

RSMP Streams Analysis QAPP Addendum – Scope of Work Preparation

Assessment question:

What percent of streams have water quality that supports designated uses inside and outside UGAs?

Is the approach known or needed? needed for PAHs and metals; known for WQI: “how to” at <https://fortress.wa.gov/ecy/publications/summarypages/0203052.html> and http://www.ecy.wa.gov/programs/eap/fw_riv/rv_main.html. Allow flexibility to do more analyses as look at data.

Basic data required:

- WQI auto calculated by EIM
- PAHs and metals
- Stream segment data for listing
- WQS

Ancillary data needed: GIS coverages:

- LU/LC (contributing watershed and adjacent to reach)
- AADT (vehicle counts) from DOT and counties
- Road density and stream crossing metrics
- MS4 outfalls upstream, from local jurisdictions

Post stratification beyond in-out UGA?

- LU/LC
- AADT category
- by watershed
- by county groups
- by south/central/north PS
- by salmon watershed
- by TMDL

Report format(s) beyond traditional publication of findings:

- web reporting
- summary fact sheets
- coordinate with Salmon Recovery teams to provide relevant results on habitat condition

Other communication of findings:

- Signal to noise effort
- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/ experts for writing QAPP section: Markus Von Prause

Schedule to write QAPP section: week for WQI; need plan for metals + PAHs

Cost to write QAPP section:

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Assessment question:

What percent of streams have B-IBI and habitat characteristics that support designated uses inside and outside UGAs?

Comment [LF1]: Why habitat included here?

Is the approach known or needed? known; allow flexibility to do more analyses as look at data

Basic data required: B-IBI; watershed health characterization; stream segment data for listing; WQS

- Field data/samples
- Invertebrate counts/attributes
- Periphyton counts/attributes
- Raw habitat data (clean, complete)

Ancillary data required:

- Landscape data: Natural features; Human impacts
- [P. Habitat](#) metrics: In stream; Riparian
- Biology scores: Benthic data IBI, O/E; Algae IBI, O/E
- Chemistry results: water/in situ; sediment
- LU/LC ; AADT; road density and stream crossing metrics
- MS4 outfalls upstream, from local jurisdictions
- New EAP metrics for BIBI-western WA and habitat metric calculations
- Flashiness response estimated

Comment [KD2]: We seem to have a mix of ideas of what's considered "basic" and "ancillary" – as long as we identify all the data we need I think clarifying that is a low priority ☺

Post stratification beyond in-out UGA?

- Size: Watershed area; REV100kStrahler
- Geology: Glacial history; Volcanic/depositional
- EPA ecoregions
- Predictors for O/E
- LU/LC; AADT category
- Riparian buffer width, percent forest
- Flow-flashiness categories?
- by watershed; by county groups; by south/central/north PS; by salmon watershed; by TMDL

Report format(s) beyond traditional publication of findings:

- WEB: Pie, Bar, CDF; box-whisker
- Data scored relative to reference conditions percentiles
- Indirect/Direct Gradient Analysis
- summary fact sheets
- coordinate with Salmon Recovery teams to provide relevant results on habitat condition

Other communication of findings:

- Extent of impairment (km); -Relative Risk & Attrib. Risk; Signal/Noise
- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/experts for writing QAPP section: Chad Larson, Glenn Merritt, Leska Fore, Jo Wilhelm

Schedule to write QAPP section:

Cost to write QAPP section:

RSMP Streams Analysis QAPP Addendum – Scope of Work Preparation

Assessment question:

What percent of streams have sediment quality that supports designated uses inside and outside UGAs?

Is the approach known or needed? Needed; Allow flexibility to do more analyses as look at data. May base initial approach on <https://fortress.wa.gov/ecy/publications/summarypages/1109054.html>.

Basic data required: Sediment chemistry; new freshwater sediment quality standards; toxicity measures

Ancillary data needed:

- LU/LC
- AADT
- Road density and stream crossing metrics
- MS4 outfalls upstream, from local jurisdictions

Post stratification beyond in-out UGA?

- LU/LC
- AADT category
- Distance from wetland
- by watershed
- by county groups
- by south/central/north PS
- by salmon watershed
- by TMDL
- Report format(s) beyond traditional publication of findings:

Report format(s) beyond traditional publication of findings:

- summary fact sheets
- coordinate with Salmon Recovery teams to provide relevant results on habitat condition

Other communication of findings:

- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/experts for writing QAPP section: Deb Lester, Jenee Colton, Dale Norton

Schedule to write QAPP section:

Cost to write QAPP section:

RSMP Streams Analysis QAPP Addendum – Scope of Work Preparation

Assessment question:

How does the RSMP compare to existing programs?

Is the approach known or needed? Known; Allow flexibility to do more analyses as look at data.

- Need to develop methods for determining what RSMP adds to existing programs

Basic data required: Identify key programs and data types:

- Ecology's Watershed Health Monitoring Program
- Probabilistic sampling in King and Kitsap Counties
- Musselwatch data from other sites

Ancillary data needed:

- Stream quality data including sampling location; watershed characteristics at sample sites

Post stratification beyond in-out UGA?

- Comparative analyses may be limited to selected sites in RSMP and other programs based on location or basin characteristics

Report format(s) beyond traditional publication of findings:

- summary fact sheets

Other communication of findings:

- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/experts for writing QAPP section:

Schedule to write QAPP section:

Cost to write QAPP section:

Comment [KD3]: Articulate how this is relevant to streams data – seems different from intent of this assessment question – could be another, new AQ?

RSMP Streams Analysis QAPP Addendum – Scope of Work Preparation

Assessment question:

How does the RSMP compare to targeted programs?

Is the approach known or needed? Choose among what's been done (Booth? Olsen?). Allow flexibility to do more analyses as look at data.

Basic data required: all streams data collected; census sampling in Kitsap Co; **Redmond and Pierce Co opt-out data**

Ancillary data needed:

- Monthly water quality data from Skagit, Snohomish, King, Pierce, Thurston, Kitsap counties, and from any cities like Bainbridge Island, Everett and Federal Way that collect this data.
- Stream Benthos data from PugetSoundStreamBenthos.org website
- Stream sediment chemistry results from King County and Ecology
- Habitat data from Ecology, King County, and other, including stream order.
- GIS overlays of jurisdiction boundaries, urban growth boundary, Puget Lowland boundary
- Land use index or human disturbance value for all stations.

Post stratification beyond in-out UGA?

- Divide all data into 4 groups: in vs out of UGA and random vs targeted.
- Also divide monthly stream data into monthly sets, seasonal sets, and an annual set
- For each month of water quality, each season of water quality, annual water quality, sediment chemistry and benthos, compare in+random vs in+targeted and out+random vs out+targeted using box plots, summary stats, and CDFs for all parameters
- Where differences appear likely, use nonparametric Wilcoxon rank sum test and Kolmogorov-Smirnov test

Report format(s) beyond traditional publication of findings:

- Data summary fact sheet
- Other summary fact sheets

Other communication of findings:

- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/experts for writing QAPP section: Jim Simmonds and Scott Collyard

Schedule to write QAPP section:

Cost to write QAPP section:

Comment [KD4]: This might answer a different AQ as well. These aren't targeted; they're collected at different (local) scale.

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Assessment question:

What trends data will be most meaningful for the next RSMP round?

Is the approach known or needed? needed; consider Booth/Lando approach for LCHSTM

Basic data required: Signal to noise done by EAP and LCHSTM

Ancillary data needed: drainage areas (site selection approach for LCHSTM)

Post stratification beyond in-out UGA?

Report format(s) beyond traditional publication of findings:

- summary fact sheets

Other communication of findings:

- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/experts for writing QAPP section: Leska Fore

Schedule to write QAPP section:

Cost to write QAPP section:

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Assessment question:

How does status inform effectiveness studies and source control?

Is the approach known or needed? Known: relative risk analysis possible to determine strongest predictors of impaired sites, determine which effectiveness and source control questions could be addressed by status monitoring

Basic data required: RSMP and other monitoring program results

Ancillary data needed: spatial information on stormwater management practices including source controls

Post stratification beyond in-out UGA? Spatial and temporal stratification based on stormwater management practices

Report format(s) beyond traditional publication of findings:

- summary fact sheets
- coordinate with Salmon Recovery teams to provide relevant results on habitat condition

Other communication of findings:

- Early presentation to jurisdictions or SWG and incorporate feedback and suggested analyses into final product

Team/experts for writing QAPP section: Leska Fore, Cami Apfelbeck, Chris May, Chris Konrad

Schedule to write QAPP section:

Cost to write QAPP section: