A Desirable Forest Health Program For Washington's Forests

Forest Health Strategy Work Group Report

December 30, 2004

REPORT PREPARED IN RESPONSE TO
SECOND SUBSTITUTE SENATE BILL 6144

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

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Forest Health Strategy Work Group Members

Pat McElroy
Mike Blankenship
Rick Brazell
Rich Fonda
Robert Gara
Peter Heide
Bruce Lippke
John Mankowski
Barry Moore
Mike Petersen
Ron Shultz
John St. Pierre
Steve Tveit
Maurice Williamson

Staff Support

Karen Ripley
Vicki Lee

See Appendix 1 for member credentials and representation

This report is available from:

Washington State Department of Natural Resources
Resource Protection Division – Forest Health Program
P.O. Box 47037
Olympia, WA 98504-7037

Persons needing this information
in an alternate format may call
(360) 902-1300 or TTY (360) 902-1125

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EXECUTIVE SUMMARY

As directed in 2SSB6144, the Commissioner of Public Lands Doug Sutherland assembled the Forest Health Strategy Work Group (FHSWG or "Work Group"). (For a list of members, see Appendix 1 of the Report). The Work Group met for one to two days each month from May to December, meeting at various locations across the state.

The report describes the FHSWG's findings and recommendations for a desirable forest health program for Washington's forests. It addresses forest health needs on public and private ownerships with the goal of protecting a wide variety of public benefits. It describes current opportunities and barriers for improving forest health. The recommendations made in this report are intended to empower landowners, strengthen state government services, and complement current Forest Practices Rules and procedures.

The FHSWG's vision for forest health in Washington is:

> *"The forests of Washington, on all ownerships, are resistant to uncharacteristic, economically, or environmentally undesirable wildfire, windstorm, pests, disease, and other damaging agents, and are able to recover following disturbance."*

The work group is unanimous in acknowledging that achieving satisfactory forest health outcomes is a shared responsibility between landowners and the public. Healthy forests provide the public with a wide variety of public goods and services, in addition to providing landowners with economic benefits. The public goods and services provided by healthy forests include wildlife habitat, including habitat necessary for the well-being of threatened and endangered species, clean and abundant water for communities, agriculture and industrial operations as well as fish and riparian dependent species, a sense of place for residents in local communities, outstanding vistas and viewsheds for the public at large, and a means of reducing the escalating cost of fire suppression.

The Forest Health Strategy Work Group has thoughtfully approached developing a comprehensive Forest Health Act. While the Work Group as a whole is supportive of the approach outlined in the key elements of this report and the proposed draft Legislation, the Work Group is mindful that it has been developed over a very short time frame and with limited input. We are also aware that elements of the proposed legislation are likely to be quite controversial, and there may be unintended consequences that need to be discovered and considered. Thus, there is a need for public review and discussion before the proposal is considered by the legislature. We believe this approach will better inform the Work Group, the public, and the legislature, and provide a much more robust product.

> **Recommendation: Workshops should be held across the state in CY 2005 to inform landowners and managers, communities of interest, public officials, and the general public of the Work Groups' findings and recommendations, take public comment and input into the legislation, and provide the legislature with a proposed bill, along with a summary of the issues identified in the public process.**

In 2SSB6144, the legislature asked the work group to recommend whether it should be extended beyond the time that the required report has been submitted. Without specific legislation, the work group would cease to exist on June 30, 2005 (2SSB6144 Section 4(3)(i) and (4)).

The Work Group has worked diligently to meet the legislature's request for a work product by December 30, 2004. On many occasions, discussion on key issues had to be cut short in order to move on and get the job done. The work group believes the report and recommended legislation is really just the beginning of a process that the work group should continue.

We believe it would be useful for the Legislature to continue the work group so it can conduct the workshops and public meetings. In addition, the Work Group needs to better understand and make recommendations to the legislature on information needs on forest health, and on proposed program elements and budgets. There simply was not enough time to fully explore and grasp these issues. Without a full understanding of the needs and issues, there is some disagreement within the Work Group about which expenditures or investments are the most strategic, with the greatest long-term benefit to the public and forest landowners.

> **Recommendation: The Legislature should extend the Work Group through the 2005-2007 biennium and appropriate funds to the DNR to pay the expenses of committee members who are not federal or state employees with access to other sources, and for expenses necessary to conduct the public meetings and hearings discussed above.**

The responsibility of public agencies, particularly the Department of Natural Resources, federal agencies, universities and university extension systems, is to continue to provide the basic information on, and monitoring of, forest health conditions across the State. Where forest health problems exist, the State must provide information, coordinate mitigation programs and pest control activities, and provide technical assistance to forest practitioners, landowners, and land managers, particularly those without the knowledge, expertise or resources of their own. Public agencies would focus on providing information and assistance to forest landowners so they can manage their forests to reduce susceptibility to forest insect outbreaks, disease infections, and fire. Where possible, the state and federal government should provide incentives or financial assistance to achieve the desired outcomes.

Landowners and land managers are responsible for on-the-ground prevention and treatment through a wellness approach. Landowners and managers must have access to the necessary tools and support of public agencies so that they can take actions to control native pests, and respond to disturbance events that have the potential to spread insect attack, increase forest diseases, or augment wildfire potential.

The Work Group recognizes there is severe competition for public funding; both state and federal, and that this may be a major impediment to correcting forest health problems. However, investments in prevention provide the opportunity to reduce the many future costs associated with fires, disease and other health breakdowns. Over time, the cost of suppressing fires that occur in these managed stands will be less than suppressing fires in unmanaged areas. Good

ecologically and economically balanced forest health across the state is a good investment for the public.

The FHSWG believes the keystone to achieving forest health across all ownerships in Washington is that well managed forests are healthy forests. In areas where forest health issues are a problem, landowners and land managers at all levels need encouragement to practice active management on their forests that incorporates forest health maintenance within their forest management objectives. To achieve this vision, the Work Group believes an effective forest health program must have many elements.

Key elements of an effective program should include:

- Comprehensive data and information are available so landowners, policy makers and the public can understand existing and developing forest health conditions, identify areas of greatest treatment need, and effectively communicate practical remedies to forest managers, policy makers and the public.
- Easily understandable measures of success exist, and there is effective monitoring for the program.
- An effective legal construct that recognizes landowner objectives and obligations and the role of government and educational institutions along with an effective, efficient program structure with sufficient funding to achieve desired results, including the ability to respond immediately to the detection of exotic insect or disease invaders.
- A tiered approach to ensure an appropriate and effective response based on the severity of forest health conditions, with an emphasis on landowner response for keeping forests healthy.
- Strategic plans and operational programs at appropriate levels to achieve the desired results on all ownerships.
- A focused program, including technical and financial assistance or incentives when appropriate, tailored to family forest owners to increase their understanding of forest health concerns and take action appropriate to their ownership objectives
- A cooperative atmosphere across ownerships on forest health and a collaborative approach among private, public, and tribal landowners, forest health professionals, community wildfire protection planning groups, and other interested parties to achieve cross-boundary results.
- An effective communications plan that informs landowners and managers, forest practitioners, decision makers and the general public on the importance of healthy forests, and the practical ways of achieving healthy forests.
- Forest products processing infrastructure, markets, or market substitutes are in place to partially compensate landowners for the costs involved in undertaking appropriate control activities.
- Improved coordination among regulatory programs so that the key objectives of each can be realized without adverse effects on others.
- Recognition that appropriate funding/investment today will avoid increased costs in the future while at the same time providing many non-market benefits to society.
- Sufficient and stable funding to successfully implement the Forest Health Strategy.

The Report details major barriers and opportunities to achieving healthy forests and makes a series of recommendations for each of these issue areas. For more detail on the specific recommendations, please go to the appropriate section of the Report.

Introduction and Background

Washington faces serious challenges in areas where forests are overcrowded and susceptible to insects, disease, adverse weather, and fire. For example:

- Washington has approximately 21 million acres of forestland. In 2004, over 1.9 million acres of this land contained elevated levels of tree mortality, tree defoliation, or foliage diseases. Although not every tree is killed on these acres, almost 3.8 million newly dead trees were counted, an increasing trend.

- Populations of the western spruce budworm, a native defoliating caterpillar, are rising in eastern Washington and expected to cause significant damage. Forests with crowded Douglas-fir and grand fir hosts favor long lasting outbreaks. Although outbreaks are normally cyclic, lasting approximately four to seven years, an ongoing outbreak in Yakima and Klickitat counties has lasted more than 22 years.

- High levels of tree mortality caused by pine and fir bark beetles continue in eastern Washington. This damage can be significantly reduced or prevented by basic forestry practices to reduce tree crowding. Lack of landowner awareness and the low value of the small sized trees that should be removed inhibit proactive or restorative treatments.

- Fire suppression costs are rising due to extreme fire behavior caused by high fuel loads and increased tactical complexities when homes and structures are intermixed with forest. As seen in Appendix 4, fire prevention continues to be a very important component of an overall strategy, but activities that promote forest health by reducing tree crowding and fuel loads will provide long-term benefits by altering the trend.

- Older forest conditions provide critical habitat for late successional species such as the Northern spotted owl. However, in some portions of Eastern Washington, with the loss of naturally occurring fires, some stands can become overcrowded thus altering their value for spotted owls while increasing the risk of destructive wildfires. In addition, use of fire and other management tools may be necessary to protect or enhance habitats for several forest wildlife species such as the Mardon skipper, a butterfly that occurs in forest meadows. In areas where forest health issues are a problem, active management could increase the availability and stability of desirable forest conditions for wildlife.

- Some of eastern Washington's streams and wetlands are bordered by overcrowded conifer forests, which can increase the risk of destructive insect, disease, and wildfire outbreaks. While forested riparian areas provide critical riparian functions for fish (including large woody debris, shade, stream bank stability, litter input, etc.) and wildlife resources, active management may be necessary to address emerging forest health problems in specific geographic risk areas. In these areas, a balance must be sought between protecting near-term functions while improving long-term forest health conditions.

A great deal of effort is currently being expended to remedy forest health problems.

- Federal land management agencies have implemented several administrative changes aimed at restoring forest health as prescribed by the President's Healthy Forest Initiative (HFI) and the Healthy Forest Restoration Act (HFRA).
- In FY 2004 the Confederated Tribes of the Colville Reservation treated 6,047 acres of hazardous fuel treatments with prescribed fire. Almost all of these treatments were in designated Wildland Urban Interface (WUI) areas. Over the next five years they plan to treat about 10,000 acres per year, of which 80% will be within the WUI and approximately 50 percent of the acreage will be mechanically treated.
- In FY 2004 the Okanogan and Wenatchee National Forests (NF) completed 22,577 acres of hazardous fuels treatments. Treatments were approximately 50 percent mechanical, 50 percent prescribed fire on the Wenatchee NF and approximately 33 percent mechanical 67 percent prescribed fire on the Okanogan NF.
- The DNR's Forest Health Program conducts annual monitoring of forest insects and diseases, acquired over $1.1 million in federal grants for bark beetle prevention and suppression activities in eastern Washington, and made over 2,500 technical assistance contacts with landowners and land managers last year.
- On state trust lands, long-standing policy has directed land managers to prevent forest resource losses from insects, diseases, animals and other similar threats. The policy currently being analyzed for potential changes to address landscape level Forest Health strategies.

Findings and Recommendations

The Work Group analyzed 10 areas associated with the key elements of an effective forest health program (see previous section for elements). Major barriers, opportunities and recommendations associated with these elements are described below. Additional potential opportunities and barriers are listed in Appendix 4.

ANALYSIS AREA 1 – EFFECTIVE COMMUNICATION

Effective Communication will keep landowners, policy makers, and the general public aware of existing or emerging forest health issues and the benefits of prevention of restoration efforts.

There are sufficient data from a number of existing studies and reports to signal that forest health is a problem in many of Washington's forests from the Cascade Range crest east to the Idaho border. Over most of the last century, our past management practices and activities that exclude natural fires on some lands are largely responsible. Many forest landowners and policy makers are aware of the risks and costs associated with insect outbreaks, forest disease, and uncharacteristic wildfire.

For public lands, poor public understanding of the risks and benefits compounded by a lack of public trust have been major barriers to implementing large-scale forest health improvements. Additional efforts to communicate current forest health conditions will have to be made by the Commissioner of Public Lands and other public agencies. Community involvement in assessing local conditions and developing solutions has the potential to increase public support. Needed forest landowner education programs are described in Analysis Area 6.

Developing public understanding of non-market values could substantially increase the support for more active forest health management on public lands. One recent study (Mason et al 2004) suggests that positive market and non-market values are likely to far outweigh the direct costs of fire risk reduction strategies. For example $481 per acre can be saved in firefighting costs when high-risk forest conditions are improved. For many more examples see Appendix 5. For high fire risk acres, the estimated cost avoidance for firefighting and facility losses alone exceeds the costs of treatments by nearly $60 per acre without considering the many other benefits.

A panel of respected officials could assess research on non-market values and provide recommendations on how best to incorporate those values in decision-making on public lands. When there is knowledge that non-market values are far in excess of treatment costs, there may still be a need for recommendations on best methods to support implementation. Such understanding will also aid development of community-based stewardship contracting arrangements that have been recognized by the federal government as important elements of a national forest health strategy.

> **Recommendation: Promote wider understanding that poor forest health conditions create severe fire behavior and that widespread public and private benefits can result from improved forest management.**

Recommendation: Legislature should recommend a panel investigate and quantify non-market values associated with forest health management activities and should consider its recommendations when directing future activities.

ANALYSIS AREA 2 – RESOURCES CAN BE DIRECTED TO PROBLEM AREAS

The quality of forests at risk is known in sufficient detail so that resources can be allocated to combat the problem in an efficient and a timely manner. This includes broad-scale strategic planning and local assessments in high-risk areas.

There is general agreement among the Work Group that there is sufficient information available to policy makers and landowners and managers, the general public and others that there are serious forest health conditions in Washington's forests, particularly in Eastern Washington. There is also a thorough understanding that information necessary to make key policy decisions, regulatory decisions, or site-specific management recommendations to landowners is lacking.

Accurate information on forest health conditions and on site factors necessary for management prescriptions is particularly lacking on a site-specific basis. This is generally referred to as "spatially explicit" data. While there is a wealth of information useful for analysis and policy making on a statewide or regional basis, with the exception of proprietary information some large landowners have, it is nearly non-existent on a spatial basis. This spatially explicit information is critically important to determine which landowner categories are particularly exposed to or currently impacted by forest health threats.

In advising landowners on appropriate management activities useful to prevent or control forest health problems, and particularly to use as a regulatory tool to direct specific action, density thresholds need to be established (see Analysis Area 3).

Appendix 2 details the preliminary thinking of the Work Group on what could be a valuable approach to providing the data and analytical tools necessary to meet the data needs. There was not sufficient time for the Work Group to come to consensus on the exact nature, funding and timing of such an effort, though there is strong support for gathering spatially explicit data and analysis tools.

ANALYSIS AREA 3 – ACURATE FOREST HEALTH THRESHOLDS

Accurate, comprehensive, and site-specific forest health risk thresholds are needed.

Thresholds provide information so landowners and managers can understand the condition of their land, identify risk, and focus on actions that reduce risk. Site-specific thresholds must be established to relate forest condition metrics with forest health risks, such as insect susceptibility and the likelihood of unnaturally hot crown fires.

There is significant variability in plant community structure and species composition that coexists with a wide range of forest productivity and stand carrying capacity. This variability should be considered as one of several means to prescribe treatments that would ultimately manage tree densities across large areas thereby creating healthy forests. Existing studies have

generally covered limited geographic areas and are not sufficient for forest health planning across many forest types. Density Thresholds (DT) could be developed for different forest types by extending these studies and adjusting them for site quality measures as one method to reduce the preponderance of overstocked forests.

Determining statewide DT requires modeling specific forest insect or disease risks. Fire/physical damage and bark beetles contribute to the majority of tree mortality in eastern Washington on non-preserved lands. Concentrating initial efforts on DT to reduce these mortality agents would substantially reduce the forest health losses in eastern Washington. Development of a DT modeling approach for bark beetle epidemics and fire risk reduction by habitat type may also yield a methodology that can be used to establish 'interim thresholds' for other forest insects and diseases.

For example, extending past studies on silvicultural control of the mountain pine beetle (*Dendroctonus ponderosae*) as well as studies of DT of pine forests associated with different plant associations would be relatively straight forward, but would require additional research. Thresholds for fire risk at the stand level have been adequately researched and are currently linked into several models to support the identification of best strategies and should become a routine part of educational sessions to train the trainers. Reducing stand density and ladder fuels raises the wind speed necessary for flames to move into and between tree crowns, i.e. reduces destructive fire risk. The US Forest Service PNW Research Station is currently working on the effects of climate change on fire intensity, which will extend this capability.

More elaborate analysis is required to develop more complex thresholds to address issues like spruce budworm and windthrow susceptibility. A third assessment procedure would be needed to cover species driven by population building events, such as heavy die-offs that increase food sources and cause insect outbreaks.

Forest Vegetation Simulator (commonly known in the silviculture community as FVS) is a widely used forest growth model provided by USFS. Specialized model versions incorporate risk and impacts of Dwarf Mistletoe, Douglas-fir Beetle, Douglas-fir Tussock Moth, Mountain Pine Beetle in Lodgepole Pine, Western Root Disease, and Western Spruce Budworm Damage. These models' abilities to predict risk have not been adequately evaluated for reliability.

> **Recommendation: Data gathering, synthesis, and presentation to develop density thresholds for use with spatially distributed inventory data to identify the locations of highest forest health risks in Washington should occur.**

ANALYSIS AREA 4 – EFFECTIVE MONITORING

An effective monitoring system measures results on the ground and provides for continuous improvement of the program.

As discussed previously, a general barrier to pursuing forest health improvement opportunities is the lack of quality spatial and inventory data to target areas of need and monitor treatment results. Refer to Appendix 3.

Monitoring of forest health program activities is needed to track delivery of services and validation monitoring to examine whether those activities are achieving desired results. Elements of program services that should be tracked include the progress on specific analysis/data synthesis projects, communication and outreach activities. The assessment tools developed in Analysis Area 2 should be sufficient to enable tracking the on-the-ground results of delivering program services. A panel could be assembled to make recommendations regarding which program activities and indicators of forest health conditions should be measured. The use of existing monitoring systems is recommended. Annual Forest Health Conditions Reports should be improved and disseminated widely. DNR will report on forest health activities and accomplishments to the Legislature annually.

Recommendation: DNR should seek advice on subjects and procedures for monitoring forest health conditions and program activities.
Recommendation: DNR should expand the distribution of annual Forest Health Conditions reports.

ANALYSIS AREA 5 – EFFECTIVE LEGAL CONSTRUCT

An effective legal construct and program are needed.

An effective forest health law would describe the responsibilities of both landowners and the regulatory and service provider agencies and activate an effective program. Landowner responsibilities would include prevention and control of native pests. State, county, and local governments would focus on providing information and assistance. Governments must obtain accurate information about current conditions and potential responses; and work cooperatively to suppress damaging pest organisms and disease populations.

Insects, diseases, and wildfires should be the main focus of managing forest health problems. The goals and requirements of chapter RCW 76.06 are not being met with regard to identification, designation, and reduction of this threat to public and private resources. Timely detection of insects and disease is often inadequate for effective pest management tactics. In particular, information transfer, education, and technical assistance available to landowners and managers to deal with acute problems are limited and insufficient for accomplishing major improvements in forest conditions in eastern Washington. Even if a specific problem is identified, the provisions of RCW 76.06, which mandate control of native insect outbreaks, cannot be implemented because:

(1) Pests cannot be controlled, destroyed or eradicated to the extent prescribed by the law,
(2) Lack of resources,
(3) DNR would often be unable to comply with requirements of the Forest Practices Rules (RCW 76.09 and associated WACs) and control pests, and
(4) DNR lacks an effective fund-collection authority.

Recommendation: Changes must be made to RCW 76.06 to correct current deficiencies as well as reflect the vision of the FHSWG.

Washington's Noxious Weed laws and rules[1] and the Forest Protection statutes related to extreme fire hazards[2] were evaluated as models for improved regulations. These statutes have elements of a regulatory structure to authorize state-mandated treatment of severe forest health issues. The most promising concept is that the landowner is ultimately responsible for controlling the problem, regardless of how it originated. The Forest Protection statutes currently lack this concept, even though the yearly accumulation of highly flammable fuels continues and the development of wildfire hazards is widespread.

The Forest Protection statutes should be changed to hold landowners responsible for reducing extreme accumulations of fuels, regardless of how the condition developed. Fire ecology is the key to restoring proper forest health. Forests managed for resistance to fire damage will also resist damage by native insects, disease organisms, and extreme weather conditions with the additional advantage of protecting fish, wildlife, watersheds, and other public resources.

RCW 76.06 is the appropriate place for describing and improving Forest Health goals and program activities. It currently describes the Commissioner of Public Lands as a leader on forest health issues in Washington. It does not, however, describe the responsibilities, authorities, and program services that should be administered by the DNR and rendered to the public such as:
1) Monitoring the health of the forestlands of the State,
2) Providing forest health information and assistance to landowners and managers,
3) Promoting integrated forest pest management,
4) Conducting and assisting in cooperative forest health management programs and projects to control and contain outbreaks of forest insects or diseases that threaten forest resources on affected areas, or that have the potential to spread onto adjoining forest lands,
5) Establishing procedures and enforcing required actions related to prevention, detection, mitigation, and correction of forest health hazards,
6) Developing cooperative relationships with the federal government to obtain funding and achieve mutual objectives, and
7) Responding immediately and effectively to the detection of exotic insect or disease invaders.

Exotic forest insects and disease organisms are a significant threat to forest resources. The provisions and authorities in RCW 76.06 that relate to working with the Washington State Department of Agriculture for emergency management of exotic forest insect and disease organisms are important. If exotic disease or insects invade public or private forestland, initiating control in a timely manner is extremely important for effective and economic eradication. There are currently no funds available to the DNR to carry out exotic pest control activities. This could result in a delay of action resulting in higher control costs or the potential to lose control of the invasive species.

Recommendation: The Legislature should provide access to emergency funds to address exotic insect or disease invasion of state or private forestlands similar to emergency fire suppression funding. In addition, changes must be made to RCW

[1] 17.10 RCW *Noxious Weeds – Control Boards*, 17.04 RCW *Weed Districts*, and 17.06 RCW *Intercounty Weed Districts*, Chapter 16-750, the WAC *State Noxious Weed List and Schedule of Monetary Penalties*
[2] 76.04.660 RCW *Additional Fire Hazards, Extreme Hazard Areas, Abatement, isolation or reduction, Summary action, Recovery of costs; 332.24 WAC*

76.04 and 76.06 to incorporate the sequential framework detailed in Analysis Area 6. The FHSWG believes that the best solution is through changes to 76.06 and 76.04, rather than the approach used in the noxious weed law.

Recommendation: The DNR should increase its capacity to coordinate and conduct statewide monitoring, develop and deliver training, and provide insect and disease reporting and technical assistance.

ANALYSIS AREA 6 – A TIERED APPROACH TO ENSURE APPROPRIATE RESPONSE

A tiered approach is needed to ensure appropriate and effective response based on the severity of forest health conditions.

Healthy forests resist insects, diseases, and other disturbances, and exist in appropriate balance with other species. By and large this balance is a result of tree stocking appropriate to the site. Healthy forests include native insects and diseases that are in balance with natural control mechanisms. Overcrowded forests, particularly those with the wrong species composition for the site, are particularly susceptible to a wide variety of disturbance agents. When unhealthy forests occur in sufficient quantity, or over a broad enough area, action needs to be taken to limit the damage to the forests and public resources.

The FHSWG was impressed by the sequential process used in regulating control of noxious weeds, and believes such an approach is the best way to deal with the forest health problems Washington faces. The Work Group was also impressed by the effectiveness of and processes embedded in the Additional and Extreme Fire Hazard provisions of the Forest Protection statutes. In the dry forest types of eastern Washington, forest health and fire hazard are linked. Indeed, a major element of the public interest in forest health is to reduce public expenditures for large, costly fires. Furthermore, many forest landowners and managers are familiar with fire hazard laws and their operation. Thus, the Work Group felt linking forest health requirements with hazard abatement requirements was an appropriate approach.

The FHSWG's vision for an effective forest health program involves three tiers, which are aimed at first preventing then controlling pest outbreaks.

Tier 1: Goal: Make available information necessary to maintain healthy forests. Through cooperative efforts, DNR and private landowners continually monitor fuel buildups, insects, and diseases, and ultimately evaluate forest health risks. DNR provides landowners with information and technical assistance on statewide forest health conditions as well as strategies to create stand conditions that reduce fire hazard and insect and disease outbreaks.

DNR, WSU Extension, UW-College of Forest Resources, and the UW/WSU Cooperative Rural Technology Initiative (RTI) have the technical expertise and experience to educate forest landowners. Through publications, short courses, and field demonstration landowners will understand: (1) basic principles of forest fire behavior and forest insect and disease biology; (2) dynamics of forest conditions prone to fire and other disturbances, *i.e.* insect and disease outbreaks; and (3) knowledge and applied techniques

associated with measuring appropriate forest stocking, fuels management, and insect and disease control tactics.

Education and Technical Assistance

Maintaining healthy forest conditions requires that landowners and managers have science-based information on appropriate stocking levels and vegetation types for their site. In addition, some small-acreage landowners may need assistance with gathering the stand level inventory data sufficient to evaluate density and apply healthy forest density thresholds.

Technical assistance will be needed for small forest landowners whose acreage is too small to effectively develop and implement forest management plans. New educational methods will need to be explored to reach the large number of small-acreage forest landowners that are not currently engaged in understanding the potential consequences of their actions. These educational methods should include a number of alternatives, from site visits to distance learning delivery, to reach rural and absentee landowners.

Small-acreage landowners: Education through workshops, seminars, technology transfer, and community meetings will help to reduce complexity, foster common understanding, and connect landowners to programs and resources necessary for effective forest health restoration. Implementing forest-modeling technologies for rural education delivery can increase the scale of forest health restoration activity. Training the trainers such as the local forestry consultants and providing tools for them to use such as management templates is an essential role for the Universities and Community Colleges in order to move beyond education into effective technical assistance.

Education and technical assistance may best be patterned after the highly successful coached planning curriculum for landowners carried out collaboratively between DNR and WSU Extension with science and technical support provided by campus-based research faculties. Forest health education is currently part of the accredited logger program offered by the Washington Contract Loggers Association with technical support from WSU Extension and DNR personnel. The forest health aspects should be strengthened and incorporated into any recertification modules.

WSU and UW have established resource education delivery partnerships with community colleges around the state, which has been shown to improve educational access in rural communities. In addition, emerging educational delivery systems including streaming video, web-based learning and video conferencing are a key component to reach out-of-state absentee landowners.

New education and technical assistance approaches require adequately trained people to ensure that correct advice is given. A registration, license, or certification process similar to the Society of American Forester Certified Forester program would be helpful for Technical Service Providers. In addition, a monitoring and discipline system similar to professional accreditation organizations may need to be implemented to ensure all providers are adequately trained and accountable.

Public Lands: Education opportunities for forestry professionals are needed to deliver best available science and technology to assist development of multi-ownership health strategies at the landscape level. While recognizing different owners have different objectives, it is essential for public forestland managers to work with educators and trainers in developing integrated landscape-level approaches. Broadening the risk assessment to include non-market values will be particularly important for making community-based decisions involving public forests.

Private Industry: Partnering with community groups and having access to professional continuing education can increase the overall effectiveness of management strategies at the landscape scale that incorporate industrial lands into the matrix. Forest health improvements should be part of the positive steps accomplished by private industry as an integral part of forest certification programs such as Sustainable Forestry Initiative and Forest Stewardship Council.

Tribal Lands: Tribal land managers can benefit from continuing education to improve their knowledge and skills in managing for healthy forests. Like private industry managers, tribal land managers can partner with neighboring landowners and community groups to increase the overall effectiveness of management strategies. More over, opportunities exist on tribal lands to demonstrate creative approaches in meeting forest health strategies. Tribal management procedures include tribal community consensus and a focus on both biological and economic goals. The leadership role that several tribes have demonstrated in addressing forest health would serve as templates for development of both community participation and adaptive management for others. The new Tribal Forestry Relations Act may provide opportunities to expand on current cooperative agreement structures between government entities, but education and technical assistance regarding landscape level approaches may be warranted.

Recommendation: In order to effectively address Forest Health restoration and maintenance activities, the DNR Stewardship program, WSU Forestry Extension, and campus based support from UW and WSU must expand their capacity.

Recommendation: The legislature should provide encouragement to the USDA-NRCS state office to fund a forest health based emphasis.

Recommendation: DNR should conduct a one-time public forest health educational campaign and evaluate the response to determine if there should be a continuing public education program.

Recommendation: The production and dissemination of landowner educational and public outreach materials including both print and distant learning streaming media materials on forest health issues and restoration strategies should be expanded.

Recommendation: Sustainable forestry programs, such as Sustainable Forestry Initiative®, Forest Stewardship Council®, and the Washington Certified Tree Farm Program®, commit to adding standards to promote healthy forests on participants' lands and to recognize educational outreach programs conducted or participated in by program participants.

Tier 2: Goal: Voluntary efforts are aimed at containing, suppressing, and otherwise managing the development of extreme forest health hazards. When forest ecosystems are imminently threatened by a forest health hazard, the Commissioner of Public Lands may appoint a forest health technical advisory committee to serve on an ad hoc basis as long as the Commissioner determines appropriate. The members are chosen for expertise relative to the attendant risk in order to: evaluate the degree of the threat and provide advice on the nature and extent of the threat, its location, and measures that can be taken to reduce the threat. If an effective resolution to the threat requires it, a Commissioner's Forest Health Hazard Warning will be made to describe the problem, boundaries, treatments, and timing recommendations. Technical assistance, project coordination, and resources for the implementation of effective treatments will be provided by the state, and facilitated with the support of university specialists, Extension Services, and consultants, as funding permits. Budgetary constraints notwithstanding, the Commissioner of Public Lands is responsible for organizing and coordinating efforts. Landowners may comply with the suggested treatments to correct the problem or prepare a long-term plan for achieving desired conditions. While this approach is voluntary, landowners who fail to take action necessary to reduce the risk are subject to increased liability for the spread of fire, as described in RCW 76.04.660

Forest insect and disease outbreaks are occurring and thus demand extra resources and efforts in order to protect private and public natural resources. Landowners or legally responsible managers of the subject property should be given notice of potential or impending violation and ideally would respond to reduce the forest health threat to an acceptable level.

Recommendation: The DNR must develop the capacity to provide for forest health scientific advisory committees to assist the Commissioner in responding to extreme health problems that will occur from time to time.

Tier 3: Goal: If voluntary efforts fail to eliminate the forest health hazard or reduce it to an acceptable level, and the hazard continues to pose a significant threat to public or private forests within the area, further action may be necessary. An Extreme Forest Health Hazard could be recommended by the forest health technical advisory committee and declared by a Commissioner's Extreme Forest Health Hazard Order that describes the area affected, the causal agent and measures landowners must take to reduce the risk. If a landowner is in an identified area of risk and has failed to respond to a forest health order, that landowner is subject to increased liability. Under some circumstances, the landowner may also be subject to remedial action by the state. To implement this approach, changes should be made in RCW 76.06 to provide the direction and authority.

State lands should be subject to the same excess health risk rules as private owners.

Enforcement of minimum standards of forest health maintenance on state and private lands requires defensible standards for forest condition, an implemental process for determining conditions of forest stands against which to apply the standards. Defensible standards for

declaring an extreme hazard of insect or disease damage do not currently exist, nor does the information necessary to determine whether a standard has been violated on a specific parcel of land. The standards must be science-based and properly define an *extreme risk* of insect, disease or fire spread from the subject property to adjacent lands. A standard for data quantity, quality, and acceptable collection techniques required to make a determination of *extreme risk* must be established in rule. Aerial photography or other remote sensing methods will be needed for initial forest condition assessment to establish a legal opportunity to enter private property for ground-based data gathering.

> **Recommendation: The DNR should develop Tier 3 policy and procedures including legally sound standards for forest condition, an implementable process for determining the condition of forest stands against which to apply the standards, and reasonable sanctions for failure to comply.**

Landowners who continue to manage their lands over an extended period in such a way that they expose others to increased fire or forest health risk could be classified in a higher risk bracket for protection services requiring a higher state-levied protection fee, similar to a risk sensitive insurance premium. The penalty for a Tier 3 forest health condition could be one or some combination of conditions (see Appendix 4). A higher forest protection fee might be the most administratively feasible option with the fewest unintended consequences. The option of using the Landowner Contingency Fund to address forest health conditions has not been included in Appendix 4.

> **Recommendation: Once the implementation of the forest health strategic plan has progressed to the point where Tier 3 may be implemented, the Legislature should authorize use of funds from the Landowner Contingency Fund to support state actions to address an extreme forest health hazard with the expectation that cost would eventually be recovered from the offending landowner.**

ANALYSIS AREA 7: INCREASING SMALL FOREST LANDOWNER MOTIVATION

Family forest owners are motivated to increase their understanding of forest health concerns and take action appropriate to their ownership objectives.

Technical assistance is most important to the smaller-acreage owners who do not have the resources or expertise alone to respond to forest health issues. As Technical Service Providers (TSP), forestry consultants are locally respected, experienced with public/private projects, and capable to provide valuable support to small forest landowners when they are adequately trained. By capitalizing on TSP, the number of education and assistance field personnel directed at forest health conditions can be increased.

With current tax structure under the Department of Revenue, there is very little room to manipulate state excise tax returns to generate incentives or revenue to facilitate forest health goals. Currently, landowners must pay excise tax on a minimum value for stumpage (the value of trees removed) even if it has no value or is given away. This could encourage landowners to leave materials that contribute to fire risk. In order to encourage the removal of low value thinnings or off site species from the forest, there should not be a tax on low value wood.

The only other excise tax opportunity may be to enlarge the current riparian and road tax credit to include tax reductions for forest health. Federal programs have the potential to provide a much larger pool of funds that could be considered.

Cost share programs should be expanded, particularly for the small-acreage landowner group. Examining ways to achieve maximum economic efficiency of the dollars spent will be crucial in implementing the goals of the program.

> **Recommendation: A series of management templates should be developed for easy identification of site sensitive situations and plans that are acceptable for providing private owners sustainable economic returns, low forest health risks, and environmental protections required under Forest & Fish (see Analysis Area 9).**

Opportunities exist for mechanical removal of excess fuel loads with some degree of restoration of early successional fire and insect resistant forest structures. Barriers include the high cost of removing small diameter material, both lack of and declining infrastructure to process these materials, non-sustainable economics, regulatory requirements, and the uncertainty in being allowed to carry out long term plans.

Removal of understory thinning for fiber and biomass is costly even though the non-market benefits to the public have been show to be substantial. Financial incentives, along the lines of the old Forest Incentives Program (FIP) could be used to underwrite the costs of removals and to reward enduring commitment to forest health management plans. Where community objectives include increased retention of large tree overstory beyond that which is economic for private landowners, a FIP-like per acre per year incentive payment could be provided to cooperating forest landowners via forest health community groups. With regional/community goals, the allocation of payments for increased retention could be determined by competitive bidding, which would insure the greatest acreage of large tree retention in the community up to an authorized target for the least cost. This process might also be expected to provide an incentive for the formation of more active community based forest health groups.

Cost of Incentive Programs: The cost to remove non-merchantable material from overstocked and off-site species forests is estimated to average $200/acre. As a placeholder for a more detailed analysis we have produced a ballpark estimate of two million acres that require treatment of four million acres available over all owners. By treating 100,000 acres/year at $200/acre, the yearly treatment cost would be $20 million per year over 20 years. After 20 years, in-growth would require the initiation of a second treatment. If forest health goals include the retention of fire-resistant (ponderosa pine and western larch) large diameter trees, a rough estimate of an additional $100/acre per year would be required. If only one fourth of the treated acres were eligible for the retention fee on an annual basis, ($1/8^{th}$ of the total acres) the additional cost estimate is an additional $50 million/year.

> **Recommendation: Restructure the forest excise tax tables to remove excise tax from wood products that have a stumpage value below a point where the net after tax**

return is below a minimum value. This minimum value should reflect a break even or nominal return on the cost of removing the material from the site.

Recommendation: DNR continue to seek federal grants that provide cost share to landowners. The Legislature should provide cost share funds for landowners also.

Since a major goal of forest health is prevention before needing to undertake a costly response after the problem has become critical, financial support for a panel to oversee the collection of non-market costs that can be avoided and how best to incorporate that information in decisions may be the most effective cost saving measure that can be taken.

To the degree that private industry participates in a community health consortium they should have access to the same incentive structure as family forestlands. Similarly to the degree that they contribute to high fire risk over a prolonged period they should be subject to a similar protection fee schedule.

Recommendation: Recognizing that the greatest cost reductions and health gains will come from more effective prevention, the Legislature should create a panel to oversee the evaluation of non-market costs that can be avoided and benefits that can be gained by changing the motivation for management. The panel should to make recommendations and provide consulting support on how to best use this information in decisions to achieve these gains.

ANALYSIS AREA 8: A COOPERATIVE ATMOSPHERE ACROSS OWNERSHIPS

A Cooperative atmosphere exists across ownerships on forest health and receives cross-boundary results.

Forest health problems exist across ownership types throughout the state. Federal, tribal, state, and private landowners share commitment to improving forest health. Cooperative agreements and community involvement provide additional opportunities to improve forest health on a multi-owner watershed scale and are particularly critical to ensure a landscape level impact.

2SSB6144 requires the Commissioner of Public Lands to promote communications between the state and the federal government regarding forest health, allows the state to have an influence on the management of federally owned land, and encourages consideration of additional cooperative agreements with the Forest Service and the Bureau of Land Management.

Currently, Cooperating Agency Status (CAS) can be done at the Forest Planning level or on a project-by-project basis. It gives the state the opportunity to be a full member of the planning team and may help in influencing the final alternative, but it does not give the state decision authority. Proposed new planning regulations for the Forest Service may not allow for CAS at the Forest Planning level. Due to the uncertainty of the requirements of the new planning regulations and the resources necessary to participate in CAS, the committee does not recommend pursuing this status during the initiation of the State's plan with the federal agencies.

DNR and federal agencies have a number of agreements in place for coordination of resources and personnel for projects of mutual benefit. A Memorandum of Understanding (MOU) from January 2003 between the Forest Service, Department of Interior, Land Management Agencies, the National Association of State Foresters, and the National Association of Counties collaborated on the annual selection of a fuels protection and enhancement of forest health. Washington's agencies should review existing agreements and modify as necessary to incorporate state strategic forest health objectives. The statewide strategic forest health plan is the benchmark to ensure that forest health planning elements are incorporated into landscape planning efforts on the part of all federal and state agencies and tribes. The DNR would provide assessment and input into strategic plans.

> **Recommendation: The State of Washington should attempt to influence federal and tribal forest health management and implementation programs to be consistent with the state strategy. DNR should develop policy level capacity in the office of the State Forester to coordinate the state forest health strategy with federal and tribal land management agencies and to develop cooperative agreements with other landowners when appropriate.**
>
> **Recommendation: The State should explore opportunities to intervene in litigation on projects that support the statewide healthy forest strategy.**

Tribal Lands: Tribes are major forest landowners. Some tribes have forest health problems and active forest health programs. Tribal involvement is essential for landscape level approaches to achieving desired forest health actions. It is essential that tribes be approached on a government-to-government basis.

Forest Industry: The viability of private forest companies is critical to the success of a state forest health strategy. Without their expertise and infrastructure, effective management of forests to curtail forest health risks on any ownership would be impossible. The infrastructure for processing has continued to decline leaving few bidders for many log types. An assessment of the current decline in forest industry infrastructure and its implications for the health of Washington's forest should be undertaken. The assessment should specifically identify what further incentives are required to develop infrastructure necessary to address forest health concerns such as using the unmerchantable removals as biofuels for energy. Increased certainty on the long-term support for forest health activities would be an incentive for private investments in infrastructure needs.

Community Group Support: Some organizational incentive support for largely voluntary organizations should be provided. Emphasis on increasing the outreach to existing groups, such as the Washington Farm Forestry Association, Farm Bureau, Resource Advisory Committees, FLAC's, and Community Wildfire Protection Planning groups, is needed. Enlarging the definition of community groups to include communities of forest owners or forest interest groups, such as the Timber Fish and Wildlife cooperators, may be required to facilitate landscape level approaches in specific locations where the cooperative agreement framework is inappropriate or unwieldy. Accountability for funding of community groups might be judged by

health improvement measurements in the community to avoid the inefficient use of funds. Health improvement measures could include the following criteria:

- **Reducing forest health risks in the community 'area of interest'.** The area of interest allows for the expansion of the sphere of influence beyond the narrow boundaries defined by current fire planning initiatives.
- **Increasing local capacity to address forest health risks,** including increases in infrastructure, markets, and employment in forest health related endeavors.
- **Expanding community participation and interagency cooperation.** The FireWise program and Community Wildfire Protection Planning are ways to engage rural residents in Forest Health issues.

Private forest lands. It is important for DNR to have sufficient capacity to provide technical assistance and project coordination to address forest health hazard areas and to maximize the state's opportunities for forest health funding from national programs.

> **Recommendation: Encourage continuation of and extension of federal support for technical assistance capacity and for increasing collaborative forest health improvement activities across all land ownerships.**

ANALYSIS AREA 9 – REGULATORY PROGRAMS ARE COORDINATED

Regulatory programs are coordinated so key objectives of each can be realized without adverse effects on others.

State regulatory programs that implement federal statutes such as the Clean Air Act, the Clean Water Act, and the Endangered Species Act should be coordinated whenever possible to maximize achievement of compatible objectives. Improvements should be investigated in state Smoke Management and Forest Practices programs.

Smoke Management:

Prescribed fire can be an effective method to reduce fire and insect risk, manage smoke emissions, restore some fire resistant forest overstory types, and improve soil nutrition and forest health. If periodic prescribed fire is not possible, then the success of this plan may be jeopardized and not fully achievable. Current state implementation of the Clean Air Act substantially limits the potential for using prescribed fire through the daily permission requirements and standards.

> **Recommendation: The legislature consider directing coordinated changes to the statewide smoke management plan that would encourage maximum use of silvicultural burning where appropriate for forest health improvement. The direction should address areas where the state smoke management plan is more stringent than the National Clean Air Act and allow brief exceedence of standards to alleviate future wildfire events that are uncontrolled and have a greater, more prolonged impact on the public.**

Forest Practices:

Forest Practices Rules should allow landowners to effectively deal with forest health issues while protecting public resources. There are three areas where the Forest Practices Board should review the Rules to ensure that they do not unnecessarily conflict with forest health management goals:

1. Potential Limits on Active Management:
Some rules may restrict landowners from effectively treating the stand to improve its resistance to health threats or prevent landowners from taking action if health issues are currently impacting stands. These rules are the eastern Washington riparian rules and other leave areas, such as spotted owl circles, that can restrict harvesting.

> **Recommendation: The Forest Practices Board should review the Forest Practices Rules to see if, or when the riparian and wildlife protection strategies conflict with forest health goals, or if changes or modifications can be made that achieve the goals of protecting public resources as well as meeting forest health and fire protection needs.**

While the Riparian Management Zone (RMZ) rules for eastern Washington were developed to maintain general forest health through measures such as species preference and periodic stand re-entry, the combined impacts of tree leave and shade requirements can make re-entry uneconomic and the rules complex for landowners to implement. Many landowners default to no-cut buffers. This can leave riparian buffers in an overstocked condition, which may lead to increases in forest health issues and stand replacement fires adjacent to streams. Revising these requirements through the Board's Forest and Fish Adaptive Management process, or through the creative use of Alternate Plans could provide an incentive to improve forest health consistent with the protection of public resources.

Adjustments in the Forest Practice Rules using existing legislation on alternate planning in RMZ's could also reduce the risk of dwarf mistletoe, spruce budworm, mountain pine beetle, and brown stringy butt rot, although care must be taken because of the need to protect the public resource values found in riparian areas, such as fish and wildlife habitats and water quality. Development of a series of management templates could provide for easy identification of both site sensitive situations and plans that are acceptable for producing the desired future conditions of improved forest health and public resource values. Streamlining this process by adopting a series of site sensitive templates would provide the long-term regulatory certainty needed to plan sustainable forest stewardship activities and may be an effective incentive.

In eastern Washington, some landowners have also experienced problems with Spotted Owl SEPA requirements that prevent harvest while conserving spotted owls and the habitats on which they depend. In some areas these stands are in conditions that are overstocked, contain high fuel levels, and are often suffering from various forest health pests. Historically, some of these stands contained less stocking as frequent fires impacted them, but have now become overstocked, resulting in suitable habitat for spotted owls. Opportunities exist, however, within the spotted owl rules to develop Landowner Option Plans and Habitat Conservation Plans, which may be a vehicle to address both the needs of spotted owl conservation and the need to improve and maintain forest health.

Recommendation: As these issues come before the Forest Practices Board through the adaptive management process, the Board should examine potential unintended forest health consequences. Solutions might include streamlining the acceptance of alternative plans, greater use of available collaborative planning processes, and eliminating some of the complex overlays in the Rules.

Recommendation: Give expeditious consideration to management templates (Analysis Area 7), once developed.

2. Applications:
The second area that the Forest Practice Rules impact landowners is the permit process needed for salvage and pesticide spraying. There are no emergencies procedures for when landowner resources are at risk of economic loss.

The permitting process can be lengthy when using applications for pesticide spray. These often are Class IV permits and are often appealed because of concerns over how the pesticide may affect fish, wildlife, or water quality. An appealed application often delays this type of project beyond the window of effective treatment. These appeals often occur when landowners propose to treat insect outbreaks with approved chemicals versus using alternatives such as *B.t.k.,* which are perceived to have fewer non-target effects; but may provide less effective pest control. Landowner's need some type of assurance that they can treat stands with EPA approved pesticides in a timely manner.

The other issue is timely salvage of wind thrown, fire damaged, and killed trees. These delays have mostly been for federal and state salvage projects. Private landowners are concerned that appeal processes could be used to delay salvage on public land and thus cause economic losses and the potential for increased insect problems on private lands.

Another issue in salvaging of dead and dying trees are the green-up rules that restrict the size of area from being treated without leaving buffers to reduce the unit size or filing a Class IV permit. Fires and insect damaged forests often exceed the bounds of the green-up rules. Rapid and complete salvage of damaged trees is very important to reduce the economic losses already sustained by the landowner, although care must be given to ensure public resources receive appropriate protection in any salvage project.

Recommendation: The Forest Practice Board should look into ways to include salvage and treatments of insect pests as emergency applications to speed up the process and limit the appeals, while providing protection to public resources.

3. Reforestation Requirements:
Reforestation standards require a certain number of native trees. In eastern Washington, reforestation standards that specify insect and disease resistant seral species should be considered.

The Work Group will write a letter to the Forest Practices Board identifying these concerns that may have unintended forest health consequences and merit evaluation by their science teams.

ANALYSIS AREA 10: SUFFICIENT FUNDING

Funding is available in sufficient amounts from appropriate sources to implement forest health strategy and program improvements.

There are five potential sources of funding to support forest health needs:

- Productive commercial forests returning revenue to their owners
- State general fund appropriations
- "Excess" funds that have accumulated in the Landowner Contingency Fund
- Support and grants from the federal government
- User based taxes or fees, potentially collected from and directed at the small landowner segment of private forestland ownership.

Restoring Washington's forests to a healthy condition is a shared responsibility. Landowners contribute significant resources to achieving healthy forests through investments in silvicultural treatments and insect, disease, and fuels treatment projects. While some of those investments result in financial return to landowners far off in the future, substantial expenditures will be made in the near term. Particularly for family forest owners, even when there is limited cost share assistance, costs can be prohibitive, with returns years or even decades in the future.

It is our recommendation that the public sector, state and federal, should pay for the costs of the core forest health program. Ecologically and economically balanced forest health across the state is a good investment for the public. Investments in prevention provide the opportunity to avoid the many costs associated with fires, disease, and other health breakdowns. The payback from prevention activities can be very rapid. Public health and safety will be enhanced.

In addition to funding recommendations listed below, the Work Group recommends that:

- DNR continue to work vigorously to maintain U. S. Forest Service support for disease and insect surveys, firefighting capacity, small landowner forest health treatment cost share, wildland interface fire risk treatment, exotic pest eradication, and urban forestry.
- The DNR continue to seek new funding from federal sources to address issues identified in the state forest health strategic plan.

In managed forests, harvest of commercial trees will create revenue for the landowner. Good stewardship and wisely directed incentives will encourage landowners to invest some of the revenue into maintaining good forest health on their lands. Landowners, through the Landowner Contingency Fund, may be interested in funding a data collection and analysis project, if a pilot project, recommended for funding in the 2005-7 Biennium, is successful. The small landowner community can also explore the opportunity for self-taxing or a fee structure that would support additional forest health maintenance services provided to the community.

Funding is required to implement key elements of this report. The work group did not have the time necessary to thoroughly analyze all the proposed budget items. The summary of requests can be found in Appendix 7. This work product needs further study, analysis, and the

development of strategic, well-placed investments. These funding needs can be divided into six categories:

- Immediate short-term needs for data acquisition, synthesis and presentation;
- Continuing need for field personnel to maintain and expand public outreach and education;
- Capacity to develop and enforce regulatory structure;
- Increase the capacity of the Department to pursue state cooperative actions with federal and tribal land managements;
- Effectiveness monitoring; and
- Emergency funds to combat exotic insects or diseases that may invade private or state forests.

As information becomes available, more will be known about the magnitude of forest health problems. Additional capacity may be necessary to fully execute the recommended strategy. Moreover, the work group will be in a better place to make informed budget recommendations to the legislature following the public process recommended for 2005 is completed, and as the results of the pilot project are evaluated. Thus, other than for high-priority items for the ensuing biennium, the work group is not prepared to make budget recommendations.

2005-2007 Biennium

A standard OFM Decision Package will be prepared in early January for the Legislature's consideration. In the meantime, the work group would like to highlight its recommendation for next biennium.

1. In order for them to agree to a comprehensive program for forest health in Washington, landowners, particularly family forest owners, need to be convinced that the burden of paying the costs of restoring or maintaining forests in healthy conditions is equitably spread among all landowner groups. Accordingly, the work group recommends funding the position called for in the report to work with federal land management agencies to influence their planning processes and outcomes.

    1 FTE FY 2006 $100,000 FY 2007 $100,000 GFS

    This would be a recurring expenditure.

2. Support for continuing the work group and holding public meetings and hearings; continuing the effort to develop legislation and budget items.

    0 FTE FY2006 $100,000

3. The Forest Health staff in the Department of Natural Resources is very small, highly trained, and mission critical. Department staff assigned to assist the work group have not been relieved of their "day job" because of the demand for their work product. In order to continue support for the work group, and to begin to implement the Department's Strategic Plan for Forest Health, a Forest Health Program Manager needs to be added to the Department's staff.

    1 FTE FY 2006 $100,000 FY 2007 $100,000. GFS

    This would be a recurring expenditure.

4. Pilot project. There is consensus among the working group that there is not sufficient readily available spatially explicit information on the extent, location and landownership grouping of

forest health issues needing attention to development of priorities for treatment. There is not consensus that the data acquisition and analysis projects detailed in the Analysis Area 1 are priced right or will be as useful as anticipated. Thus, the work group recommends a pilot project of gathering and displaying spatially explicit information at the scale of at least one county or parts of two or more counties that represent a discrete working circle with multiple ownerships and that has serious forest health issues. Pilot will include the limited refinement of density thresholds, development of management plans for several owners in the sample area and some training of the trainers that will be providing assistance.

0 FTE FY 2006 $175,000 FY2007 $150,000

One time money (although, if successful, additional resources would be requested to complete the project on a state-wide basis).

The work group recommends that the Landowner Contingency Fund pay for this one-time effort.

4a. The work group believes that as part of the pilot project of data collection and analysis, there should be an element of outreach, so that as information is developed, it, along with suggestions for activities to ameliorate forest health issues, can be delivered to landowners and land managers in the project area.

1 FTE FY 2006 $70,000 FY 2007 $70,000

If the pilot project is successful, this would be a recurring expense

Recommendation: The public sector, state and federal, should pay for the costs of the core forest health program.

Recommendation: The Legislature should fund high priority budget items for the 2005-2007 Biennium.

Appendix 1

Forest Health Strategy Work Group Members

Pat McElroy, Executive Director of Regulatory Programs, Washington Department of Natural Resources (DNR), Chair

Mike Blankenship, Ferry County Commissioner, County Representative

Rick Brazell, Forest Supervisor, Colville National Forest, Representative of the USDA Forest Service

Rich Fonda, Professor (retired), Western Washington University, Fire Ecologist

Robert Gara, Professor, College of Forest Resources, University of Washington, Forest Entomologist

Peter Heide, President of Washington State Society of American Foresters, and Representative of a professional forestry organization

Bruce Lippke, Professor, College of Forest Resources, University of Washington, State University Representative

John Mankowski, Environmental Policy Lead, Washington Department of Fish and Wildlife, Representative of the WDFW

Barry Moore, Associate Professor, Department of Natural Resource Science, Washington State University, Forest Hydrologist

Mike Petersen, Executive Director of The Lands Council, Environmental Organization Representative

Ron Shultz, Executive Policy Advisor, Governor's Executive Policy Office, Representative of the Governor

John St. Pierre, Natural Resource Director, Confederated Tribes of the Colville Reservation, Representative of the Confederated Tribes of the Colville Reservation

Steve Tveit, Region Timberlands Manager, Boise Cascade, Statewide Industrial Timber Landowner Representative

Maurice Williamson, Colville, Washington, Small Forest Landowner Advisory Committee Representative

Staff Support

Karen Ripley, Forest Health Program Manager, DNR, Work Group Coordinator

Vicki Lee, Resource Protection Division, DNR, Work Group Support Staff

Appendix 2

Recommendations of the Forest Health Strategy Work Group

General

Promote wider understanding that poor forest health conditions create severe fire behavior and that widespread public and private benefits can result from improved forest management.

The Legislature should recommend a panel investigate and quantify non-market values associated with forest health management activities and should consider its recommendations when directing future activities.

The legislature consider directing coordinated changes to the statewide smoke management plan that would encourage maximum use of silvicultural burning where appropriate for forest health improvement. The direction should address areas where the state smoke management plan is more stringent than the National Clean Air Act and allow brief exceedence of standards to alleviate future wildfire events that are uncontrolled and have a greater, more prolonged impact on the public.

Work Group Activities

Workshops should be held across the state in CY 2005 to inform landowners and managers, communities of interest, public officials, and the general public of the Work Groups findings and recommendations, take public comment and input into the legislation, and provide the legislature with a proposed bill, along with a summary of the issues identified in the public process.

The Legislature should extend the work group through the 2005-2007 biennium and appropriate funds to the DNR to pay the expenses of committee members who are not state employees, and for expenses necessary to conduct the public meetings and hearings discussed above.

Determine which of Washington's forestlands are at greatest risk

A DNR strategy is needed for determining Washington's forestlands that are at greatest risk. DNR should coordinate the development of a Regional Forest Health Modeling capability that merges the available remote sensing and existing inventory data with existing GIS layers and offers these data in downloadable form. This will assist in analyzing current and projected conditions and in prioritizing the need for stand specific treatments. DNR should enlist the support of the following:

(1) University of Washington to help develop and validate the methods, and also to provide links and support using their Landscape Management System as available software for use by local user groups;
(2) USFS FIA for calibration of forest inventories to GIS stand attributes when using FIA data,
(3) USFS Pacific Northwest Research Station's Focused Delivery Program that has funded pilot work in this area, and is willing to contribute their expertise, and
(4) DNR, for providing existing GIS layers as well as web access to provide operational support for using the system both for DNR's strategic decision process and field support of communities that are determining how to respond to identified health problems.

Data gathering, synthesis, and presentation to develop Density Thresholds for use with spatially distributed inventory data to identify the locations of highest forest health risks in Washington should occur.

Encourage federal support for maintenance and updates to the Landscape Management System.

Changes must be made to RCW 76.04 and 76.06 to incorporate the 3-tiered forest health regulatory framework. The best solution is through changes to 76.06 and 76.04, rather than the noxious weed law.

1. Meet continuing need for field personnel to maintain and expand public outreach and education.
The DNR should increase their capacity to coordinate and conduct statewide monitoring, develop and deliver training, and provide insect and disease reporting and technical assistance.

DNR should seek advice on subjects and procedures for monitoring forest health conditions and program activities.

In order to effectively address Forest Health restoration and maintenance activities, the DNR Stewardship program, WSU Forestry Extension, and campus based support from UW and WSU must expand their capacity.

DNR should expand the distribution of annual Forest Health Conditions reports.

The legislature should provide encouragement to the USDA-NRCS state office to fund a forest health based emphasis.

DNR should conduct a one-time public forest health educational campaign and evaluate the response to determine if there should be a continuing public education program.

The production and dissemination of landowner educational and public outreach materials including both print and distant learning streaming media materials on forest health issues and restoration strategies should be expanded.

Sustainable forestry programs, such as Sustainable Forestry Initiative®, Forest Stewardship Council®, and the Washington Certified Tree Farm Program®, commit to adding standards to promote healthy forests on participants' lands and to recognize educational outreach programs conducted or participated in by program participants.

2. Increase the capacity to develop and enforce forest health regulatory structure.
The DNR must develop the capacity to provide for forest health scientific advisory committees to assist the Commissioner in responding to extreme health problems that will occur from time to time.

The DNR should develop Tier 3 policy and procedures including legally sound standards for forest condition, an implementable process for determining the condition of forest stands against which to apply the standards, and reasonable penalties.

When landowners/managers adopt plans to reduce forest health hazard, in accordance with a Commissioner's Forest Health Hazard Warning or Order, they must be provided with a notification documenting their response. In the event of a severe insect outbreak or fire, such notification can be expected to reduce the liability exposure for landowners who are effectively working to reduce the forest health risk. The DNR Forest Stewardship Program should conduct this activity.

Once the implementation of the forest health strategic plan has progressed to the point where Tier 3 may be implemented, the Legislature should authorize use of funds from the Landowner

Authorize use of Landowner Contingency Fund to support state actions to address an extreme forest health hazard with the expectation that cost would eventually be recovered from the offending landowner.

A series of management templates should be developed for easy identification of site sensitive situations and plans that are acceptable for providing private owners sustainable economic returns, low forest health risks, and environmental protections required under Forest & Fish.

Increase DNR capacity to pursue state cooperative actions with federal and Tribal land managers

The State of Washington should attempt to influence federal and tribal forest health management and implementation programs to be consistent with the state strategy. DNR should develop policy level capacity in the office of the State Forester to coordinate the state forest health strategy with federal and tribal land management agencies and to develop cooperative agreements with other landowners when appropriate.

The State should explore opportunities to intervene in litigation on projects that support the statewide healthy forest strategy.

Encourage continuation of and extension of federal support for technical assistance capacity and for increasing collaborative forest health improvement activities across all land ownerships.

Forest Practices Board

The Forest Practices Board should review the FPA rules to see if, when the riparian and wildlife protection strategies conflict with forest health goals, changes or modifications can be made that achieve the goals of protecting public resources as well as meeting forest health and fire protection needs.

As these issues come before the Forest Practices Board through the adaptive management process, the Board should examine potential unintended forest health consequences. Solutions

might include streamlining the acceptance of alternative plans, greater use of available collaborative planning processes, and eliminating some of the complex overlays in the rules.

The Forest Practices Board should give expeditious consideration to management templates, when developed.

The Forest Practice Board should look into ways to include salvage and treatments of insect pests as emergency applications to speed up the process and limit the appeals, while providing protection to public resources.

Funding
The public sector, state and federal, should pay for the costs of the core forest health program.

The Legislature should fund high priority budget items for the 2005-2007 biennium.

Restructure the forest excise tax tables to remove excise tax from wood products that have a stumpage value below a point where the net after tax return is below a minimum value. This minimum value should reflect a break even or nominal return on the cost of removing the material from the site.

DNR continue to seek federal grants that provide cost share to landowners. The Legislature should provide cost share funds for landowners also.

Recognizing that the greatest cost reductions and health gains will come from more effective prevention, the Legislature should create a panel to oversee the evaluation of non-market costs that can be avoided and benefits that can be gained by changing the motivation for management. The panel should to make recommendations and provide consulting support on how to best use this information in decisions to achieve these gains.

The Legislature should provide access to emergency funds to address exotic insect or disease invasion of state or private forestlands similar to emergency fire suppression funding.

Appendix 3

Detailed Discussion of Data and Analytical Needs (ANALYSIS AREA 2)

This is the complete text of the Work Group's preliminary view of the data and analysis needs in order to be able to develop site specific approaches to forest health treatments, as well as providing detailed, land based information for policy decisions. There is general agreement that this is an appropriate approach. However, there was not enough time for the Work Group to do the review necessary to fully assess costs and benefits associated with work on this scale.

Broad-Scale Strategic Planning

Strategic planning at state or regional levels requires an understanding of the severity and geographic extent of the forest health problem. Comprehensive spatial information on forest conditions is not currently available. Assessments must be conducted to identify locations with severe forest health risk. Data acquisition, storage, retrieval, and processing systems must be developed and include the capability to update information.

Basic forest information (stand composition, tree species, size and density, and soil productivity or carrying capacity) is needed to assess forest health conditions affecting insect and disease outbreak, and fire risk. Forest inventory plot data are available for use in statistical analysis and limited interpretation of remote sensing information (aerial and satellite photography). However, the geographic source of this data is not available. Although the DNR, the Forest Service, Tribes, and major forest landowners maintain spatially explicit ground plot forest inventory information for their own lands, the sample plot density and forest data collected in each system varies. Unfortunately, the Forest Service's Forest Inventory and Analysis (FIA) inventory for private lands is too sparse, not spatially registered, and cannot yield a similar estimate of stand condition across all privately owned forests.

Metrics and measurement methods available for assessing forest health

Tree lists with spatial links are needed to identify and locate insect, disease, and fire prone forests. This kind of information, though sparse, is available in ground plot FIA inventory. More data on stand conditions must be gathered through ground sampling. Spatial information should be coupled with temporal modeling to project developing forest conditions.
A system that links tree data with remote sensing satellite imagery is needed to identify the location of at risk forest stands. Integration of ground acquired tree-list information and satellite-derived data, called Regional Forest Health Modeling (RFHM), offers the best hope of providing the metrics necessary to analyze forest health. Calibrating Landsat satellite images of uniquely identifiable stands guarantees extending the use of existing detailed ground plot inventory data samples. The satellite-mapped stands are assigned tree-list attributes based on their similarity to images that have been matched to attributes measured on the ground. Wherever that image appears, the matching tree-list is used to identify on the ground conditions at that location.

Modeling tools that show promise must be adapted to include a reliability assessment to determine the effectiveness of the results and may have to be enhanced to support the use of

Landsat data on complex dry-site forests. Aerial photography for Landsat may improve resolution but would likely be extremely labor intensive and costly. DNR, Forest Service, and FIA data may be used as the training plots for Landsat spatial forest data, however there is a gap between tree-list information and existing GIS data layers. The Landscape Management System (LMS) developed at the University of Washington is an analytical tool that projects future forest conditions in a spatial framework in response to management treatments and can assist in developing appropriate site and landscape specific management strategies when adequate inventory information is available and forest health density thresholds are understood.

Recommendation: A state strategy is needed for determining Washington's forestlands that are at greatest risk. DNR should coordinate the development of a Regional Forest Health Modeling capability that merges the available remote sensing and existing inventory data with existing GIS layers and offers these data in downloadable form. This will assist in analyzing current and projected conditions and in prioritizing the need for stand specific treatments. DNR should enlist the support of the following:

(1) University of Washington to help develop and validate the methods, and also to provide links and support using their Landscape Management System as available software for use by local user groups;

(2) USFS FIA for calibration of forest inventories to GIS stand attributes when using FIA data,

(3) USFS Pacific Northwest Research Station's Focused Delivery Program that has funded pilot work in this area, and is willing to contribute their expertise, and

(4) DNR, for providing existing GIS layers as well as web access to provide operational support for using the system both for DNR's strategic decision process and field support of communities that are determining how to respond to identified health problems.

The activities could be implemented as follows:

a. **Phase 1 (two years) should be adequate to identify the most appropriate source data and calibration technologies, pilot test, and validate the methods for integrating the several sources of data.**

b. **Phase 2 (two years) should be sufficient to complete the operational program capabilities (integrating inventory sources, providing a web access for downloading the data and linkage to landscape management systems in order to select best treatment pathways). Included in this phase would be the first analysis in support of the strategic planning process *i.e.* identification of threats, and an initial pilot test in support of a community based forest health improvement project.**

Local analysis in high-risk areas

Analyzing forests in high-risk areas will allow resources to be directed to where the need is most urgent and the return will be highest. The information in the strategic planning models is likely not accurate enough to trigger treatment because it does not rely on site-specific forest stand inventory data.

Local individual landowners, community members, and/or a high-risk planning team, with guidance and coordination as appropriate from the state, will assess available local information to determine what data is needed to facilitate planning and site treatment. They must be provided information on forest density thresholds that will avoid or reduce risk across the vegetation types in the area. They will likely need tree-list inventory information and tools to analyze stand conditions for forest health risk. Local owners with tree-list information on their own lands would be able to use their own inventory data and assess their high-risk stands. A process of extending available ground plot data to similar neighboring stands, where data are not available, could be employed.

LMS is potentially useful for high-risk areas. LMS is free, user-friendly software. Its low cost application training will make the forest health planning process more accessible. Furthermore, LMS links to three-dimensional visualization tools that facilitate communicating a common understanding of forest health treatments.

> **Recommendation: The system development identified above and the educational and technical assistance provided under Analysis Area 6 will be sufficient to provide the support needed for local owners and community groups. However much of this support will depend upon the continued availability of LMS, which has been developed and maintained by a Congressionally supported grant. The federal support for keeping this system updated should be encouraged.**

Enforcement and monitoring

In order to enforce penalties or liability as a function of fuel development or fire hazard, there must be an even more accurate health measurement system at the local level. A uniform data system could be based on a series of GIS layers characterizing different health issues. Greater consistency in forest inventory datasets, measurement, and performance assessment methodology is necessary for enforcement actions.

Even though local foresters will be able to understand the risk at the local level sufficient to develop health improvement plans, there could easily be a lack of consistency in applying standards from one community to the next.

Recommendation: When landowners/managers adopt plans to reduce forest health hazard, in accordance with a Commissioner's Forest Health Hazard Warning or Order, they must be provided with a notification documenting their response. In the event of a severe insect outbreak or fire, such notification can be expected to reduce the liability exposure for landowners who are effectively working to reduce the forest health risk. The DNR Forest Stewardship Program should conduct this activity.

Appendix 4

Table 1: Opportunities and Barriers to Implementation of a Forest Health Strategy for Washington State.

APPENDIX 1

Table 2: Opportunities and Barriers to implementation of a Forest Health Strategy for Washington State

Table 2 outlines feasible opportunities for implementing a forest health strategy for Washington State along with barriers that may arise for each opportunity.
Barriers are arranged into economic, social, educational, human relations, institutional, regulatory, environmental, scientific, and administrative categories.
The majority of concerns raised during working group deliberations are included. The table assists ranking opportunities for funding and implementation.
Some barriers do not require funding, but do require a fundamental rearrangement of organizational practices among affected agencies, organizations, and individuals.
Table can be modified over time as necessary funding is obtained and changes are made.

	Opportunities							
Barriers	**Prescribed Fire**	**Thinning**	**Education**	**Technical Assistance**	**Incentives**	**Cooperative Agreements**	**Community agreements**	**Include non-market values**
Costs	Not feasible on small parcels	Non-merchantable costs may override merchantable volume	Recent loss of FTE's needs to be addressed as well as ramping up to meet FH	Recent loss of FTE's needs to be addressed as well as ramping up to meet FH	Estimates of $200/ac for sm diameter removal; $100/ac/yr for overstory retention	Reduced protection fee assessments with participation?	Not all participants are 'equal' due to funding limits on private participation	Inclusion in risk equations clearly shifts balance toward treatment
Loss of sustainable economic return	Regen is destroyed during repeated overstory maintenance burns				Landowners pay excise tax on minimum value, even if stumpage is given away. Drop this tax for low value wood.			Quantifying non-market values and/or establishing markets (eg carbon or water) may be required
Lack of markets		Adds to cost issue						Increases the non-market component of cost reduction
Lack of capacity (FTE's, people, skill sets, funding)	We are losing our skill set in prescribed fire.	Need to extend knowledge for site specific treatments	Need increased funding to provide education	Need increased funding to provide tools and train the trainers	Allocation of scare funds should be ranked by effectiveness. Competitive bidding might be most effective	Need DNR policy person to work with other agencies and organizations to meet strategic plan goals	Community interests may not be sufficiently represented without funding mechanisms	Research on non-market values and how to implement is needed
Loss of infrastructure to use by-products of FH treatments		Small diameter wood processing capacity is scarce	What information is needed to restore declining infrastructure?		What incentives would be effective to improve infrastructure?			

Liability exposure	All groups face high risk with prescribed burn	Lawsuits discourage thinning treatments on federal land	Include insurance companies as part of the mix	Include insurance companies as part of the mix	Include insurance companies as part of the mix		Does participation increase liability exposure?	
Parcelization (land ownership pattern)	Small landowners find prescribed fire cost prohibitive and administratively difficult		Hard to reach small landowners	Hard to motivate some owners even if they can be reached			Harder to include contiguous tracts in any planning effort	
Regulatory uncertainty (i.e. no long term assurances)		Sustainable economics requires periodic income			Incentives will not produce matching investments with uncertainty	Does participation garner any benefits given statutory limits on decision making?		
Lack of education on the benefits	Beneficiaries may not be aware of either benefits or their costs	Beneficiaries may not be aware of either benefits or their costs					x-	Institutional focus on symptoms vs prevention (eg. fire fighting vs allocation to education/tech assistance)
Prior cooperation has declined and new technology needs to be added			Need new tehcnology tools, training of trainers, and to increase the number of trainers	Need more trained extension capacity and consultants				
Licensing/adequate training of consulting groups				Poor assistance can be worse than no assistance i.e. litigation & loss of trust				
Lack of trust	x-	x-		Teamwork needed to avoid the regulatory backlash	Incentive programs here today and gone tomorrow		x-	
Extensive time lag in building necessary relationships			Door to door selling may be required	Door to door selling may be required		x	Door to door selling may be required	
Diverse management goals		Not all entities chose to manage for reduced risk to mature stands	Can facilitate a landscape level approach	Can facilitate a landscape level approach		Can facilitate a landscape level approach	Can facilitate a landscape level approach	

Social acceptability including executive support					Increased fees for non-treatment - especially for small landowners	Relates to mechanism between gov't's (state, fed, tribe). Executive allocation of scarce resources determines effectiveness	Will local input be sufficient to override urban votes	
Statutory issues						Limited authority but ican ncrease cooperation		
Institutional procedures			Technology and tools are needed as well as education on stewardship	Technology and tools are needed to support tehncial assistance	Funding is locked into reactive rahter than preventive paradigms	Basis for stronger partnerships needs development given the statutory decision making limits?	Process for coming to agreement	Need to look for new accounting mechansims
Regulations	RMZ/owl circle protection. Smoke caps.	Rmz/owl circle protection						
Implementation of regs	Unintended consequences	Unintended consequences			Alt Plan framework			Integrated valuation
Forest Practice Permit issues		Salvage of even a few trees involves significant $/time				Streamlining of permitting process		
Proximity to human populations	Smoke and fire escape risk	Risks of arson/accidental fire. Better chances for use of materials			$200/acre to encourage removal of non-merchantable material		There is a need to quantify the definition of community and the 'reach' into the forest of community groups	
Clean air act implementation	Remove the '0' tolerance approach and allow federal guidelines to prevail							
Hot fires (i.e. damaging fires because of high fuel loads)	Risk too high until ladder fuels are removed							
Smoke	Especially close to urban centers							

Lack of science on specific prescriptive strategies		Site specific density and composition thresholds needed	Site specific density and composition thresholds needed	Site specific density and composition thresholds needed				
Uniformity in application of rules/monitoring				Need data that is consistent across ownership/landscape	Uniformity of assessment needed for fairness and effectiveness. Competitive bidding could contribute to both.		Different communities have dif't limits for treatment boundaries	
Lack of spatial data	Harder to prioritize	Harder to prioritize	Harder to establish need	Harder to prioritize	Harder to enforce		x	
Lack of inventory data	Can't design reliable treatments	Can't design reliable treatments	Can't design reliable treatments	Can't design reliable treatments	Can't qualify		x	Can't measure values

Appendix 5

Market and Non-market Values Associated with Fire Risk Reduction Treatments

(Extracted from the report entitled *"Investigation of Alternative Strategies for Design, Layout, and Administration of Fuel Removal Projects", section on Market and Non-Market Values*, College of Forest Resources, Rural Technology Initiative, University of Washington, July 2003: www.ruraltech.org)

***Introduction**: As a consequence of large intense forest fires in the inland west over recent years, considerable public attention is being directed at the question of how to reduce hazardous fuel loads from the overly dense forests that characterize the region. Removal of the many small trees that make up these fuel loads is known to be costly. While large trees can be removed for lumber and other product values as reflected in the market, the market value for the smaller logs may be less than the harvest and hauling charges, resulting in a net cost for thinning operations that are needed to lower fire risk. However, failure to remove these small logs results in the retention of ladder fuels that support the transfer of any ground fire to a crown fire with destructive impacts to the forest landscape. Many non-market benefits or avoided costs are not being considered in the market computation that only considers the market value for the log relative to the cost of delivering the logs to market. A first attempt at estimating these costs and benefits appears to show that the benefits will likely exceed the costs as justification for more aggressive treatments to reduce fire risk. There are however many different beneficiaries complicating the issue of who should pay.*

Benefits/avoided costs of reducing fire risk: An analysis of fire risk and hazardous forest fuels on the Fremont (OR) and Okanogan (WA) National Forests indicates that the negative impacts of crown fires are underestimated and the benefits of government investments in fuel reductions are substantial. Perhaps most obvious is the escalating cost of fighting forest fire, which nationally has been in the billions of dollars during recent years. Similarly, there is the value of avoiding facility losses and fatalities that result from forest fires. Communities value a lower fire risk and reduced smoke. Forest fires destroy visual aesthetics and limit recreational opportunities. The United States Congress has historically placed a very high value on species protection as evidenced by laws such as the Endangered Species Act or the National Forest Management Act yet irreplaceable habitats for threatened and

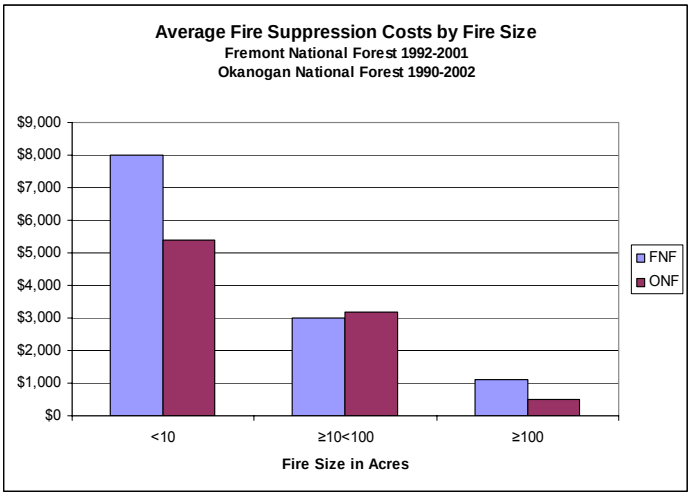


Figure 1. Average fire suppressions costs - Fremont and Okanogan National Forests.

endangered species may be lost when forests fires are more destructive than historical norms. Valuable timber resources are destroyed. Fires also convert the carbon stored in forest biomass to smoke reducing the opportunity to produce long lasting pools of carbon stored in forests and products while adding to atmospheric carbon and global warming. Fires consume biomass that otherwise could be used for clean energy conversion and green energy credits.

Regeneration after fires is problematic and costly and rehabilitation investments are often needed to avoid serious erosion, sedimentation, and water contamination. If forests are thinned, the resulting increase in available surface water could benefit salmon habitats, municipal reservoirs, and agricultural irrigation. Rural economic development benefits would result from the taxes and rural incomes generated by fuel reduction activities. Since economic activity in these regions has been in decline as a consequence of lower federal timber harvests, any reduction in unemployment has higher than normal leverage on state and local finances by lowering assistance costs.

Many scientific studies have shown that forests thinned to remove fuel loads are unlikely to experience crown fires. Accounting for the full value of this reduced risk exposure, however, must take into consideration both the predicted costs and the timing of future fire events. While it is impossible to predict exactly when a future fire might occur in a specific location, we do know that due to decades of fire suppression, the time since last ignition in many forests is well beyond previous fire return cycles and that present fuel loads are well outside of historic levels. Fire ecologists agree that the question is not whether these forests will burn but when.

To illustrate how the relative costs and benefits of investments in hazardous fuels removal treatments to reduce risk of crown fires might be considered, a parametric table can be constructed to display the present value of anticipated future costs associated with failure to reduce risk. For this example, we will assume that that all acres of forests with a present high risk, if left untreated, will burn sometime in the next 30 years while all those forests considered at moderate risk will burn sometime in the next 60 years. If there is an equal probability of each acre burning in any year during the assigned interval then for approximation purposes we can assume that an average time for all acres to burn is equivalent to one-half the interval. More complex models have been evaluated producing similar results.

Non-market Valuations

$$V_0 = \frac{V_n}{(1+i)^n}$$

Where:

V_0 = present value at time 0

V_n = future value after n periods (years)

i = interest rate

n = number of periods (years)

Parametric Present Value Estimations of Fire Risk Costs with Assumptions of $1000/acre to Fight Fire and 5% as the Discount Rate.

For this Exercise Assume all High Risk acres burn in 30 years (15 year midpoint) and all Moderate Risk acres burn in 60 years (30 year midpoint).

Year	5	10	15	20	25	30	35	40	45	50	55	60
Method 1. Present cost/ac of a forest fire at specified future year	$784	$614	$481	$377	$295	$231	$181	$142	$111	$87	$68	$54

In other words, an equal probability that all acres burn sometime in 30 years means an average time to burn of 15 years and correspondingly, given a 60-year interval, the average burn time will be 30 years. If we further assume, as is often done for financial analysis, that an inflation-adjusted interest rate of five percent is representative of the average anticipated cost of money throughout the risk interval then we have what we need to discount future cost estimates to present dollars. In the example above, an estimated future average fire fighting cost of $1000 per acre is used to demonstrate the present value of a future liability. This example shows that every dollar that will be needed to fight forest fires during the 30-year period for high risk represents $0.48 of anticipated cost exposure today and during the 60-year period for moderate risk represents $0.23 today. Conversely, investments in fuels removals today are worth the savings represented by these present value estimates of costs avoided if fires do not occur. Other non-market values of interest can be similarly assessed and then summed to estimate broad present benefit from investment in risk avoidance.

The following table shows present value estimates of avoided future losses associated with a number of market and non-market values. Also displayed for comparison are Forest Service contract preparation costs and operational costs. Future values are taken from a variety of governmental and non-governmental information sources while contract and operational estimates are derived from figures provided by the Okanogan and Fremont National Forests as well as from interviews with harvest contractors. Treatments are assumed to be forest thinnings within the understory that leave approximately 40-100 of the biggest trees per acre (TPA). A more rigorous explanation of this estimation methodology and source information can be found in the publication *"Investigation of Alternative Strategies for Design, Layout, and Administration of Fuel Removal Projects"*, in the Market and Non-Market Values section, at www.ruraltech.org

Table 1. Summary table of costs and benefits from fire risk reductions

Treatment Benefits	Value per acre	
	High Risk	Moderate Risk
Fire fighting costs avoided	$481	$231
Fatalities avoided	$8	$4
Facility losses avoided	$150	$72
Timber losses avoided	$772	$371
Regeneration and rehabilitation costs avoided	$120	$58
Community value of fire risk reduction	$63	$63
Increased water yield	$83	$83
Regional economic benefits	$386	$386
Total Benefits	**$2,063**	**$1,268**
Treatment costs		
Operational costs	($374)	($374)
Forest Service contract preparation costs	($206)	($206)
Total Costs	($580)	($580)
Positive Net Benefits from Fuel Removals	**$1,483**	**$706**

Additional benefits from fuels reductions such as habitat restoration, water quality protection, carbon credits, and others are more difficult to estimate but are generally considered to be of high public value.

Further research is needed to quantify such benefits; however, it should be apparent that addition of such considerations would serve to increase further the net value of public investments in forest fire risk reduction.

Potential negative costs associated with harvest activities to reduce hazardous fuel loads should also be considered, including environmental impacts of soil compaction, damage to leave trees, and road sediments. However, these costs are difficult to estimate and in general can be avoided with due diligence. Compromises to habitat quality for some species may decline while others increase, creating tradeoffs that are difficult to evaluate, but these changes are not likely to be as harmful as the impacts of catastrophic wildfires.

While the values assigned to the benefits from fuels reductions that have been listed above can rightly be considered coarse estimates, they have been shown to be legitimately defensible and intentionally conservative. These figures suggest that the benefits of fire risk reduction are of high value and generally of much higher value than any market losses resulting from thinning to reduce the fire risk. It is worthy to note that many areas of the forests studied in this investigation showed positive net returns from log sales after thinning simulations when some larger trees were removed as part of the fuels reduction activity. However, even with an assumed net cost of fuel reduction operations, the results of this cost/benefit analysis clearly show that the future risk of catastrophic fire is far costlier to the public than investments made today to protect against such eventuality.

Magnitude of Potential Benefits: An analysis of Fremont and Okanogan National Forest inventory data indicated that 1,307,667 acres (greater than 75 percent of the total forest area) are at moderate to high risk of crown fire. Based upon present value estimations above, the total no-action liability for these at-risk forests is greater than two billion dollars. The net public benefit of hazardous fuels reductions after subtraction of operations costs for just these two National Forests is estimated to be greater than 1.3 billion dollars.

Appendix 6

Fire Preparedness, Suppression and Prevention Costs

Figure 1 shows that fire preparedness costs (personnel and equipment) for DNR protected land have increased over the last two biennia largely in response to a more than doubling of fire suppression costs (fighting fires). Over the last two biennia, fire suppression costs have increased by $25 million to reach almost $60 million per biennium. Fire suppression costs are more random from year to year than preparedness costs depending upon drought and other weather conditions.

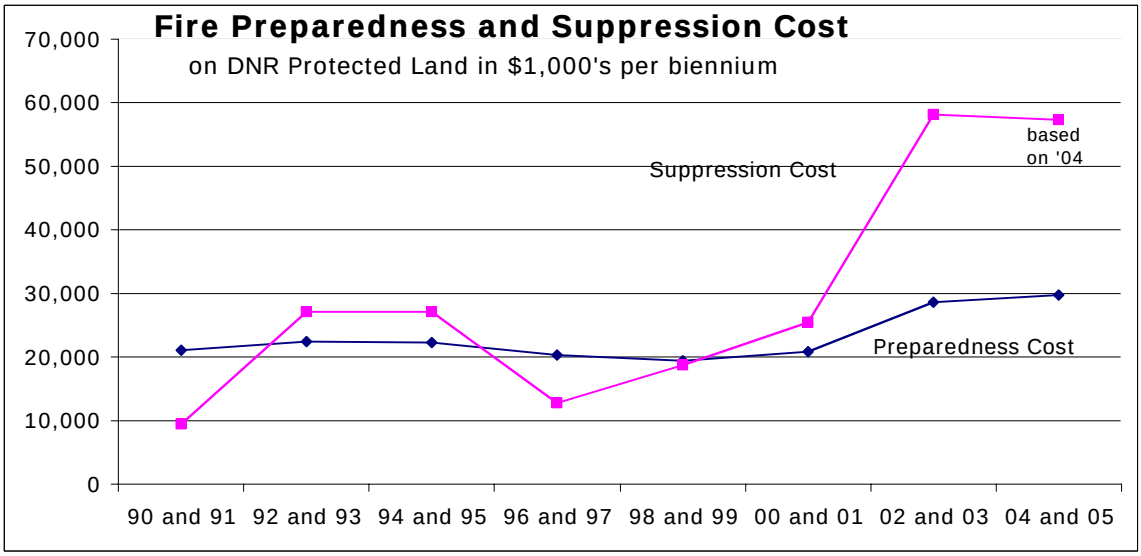
Figure 2 shows that the fire suppression costs per acre burned appear to have more than doubled over the last several years from just under $1,000 per acre to over $2,000.

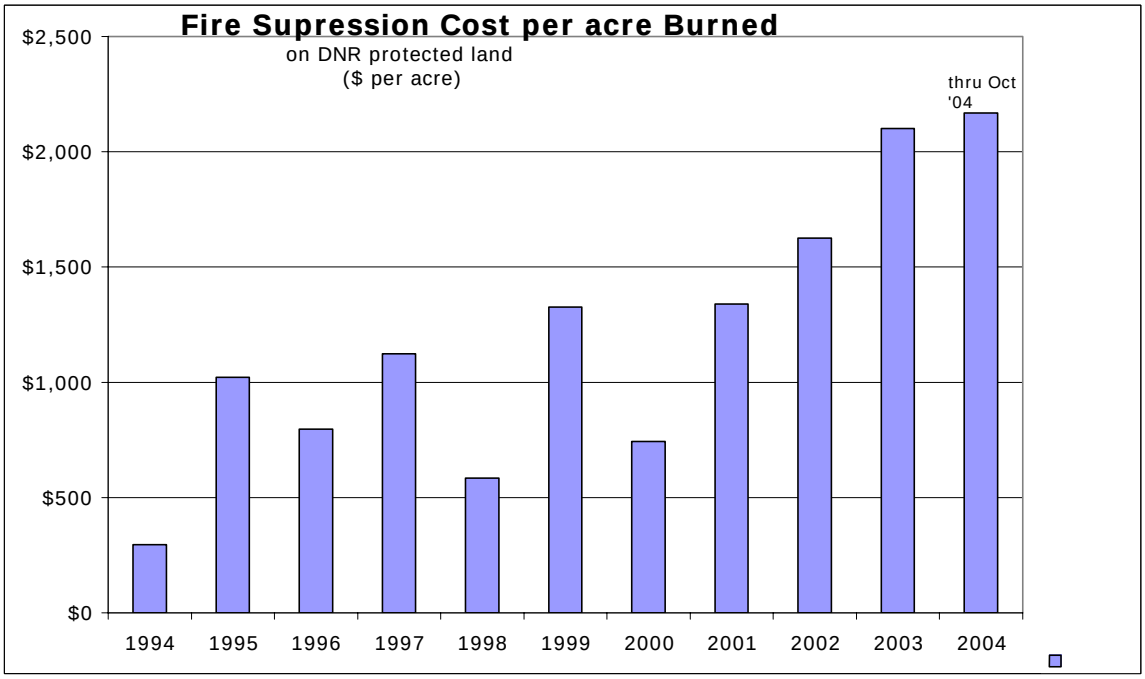
Figure 3 shows the suppression cost for the Okanogan/Wenatchee National Forest as a function of the number of acres burned. While the cost is very large for small tracts it is somewhat lower for the very large tracts. Federal forests tend to have larger blocks of contiguous acres, which are also generally at greater distance from populated areas so the suppression activity is less concentrated.

While there is some funding devoted to prevention activities such as education and technical assistance, the amounts are minimal relative to the cost of preparing to fight fires and trying to suppress them once they start, and these suppression costs do not include the costs associated with the damage created by fires and post-fir restoration activities.

The cost of thinning treatments that would reduce the risk of fires represents an investment that would be expected to lower the cost of fighting fires over time. If other non-market values are considered, the benefits can be expected to exceed the investment in treatment costs very quickly. Even if just the avoidance of future firefighting costs is considered as a payback for the treatment cost there will likely be a positive benefit for treating high risk acres since the probability of preventing a fire by treatment increases year after year i.e. the treated acre would eventually have been in the path of a fire.

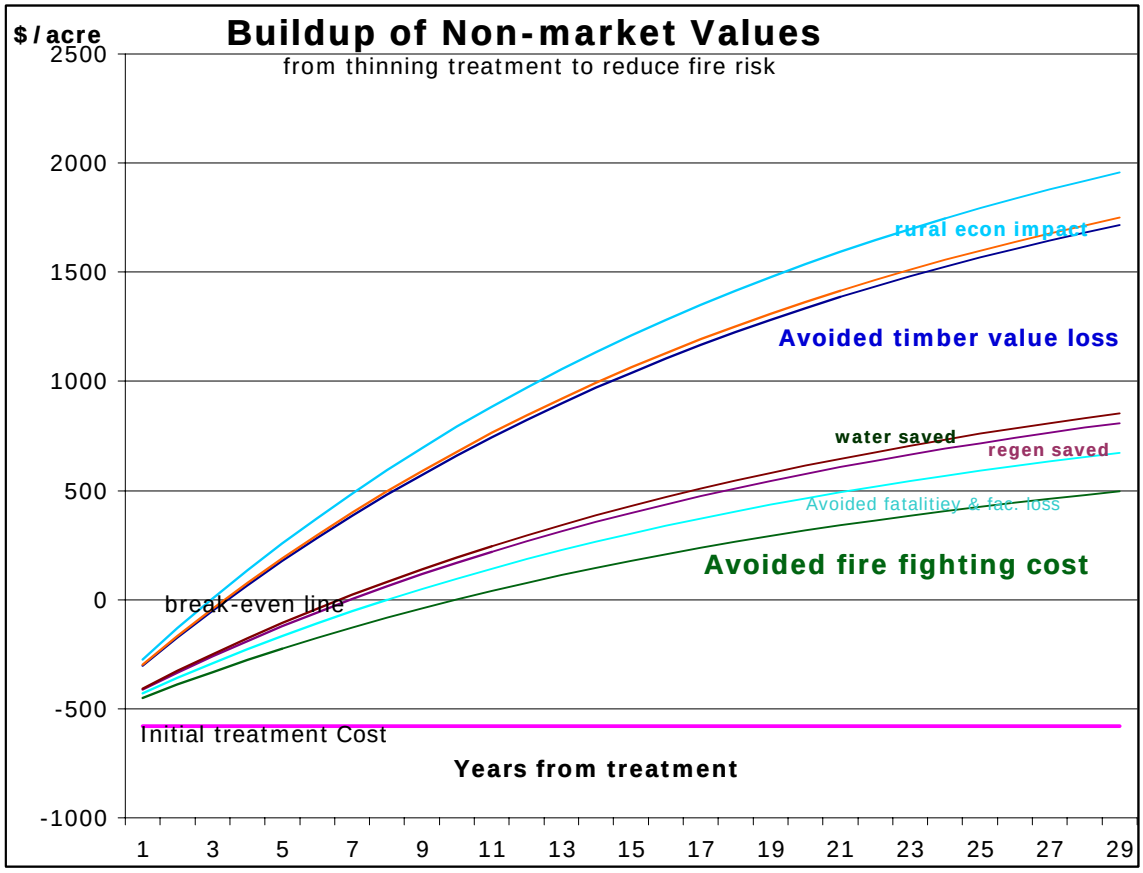
The cash flow or value benefit of avoiding firefighting costs and producing other non-market benefits is shown in Figure 4. The returns from the investment cost of thinning a high fire risk stand turns positive in as little as three to four years when many of the identified non-market benefits are included. When the cost of fighting fires is as high as $2,000 per acre, the avoided costs of fighting fires results in a positive return in about 10 years. When a number of other non-market values are included the breakeven to a positive return is as short as three years. Considering non-market values in the fire treatment decision results in both a quick pay back to society with the magnitude of the payback rising to more than a $1000 per acre in about 10 years.





Okanogan-Wenatchee Fires 1990 – 2002			
Size Class	**Suppression Costs**	**Total Acres Burned**	**Average Cost per Acre**
A (0-.25 acres)	**$1,359,382**	**188**	**$7,231**
B (.26-9.9 acres)	**$4,769,332**	**948**	**$5,031**

C (10-99.9 acres)	**$8,484,542**	**2,662**	**$3,187**
D (100-299.9 acres)	**$6,736,500**	**3,379**	**$1,994**
E (300-2999.9 acres)	**$27,646,681**	**10,530**	**$2,626**
F (3000-4999.9 acres)	**$27,767,956**	**28,419**	**$977**
G (5000+ acres)	**$100,474,867**	**280,450**	**$358**



Appendix 7

Comprehensive Forest Health Strategy: Preliminary Funding Estimate - Summary Table

Appendix 7: Comprehensive Forest Health Strategy: Preliminary Funding Estimate - Summary Table

Purpose	To Whom	$ Amt. Needed	Funding Source	Funding Type
1. Determine Greatest Risk Forest Stands				
Data Acquisition, Synthesis and Presentation Phase I	UW, USFS FIA, USFS PNW, DNR	500,000		one time
Complete Program Capabilities & Conduct First Analysis Phase II	UW, USFS FIA, USFS PNW, DNR	500,000		one time
Develop Density Thresholds	UW, USFS FIA, USFS PNW, DNR	305,000		one time
2. Meet Continuing Need For Field Personnel, Public Outreach, and Education				
Increase Forest Health Program Capacity - 4.5 FTEs	DNR Resource Protection	360,000		annually
Expanded Educational and Technical Assistance Personnel - Restore DNR Stewardship	DNR Resource Protection	480,000		annually
Expanded Educational and Technical Assistance Personnel - 4 New DNR Stewardship FTEs	DNR Resource Protection	280,000		annually
Expanded Educational and Technical Assistance Personnel - Restore WSU Extension - 2 FTEs	WSU Extension	150,000		annually
Expanded Educational and Technical Assistance Personnel - 4 New WSU Extension FTEs	WSU Extension	280,000		annually
WSU and UW Technical Experts to Train the Trainer - 4 New FTEs	WSU & UW	280,000		annually
Public Forest Health Educational Campaign	WSU & UW	50,000		one time
Production and Dissemination of Landowner Educational and Public Outreach Materials	WSU Extension and DNR Res. Prot.	50,000		annually?
Cost Share Grants to Private Landowners - Additional Federal Grants	DNR Resource Protection	200,000+	State General Fund	annually
Develop Density Threshold Management Templates	WSU & UW	200,000		one time
3. Increase the Capacity to Develop and Enforce Forest Health Regulatory Structure				
DNR Forest Health Scientific Advisory Committees for Extreme Health Problem Events - 0.5FTEs	DNR Executive	40,000		annually
Rule Making - Develop Defensible Standards, Process for Determining Conditions and Penalties	DNR Resource Protection	50,000		one time
Tier 3 Implementation - Extreme Forest Health Hazards - Collect replacement from violators when possible	DNR Resource Protection	Variable	Landowner Contingency Fund	recurring
Landowner Plan Certification for Forest Health Hazard Reduction - 1 FTE	DNR Resource Protection	80,000		annually

4. Increase DNR Capacity to Pursue Cooperative Actions with Federal and Tribal Land Managers				
Non-Market Costs Panel	UW	250,000		one time
State Forester Capacity to Coordinate Forest Health Strategy with Federal & Tribal Agencies - 1FTE	DNR Executive	100,000		annually
Litigation Intervention for Projects Supporting the Statewide Healthy Forest Strategy	DNR Executive	Variable		recurring
Encourage Continued and Expanded Forest Health Improvement Activities Statewide	DNR Executive	Variable		recurring
5. Effectiveness Monitoring				
Panel to Advise on Monitoring Forest Health Conditions and Program Activities	DNR Executive	80,000		one time
6. Combat Exotic Insects and Diseases				
Legislative Access for Emergency Funds for Exotic Invasives on State & Private Lands	WSDA and DNR Resource Protection	Variable	Emergency Fund	recurring

Abbreviations:

DNR: Department of Natural Resources

USFS FIA: United States Forest Service, Forest Inventory and Analysis

USFS PNW: United States Forest Service, Pacific Northwest Research Station

UW: University of Washington

WSDA: Washington State Department of Agriculture

WSU: Washington State University

Appendix 8

Legislation Proposal

INTRODUCTION

The Forest Health Strategy Work Group has thoughtfully approached developing a comprehensive Forest Health Act. While the Work Group as a whole is supportive of the approach outlined in the legislation, and its key elements, the Work Group is mindful that it has been developed over a very short time frame and with limited input. We are also aware that elements of the proposed legislation are likely to be quite controversial, and there may be unintended consequences that need to be discovered and considered. Thus, there is a need for public review and discussion before the proposal is considered by the legislature.

The Work Group recommends that workshops be held across the state in CY 2005 to inform landowners and managers, communities of interest, public officials, and the general public of the Work Groups findings and recommendations, take public comment and input into the legislation, and provide the legislature with a proposed bill, along with a summary of the issues identified in the public process. We believe that will better inform the Work Group, the public, and the legislature, and provide a much more robust product.

FUTURE ROLE OF THE WORK GROUP

In 2SSB6144, the legislature asked the work group to recommend whether it should be extended beyond the time that the required report has been submitted. Without specific legislation, the work group would cease to exist on June 30, 2005 (2SSB6144 Section 4(3)(i) and (4)).

The work group has worked diligently to meet the legislature's request for a work product by December 30, 2004. On many occasions, discussion on key issues had to be cut short in order to move on and get the job done. The work group believes the report and recommended legislation is really just the beginning of a process that the work group should continue.

We believe it would be useful for the legislature to continue the work group so it can conduct a series of workshops and public meetings across the state to inform interested parties of the current situation, as we know it, on forest health in Washington, and to explain and take public comment on the draft proposed legislation. In addition, the work group needs to better understand and make recommendations to the legislature on information needs on forest health, and on proposed program elements and budgets. There simply was not enough time to fully explore and grasp these issues. Without a full understanding of the needs and issues, there is some disagreement within the work group about which expenditures or investments are the most strategic, with the greatest long-term benefit to the public and forest landowners.

We recommend the life of the work group be extended through the 2005-2007 biennium and that the legislature appropriate funds to the department to pay the expenses of committee members who are not federal or state employees with access to other sources, and for expenses necessary to conduct the public meetings and hearings discussed above.

DRAFT LEGISLATION RECOMMENDATIONS
FOR FOREST HEALTH STRATEGY WORK GROUP CONSIDERATION
SUBJECT TO CHANGE WITHOUT NOTICE

SECTION 1 - FINDINGS (To be integrated with RCW 76.06.140)

The legislature finds that well managed forests are the first line of defense in preventing destructive fires and outbreaks of native insects and diseases, and that active management of forests, consistent with landowner objectives and the protection of public resources, is the most economical and effective way to address forest health concerns. The legislature also finds that native insects and diseases play important ecological roles when their occurrence does not present a material threat to forest productivity and increase the likelihood of destructive fire. The legislature also finds there is both a private and public interest in preventing and controlling uncharacteristic outbreaks of native and naturalized insects and diseases, and reducing the risk of uncharacteristic loss due to ice storms, wind storms and wildfire. The public interest is in protecting forest productivity on forests managed for commodity production; forest ecosystem vitality; reducing the cost of fire suppression and the resulting public expenditures; protecting, restoring, and enhancing fish and wildlife habitat including the habitat of threatened or endangered species; and protecting drinking water supplies and water quality.

SECTION 2 - APPROACH - Roles and Responsibilities

(a) RCW 76.06.030 is amended to read as follows:

(1) This chapter shall be administered by the department.

(2) The department shall have the lead role in developing, gathering, and disseminating information on forest health conditions, on monitoring conditions and changes over time, in coordinating and entering into agreements with all interested and affected parties, and in developing a comprehensive forest health program to achieve the goals of this act. The department shall coordinate with universities, university extension systems, federal and state agencies, consulting foresters, and landowners and managers in cooperatively monitoring fuel buildups, insect and disease outbreaks, wind storm and ice storm events. The department, universities and university extension services, and federal and state agencies shall provide, to the extent funds are available, education and technical assistance to private, public, and tribal forest landowners on silvicultural and forest management science, techniques, and technology that would assist them in maintaining forest stands in a condition that is resistant to fire, insect and disease outbreaks, and physical damage due to wind or ice storms.

(3) The department is authorized to use such funds as are available to monitor the health of the forest lands of the state, provide forest health information and assistance to landowners and managers, promote integrated forest pest management, conduct and assist in cooperative forest health management programs and projects.

(4) The department is authorized to implement a panel to advise subjects and procedures for monitoring forest health conditions and program activities.

(5) The department is authorized to coordinate, support, and assist in the establishment of cooperative forest health projects to control and contain outbreaks of forest insects or diseases that threaten forest resources on affected areas, or that have the potential to spread onto other forest lands. Priority for assistance authorized under this section must be given to forest lands under commissioner's forest health hazard warning or order areas and areas where forest health decline has resulted in increased risk to public safety from destructive wildfire.

(6) The state and its officers and employees are not liable for damages to a person or their property to the extent that liability is asserted to arise from providing or failing to provide assistance.

(b) RCW 76.06.040 is amended to read as follows:
~~Every owner of timber lands, or his agent, shall make every reasonable effort to control, destroy and eradicate such forest insect pests and forest tree diseases which threaten the existence of any stand of timber or provide for the same to be done on timber lands owned by him or under his control. In the event he fails, neglects, or is unable to accomplish such control, the action may be performed as provided for in this chapter.~~
Landowners are encouraged to maintain their forest lands in a healthy condition in order to meet their individual ownership objectives and to avoid contributing to forest insect or disease outbreaks or increasing the risk of destructive fire.

(c) New section to be added to RCW 76.06:
Tiered system. The legislature directs that forest health issues be addressed by a tiered system. New sections will be added to RCW 76.06 as needed to describe and implement this system.

The first tier is intended to protect forests from fire, insects and disease, and the effects of windstorm, and ice storms. Consistent with landowner objectives and the protection of public resources, forests should be managed in ways that create, restore or maintain healthy forest ecosystems so that fires, insects and diseases occur or exist at non-destructive levels. Information and technical assistance will be available to forest landowners to so they can plan for and implement necessary forest health maintenance and restoration activities.

The second tier is based on voluntary efforts intended to contain, suppress, and otherwise manage the development of forest health hazards. A key feature of this approach is the work of a forest health technical advisory committee, created in conformance with section 3 of this act. Site-specific information, technical assistance, and project coordination services shall be offered as funding permits. While this approach is voluntary, landowners who fail to take action necessary to reduce the hazard created by a disturbance agent, may be subject to increased liability for the spread of fire, as described in RCW 76.04…..

The third tier would require action by landowners when forest insects or diseases represent a significant threat of spreading to multiple forest ownerships, or the potential fuels buildup represents, in the opinion of the department, a significant increase in the difficulty of controlling wildfire, should it occur. It is expected that this would only occur when voluntary efforts do not accomplish the desired results, either because not enough landowners participated in control efforts, or when the forests over a large area are extensively damaged by disturbance agents, and forests are therefore particularly exposed to destructive fire. At this stage, the commissioner of public lands, with the advice of a forest health technical advisory committee, shall issue a forest health hazard order, as described in section 4 of this act.

SECTION 3 – THE FOREST HEALTH TECHNICAL ADVISORY COMMITTEE

New Section to be added to RCW 76.06

Committee Creation and Membership

(1) (a)When in the opinion of the commissioner of public lands forest lands in any area of the state appear to be threatened by a forest health condition of such a nature or extent that action to reduce the threat seems necessary, the commissioner shall appoint a forest health technical advisory committee. The committee shall consist of two scientists chosen for expertise relative to the attendant risk, one specialist in wildfire protection, one specialist in fuels management, one forester with extensive silvicultural experience in the affected forest type, and a chair who shall represent the commissioner, but shall not be a voting member of the committee. The departments of wildlife, ecology, and natural resources shall provide technical assistance to the committee in the areas of fish and wildlife, water quality, and forest practices, but shall not be members of the committee, nor shall they vote. The director of Forest Health Protection of Region 6 of the USDA Forest Service or their named designee shall be invited to be an ex-officio member of the committee. In the event the area affected contains substantial acreage of tribal or federally owned lands, representatives of the affected agencies and tribes shall be invited to participate in the proceedings of the committee.

(b) Meetings of the committee shall be subject to the open public meetings act, RCW….

(c) All costs associated with the committee may be paid from the general fund appropriation made available to the department of natural resources for fire suppression.

(d) The commissioner shall have the authority to disband the committee when the commissioner deems appropriate.

Duties of the Committee

(2) The committee shall evaluate the threat and report on its nature, extent, and location. In their deliberations, the committee shall consider the need for action, and alternate ways of achieving the desired results including the environmental risks associated with the recommended alternatives. They shall also make recommendations on potential approaches to meet the control objectives for forest land ownerships of less than 10 acres, and for forests owned for scientific, study, recreational, or other uses not compatible with active management. The committee shall recommend to the commissioner whether a forest health hazard warning as specified in section 4(b) of this act is warranted. If the commissioner issues a forest health hazard warning, the committee shall monitor the progress of activities to control or mitigate the hazard, as well as the results of the treatment, and shall periodically report its findings to the commissioner. If landowner actions are not sufficient to reduce the risk of spread of the agent, or to reduce the risk of substantially increased wildfire hazard, the committee shall evaluate whether to recommend that the commissioner issue a forest health hazard order as described in section 4(c) of this act.

SECTION 4 - FOREST HEALTH HAZARD WARNINGS AND ORDERS

New Section to be added to RCW 76.06

(a) Prior to issuing any forest health hazard warning or forest health hazard order, the commissioner shall consult with county government officials, forest landowners and forest land managers, consulting foresters, and other interested parties. The purpose of the consultation is to gather information on the threat, opportunities or constraints on control mechanisms, and other information they may provide. The commissioner, or a designee, shall also conduct at least one public hearing in a county within the geographical area being considered.

(b) Forest health hazard warning. A forest health hazard warning shall be issued by use of a commissioner's order. It would be warranted when a forest health advisory committee recommends it, due to existing forest stand conditions and the presence of disturbance agents that are likely to spread to multiple forest ownerships and, if not controlled or contained, cause extensive damage to forests and associated public resources (defined in 76.09 as fish, wildlife, water quality, and capital improvements of the state), and when, due to wind storm or ice storm or other physical damage, there is a likelihood of insect populations building up to damaging levels. The warning shall specify the boundaries of the area affected including federal and tribal lands, the forest stand conditions that would make a parcel subject to the provisions of the warning, and shall make specific recommendations for actions landowners or land managers may take to reduce the risk or hazard.

(c) Forest health hazard order. A forest health hazard order shall be issued by use of a commissioner's order. It would be warranted when a forest health advisory committee recommends it, due to existing forest stand conditions and the presence of disturbance agents that have spread to multiple forest ownerships, and that have caused and are likely to continue to cause extensive damage to forests. It would also be warranted when, due to extensive damage from wind storm, ice storm, or other physical damage, insect populations are likely to build up in sufficient numbers to cause extensive damage to forests in the area, or cause forest fuel conditions to develop that would cause the rapid spread and extreme difficulty of control of a wildfire, should one start. It may be warranted when actions taken under a forest health hazard warning have been insufficient to bring the insect or disease outbreak under control or containment, or insufficient action has been taken. The order shall specify the boundaries of the area affected including federal and tribal lands, the forest stand conditions that would make a parcel subject to the provisions of the order, and shall specify actions landowners or land managers must take to reduce the risk or hazard.

(d) Notice. The commissioner shall cause the owner of a parcel subject to a forest health hazard warning or forest health hazard order to be notified of that fact, of the need to take action, and a description of action that will satisfy the warning or order. The notice shall also inform the landowner of where they can obtain more information or technical assistance on forest health conditions and treatment options. Notice must be given by publication in a newspaper of general circulation in each county within the area covered by the order, by a notice on the department's website, and by mailing, using first class US Mail, to the parcel's address of record in the county auditor's office. Notice may also be hand-delivered to landowners and residents.

(e) Adequacy met by management plan. Landowners or land managers who, before or in response to either a forest health hazard warning or forest health hazard order, develop a forest management plan that, in the opinion of the department, is likely to achieve the desired results will have met the requirements of either a warning or an order as long as the landowner or manager is diligently following the plan. The department shall provide such approval in writing upon the request of the landowner or manager.

(f) Appeal. Landowners or land managers who feel the provisions of a forest health warning or a forest health order have been applied to their parcel or parcels in error may appeal that decision to the person designated by the Commissioner of Public Lands as the State Forester within 30

days of the date the notice was mailed to the address on record or hand delivered, whichever is later, or by requesting a brief adjudication hearing within 30 days of the date notice was mailed to the address on record or hand delivered. A recorder capable of producing a record that will be acceptable evidence in superior court will be present and record the proceedings of the brief adjudication hearing. If the landowner or land manager is not satisfied with the results, the department's decision may be appealed within 14 days of when it is made to the superior court in the county where the parcel is located.

SECTION 5 - ACTIVITIES CONDUCTED UNDER THIS ACT
New Section to be added to RCW 76.06
Forest practices conducted on forest land pursuant to any requirement of this act shall be considered forest practices as defined in RCW 76.09 and thus shall be subject to the forest practices act and rules, and shall be classified by class of forest practice under the rules existing at the time the activity takes place.

SECTION 6 – LANDOWNER SIGNATURE NOT REQUIRED
RCW 76.09.060 (1) shall be amended to state: "The department shall prescribe the form and contents of the notification and application. The forest practices rules shall specify by whom and under what conditions the notification and application shall be signed or otherwise certified as acceptable. Activities conducted by the department or a contractor under the direction of the department under the provisions of RCW 76.04.660, as amended, shall be exempt from the landowner signature requirement on any forest practice application required to be filed."

SECTION 7 - FOREST PRACTICES BOARD
New Section to be added to RCW 76.09….
The forest practices board shall evaluate the eastside riparian rules to determine if adjustments are needed to meet the riparian function intended by the rules and contribute to meeting forest health and wildfire protection goals as stated in Section 1 of this bill. The forest practices board should explore creating a class of emergency forest practices that would enable forest landowners and managers to react to forest disturbances, such as insect and disease outbreaks and wildfire, so as to be able to meet their ownership objectives, or to prevent the spread of the disturbance agent when rapid spread resulting in extensive loss is likely, while providing protection to public resources.

SECTION 8 – DISTURBANCE AGENTS CREATE ADDITIONAL HAZARDS IN COMMISSIONER'S FOREST HEALTH HAZARD WARNING OR FOREST HEALTH HAZARD ORDER AREAS
RCW 76.04.005 is amended to read as follows:
As used in this chapter, the following terms have the meanings indicated unless the context clearly requires otherwise.

(1) "Additional fire hazard" means a condition existing on any land in the state covered wholly or in part by forest debris which is likely to further the spread of fire and thereby endanger life or property, and when broken, dead, or dying trees exist on forest land due to the effects of disturbance agents in sufficient quantity to be likely to further the spread of fire within a Forest Health Hazard Warning Area or Forest Health Hazard Order Area as issued by the

Commissioner of Pubic Lands. The term "additional fire hazard" does not include green trees or snags left standing in upland or riparian areas under the provisions of RCW 76.04.465 or chapter 76.09 RCW.

(2) "Closed season" means the period between April 15 and October 15, unless the department designates different dates because of prevailing fire weather conditions.

(3) "Department" means the department of natural resources, or its authorized representatives, as defined in chapter 43.30 RCW.

(4) "Department protected lands" means all lands subject to the forest protection assessment under RCW 76.04.610 or covered under contract or agreement pursuant to RCW 76.04.135 by the department.

(5) “Disturbance agent” means those agents that damage or kill significant numbers of forest trees, such as insects, diseases, other pests, wind storms, ice storms, and fires.

(6) "Emergency fire costs" means those costs incurred or approved by the department for emergency forest fire suppression, including the employment of personnel, rental of equipment, and purchase of supplies over and above costs regularly budgeted and provided for non-emergency fire expenses for the biennium in which the costs occur.

(7) "Forest debris" includes forest slash, chips, and any other vegetative residue resulting from activities on forest land.

(8) "Forest fire service" includes all wardens, rangers, and other persons employed especially for preventing or fighting forest fires.

(9) "Forest land" means any unimproved lands which have enough trees, standing or down, or flammable material, to constitute in the judgment of the department, a fire menace to life or property. Sagebrush and grass areas east of the summit of the Cascade mountains may be considered forest lands when such areas are adjacent to or intermingled with areas supporting tree growth. Forest land, for protection purposes, does not include structures.

(10) "Forest landowner," "owner of forest land," "landowner," or "owner" means the owner or the person in possession of any public or private forest land.

(11) "Forest material" means forest slash, chips, timber, standing or down, or other vegetation.

(12) "Landowner operation" means every activity, and supporting activities, of a forest landowner and the landowner's agents, employees, or independent contractors or permittees in the management and use of forest land subject to the forest protection assessment under RCW 76.04.610 for the primary benefit of the owner. The term includes, but is not limited to, the growing and harvesting of forest products, the development of transportation systems, the utilization of minerals or other natural resources, and the clearing of land. The term does not

include recreational and/or residential activities not associated with these enumerated activities.

(13) "Participating landowner" means an owner of forest land whose land is subject to the forest protection assessment under RCW 76.04.610.

(14) "Slash" means organic forest debris such as tree tops, limbs, brush, and other dead flammable material remaining on forest land as a result of a landowner operation.

(15) "Slash burning" means the planned and controlled burning of forest debris on forest lands by broadcast burning, underburning, pile burning, or other means, for the purposes of silviculture, hazard abatement, or reduction and prevention or elimination of a fire hazard.

(16) "Suppression" means all activities involved in the containment and control of forest fires, including the patrolling thereof until such fires are extinguished or considered by the department to pose no further threat to life or property.

(17) "Unimproved lands" means those lands that will support grass, brush and tree growth, or other flammable material when such lands are not cleared or cultivated and, in the opinion of the department, are a fire menace to life and property.

SECTION 9 – EXTREME HAZARD RESULTS FROM FAILURE TO COMPLY WITH COMMISSIONER'S FOREST HEALTH HAZARD ORDER

RCW 76.04.660 is amended to read as follows:

(1) The owner of land on which there exists ~~is~~ an additional fire hazard and the person responsible for the existence of an additional fire hazard, when that hazard is the result of a landowner operation or within the areas of a commissioner's forest health hazard warning, shall take reasonable measures to reduce the danger of fire spreading from the area and may abate the hazard by burning or other satisfactory means.

(2) The department shall adopt rules defining areas of extreme fire hazard that the owner and person responsible shall abate. The areas shall include but are not limited to high risk areas such as where life or buildings may be endangered, areas adjacent to public highways, and areas of frequent public use.

(3) The department may adopt rules, after consultation with the forest fire advisory board, defining other conditions of extreme fire hazard with a high potential for fire spreading to lands in other ownerships. The department may prescribe additional measures that shall be taken by the owner and person responsible to isolate or reduce the extreme fire hazard.

(4) An extreme fire hazard shall exist on forest lands on which there is an additional fire hazard caused by disturbance agents, when the landowner has failed to abate, isolate, or reduce the fire hazard, or failed to take such action as required by a forest health hazard order issued by the commissioner of public lands in accordance with section 4 of this act.

(5) The owner or person responsible for the existence of the extreme fire hazard is required to abate, isolate, or reduce the hazard. The duty to abate, isolate, or reduce, and liability under this

chapter, arise upon creation of the extreme fire hazard. Liability shall include but not be limited to all fire suppression expenses incurred by the department, regardless of fire cause.

(6) If the owner or person responsible for the existence of the extreme fire hazard or forest debris subject to RCW 76.04.650 refuses, neglects, or unsuccessfully attempts to abate, isolate, or reduce the same, the department may summarily abate, isolate, or reduce the hazard as required by this chapter and recover twice the actual cost thereof from the owner or person responsible. Landowner contingency forest fire suppression account moneys may be used by the department, when available, for this purpose. Moneys recovered by the department pursuant to this section shall be returned to the landowner contingency forest fire suppression account.

(7) Such costs shall include all salaries and expenses of people and equipment incurred therein, including those of the department. All such costs shall also be a lien upon the land enforceable in the same manner with the same effect as a mechanic's lien.

(8) The summary action may be taken only after ten days' notice in writing has been given to the owner or reputed owner of the land on which the extreme fire hazard or forest debris subject to RCW 76.04.650 exists. The notice shall include a suggested method of abatement and estimated cost thereof. The notice shall be by personal service or by registered or certified mail addressed to the owner or reputed owner at the owner's last known place of residence.

(9) When a landowner or manager has taken adequate action to isolate, abate or reduce and additional or extreme hazard on a parcel under their control, they may request, in writing, the department to inspect their property and to provide them with written notice to that effect. The decision of the department shall be final, but shall be subject to appeal as provided in…….

SECTION 10 - Sections RCW 76.06.050, RCW 76.06.060, RCW 76.06.070, RCW 76.06.080, RCW 76.06.090, and RCW 76.06.110 are repealed.

Appendix 9

Forest Health Strategy Work Group Charter

Purpose:
The Forest Health Strategy Work Group was established in 2004 by the Commissioner of Public Lands in order to meet the requirements of 2SSB 6144. By law, the work group is charged to identify opportunities to improve the forest health conditions in Washington and report its findings to the Legislature by December 30, 2004. Forest Health issues are associated with overcrowded forests that are infested with or susceptible to insects, diseases, wind, ice storms, and fire on all ownerships including federal lands. The work group will also assist the Commissioner of Public Lands in developing a statewide Forest Health plan by December 30, 2004.

Specific Tasks:

1. Determine whether the goals and requirements of chapter 76.06 RCW are being met with regard to the identification, designation, and reduction of significant forest insect and disease threats to public and private forest resources, and whether the provisions of chapter 76.06 RCW are the most effective and appropriate way to address forest health issues;
2. Study what incentives could be used to assist landowners with the costs of creating and maintaining forest health;
3. Identify opportunities and barriers for improved prevention of losses of public and private resources to forest insects, diseases, wind and fire;
4. Assist the commissioner in developing a strategic plan (2SSB6144, Section 3) for increasing forest resistance and resilience to forest insects, diseases, wind, and fire in Washington;
5. Develop funding alternatives for consideration by the legislature;
6. Explore possible opportunities for the state to enter into cooperative agreements with the federal government, or other avenues for the state to provide input on the management of federally owned land in Washington;
7. Develop recommendations for the proper treatment of infested and fire and wind damaged forests on public and private lands within the context of working with interdisciplinary teams under the forest practices act to ensure that forest health is achieved with the protection of fish, wildlife, and other public resources;
8. Analyze the state noxious weed control statutes and procedures (Chapter 17.10 RCW) and the extreme hazard regulation adopted under the forest protection laws, to determine if the policies and procedures of these laws are applicable, or could serve as a model to support improved forest health;
9. Recommend whether the work group should be extended beyond the time that the required report has been submitted.

Designated work group representatives:
By law, the work group is composed of individuals selected by the Commissioner of Public Lands on the basis of their knowledge of forests, forest ecology, or forest health issues. Specific members include:

1. The Commissioner of Public Lands or his designee, who shall serve as chair.
2. A representative of a statewide industrial timber landowner group.
3. A landowner representative from the small forest landowner advisory committee.
4. A representative of a college within a state university that specializes in forestry or natural resources science.
5. A representative of an environmental organization.
6. A representative of a county that has within its borders state-owned forest lands that are known to suffer from the forest health deficiencies enumerated in Section 1 of 2SSB6144.
7. A representative of the Washington Department of Fish and Wildlife.
8. A forest hydrologist, if available.
9. A forest entomologist, if available.
10. A fire ecologist, if available.
11. A representative of the governor, appointed by the governor.
12. A representative of a professional forestry organization.

- Invited members:
    1. A representative of a tribal government located in a region of the state where the forest health issues enumerated in 2SSB6144 section 1 are present.
    2. A representative of the US Forest Service stationed to work primarily in Washington.
    3. A representative of the US Fish and Wildlife Service stationed to work primarily in Washington.

The current work group members:

- Chair, Pat McElroy, Executive Director for Regulatory Programs, DNR
- Steve Tveit, Boise Cascade Corporation
- Maurice Williamson, Small Forest Landowner Advisory Committee
- Bruce Lippke, University of Washington
- Mike Petersen, The Lands Council
- Mike Blankenship, Ferry County
- Barry Moore, Forest Hydrologist
- Robert Gara, Forest Entomologist
- Rich Fonda, Fire Ecologist
- Peter Heide, Society of American Foresters
- Ron Shultz, Washington State
- John St. Pierre, Colville Confederated Tribes
- John Mankowski, Washington Department of Fish and Wildlife
- Rick Brazell, USDA Forest Service

Declined to participate due to budget constraints:

- US Fish and Wildlife Service

Work Group Coordinator: Karen Ripley (360) 902-1691 karen.ripley@wadnr.gov
Support Staff: Vicki Lee (360) 902-1312 vicki.lee@wadnr.gov
DNR, Resource Protection Division, PO Box 47037, Olympia, WA 98504-7037

Appendix 10

Forest Health Strategy Work Group

Ground Rules

Each of the participants to these discussions agree that the work group will:

1. Identify opportunities to improve Forest Health in Washington, report findings to the Legislature by December 30, 2004, and assist the Commissioner of Public Lands in developing a statewide strategic plan for improving Forest Health in Washington by December 30, 2004.

2. Commit time and attention to the work group efforts and meet established deadlines. If you bring materials for the committee, provide at least 40 copies.

3. Treat each other with courtesy and respect.

4. Search for opportunities, solutions and consensus.

5. Listen carefully; ask questions to understand and make statements to explain or educate.

6. Recognize the legitimacy of the goals of others and assume that your own goals will also be respected.

7. Explain why you disagree with an idea, and offer alternatives.

8. Be proactive to get the word out to define the problems and explain what the Forest Health Strategy Work Group is doing to resolve issues.

9. Do not speak for other members or organizations to the news media or non-participants.

10. Keep the organization that you represent, associates, and friends informed of the progress of the discussions. Seek the best advice from colleagues and friends when needed.

11. If consensus cannot be reached on an issue or overall proposal after diligent effort, a vote will be taken. Final acceptance of any proposal resides with the Department of Natural Resources.

Appendix 11

Acknowledgements

The Forest Health Strategy Work Group received a great deal of help and assistance from many individuals and organizations. We wish to indicate our appreciation to:

Back-Up Support for Committee Members:
Karl Denison, US Forest Service
Keith Blatner, Washington State University
Don Hanley, Washington State University
Elaine Oneil, University of Washington
Larry Mason, University of Washington

Forest Health Tour of the Confederated Tribes of the Colville Reservation Lands:
Mike Palmer, Parks and Recreation Manager
Ike Cawston, Fire Management Officer,
Rebecca Peone, Assistant Plant Specialist
Mike Pond, Omak/Nespelem District Officer
Wayne McCraige, Timber Sale Officer
Adam Bearcub, Timber Sale Officer
Terri Covington, Fuels Specialist
Shirley Terbasket, Forest Development Officer
Myra Clark, IRMP Coordinator

Meeting Support and Subject Expertise:
Peter Griessman, Washington State University Cooperative Extension
Sasha McGee, DNR
John Viada, DNR
Don Strand, DNR
Roy Henderson, DNR
Stephen Saunders, DNR
Lynn Catlett, University of Washington
Howard Thronson, DNR
George Shelton, DNR
Mark Gray, DNR
Darrel Johnson, DNR
Gary Berndt, DNR
Mark Kahley, DNR
Steve McGonigle, Washington State Department of Agriculture
Jeremy Fried, US Forest Service, PNW Research Station
Richard Bigley, DNR