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MEMORANDUM • PORTLAND OFFICE

DATE:	Friday June 1, 2007
TO:	Ron Opitz, SCDC
FROM:	Robert Whelan, ECONorthwest
SUBJECT:	Notes on the comments to the draft white paper

Introduction

As you may recall, several people reviewed the April 24th draft white paper on the impacts of a closure of river mining. On May 18, you visited and gave me notes taken at the review by Mr. Jon Barton. A day before that he had also emailed me production data he collected. During your visit you also provided some additional market information.

I read the reviewers' comments and incorporated some of them and other insights you provided into the final white paper entitled, " An economic impact forecast of the potential closure of river rock mining on the south coast of Oregon," which was dated June 1, 2007.

You asked that I provide feedback on the white paper comments. To facilitate this exercise, I had the comments scanned into this document and I then entered my responses. Beginning below is the scanned white paper comments in italics and my responses, which are indented.

White Paper Comments and Responses

WP refers to Chetco and Umpqua Rivers. The Rogue River is also a significant factor and there is gravel removal on the Coquille by LTM but it is relatively small, we believe. The omission of Rogue (and Coquille) is noted throughout.

> I was told not to contact the companies engaged in river mining. I got the production data shown in the report from the auditor at State Lands, which collects royalties from all entities that is extracted gravel from rivers.

After I sent the draft report out I received a table from Jon Barton showing his production figures, which included other rivers and some other producers. I averaged the two sources, using the same 1.50 tons per cubic yard factor that Jon used and found that the State Lands figure (2002 – 2006 average) was 183,604 tons while Barton's figure was 184,866.

So while the river and producer specific data did not match, the totals (of product going into construction) nearly did. I thought about calling Lands and asking about the discrepancies, but I did not want to intervene.

About 35%of the current Chetco production goes to Del Norte County either as rock or concrete. This will no doubt alter impact since only Oregon counties are included in the consumption figures.

I was told to not include Del Norte County. Originally it was to be in the impact model, which is why we did get Del Norte County construction data. In the final version, we did include 45,000 tons of river rock being exported (net) to Del Norte County. It has only a small effect on the impact analysis—about five additional workers in the 3-county area.

Economic output losses are compared with 2006. Since the Smith River (Calif.) and half the Chetco were shut down in 2005, comparisons with 2004 or 2005 might be more meaningful. The same is true for projected increases for the cost of gravel shown as 60%. Consumer prices have already increased by 35% to 60% over 2004 levels. Gravel removal from 'high value land' in the Willamette Valley is likely to be curtailed adding to sourcing problems. (see EcoNW study on subject).

No. Economic output losses are not compared to 2006. They are compared to 2008—next year—and we assume a level of river rock mining that year without curtailment to be 275,000 tons, which is higher than any recent year. The Smith River is not in the analysis because we were told not to extend the coverage to Del Norte County and instead include Douglas County.

The analysis compares 2008 with and without curtailing river production. There are no comparisons with 2006 or other years. We show 2006 data only to illustrate the size and extent of the mining industry and provide context to the impact study.

Thus, the 60 percent price increase used in the draft impact analysis is the change in 2008 of using imported rock instead of river rock in that year. It is not a comparison of price changes from earlier years. The analysis is to measure the impact of mine closures, not changes over periods of time.

The lack of Willamette Valley material was noted in the final report. I cannot see any practical way you could get inland rock to the coast at a price cheaper than just barging it in from Canada.

WP does not anywhere acknowledge that river bar aggregate is a renewable resource.

I added this to the final report because it is an accurate reflection of the resource.

Round rock, whether mined from pits or scalped from bars is often crushed and used for base rock and asphalt due to its inherent hardness. Concrete is actually stronger using round rock (has to do with cement content in mixes) and load bearing members' can use crushed rock but round rock is also often used. Round rock is also preferred by cement finishers as well as pumpers.

> I made changes in the final report to reflect these comments. The report was written for a general audience and is not intended to be an industry paper, so I tried to express things quickly & simply.

WP, page 4, refers to concrete being a mixture of 'crushed rock', etc., which is contradictory to earlier comments and fact. Also, 'cement' trucks should be called concrete or mixer trucks since 'cement trucks' usually refers to bulk haulers carrying powdered cement.

> The white paper does say on page 3 that rounded rock and crushed rock are used in concrete. It then says on page 4 that concrete is a mixture of "crushed rock, sand, and gravel," which I took from the Portland Cement Association website. I know this describes concrete made with Portland cement and that there are other types of concrete. I do not want to bore the casual reader with a lot of definitions, descriptions, and exceptions. That is why I used cement truck instead of mixer truck. I changed it back on the final report. The goal here is to educate readers on economic implications, not teach them materials science.

WP refers to two firms harvesting rock, LTM-Umpqua Navigation and Freeman Rock. Tidewater and Umpqua Sand & Gravel are also players. Several smaller operators also extract gravel but not for commercial purposes.

> According to State Lands (auditor) Tidewater has "not taken any material out of the rivers in recent years." I know that the Curry Coastal Pilot quotes somebody from that firm saying he was taking material from stockpiles. Jon sent me data showing rock taken from rivers. If it was, the State Lands auditor was unaware of it. He also said Umpqua Sand & Gravel show no recent production. MSHA shows that firm only producing from an inland pit.
>
> Those producing rock for non-commercial purposes have no economic impact because the product does not enter the market. The exception would be a county taking material out for roads, because without it they would have to buy on the open market.
>
> Regardless of what Lands shows, and I think they track by where the checks are cut for School Fund royalties rather than specific mine sites, the numbers from Jon and State Lands on average (as shown in the final report) are nearly identical.

Table 1 shows labor hours reported to MSHA. Typically what is reported are only the labor hours expended operating mining equipment, including processing equipment. They do not include all the support labor hours such expended by support personnel such as maintenance, yard and others.

I know. I used to work for the U.S. Bureau of Mines and DOGAMI. MSHA does report office worker hours, however, and I did not include them.

Table 2 shows production by LTM and Freeman with no mention of Tidewater or others. It also refers to only the Umpqua and Chetco Rivers with no mention of the Rogue. Substantial quantities of gravel are removed from the Rogue. Also, TW is known to have harvested gravel from at least on of two locations on the Chetco in each of the years mentioned. LTM's operation on the Coquille is not mentioned.

Again, State Lands receives royalties from rivers and their records show no money coming in from Tidewater. I specifically asked about it twice and got the same response. When I averaged their data and compared it to Jon's there was no difference. MSHA shows production by Tidewater, but no hours on dredges (Tidewater has quarries and stockpiles or river rock, apparently), and production by Umpqua, but from a sand & gravel pit.

I took out references to specific rivers from the final report and just used the averages, as both sources were nearly the same. What are relevant to the analysis is how much river material would be curtailed in 2008, what that would cost in local output, and what it would cost to replace with outside material.

Just below Table 2, mention is made that Del Norte County consume about one-tenth the aggregate as the three Oregon counties. That number should be tested based on the additional information discussed herein. Also, very little aggregate flows from Del Norte County to Curry County. The flow is predominantly the other way.

There is nothing to test. We know how much construction goes on in Del Norte County and it is less than in the other three. I put the actual construction figures (average the last five years) into the final report. In 2002 to 2006, Del Norte construction averaged about $157 million a year. In the other three counties it was $1,151 million. So for that period at least, Del Norte was 13.6 percent of the construction in the other three places. When converted into aggregate, it was about 10 percent. It is less probably because Douglas County, in particular, has a lot more roads and spread out population.

According to state payroll data, Del Norte has about one-twentieth as many construction workers employed as the three-county area. The states get these figures from actual payroll taxes paid by construction companies.

Somebody in the construction industry told me that sometimes rock flows up from Del Norte. I assumed very little in the final report.

The "Overview of Aggregate Demand" seems to imply that the lack of limestone impinges on aggregate usage. Correctly, it states there is very little limestone available on the Oregon coast. It is the absence of quality basalt that will meet hardness and other tests that impacts the demand for alluvial or river bar rock.

No, the report says a lack of limestone means that very little rock is used in "non-aggregate applications" (cement manufacturing, agricultural lime, *etc.*) In some markets manufacturing uses play a big role and would have to be considered in an analysis. I wanted to make sure this was not the case here and state it as such.

The lack of quality rock is mentioned several times in the report and is further emphasized in the final. That is covered in the discussion of marine basalt deposits.

Table 3 bears a good deal of discussion. For example, Home Depot is scheduled to be built in 2008 and will likely be at least 300,000 square feet whereas the Table 2 projects only 12,559 sf. In Coos County for the year. The new airport terminal will be about 30,000 sf and will complete in 2008, though much of the structural work will be done in 2007. Single family dwelling construction for Curry County is project at over three times that in Coos County. Construction spending in Coos County is projected at $66 million. The airport terminal, ACTC and Taxiway C projects alone will over $20 million spent in 2008. Regional spending at 2.8% compares with what percentage of the state's population?

All of this is nearly irrelevant to the impact results. Nonetheless, the Home Depot has not been approved yet, so it does not appear in the Dodge forecast. There is some federal roadblock affecting it from being finalized. Even so, Home Depot's (and I did consulting for them) are only about 105,000 sf of building. The Dodge data on buildings only counts the sf under roof. They will often occupy 300,000 sf of land, which does create a lot of crushed rock demand for parking and the nursery, but that amount is captured in the Dodge aggregate forecasts.

The air terminal is counted in the 2007 Dodge numbers. They count projects when they start.

Single-family dwellings are going up faster in Curry County. I cannot readily get data for the last couple of years without busting the budget on this project, but the last figures I have show 390 housing starts in Curry County (2002, 2003, and 2004) versus 137 in Coos—that was 2.8 times more. Not only that, but the average price of homes built (the construction costs only) were nearly 47 percent higher in Curry County. So the Dodge forecast is reasonable.

Construction spending in the three counties would be 2.8 percent of the state total in 2008. That compares to 5.1 percent of the population, but construction spending is also driven by growth and the three counties in 2008 would capture only 1.8 percent of the population growth in Oregon.

Table 4 requires the same discussion as Table 3. Other commentary also applies.

The data are from Dodge and they take it from construction contracts and permits. It is pretty accurate. What they miss are small projects of less than $50,000, DIY projects, and some farm/forestry projects. We adjusted their aggregate consumption numbers to reflect this using a method we developed based off of apparent consumption data and an analysis the federal government did some years ago (Department of Labor). F.W. Dodge, by the way, collects the federal government's construction data.

Table 5 shows projected aggregate consumption in the region (which likely should be adjusted upward based on above comments) and I had trouble reconciling the economic impact number with the '60% increase in cost' and the projected increase in per ton costs. Also, consumption numbers are questionable based on above comments and the fact that Dodge reports only 'known contracts and permits', apparently.

It looks low to me also, but I know that these numbers on the county level bounce around a lot depending on if there are any big road projects and, based on my work in Douglas County, I suspect no local government is planning anything like that. Estimates I made for the area back in the early 90's were higher, but that was when there was a lot more logging going on. I did account for the known permits effect by adding "farm, forestry & minor construction" and the 1.3 million in total consumption is large relative to the river mine output reported by Jon Barton (111,984 to 252,398 tons a year).

The way around this would be to collect production and flow data, which I did for DOGAMI in 1992. It took over a year. Clearly this would not be practical for this work and the results would not have made much of a difference.

It is important to know that the Dodge figures have very little impact on the economic analysis because we are showing the effect of the loss of production from the mines and assume all that production (except for 45,000 tons to Del Norte) is used locally. The magnitude of the loss is known and based on the data I was given.

On page 11 the statement 'river rock is suited for making concrete and as drainage rock' falls a bit short. It is also used for asphalt (once crushed and base rock, which likely consumes more tonnage than concrete or drain rock.

I made changes to the final report on this.

Some discussion is in order regarding the estimate of hauling costs. WP suggest a higher number per ton mile that industry analyses. Also, there is a question as to whether the costs of double handling of imported material are considered.

The white paper uses a ton-mile cost it got from calling Main Rock. I added a comment that some may ship for less and something about double handling in the final report.

Total regional tonnage discussed on page 12 is a major discussion item as is the conclusion that 200,000 to 250,000 tons of river rock is the total regional requirement.

I reworded that part of the report.

Also on page 12, some discussion of the total cost of barged material from BC is in order. There are known to be barge? designed to haul quantities in the neighborhood of 10,000 tons. Though substantially less than that which can be carried in a Panamax vessel, the cost differential may not be as great as is implied and such barges are a good fit for the Port of Coos Bay.

> I used an analysis from British Columbia for this data and the idea that material would be barged. San Francisco gets it by ship. Seattle import statistics show amounts consistent with barges. These shipments have been going on for many years. Talks with barge firms verify this as an option for the South Coast. The Canadians would love to sell more gravel to the U.S., but see the Oregon market shut off because Portland can get gravel barged in by river.

IMPLAN is purported to be a widely used and accepted planning model. Do we have any data that shows its track record?

> The IMPLAN model is tested against national GDP data and is designed to balance out all the flows in the economy. Practically everyone uses it. Its parameters come from the Census of Business and other data, including the IRS, trade reports, payroll taxes, *etc.* The only thing it does not count is illegal factors. We have been using it for years and know how to measure things such as what was asked here. The federal government uses it (actually developed it originally).

Page 14 discusses how impacts are measured. It isn't entirely clear that the impact of higher prices acting as a depressant on construction has been considered. That said, it is fully recognized the difficulty in doing so.

> In the short run, prices would hurt construction spending based on the price elasticity. That is accounted for in the model.

Under 'Assumptions' the statement is made that a price elasticity of one was assumed. Rationale?

> The elasticity used in the draft was -1. It is a fallback assumption called "unitary elasticity." Now that I had time I dug through the economic literature and found that the historical elasticity relevant to this analysis would be -0.811. Thus a one-percent increase in construction costs due to higher gravel prices would cause the amount of construction done to be 0.811 percent less than it would otherwise be.
>
> Another report found for housing construction that the elasticity was even more inelastic (-0.50). All this comes from using historical data and would be beyond the scope of this project to spend time doing. Economic research has found that construction spending is price inelastic (numbers come in less than -1.0). That means that the amount of construction does not go down as much as prices go up.

Page 15 talks to an adjustment period to transition to alternate source of aggregate. What is not mentioned is the significant capital investment that would be required to do so. Larger capacity trucks would be need to economically haul large quantities of gravel from either the valley or the Port of Coos Bay to Curry County. If gravel is imported to Coos Bay, dock facilities and off-loading and stacking equipment will be required. None of that is currently available.

I added some comments to reflect that certainty in the final report.

In the last paragraph, the statement is made that 'delivered prices could be 400% of what the are today'. That may well be true but doesn't reconcile to the 60% increase in costs mentioned earlier in the paper.

The 400 percent is if you do not import rock, but ship it in by truck from the valley. This was confusing when I re-read it. I clarified the meaning of this and pulled the 400 percent out.

Under Assumption Values' the price of rock is stated at about $11 per ton, FOB mine. That presumably represents the cost to a consumer whereas the $17.50 per ton mentioned for imported aggregate represents the actual cost to the local operator. There is no margin of profit available for the retailer.

I changed the price in a truck at dockside to $21. Hopefully that captures some of what you see absent. The Canadian mining company and importer profits are included in what they charge.

Some discussion is in order regarding the numbers in Table 6. They will no doubt need to be adjusted based on earlier comments but the net increase assumptions do not reconcile to earlier commentary such as '400% increase' and other numbers previously discussed. This is apparently where the 60% increase number comes from.

Replacing $11 rock with $17.50 rock is approximately 60 percent. If you replace it with rock trucked in 110 miles away, it would cost you 400 percent more than $11. This apparently is confusing, so I will take the comment out. We are considering the next cheapest alternative and that is imported gravel as I am unaware of any other alternatives at this time.

In the last paragraph on page 16 the statement is made that just the increase in aggregate cost would leak out of the local economy. Actually, the entire cost of production would be the appropriate leakage number. That number would be more like the $2,530,000 in Table 6, or as it may be ultimately modified.

No it would not. If you put in the entire number as leakage, you would be double counting the loss in mine production. It is the cost of imports in excess of the value of lost mine production that is leakage in this analysis. The loss in mine production is then counted separately and is reported clearly on Table 7 as such. If you do not do it this way, you will get the wrong result (and a lower result at that).

Tables 7 & 8 require further understanding as to how these numbers were developed. As they stand, there is inadequate explanation to establish solid credibility.

These numbers are clearly explained. We list the assumptions if they force you to stop mining rock from rivers. We show the production assumption of 275,000 tons from rivers, which exceeds the highest amount reported by Jon Barton and State Lands for any of the last five years, but seems reasonable to me to be reflective of an unhindered situation. I then went to the trade statistics and looked at what people in Seattle were paying to have barges from Canada deliver gravel.

I then found out what a barge to Coos Bay would charge. I added inflation and more to account for handling. I got $21, which is well in excess of the average delivered price of gravel imported into the United States (again actual trade statistics). I went to a report from the Province of British Columbia, which has actively researched the prospect of developing west coast markets for its mines, and verified that my numbers were in the ballpark.

I found out what it would cost to get Willamette Valley gravel in and was told that mines (and trucking companies) have little available capacity to accommodate the South Coast. Canada has capacity and a means of getting product on barges. They look like the next alternative choice.

The assumptions are then listed in the white paper. The incremental cost is mostly just production times price differential. We know the output of the mines (from State Lands and Jon Barton). We know the value (I asked what is your price?). We know the payroll of mines (Employment Department and Bureau of Labor Statistics). We know the employment (MSHA). We assumed the mines would close if river mining were prohibited. We then said if you bought imported rock instead, what it would cost you. We factored that all in and worked the numbers through IMPLAN.

There is nothing mysterious about this. Using higher price differentials (because I needed to include handling, updated barge costs, and using the Seattle trade data instead of San Francisco (because Seattle runs in smaller shipments similar to what I would expect in Coos Bay), I got a net impact of $9.2 million in the final analysis. That is about $2 million more than in the draft. I think that is very credible. Longer term, however, you are going to have troubles attracting big capital projects so I added extra commentary to that effect. I did not have time for that when rushing to get a draft done.

One final comment: for a first cut the WP is clearly headed in the right direction and understanding the crunch to get something out by April 25 (effort truly appreciated) it gives both the consultant and the ultimate users of the data an opportunity to re-address specific data points with the benefit of some industry expertise.

Robert Whelan