WRIA 9 Implementation Technical Committee Meeting
September 21, 2023 | 9:30 am – 11:30 am
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Meeting ID: 291 061 535 541
Passcode: uafR9e

9:30	**Welcome & Introductions**	
9:40	**Status & Trends: Flow Regime** *Presentation followed by Q&A and group discussion.* **Pre-meeting reading:** Flow regime, pp. 95-100, WRIA 9 2012 Status & Trends WRIA 9's Salmon Habitat Plan and Monitoring and Adaptive Management Plan recommend monitoring consistent metrics over time to evaluate cumulative habitat conditions in relation to restoration efforts. Bailey will review metrics associated with flow regime: the number of habitat-forming/channel-forming flow days (daily average flows above 8,800 cfs), scour flows (5,000-8,800 cfs), and low flow days (flows below 300 cfs). This analysis was undertaken in support of the WRIA 9 2023 Status & Trends report.	Bailey Keeler & Kollin Higgins, King County Science Section
10:25	**Status & Trends: Water Temperature** *Presentation followed by Q&A and group discussion.* **Pre-meeting reading:** Temperature, pp. 112-115, WRIA 9 2012 Status & Trends The temperature metric reported in the 2012 Status & Trends report was the number of days Soos and Newaukum Creeks violated state water temperature standards (i.e., number of times the 7-day average of daily maximum temperatures exceeded 16°C during July 1-September 15 and 13°C during September 16-June 30). In addition to continued monitoring of this metric in Soos and Newaukum Creeks, WRIA 9 recommends expanding this analysis using data from mainstem river gages where available. Iris will review available data and results. This analysis was undertaken in support of the WRIA 9 2023 Status & Trends report.	Iris Kemp, WRIA 9
11:05	**Discuss potential projects: PSP Watershed Habitat Assessment Funding** *Brief overview followed by group discussion.* The Puget Sound Partnership is accepting submissions for the Watershed Habitat Assessment funding opportunity to support Puget Sound Lead Entities and partners to assess and report on salmon habitat. Project sponsors will present their ideas to the WRIA 9 ITC for discussion.	All
11:30	**Adjourn**	

WRIA 9 ITC web page: http://www.govlink.org/watersheds/9/committees/ImpleTechCmte.aspx

Participant list:
Alicia Kellogg, Bailey Keeler, Bridget Kaminski, Chapin Pier, Chester Bennett, Chris Gregersen, Cleo Neculae, Erik Rigaux, Iris Kemp, Josh Hopkins, Josh Kahan, Kate McLaughlin, Kathleen Hurley, Kerry Bauman, Kollin Higgins, Kyle Comanor, Marc Marcantonio, Matt Knox, Mike Perfetti, Natane Moore, Patty Robinson, Rowena Valencia-Gica

Updates and Reminders

- Please welcome Chester Bennett (City of Renton), Kate McLaughlin (RCO), and Kyle Comanor (USACE) to the group and welcome back Suzanna Smith, WRIA 9 Habitat Projects Coordinator, as she returns from parental leave!
- The King County Flood Control District voted Flood Control District voted unanimously in favor of the WRIA recommended CWM projects presented this year. ITC members, thank you again for reviewing and providing input on the 2023 funding package!
- Job opportunity: Environmental Specialist (TLT) in Public Works Engineering at City of Kent. Please distribute through your networks. Application period closes October 18, 2023.
- Funding opportunity: DNR 2024 Community Forestry Assistance Grants for projects $5k-$40k that include:
    - Community outreach and development (ex. surveys, volunteer events, interpretative signage, translation services)
    - Education and training (ex. multimedia projects, planning courses, workshops)
    - Tree plantings on public property (including demonstration projects, new plantings)
    - Tree pruning and maintenance for public trees (including removing invasives)
    - Program development
    - Ordinance and policy development
    - Public tree inventories
    - Urban Forest Plans

  Eligible applicants include cities, towns, counties, tribes, 501c3 non-profits, educational institutions, and special taxing districts such as school districts, parks districts, conservation districts, etc. Visit this link for more info on this opportunity and grant webinars: https://dnrtreelink.wordpress.com/2023/07/12/dnr-offers-grant-webinars-to-assist-applicants-in-2024-grant-cycle/

Status & Trends: Flow Regime (link to slides)

Pre-meeting reading: Flow regime, pp. 95-100, WRIA 9 2012 Status & Trends

This analysis evaluated effects of Howard Hanson Dam (HHD) management on flow regime for water years 2011-2018. Data were provided on Green River daily average flow at Auburn as observed and as modeled without HHD.

Flows and flow regime metrics reported on reflect habitat/channel forming flows (metric: daily average flows greater than or equal to 8,800 cubic feet per second (CFS), scour flows (metric: daily average flows between 5,000 CFS and 8,800 CFS), and low flows. Habitat-forming flows can reshape the river channel, increase floodplain connection, and create off-channel habitats. These flows engage restoration projects in the Middle Green and are needed to fully realize the habitat benefits of those projects. Scour flows scour the channel but are insufficient to create new habitat; they are tracked to give context on scouring impact to redds and management implications for flows, scour, and sediment dynamics. Low flows can be important at specific salmon life stages; there is currently no set metric for low flows and we are asking for ITC guidance.

HHD dam operations reduced the magnitude of high flow events and the frequency of channel-forming flows, increased the frequency of moderate flows ("scour flows"), and reduced the frequency of flows below 300 CFS.

The ITC was asked to weigh in: should WRIA 9 track a low-flow metric? If so, what should that metric be? If not, should this portion of the analyses continue to be included in future status and trends reports?

Q&A:

- Cleo - I would like to understand how the metric is related to temperature.
    - Kollin – Curtis DeGasperi produced a report that, surprisingly, found little impact of flows on temperature. Kollin can provide the report.
    - Marc – downstream temperatures are related to where the water is pulled from to get below the dam. Have we ever considered aerators or mixers to reduce temperature stratification in the reservoir? This has been done in other drinking water systems.
        - Kyle – I don't think this has been a topic of consideration but can investigate.
- Mike – interested that the estimates of flows without the dam are so low – approaching zero flow.
    - Bailey is investigating further into the details of the methodology used to produce the "no dam" estimates. Do those estimates reflect no dam AND no Tacoma diversion?
- Kerry – historically, the river would have had water inputs from the White River, Cedar River, and Black River. How would low flows look if we still had those water inputs? What are the implications for the lower Green? This is not a "natural" system even without the dam.
    - Kollin – we're not trying to exclude the Lower Green. The data we have is just from the Middle Green. Think the importance of these results is that they suggest parts of the Middle Green could dewater without the dam at this point.
- Kollin & Kyle provided background context on the Habitat Conservation Plan (HCP) related to the MIT-TPU agreement that sets flow thresholds. Suggest that further questions and discussions about the HCP be deferred to Nik Novotny.

- Cleo - Unrelated to the metric but related to low flows, how does the decrease in the number of habitat/channel forming flows during the wet season impact the low flows in the summer? Is that taken into account in the low-flow analysis?
    - Kollin – high flows increase scour and allow channel migration which could increase hyporheic exchange, could benefit summer flows. But likely this would be outweighed by the dam impact.
    - Cleo – theoretical pondering – with a “no dam scenario" of very low flows, would the “no dam” increase of habitat forming flows increase groundwater recharge that then helps with low flows in summer.
    - Kyle – from the flow management perspective, the channel forming flows are in winter and spring is dedicated to flood regulation. The 8800 threshold and 10k rising target are not large in the scheme of things.
- Kyle – another constraint on channel forming flow is that we are actively trying to avoid going above 5k flows October through February to limit Chinook redd scour. Scour is good for physical habitat but bad for redds.
    - Kollin & Bailey – agree, staying in the 5k-8.8k range is bad for redds and doesn’t create habitat; going above 8.8k would be bad for redds but good for habitats and likely closer to what historically “natural” would have been, depending on frequency and seasonality. The creation of habitat is a balance of positives and negatives.
    - Kerry – another complicating factor is that flows during the spawning period affect redd location. For example, if flows are low during spawning, redds will be located more towards the main channel which is also more vulnerable to scour flow.
- Mike – what are we committing to with developing and tracking a low flow metric?
    - Kollin – if we were to adopt a metric, it would be to track context and change. We’re not able to change the management framework, which is driven by multiple agreements.
- Kyle – flows were used as a context for depth previously. Check with gages about change of depth, will tell you more about the active channel. Recommend that any low flow metric adopted has physical meaning.
- Mike - based on this discussion, I would support tracking a low flow metric.
- Kerry - Will you please share your references?
    - References are available on the final slide in the presentation linked above.

Generally, ITC members recommended continued low flow tracking using the analysis methods and code that Bailey presented but recommended further discussion on the metric itself.

Further questions? Contact Bailey Keeler and Kollin Higgins at bkeeler@kingcounty.gov and kollin.higgins@kingcounty.gov.

Status & Trends: Water Temperature (link to slides)

Pre-meeting reading: Temperature, pp. 112-115, WRIA 9 2012 Status & Trends

At the time the 2012 Status & Trends report was developed, water temperature was considered a tier 2 conservation hypothesis. The 2012 Status & Trends report included water temperature data from a gage near the mouth of Soos Creek (54a) and a gage near the mouth of Newaukum Creek (44a). The ITC recommended at the time to increase the priority of reviewing water temperature data and elevating temperature issues to a tier 1 conservation hypothesis. This recommendation was based on the TMDL studies for Green River and Newaukum Creek that Ecology had recently completed, and led to further temperature studies in the basin and a technical briefing on water temperature and salmon summarizing relevant information and scientific basis for adopting a tier 1 conservation hypothesis focused on water quality. The ITC and Forum increased the priority of reporting on temperature and initiated the ReGreen the Green effort to promote riparian revegetation to provide shade and buffer heat exchange.

Washington state has established water temperature criteria/water quality standards to protect salmon, trout, and char. A full listing of the standards are linked here: https://app.leg.wa.gov/WAC/default.aspx?cite=173-201A-200 and, specific to watersheds, here: https://app.leg.wa.gov/wac/default.aspx?cite=173-201A-602. The metric used for most standards, and which WRIA 9 has previously used to report Soos and Newaukum water temperatures in the 2012 report, is the seven-day average of daily maximum temperatures (7-DADMax). Water temperature standards are based on the expected use/life stage using a given area of the river. For example, downstream of river mile (RM) 23.8 in the Green falls under a 7-DADMax 17.5°C / 63.5°F migration/spawning/rearing standard, while lower Soos Creek falls under a 7-DADMax 16°C / 60.8 °F core summer salmonid habitat standard applicable July 1 through September 15 and a 7-DADMax 13°C / 55.4°F supplemental spawning criteria applicable September 16 through June 30.

We are asking the ITC to review the available data from gages along the mainstem Green to recommend which locations should be included in status and trends monitoring moving forward. The data available for consideration are three Lower Green/Duwamish gages, one Middle Green mainstem gage, the Soos and Newaukum gages previously included in the 2012 status and trends report, a gage at RM 63.8 (about 0.7 miles downstream of HHD), and several gages seasonally deployed in the Upper Green mainstem and tributaries. Each gage has different lengths of deployment and can experience periodic placement issues – for example, King County gage GRT41 in the upper Duwamish is located at a good fishing spot so is often accidentally pulled out of place by fishers. If this gage is adopted as a data source for ongoing status and trends reports, procedures should be developed for identifying and correcting/removing erroneous data due to human influence. In addition, these gages are managed by multiple entities (USGS, King County, USACE, Tacoma Water) and deployment methodology such as target depth in the water column can vary.

Temperature plots across the timeseries of available data for each gage indicate frequent exceedance of state standards, particularly during the summer. Unsurprisingly, temperatures tend to increase downstream through the mainstem Middle and Lower Green and Duwamish. Soos and Newaukum remain cooler than the mainstem in the summer, although the frequency

of days with 7-DADMax exceeding state standards are increasing over time. The influence of the Additional Water Storage Project (AWSP) implemented in 2007 and dam management is apparent in the data from the gage at RM 63.8: delaying temperature increases in the summer but prolonging warm water in the fall. The dam typically drafts water from the bottom of the reservoir through summer then begins to draft water from what was the top of the reservoir in the fall. In the Upper Green, temperatures follow a similar pattern as in the below-dam portion of the watershed: tributaries remain cooler throughout the summer while mainstem temperatures increase from upstream to downstream.

Note: data from Upper Green gages has been removed from the slides prior to distribution as these slides are preliminary. Contact Iris & Nik Novotny (nnovotny@cityoftacoma.org) if you want to see/discuss the Upper Green sites.

Previous WRIA/ITC recommendations on water temperature gages included 1) continue to monitor Soos Cr 54A and Newaukum Cr 44A, 2) establish Lower Green Fort Dent GRT40 gage which was previously a TMDL site as a long-term monitoring site, and 3) establish Middle Green Whitney Bridge GRT10 (now 40T) as a long-term monitoring site.

Q&A:

- Chris – recommend including/maintaining locations important to rearing in the Middle Green and Lower Green.
- Kollin – recommend including Upper Green locations such as Koss. The site immediately below the dam may be less informative.
- Matt – some duplication in site locations is useful, given how often issues with gages happen. Nice to have a close-by back-up/verification.
- Kollin – does Kent still collect temperature data in the Lower Green? Would be nice to have a site there, given the concerns around Mill Creek.
    - Rowena – we're not currently collecting data there. Matt – recall that Kent stopped collecting in mid-2010s.
- Mike – agree with comments on the need for more riparian revegetation, working on tributaries to keep cold water sources coming into the mainstem, and doubling-down on the strategy of prioritizing riparian projects that will keep the river cool.
- Mike – it didn't look like tidal influence had much impact on lower gages, which is interesting. Is there any way to look at pre-development conditions? A comparable watershed? What's a suitable goal for achieving water temperatures?
    - Kollin & Iris – the lower gages are in the very uppermost portion of the Duwamish – they are tidally influenced but not salty.
- Marc – also consider drinking water needs. Tacoma recently lost their largest customer. How will management impacts change water temperatures?
    - Kyle noted that the pipes still need to be flushed so water need will not be removed completely.

Further questions? Contact Iris Kemp and Kollin Higgins at ikemp@kingcounty.gov and kollin.higgins@kingcounty.gov.

DRPP application for PSP Watershed Habitat Assessment Funding

- Puget Sound Partnership appropriation: $600k for the 2023-2025 biennium
- Objective: support Lead Entities and groups they coordinate to assess and report on salmon habitat, especially
    1. Progress towards salmon habitat goals and recovery plan implementation
    2. Effectiveness of habitat restoration actions and cumulative effectiveness
    3. Identification of additional monitoring needs to support salmon recovery and planning of projects to address these gaps
- Expect to fund 4-6 projects within the $100-$150k budget range
- Projects should be ready-to-fund and feasibly completed by June 30, 2025
- Lead Entities may submit multiple applications but should provide a ranked list indicating their priority if there are multiple projects
- Projects should meaningfully contribute to understanding and assessment of salmon habitat and address a need listed in Lead Entities' recovery plans/strategies

Kathleen Hurley (Port of Seattle) presented a proposed PIT tag project at Duwamish River People's Park and Shoreline Habitat. Installing a PIT tag array at the mouth of this project site would provide information on the movement and residence time of tagged juvenile Chinook in and out of the restored habitat. This goes above and beyond the required monitoring for this project, which consists of netting samples during the juvenile Chinook outmigration period. Project sponsors are collaborating with Chris Gregersen to develop the proposal.

WRIA 9 ITC members had no objection to moving this project forward to the Partnership.

For more information about this project site and initial project monitoring efforts, visit https://www.portseattle.org/projects/duwamish-river-peoples-park and https://www.portseattle.org/news/new-habitat-attracts-salmon-duwamish-river-peoples-park.

Overhead view, with mouth of project and proposed array site noted in green:

Further questions? Contact Jenn Stebbings and Kathleen Hurley at stebbings.j@portseattle.org and Hurley.K@portseattle.org.