



## CONFERENCE MEMORANDUM

<b>Project:</b>	Santa Clara River Estuary Special Studies	<b>Conf. Date:</b>	2/10/11
<b>Client:</b>	City of Ventura	<b>Issue Date:</b>	2/22/11
<b>Location:</b>	City of Ventura		
<b>Attendees:</b>	See attached attendance sheet	<u>Carollo:</u> Lydia Holmes	<u>Stillwater:</u> Noah Hume, Scott Dusterhoff
<b>Purpose:</b>	Estuary Study Workshop		
<b>Distribution:</b>	Attendees	<b>File:</b>	8144B.00

**Discussion:**

The following is our understanding of the subject matter covered in this conference. If this differs with your understanding, please notify us.

**Introduction/Purpose of Meeting**

Provide an overview of the Estuary Subwatershed Study – Synthesis Report and discuss the results of the discharge alternatives evaluation.

**Alternatives Presented**

Six discharge alternatives were evaluated in the study and the results were presented at the workshop. The alternatives were evaluated based on a hypothetical extended closed-mouth period extending from late spring through summer (June through September) and future conditions of an increased sea level (1.35 ft higher) and an increase in temperature of 2 degrees Celsius. The alternatives evaluation focused on this critical summer period by assessing habitat, water quality, and recreation impacts for each alternative:

Alternative 1: No Action

Alternative 2: Planned VVWRF upgrades to denitrify to 10 mg/l total nitrogen (TN)

Alternative 3: Planned VVWRF upgrades with further denitrification to 5 mg/l TN

Alternative 4: VVWRF effluent flow reduction (by approximately 30%)

Alternative 5: VVWRF effluent flow reduction with further denitrification to 5 mg/l TN

Alternative 6: Complete VVWRF effluent flow removal

## Discussion

Questions and comments were raised throughout the presentation. The following is a documentation of the comments and questions raised during the workshop.

Comment: Reed Smith – Should consider that algal growth limits tern foraging

Question: Richard Sweet – What does the future TMDL mean for nutrients in the estuary?

Response: Michael Lyons – We don't know what the target would be for nitrogen removal. We don't have applicable water quality standards (current standards are for drinking water  $\text{NO}_3 < 10 \text{ mg/l}$ ), although new standards are being developed.

Comment: Stan Glowacki – The reduced flow alternatives decrease surface area of the estuary, but also need to know depth. Need to consider steelhead stage-habitat relationship to edge habitat – wet area compared to vegetation.

Response: Noah Hume – In developing the steelhead stage – habitat relationships we excluded the shallow areas (less than 15 cm deep) which would be avoided by the fish due to avian predation.

Question: Stan Glowacki – Are endocrine disrupting compounds (EDCs) and pharmaceuticals included in this study? Will wetlands remove these compounds?

Response: Noah and Lydia – EDCs were not part of the estuary study as there is not an approved test method for measuring. In the wetland study we reviewed literature on EDCs and other compounds that are partially removed by wetlands – results are widely variable depending on the compound. Also, it is very hard to relate EDC presence or absence to species impacts or benefits at a population level.

Comment: Karen Waln – There were early discussions with Doug McPherson from the US Bureau of Reclamation (not in attendance). The Bureau was interested in doing a pilot project to look at wetland removal of EDCs. No further discussions or studies underway.

Comment: Jason Weiner – Ventura Coast Keepers has commissioned a study on EDCs in the estuary that will be completed 2012.

Question: Richard Sweet – What toxicity study tests are being done by the City?

Response: Florence Jay – Three sites are tested quarterly in the estuary and the plant effluent is tested monthly using chronic effluent bioassays at several levels of dilution. Some discussions have arisen to the use of fresh water organisms to test a saltwater environment.

Question: Richard Sweet – Any evidence of toxicity in the steelhead?

Response: Florence Jay - No evidence of toxicity that we are aware of – but steelhead are not used for the test. Other indicator organisms are used.

Questions: Nat Cox – Is there any evidence that the available habitat is limiting the species? How does decreasing habitat affect 'take?' How does unnatural breaching affect 'take?'

Response: Noah Hume – No. There was no evaluation of "take" of species, but in general habitat area is not considered to be limiting the species under current conditions.

Question: Kirsten James – Did the alternatives consider wetlands at an upstream location?  
Response: Noah Hume – Did not differentiate location. Assumed that even if wetlands are located upstream of the estuary, the water will return to the estuary.

Question: Kirsten James – How did you select the volume of flow reduction?  
Response: Scott Dusterhoff – We adjusted the water balance model until we were able to reduce the estuary stage to about 9.5 ft NAVD88, which would eliminate the flooding of the State Park. It ended up that a 30% reduction in effluent flow resulted in the lower estuary stage.

Question: Michael Lyons – Where does the rest of that effluent go?  
Response: Not determined in this study. Next phase of studies outlined in the work plan.

Question: Jenny Marek – Why is the estuary filling even with no discharge? What is the uncertainty of the model?  
Response: Scott Dusterhoff - The estuary fills to a lower elevation if no discharge – primarily from groundwater contributions. The models do have areas of uncertainty. There is uncertainty in both the ‘measured’ data (e.g., stage elevation, SCRE bathymetry) and ‘calculated’ data (e.g., groundwater discharge). It is very difficult to account for all error sources within this type of analysis.

Comment: Jenny Marek - Consider showing error bars in the report.

Question: Dan Detmer – Does the water balance model change as a seepage face of the berm decreases? The south arm is extended now further than has been in the past.  
Response: Scott Dusterhoff - Yes, the estuary water balance would change as the seepage face changes. This is not currently evaluated in the model/report. We are using the existing berm length.

Comment: Paul Jenkin – I would hate to think that having less water in this kind of habitat for steelhead would be considered a bad thing. With less water, there maybe more opportunity for vegetation that could provide better habitat for the steelhead.  
Response: Noah Hume – We were surprised by the lack of habitat complexity in the estuary and overall, the frequent high flow scour events tend to reset the system. Existing steelhead habitat area is primarily made up of large areas of shallow water over sand, along with limited structural cover from vegetation along the edge.

Question: Model of habitat is based on area not changes in vegetation and habitat?  
Response: Noah Hume – Correct. Habitat was based on available area not changes in future vegetation patterns.

Comment: Low flows/lower water levels in the estuary may lead to willows and other plants encroaching into the estuary.

Response: Noah Hume – In general, this estuary does not have long lasting vegetation features as storm flows tend to “reset” the system by scouring the river and estuary. Future edge habitat would move depending on the average water surface elevation and scour events but would have a similar structure as current conditions

Question: Jenny Marek – How was the climate change addressed? How did you choose the sea level rise values?  
Response: Lydia Holmes – We summarized information from many different climate models which each show a range of sea level rise. We selected a mid-range value of 1.35 ft sea level rise by 2050. We also used an increase of 2 degrees Celsius in air temperature which increased evaporation.

Question: Paul Jenkin – What is the current elevation of the discharge into the estuary?  
Response: Noah Hume – Outfall cascades down from pond water surface with approximately an 8 – 10 foot drop.

Question: Stan Glowacki – Do you have any analysis of how different alternatives affect breaching frequency? What about in winter during steelhead migration?  
Response: Scott Dusterhoff – For the modeling period, we implicitly modeled breaching frequency. The assumption was that the mouth would breach if the estuary stage got above 11 ft NAVD88, and the stage did not go above 10.5 ft NAVD88 for all alternatives. The reduced flow alternatives were designed to try to reduce the water levels in the estuary during the summer/fall to relieve either artificial or natural breaching. In the winter/spring, breaching dynamics are driven by river storm flows. Recent climate models predict increased ‘storminess’ in the future, which will probably result in more frequent mouth breaching. VWRP effluent is a minor contribution to the total inflow volume in the winter/spring.

Question: Nat Cox – Did the climate change analysis indicate if we are going to convert to a monsoon weather pattern?  
Response: Lydia Holmes – Predictions are that there will be an increase in extreme storm events – moving to more intense storms over a shorter time-frame (likely January and February). No predictions of rainfall moving to summer months.

Question: Do you have details on the water depths (for each estuary stage) for each alternative?  
Response: Scott Dusterhoff – Yes, in the report. The deepest part of the estuary has a bottom elevation of 5 ft NAVD88. At an estuary stage (water surface elevation) of 8 ft NAVD88 for the no discharge alternative, there is only 3 feet of water depth at the deepest part.

Question: Jason Weiner – Was the hydraulic model explained in the Report?  
Response: Scott Dusterhoff – Yes.

Question: Jason Weiner – Was there an analysis done on where the pollutants concentrate versus where the fish concentrate?  
Response: Noah – No, but we do have some information showing that nutrients are higher in the outfall channel. Based on the fish stranding resulting from the artificial breach last summer, it appears that goby and other fish are everywhere in the estuary.

Question: Jason Weiner – how was the estuary boundary defined?  
Response: Scott Dusterhoff – the inundated area when the mouth is closed and the estuary water surface reaches the ‘equilibrium’ stage (10.5 ft NAVD88)

Question: Nat Cox – Are the different sources of ground water into the estuary documented in the report?

Response: Scott Dusterhoff – Yes. The water balance model considers inflow from the ponds to the north, groundwater flow across the south bank of the estuary and the north bank of the river/estuary upstream of Harbor Blvd.

Question: Does the adjacent agriculture affect the ground water?

Response: Noah Hume – McGrath Lake is artificially drained to control the water level, which is likely high due to irrigation. The monitoring wells installed as part of this project along the southern edge of the estuary (in McGrath State Park) showed low nitrogen levels.

### **Conclusion /Next Steps**

- Meeting minutes and presentation materials will be posted on City website.
- Estuary Study Synthesis Report will be submitted to the RWQCB on March 7, 2011.
- Comments to the report are due February 21, 2011 to Karen Waln.
- Report will be submitted to RWQCB on March 7, 2011.
- City will request that the RWQCB allow comments on the report after the March 7<sup>th</sup> submittal.
- Phase 2 Recycled Water Study starts March 6, 2011 and is due March 2013. The Work Plan was approved December 2008

Question: What is the time period for selection of alternatives?

Response: Michael Lyons – This will not come to the Board before September.

## ESTUARY MEETING HELD FEBRUARY 10, 2011 ATTENDANCE LIST

<b>NAME</b>	<b>AFFILIATION</b>
Dan Pfeifer	City of Ventura
Gerhardt Hubner	VCWPD
Nat Cox	CA State Parks
Reed Smith	VTA Audubon
Alexis Hamilton	CA State Parks
Rich Rozzelle	CA State Parks
Paul Jenkin	Surfrider Foundation
Steve Howard	UWCD
Murray McEachron	UWCD
Ron Bottorf	Friends of SCR
Dan Detmer	UWCD
Betsy Cooper	City of Ventura
Jenny Marek	USFWS
Mark Pumford	City of Oxnard
Derek Booth	Stillwater Sciences
Karen Waln	City of Ventura
Claire Hopkins	Hopkins Groundwater Consultants
Cheryl Hopkins	Hopkins Groundwater Consultants
Lily Verdone	The Nature Conservancy
Mary Walsh	City of Ventura
Florence Jay	City of Ventura
Jason Weiner	Ventura Coastkeeper
Richard Sweet	Ventura Water System User
Kirsten James	Heal the Bay
Michael Lyons	RWQCB - Los Angeles
Noreen Murano	Resource Conservation Partners
Bob Krimmer	ATOZ Law
Jason Wong	City of Ventura
Stan Glowacki	NOAA Fisheries
Lydia Holmes	Carollo Engineers
Noah Hume	Stillwater Sciences
Scott Dusterhoff	Stillwater Sciences
Catherine McCalvin	UWCD