



STATE OF WASHINGTON

**GOVERNOR'S SALMON RECOVERY OFFICE**

*Natural Resources Building, PO Box 43135 • Olympia, Washington 98504-3135*

**TO:** Salmon Recovery Funding Board Members

**FROM:** Lloyd Moody, GSRO

**DATE:** October 2008

**SUBJECT: Large Woody Materials**

Background/Context

Since 1999, large woody materials have been used in two of every five SRFB restoration projects and make up more than 21%, or \$22.7 million, of wood related restoration grants (\$107.8 million). Since there are literally thousands of miles of wood deficient streams and rivers across our state, the SRFB will likely be receiving proposals for wood related restoration projects for decades. All salmon recovery plans in the state have identified wood related restoration projects as a key part of their habitat strategy.

Large Wood Questionnaire

Responding to reports of increased cost and lack of availability, RCO and GSRO sent a questionnaire (Dec. 5, 2007) to SRFB project sponsors, lead entities, state and federal agencies and others to understand how significant the restoration project wood issue might be. The 140 responses told us that supply, transport and storage of wood for restoration projects can be and often is a real challenge for many, but not all project sponsors. This affects scope and scale of SRFB projects and the certainty of meeting project objectives.

Large Woody Materials Workshop

With strong support expressed from many associated with SRFB restoration projects, the RCO, WDFW, and GSRO co-sponsored a one-day workshop in Tacoma (May 30, 2008). The primary purpose of the workshop was to encourage an active discussion; listen to concerns & successes; and to brainstorm ways to improve the supply, minimize transport costs, and make storage of wood easier for restoration projects. More than 125 people representing a broad spectrum of interested parties and governmental entities actively participated. Key issues identified by the participants are listed below:

## **Supply**

We need to identify options and preferences for ways to improve the existing large wood supply infrastructure.

- Expand access to and supply of adequately sized wood for projects (e.g., DNR, USFS, USACE, WSDOT, etc.).
- Explore options and roles for creating some kind of brokerage structure to better organize and improve supply (e.g., state, regional or watershed scale)
- Explore options for creating some kind of electronic mechanism that could be used to link those who have wood and those who need it (e.g., “Craig’s List” approach)
- Explore options for improving access to funds to purchase large wood (e.g., a revolving account) to take better advantage of weather related events, timber harvest, development, and other activities that make lower cost wood available before project sponsors typically have access to funding sources for projects.
- Explore options to improve incentives for those who have wood to make it available at low cost to project sponsors (e.g., mitigation credits, mitigation large wood banks, etc.). WSDOT, WDFW, and some local governments have already expressed interest in participating
- Explore possible legislative proposals and regulatory requirement options to improve supply

## **Transport/Storage**

We need to identify options and preferences for ways to minimize large wood related transportation expenses and distance from wood storage sites to project locations.

- Explore ways to support better planning at appropriate scales (e.g., reach, basin) to improve estimates of large wood needs for projects
- Explore options to create incentives to allow large wood storage (e.g., storage best management practices)

## Current Follow-Up

- DNR Pilot – an effort is currently underway in Whatcom, Skagit, and Snohomish Counties to improve wood supply potential by coordinating DNR timber harvest opportunities with restoration/mitigation project needs for 2009.
- Storage BMPs – a draft set of best management practices for the storage of large woody materials is ready for review and comment (see copy provided).
- Lewis County – GSRO continues to work with DNR and agricultural interests to facilitate restoration & mitigation project use of flood wood removed from private property.
- GSRO is starting discussions to consider creating incentives (e.g., some kind of mitigation credit) for WSDOT, local governments, and others who store and/or supply large woody materials for restoration projects.

## Future Follow-Up

SRFB, GSRO & RCO could put task force together to explore one or more solutions to improve supply and simplify access to wood. The following list, generated by workshop participants, offers options to continue progress on this topic:

## **Workshop Ideas & Suggestions to Improve the Supply, Transport and Storage of Large Woody Materials**

Electronic Network - A popular suggestion was to create a Craig's List type website, to match up those who have wood with those who need wood, and might be a valuable tool to improve the supply and availability.

- Provide a list of sources/vendors.
- Need an online clearinghouse of availability (who/how/when/what).
- Need a regional summary of harvest action plan (DNR, USFS, private?)
- The idea of developing a programmatic way to identify experienced contractors who may be available to help with transport of large wood, sometimes on short notice.
- Need a common place to post information on supply possibilities with restoration & mitigation needs.

***Demand Forecast*** – There was strong support to develop some kind of projected large wood needs reporting mechanism (project, watershed, regional, statewide) for both restoration and mitigation activities.

- Look at prism, habitat work schedule, and other possible existing tools to determine potential to provide needed information.
- LEAG has indicated an interest in being very involved in this effort.
- RCO could produce an annual summary of large wood related SRFB projects and wood use.
- State, feds, tribes, local governments need to be engaged so needs for mitigation and restoration efforts become part of the demand forecast.

***Brokerage/Wood Supply Coordination*** – This concept enjoyed strong support from potential suppliers (i.e., DNR) and project sponsors alike.

- Private or public?
- Could be run like some kind of mitigation bank?
- Timing and availability of wood is critical and can often affect market value.
- RFEGs could act as a wood banker/broker through a SRFB grant.
- NGOs might be best as a broker because they can be impartial.
- Whoever the broker/wood coordinator is, they need an independent budget.
- Ideally, we need to link supply with demand in such a way as to eliminate the need for storage.
- We need to look into the model used to deal with dirt.
- SRFB or some other government entity should coordinate wood because it's a statewide issue.
- RFEGs are already set up by the state as 501(c)(3) non-profits and receive funding for setup and operations. That same model could be used to set up a large wood program. The specific mission of this entity would be to acquire, coordinate, and organize large wood for restoration, and maybe mitigation activities.
- We need to be clear in strategic versus tactical needs to help our focus to answer whether a statewide or regional approach is best.
- State could be an information broker (web-based) that would support regional actual wood resource broker/coordinator-manager.

***Storage***

- Developing a set of best management practices to address pest, fire, and liability issues would minimize land owner concerns and make them much more likely to allow storage on their lands.
- Local and regional organizations should oversee the storage side so they can track inventory, rotation, need and distribution.

***Funding*** – funding to purchase wood when it its available may be necessary before it can be resold to project sponsors with SRFB contracts.

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### **Best Management Practices for Storage and Handling of Large Woody Materials**

Interest in the storage, handling, and use of Large Woody Material (LWM) for stream and river restoration and mitigation projects continues to increase, with little sign of diminishing. Programs dedicated to supplying LWM to projects are rare, generally localized, and in some localities, nonexistent. This document addresses questions commonly asked about the actual storage and handling of wood, and the Best Management Practices (BMP's) inherent in yard maintenance.

The following are suggested practices that have been found to be successful at promoting safety and minimizing risk:

#### General Rules:

1. No smoking, flammable liquids, or fires of any kind at the yard.
2. No cutting of wood at the yard. If wood absolutely must be trimmed, it must be done on gravel, and with the permission of yard manager.
3. No climbing on stacked wood.
4. No "Cherry Picking" of inventory.
5. Do not leave slash, debris, and bark lying about.
6. No excessive speeds with equipment or trucks.

#### Storage/Inventory Best Management Practices (BMP)

- I. Security
- II. Physical Layout
- III. Communication
- IV. Inventory Control
- V. Fire and other vectors

#### I. Security

To prevent theft, trespassing, and injury, it is best to make sure the site can be locked, or that entrance by unauthorized individuals can be minimized, particularly from wheeled vehicles. The materials stored at the yard are valuable, and generally sorted for inventory purposes, making the wood an inviting target for thieves.

In addition to discouraging access through locked gates, the yard should be signed to establish that trespassing is not permitted. The wood at the yard is stacked to minimize

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space needs, sometimes as high as twenty feet. The stacks can in no way be considered stable, so unsupervised individuals climbing on or around the stacks are in danger of being crushed by moving materials.

### II. Physical Layout of the Yard

Ideally, a yard should have a clear entrance and exit. Given that this is not always possible, it is important to have an entrance that is large enough to permit two trucks (with tubs) to pass safely. Further, at least two acres is needed to stack and sort approximately 1,000 pieces of wood. The yard should be configured in such a way that there is adequate room to turn trucks around, generally speaking, a thirty foot tub and tractor will require an arc of approximately eighty feet to turn around and be in position for backing. There should be adequate space in the yard to sort materials. Materials can be sorted according to size, species, length, and age, whatever method chosen by the yard manager. Stacks should be far enough apart to allow for removal, sorting of stacks, and restacking. Tops (logs without root wads) should be kept in a separate location, stacked in whatever manner necessary for efficient use.

If possible, the site should be an all-weather surface consisting of gravel, at a minimum. It is best to avoid the accumulation of slash and debris, so such materials should be collected and stored in a separate pile. Partially decayed wood is used in riparian restoration projects, so is valuable for such uses, and can be parceled out as demand materializes.

### III. Communication

1. To avoid accidents, and to keep the yard running smoothly, a basic communication strategy should be created. For example,
2. Driver, equipment operators and managers are all using the same radio frequency
3. Drivers, equipment operators, and managers all agree on radio protocols
4. Some sites are small enough that visibility is not an issue, thus drivers, equipment operators, and managers should all agree on hand signals.
5. Trucks coming into the yard have the right-of-way, similarly, trucks moving uphill have the right-of-way.
6. Before each session of transporting, safety protocols will be discussed and agreed upon.

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### IV. Inventory Control

Wood comprises a very changeable inventory material. Depending on species, size and condition, wood can be kept in inventory from two to several years before decay degrades the value of the wood for restoration/mitigation projects. Thus, it is important to synchronize demand forecasting with inventory control so as not to store wood past its "storage window". The table below provides general storage window guidelines based on species and size class.

Species	Size Class* DBH	Storage Window
Western Hemlock, Douglas Fir	12 – 16"	2 – 3 years
Western Red Cedar, Douglas Fir, Spruce	17 – 24"	3 - 5 years
Western Red Cedar, Douglas Fir, Spruce	25 – 42"	5 – 10 years
Western Red Cedar, Douglas Fir, Spruce	> 27"	10 years

\* Size Class is described as diameter at breast height

Other species, particularly hardwood species, (alder, cottonwood) are often used in restoration projects. Unfortunately, storage windows for such species, (unless they are very large diameter), are significantly shorter, and it is recommended that they be used immediately, if possible, and not stored in a yard with other materials longer than one season.

We only recommend cedar in large sizes because the smaller sizes have a significant problem with "checking", and become very brittle, making handling problematic.

The default length for ease of transport is 32 feet, with larger diameter root wads and length requiring specialized transport mechanisms, such as lo-boy trailers and larger than normal excavators, or logging shovels, for lifting, loading and handling.

### V. Fire and Other Vectors

Fire is a constant consideration, particularly during the summer months, and when a lot of activity occurs in the yard. It is imperative that fire sources be kept from fuels; that is, matches, lighters, cutting torches, chainsaws, or fireworks. Other ignition sources, such as lightning, cannot be controlled, nor anticipated. If possible, a dependable water sources

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and firefighting equipment should be kept on hand, in most cases, this is not possible, so the best precaution is prevention.

Insect and disease vectors, though problematic in fresh, green trees, are generally not a problem. Most disease vectors do not do well in the dry environment of a yard, and even less well when submerged in water. If there is concern for transmission of diseases or insects, it is up to the various managers to decide.

# **Large Woody Materials and Salmon Recovery**

A satellite-style photograph of the Earth from space, showing the Americas and surrounding oceans. The image is centered on the Western Hemisphere, with North America at the top and South America at the bottom. The oceans are a deep blue, and the continents are green and brown. The Earth is set against a black background of space with some stars visible.

**Governor's Salmon Recovery Office**

***Lloyd Moody***

**October 16, 2008**

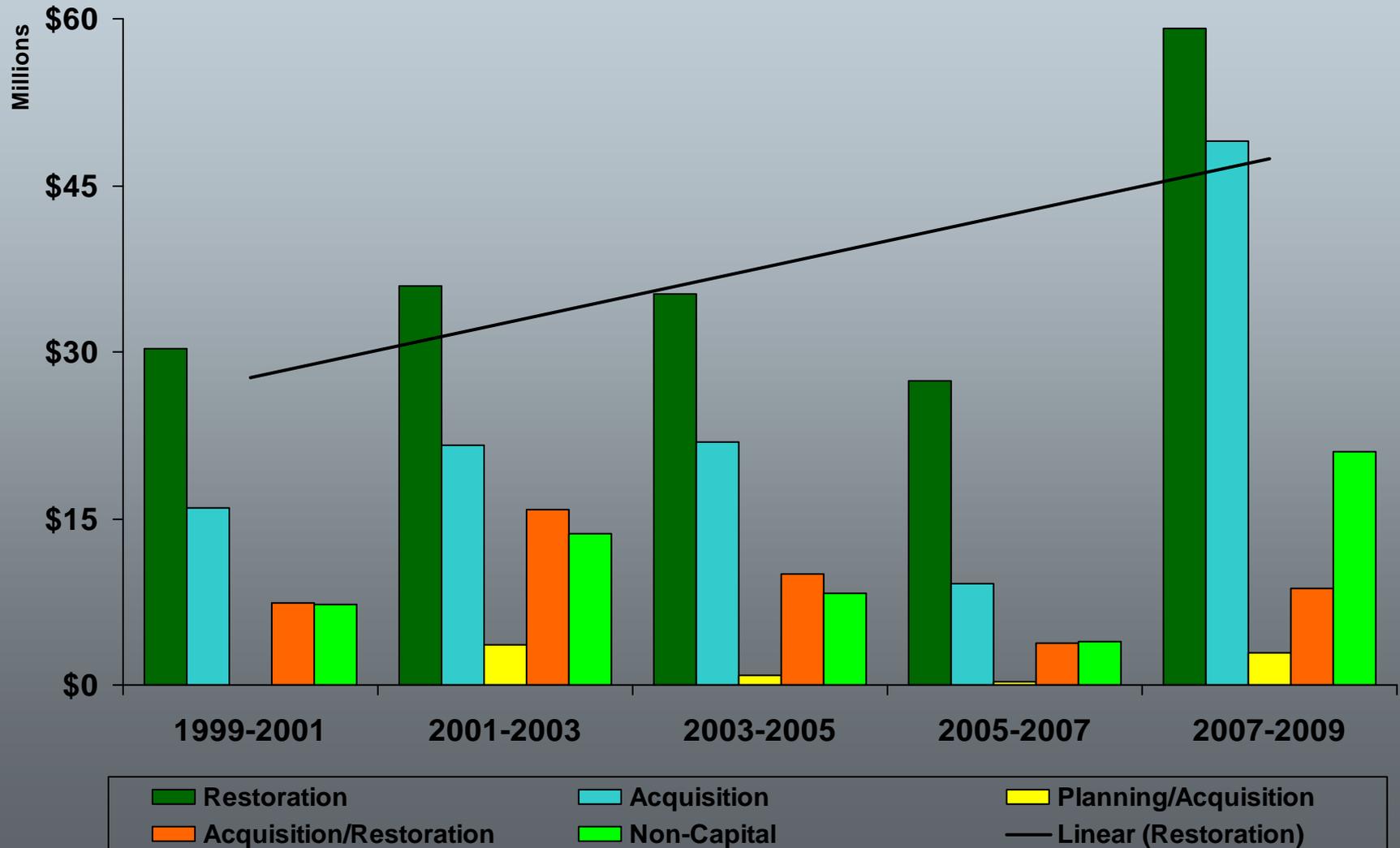


**Half of Washington is covered by forests**

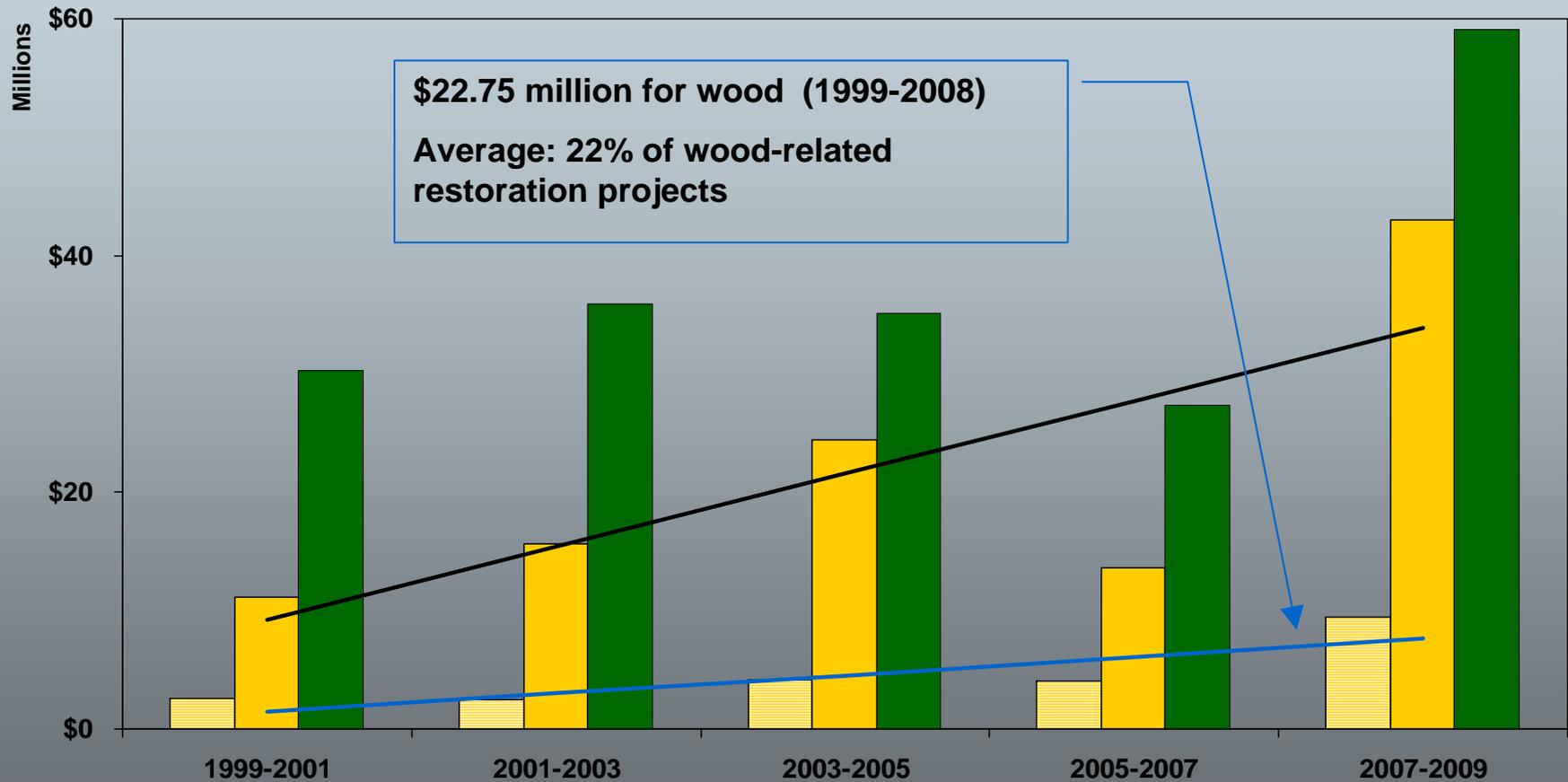
# Wood Knots

- **Wood needs not well organized**
- **Funding limitations**
- **Lack of information**
- **Wood storage concerns**
- **Current wood supply not well connected with restoration needs**

# SRFB Funding for Restoration

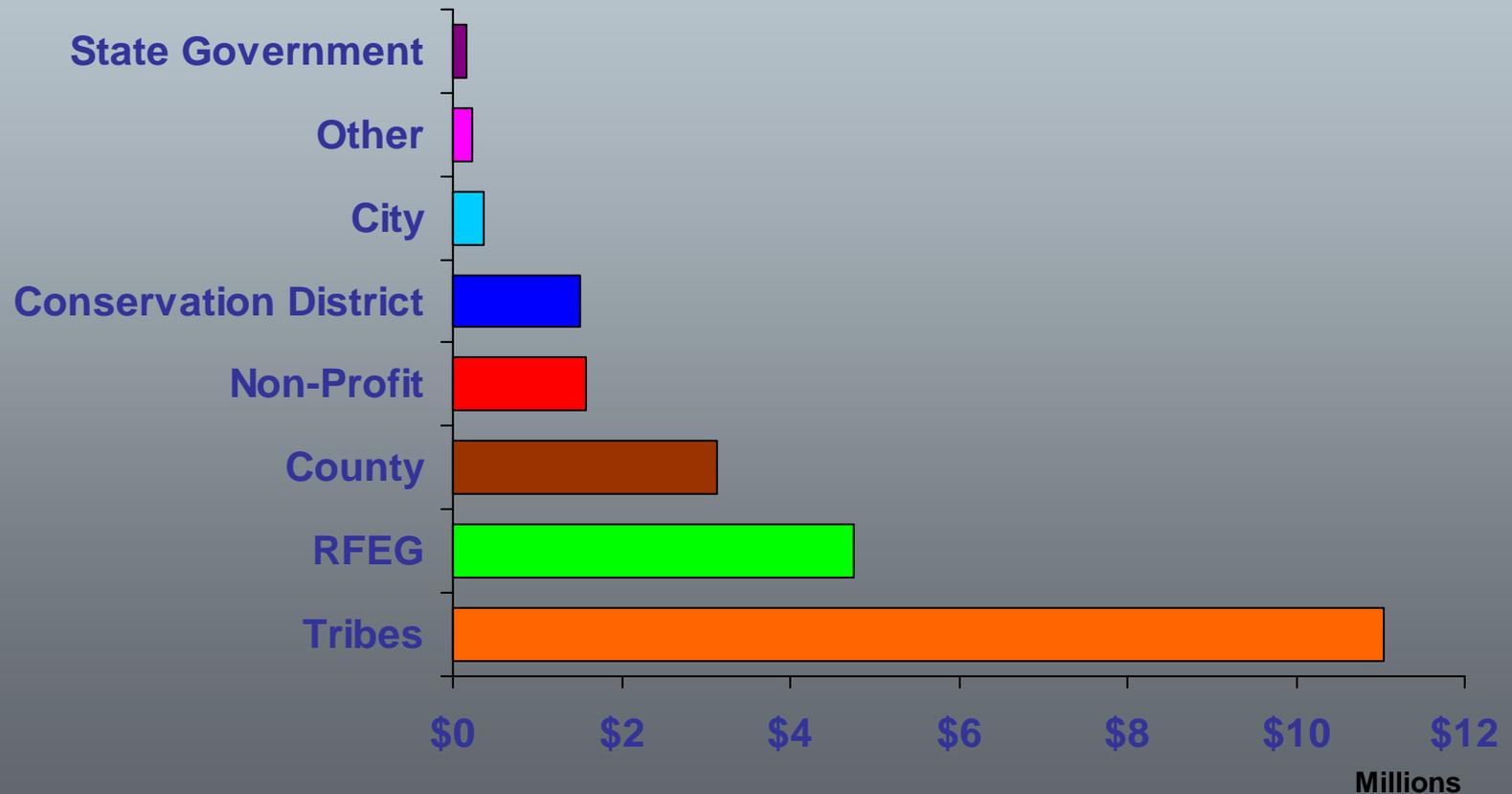


# Wood Related Restoration



# Wood Related SRFB Restoration Grants

Value of Wood Related Restoration Grants by Organization Type 1999-2008







# Lewis County Flood Wood



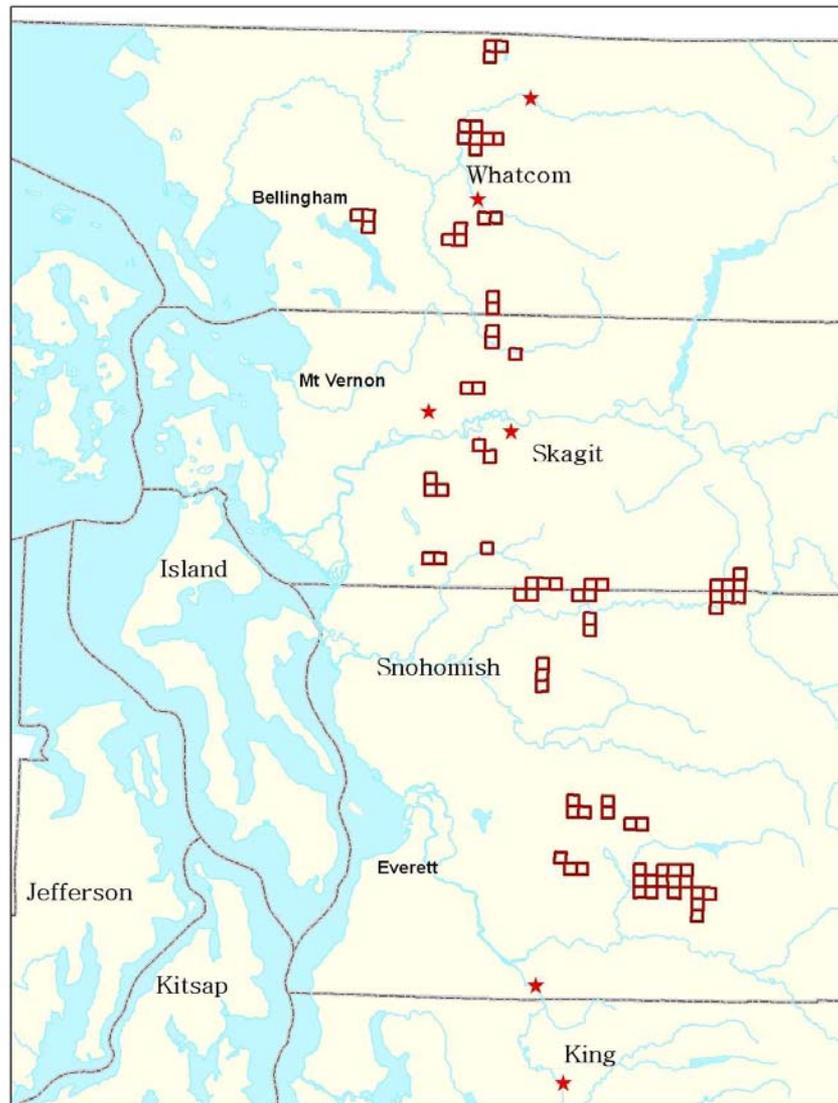
- Remove wood from working Ag lands
- Reuse wood for restoration/mitigation
- Build working relationships
- Learn from the experience

Restoration wood - 150 pieces

Mitigation wood – 36 pieces



# DNR Pilot



# Incentive Approach

**Good Government**

**Good Economics**

**Good Politics**

# Possible Next Steps

- **Electronic network (e.g., DirtFill.com)**
- **Demand forecasting (restoration & mitigation)**
- **Explore brokerage needs/options**
- **Explore funding needs/options**
- **Explore mitigation credit interest/options**

**From:** Jeanette Dorner [jdorner@nwifc.org]  
**Sent:** Wednesday, October 15, 2008 12:58 PM  
**To:** Connolly, Rebecca (RCO)  
**Cc:** Moody, Lloyd (DFW)  
**Subject:** Nisqually letter to SRFB

Dear Salmon Recovery Funding Board,

I understand that Lloyd Moody from the Governor's Salmon Recovery Office is presenting to you about his work to date on increasing the availability of large woody material for salmon habitat restoration projects. We in Nisqually are very grateful to Lloyd for his efforts to date on this and are looking forward to any future results of his work. Increasing the reliable and cost-effective availability of large wood for salmon projects is a key need for implementation of our salmon habitat plan. Our two highest priority freshwater salmon habitat restoration projects in the Nisqually will require large amounts of large wood – in the order of 2400 pieces over the next several years. This is a major expense in our projects – both due to the time it takes for our project managers to locate and secure the wood for the project and in the cost of purchasing and transporting the wood. If Lloyd's efforts are successful in securing reliable sources of wood at a lower cost than what is currently available it could substantially reduce the cost of our projects. In a time of shrinking budgets this would substantially increase our likelihood of actually being able to implement our salmon recovery plan.

We know that large wood projects are making a difference for salmon. We have been monitoring our project installed on the Mashel River, one of our high priority restoration sites, and have found a substantial increase in juvenile salmon usage of the restored area. We are also seeing the river shape responding to the large wood placements by the development around the log jams of large deep pools for juvenile salmon to rest and hide in, and new beds of sorted gravel for adult salmon to lay their eggs in. As we work to replant the banks of these key habitats with the trees that will provide the next pieces of large wood to the system 50 to 100 years from now, it is critical to provide some immediate large wood to the system for the salmon that need it now.

It makes a lot of sense for the Governors Salmon Recovery office to take on this effort so that we have a statewide coordinated approach to locating and providing large wood for salmon projects, rather than having every project manager statewide working on their own to try to make the right contacts and locate an available supply. I urge you to provide whatever support Lloyd needs for his efforts to be successful.

Sincerely,

Jeanette Dorner  
Nisqually Watershed Salmon Recovery Lead Entity Coordinator  
and  
Nisqually Tribe Salmon Recovery Program Manager

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