Key Lower Fraser Sturgeon Habitat Questions for Qualified Environmental Professionals
Major Projects -
Resource Management, FLNRO – South Coast Region
June 20, 2017 – Version 2.0

Date:

South Coast Region Resource Management of the Ministry of Forests, Lands and Natural Resource Operations recommends that the following questions be filled out and submitted by Qualified Environmental Professionals working on behalf of the _____ project. A completed form will assist in clarifying the information prepared by Qualified Environmental Professionals on behalf of the project proponent and improve the efficiency of the review process.

Please be advised that a Qualified Environmental Professional is an applied scientist or technologist, acting alone or together with another qualified environmental professional. He or she must be registered and in good standing in British Columbia with an appropriate professional organization constituted under a provincial *Act*, acting under that association's code of ethics and subject to disciplinary action by that association. To be able to certify that they are qualified to provide an answer to a particular question posed, the individual's area of expertise must be one that is acceptable for the purpose of providing all or part of a report in respect of the particular development proposal that is being assessed. The individual is considered a Qualified Environmental Professional only for that portion of the assessment that is within their area of expertise. In this case, it is expected that the Qualified Environmental Professional(s) will be experienced in sturgeon population assessments, and in assessing and monitoring the impacts, mitigation and compensation/off-sets associated with industrial or recreational activities on White and Green Sturgeon and their habitat. The professional will be considered qualified if they have worked on multiple sturgeon-related projects and are very familiar with the specific habitat needs and uses for all life stages of sturgeon, and with both the published and grey literature on lower Fraser sturgeon.

1.0 Professional Accountability		
1.1	**Has the submission been signed off by a certified and qualified environmental professional experienced in sturgeon population assessments, and in monitoring** assessing the impacts, mitigation and compensation/off-sets associated with industrial or recreational activities on Sturgeon and their habitat?	Unknown

Professional			**Portion(s) of Technical Data Report or Environmental Assessment (and Appendices) Responsible For**
Name	**Accreditation**	**Signature**	
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2.0 Assessment of Sturgeon Values/Components		
2.1	**Habitat**	
2.1.1	Is the extent of affected sturgeon habitat fully understood and described?	Not Applicab
2.1.1.1	Are the habitat types (by life stages) understood and described for the following habitats:	
a	*microhabitats; and/or,*	Not Applicab
b	*macrohabitats?*	Not Applicab
2.1.1.2	Is habitat use understood and described for the following parameters:	
a	*by life stage; and/or,*	Not Applicab
b	*by timing/season?*	Not Applicab
2.2	**Individuals & Populations**	
2.2.1	Has use of each sturgeon life stage in the project area been adequately determined?	Not Applicab
2.2.1.1	Has the published and grey literature been adequately reviewed and interpreted?	Not Applicab
2.2.1.2	Have any project-specific assessments been conducted?	Not Applicab
2.2.1.3	Were assessment efforts and methods consistent with government or professional expectations?	Not Applicab
2.2.1.4	Is there adequate description of sampling methods and effort?	Not Applicab
2.2.1.5	Are the methods and effort used adequate to support conclusions; particularly to support low use sturgeon habitats or low impact statements?	Not Applicab
a	*Are the catch methods appropriate for all life-stages, seasons, tidal, flow and habitat conditions (were multiple catch methods employed)?*	Not Applicab
b	*Is there appropriate temporal distribution of effort (multiple seasons during all habitat conditions and multiple years)?*	Not Applicab
c	*Is there appropriate spatial distribution of effort to capture all directly and indirectly effected habitats?*	Not Applicab
d	*Is the timing appropriate to ensure the catchability and assessment of all life stages?*	Not Applicab
e	*Is sampling conducted at appropriate flow and tidal stage(s)?*	Not Applicab
f	*Is sampling conducted at appropriate water temperature(s)?*	Not Applicab
h	*Are appropriate site photos of all directly and indirectly effected habitats provided?*	Not Applicab
2.2.1.3	Are sampling sites mapped and results summarized geographically?	Not Applicab
2.2.1.4	Are sampling results consistent with existing/historic knowledge of the sites in both the published and grey literature?	Not Applicab
2.2.1.5	Have results been presented to allow clear interpretation of abundance, distribution, high use areas, seasonality of use, and use by all life stages?	Not Applicab
2.2.1.6	Have fish productivity and high use habitats, or indicators been adequately assessed and interpreted?	Not Applicab
2.2.1.7	Are any other factors that should be considered in the project licensing/permitting decisions adequately described that are not identified above with respect to fish distribution or abundance?	Not Applicab

3.0 Assessment of Potential/Expected Impacts		
3.1	**Project Footprint/Construction – Sturgeon Habitat**	
3.1.1	Are the immediate impact pathways and limiting factors to sturgeon habitats fully considered, understood and described?	Not Applicab
3.1.2	Does the project footprint avoid affecting critical or important high use sturgeon habitat?	Not Applicab
3.1.3	Have direct and indirect instream habitat changes and impacts been adequately detailed?	Not Applicab
3.1.4	Have fish spawning/rearing/migration/survival impacts for all life stages been adequately detailed for all project components?	Not Applicab
3.1.5	Have locations where sediment will be introduced been accurately mapped and interpreted?	Not Applicab
3.1.6	Have locations where habitat will be altered been accurately mapped and interpreted?	Not Applicab
3.2	**Project Operation/Post Construction – Sturgeon Habitat**	
3.2.1	Are the long term impact pathways and limiting factors to sturgeon habitats fully considered, understood and described?	Not Applicab
3.2.2	Does the project operation or project design avoid or minimize long term impacts on critical or important sturgeon habitats?	Not Applicab
3.2.3	Have the project operations or project design been adequately defined to assess potential extended or long term impacts to sturgeon habitat?	Not Applicab
3.2.3.2	Are the maintenance schedules and activities fully understood and described in order to assess potential extended or long term impacts to sturgeon habitat?	Not Applicab
3.2.4	Are changes to instream habitat adequately detailed by habitat type and specific habitat, tidal and flow variability, seasonality and use by all life stages?	Not Applicab
3.2.5	Are changes to productivity and use of instream habitats by all sturgeon life stages adequately detailed by habitat type and specific habitat?	Not Applicab
3.2.5.2	Has a table describing habitat time series changes and summary been developed and interpreted for the proposed construction and operations/post construction with comparisons to the pre-project state?	Not Applicab
3.3	**Project Footprint- Individuals & Population**	
3.3.1	Has there been a thorough comparison of pre- and post-project habitat availability and use for all sturgeon life stages in directly and indirectly affected habitats?	Not Applicab
3.3.2	Has an interpretation of the significance of changes at the population and individual level in habitat availability and use by all sturgeon life stages been provided?	Not Applicab
3.3.2.1	Is this assessment based on site-specific assessment information, published and grey literature, and qualified professional judgement?	Not Applicab
3.4	**Project Construction - Individuals and Population**	
3.4.1	Will least risk windows for the mitigation of impacts to all life stages of sturgeon and their habitats be adhered to for all foreshore and in-river decommissioning or construction activities?	Not Applicab
3.4.1.1	Will fish movement/migration impacts be adequately mitigated during project construction? Does this include:	Not Applicab
a	*All instream construction activities;*	Not Applicab

b	*All foreshore construction activities;*	Not Applicab
c	*Avoidance of sturgeon high use areas during high use and high risk periods or seasons;*	Not Applicab
d	*Adequate mitigation methods to keep sturgeon from construction areas during in-water construction or activities if required and unavoidable; and/or,*	Not Applicab
e	*Pre-assessment of in-river construction areas immediately prior to the undertaking of activities using high resolution sonar or equivalent method to determine if additional mitigation is required or if activities need to be postponed?*	Not Applicab
3.4.2	Have mitigation methods been identified for each in-river or foreshore activity?	Not Applicab
3.4.2.1	Do mitigation methods take into consideration the sensitivity of sturgeon and use and habitat values at each activity location?	Not Applicab
3.4.2.2	Are significant effects to be avoided or minimized at any in-river or foreshore activity location?	Not Applicab
3.4.2.3	Are appropriate and adequate mitigation measures prescribed to restrict or limit sediment or any other deleterious substance from entering the Fraser River or any other watercourse?	Not Applicab
3.4.2.4	Will sediment or substrate deposition or disturbance directly or indirectly resulting from the proposed construction activities be minimized and mitigated to avoid impacting any life stage of sturgeon (e.g. migration, spawning, egg incubation, feeding, or early, juvenile and adult rearing)?	Not Applicab
3.5	**Project Operation/Post Construction - Individuals & Population**	
3.5.1	Has there been a thorough comparison of pre- and post-project habitat availability and use by all sturgeon life stages?	Not Applicab
3.5.2	Has an interpretation of the significance of changes at the population and individual level in habitat availability and use by all sturgeon life stages been provided?	Not Applicab
3.5.2.1	Does this interpretation account for regular changes that will occur long-term as a consequence of required future in-river or foreshore maintenance activities (e.g. dredging, streambank protection, etc.)?	Not Applicab
3.5.2.2	Is this assessment based on site-specific assessment information, published and grey literature, and qualified professional judgement?	Not Applicab
4.0 Mitigation and Off-sets		
4.1	**Impact Avoidance**	
4.1.1	Project Footprint – Habitat and Individual Sturgeon	
4.1.1.1	Have the project components been designed to avoid direct or indirect impacts to sturgeon and instream sturgeon habitat?	Not Applicab
4.1.1.2	Have the project components been designed to avoid direct or indirect impacts to high use, important or critical sturgeon habitats?	Not Applicab
4.1.1.3	Have the project components been designed to avoid direct or indirect impacts to foreshore habitat?	Not Applicab
4.1.1.4	Have the project components been designed to avoid direct or indirect impacts to riparian habitat?	Not Applicab
4.2	**Mitigation Measures**	
4.2.1	Project Footprint – Habitat and Individual Sturgeon	
4.2.1.2	Are all project components designed, located or other measures prescribed to reduce or mitigate impacts to individual sturgeon and instream sturgeon habitat as much as is technically possible?	Not Applicab
4.2.1.3	Are the project components designed to adequately reduce or mitigate impacts to foreshore habitat as much	Not Applicab

	as is technically possible?	
4.2.1.3	Are the project components designed to adequately reduce or mitigate impacts to riparian habitat as much as is technically possible?	Not Applicab
4.2.1.4	Will directly or indirectly disturbed habitats be adequately restored as much as is technically possible? Does this include:	Not Applicab
a	*Complete restoration of all directly and indirectly disturbed areas; and/or,*	Not Applicab
b	*Long-term maintenance (in perpetuity) of restored habitats?*	Not Applicab
4.2.1.5	Will direct or indirect fish movement/migration impacts be adequately mitigated as much as is technically possible? Does this include:	Not Applicab
a	*All in-river structure removal or construction activities; and,*	Not Applicab
b	*All required post-construction in-river maintenance activities (e.g. dredging, streambank protection, structure maintenance, etc.)*	Not Applicab
4.2.2	Project Operation/Post Construction Maintenance– Habitat and Individuals	
4.2.2.1	Will the proposed project and its' long term maintenance or operational activities avoid the introduction or significant alteration of sediment or substrates to avoid the alteration of sturgeon habitats?	Not Applicab
4.2.2.2	Will the proposed project and its' long term maintenance or operational activities avoid the introduction of contaminants to sturgeon or their habitats?	Not Applicab
4.2.2.3	Will the introduction of any sediments or contaminants resulting from long term maintenance activities be limited and mitigated to minimize impacts to productivity of instream sturgeon habitats?	Not Applicab
4.3	**Off-setting/Compensation**	
4.3.1	Project Footprint Impacts	
4.3.1.1	Does the proposed compensation/off-set provide adequate equivalency or an appropriate alternative to directly address immediate and residual impacts from changes in water quality and sturgeon habitat availability, use and productivity?	Not Applicab
4.3.1.2	Does the proposed compensation/off-set provide adequate equivalency or an appropriate alternative to directly address immediate and residual impacts to instream sturgeon habitats?	Not Applicab
a	*Is it like-for-like in terms of instream habitat function and productivity?*	Not Applicab
b	*If it is not like-for-like, does it target a limiting life stage?*	Not Applicab
c	*Is it geographically as close as possible to the disturbance?*	Not Applicab
d	*Does it adequately address anticipated changes in function, productive capacity and use by individual sturgeon?*	Not Applicab
e	*Is there a sufficient compensation ratio applied that accounts for maintenance requirements and habitat development and maturation of instream habitat?*	Not Applicab
f	*Will proposed restoration or enhancement habitats be maintained in perpetuity?*	Not Applicab
4.3.1.3	Does the proposed compensation/off-set provide adequate equivalency or an appropriate alternative to directly address immediate or residual impacts to riparian habitat?	Not Applicab
a	*Is it like-for-like in terms of function (streambank stability, shade, food and nutrition, LWD, etc.)?*	Not Applicab
b	*Is it geographically as close as possible to the disturbance?*	Not Applicab
c	*Does it adequately address anticipated changes in function and productive capacity?*	Not Applicab
d	*Is there a sufficient compensation ratio applied that accounts for maintenance requirements and habitat development and maturation for riparian habitat?*	Not Applicab
e	*Will proposed restoration or enhancement riparian habitats be maintained in perpetuity?*	Not Applicab

4.3.2	Project Operation/Post Construction Maintenance Impacts	
4.3.2.1	Does the proposed compensation/off-set provide adequate equivalency or an appropriate alternative to directly address immediate and residual impacts from changes in water quality, sturgeon habitat productivity and use by individual sturgeon that will occur over the long term as a consequence of maintenance or operational activities (e.g. dredging, structure maintenance, streambank protection, etc.) ?	Not Applicab
a	*Is it like-for-like in terms of instream habitat function and productivity?*	Not Applicab
b	*Is it geographically as close as possible to the disturbance?*	Not Applicab
c	*Does it adequately address anticipated changes in function and productive capacity?*	Not Applicab
d	*Is there a sufficient compensation ratio applied that accounts for maintenance requirements and habitat development and maturation?*	Not Applicab
e	*Will proposed restoration or enhancement habitats be maintained in perpetuity, or the compensation/offsetting of any regular activities be undertaken or resourced in perpetuity?*	Not Applicab
5.0 Monitoring and Reporting		
5.1	**Mitigation and Restoration Implementation**	
5.1.2	Project Footprint Construction Impacts	
5.1.2.1	Will the implementation of mitigation and restoration activities associated with the construction or alteration of project structures and their impacts or threats be regularly and adequately monitored by qualified environmental professionals and reported to FLNRO?	Not Applicab
5.2	**Project Infrastructure Effectiveness**	
5.2.1	Will there be effectiveness monitoring for project components with respect to:	
a	*Water quality;*	Not Applicab
b	*Turbidity, and/or,*	Not Applicab
c	*Sturgeon habitat use?*	Not Applicab
5.2.1.1	Are there signed agreements in place to modify structures or operations based on monitoring results?	Not Applicab
5.3	**Project Operation Effectiveness**	
5.3.1	Will the monitoring program quantitatively measure changes to the sturgeon habitats and populations in response to the project operations or maintenance activities (e.g. dredging, streambank protection, footing or structure maintenance?	Not Applicab
5.4	**Compensation Implementation**	
5.4.1	Will physical habitat characteristics of proposed instream compensation or alternative be adequately monitored, maintained and reported by a qualified environmental professional?	Not Applicab
5.4.2	Will physical habitat characteristics of proposed riparian compensation or alternatives be adequately monitored, maintained and reported by a qualified environmental professional?	Not Applicab
5.4.3	Are there signed agreements in place to modify structures or operations based on monitoring results?	Not Applicab
5.5	**Compensation Effectiveness**	
5.5.1	Will the biological responses of the proposed instream compensation or alternative be adequately monitored and reported by a qualified environmental professional (sturgeon habitat use and productivity)?	Not Applicab

5.5.2	Will the biological responses of the proposed riparian compensation or alternative be adequately monitored and reported by a qualified environmental professional (streambank stability and riparian productivity)?	Not Applicab
5.5.3	Are there signed agreements in place to modify structures or operations based on monitoring results?	Not Applicab
5.5.4	Have appropriate experimental principles been applied by a qualified environmental professional to the design of all the monitoring activities?	Not Applicab

This questionnaire can be submitted with the development plan when submitting a project proposal through the Front Counter BC.