

401 Permit Decision-Making  
Sea-Tac International Airport, Third Runway

Fendt  
EXHIBIT NO. 304  
2-8-02  
M. Green

FINAL MEETING NOTES

LOW FLOW ANALYSIS

June 25, 2001  
10:00 - 4:00

These final meeting notes have been prepared by Kate Snider, Floyd & Snider Inc.

ATTENDEES

Ann Kenny, Dept. of Ecology  
John Drabeck, Dept. of Ecology  
Kelly Whiting, King County  
Keith Smith, Port of Seattle  
Paul Fendt, Parametrix  
Rick Schaefer, EarthTech  
Felix Kristanovich, Foster Wheeler  
Robert Farid, Parametrix  
Pony Ellingson, Pacific Groundwater Group

MEETING SCOPE AND AGENDA

The agenda of the meeting included:

- 1) Methodology for evaluating modeling results to determine impact and mitigation
- 2) Vault filling estimates
- 3) Slice model status and Hydrus interim deliverable
- 4) Non-hydrologic affects
- 5) Operational Plan
- 6) Expectations for meeting on July 9

IMPORTANT NOTE: Modeling is underway to determine post-project low stream flows. Modeling results are not yet available. Many issues were discussed in the 6/25 meeting regarding how the resultant data will be evaluated. It is not yet confirmed whether there are low stream flow impacts to the streams, or whether mitigation for low stream flows will be required. The purpose of the 6/25 meeting was to discuss conceptually how the modeling results will be evaluated, and how, if mitigation is required, it would be provided. These discussions will be revisited when the modeling results are evaluated.

**METHODOLOGY RE: LOW STREAM FLOW IMPACT AND MITIGATION**

1. Dates of 7-day low stream flow events have been plotted for the full (48 year) record for each watershed. These records will be used to determine an acceptable time period for release of mitigation flows to the streams.
2. 7-day low flow statistics will be used to compare pre-and post-project flows for purposes of determining potential impact. 7-day low flow is typically used for similar applications (eg: industrial wastewater discharge, basin planning, water resource planning). 7-day low flow is the criteria that Ecology uses to determine maximum impact on receiving waters.
3. To evaluate the modeling results and determine mitigation requirements, the following deliverables will be provided:
  - Ranked and graphed 7-day low flow values for the full record for the pre-project 1994 data. Determination of the "2-year" 7-day low flow location on the full record of pre-project data.
  - Graphed 7-day low flow values for the 1991 – 1994 period for 2006 post-project data. These values will aggregate HSPF results, embankment seepage results and non-hydrologic affects. This post-project graphed data should be presented on the same graph as the pre-project information.
  - "delta" values (7-day low flow impact) for the 1991 – 1994 period

**VAULT FILLING ESTIMATES**

Parametrix presented draft information related to methodology of how to calculate time needed to fill vaults to plan for availability of water to release for low-stream flow mitigation.

Ecology and King County comment on vault filling focused on "water balance" concerns between water used to fill the vaults vs. water modeled as infiltrating into the embankment in the embankment seepage modeling. Vault filling information provided at the July 9 meeting should confirm that this water is not being double counted.

**SLICE MODEL STATUS, HYDRUS INTERIM DELIVERABLE**

Pacific Groundwater expects to be complete with the slice modeling work by 6/28, resulting in transfer of time series output to Aquaterra.

An interim deliverable was submitted to Ecology and King County with Hydrus results, mapping and Slice cross-sections.

Additional documentation is requested before the July 9 meeting for the Pacific Groundwater effort including:

- HSPF input files to Hydrus

- Documentation regarding extrapolation of the Slice sections across the embankment
- Graphs of time series data provided to Aquaterra.

## NON-HYDROLOGIC AFFECTS

The revised non-hydrologic affects appendix to the SMP was submitted for review as a portion of D-7 under the SMP process. King County has partially reviewed, and expects that the revisions will be acceptable. Additional comments will be provided at the next SMP meeting. Ecology and King County will be interested in reviewing how this information is added to the HSPF time series work for low flow evaluation.

## OPERATIONAL PLAN

Portions of a revised operational plan for low-flow stream flow mitigation were submitted to Ecology for review prior to the 6/25 meeting. Ecology has partially reviewed and provided a few minor comments at the 6/25 meeting. In general, Ecology reported that this revised operational plan material meets the expected level of detail and content.

## EXPECTATIONS FOR JULY 9 LOW-FLOW MEETING

A meeting is scheduled from 10am – 4pm on July 9, at Floyd & Snider. The purpose of the meeting is to review modeling output and reach concurrence on the methodology to be used to determine low-stream flow mitigation requirements.

The productivity of the July 9 meeting is dependent on the level of information that can be submitted to Ecology and King county before July 9. It is anticipated that by the morning of July 6, preferably by mid-day on July 5, the following information will be submitted:

1. Modeling Backup:
  - HSPF input files to Hydrus
  - Documentation regarding extrapolation of the Slice sections across the embankment
  - Graphs of time series data provided by Pacific Groundwater to Aquaterra.
  - Info related to Ecology comments discussed at the June 14 meeting regarding low-flow modeling (out-of-basin groundwater transfers, impervious area, etc.)
  - Aggregated HSPF output files including 2006 HSPF, embankment seepage and non-hydrologic affects
2. Modeling results evaluation:
  - Ranked and graphed 7-day low flow values for the full record for the pre-project 1994 data. Determination of the "2-year" 7-day low flow location on the full record of pre-project data.

- Graphed 7-day low flow values for the 1991 – 1994 period for 2006 post-project data. These values will aggregate HSPF results, embankment seepage results and non-hydrologic affects. This post-project graphed data should be presented on the same graph as the pre-project information.
  - "delta" values (7-day low flow impact) for the 1991 – 1994 period
3. Mitigation proposal:
- Port proposal for mitigation volume and duration, rationale
  - Potential back-check of how mitigation would have worked if applied over full record
4. Vault feasibility information:
- Information documenting feasibility of vault filling for low-flow mitigation

Following the meeting on July 9, Ecology will require written documentation to be provided by the Port re: meeting outcomes.

