

11-27-2016

Millennium Bulk Terminals-Longview  
NEPA Draft Environmental Impact Statement Comments

Dear Army Corps of Engineers:

I respectfully submit this set of comments as a follow-up to my earlier comment regarding concerns that the flood risk to the Millennium project was not adequately examined in the DEIS. Based on follow-up research and personal communication with Professors David Jay and Stefan Talke of Portland State University (noted experts on lower Columbia hydrology) and Charles Eriksen of the University of Washington (distinguished Professor of Oceanography and AGU Fellow), it appears that there is more risk of significant flooding on the lower Columbia River than is commonly thought. It seems that when it comes to flooding and assessing flood risk, there may be a common analyst bias towards recent events and personal experiences. Even practicing hydrologists may underestimate current risk and overestimate the flood protection provided by the upriver dams and reservoirs (personal communication with NOAA staff). Moreover, it seems likely that flood risk will be amplified (especially in downriver areas such as Longview) due to climate change and an increase in sea levels or changes in precipitation patterns, though definitive research is waiting to be published.

Longview and the industrial area in which the Millennium project would be located do appear to be fairly well protected from regular flooding events by an extensive system of dikes, drainage ditches and pumps. But it is unclear from the DEIS how adequately this system would hold up to a more catastrophic flood such as the 1894 flood event. It is hoped that with modern weather forecasting and improved transportation that the residents of Longview could be evacuated well before the breaching of any dike, but it seems likely that the rapid removal or draw down of a large coal stockpile would be a very low priority. Unfortunately, the flushing of significant amounts of coal into the lower Columbia would likely have lasting adverse environmental impacts.

With this background in mind, please require Millennium to prepare a more complete analysis of flood risk than what was provided in Section 5.2 of the DEIS and to discuss any increase in flood risk that may come about due to climate change, sea level rise, and changes in precipitation patterns. Also, an analysis should be prepared detailing the environmental impacts if the large Millennium coal stockpile were to be inundated by flood waters.

Specific concerns that should be addressed:

1. FEMA mapping is inadequate to assess flood risk. The decision to site an industrial facility of this magnitude should employ a much broader tool set and at least mention the results of current hydrological and hydrodynamic modeling.
2. FEMA mapping explicitly does not include any impacts of future sea level rise.

3. The basis for FEMA mapping on the Lower Columbia is unclear and appears to follow more of a 1996 event rather than a 1948 or 1894 event. All assumptions should be made explicit including error bars. (When it comes to catastrophic flooding and preparing for 1% or 2% events, estimates that fall within 95% confidence intervals are preferable to simple mean estimates.)
4. There is more risk of flooding on the lower Columbia than is commonly thought.
5. Many observers downplay the risk of 1948 or 1894 type events because they occurred before all upstream flood control was in place.
6. Upstream flood control may not be able to prevent large flood events.
7. Models are currently being developed to assess the impacts of sea level rise and initial results indicate a roughly 50% impact upstream for the Longview area (e.g. a 6.6' sea level rise would result in floods 3.3' higher than without any sea level rise).

Also,

- Does FEMA mapping take into account recent land use changes in the lower Columbia watershed including extensive urban development and aggressive logging on private and state forests?
- Does FEMA mapping adequately address changes to the hydrology of the Toutle and Cowlitz due to silt loading caused by the eruption of Mt St Helens?

At a minimum it seems reasonable to require the applicant to:

1. Prepare an analysis and discussion of flood risk with the help of hydrologists who have working knowledge of Columbia River hydrology and are familiar with current research on flooding issues in the lower Columbia.
2. Prepare an estimate of the most likely and worst case scenarios of flood amplification due to climate change and sea level rise.
3. Discuss the current state of the Longview dike and pump system and its ability to protect during a severe flood event. The brief mention of the pumping system during a 1986 storm on page 5.2-15 is not adequate.

#### Additional Background

As mentioned above, relying solely on FEMA maps to assess flood risk is not adequate. FEMA maps for the lower Columbia understate flood risk and explicitly do not take into account any future impacts of sea level rise. FEMA provides essential public services but often their mapping is based on missing or incomplete data. And the errors can have significant impacts as witnessed by the unexpected flooding caused by Hurricane Sandy in NY-NJ. Past FEMA mapping on the lower Columbia relied on incomplete hydrological background data and was complicated by a very messy datum situation. It is unclear if FEMA has incorporated the latest hydrological data and modeling in their current maps.

Flood risk in general on the lower Columbia and Willamette rivers is underestimated and weighted towards more recent events. The catastrophic floods of 1948 and 1894 are downplayed since they occurred before the full system of dams and reservoirs was completed on the upper Columbia. The flood control provided by the Columbia river dams has most certainly saved lives and made regular flooding more of a nuisance than an emergency but there are limits during unusual precipitation events. In 1948 for instance, most of the problem rainfall (>400% of normal precipitation) occurred below the Grand Coulee Dam and even modern meteorologists would have had difficulty predicting the rainfall levels and locations that led to the 1948 flood. 1947-1948 was a cold winter but not with high snowfall. The sudden rapid warming combined with very heavy rain could happen again.

It would be very helpful if the Army Corps was willing to share any internal analysis on Columbia River hydrology that could help determine actual flood risk. Also, BPA should be contacted for updates on their projections for future river flows under the new US-Canada treaty projections.

Thank you for considering these comments.

Sincerely,

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