05 - 0635

Annual Report on Emergency Fire Expenditures

FY 2005

Purpose

The purpose of this Report is to address the requirements of Minnesota Laws of 2003 Chapter 128, Article 1, Section 5, 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 way and means committee, the senate finance committee, the environment and agriculture budget division of the senate finance committee, and the house of representatives 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 2003 appropriated $7,650,000 [(1)] for prevention, presuppression and suppression costs of emergency firefighting, and other costs incurred under Minnesota Statutes, section 88.12.
(Laws of 2003 Chapter 128, Article 1, Section 5, subd. 4)

Emergency Fire Fighting – Open Appropriation: Under the authority of this appropriation, during FY 2005, $6,934,419 was expended.
(Laws of 2003 Chapter 128, Article 1, Section 5, 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 2005 was $7,136,680. This was the result of a $433,000 cancellation due to budget reductions, plus $8,145 balanced in from FY 2004, and minus $88,465 cancelled at the end of FY 2005.

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).

Prior to FY 2002 these reimbursements were retained by DNR of Forestry and expended for firefighting. This was changed starting in FY 2002. These collections are now deposited directly to the general fund and are not used by the DNR.

In FY 2005, collections came from the following sources:

- Cache Sales - $ 67,522
- Fire Cost Collections- $ 530,451
- **Total Collections - $ 597,973**

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. This is because the state charges cooperators a portion of the fixed costs associated with these aircraft, 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 2005 $357,370 was 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 Non-State account, (Special Revenue Fund 200.) Federal reimbursements are deposited to the account to cover the costs. During FY 2005 the DNR expended $3,537,741 in reimbursable costs incurred for national mobilizations. Approximately $1.42mm is due to firefighter mobilizations and $2.11mm is due to CL-215 mobilizations. This is not a use of the emergency fire appropriations, 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 19% of the direct and open fire appropriations in FY 2005. 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

An additional effort to identify base costs for wildfire response was associated with the restructuring of guidelines for determining potential wildfire risks and establishing fire planning levels. This resulted in the development of criteria to guide the determination of fire planning (or readiness) levels.

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

These planning level guidelines are reviewed and implemented at weekly conference calls by fire managers from all 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 2005 there were 236 days of possible wildfire danger. (i.e. at least one region at planning level 1 or higher). Of the possible wildfire days, 176 were at Planning Level 1, 41 were at Planning Level 2 and 19 were at Planning level 3. On 3 days, one region was at a higher level than the rest of the state due to local conditions. On 81 days, at least on 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. Historically, for the seven years that a formalized planning level system has been in use, the average number of days at Planning Level 1 or higher is 239.

Attachment 4 shows the ten-year fire expenditure history.

FY 2005 Fire Season

General Activity: In FY 2005, 1,001 fires occurred burning 14,575 acres. Historically, the state experiences an average of about 1,777 fires per year burning just over 48,000 acres.

# Fires By Cause				
	FY 2005	**%**	**20 Yr. Ave.**	**%**
Lightning	14	2	28	2
Campfires	34	3	47	2
Smoking	22	2	60	3
Debris Burning	384	38	666	37
Arson	297	30	528	30
Equipment Use	78	8	137	8
Railroad	62	6	91	5
Misc./Unknown	110	11	220	13
Total	1001		1777	

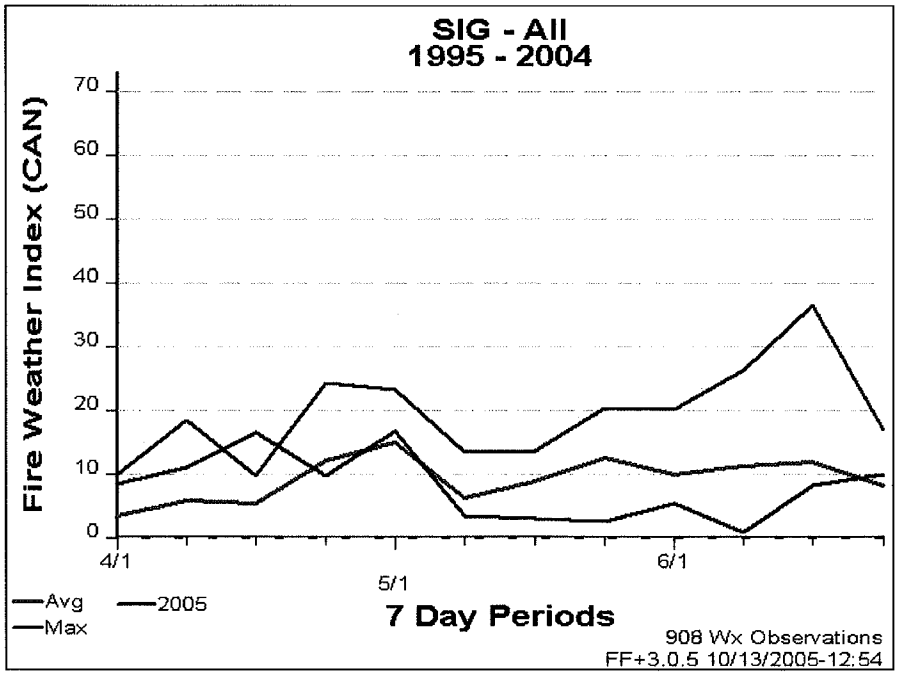
See **Attachments 5a and 5b** for a graphical representation of fire history and causes.
Overall, FY 2005 turned out to be a lower than average year.

The following discussion of fire conditions describes factors that influenced readiness levels.

Discussion of Fire Behavior and Danger Levels: The cool summer of 2004 lasted through August with a widespread frost on August 20-21 in central and northern Minnesota. North central and northeastern Minnesota received below average precipitation during the summer, which elevated fire danger in that portion of the state. September 2004 was one of the warmest in history with more 90-degree days than any month of the previous summer. The month of September was also one of the wettest on record, with many areas receiving rain in excess of 3 inches above average. Fuels remained relatively dry in north central and northeast Minnesota, but in general, the more frequent rainfall moderated fire danger statewide. July through November fire occurrence was below average and the majority of fires were contained under 1 acre. One exception was a fire in Voyageurs National Park, which started in a wilderness area from a lightning strike on July 5. Declared a prescribed natural fire and named the *Section 33 Fire,* it burned intermittently into early August. Minnesota DNR personnel provided fire behavior analysis and helicopter air support associated with management of the fire. Costs of this support were reimbursed by the National Park Service.

By the end of March 2005, most of the state was snow free, marking the beginning of spring fire season. The month of April was warmer than average, but a cooling trend began by the end of the month and continued through May. Precipitation fell far short of average in northern Minnesota during April, while the central part of the State received over 4 inches of rain. Above average rainfall and persistent cloudiness continued over most of the State through the months of May and June. Weather and fuel conditions resulted in frequent fires from mid-March through April, but fire occurrence dropped dramatically with the onset of cool, moist conditions in May.

The chart below compares spring 2005 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 three weeks of April 2005, then averaged close to past years for the next two weeks before cool, wet weather greatly lessened wildfire potential until later in June.



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Major Incidents in FY 05

On May 5 an escaped prescribed fire on the Chippewa National Forest, the *Mississippi Meadows Fire*, required mobilization of a Minnesota Interagency Incident Command System (MNICS) Incident Management Team. The prescribed burn was intended to reduce fuel hazards and improve wildlife habitat, but a sudden change in wind speed and direction caused the fire to escape control. Numerous Minnesota DNR personnel were mobilized to assist with the suppression effort. The federal government paid all suppression costs.

CL - 215 Aircraft

The DNR purchased two CL-215 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. We are in the last year of payments and will retire the debt in December of 2005.

The Canadian built CL-215 is especially suited for Minnesota in that it is a water scooping aircraft. The short turn around time for delivering water on a wildfire can be as little as 5 minutes. Whereas land based tankers, which have to return to an airport for reloading, can take 30 - 60 minutes or more to return. This short turn around time for the CL-215's has saved buildings and resources. An additional benefit to the State owning vs. renting these aircraft, is that they are available for the entire fire season.

In FY 2005 these aircraft made 178 water drops, delivering 228,200 gallons of water on 12 wildfires in Minnesota. During times of low fire danger the tankers may be temporarily sent to other states under cooperative contracts. In FY 2005, they were deployed to Montana for 28 days and Alaska for 40 days. Savings to the State of Minnesota for these federal mobilizations was $608,780 because of not having to pay 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 and Montana. As a result, $427,740 will be transferred to the state's general fund. Together, these deployments helped to offset the State's cost of owning and deploying the air tankers by $1,036,520.

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

Land based air tankers are still occasionally used in the state, especially to fill the gap between the time snow melts, (which allows fires to burn) and ice-out on the lakes, (which allows the CL-215's to scoop water.) In the spring of 2005 the DNR, along with federal partners (U.S. Forest Service and Bureau of Indian Affairs) shared the cost of importing a P3 Orion retardant air tanker and three single-engine air tankers for a short period. However, much of the national air-tanker fleet is grounded due to catastrophic wing failures of certain heavy airtankers working in the western states. This has created a national shortage of heavy airtankers, and underscores the importance of having exclusive use aircraft (e.g. CL-215's) that are designed and built for airtanker work to meet the state's needs.

Attachment 7 illustrates where CL-215's fought fire in FY 2005

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 2005

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sjs

Attachment 1

Emergency Fire Direct and Open Appropriations
Expenditures by Category
FY 2005

Direct Appropriation		7,136,680
Open Appropriation		6,934,419
	Total	14,071,099
Salary Costs	6,933,546	
Operating Costs	5,608,562	
Debt Service	1,528,991	
Total	14,071,099	

FY 2005 Fire Cost Summary

By Type of Activity and Appropriation

	Emergency Firefighting Direct	Emergency Firefighting Open	Total
Fire Prevention	2%	0%	**1%**
Fire Presuppression	29%	8%	**19%**
Fire Suppression	69%	92%	**80%**
Total			**100%**

ATTACHMENT 3 A GUIDELINE FOR STATEWIDE WILDFIRE PLANNING LEVEL DETERMININATION

	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.

10/12/2005

Attachment 4

Department of Natural Resources, Division of Forestry
Wildfire Activities Ten Year Expenditure History

Nominal Dollars By Source of Funds	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000 (b)	FY 2001 (c)	FY 2002	FY 2003	FY 2004	FY 2005	10 Year Average
Forestry General	$1,667,949	$1,912,828	$2,325,257	$2,559,669	$2,658,615	$2,640,289	$2,748,183	$2,884,809	$0 (e)	$0	$1,939,760 (g)
Emergency Fire-Direct	$2,736,000	$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	$4,628,530
Cost Recovery (a)	$155,105	$283,494	$269,728	$486,253	$777,690	$952,255	n.a.	n.a.	n.a.	n.a.	$292,453
Emergency Fire-Open	$1,347,211	$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	$6,348,235
Fire Program Total	$5,906,265	$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	$13,208,977
Cost Recovery (a)	$155,105	$283,494	$269,728	$486,253	$777,690	$952,255	$391,698 (d)	$448,568	$634,163	$955,343	$535,430
Net Cost to State	$5,751,160	$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	$12,673,547
Out of State Fire Costs/ Reimbursement			$302,889	$299,106	$1,028,550	$2,604,290	$2,876,747	$2,962,300	$4,440,968	$3,384,226 (f)	$2,048,531

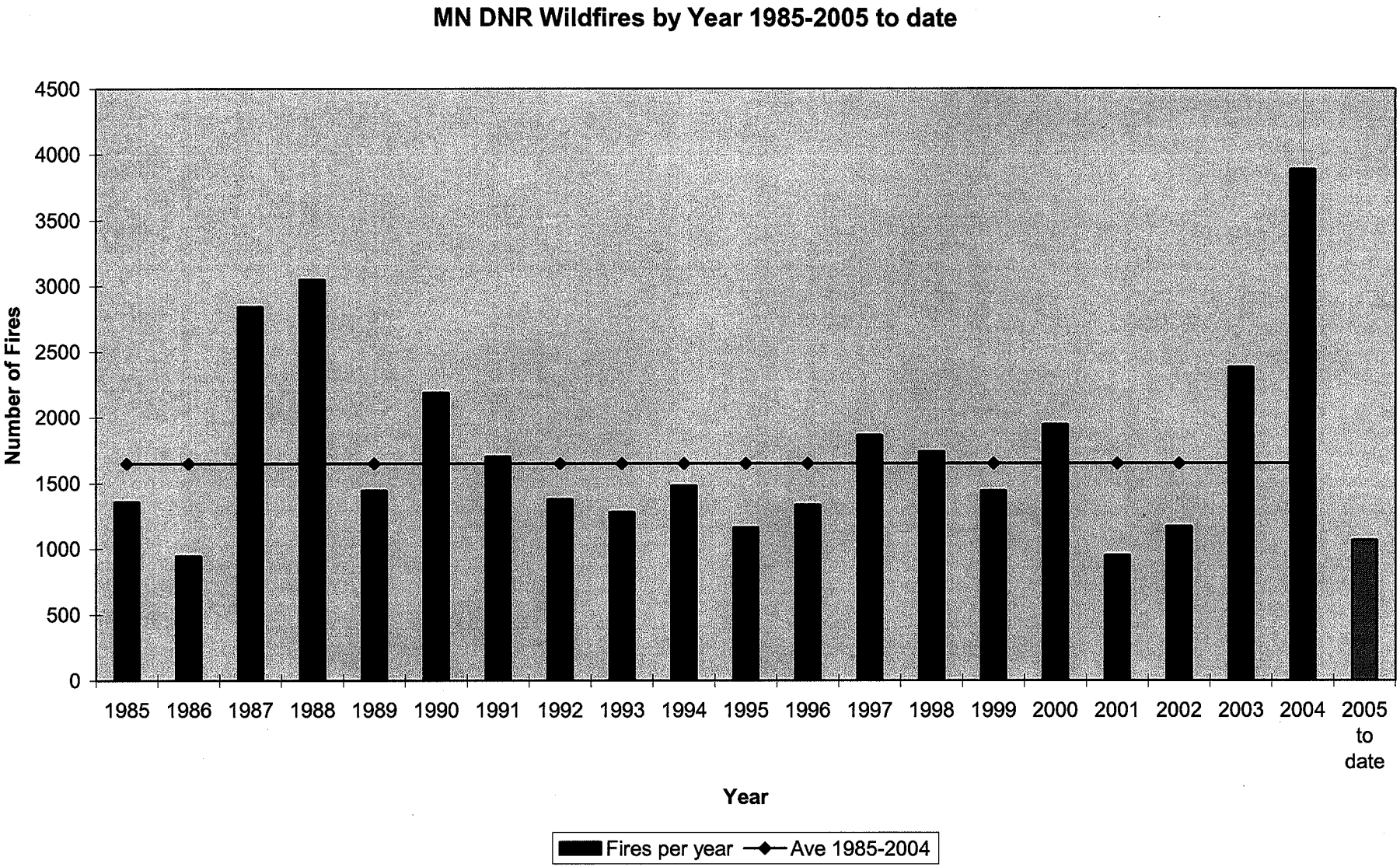
(a)Fire Cache Sales, Fire Cost Collections, excess recovery from Special Revenue Fund transferred to General Fund.
(b) $1.9mm Ne MN preparedness initiative (Blowdown)

(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.

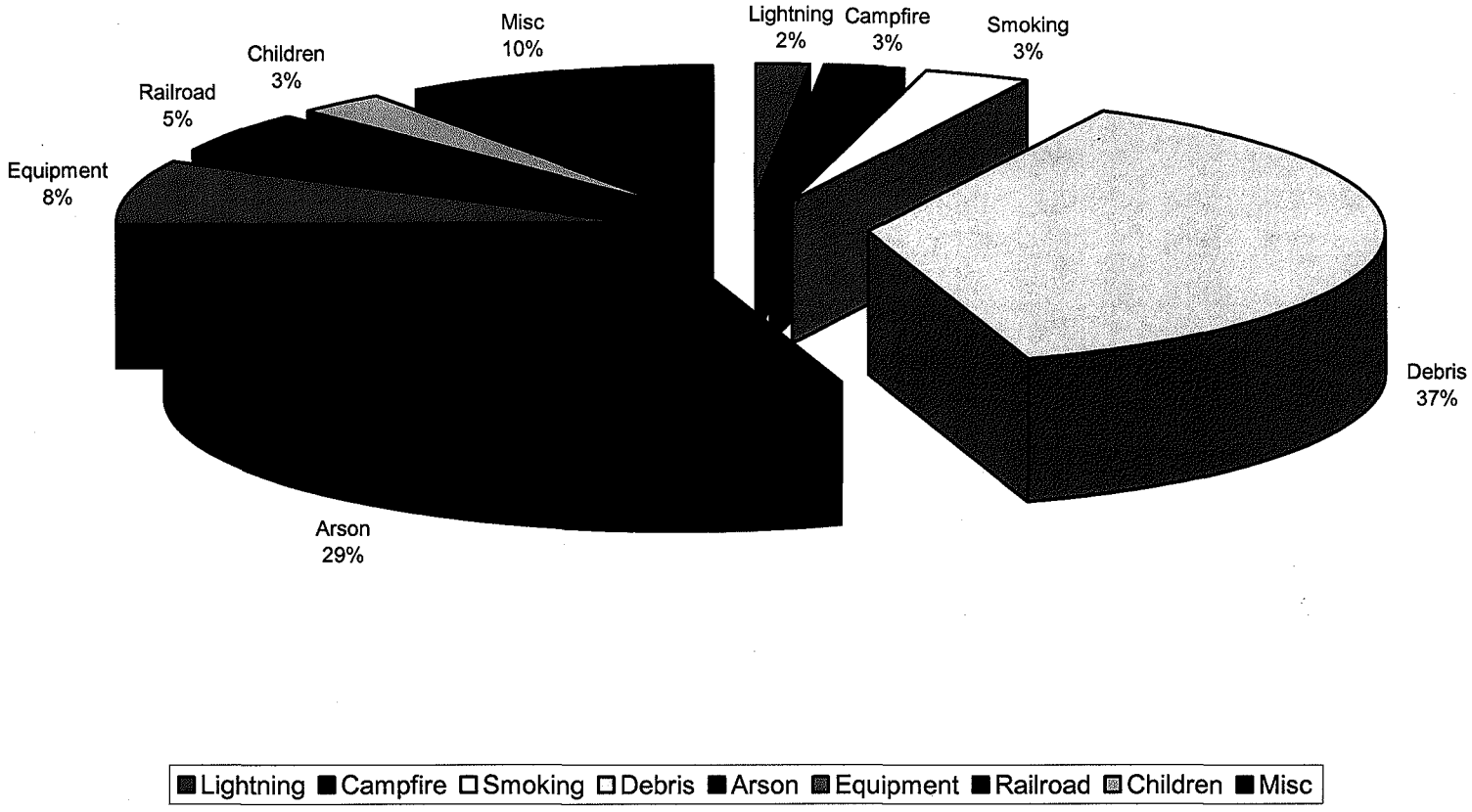
(f) $1.98mm for personnel deployments and $1.40mm for CL-215 deployments. Of this, $357,370 was transferred to the general fund as excess recovery.
(g) Fire costs are no longer paid from the Forestry division's general appropriation. In FY 03, just prior to this change, the 10 year average was $2,266,992

Attachment 5a



Attachment 5b

MN DNR Average Wildfires by Cause 1985 - 2004



Attachment 6

CL – 215 AIR TANKER OWNERSHIP and OPERATION COSTS FY 2005

State Owned (2 aircraft):

Availability Cost: (232 days) @ $4,430	=	$1,027,760	
Availability Cost: (168 days) @ $4,640	=	$ 779,520	
(rate change 4/08/2005)			
400 days availability total	=		$1,807,280
Flight time cost: (13.04 hrs) @ $2,840	=	$ 37,033	
Flight time cost: (37.82 hrs) @ $3,162	=	$119,587	
Total state flight time cost	=		$ 156,620
Annual liability insurance policy			$ 258,400
Annual loan payment: (five year term)			$1,528,991
Ownership Cost:			**$3,751,291**
Savings from out-of-state use in support of federal mobilizations:			$ (608,780)
Reimbursements in excess of contract costs (to be transferred to the general fund)			$ (427,740)
Net Ownership and Operation Cost:			**$2,714,771**

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.

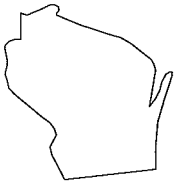
1) Loan Payment - completes purchase of the aircraft over a five-year term. The final scheduled payment will be made in 2005.
2) Liability Insurance - protects the state from the loss of the aircraft.
3) Flight time - is an hourly rate paid to the contractor that operates the aircraft for hours actually 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).

Due to a national shortage of conventional air tankers in the United States, Minnesota cannot be guaranteed an air tanker upon request; it would depend upon national availability.

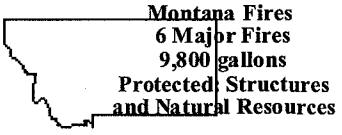
Attachment 7

CL-215 Dispatches in FY 2005

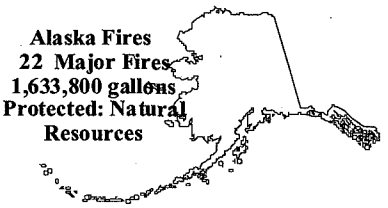
Red text indicates reimbursable missions



Wisconsin Fires
2 Major Fires
23,800 gallons
Protected: Structures & Natural Resources



Montana Fires
6 Major Fires
9,800 gallons
Protected: Structures and Natural Resources



Alaska Fires
22 Major Fires
1,633,800 gallons
Protected: Natural Resources