



**DRAFT September 09, 2009 Meeting Notes**  
**Dungeness River Management Team**  
**Dungeness River Audubon Center**  
**Railroad Bridge Park, Sequim, WA**  
**2:00 – 5:00 P.M.**

*Notes prepared by: Melissa Coughlin*

**Team Members/Alternates in Attendance:**

Steve Tharinger, Clallam County  
Cathy Lear, Clallam County (alt)  
Cynthia Nelson, WA Department of Ecology  
Scott Chitwood, Jamestown S'Klallam Tribe  
Shawn Hines, Jamestown S'Klallam Tribe (alt)  
Bob Caldwell, Water Users Association  
Al Moore, Riverside Property Owners (RM 0 - 3.25)  
Virginia Clark, Dungeness/Quilcene Planning  
Les Jones, Dungeness/Quilcene Planning (alt)  
Robert Brown, Dungeness Beach Association  
Don Hatler, Sports Fisheries

Joe Holtrop, Clallam Conservation District  
Michael Blanton, WDFW  
Lorenz Sollmann, USFW  
Scott Hagerty, USFW (alt)  
Pete Tjemsland, City of Sequim  
Ben Rankin, City of Sequim (alt)  
Michele d'Hemecourt, North Olympic Land Trust  
Judy Larson, Protect Peninsula's Future  
Pete Schroeder, Riverside Property Owners (RM 3.25-4.25)

**Others in Attendance:**

Gary Gleason, PA Planning Commission, EMMT  
Ann Soule, Clallam County  
Hannah Merrill, Clallam County & EMMT  
Philip Marts, City of Sequim  
Peter Schwartzman, Pacific Groundwater Group  
Chuck Sullivan, Sequim Resident  
Diane Nelson, League of Women Voters  
Marguerite Gover, Sequim Resident

Bob Philips  
Byron Rot, Jamestown S'Klallam Tribe  
Robin Berry, Graysmarsh  
Matt Heins, Dungeness Farms  
Elizabeth van Sickle, Property owner/Resident  
Bob Boekelheide, Dungeness River Audubon Center  
Powell Jones, Dungeness River Audubon Center  
Melissa Coughlin, Independent Contractor/note-taker

**2:10 P.M.**

**I. Introductions /Review Agenda / Review of Field Trip slides from August**

- Introductions all around.
- Bob Boekelheide announced the pinks (salmon) were running and could be seen from the bridge.
- Today's agenda was reviewed and accepted. August DRMT Field Trip was discussed briefly; group was impressed particularly by the Forest Service stewardship project in Slab Camp. The project thinned 69 acres, and the timber was sold to fund other restoration projects. The down-turn in housing development has driven down material costs in the current economy, but there is still a market for materials, especially for Hemlock and Douglas fir. If there are further questions you may e-mail Scott Hagerty.
- In November the second Wednesday of the month falls on November 11<sup>th</sup> (Veteran's Day). Bob Caldwell moved that the group hold November's meeting on November 4<sup>th</sup>; Virginia Clark seconded the motion which passed unanimously.

**Public Comment:**

- Matt Heins acknowledged the Jamestown S'Klallam Tribe's effort, with help from landowners, in removing old levees and dikes from the estuary. Michael Blanton has pictures of the effort that he will send Shawn to distribute to team. A dike on WDFW property was also breached as part of the project.
- Bob Boekelheide reminded everyone that the River Festival is September 25, 26 and 27 this year. Please attend.

**II. Dungeness Aquifer Recharge Feasibility Study – Ann Soule, hydrogeologist for Clallam County**

- Ann Soule handed out hardcopies of her PowerPoint presentation and Dungeness Aquifer Recharge Feasibility Study (March 2009) scenario comparison grid.
- Project included meetings of the Aquifer Recharge Technical Advisory Group (TAG) that discussed progress and scenarios. TAG met over 20 times in the last 2 ½ years. TAG's status was reported at periodic DRMT meetings.
- Project included pilot testing in irrigation ditches which were repeated twice in late spring of 2007 and 2008.

- A great deal of data was gathered throughout the study. Ann went over graphs displaying (1) groundwater elevations in monitoring wells in the 2007 and 2008 AR pilot tests and (2) flow rates as an indicator of infiltration – AR compared to Dungeness River (assuming 1% loss of flow measured at USGS gage). Results were hard to interpret AR from River recharge. With so much data, analysis is not finished, Ann hopes to get more help from DOE to continue interpreting data sets.
- Modeling included reviews, adjustments and calibrations; peer review/input and training; several recharge scenarios were selected and were run multiple times (scenario selection involved consideration of factors such as depth to water, soils, permeability, municipal wells, etc.). Model had to be recalibrated for multiple runs on various scenarios.
- Detailed feasibility analysis was run on three scenarios: selection of sites was based on hydrogeology, source water, site feasibility, and intents of conducting the aquifer recharge. The executive summary outline looked at the three scenarios that were selected: (A) Aquifer recharge: river water infiltration in ditches, west side. (B) Aquifer recharge: reclaimed water infiltration in basin, east side. (C) Aquifer storage and recovery: river water injected to deep aquifer and recovered. Storage of water for later recovery. Key elements for comparison, for source water as well as for recharge: effects on streamflow; effects on habitat; project cost and risk. Costs to implement the various scenarios range from \$150,000 - \$8 million. Model was used to estimate effects on streamflows, which ranged from -0.3 cfs to "several" cfs depending on timing, location (caveat about amounts: <5-10 cfs will not be measurable).
- Final analysis and feasibility report will be available on-line soon. Now at <http://www.clallam.net/environment/>
- Project cost totaled \$½ Million by the time extensions were funded.
- Ann referred to the information in the following: "Dungeness Aquifer Recharge Feasibility Study (March 2009) – Scenario Comparison" (provided below) when comparing the three scenarios.

	<b>Scenario A</b>	<b>Scenario B</b>	<b>Scenario C</b>
	<b>River Water Infiltration via Ditches</b>	<b>Located to benefit small streams and River</b>	<b>Mitigate for new water rights</b>
<b>Primary Purpose</b>	Located to benefit Dungeness River flows	Located to benefit small streams and River	Mitigate for new water rights
<b>Zone of recharge</b>	Shallow Aquifer	Shallow Aquifer	Lower confined or deeper portions of the aquifer system
<b>Source water</b>	River	Reclaimed	River via bank filtration (RBF)
<b>Type of Recharge</b>	Infiltration via unused irrigation ditches (AR)	Infiltration via infiltration pond/basin (AR)	Separate injection and pumping wells (ASR)
<b>Location</b>	West of River at modeled site #9 (pilot-tested ditches in Carlsborg area)	East of River near modeled site #6, north of City (2-3 miles of conveyance pipe estimated)	"Diversion" from infiltration gallery near River; injection to deep aquifer either near shallow wells or other location west of River; extraction from deep aquifer west of river-at unidentified sites
<b>Recharge rate</b>	2-10 cfs (depends on results of recharge test data; likely <10)	Up to 3 cfs	2 cfs considered a reasonable maximum at this time
<b>Recharge timing</b>	2 months (mid-May – mid-July) and 6 months (mid-Jan – mid-July)	8 months (October – May)	2 months of injection during freshet (mid-May – mid-July); recovery (withdrawal) for water supply assumed to be 2 months following injection, to offset normal peak demand from conventional withdrawals in summer
<b>Source water limitations</b>	Source water is only available during spring freshet without special water right or senior transfer (approx 2 months)	City has no obligation to maintain source water	source water is only available during spring freshet without special water right or senior transfer (approx 2 months); filtration needed for turbidity (RBF or above-ground facility)
<b>Infiltration capacity</b>	Max infiltration capacity for existing ditches evaluated is 5-7 cfs (est.)	Scenario B site infiltration capacity is site dependent; field tests needed to confirm	2 cfs assumed rate of injection, west of river; lower confined aquifer capacity varies, may require >1 ASR well; deep (unexplored) aquifers suggest greater potential but exploratory drilling necessary to determine capacity to inject and recover
<b>Extent of analysis</b>	Comprehensive, site-specific	Screening-level for broadly-defined site	General, including multiple sites
<b>Fixed costs</b>	\$137K - \$155K	\$4.1 – \$8.3 million (depends on # sites initially characterized, scale of studies done, infiltration capacity of sites, and length of pipe needed)	\$2.6 – \$5.7 million (or more if RBF isn't adequate)
<b>Annual costs</b>	\$15K (for 2 month AR)	\$60K – \$70K	\$135K – \$200K
<b>Timing</b>	<1 year to complete	3 years to complete (includes 4-6 month pilot testing)	Potentially 7.5 years before pilot testing complete
<b>Max/Positive</b>	7 cfs over 2 months is predicted to	3.1 cfs AR over 8 months is predicted to	Impacts to mainstem Dungeness or

<b>effects on Dungeness streamflow</b>	provide max 3.1 cfs flow to Dungeness (1.6 cfs max during low flow season); 7 cfs over 6 months would provide max 4.7 cfs flow to Dungeness (max 2.8 cfs during low flow season)	provide max 1.1 cfs to Dungeness; maximum enhancement likely in July-August	the order of +/- 0.1 cfs with maximum effect of +0.4 to -0.3 cfs, depending on aquifer permeabilities assuming "created" water supply is infiltrated then it would offset streamflow diversion/depletion
<b>Minimum/negative effects on Dungeness streamflow</b>	7 cfs over 2 months is predicted to provide at least 0.2 cfs flow to Dungeness (min 0.7 cfs max during low flow season); 7 cfs over 6 months would provide at least 0.7 cfs flow to Dungeness (min 1.4 cfs during low flow season)	3.1 cfs AR over 8 months is predicted to provide at least 0.7 cfs in Dungeness; maximum enhancement likely in July-August	Small reduction during diversion cycle (see numbers above)
<b>Effects on habitat Dungeness</b>	7 cfs AR over 2 months is predicted to provide 2-3% increased WUA during low flow; 7 cfs over 6 months would provide 3% increased WUA; impacts of spring diversion unmeasurable but may improve habitat; return flow happen downstream of diversion, some time after AR	3.1 cfs AR over 8 months is predicted to provide minor/unmeasurable changes in WUA (1%) in Dungeness	Impacts of spring diversion unmeasurable but may improve habitat
<b>Positive effects on small stream flows</b>	7 cfs AR over 2 months is predicted to provide max 0.2 cfs flow to Matriotti Creek* (0.1 cfs during low flow season), and insignificant effects on other streams	3.1 cfs AR over 8 months is predicted to provide max 0.5 cfs flow to Cassalery Creek and 0.6 cfs flow to Gierin Creek; maximum enhancement likely in July-August	If "created" water supply is reclaimed and infiltrated then it would offset streamflow diversion/depletion
<b>Negative effects on small stream flows</b>	N/A	3.1 cfs AR over 8 months is predicted to provide at least 0.3 cfs flow to Cassalery Creek and 0.5 cfs flow to Gierin Creek; maximum enhancement likely in July-August	Impacts to small streams from ASR withdrawals are smaller but more widespread
<b>Effects on habitat small streams</b>	7 cfs AR over 2 months is predicted to provide 0.01-0.2 cfs flow to Matriotti Creek* (0.1 cfs during low flows); 7 cfs over 6 months would provide 0.1-0.4 cfs to Matriotti* (0.2 cfs during low flows). And insignificant effects on other streams	Benefits to small streams could be significant due to already low baseflows in these streams: up to 50% increase in baseflow in Cassalery and Gierin Creeks maximum enhancement likely in July-August; would depend on specific site of infiltration	N/A
<b>Mitigative potential</b>	May offset impacts of new groundwater development in deeper aquifers due to shallow aquifer augmentation and delivery of water to streams; mitigative benefits are mostly to Dungeness (minimum 0.7 cfs during low flows) with little benefit to small streams; highly dependent on location of AR	May offset impacts of new gw development in deeper aquifers due to shallow aquifer augmentation and delivery of water to streams; benefits Dungeness (0.7 cfs) and small streams (0.5 cfs Cassalery and Gierin Creeks)	Net streamflow capture would be smaller than from conventional withdrawals in deeper aquifers; reclaimed water would offset streamflow diversion/depletion
<b>Estimate of success</b>	Most benefit per unit cost; high likelihood of success	Good likelihood of success at various sites; requires high up-front costs and ongoing management	Would help with water supply and possibly augment streamflows; greater financial risk
<b>Project risk</b>	Climate change may lower availability of source water	Actual results may vary from modeling based on specific siting of facilities within broad area considered; final site selection may require assessment (and potential purchase) of more than one site; water quality concerns; public response; reclaimed water availability not guaranteed	Final site selection may require assessment (and potential purchase) of more than one site; site assessment costs high; river water infiltration method unknown; climate change may lower availability of source water
<b>Concerns</b>	Main concerns include reliability of source water due to flow, conveyance capacity, conflicting needs of cooperating irrigators, and changes to timing/magnitude of freshet from global warming	Main concerns include competition with other uses of reclaimed water, changing regulations, water quality considerations (e.g., PPCPs)	Main concerns include uncertainties about the deeper aquifers (model results are preliminary due to uncertainties in accuracy of deeper model layers), changes to timing/magnitude of freshet from global warming

\* modeling process determined that surface-ground water connection for lower Matriotti Creek is not fully characterized, and modeled results are not reliable.

- Ann showed an idealistic and simplified look at recharge available on-line at: [www.asrforum.com/files/images/flash/asrani.html](http://www.asrforum.com/files/images/flash/asrani.html)
- In summarizing the studies, Ann said that streamflow augmentation numbers (measured in cfs) are small relative to desired flow enhancement, but may still have mitigative potential (noting that changes to habitat must be ~ 10% WUA to be measurable); two or more approaches could be used in combination; Reported effects on streams from 3

scenarios are based on geographic and aquifer location; amount and timing of AR/ASR (modeling show effects to be linear relative to rate of recharge; Final implementation costs and design considerations are transferable to other sites (but recharge projections may not be); Consider impacts to river and other streams; Source availability may change: climate change could alter seasonal availability of river water and other factors could affect reclaimed water availability. Ann thought AR/ASR could work with the right combination of projects and careful management.

- Judy Larson asked if study considered filtering reclaimed water through wetland area for treatment as well as for habitat. Ann said the project's focus was water resources, stream enhancements through aquifer recharge and storage; wetlands were not part of project (though some groundwater may discharge through wetlands into streams).
- Steve Tharinger asked if there was anywhere in the state where they are injecting water for recharge. Peter Schwartzman said Walla Walla and another site in Oregon. Difficult to use reclaimed water for recharge. Steve asked if river water could be used. Peter Schwartzman answered that river water already recharges shallow aquifers, and the subsurface filters pathogens. Water is available during high flow. Turbidity is an issue.
- Don Hatler brought up the Atterbury project for water in Dungeness for July-August-September timeframe – same sort of order of magnitude in numbers – maybe look to that when comparing for “bang for your buck” (Steve Tharinger explained Atterbury as a surface water storage project – 26 acres – Clallam Conservation District looking at this for late season discharge).
- Robert Brown asked if anyone had looked at the substrate here and how it compared to other successful AR activities – whether the composition of the material where they are pumping has anything to do with the success of the project. Peter Schwartzman said they did look at that. Had more experience east of the river. West of the river only a few wells tapped to the deeper aquifer. Found limited connection to overlying system, less connection means more containment, which would be good for ASR.
- Scott Hagerty asked if the TAG looked at water temperature when it was pumped out. Would there be a benefit to fish and habitat in river. Peter said they didn't look at the temperature, but could see that the colder river water might cool the aquifer, but the temperature would be dispersed over a wide area. Mike Blanton commented on the concern over low DO (dissolved oxygen) when pumping groundwater and putting it into the river.
- Steve Tharinger closed topic by saying that storage and recharge isn't a silver bullet, there are some advantages, but it may require a combination of projects to manage the budget and the water. Rule process will affect how we move forward.

### **III. Washington Department of Ecology Updates – Cynthia Nelson, WA Department of Ecology**

- Scheduled to file Rule by the end of year (late November) -- assumes major issues will have been negotiated.
- Still working on: metering and what the mitigation strategy will look like.
- Will put the rough draft rule on-line for comments when it has reached that stage, some time this fall. Will need six week window (for internal reviews).
- Working on Rule which will set the foundation for the mitigation/exchange. Still need MOU with County, explanation of exchange process for the public.
- Steve Tharinger explained that the County has received grants to develop the exchange MOU. County has written letter to DOE supporting the water exchange. Details of exchange is ambiguous at this stage, but the County's position is that some sort of mechanism needs to be developed to provide a process to manage a water exchange. They are close to defining a contract with DOE.
- Steve said the thought is that probably Washington Water Trust will be sub-contracted to help set up, company has experience with setting up in Walla Walla and knows the Dungeness Basin. Long-term depends on administration and management costs.
- Cynthia stated that the WUA is interested in Ecology distributing superseding certificates, which would confirm how much water the WUA have actually been using recently (as compared to original water right).
- Cynthia announced that part of a state-wide gaging program is to develop a spreadsheet to locate gages and determine where gages are needed. Cynthia needs a small group with representatives from County, Tribe, etc. to work on defining priorities (fish, irrigation) and other input for gages.
- October 22<sup>nd</sup> west side watershed planning meeting. E-mail with details was forwarded to group. Will discuss exempt wells issue, look for more agenda details in e-mail. Cynthia will need a head count in a couple of weeks. All interested watershed planning unit members are invited.

### **IV. Dungeness Middle Reach Flood Modeling / Outreach Project – Byron Rot, Jamestown S'Klallam Tribe**

- Byron passed out draft letter to landowners re: proposed meetings to discuss reducing flood risk and improve salmon habitat conditions.
- There has been a lot of restoration work in the river, but nothing on the stretch between Kinkade Island and Dungeness Meadows. The EDT (ecosystem diagnostic testing) has labeled the area as number one most important for recovering Chinook life history; 2<sup>nd</sup> most important for recovering productivity for Chinook; about 35% of reach has levees or banks armor.

- Have a grant for planning some restoration projects.
- Proposing meetings with landowners to present projects, get feedback. Want to contract with someone for flood-modeling and risk hard assessment. Develop reach restoration strategy. Timeline: Initial landowner meeting: Fall 2009; Hydraulic modeling and risk assessment: Spring 2010; Preferred restoration list: Summer 2010.
- Pete Schroeder asked how far south of Kinkade Island is the area of concern, up to the hatchery? Byron said yes, and it makes sense to start with infrastructure upstream and work downward from there.
- Many social issues make restoration work difficult, not good habitat, fast water.
- Cathy Lear said that in 2001 and 2002 the County applied for money through a state emergency fund. There wasn't enough damage to meet the threshold for funding; she thought this approach was better than waiting to meet the formula criteria. Steve thought it was a good move; Tribe took the lead in applying for the grant.
- Discussion began on how the draft letter to landowners should be signed. DRMT includes the Tribe; signature can be the DRMT, not an individual. Michael Blanton made some specific suggestions such as taking out Jamestown S'Klallam Tribe in the first sentence, and saying the DRMT would like to invite... so that J'SKT isn't apart from the DRMT. Don Hatler brought up the investment the County has in the flood situation, such as the Flood Hazard Management Plan and the people involved in that, people may look first to the County for flood relief. Byron suggested that may be part of the kick off meeting, expand the meeting to more than salmon restoration – protecting people's homes.

## V. Other Business

- Puget Sound Partnership – Steve Tharinger talked about the meeting scheduled for Friday. PSP is busy with efforts to implement salmon recovery and Action Agenda across each Action Area across the entire Sound. Working at local area to accomplish, with each action area taking its own approach.
- Workgroup to pull together Strait portion of Action Agenda had already been formed; it worked to develop a framework for the Straits Ecosystem Recovery Network. Consists of two county workgroups - one for Clallam County and one from Jefferson County. Holding the first meeting (all day) September 11 to focus on updates of Shoreline Master Plan (for 3 jurisdictions in Clallam County: Port Angeles, Sequim and Clallam County). Will ask what role the Clallam workgroup will play in updating the Shoreline Master Plan (technical role, policy, both). Meeting will then spend 2 ½ hours on Strait Ecosystem Recovery Network. Meeting will also contain 2 hours on oil spill prevention, recovery, and response, with experts presenting and answering questions. Will develop actions to take on at local level. Last ½ hour will be dedicated to 2-page document on integration and implementation for each action area. Strait Eco-net will join at the working lunch with David Freed and will discuss outreach and education for upcoming actions as well as role of Strait Eco-net. Jefferson workgroup will follow focusing on priority setting. Workgroups will meet only 4 times a year to minimize people's time. You can attend for just your interest. This meeting is all day at the Red Cedar Hall at the Jamestown S'Klallam Tribe facilities.
- John Cambalik will be the restoration coordinator, working on the Shoreline Master Plan, to combine the initial phases of that process. This is an issue where jurisdictions will need to work and talk together. Sequim and County people plan to share consultants and work. Cathy Lear said the set of issues are different and there have been discussions on where it will be efficient to work together and where separately. Uses are complex; some jurisdictions have rivers, lakes and shorelines to consider. Cathy said there are lessons to be learned from Jefferson County and City of Port Townsend who have finished with their plan.
- Joe Holtrop announced that the Conservation District is going to be celebrating 50 years (actual anniversary is September 29<sup>th</sup> – Olympic Soil Conservation District) in late October.
- Bob Boekelheide announced 9 year anniversary of the Wednesday morning birdwalks at the River Center.
- Virginia Clark announced President's address to Congress on Health Care Reform will be on television tonight.

## VI. Meeting Adjourned at 4:20 P.M.

### Handouts:

- *Aquifer Recharge Feasibility Study for the Dungeness Peninsula* –handed out by Ann Soule
- *Draft Letter from DRMT to Landowners re: Dungeness River Planning meeting for river projects from Kinkade Island downstream to Dungeness Meadows* –handed out by Byron Rot