

2.3 SPECIFIC ACTION RECOMMENDATIONS

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OVERVIEW

The following recommendations focus on salmonids while recognizing that this valuable resource coexists with our human population within the various WRIA 9/Vashon Island watersheds and the Puget Sound estuary. Healthy watersheds and estuaries are vital to naturally producing salmonids and a part of the quality of life that we have come to expect. The recognition of this partnership is vital to achieve the type of support necessary for salmonid recovery. The science based recommendations below were developed by the WRIA 9 technical committee and directed towards providing healthy salmonid habitats and the ecological processes necessary for maintaining those habitats.

These non-prioritized salmonid habitat protection, data collection, and restoration actions are recommended by limiting factor and apply to the Green River mainstem as well as all tributary and nearshore areas within the geographic scope of this report. Much of the synthesis work necessary to provide detailed recommendations has not been completed at the time of printing this report, so the recommendations presented here are general and initial. More detailed prioritized recommendations will be developed during the next phase of the WRIA 9/Vashon Island/nearshore salmonid recovery planning process, which will include more comprehensive recommendations organized by categories such as; research, specific projects and policy considerations.

For the following recommendations, some or portions of them may be addressed as part of other programs (e.g.: Howard Hanson Dam Additional Storage Project, Tacoma Water Habitat Conservation Plan, etc.) under development in the basin. However, because these programs are still under development and in many cases funding has not yet been provided, the technical committee felt it was important to confirm the importance of some of these actions here. Other recommendations focus on preliminary data collection that is needed to assess some data gaps noted in this report before additional action is taken. There also are action recommendations that the technical committee sees as appropriate due to their review of existing scientific information.

WATER QUALITY

- Support the development of water quality standards that are based on all phases of salmonid life history.
- Evaluate and prioritize implementation options necessary to address water quality parameters (e.g.: dissolved oxygen, turbidity, suspended solids, heavy metals, etc.) that are factors of decline for salmonids.
- Collect continuous temperature data at several mainstem stations in the four major sub-watersheds (Duwamish, Lower, Middle and Upper Green) to determine if temperature is a problem for migration, rearing or spawning of salmonids.

- Revegetate mainstem, tributary and nearshore riparian areas to assist in the reduction of water temperatures through increased shading, to improve soil stability, and to increase terrestrial insect production and input as determined necessary.
- Require erosion and sediment control Best Management Practices (BMPs) on all construction sites throughout the watershed to minimize sediment inputs into the mainstem, tributaries and nearshore areas.
- Reduce the input of detrimental metals, organic and inorganic contaminants into the Green River, WRIA 9 streams and the nearshore.
- Reduce the input of detrimental metals and organics streams and nearshore systems.

HYDROLOGY

- Investigate the impacts of surface and groundwater withdrawals on tributary stream sub-basins and mainstem hydrology and evaluate the effects on salmonids.
- Manage mainstem river flows to more closely emulate the natural flow regime that promotes habitat forming processes (e.g.: creation and maintenance of side channels, pools, river meanders, etc.) and long term salmonid survival (e.g.: incubation/fry emergence, flood refugia, migration, etc.).
- Conduct a basin wide investigation of (legal and illegal) surface and ground water withdrawal.
- Perform a baseline assessment of current land use impacts to the natural stream hydrology. Studies should be carried out on a subwatershed or smaller scale to help prioritize recovery efforts. A similar assessment is needed at an appropriate scale for the nearshore.

SEDIMENT TRANSPORT

- Restore gravel and LWD to the mainstem Green River downstream of HHD. Compensate for the historic sediment deficit and provide annual quantities to mimic the estimated natural recruitment rates of sediments and LWD into the mainstem Green River downstream of HHD.
- Reduce excessive fine sediment inputs into streams.
- Minimize the removal of in-channel LWD to situations where public health and safety or significant infrastructure is threatened. Relocate, rather than remove LWD whenever feasible.

- Monitor streambed scour and deposition on a WRIA wide basis and take remedial actions where necessary.
- Determine current and historic sediment sources, distribution patterns, and budgets in the nearshore and Green-Duwamish River watershed. Compare current and historic conditions to identify the extent to which sediment transport processes require restoration.

HYDROMODIFICATION

- Reestablish and protect side channel habitat along the mainstem Green River.
- Encourage the natural channel migration of streams and rivers.
- Maintain the existing natural shorelines of the Duwamish/Green River, the nearshore of WRIA 9 and Vashon and Maury Islands.
- Remove, or set back, flood and erosion control facilities whenever feasible, to allow for the reestablishment of natural habitat producing stream and estuarine shoreline processes.
- Where levees and revetments cannot be practically removed or set back due to infrastructure considerations, maintain and repair them using design approaches that maximize the use of native vegetation and LWD.

RIPARIAN

- Establish and enhance appropriately sized, and properly functioning riparian buffers around rivers, streams, wetlands, and the nearshore. Base these buffers on scientific data and principles of landscape ecology, ecosystem and conservation biology. Where data are needed, conduct studies to determine functions and values of riparian systems.
- Conduct a detailed assessment of riparian conditions throughout the watershed to determine functional value and for evaluating potential protection, enhancement, or restoration opportunities and constraints.
- Protect riparian habitat and shorelines (streambanks and nearshore) from degradation by land use activities
- Protect and preserve areas of mid- to late-seral stage riparian habitat.
- Avoid new bank hardening projects in locations where natural bank conditions currently prevail. Retrofit existing hardened bank stabilization projects with softer, more environmentally compatible bank treatments to increase riparian functional values, where and when opportunities exist.

- Revegetate existing degraded riparian habitats with an emphasis on native plant species that will contribute future LWD to riverine and estuarine ecosystems.
- Protect riparian areas surrounding wetlands. Enhance or restore riparian areas surrounding wetlands where functions have been lost or compromised if feasible.
- Re-examine levee construction and vegetation maintenance programs, regulations and guidelines to allow propagation of native riparian vegetation.
- Protect riparian areas and extend them to include adequate protection of the stream channel migration zone (CMZ) and the nearshore.

FISH PASSAGE

- Build on the fish distribution work undertaken as a part of this report by conducting a comprehensive fish barrier and habitat assessment project to identify access barriers and the quantity and quality of habitat upstream throughout WRIA 9.
- Provide efficient fish passage and allow for natural migration rates, patterns, and timing through barriers that limit juveniles and adult salmon from reaching productive historic or rehabilitated habitats in freshwater and nearshore environments.
- Reconnect side channel habitats that have been isolated from the main channel.
- Screen all water diversions properly to avoid fish entry.
- Assess the impacts of ground and surface water withdrawals on fish passage and salmonid habitats.
- Upgrade operations and equipment at the Black River Pumping Station to promote more efficient fish passage.
- Avoid construction or addition of nearshore fill, armoring, dikes, and overwater structures that would result in a disruption of normal migration rates and patterns, or access to shallow feeding and refuge areas.

NON-NATIVE SPECIES

- Prohibit new introductions of non-native animal and terrestrial plant species that directly impact salmonids through predation, competition, and potential genetic interactions.
- Remove or control, non-native aquatic plants that adversely impact salmonid survival.