska for 28 days. Savings to the State of Minnesota for these federal mobilizations was \$288,220 as the using agency paid the daily availability costs while the aircraft were out of the state. In addition, the state charged rates in excess of its contract costs for the mobilizations to Alaska. As a result, \$145,940 will be transferred to the state's general fund. Together, these deployments helped to defray the State's cost of owning and deploying the air tankers by \$434,160.

Attachment 6 summarizes the ownership costs for the CL-215's

Land-based airtankers continue to be used in-state, with large retardant aircraft and single engine airtankers (SEATs) supplementing Minnesota's CL-215 fleet. In the spring of 2006, the DNR utilized two SEATs and shared the cost of a third with the U.S. Forest Service and Bureau of Indian Affairs. The Forest Service also utilized a P2V Neptune heavy airtanker, which operated for several days from the DNR's Hibbing Airtanker Base.

Attachment 7 illustrates where CL-215's fought fire in FY 2006.

Attachments

Attachment 1 - Fire Expenditures by Object Category for Emergency Fire Appropriations

Attachment 2 – Percentage of fire costs in prevention, presuppression and suppression

Attachment 3 - Guideline for Statewide Planning Level Determination

Attachment 4 - Ten Year Expenditure History of Fire Fighting Costs.

Attachments 5a and 5b – Graphical Representation of Wildfire History and Causes.

Attachment 6 - Summary of costs for CL-215 Air Tankers

Attachment 7 – CL-215 dispatches in FY 2006

For further information, contact:
S. Olin Phillips, Fire Management Section Manager
DNR Division of Forestry
500 Lafayette Road, Box 44
St Paul, MN 55155
651-259-5281

sjs

Attachment 1

**Emergency Fire Direct and Open Appropriations
Expenditures by Category
FY 2006**

Direct Appropriation	7,084,432
Open Appropriation	8,424,271
Total	15,508,703

Salary Costs 7,670,578

Operating Costs 7,073,629

Debt Service 764,496

Total 15,508,703

FY 2006 Fire Cost Summary						
By Type of Activity and Appropriation						
	Emergency Firefighting Direct		Emergency Firefighting Open		Total	
Fire Prevention	1%		0%		0.5%	
Fire Presuppression	29%		12%		20.5%	
Fire Suppression	70%		88%		80%	
Total					100%	

	PLANNING LEVEL 0	PLANNING LEVEL I	PLANNING LEVEL II	PLANNING LEVEL III	PLANNING LEVEL IV
BI (Q) spring , pre-green, floating 5 day average	Not applicable	0-45	46-70	71-95	96+
BUI (after June 1, floating 5 day average)	Not applicable	0-25	26-50	51-67	68+
ERC (Q) (alternate summer/fall indicator, after June 1, floating 5 day average)	Not applicable	0-15	16-29	30-36	37+
8-14 day Weather Forecast	Winter conditions, most of State snow covered, temps below freezing.	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN Regional Planning Levels	All Regions/Agencies at P.L. 0	One or more Regions/Agencies at P.L. I	Two or more Regions/Agencies at P.L. II	Two or more Regions/Agencies at P.L. III	Two or more Regions/Agencies at P.L. IV
Eastern Area Planning Level	0-I	0-II	0-III	0-IV	0-IV
National Planning Level	0-II	0-III	0-IV	0-IV	0-IV
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally less than 10 fires/day Statewide.	Multiple Areas/Agencies reporting fires. 10 to 20 fires/day Statewide	Multiple Areas/Agencies reporting fires. 20 to 30 fires/day Statewide	Multiple Areas/Agencies reporting fires. 30+ fires/day Statewide.
Fire Occurrence (Escaped fires)	None	None	1-2 fires requiring extended attack Statewide (more than mop-up)	3-5 fires requiring extended attack Statewide	5+ fires requiring extended attack Statewide
Sociopolitical Considerations	Statewide or Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Moderate demand for some in-state resource types expected	Shortage of certain in-state resource types	Most in-state resources committed. Out of State assistance necessary.
In-State Mobilization	None	Less than 5% of statewide resources assigned out of home unit.	Some short term movement occurring, 5-10% of statewide resources assigned out of home unit.	10-20% of statewide resources assigned out of home unit.	20%+ of statewide resources assigned out of home unit.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

- Once Planning Level has reached level II in spring, preparedness will not drop below P.L. II until May 31 or later.
- Terms used above, which are calculated daily from weather and fuel measurements:
 - BI (Q) = **Burning Index**, fuel model Q: A measure of fire danger based on the probability of ignition and fire spread in a specified forest type.
 - BUI = **Build Up Index**: An indication of the dryness of larger sized woody fuels, which becomes a significant factor during a drought.
 - ERC (Q) = **Energy Release Component**, fuel model Q: A measure of the expected heat release from a fire, which will be experienced by firefighters on the fireline.

Department of Natural Resources, Division of Forestry

Wildfire Activities Ten Year Expenditure History

Nominal Dollars By Source of Funds	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000(b)</u>	<u>FY 2001(c)</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	10 Year Average
Forestry General	\$1,912,828	\$2,325,257	\$2,559,669	\$2,658,615	\$2,640,289	\$2,748,183	\$2,884,809	\$0 (e)	\$0	\$0	\$1,772,965 (f)
Emergency Fire-Direct	\$2,552,980	\$3,470,065	\$3,522,870	\$2,822,957	\$4,412,245	\$5,998,430	\$5,983,070	\$7,650,000	\$7,136,680	\$7,084,432	\$5,063,373
Cost Recovery (a)	\$283,494	\$269,728	\$486,253	\$777,690	\$952,255	n.a.	n.a.	n.a.	n.a.	n.a.	\$276,942
Emergency Fire-Open	\$2,981,529	\$4,554,168	\$2,945,915	\$7,768,174	\$9,435,941	\$8,870,452	\$9,084,514	\$9,560,026	\$6,934,419	\$8,424,271	\$7,055,941
Fire Program Total	\$7,730,831	\$10,619,219	\$9,514,707	\$14,027,436	\$17,440,730	\$17,617,065	\$17,952,393	\$17,210,026	\$14,071,099	\$15,508,703	\$14,169,221
Cost Recovery (a)	\$283,494	\$269,728	\$486,253	\$777,690	\$952,255	\$391,698 (d)	\$448,568	\$634,163	\$955,343	\$976,131	\$617,532
Net Cost to State	\$7,447,337	\$10,349,490	\$9,028,454	\$13,249,746	\$16,488,475	\$17,225,367	\$17,503,825	\$16,575,863	\$13,115,756	\$14,532,572	\$13,551,689
Out of State Fire Costs Reimbursable	\$1,410,139	\$302,889	\$299,106	\$1,028,550	\$2,604,290	\$2,876,747	\$2,962,300	\$4,440,968	\$3,384,226	\$3,997,899	\$2,330,711

(a) Fire Cache Sales, Fire Cost Collections, excess recovery from Special Revenue Fund transferred to General Fund.

(b) \$1.9mm NE MN preparedness initiative (Blowdown)

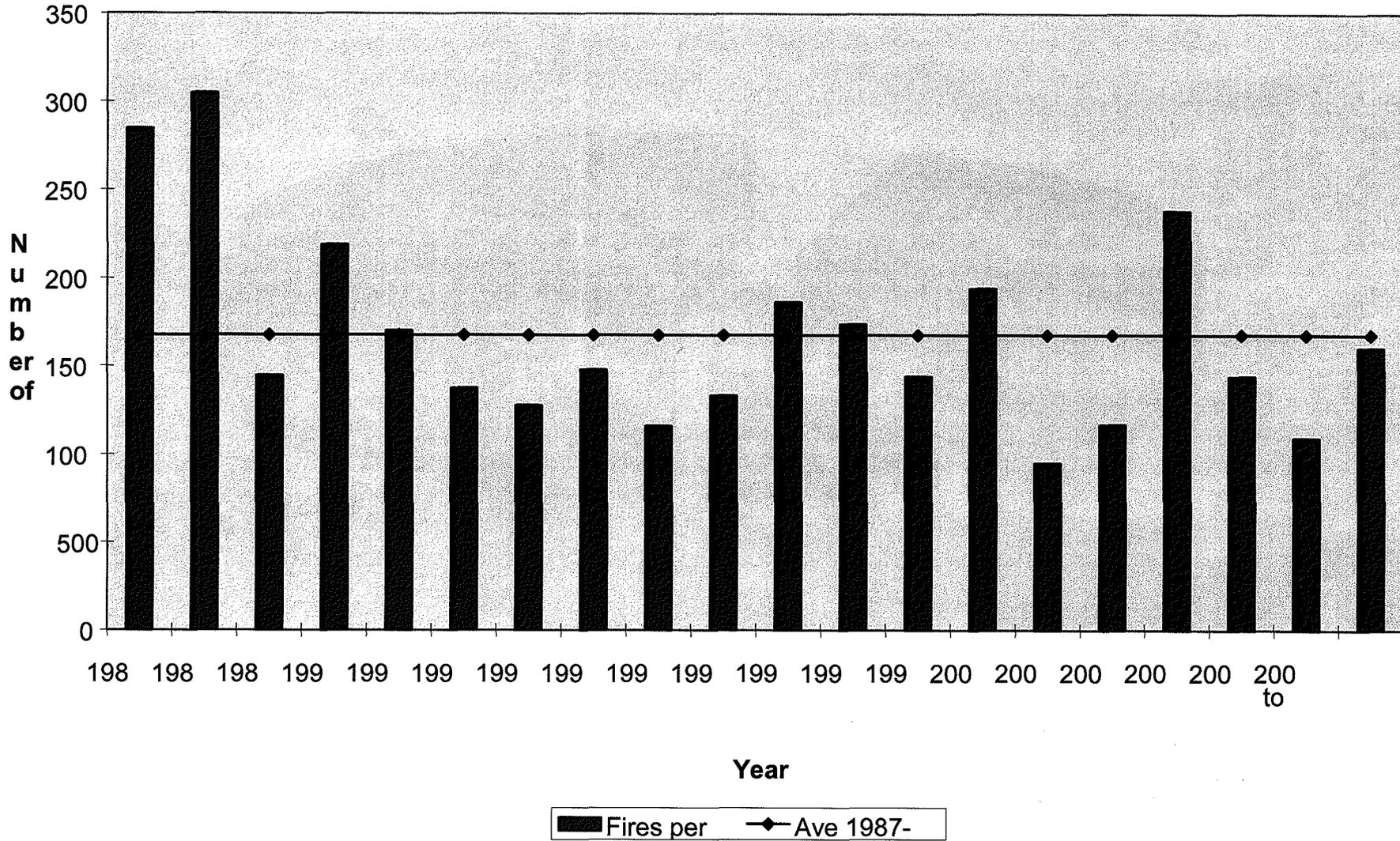
(c) Purchase of CL-215's

(d) Does not include a one-time Fed Disaster (FEMA) payment of \$1.7mm for the Carlos Edge Fire of 1999

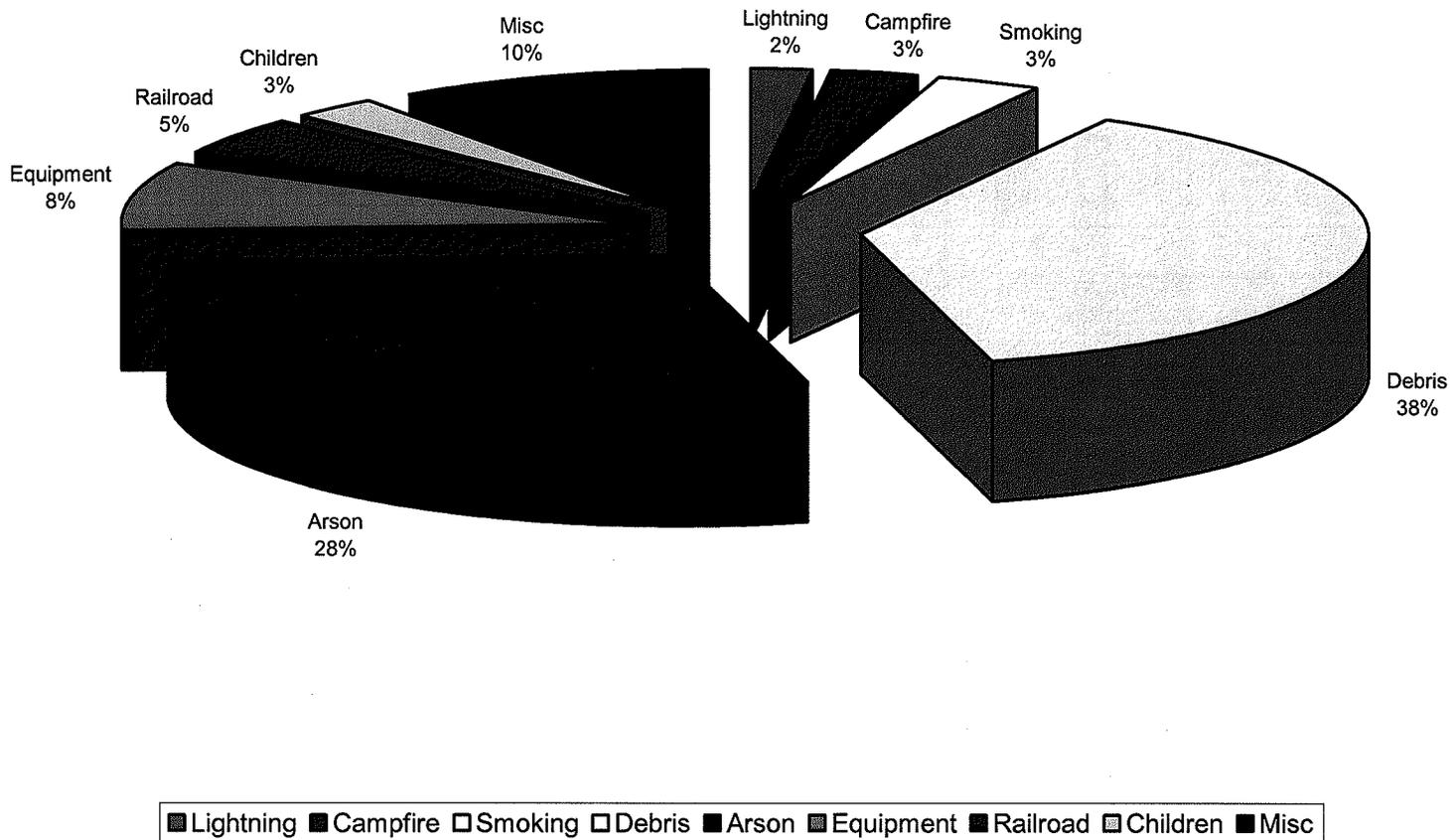
(e) Beginning in FY 2004, all firefighting costs are paid by the emergency fire appropriations.

(f) Fire costs are no longer paid from the Forestry division's general appropriation. In FY 03, just prior to this change, the 10 year average was \$2,266,992

MN DNR Wildfires by Calendar Year 1987-2006 as of 10/18/06



MN DNR Average Wildfires by Cause 1987 - 2006



Attachment 6

**CL – 215 AIR TANKER OWNERSHIP and OPERATION COSTS
FY 2006**

State Owned (2 aircraft):

Availability Cost: (232 days) @ \$4,640	=	\$ 1,076,480	
Availability Cost: (168 days) @ \$5,586	=	\$ 938,448	
(rate change 4/08/2006)			
400 days availability total	=		\$2,014,928
Flight time cost: (124 hrs) @ \$3,162	=	\$392,088	
Flight time cost: (9 hrs) @ \$3,365	=	\$ 30,285	
Flight time cost: (16 hrs) @ \$3,461*	=	\$ 55,376	
Total state flight time cost	=		\$ 477,749
Annual liability insurance policy			\$ 32,250
Annual loan payment: (final payment – December 2005)			<u>\$1,528,991</u>
Ownership Cost:			\$4,053,918
Savings from out-of-state use in support of federal mobilizations:			\$ (288,220)
Reimbursements in excess of contract costs (to be transferred to the general fund)			\$ (427,940)
Net Ownership and Operation Cost:			\$3,619,758

Discussion:

Components of ownership costs include the Loan Payment, Liability Insurance, and a contract to operate, maintain, and repair the aircraft. Contract costs comprise Flight Time and Availability amounts paid to the contractor.

- 1) Loan Payment - completes purchase of the aircraft over a five-year term. The final scheduled payment was made in 2005.
- 2) Liability Insurance - protects the state from the loss of the aircraft.
- 3) Flight time - is an hourly rate paid to the contractor that operates the aircraft for hours actually flown on firefighting missions.
- 4) Availability is a daily rate paid to the contractor that operates the aircraft. This covers the annual costs of having the aircraft "ready to fly" for the required 200 days per year (which is the anticipated season of need in this state).

* rate adjustment due to fuel cost factor in contract.

Attachment 7

CL-215 Dispatches in FY 2006

Red text indicates reimbursable missions



Wisconsin Fires
1 Major Fire
5,600 gallons
Cost: \$9,321



Ontario Fires
4 Major Fire
119,000 gallons
Cost: \$48,980



Alaska Fires
2 Major Fires
5,600 gallons
Cost: \$564,531



Michigan Fires
1 Major Fire
8,400 gallons
Cost: \$34,832

