



P.O. Box 1350  
338 West First Street  
Port Angeles  
Washington 98362  
360.457.8527

**Board of Commissioners**  
Connie Beauvais, *President*  
Steven Burke, *Vice President*  
Colleen McAleer, *Secretary*  
**Executive Director**  
Karen Goschen

December 4, 2018

The Honorable Hilary Franz  
Washington Commissioner of Public Lands  
SEPA Center  
PO Box 47015  
Olympia, Washington 98504-7015

**RE: Comments on the RDEIS, Draft Financial Analysis and Losses and Gains Analysis on the Long-Term Conservation Plan for the Marbled Murrelet**

The Port of Port Angeles appreciates the opportunity to provide comments on the Revised Draft Environmental Impact Statement on the Long-Term Conservation Strategy (LTCS) for the Marbled Murrelet, the Draft Financial Analysis (DFA) and the Losses and Gains Report submitted to the Solutions Team formed under SHB 2285.

The Port recognizes the extraordinary effort and commitment of DNR to develop the RDEIS and the accompanying financial analysis. Although these comments bring up a number of questions related to the financial analysis, we also respect that DNR faced a difficult time frame to adhere to the requirements of SHB 2285. Accordingly, we look forward to partnering with DNR to resolve these issues and questions as this process moves forward.

The Port provided extensive comments on the Draft Environmental Impact Statement. Instead of repeating our earlier comments, we will reiterate our deep concerns over the direction of the LTCS and our belief that it fails to carry out the mandate to manage these lands for the benefit of the DNR Trusts.

Fundamentally, our region has learned that decisions to permanently set aside and prohibit management on commercial forest land often does not meet biological expectations. Therefore, great care should be taken before adversely impacting a sustainable economic system when empirical data is lacking to support proposed mitigation through preservation. Ecological forestry, which considers multiple values, conservation and informed management in set-aside areas, should be considered. We also know that the adverse impacts of these decisions are very local, and that statewide economic factors mask the adverse impacts on rural communities. Putting lands into a set-aside category carries long-term consequences; accordingly, our comments focus on how DNR could improve this effort to ensure those local impacts are thoroughly evaluated to result in the most accurate conclusions.

**The Port's Focus on Economic Development and Concerns of Reduced Timber Supply**

The Port of Port Angeles's responsibility under its enabling legislation is to promote economic prosperity for Clallam County in Washington State. Clallam County spans the northern portion of Washington's Olympic Peninsula. The forest products industry continues to play a vital role in the economy of the North Olympic Peninsula, and provided an adequate supply of timber is available, is uniquely poised to sustainably produce renewable energy and material for the 21<sup>st</sup> century. The Port provides shipping, handling, logistical and barge support to serve the industry's needs for sorting and transporting logs throughout Clallam

County, the Olympic Peninsula and across Puget Sound. Additionally, the Port's strategic plan prioritizes the advanced wood products industry as a strategic initiative to increase the overall economic well-being of Clallam County. The Port has made significant progress in this area and was recently awarded a CERB (Community Economic Revitalization Board) planning grant. With water transportation from our deep-water port, these high-value finished products can access global markets.

Past decisions on the management of federal and state lands have reduced the supply of timber on the Olympic Peninsula, with dramatic and long-lasting impacts to our economy and communities. These declines in timber supply are the consequence of decisions to protect species listed under the Endangered Species Act (ESA).

The effect of these decisions has had profound impacts on the predictability and supply of timber to the mills, businesses and communities on the Northern Olympic Peninsula. Our economy has never recovered fully from the economic shocks created by these decisions. We understand first-hand the long-term adverse impacts of decisions to eliminate management options on DNR trust lands.

Accordingly, we have structured our comments to highlight three specific issues or concerns in the RDEIS and accompanying reports. We also offer solutions to remedy these concerns. The following points are discussed in depth in these comments:

- 1. *The RDEIS, Draft Financial Analysis and Losses and Gains Report fail to analyze the potential gains to trust beneficiaries from emergent technologies and markets for advanced wood products.***
- 2. *DNR should assemble a team chosen by trust beneficiaries, to work with DNR to develop the methodology and analysis of the impacts to local governments and every trust beneficiary.***
- 3. *Every area proposed for set aside should be "ground - truthed" by a team of public and private foresters to document habitat values, identify management options, and expectations.***

The results of the ground truthing, identification of management options, analysis of impacts at the local and trust beneficiary level, and potential new market opportunities should be presented to the public for review and comment.

The history of setting aside large swaths of forest land on the Olympic Peninsula has not achieved the biological or economic outcomes predicted at the time of those decisions. We know that new markets, technologies and advanced wood products are emerging that can bring new opportunity to the Olympic Peninsula and Clallam County, and help create a green economy. Accordingly, we urge DNR to consider our recommendations as a prudent and responsible step in the development of the final LTCS.

Most Sincerely,



Karen F. Goschen, Executive Director

Enclosures: Port of Port Angeles's Detailed Comments and Olympus Consulting's report *A Brief Technical Analysis of the DNR's Selected Impacts of the Marbled Murrelet LTCS*



## *Detailed Comments on the RDEIS, Draft Financial Analysis and Losses and Gains Analysis on the Long-Term Conservation Plan for the Marbled Murrelet*

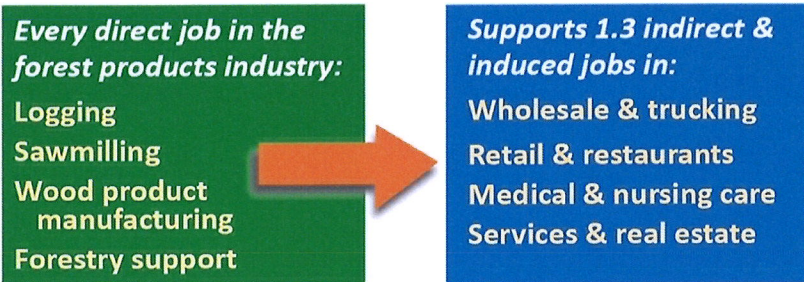
The Port of Port Angeles's responsibility under its enabling legislation is to promote economic prosperity for Clallam County in Washington State. Clallam County spans the northern portion of Washington's Olympic Peninsula. The forest products industry continues to play a vital role in the economy of the North Olympic Peninsula and, provided an adequate supply of timber is available, has wonderful opportunities for growth into the future.

This section provides an overview of the vital role the forest products industry plays in the economic well-being of our community and the concerns that setting aside large swaths of forest land from harvest will adversely impact our community and the emerging advanced wood products industry. It also identifies concerns in the RDEIS and accompanying reports and possible solutions to remedy those concerns.

### **Overview of Forest Products Industry in Clallam County**

In 2017, the Port retained Olympus Consulting to establish baseline statistics on the forest products industry in Clallam County to use in evaluating management options presented by the BNR.<sup>1</sup> In Clallam County, every 20 MMBF that is harvested results in 24 full time jobs in forestry, harvesting and manufacturing. Each of these direct jobs support 0.55 indirect (supply chain) and 0.76 induced (general economy) jobs. Therefore, for every 20 MMBF that is harvested, the indirect and induced jobs created is 31.5 in addition to the 24 direct jobs for a total of 55.5 jobs.

### **Forest Products Jobs in Clallam County**



**Indirect Jobs:** wholesale 21, trucking 16

**Induced Jobs:** retail 94, food/drink 74, medical 44, real estate 38

**Proprietors:**

*For every direct job in logging, there are 0.14 proprietors.*

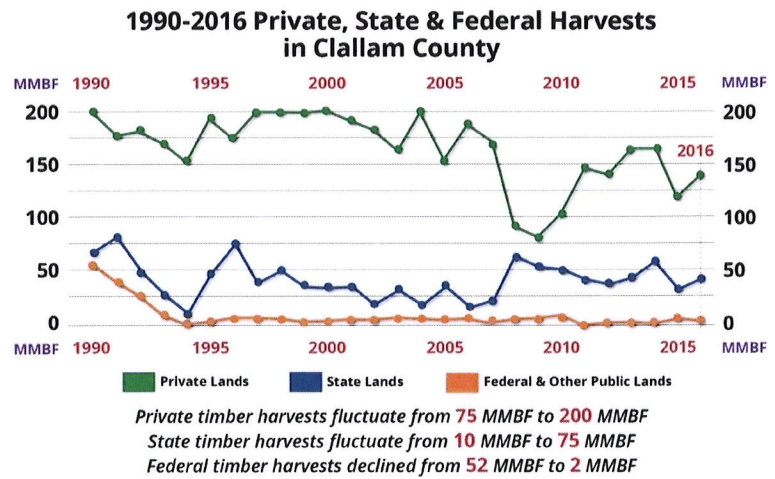
*For every direct job in forestry support, there are 0.12 proprietors.*

The sector currently (2016) contributes 1,446 jobs and \$78 million in income annually to Clallam County.<sup>2</sup> These jobs are among the highest paying jobs in Clallam County. Every 10 of those jobs support 13 indirect and induced jobs in the local economy and provides employment for 2.5 proprietors.<sup>2</sup>

<sup>1</sup> Previously, Olympus conducted comprehensive multi-sectoral economic development analysis for public and private organizations in Clallam County, focusing on expected impacts in terms of employment, income and various tax revenues. Daniel A. Underwood, *Analysis of the Department of Natural Resources' Sustainable Harvest Alternatives: Impacts on Employment, Wages, Business Taxes, and Timber Harvest and Excise Tax Revenues*. Published by the Port of Port Angeles, March 2017. <https://wa-portofportangeles2.civicplus.com/DocumentCenter/View/1143/DNRDEISanalysisfinal?bidId=>

<sup>2</sup> Daniel A. Underwood, *The Port of Port Angeles Log Yard: A Nexus in the Forest Products Industry*. Published by the Port of Port Angeles, October 2018. <https://portofpa.com/DocumentCenter/View/1866/Strategic-Role-of-Log-Yard-10-29-18-V1-Foreword?bidId>

The sector has been weathering a long period of uncertainty related to supply of timber from state and federal lands. In recent years, three mills have closed in Clallam County, in part, due to changing practices on public lands. Over 100 family wage jobs were lost as a result. In addition, Clallam County's only paper production facility, NIPPON Paper, closed with the loss of nearly 200 additional direct family wage jobs. All of these closures were partly due to reduced harvest from DNR lands.<sup>3</sup>



The Port is troubled that the financial analysis presented by DNR fails to incorporate how the forest products industry functions in local markets that will be impacted by the LTCS. For example, in a 2018 study examining the impact of the Port of Port Angeles log handling, sorting and shipping facilities, Olympus Consulting found that in the study year 2016 more than 81 jobs were directly connected to the Port's log handling and sorting facilities, activities which support an additional 100 indirect and induced jobs. Nearly 600 jobs – direct, indirect and induced – in local manufacturing facilities rely on wood movement and handling through the facility.<sup>4</sup>

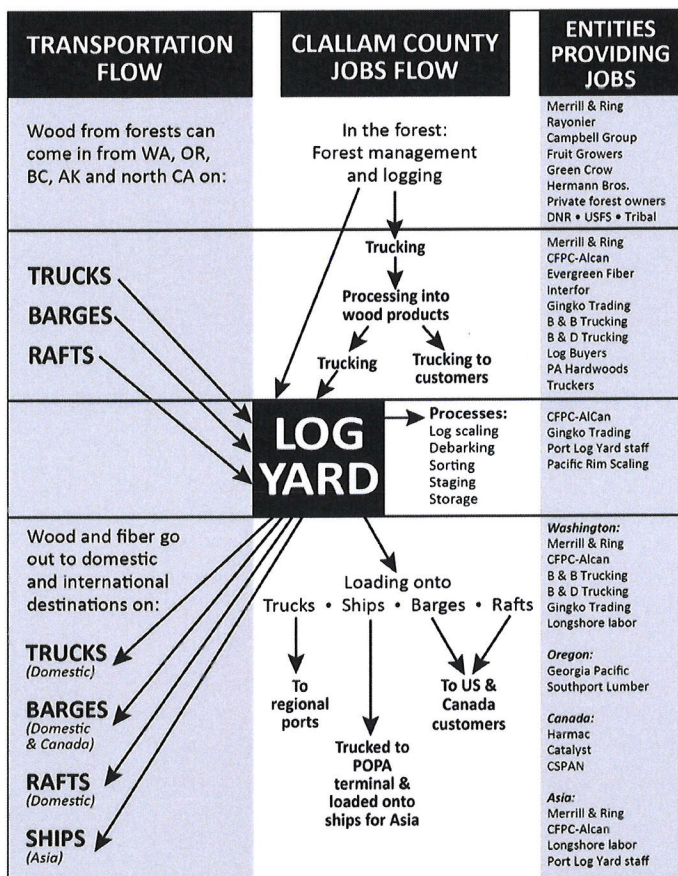


Figure 3 shows the movement of logs, by barge, truck, ship and chips/hog fuel through the log facility to various manufacturers and markets. The Port provided this analysis to DNR when it was nearly complete because it points out the uniqueness of the Clallam County market for wood products.

We don't believe this information is incorporated into the DFA or into the Losses and Gains Analysis. Given the magnitude of the decisions in the LTCS, the Port believes it is imperative that the most current and detailed understanding of local markets be incorporated into the decision process.

Figure 3 – Wood Flow at Port Angeles

<sup>3</sup> Interviews: Randy Johnson, President, Green Crow; Steve Krol, Manager, Interfor; Harold Nordland, Manager, NIPPON.

<sup>4</sup> Daniel A. Underwood, *The Port of Port Angeles Log Yard: A Nexus in the Forest Products Industry*. Published by the Port of Port Angeles, October 2018. <https://portofpa.com/DocumentCenter/View/1866/Strategic-Role-of-Log-Yard-10-29-18-V1-Foreword?bidId>

**1. The RDEIS, Draft Financial Analysis and Losses and Gains Report fail to analyze the potential gains to trust beneficiaries from emergent technologies and markets for advanced wood products.**

The Composite Recycling Technology Center (CRTC) of Port Angeles is pioneering the integration of carbon fiber recycled from aerospace manufacturing into mass timber products. The composite recycling industry was established by a strategic initiative of the Port of Port Angeles. The Port is building on that success with our current efforts in establishing an advanced wood products industry. These two industries have synergies and will create a unique renewable and sustainable market for our community.

The CRTC is partnering with Washington State University to bring new opportunities to the market. European countries and New Zealand have demonstrated the feasibility of “thermally modifying” wood to eliminate the need for wood preservative chemicals used today to protect wood from decay. The result is an environmentally friendly, decay-resistant material made from a renewable resource.



Western hemlock comprises about 47% of the growing stock on state and local lands on the Olympic Peninsula. While at present hemlock is a low-value species, the integration of hemlock, thermal modification and recycled carbon fiber will yield a high-value product with multiple stages of value added that support family wage jobs locally. These products are part of a sustainable economic system that uses renewable resources. Although today the value received by trust beneficiaries for hemlock is low due to its inherent structural features, it can be increased through these emerging technologies.

*Table 1. Volume of growing stock on forest land by species and ownership type (1000 cubic feet)*

Tree species	Forest Service	Other federal	State/local	Private	Total	Share
Pacific silver fir	283,453	1,189,786	187,021	37,965	1,698,225	11.2%
Douglas fir	1,101,139	2,123,192	659,541	693,504	4,577,376	30.3%
W. red cedar	170,,147	673,828	165,015	139,441	1,148,431	7.6%
W. hemlock	1,193,861	3,033,691	1,202,852	665,997	6,096,401	40.3%
Red alder	98,710	20,060	196,637	215,279	1,071,037	3.5%
Other species	123,408	575,006	135,343	237,279	1,071,037	7.1%
<b>Totals</b>	<b>2,970,718</b>	<b>7,615,564</b>	<b>2,546,409</b>	<b>1,990,128</b>	<b>15,122,818</b>	<b>100%</b>
<b>Share</b>	<b>19.6%</b>	<b>50.4%</b>	<b>16.8%</b>	<b>13.2%</b>	<b>100.0%</b>	<b>0.0%</b>

Source: Forest Inventory and Analysis National Program 2015. <http://www.fia.fs.fed.us>

See attached Overview of the Thermally Modified Hemlock and Recycled Carbon Fiber Military Housing Opportunity that our partners are working on.

The CRTC hosted a tour for legislators and participants during the May 2018 Rural Economic Development meetings in Port Angeles. The work to integrate carbon fiber into mass timber products was discussed at that event.

The Port of Port Angeles would welcome the opportunity to partner with the DNR to analyze the potential benefit to trust beneficiaries of the application of these emergent technologies to timber values from state lands. Together we can work towards building a sustainable future for families on the North Olympic Peninsula and around the world.

**2. DNR should assemble a team chosen by trust beneficiaries to work with DNR to develop the methodology and analysis of the impacts to local governments and every trust beneficiary.**

a. The RDEIS, Draft Financial Analysis and Losses and Gains report on Selected Impacts of the Marbled Murrelet LTCS do not provide thorough and accurate information from which Trust Beneficiaries can assess the expected economic impacts.

In our review of the documents, it appears that each analysis applied different multipliers, factors and assumptions, making it impossible for trust beneficiaries or the public to understand the possible impact on beneficiaries, employment and income, business taxes, and future economic development opportunities. For example, the RDEIS analyzes changes in employment and harvest volumes in the forest products industry and reaches the questionable conclusion that employment is falling *because of technological change*. That conclusion is based upon Mason and Lippke (2007).<sup>5</sup> That study used data from 1998 to 2004 to construct employment multipliers and their change over time. DNR used BLS QCEW data from 2005 to 2017 to extend the timeline of analysis to 2017.

If one follows this logic, then current (2017) employment per MMBF would have decreased. The RDEIS Summary Figure 3.11.1<sup>6</sup>, however, shows no clear downward trend. Rather, it oscillates around a near constant trend line. The RDEIS does not present its estimated trend line with corresponding test statistics; an assertion is not a statistical test. In a visual sense, it appears such a line of best fit could have a slope near zero and a very small R-squared with a formal test result of insignificance. The RDEIS did not explore other explanations for that possible trend. The trend between employment and harvest multipliers cited above ignored the adverse employment impacts caused by closure of local mills due partly to limited DNR harvests.

While technology does change employment factors over time, a lower harvest will still mean less employment, even though the total jobs lost per MMBF would be less because of that technological change. At the same time, technological change also creates new opportunities. As we discussed earlier, the RDEIS, DFA and Losses and Gains analysis do not evaluate the consequences of reduced harvests on the ability to bring emergent technologies and new opportunities to scale (e.g. thermally modified hemlock, carbon fiber and mass timber). The analysis fails to capture any new value that the trusts could accrue as a result of bringing new value to a lower value species such as Western hemlock.

b. By using statewide factors, the analysis of employment and income fails to adequately portray the impact on family wage jobs for local families in an economically distressed county.<sup>7</sup>

---

<sup>5</sup> C. Larry Mason and Bruce R. Lippke, *Jobs, Revenues, and Taxes from Timber Harvest; An Examination of the Forest Industry Contribution to the Washington State Economy*. Rural Technology Initiative, September 2007.

<sup>6</sup> *Revised Draft Environmental Impact Statement Long-Term Conservation Strategy for the Marbled Murrelet*, Washington State Department of Natural Resources.

<sup>7</sup> *The Port of Port Angeles Log Yard: A Nexus in the Forest Products Industry*. Published by the Port of Port Angeles, October 2018. <https://portofpa.com/DocumentCenter/View/1866/Strategic-Role-of-Log-Yard-10-29-18-V1-Foreword?bidId>; *The Economic Impacts of Private Timber Harvests: An Exploratory Investigation of Harvests, Exports, Employment, Income and Tax Remittances*. With Jason Cross. Published by the Port of Port Angeles, November 2017.

<https://portofpa.com/DocumentCenter/View/1646/Economics-Impacts-of-Private-Harvests?bidId>; *Analysis of the Wild Olympics Wilderness and Wild and Scenic Rivers Acts of 2012: Economic Impacts and Opportunities*, with Jason Cross. Published by the Port of Port Angeles, November 2012. <https://portofpa.com/DocumentCenter/View/20/Analysis-of-the-Wild-Olympics?bidId>

In the “Selected Impacts of the Marbled Murrelet LTC” Losses and Gains analysis, DNR uses multipliers that do not reflect current employment by harvest volume in Clallam County. The errors are 10.5 percent in logging and 23.1 percent in wood product manufacturing.<sup>8</sup>

Additionally, the economic impacts in the RDEIS, DFA and the Losses and Gains analysis ignore impacts of proprietors. There is significant proprietor employment and income in Logging, at 0.14 proprietors per 1 Logging FTE, and 0.12 proprietors per 1 FTE in Forest Preparation.<sup>9</sup>

Economic development in manufacturing that optimizes local resources is essential to the economic future of Clallam County. Renewable energy and materials harvested from DNR-managed lands can play a critical role in the development of green industries that create substitutes for CO<sup>2</sup> intensive concrete and steel used in construction and bio-generation of electricity.<sup>10</sup>

Unfortunately, the economic impact indicators presented in the RDEIS obscure the lost opportunities and adverse impacts described above. While it is true that 241 people were employed in wood product manufacturing in 2017, the analysis fails to point out that there were 409 additional jobs and 200 in Paper Manufacturing in 2014.<sup>11</sup> About 60 percent of those family wage jobs were lost in 3 years, an outcome partly attributable to DNR harvesting practices.

c. The socio-economic data presented in the RDEIS is misleading.

The RDEIS Table 3.11.3<sup>12</sup> indicates median household income has increased 5% to \$46,000. This metric is used to support the assertion that Clallam County is “resilient,” that is, doing well economically. Such an assertion belies direct knowledge of historic and current economic well-being in the County.

According to the WA Employment Security Department, the median household income in Clallam County in 2016 was \$48,000, which approximates a family wage income of \$47,844. However, these two comparative metrics are misleading and do not capture conditions for working families. QCEW data indicates that the mean working income of all covered employees was \$37,510. In 1992, the average working income was a living wage (*see the Overview of Economic Resiliency in Clallam County and The Trend of Economic Vitality*). Since then, the annual gap has grown, so that in 2016 a family of four with two adults, one working, has an income of \$10,334 short of a living income, or 22 percent less. For people working for a living, the median wage is \$18.90, the mean \$23.31. What this illustrates is that people who work for a living are, on average, living on an income below the median and below a living family wage.

This raises the question of how can the median household income be growing? There are two reasons. The first is that there are two working adults, some working multiple jobs, in determining household income. Second, and fundamental to understanding the dire circumstances that working people confront, is the increasing polarization in the distribution of income in the County. The mean household income is \$91,500! If income was equally distributed, all households would be in the upper 20 percent of the US population. But it is not, and they are not. Half are below \$48,000, and those who work have an income that is 40 percent of the

---

<sup>8</sup> Daniel A. Underwood, *A Brief Technical Analysis of the DNR’s Selected Impacts of the Marbled Murrelet LTCS*. Report completed for the Port of Port Angeles, November 2018.

<sup>9</sup> *The Port of Port Angeles Log Yard: A Nexus in the Forest Products Industry*. Published by the Port of Port Angeles, October 2018. <https://portofpa.com/DocumentCenter/View/1866/Strategic-Role-of-Log-Yard-10-29-18-V1-Foreword?bidId>

<sup>10</sup> Daniel A. Underwood, *Economic Impacts of the Composite Recycling Technology Center – A Brief Technical Report*. Published by the Port of Port Angeles, March 2015. <https://portofpa.com/DocumentCenter/View/466/Economic-Impact-Technical-Report---Olympus-Consulting?bidId>

<sup>11</sup> <https://esd.wa.gov/labormarketinfo/covered-employment>

<sup>12</sup> *Revised Draft Environmental Impact Statement Long-Term Conservation Strategy for the Marbled Murrelet*, Washington State Department of Natural Resources.

mean household income. What we see in Clallam County is a small group of very wealthy households. The majority struggle to get by. This is the reason why the Port of Port Angeles works strategically to stimulate economic development in sectors that pay living wages instead of the recreation, tourism and service sectors that pay less than a living wage. For example, the forest products industry pays about \$60,000/year, or four times more than a job in recreation.

*See attached Overview on Economic Resiliency in Clallam County for more information.*

d. The RDEIS, DFA and Losses and Gains analysis add confusion over arrearage.

DNR has not met its harvest targets in Clallam County over the past decade, and failure to complete calculations for the 2015-2024 sustainable harvest has created a diminished flow of sustainably harvested timber that can support local employment and income, revenue to beneficiaries including junior taxing districts, and investments to develop a multi-stage value-added green industry in Clallam County. In the last three years, the closure of three local sawmills and NIPPON Paper was at least partly due to unpredictable and reduced harvests from DNR lands.<sup>13</sup> Approximately 300 direct jobs were lost as a result.<sup>14</sup>

In the summer of 2017, DNR staff indicated that arrearage acres could be separate from sustainable harvest units, or they could be lumped together. Final yields would be approximately the same using either approach. Thus, in Table 7 of the RDFA, we see essentially no difference in NPV across Alternatives.

However, on page 25, Arrearage, the RDEIS states “...areas that were unavailable for harvest during the fiscal year 2005 through 2014 planning decade (for example, areas transferred out of trust status and areas where DNR restricted harvest to avoid foreclosing future options for murrelet conservation) *continue to be unavailable for harvest during the 2015-2024 planning decade. For that reason, the model must make up the arrearage by bringing harvest forward from decade 2. That, in turn, reduces harvest volumes in decade 2.*” (emphasis ours)

This doesn’t make sense --- how can volume slated for harvest, but not harvested, now count “against” decade 2 volumes? Accordingly, we urge DNR to assemble a team, chosen by trust beneficiaries, to work with DNR to develop the methodology and analysis of the impacts to local governments and every trust beneficiary to remedy the deficiencies identified earlier.

***3. Every area proposed for set aside should be “ground - truthed” by a team of public and private foresters to document habitat values, identify management options, and expectations.***

a. The long-term consequences of a decision to “set aside” DNR trust lands, must take into consideration each and every alternative option for management.

We have learned the hard way about the long-term environmental consequences of eliminating management on National Forest lands in the region: massive wildfires, declining forest health, wind throw and lost economic opportunities. Yet the biological benefits that were expected have failed to materialize.

---

<sup>13</sup> Interviews with NIPPON Paper indicated margins were tight due to limited availability of pulp wood, a circumstance also linked to this issue. NIPPON Paper has hence closed down.

<sup>14</sup> *Wilderness Declarations, Wild and Scenic River Designations, and Additions to Olympic National Park: Evaluating the Cumulative Economic Impacts on Clallam and Jefferson Counties*, with Jason Cross. Completed for the Port of Port Angeles, September 2011.



Given this history, it makes sense that, before adding more lands in a “set aside” condition, that DNR assemble a team to evaluate, on the ground, each area of interest. The team should include public and private experts from the area and be charged with developing and evaluating management options within these areas.

**b. Ground truthing is necessary to reconcile inconsistencies between the DNR Losses and Gains analysis and the RDEIS.**

The DEIS, RDEIS, DFA and revised DFA provide limited information about location and volume of harvests, making comparative analysis between Alternatives difficult.

The following table, which was provided to DNR in the Port’s comments on the DEIS, shows the impact of the options presented in the DEIS on Clallam County’s economy. Alternative 2’, which was a modified version of Alternative B,<sup>15</sup> was shown to provide the greatest benefits to Clallam County, with a total value of \$57,079,983 (2016 \$), \$60,758,397 (current \$).

*Total product<sup>a</sup> of preferred alternative and relative cost of competing alternatives, by category.*

Alternative	Total Wages <sup>b</sup>	Total Business <sup>c</sup>	Total timber <sup>d</sup>	Total
2’	\$16,715,319	\$1,656,676	\$38,707,9892	\$57,079,983
2	\$-65,553	\$-6,395	\$-322,858	\$-394,876
3	\$-4,683,660	\$-464,017	\$-7,146,505	\$-11,899,306
4	\$-5,129,527	\$-508,932	\$-8,055,654	\$-13,299,236
5	\$-6,897,972	\$-683,303	\$-10,394,877	\$-17,581,276
1	\$-12,636,687	\$-1,252,304	\$-18,840,790	\$-32,334,905

a. Present value of 10-year cash flow discounted at DNR’s rate of 0.02.

b. Annual direct, indirect and induced wages in Clallam county projected by IMPLAN.

c. Local and state business taxes projected by IMPLAN to be associated with direct, indirect and induced employment and wages.

d. Includes timber harvest revenues from Clallam County FBTPs and excise taxes from all (public + private) timber harvesters in county.

The DNR Losses and Gains study, *Selected Impacts of the Marbled Murrelet LTC*, states that 5.12 MMBF of additional harvest will be available to Clallam County under the preferred Alternative H. That projection is inconsistent with the RDEIS table 4.11.4 which states harvests will increase by 1 percent in Clallam County, relative to 9 percent under Alternative B. Alternative B increases the harvest by 11 MMBF. If Alternative H increases the harvest by 1 percent, that translates into approximately 1 MMBF annually, not 5.12 MMBF.

Additionally, the reports show that harvests vary by 7.3% under Alternative B across arrearage and thinning scenarios; the variation for 10-decade NPV is 0.8%. If harvests vary, so too should NPV across alternatives by approximately the same percent. There is insufficient information to explain this inconsistency – moreover, a similar variation exists for OESF in DFA tables D3 and D4, and Clallam Trust Lands in DFA tables D7 and D8<sup>16</sup>.

The above inconsistencies are illustrative, not exhaustive, of the challenge to assess the economic impacts of Alternatives in the RDEIS.

**c. Ground truthing is necessary to reconcile how volume from riparian thinnings will be included in the long-term program.**

<sup>15</sup> *Analysis of the Department of Natural Resources’ Sustainable Harvest Alternatives: Impacts on Employment, Wages, Business Taxes, and Timber Harvest and Excise Tax Revenues*, Daniel A. Underwood and Jason Cross. Published by the Port of Port Angeles, March 2017. <https://portofpa.com/DocumentCenter/View/1143/DNRDEISanalysisfinal?bidId>

<sup>16</sup> *Draft Financial Analysis of Alternatives for the Establishment of Sustainable Harvest Level for Forested State Trust Lands in Western Washington*, Washington State Department of Natural Resources.

Page 5 of the RDEIS states “...the preferred alternative does not count riparian thinning in the forest estate model towards the projections of the sustainable harvest level. During implementation, riparian thinning can occur consistent with the 1997 HCP. *Volume thinning in riparian areas will count towards implementation of the sustainable harvest level.*” (emphasis ours)

Page 28 states, “During implementation, thinning in riparian areas is expected to continue at a level consistent with recent practice under the Riparian Forest Restoration Strategy and the OESF HCP Unit Forest Land Plan. *Volume from these activities will be counted towards attainment of the sustainable harvest level.*” (emphasis ours)

Again, this doesn’t make sense: riparian volume will not be counted towards target volumes, but will be counted against achievement of goals?

The Port believes the confusion related to harvest levels, what lands are included, what levels of harvest can be modeled, and how riparian areas are modeled can be worked out with local experts and DNR.

### ***Concluding Remarks***

The Port of Port Angeles is urging DNR to assemble teams of local experts to assist in:

1. Evaluating potential “new” values to the trusts from emerging technologies and markets;
2. Developing economic and social analysis that reflect the markets and economies that reflect the localities that will be impacted by the LTCS; and
3. “Ground-truthing” proposed murrelet habitat areas and analyzing management options within those areas.

The history of setting aside large swaths of forest land on the Olympic Peninsula has not achieved the biological or economic outcomes predicted at the time of those decisions. We know that new markets, technologies and advanced wood products are emerging that can bring new opportunity to the Olympic Peninsula and Clallam County, and help create a green economy. Accordingly, we urge DNR to consider our recommendations as a prudent, and responsible step in the development of the final LTCS.

## ***Overview of Thermally Modified Hemlock and Recycled Carbon Fiber Military Housing Opportunity***

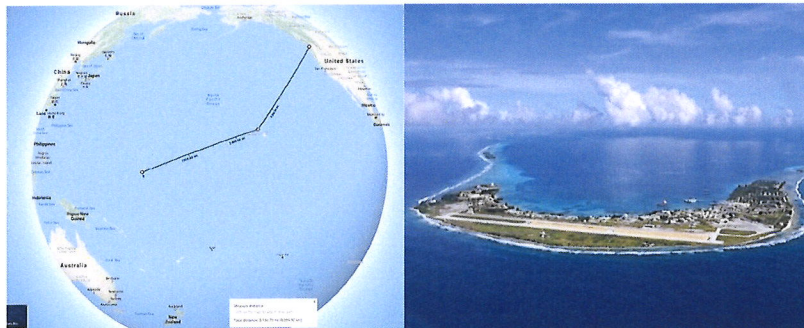
The Department of Defense is seeking a housing solution for military bases in tropical locations that can be both decay resistant, and hurricane proof. Additionally, due to labor shortages in many of these locations, the housing solution must be simple to erect.

The CRTC and Washington State University have partnered to develop a potential solution for the Department of Defense by integrating recycled carbon fiber into smaller scale, mass timber panels of thermal modified hemlock. The concept can achieve the fundamental housing structure that meets the Department of Defense criteria.

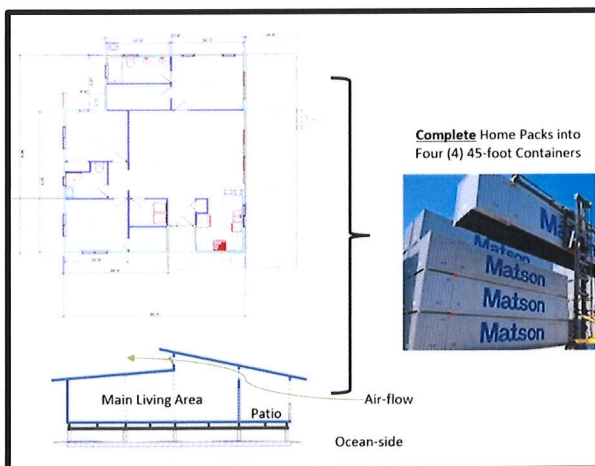
On November 15, 2018, the Community Economic Revitalization Board approved a \$67,000 feasibility study of bringing together the technologies of thermal modification of Western Hemlock, integration with recycled carbon fiber and small-scale mass timber to create a new product and housing concept.

The entry market is military housing applications at bases in tropical locations that face rapid rates of decay (with traditional building materials) and hurricane force winds. The initial market is for up to 400 homes on the Kwajalein Atoll.

### **Kwajalein Atoll**



The housing concept includes home packages that fit into four, 45' containers for assembly at the base.



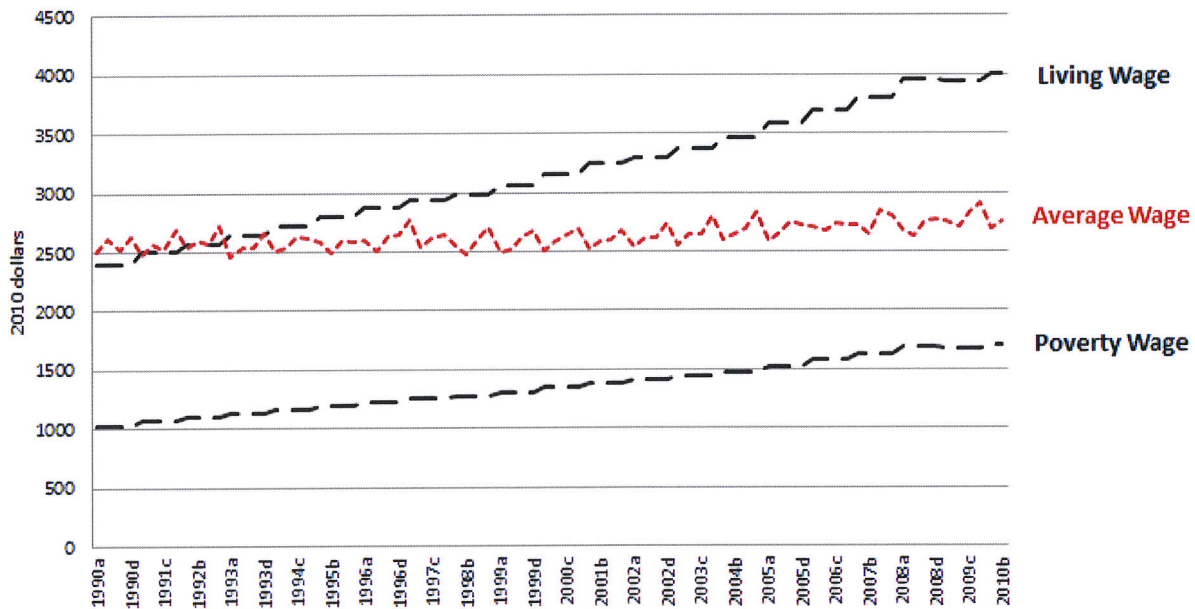
**3-BEDROOM 2-BATH COMMON DESIGN FOR KWAJALEIN  
1,440 S.F. PLUS 480 S.F. DECK**

When proven, the integrated system of thermal modification, integration with carbon fiber, small scale mass timber production and assembly into shipping units will:

- Create new jobs and opportunity on the Olympic Peninsula
- Create a new manufacturing process for housing that can be used in any market worldwide
- Create new value for forest landowners and DNR Trust beneficiaries by adding new value to Western Hemlock, which makes up about 47% of growing stock on the Olympic Peninsula.

## Overview of Economic Resiliency in Clallam County

# The Trend of Economic Vitality



Clallam County has been presented with several visions for its economic future: tourism, the amenity economy and now, in the RDEIS, recreation. What these visions share in common is the empirically unsupported assertion that the benefits derived will outweigh the costs resulting from diminished timber harvests from public lands.<sup>17</sup> This gives rise to two questions. First, who benefits from implementation of this vision? Second, what are the expected impacts on economic vitality for Clallam County? While the Port cannot answer the first question, we can illuminate upon the second. The MIT Living Wage Calculator indicates that a family with 2 adults, 1 working, with 2 children requires a wage of \$24.61 hour or \$51,189.<sup>18</sup> This provides the Port a useful metric to assess the impact of an economic development strategy on the vitality of the community. QCEW2017 indicates a mean annual income of \$38,864, which is below the living wage target of \$51,189, or a Living Wage Premium (LWP) – the difference between a living wage and the wage earned – of <\$12,325>. Sectors paying less than \$38,864 pull the county mean wage downward and increase the LWP gap. As the graph above reveals, the LWP gap has been growing annually.

QCEW 2017 NAICS 71, Arts, entertainment and recreation shows total employment of 221 people in Clallam County with a mean annual income of \$15,977. In contrast, mean annual income in wood products manufacturing is \$59,512.<sup>19</sup> How has the tourism economy, or amenity economy, or now the recreation economy affected the LWP gap? Again, using QCEW2017, the most current annual data available, NAICS 71,

<sup>17</sup> It is to be emphasized that no empirical evidence has been provided to support the claim that diminished harvest will stimulate tourism, amenities or recreation. They are expression of philosophical belief systems, and not conclusions supported by systematic economic analysis.

<sup>18</sup> <http://livingwage.mit.edu/counties/53009>

<sup>19</sup> <https://esd.wa.gov/labormarketinfo/covered-employment>

Arts, entertainment and recreation, pays an annual mean wage of \$15,977 with a LWP = <\$35,212>.<sup>20</sup> NAICS 713, Amusements, gambling and recreation indicates an annual average mean wage of \$14,391. It is to be noted here there closer one gets to recreation, the lower the annual average mean wage! There are other recreation associated sectors, like NAICS 72, Accommodation and food service. There, the annual average mean wage is \$18,544. While greater than recreation it has a LWP = <\$32,645>. Growth in these sectors pulls the average county wage down, decreases the quality of life, and increases the demand for public assistance with its corresponding tax burden. Contrast this with employment in logging or wood product manufacturing where we see annual average wages of \$53,933 and \$59,512 respectively, with corresponding LWPs of \$2,744 and \$8,323.

This trend towards “resiliency” helps explain the socioeconomic indicators presented in the table below. We urge that this analysis be re-visited, and the conclusions reflect the actual situation in impacted communities. Unfortunately, the decisions made over the past few decades on National Forest and DNR Trust Lands have all attempted to rationalize that job and economic growth will occur in recreation and accommodation and food services and thus compensate rural communities for employment lost in the forest products industry, and lost opportunities for further economic development that increases value added through advanced wood product manufacturing. Sadly, the history shows that while some jobs may be created, the loss of employment in the forest products industry has increasingly impoverished the county. The result has been a steady decline in the average economic standard of living. Let’s not repeat the mistakes of the past, and instead seek management options that increase family and community well-being.

Household Income Characteristics	Rate	WA	Health Characteristics	WA
Below poverty	15%	Higher	Suicide death rates	Higher
Within 200% poverty	35%	Higher	Hospitalization: alcohol, drugs, opioids	Higher
School lunch program	52%	Higher	Death rates	Higher
Infants with WIC	56%	Same	Infant mortality	Higher
Children with public assistance	35%	Higher	Adults without health insurance	Higher
SNAP	22%	Higher	Adults insured by Medicaid	Higher
Public school students homeless	5%	Higher	Life expectancy at birth	Lower

Source, *The Health of Clallam County 2017*. The Clallam Community Health Assessment Steering Committee, Public Health Centers for Excellence.

<sup>20</sup> The RDEIS states that income data was not available for QCEW.

# A BRIEF TECHNICAL ANALYSIS OF THE DNR'S SELECTED IMPACTS OF THE MARBLED MURRELET LTCS



Daniel A. Underwood, Ph.D.

OlympusConsulting@olypen.com

(360) 775-0507

11/5/2018



## Abstract

This technical analysis assesses the methodology and conclusions in the DNR report *SELECTED IMPACTS OF THE MARBLED MURRELET LTCS (REPORT)*. The *REPORT* presents economic impacts as timber excise taxes from Trust Lands and employment at the county level. The methodology for employment impacts is not explained, nor source cited. Direct employment estimates for Clallam County in the *REPORT* are contrasted with estimates using multipliers derived from county specific economic conditions. It is seen that the *REPORT* produces estimates that are likely incorrect, with both upward and downward errors. This technical analysis concludes with an approximate estimate of the 10-year financial cost to Clallam County of Alternative H relative Alternative B: \$16,758,397.

## ***Introduction***

This brief technical analysis was developed for the Port of Port Angeles to assess the methodology and conclusions of the DNR report *SELECTED IMPACTS OF THE MARBLED MURRELET LTCS (REPORT)*, submitted to the Solutions Table, an advisory group examining the implications of the LTCS in the Draft Environmental Impact Statement (DEIS). The *REPORT* provides a “losses and gains” impact analysis between alternatives A and H in the latest DEIS, that projects an annual average harvest volume of 382 million board feet (MMBF). Excise tax impacts upon beneficiaries from Trust Lands are provided. The *REPORT* also projects employment impacts at the county. This brief technical analysis explores the methodology used in the *REPORT* and the conclusions presented.

## ***REPORT Methodology and Estimated Impacts***

The objective of the *REPORT* is to estimate employment and excise tax impacts resulting from changes in net harvest between Alternative A and Alternative H in the DEIS to provide a “losses and gains” analysis. Alternative H provides an annual average harvest volume of 382 MMBF which will support economic activity in the forest products industry and associated economic sectors in the supply chain (indirect effects) and in the overall economy (induced effects). Timber sales are also subject to excise taxes that accrue to beneficiaries, including junior taxing districts.

### **Estimates of Excise Taxes**

The *REPORT* presents excise tax revenues from Trust Lands in Table 3. Excise tax impacts for counties from Transfer Trust Lands are not presented, nor are the corresponding impacts to junior taxing districts. This noted, assumed county specific stumpage values and corresponding changes in harvest volumes presented in Table 4 could be used to estimate impacts on excise tax revenues at the county level. However, in the absence of geographic detail for areas impacted by harvests, including the intertemporal flow of those area specific harvests, it is not possible to estimate impacts on excise taxes at the level of junior taxing districts. Thus, *the REPORT does not inform many Trust beneficiaries the excise tax impacts resulting from Alternative H.*

### **Estimates of Employment Impacts**

Assessing the *REPORT'S* methodology and conclusions is difficult. The *REPORT* lacks a methodology section. The reader is told the *REPORT* transforms average annual harvests into employment impacts using multipliers constructed from “sourcing data” from the *Washington State Mill Survey* to determine how cross-county timber flows support employment in a particular county. The *REPORT* also states the employment impacts are based upon the assumption all timber harvested in a county is processed in the county. The source of employment data is not stated. Similarly, the process to construct employment multipliers derived from timber harvests is not stated.<sup>1</sup> The *REPORT* follows the

---

<sup>1</sup> A comparison of the Washington State Mill Survey (*Survey*) with QCEW data for 2016 helps demonstrated inconsistencies in data sources, and the difficulty with assessing the methodology used to construct employment multipliers. As example, the *2016 Survey* (p. 17) states there are 7 wood product manufacturers in Clallam County; QCEW indicates 12. [https://www.dnr.wa.gov/publications/em\\_obe\\_2016\\_mill\\_survey\\_final.pdf?ztxyvjw](https://www.dnr.wa.gov/publications/em_obe_2016_mill_survey_final.pdf?ztxyvjw)

general lines of methodological approach outlined in the study “Employment and Wage Impacts of Timber Harvesting and Processing in the United States”<sup>2</sup> That study created Direct Response Coefficients (DRCs) that transform harvests in millions of cubic feet (MMCF) into employment in economic sectors associated with forestry for twelve regions in the USA, including the region Washington-Oregon (WA/OR). DRCs were constructed for total employment in each forest product sector in WA/OR and the total harvest volume. Those multipliers are highly aggregated and only applicable to the region studied.<sup>3</sup> The *REPORT* does not state the source of the DRCs used to make projections. Thus, Olympus cannot comment on the methodology.<sup>4 5</sup>

Whatever the source of the *REPORT'S* DRCs, they are used to transform projected changes in average annual harvests into direct employment impacts in the economic sectors Logging, Sawmills and Pulp and Paper. Those direct employment impacts, along with value of output, were integrated into IMPLAN (market values for 2016). Monetary values are expressed in 2018 dollars. The reader is not informed of the process used to make the transformation from harvest volume to direct employment.

The question Olympus was asked to answer is, “How accurate are the DRCs used by DNR to forecast direct employment impacts?” One way to answer the question is to compare the projected impacts from the DNR *REPORT* with the actual economic conditions in Clallam County. Olympus applied QCEW data for Clallam County in 2016. Covered employment for NAICS 113 and 321 was 359 and 255 respectively.<sup>6</sup> The total harvest in Clallam County, from both private and DNR lands in 2016, was 169.1 MMBF.<sup>7</sup> The ratios Employment/MMBF are 2.12 and 1.51 which can serve as employment multipliers. *These multipliers capture the actual structure of the forest products industry in Clallam County, from mill technology to methods of harvesting and transporting timber as explained by Clallam harvests.*<sup>8</sup> Thus, the employment multipliers (ratios) capture actual timber harvest flows as directed by local market conditions and the organizational and technological structure of the forest product industry in Clallam County. DRCs (multipliers) used in the *REPORT* are “implied” in Table A1: employment by sector is the

---

<sup>2</sup> Sorenson, C., Keegan, C., Morgan, T., McIver, C., and Niccolucci, M. (2016) Employment and Wage Impacts of Timber Harvesting and Processing in the United States, *Journal of Forestry*, 114(4), 474-482

<sup>3</sup> It follows that DRCs (multipliers) derived for WA state cannot be accurately applied at the county level. County level economic impacts must be evaluated using county specific data and economic conditions.

<sup>4</sup> The Draft Financial Analysis, October 2018, presented the net present value of excise taxes from Trust Transfer Lands (Appendix C) and Trust Lands (Appendix D) over a 100-year period.

<sup>5</sup> The DEIS presents employment multipliers on page 70, citing Mason and Lipke, 2007. Those multipliers were constructed using data from 1995 to 2006, and do not capture current economic conditions.

<sup>6</sup> Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2016.

<sup>7</sup> *The Economic Impacts of Private Timber Harvests: An Exploratory Investigation of Harvests, Exports, Employment, Income and Tax Remittances.* Daniel A. Underwood and Jason Cross. Published by the Port of Port Angeles, December, 2017. <https://portofpa.com/DocumentCenter/View/1646/Economics-Impacts-of-Private-Harvests?bidId>  
*Analysis of the Department of Natural Resources' Sustainable Harvest Alternatives: Impacts on Employment, Wages, Business Taxes, and Timber Harvest and Excise Tax Revenues,* Daniel A. Underwood and Jason Cross. Published by the Port of Port Angeles, March, 2017.

<https://portofpa.com/DocumentCenter/View/1143/DNRDEISanalysisfinal?bidId>

<sup>8</sup> Clallam County employment in the forest products industry depends on the total harvest in Clallam and Jefferson Counties. However, as this technical analysis is to focus on an assessment of the methodology and conclusions in the *REPORT*, Olympus has constrained its analysis to harvest in Clallam County.



product of change in harvest volume and the DRC. Those implied multipliers are presented in Table 1. They are contrasted with the Olympus multipliers. The expected average annual harvest of 5.18 MMBF is then used to estimate direct employment impacts.

Industry	Multipliers		Direct Employment: 5.18 MMBF Clallam County		
	DNR	Olympus	DNR	Olympus	Difference
Logging	2.43	2.12	12.6	11	4.6
Sawmill	1.16	1.51	6	7.8	<1.8>
Pulp & Paper	0.23	0	1.2	0	1.2
<b>Total</b>			<b>19.8</b>	<b>18.8</b>	<b>1.0</b>

Table 1: Comparison between DNR and Olympus employment impacts, 5.18 MMBF differential harvests.

Table 1 reveals the direction and magnitude of estimation errors in the *REPORT*, which can be seen in the relative size of multipliers for the sectors Logging, Sawmills and Pulp and Paper. In Logging, the upward bias is 10.5%; Sawmill, the downward bias is 23.1%. The implied DNR multipliers do not capture and explain actual economic conditions in Clallam County. Consider Logging: With a total harvest in 2016 of 169.1 MMBF, the DNR multipliers project employment of 411; the actual was 359. In Sawmills, the projection is 196; the actual was 255. For Pulp and Paper, while NIPPON Paper was in operation in 2016, it has since been closed. The correct multiplier is 0, not 0.23. In the instance of Clallam County the casual reader may conclude “these upward and downward errors nearly cancel one another out,” and numerically this is true in this instance. However, two bad statistics do not create a good estimation procedure.<sup>9</sup>

### ***Some Additional Observations of the DNR REPORT***

There is a high degree of integration in the forest products industry between Clallam and Jefferson Counties. According the *2016 Survey*, 37 % of the Jefferson County harvest is processed in Clallam County. Thus, the reduction in the Jefferson County harvest of 1.41 MMBF should decrease harvest available in Clallam by 0.52 MMBF. This would reduce employment in Logging by 1.1 and Sawmills by 0.6.<sup>10</sup> This noted, Olympus confined its analysis to the projected change in Clallam harvests of 5.18 MMBF. Those direct employment impacts should be understood as the upper threshold.

A second observation is a general cautionary note regarding an implicit assumption when applying job multipliers to harvest volumes to estimate employment impacts. The application of harvest volumes to employment assumes a continuous relationship. For some sectors, like Logging, this is approximately appropriate: harvesting and transporting more/less timber will translate into more or less

<sup>9</sup> A discussion with Mike Comisky, Washington Manager, American Forest Resource Council, who is well familiar with the compositional structure of the forest products industry at the county level, revealed a large number of impact estimates inconsistent with actual economic conditions. Olympus expects that, if so, they are the result of using the highly aggregated DCRs. DCRs may be useful for WA/OR projections, for that is what they were designed to do. However, as the scale of application decreases, errors in estimates become increasingly problematic.

<sup>10</sup>The approximate impact of 2 jobs may appear small to the reader. However, to the individuals and families of those potentially affected, those 2 jobs are critical in an economically distressed county.

employment. Yet even here, until a threshold change is reached, those employed may work more or fewer hours to adjust for changes in harvest volume. This is especially problematic in Sawmilling and Pulp and Paper. Processing more/less wood fiber may translate into overtime or a shorter shift, not more/less employment. Furthermore, unless there is a market for additional processed product, that additional wood will not be processed. In those cases, wood will be transported out of the area if market conditions are favorable. Continuing, often in those sectors – Sawmilling and Pulp and Paper – we observe step functions: a new shift is added, one is lost, or a mill shuts down. Thus, looking at Jefferson County, the increased harvest in Clallam may not change employment at Port Townsend Paper Company. There is no methodological solution to this quandary when analyzing continuous changes in timber harvest. This said, it is important for readers of such analyses to be aware of this limitation in projection of employment impacts.

### ***Total Financial Impacts of Alternative H***

While this is a brief technical analysis, and a detailed assessment of the total financial impacts are beyond its scope, it is possible to use the results of other recently published work by Olympus to derive an approximate estimate of the total financial impact of Alternative H to Clallam County.<sup>11</sup> A comparative net assessment of the benefits/costs to Clallam County on the basis of the net present value of total wages, total excise taxes, and total business taxes for a 10-year sustainable harvest was conducted for the five Alternatives in the DEIS. Olympus focused its analysis on relative projected increases in average annual harvests between the five Alternatives, not total harvests under each. In other words, Olympus analyzed differences in harvests from the “new” projections.<sup>12</sup> Alternative B with an increased average annual harvest of 11MMBF provided the greatest net present value in benefits – wages from employment, timber excise taxes, and business taxes. Thus, all other Alternatives, in providing a lower net present value, represent a cost to the County. The results, presented in the Executive Summary, are reproduced below:

---

<sup>11</sup> *Analysis of the Department of Natural Resources’ Sustainable Harvest Alternatives: Impacts on Employment, Wages, Business Taxes, and Timber Harvest and Excise Tax Revenues*, Daniel A. Underwood and Jason Cross. Published by the Port of Port Angeles, March, 2017.

<https://portofpa.com/DocumentCenter/View/1143/DNRDEISanalysisfinal?bidId>

<sup>12</sup> The values in the table would be the same whether Olympus used relative total harvests, or the differential harvest between projected average annual increases. It is interesting to note the *REPORT* employed the same methodology.

Total product<sup>a</sup> of preferred alternative and relative cost of competing alternatives, by category.

Alternative	Total Wages <sup>b</sup>	Total Business <sup>c</sup>	Total Timber <sup>d</sup>	Total
2'	\$ 16,715,319	\$ 1,656,676	\$ 38,707,989	\$ 57,079,983
2	\$ -65,553	\$ -6,395	\$ -322,858	\$ -394,876
3	\$ -4,683,660	\$ -464,017	\$ -7,146,505	\$ -11,899,306
4	\$ -5,129,527	\$ -508,932	\$ -8,055,654	\$ -13,299,236
5	\$ -6,897,972	\$ -683,303	\$ -10,394,877	\$ -17,581,276
1	\$ -12,636,687	\$ -1,252,304	\$ -18,840,790	\$ -32,334,905

a: Present value of 10-year cash flow discounted at DNR's rate of 0.02.

b: Annual Direct, indirect, and induced wages in Clallam County projected by IMPLAN.

c: Local and state business taxes projected by IMPLAN to be associated with direct, indirect, and induced employment and wages.

d: Includes timber harvest revenues from Clallam County FBTPs, and excise taxes from all (public + private) timber harvested in county.

The Olympus report numbered the Alternatives, so 1 = A, 2 = B...5 = E. 2' was based on an even yield flow of the total harvest, which would provide \$57,079,983 (2016 dollars) in total net present value benefits to Clallam County resulting from an average annual increase in harvest from current DNR levels by 11 MMBF. Contrast this with Alternative 1 (A), which increases average annual harvests by 2.7 MMBF, and would provide \$24,745,078 in net present value benefits, or \$32,334,905 less in total net present value benefits.

The results presented above can be used to approximate the cost to Clallam County of Alternative H relative to Alternative B, or 2' above. The first step is to create a common base for comparison. The report presents the net change in harvest between Alternative A and H. Alternative A was an increase over the "current" DNR harvest of 2.7 MMB. Alternative B compared the current harvest, not Alternative A and an additional 2.7 MMB. If it is assumed total net present value benefits are proportionate to average annual harvest, then 8.25 MMBF of Alternative B would be commensurate to the harvest of 5.18 MMBF under Alternative H. 5.18 MMBF is 63% of the 8.25 MMBF under Alternative B – it provides 63% of the benefits. Thus, it does not provide 37% of the benefits. It follows that the total net present value of the cost of Alternative H relative to the equal annual harvest under B is \$15,839,695, or \$16,758,397.<sup>13</sup>

<sup>13</sup> The value \$15,839,695 was in 2016 dollars; \$16,758,397 is in "current" dollars, as of September 2018.