Reverse of Sequestration and Forest Under Stress (RSFUS)

1. Nature uses fire.

2. Passive forest policy (management by nature) interrupted the natural fire cycle starting decades ago, causing a disturbance.

3. Bugs, such as beetle infestation, kill trees by stress. This condition creates volatile fuel loads, which burn out of control when wildfires strike, either man-made or natural fires. This current trend of wildfires are exacerbated by this disturbance in the natural fire cycle.

4. The sequestered carbon footprint begins to "**reverse**" when beetle infected timber remains in the forest. The same could be said of large burns in the forest. There is a measurable global footprint contributing to green house effects as the sink of sequestration in the Northwest forests ***"are reversed"*** by Passive Forest Management (PFM), or lack of management of our forests terrestrial health.

5. This reverse can be measured by percentages. Such infected forests cannot maintain terrestrial carbon sequestration to their fullest capacity. With each percentage of the trees decline, say 20 percent, there is a corresponding measurable decline of sequestration of carbon dioxide. Secondly, in all probability, an equivalent percentage of stored carbon (as it decays and dies) is released as carbon back into the atmosphere that it once sequestered as a healthy tree. This acerbates climate change threefold, because the end result is that tree will emit 100 percent carbon when it burns during a forest fire. Once more, these massive prolonged fires could possibly cause "cloud albedo forcing" and, should that be the case, hastening climate change even further.

6. Beetle infestation attacks stress mature trees. The forest is in fierce competition during drought years for mature trees to survive without further competition caused by PFM. Forest floor fuel build-up is scaffolding to the canopy during fires, which causes crown fires.

These crown fires can release windborne embers which are carried to fronts of nearby forest canopies, causing spot fires. These in turn generate new crown fires far beyond the containment lines. These fires accelerate from the top of the forest canopy to the floor of the forest "downwards" through ladders, converging with the advancing ground to canopy wildfire creating a formidable advancing wall of fire. The fire's behavior is a hop-scotching of canopy fires at a dangerous rate of speed and heat. Regardless of tree types, winds play a major factor, endangering firefighters and all living creatures sandwiched between the two fires advancement. The beginning of such hop-scotching ember fires in the canopy originates from the forest floor fuel build-up, which is a man-made disturbance in the natural fire cycle.

Forest floor build-up drinks first, and when there is little precipitation (including low snow budget winters), this is detrimental to the mature stands. The adult trees cannot continue to survive in drought years without relief from under story fuel load. In drought years, the mature trees decline in health, due to the stress this added overcrowding causes. The mature trees are then susceptible to disease and insect infestations. When the infected tree dies, the beetle moves on to the next stressed tree.

7. Manageable harvest of beetle infected forest, performed while the timber is still a green stored carbon, is critical to forest health. This viable stored green carbon (living tree) in beetle infected forests must be harvested. Estimated time frame is known to forest managers in the field of the private sector. Beetle infected stands should be harvested on the "trees decline" when the green carbon is still viable to the private sector as a "market ready" value wood product. This is the most cost-effective method to remove infected forests and the carbon foot print is held in storage in the green tree. Then replant. Good forest management

reduces the impact of fire. Lack of forest management ["passive"] causes fires to be more extreme, which requires shifting of funds away from actions that reduce the impact of wildfire to reaction (which costs billions of dollars in lost revenue, property and lives) instead of active management.

8. Dead beetle kill stands are stored carbon (low grade fiber) at this point, but are tinder for lightning strikes or man-made fires, which releases 100 percent carbon into atmosphere. There are vast acres of such "dead stands" in our national forests.

Note: a dead stand of beetle kill could be used as paper mill products for companies such as Amazon, Wal-Mart, etc. to mitigate outsourced cardboard consumption. The current dead beetle stands are stored carbon energy, if not burned. The fiber in the dead wood is broken down (microbial activity) and is sufficient for harvest as paper products or biomass products, but not timber sales.

Nursery stock could be augmented by planting seeds as a faster cost effective means, along with standardized planting of nursery stock for a quicker recovery in reforestation.
Also, as I mentioned in Forest Under Stress (FUS), spacing seedlings twice as far apart could be a means to extend nursery stock.

9. I put forth that the past and continued support and enforcement of the ideological science of PFM creates the reverse of sequestration and unbalanced forest health, which then contributes to browning of the forest in the Northwest and catastrophic fires.

Conclusion-- take into consideration that for hundreds of years, old growth forests thrived until man disturbed the natural fire cycle and created the massive forest floor fuel build-up that concerns us today. Historically, beetle kill and forest floor build-up would have naturally burned, but we are now beyond that stage - since interfering with the natural fire cycle, causing a great disturbance in forest resiliency is without remedy if aggressive forest management is not employed immediately!

Consider the historic tree rings of our old growth forest and the mighty Douglas fir, Sugar pine, Ponderosa pine, and spruce among others; for hundreds of years these trees survived serious droughts, hard winters, etc., without forest floor build-up, scaffolding to their canopies, and competition on the forest floor for water in drought years. These impediments to their survival are currently caused by overcrowding in the forest floor (man-made) and beetle kill left unattended in the forest.

The past three decades of PFM hinders the continued ability of the forest to accumulate and store vast amounts of CO^2 for the coming years as in centuries past. Finally, reforestation of our forests will increase carbon sequestration: young trees are usually not susceptible to beetle kill. They grow vigorously when there is a healthy forest floor.

The answer to reverse the loss of sequestration is immediate action in the form of active forest management and doing so at the same level of cost to acres lost in recent wildfires. This would require forest policy change from PFM to *intervention*.

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