



- Phase 2 study is due March 2013 (per NPDES permit).
- Developing a Recommendations Memorandum on what needs more investigation in Phase 2.
  - Want input from the stakeholders on the alternatives that should be included and the additional studies needed to get stakeholder agreement on a recommendation to the Board.

### **Estuary Subwatershed Study - Noah**

Overview of the data collection and synthesis. Started with data gap memo and then collected data that was needed. Integrated the biological monitoring, water balance, and how these interact with the physical and ecological function of the estuary. Then looked at climate change impacts. From this we developed discharge scenarios.

Six alternatives were studied in the March 2011 Estuary Subwatershed Study:

Alternative 1: No Action

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

Alternative 3: Planned VWRP upgrades with further denitrification to approx. 4 mg/l TN

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

Alternative 5: VWRP effluent flow reduction with further denitrification

Alternative 6: Complete VWRP effluent flow removal (except for sufficient discharge to maintain the Wildlife/Polishing Ponds)

Looking at alternatives – there is a flow out of the estuary into the ocean through the sand berm - and then you have build up and breaching. See that Alternatives 1-3 you get no change in volume, but 4 & 5 you see a reduction - but would not go dry with no discharge removal. This is a dry season scenario. Summer condition is the most critical because our discharge has more impact then during heavy winter flows and the river is dominating the estuary events.

Water quality model – looking at components coming into the estuary – primarily flow and nitrogen.

Alternatives comparison table - reader needs to look down each column to compare.

- Don't see a difference in the goby habitat between alternatives.
- Steelhead - with flow reduction you do see decrease in habitat.
- Plover nesting along margin habitat, therefore reduction in estuary would give a temporary benefit of habitat until vegetation came in.
- Tern foraging no impact between alternatives.
- Water quality would improve with decrease in nitrogen
- Recreation would increase with less discharge at McGrath SP because of less flooding.

Conclusions from the report:

- Question of enhancement – are beneficial uses improved with the discharge as compared to the absence of flows? Yes – additional habitat is provided.

- Optimizing the discharge – Reduce flows in summer and reduce nutrient loading.

### **Stakeholder input on alternatives and additional data gaps to be filled – Noah& Lydia**

Received comments from stakeholders in several categories:

- Species evaluated and habitat needs for those species
- Water balance issues
- Breaching
- Confidence in model and data
- Water quality as pertains to suitable habitat
- Preference for particular alternatives
- Additional data needs/other recommendations

Today can we decrease the number of alternatives and can we see what would increase everyone's confidence?

Will be making some changes to the study based on comments received:

- Text clarifications and additions
- Will be doing some estuary stage and depth relationships
- Model sensitivity analysis to how sensitive the model is to changes in assumptions.

### **Questions and Next Step - Lydia**

- Sept. 16 we will provide an updated study to the Board.
- Response to Comment Matrix being developed
- Recommendations memo being developed – to list the additional data that needs to be gathered in the Phase 2 study to provide stakeholders confidence in moving forward.
- Phase 2 studies – will included more stakeholder workshops, incorporating recycled water study, treatment wetlands study and estuary study.

### **STAKEHOLDER DISCUSSION**

Paul Jenkins (Surfrider) – For Alternatives 1 through 3, why did you use a VWRP discharge of 5 MGD?

Scott Dusterhoff (Stillwater) – We were modeling dry season conditions from June through September. The long-term average VWRP discharge for this time period is 5 MGD.

Lydia Holmes (Carollo) – To be clear, we were just concerned with modeling the time of year when the VWRP discharge has the most ecological impact, on average.

Jenny Marek (FWS)– Phase 2 is due 2013. How are the permitting agencies going to be involved in how this final determination is going to be derived? Will we be commenting on the permit?

Lydia Holmes (Carollo) - Original NPDES permit established a Phase 1 (current studies) and a Phase 2 that integrate these studies and determine how to implement the findings. Not sure when the RWQCB would reopen the permit.

Dan Pfeifer (City) – Settlement takes into account the timeline for the Phase 2 due on 2013. Timeline includes the need to evaluate what the discharge regime would be.

Jason Weiner (VCK) – Settlement provides that if there is a dispute among the parties – then the decision is going to be kicked to a science panel that will send a recommendation to the permitting agencies.

Jenny Marek (FWS) – The same NPDES permit is going to be extended until a new permit is issued?

Brandi Outwin (RWQCB) – The permit can be extended to cover the timeline needed – considering where we are at in the process. The Board just learned of the settlement and have to see how this goes.

Brandi Outwin (RWQCB) – Regarding the issue of take – the Board has been told that they are liable that if one steelhead is taken. They hope through this process that we can get consensus with the agencies. Also they have the Bay and Estuary ruling that says all discharge should be removed from the estuary, unless there is a finding of enhancement. If effluent is still to go to the estuary – then they need to look at that from their own policy standards. Basically there are competing policies. They will bring the permit back in 2013 (for renewal), which will depend on the stakeholder process.

Brittany White (NMFS) – So the permit won't be changed until 2013?

Brandi Outwin (RWQCB) – The permit can be opened before then – but since Phase 2 is hashing out the details of this permit they would like us to work through the process.

Lydia Holmes (Carollo) – A permit has a compliance schedule associated with it – so it would dictate when any changes would need to be implemented.

Brandi Outwin (RWQCB) – When the permit gets reopen it will be a very public process.

Dan Detmer (United) – Is the whole range of alternatives still open to discussion?

Lydia Holmes (Carollo) – Yes. The settlement has a goal of 50% - 100% and the stakeholders and science can determine what that amount is.

Jason Weiner (Wishtoyo/VCK) – A minimum of 50% removal is what the parties agreed to in the settlement, and our agreement was based on the best available science. We agree that the resource agencies should provide their expertise to determine how much tertiary treated wastewater effluent should be removed.

Brandi Outwin (RWQCB) – Back to the endangered species act (ESA) is there anything in the settlement?

Jason Weiner (VCK) – The settlement requires that Ventura obtain all necessary permits for this to move forward.

Brittany White (NMFS) – There is a Memorandum (MOA) developed in 2001 between participating agencies of NMFS, EPA and FWS. It would be essential to try to coordinate outside of a formal Section 7 consultation if there are any changes to the permit – that the resources agencies get the opportunity to informally provide consultation. Brittany to look into this MOA for further information.

Jenny Marek (FWS) – Any ESA take would be the responsibility of the Regional Board? The alternative would be for the City to initiate a habitat conservation plan (HCP) as the other permitting option.

Donald Tsai (RWQCB) – Where would the water being diverted away from the SCRE go?

Dan Pfeifer (City) – The Settlement Agreement states that it will go towards Recycled Water.

Brandi Outwin (RWQCB) – We will have some discussion how to move forward – since the permit is the action that would have to be approved by the Board and resource agencies.

Dan Pfeifer (City) – The goal of the agreement outlines the best use of the water that is not discharged.

Richard Sweet – What process would be used by the resource agencies to decide if there is harm right now with the existing discharge?

Jenny Marek (FWS) – Now is our baseline condition. The decision to be made by the Regional Board is what is the change that they would be evaluating. So if the permit actually impacts the fish then there is an issue.

Brittany White (NMFS) – The action taken at this time would be the reduction in flows.

Jenny Marek (FWS) – The problem is that it is a tough call as to determine which and what species would be impacted.

Paul Jenkins (Surfrider)– You have a good number of potential impacts from the manmade breach that occurred last fall.

Brittany White (NMFS) – Yes, can use that information to understand that with that breach event how many Steelhead were stranded. But we can't predict this will be the same number in the future. We really don't have a good idea as to exactly how many Steelhead are using the estuary at any given time.

Paul Jenkins (Surfrider)– If the goal is to reduce discharge by 50% per the settlement. Does that mean the 3.5 mgd reduction we saw is close to 50% reduction?

Kirsten James (Heal the Bay) – Settlement says current annual average would be reduced.

Jenny Marek (FWS) – Why are we modeling 5 mgd?

Lydia Holmes (Carollo) – City diverts to recycled water in the summer months and has losses across the ponds – so 5 mgd is what we really see coming into the estuary during average summertime conditions (June through September).

Jenny Marek (FWS) – In Phase 2 report we would like to see the proposed alternatives based on all three studies (estuary, recycled water and treatment wetlands).

Lydia Holmes (Carollo) – Once we narrow down the alternatives we can use those studies to further evaluate the feasible options.

#### **<Reviewed the findings of the recycled water and wetlands studies>**

Don Tsai (RWQCB) - The final draft Groundwater Replenishment Reuse Regulations will be released by the CDPH for the public comment in the late September or early October 2011. The CDPH plans to submit a regulation package for adoption in early 2012.

Lydia Holmes (Carollo) - Treatment wetland studies found performance of Nitrogen removal varies with the type of treatment. We looked at different locations of where to put the wetlands. Not enough retention time on current site to reduce the nitrogen to background levels.

Elise Kelley (UCSB) – Was there was enough retention time on the McGrath Property (owned by the Nature Conservancy)? Answer yes.

Lily Verdone – The Nature Conservancy is in the process of acquiring additional lands between the plant and the McGrath property. Will be about an additional 100 acres. Goal is to acquire land from mushroom farm over to McGrath. The intent is to reconnect to the river to have a floodplain extension.

Lydia Holmes (Carollo) – For NPDES permitting of a treatment wetlands it gets complicated with the monitoring point. If you have to meet a numeric endpoint for compliance then this might be hard to do with wetlands that can be flooded.

Jason Weiner (Wishtoyo/VCK) – The settlement agreement could facilitate a solution to that regulatory hurdle. The agreement provides that discharges of tertiary treated wastewater from the treatment wetlands shall not contain nitrate in concentrations greater than 4.0 mg/L as a monthly average.

Dan Pfeifer (City) – City is in the process of completing a denitrification process by Oct 5th. Goal of improvements is to have effluent less than 10 mg/L total nitrogen.

Lydia Holmes (Carollo) – City has invested in reducing total nitrogen at the plant. While additional removal could be performed with wetlands, the City could also provide additional removal through processes at the treatment plant.

Noah Hume (Stillwater) – One option for creating a wetlands would be to a wetland upland area with an enclosed berm for a monitoring point and have an area below that which could be flooded. But we don't try to take credit for any removal in the flooded area.

Richard Sweet (Friends) – Need additional studies with United Conservation District on the amount of flow reaching the estuary. United is implementing a new flow regime with NMFS in the last year due to the HCP. Suggests the need to look into how much water is reaching the estuary from United and how much is percolating. The model should look at the planned operational changes by United.

Katherine McCalvin (United) – United is going to be looking at this as part of their HCP – Stillwater Science is looking at the effect of their diversion on the estuary and on fish passage. They are starting this study now. So what we are talking about will impact their analysis. That study is should be done by the summer of 2012.

Kirsten James (Heal the Bay) – Is there public opportunity to comment?

Katherine McCalvin (United) – Yes – there is a stakeholder process of folks that can be committed and stick with the commitment for the whole process. They need a permit very quickly so they are trying to move along – and they can't go back to looking at things after the fact.

Dan Detmer (United) – Under new regime, there is more water that will be going down the river in spring and winter.

Jason Weiner (VCK) – We would like to see a sub-lethal effects analysis for all the species impacted. Document studies for example of copper levels – salinity changes – toxicity acute and chronic of the full effects on the water quality of the species. Dr. Ambrose's report - shows more need for clarification how tidal influences impact stages – modeling will be useful.

Scott Dusterhoff (Stillwater) – What we show from the data collected and modeled is that when the estuary closes we see ocean fluctuation but we did not see the impact of this on estuary levels and groundwater level. So did not see change in estuary with ocean tides unless estuary is open.

Jason Weiner (VCK) - Then could you include that clarification in the revised report?

Jason Weiner (VCK) – Also need a more thorough toxicity report with the science community other than just endangered species.

Florence Jay (City) – We do quarterly algae toxicity studies. Every three years we do algae fathead larvae and daphnia – and now use a marine species. All the toxicity studies we do are available online.

Noah Hume (Stillwater) – City has an extensive data of toxicity studies and no indication in the data that there was any toxicity problem. It is very different to go from a lab to population impact. We can look into this in Phase 2 but we would have a hard time linking any finding to a potential take of species or to reproductive success. Scientifically interesting but speculation would be a part of that.

Jenny Marek (FWS) - I agree with Noah – taking a lab study - it is extremely difficult to extend to a population. City can work with scientist that get more information towards this issue – but it is very difficult.

Sean Anderson (CSUCI) - The goal is the health of the estuary not just endangered species. We need to look at diversity of species and look at the system as a whole. Something will get missed if we focus specifically at just a few species.

Brandi Outwin (RWQCB) – Want to focus back on the quality of the water that it is not focus species specific. The constituent choices are limited –we need to broaden the look at water quality. Mike Lyon could provide input to the expansion of the constituents that we should be looking at.

Jason Weiner (VCK) – We would like more analysis how the discharge impacts the natural salinity of the whole system and the species that utilize it. Macroinvertebrates, and possibly how the change in the discharge point impacts this. Overall the impact of discharge impact on salinity. If we could return the estuary as close to its natural regime as feasible.

Lydia Holmes (Carollo) – Let's focus on alternatives to pursue. New baseline in Oct will be Alternative 2, Alternative 3 is further reducing nitrogen but keeping flow same. Let's get more input from folks.

Jenny Marek (FWS) – Suggest looking at wetlands at TNC property combined with the most viable option from recycled water market study.

Lydia Holmes (Carollo) – Urban reuse is the most economical – this is also a dry weather season only use. Relieves the pressure on the estuary in the summer months only.

Elise Kelley (UCSB) – What about the wetlands in winter months?

Noah Hume (Stillwater) - Lower temps would be less effective for nitrogen removal – performance would drop off. So at the time when the urban users would be using the recycled water it is in summer time when less would be going through wetlands. Seasonal die offs of plants. Wetlands make it difficult to meet discharge point compliance year-round.

Brandi Outwin (RWQCB) – Looking at the Enclosed Bays and Estuaries Policy - if we continue to allow the discharge then we have say it improves the estuary. We are going to have to make an argument for year-round improvement to comply with the Enclosed Bays and Estuaries Policy. It doesn't distinguish from seasons. Brandi to look into this further.

Lydia Holmes (Carollo) – Hard to look around the state to see what is the enhancement – few examples. We looked at Arcata, and by adding wetlands they added habitat (so called it enhancement).

Dan Pfeifer (City) – So the question is if you move it to the wetlands on TNC are you then discharging to a river and not an estuary?

Kirsten James (Heal the Bay) – The Board needs to determine the estuary boundary.

Lydia Holmes (Carollo) – Then this is a wetland into river – but the permit would be to a river discharge and not an estuary - so don't have to demonstrate estuary enhancement.

Lydia Holmes (Carollo) – It doesn't feel like we have resolution on the alternative(s) that we carry forward. So does anyone want to leave all the water in the estuary? <No response>.

Lydia Holmes (Carollo) – What about improving water quality?

All – Yes

Kirsten James (Heal the Bay) – Need to look at a couple of different options when looking at the volume.

Sean Anderson (CSUCI) – You need to look at the sensitivity to key into the amount. Need to look at effect on the breaching.

Richard Sweet (Friends) – Look at if all the discharge could be percolated in the lower reaches in the lower lenses in the fresh water tables rather than sending up to the Fox Canyon – send it to the lenses of the estuary.

Kirsten James (Heal the Bay) – City goal is to get as much water recycling. So looking at the recycle water study – how we can think beyond this. So maybe percolate.

Jason Weiner (Wishtoyo/VCK) – If percolated then the discharge would have to go to a useable groundwater aquifer.

Brittany White (NMFS) – For most of year is the effluent is a major source of water?

Lydia Holmes (Carollo) – Not in the winter. But in the summer months, yes.

Brittany White (NMFS) – Then in the summer if that water is not there – what does the habitat look like if all gone – so if the water needs to be there in the summer – it is adding habitat. NMFS is interested in both water quantity (to provide habitat) and water quality.

Nat Cox (State Parks) – In absence of effluent there is water that will come in from the ground.

Noah Hume (Stillwater) – In the sampling to date it appears that the ground water looks good (in terms of quality) – but we can't get data from the farmers in the area to test the ground water. We can put piezometers up the river in the dry months to see what kind of ground water is filling the estuary during the summer months.

Sean Anderson (CSUCI) – Can we shut the water off for a few months in the summer? That would answer a lot questions. Could be done in such a way that if there is any issues we stop the process. Do a pilot of doing a temporary diversion – take a pipe out to the ocean.

Brandi Outwin (RWQCB) – The answer is no way will you get a permit to do this.

Jenny Marek (FWS)- Would like to see any change done slowly to see the effects.

Brandi Outwin (RWQCB) – In 2008, the RWQCB proposed 10% stepwise reduction in VWRP discharge into the SCRE. The idea was ultimately rejected because studies aimed at understanding the impact of this reduction on the SCRE had not been done yet.

Dan Pfeifer (City) – Any diversion has to be able to take the entire plant flow.

Paul Jenkins (Surfrider)– Attended a City water efficiency plan meeting. We need to look at

the supply side of the equation. Up to two-thirds of water coming to VWRP is coming from Ventura River Watershed. Should be doing Ecosystem-Based Management (EBM). This is beyond the scope of work. But we have an end of pipe problem. We need to look outside the box. The City needs to take a serious stab at an integrated water management plan that includes stormwater, wastewater and water supply – and from that comes out of the box solutions. And there are lots of grant funding to come up with creative out of the box ideas.

Noah Hume (Stillwater) – We've had this discussion before – so what is coming in and coming out of the plant – Paul's notion is that we do decentralize the water treatment instead of one treatment place.

Paul Jenkins (Surfrider)– Idea would be to look at graywater management and less centralized treatment.

Noah Hume (Stillwater) – Look at ways to reduce wastewater coming into the plant.

Elise Kelley (UCSB) - Asked for a State Parks update on McGrath State Park.

Rick Rozzelle (State Parks) – Working on several funding sources to keep it going – Need 0.5 million to replace the sewer pipe – the pipe going to VWRP is old and we have very little confidence in it. Land conservation gave money to keep park open, but not enough for pipe replacement. Working on other funding to keep park going. Also Working with Wishtoyo on funding to get the campground out of the flood plain.

Elise Kelley (UCSB) – So if you are going to move campground – can the estuary be allowed to expand the wetlands area of the park?

Rick Rozzelle (State Parks) - Process is always happening. They would need to remove structures.

Jason Weiner (VCK) – More opportunity for side channel habitat. Good part for the analysis in Phase 2 is to look at.

Rick Rozzelle (State Parks) – Looking to move the campgrounds behind the dunes near McGrath Lake. So this would add area for restoration.

Jason Weiner (VCK) – Looking at different habitat scenarios under discharge regimes. This could create some habitat side channels.

Scott Dusterhoff (Stillwater) – There is a side channel that use to be a trail on the property.

Dan Blankenship (Ca Dept of Fish and Game) – Reduction in flows and water quality seems hopeful and like the use of the TNC property.

## **SUMMARY OF WHITE BOARD DOCUMENTATION**

### **Alternatives to Consider:**

- Wetlands at Nature Conservancy property and recycled water
- Percolate water upstream where could add to the base flow of the river
- Water efficiency effect on discharge evaluations
- Integrated planning for water/stormwater/sewer – decentralized treatment, direct/indirect reuse
- Restoring McGrath SP as part of estuary to provide additional habitat
- Pilot to take water out to ocean
  - RWQCB staff confirmed this would be extremely hard to permit
- Ventura to Oxnard outfall

**Group agreed that improving water quality and reducing discharge is the right way to go.**

**Additional Data Needs:**

- Marry the three studies (estuary, recycled water, treatment wetlands)
- Studies with United Conservation district
  - additional flow down river – how much reaches the estuary?
  - looking at new flow regime with habitat conservation plan
  - more flow will be released in winter and spring
  - Study to be done summer 2012
- Sub-lethal effects analysis of water quality on all endangered species
  - copper, salinity, toxicity, temperature
  - reference other studies
- Tidal influences on stage of estuary
  - clarify in report what is seen in the model
- Toxicity analysis
- Potential impacts on a broader diversity of species should be considered
- Quality of water overall needs to be considered – not just for endangered species
- Discharge effect on salinity and the effect on macroinvertebrates
  - where the discharge is located in the estuary
- RWQCB on Enclosed Bays and Estuaries Policy)
  - have to show improved estuary – not seasonally dependant
  - Brandi to check into further
  - Need decision on background
  - At what point upstream does the discharge become a river discharge
- Groundwater data upstream
- Impact of salinity on invasive species
- Impact of invasive species on native species

**CONCLUSION /NEXT STEPS**

- Meeting minutes and presentation materials will be posted on City website.
- Final Estuary Study Synthesis Report and Memorandum of Recommendations will be submitted to the RWQCB on September 16, 2011.
- Phase 2 Study due March 2013.

**Prepared By:**



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Lydia Holmes