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Subject: Loss of UHS Manhour Estimates, NRC input.doc
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Attachments: [Loss of UHS Manhour Estimates, NRC input.doc](#)

Chris, Ed;

The summary of the impact of the downstream dam evaluation that we discussed during our call yesterday is attached.



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Loss of UHS – Level of Effort Estimates

Summary:

The feedback below came from sites with downstream dams that impound their UHS and where the flood that affects the downstream dam will also affect the site.

- 13 sites with existing plants plus one site with a plant under construction are affected
 - 6 in group 1 (completion of reevaluation is due on March 12, 2013,
 - 7 in group 2,
 - 1 in group 3
 - Impact of the dam failure evaluation ranges from 0 to 520 manhours and 0 to 6 weeks schedule slip
 - Group 1: typical impact is 100 man hours and 3 weeks
 - Group 2: impact ranges from 0 to 520 man hours and 0 to 6 weeks schedule slip
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Assumptions:

When we circulated the request for the information cited above, we also communicated the following assumptions as input to the estimates:

- It is anticipated that the hydrologic and hydraulic models being developed for the 2.1 flood hazard reevaluations will incorporate the stage-discharge functions for the downstream dam. Therefore, no additional modeling will be required.
- The bounding PMF, developed for the site's 2.1 flood hazard reevaluation, can also be used to evaluate the effects of flooding at the downstream dam. That is, it is not necessary to develop an alternative PMF scenario specifically for the dam will not be required.
- The evaluation of flooding effects can be based on a comparison with the dam's current design basis. That is, no additional engineering evaluations (e.g. seepage, stability, overturning, sliding, erosion/scour, analysis of structural components, review of gate operational procedures, etc.) will be required, other than flood hydrograph routing through the dam to determine peak water levels associated with the bounding PMF.
- Several sites rely on in-line, low-head downstream dams (e.g. locks/dams, concrete weirs, etc.) for UHS that are typically designed to overtop even for low-magnitude floods and submerged by tailwater. Other than considering the backwater affects at the site (part of the 2.1 flood hazard reevaluations), these dams can be assumed to not fail in the loss of UHS evaluations.
- When we are talking of the UHS impounded by a downstream dam, that means any water flowing off the site from a flooding event LIP or PMP would end up in the same reservoir

Loss of UHS – Level of Effort Estimates

that is used for the UHS which then would be postulated to fail (leaving the site with no UHS).

- Evaluations associated with the affects of downstream dam failure on the UHS, including dam breach modeling and resulting drawdown time and low-water conditions, are not included.

Hydrologic Impacts at Dams

In our call on August 21st, we were asked how an evaluation of an upstream dam might differ from an evaluation of a downstream dam. The following table summarizes the difference:

Item	Downstream Dam	Upstream Dam(s)
1. Hydrologic/Hydraulic Modeling at the bounding PMF for the site	Included	Included
2. Breach versus no-breach based on comparison with design basis for dam (no additional engineering evaluations) *	Included	Included
3. Evaluate effects of dam failure #	<u>Not</u> Included	Included

* A dam is vulnerable to failure if unprotected portions are overtopped during the bounding PMF; no additional engineering evaluations would be required.

For the downstream dam, the effects of dam failure would be loss of impounded water on UHS; evaluating low-water conditions with the loss of the dam is not part of 2.1. For the upstream dam, the effects of dam failure would be flooding at the site, which is part of 2.1.