

From: Halah Voges
Sent: Monday, March 16, 2020 10:29 AM
To: BAYUK Dana <Dana.BAYUK@state.or.us>
Cc: NELSON Heidi <Heidi.NELSON@state.or.us>; LARSEN Henning <Henning.LARSEN@state.or.us>; Jen Mott <jmott@anchorqea.com>
Subject: RE: NW Natural, LNG Basin Questions

Hi Dana,

Attached please find the additional simulation results for the LNG Basin interim measure DEQ requested at Wednesday's meeting. Also provided below are responses to questions transmitted in your March 12, 2020 email below.

At DEQ's request, we re-ran particle tracking simulations with an expanded row of particles to fully delineate the capture zone for the two-trench scenario. The simulated capture zones for the 50-150 scenario (i.e. with a 50-ft trench near MW-49F and a 150-ft trench in the PacTerm basin) are attached. The capture zones are larger than those presented at Wednesday's meeting because of the expanded particle row. In addition, we added particles and released them from the vicinity of MW-49F to evaluate hydraulic capture for this area. The particle release locations and pathlines from MW-49F are shown in blue and purple, respectively. These results show that either a single 150-ft long trench in the PacTerm basin or the two-trench layout can provide complete hydraulic capture for the LNG Basin footprint as well as the area around MW-49F.

Below are responses to your follow-up questions from Wednesday's meeting.

DEQ Question #1. What is the extent of drawdown within the trench under the different scenarios, and the depth of the intake?

In the model, the trench is simulated as a drain in which the water level to be maintained is specified. We set the groundwater elevation in the drain to be the base of Fill WBZ. The resulting drawdowns in the trench in the PacTerm basin and the trench near MW-49F are 6 ft and 8 ft, respectively.

DEQ Question #2. Further description of what the pumping rates represent. For example, are the rates shown the maximum allowable pumping rate for the trenches to achieve the corresponding capture zone?

The pumping rates represent the groundwater extraction rates required to maintain the groundwater elevation in the trench at the base of Fill WBZ (see response above). Because the groundwater model simulations were steady-state runs, these pumping rates represent the average groundwater extraction rates under the simulated conditions (e.g. annual average, wet season, or dry season).

We look forward to meeting with you on Thursday; in the meantime, please let us know if you have any additional questions. Take care.

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-----Original Message-----

From: BAYUK Dana <Dana.BAYUK@state.or.us>
Sent: Thursday, March 12, 2020 11:17 AM
To: Halah Voges <hvoges@anchorqea.com>
Cc: NELSON Heidi <Heidi.NELSON@state.or.us>; LARSEN Henning <Henning.LARSEN@state.or.us>; Jen Mott <jmott@anchorqea.com>

Subject: NW Natural, LNG Basin Questions

Hello Halah.

We have followup questions regarding the LNG Basin modeling scenarios that we'd like to discuss during the next meeting/call, including:

1. What is the extent of drawdown within the trench under the different scenarios, and the depth of the intake?
2. Further description of what the pumping rates represent. For example, are the rates shown the maximum allowable pumping rate for the trenches to achieve the corresponding capture zone?

Thank you.

Dana

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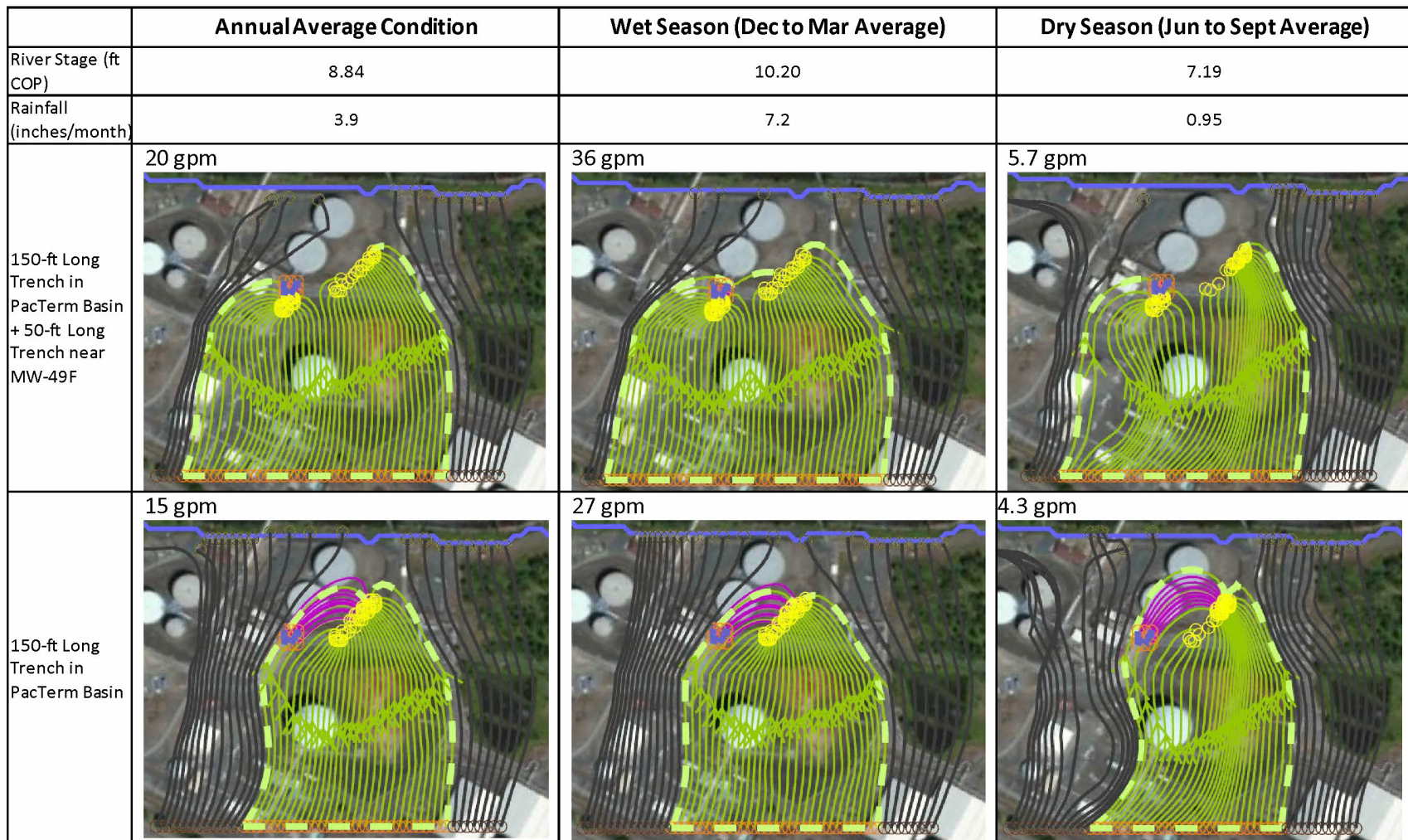


Figure 1c
 Simulated Capture Zones for 150-ft Long Trench in PacTerm Basin
 LNG Basin Interim Measure
 NW Natural Gasco Site

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