

CORRESPONDENCE

VINA STAKEHOLDER ADVISORY COMMITTEE

----Original Message-----

**From:** Buck, Christina   
**Sent:** Monday, August 24, 2020 4:09 PM  
**To:** Jim Brobeck ([jimb@aqualliance.net](mailto:jimb@aqualliance.net)) <[jimb@aqualliance.net](mailto:jimb@aqualliance.net)>  
**Cc:** 'Byron Clark' <[byron@davidsengineering.com](mailto:byron@davidsengineering.com)>  
**Subject:** FW: Boundary flows question

Hi Jim,

I’ve received the following helpful explanation from Byron in answer to your question a while back.  Also, Interbasin Coordination that Tania [Carlone, Facilitator] is facilitating among the NSV subbasins will be putting together boundary flow estimates from the different modeling tools being used in the region for comparison.  Interbasin flows will continue to be better understood in the coming months.

Best,

Christina

**From:** Byron Clark <[byron@davidsengineering.com](mailto:byron@davidsengineering.com)>   
**Sent:** Thursday, August 20, 2020 8:40 AM  
**To:** Buck, Christina <[CBuck@buttecounty.net](mailto:CBuck@buttecounty.net)>  
**Subject:** RE: Boundary flows question

Hi Christina,

Slide 17 of the Butte presentation from April represents draft net subsurface flows along the model’s western boundary at that time.  These are estimated based on a specified head boundary condition with groundwater levels at each node for each model layer estimated over time based on a prior version of C2VSim in 2014.

Slide 16 of the Vina presentation represents draft net boundary outflows along the model’s western boundary.  Following the Butte Subbasin meeting on 4/23, due to relatively large uncertainty in sw-gw interaction and subsurface flows along the western boundary, we decided to combine these flows along the model boundary until they can be better understood.  We have called these “boundary flows”, rather than “interbasin flows”, because of current limitations in the model’s ability to accurately distinguish between the two along its boundary.  Slide 16 of the Vina presentation distinguishes between boundary flows and interbasin flows.  Comparing these is an “apples to oranges” situation that will need to be resolved moving forward.

Review of groundwater elevation contours based on monitoring data along the western boundary suggest that the general direction of flow is from north to south, rather than west to east or east to west, suggesting that subsurface/interbasin flows are likely small relative to stream aquifer interaction along the Sacramento River.

From the draft Butte Subbasin Basin Setting

Section 1.2.6.1:

*It should be noted that interaction with the Sacramento River is subject substantially greater uncertainty than other streams, due to the river representing the western boundary of the BBGM model domain. It is recommended that this uncertainty be addressed through future refinements to the BBGM (see Section 1.3.8).*

Section 1.3.4:

*Western Boundary Net Outflows – Sacramento River gains from groundwater and subsurface outflows to the Colusa and Corning Subbasins along the shared boundary along the river.  The split between these outflows is uncertain at this time and will be addressed through future refinements to the BBGM and through coordination and collaboration with neighboring subbasins as part of GSP implementation.*

Section 1.3.4.:

*Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Colusa and Corning subbasins along the shared boundary along the Sacramento River.  The split between these outflows is uncertain at this time and will be addressed through future refinements to the BBGM and through coordination and collaboration with neighboring subbasins as part of GSP implementation.*

Section 1.3.8.5:

***Refine Characterization of Interbasin Flows and Net Outflows along Western Boundary***

*Interbasin flows are dependent on conditions in adjacent basins.  It is recommended that GSAs refine estimates of subsurface groundwater flows from and to neighboring basins through coordination with GSAs in neighboring basins during or following GSP development and through review of modeling tools that cover the Sacramento Valley region, including the C2VSim and SVSim integrated hydrologic model applications developed by DWR.*

I hope this helps to clarify the difference between interbasin flows (subsurface only) and boundary flows (subsurface + sw-gw interaction).

**Byron Clark, P.E.** **|** Supervising Engineer **|** [Davids Engineering, Inc.](https://urldefense.com/v3/__http:/www.davidsengineering.com/__;!!KNMwiTCp4spf!U5Il6KOGMIG_oN7nITk4ACU6ZPFkOS1syyx0qeq21OP2tvmeBOo7k9vQV8c3iI2VjkU$)

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**From:** Buck, Christina <[CBuck@buttecounty.net](mailto:CBuck@buttecounty.net)>   
**Sent:** Tuesday, August 18, 2020 9:33 AM  
**To:** Byron Clark <[byron@davidsengineering.com](mailto:byron@davidsengineering.com)>  
**Subject:** Boundary flows question

Hi Byron,

This question (below) from Jim Brobeck and others is still unanswered.  Can you provide some clarification on this?  Or perhaps this is a good question for Reza or Sara to help with?

Thanks,

Christina

Question: How are the Colusa interbasin flows of 261K A/F into Butte Basin [slide 17 of the Butte Basin setting presentation] compatible with the 200K A/F outflow from the Butte Basin to Colusa and the 56K A/F outflow from the Vina to Corning [slide 16 of the Vina setting]? I don’t know the answer to this

specifically. I’ve passed this question on to Byron so he can help explain it.

**From:** Jim Brobeck ([jimb@aqualliance.net](mailto:jimb@aqualliance.net)) <[jimb@aqualliance.net](mailto:jimb@aqualliance.net)>  
**Sent:** September 6, 2020 at 1:08 PM  
**To:** Mariana Rivera-Torres ([mriveratorres@cbi.org](mailto:mriveratorres@cbi.org))   
**Subject:** [For Review and Comment] Vina SHAC 8/18/20 Draft Meeting Notes

Hi Mariana,  
Item 8 of the 8/18/20 meeting notes retains the dubious title "Identifying and Managing the Legal Implications of Artificial Recharge" that evolved from the original title "Out-of-Basin Transfer Rule for the Vina Subbasin”. During our documented discussions of this as-yet unfunded investigation we have discussed other important aspects of attempting artificial recharge of the aquifer system that includes examining the efficacy of recharge efforts that may be impeded by interbasin flows and suggested other titles. The inclusion of the word "managing" in the title implies that we intend to engage in artificial recharge and will invest resources into managing the legal implications. It is clear we need to identify and protect natural recharge areas but prior to committing resources to develop artificial recharge we should "Investigate the Efficacy and the Legal Implications of Artificial Recharge".

Jim Brobeck  
  
On 2020-09-04 18:11, Mariana Rivera-Torres wrote:

Dear Vina SHAC Members,  
  
You can find the August 18th SHAC draft meeting notes attached for  
your review and feedback. Please let us know if there is anything we  
missed or mischaracterized. We welcome your suggestions and edits by  
COB September 8, so we can integrate your comments in the draft posted  
on the website. We also welcome your suggestions during our next  
meeting.   
  
We are looking forward to your input, and wish you all a happy and  
restful long weekend,  
  
Mariana  
  
Mariana Rivera-Torres  
Consensus Building Institute   
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