

Water Quality Profile

September 2016

ID	Competency Statement	Type
CATEGORY A: Environmental and Social Impact Assessment		
SUB-CATEGORY 1: Conducting Environmental and Social Impact Assessments		
5	Consults with stakeholders to gather information regarding the perceived impacts of development activities on communities, the environment and natural resources.	3
7	Assesses environmental and/or social issues, risks or problems, including their cumulative effect and corresponding economic, social and cultural impacts.	3
9	Prepares environmental impact assessment report(s) that may include mitigation, environmental protection, and recovery plans.	3
CATEGORY B: Site Assessment (RRR)		
SUB-CATEGORY 2: Conducting Environmental Site Assessments (ESA - Phase 1 and Phase 2)		
10	Identifies the scope of the site assessment (phase 1 and 2) project, including identification of the standards to be followed.	3
11	Reviews historical records for the site (e.g. site plans, fire insurance maps, legal title searches, business directories, air photos, satellite images, etc.) to determine previous land use.	3
12	Carries out visual inspection of site and neighbouring properties as part of the site assessment.	2
13	Collects related information from key stakeholders (e.g. owners and staff, municipalities, regulators) regarding land use, facility operations, permits, relevant legislation, etc.	3
14	Conducts investigation, sampling, screening, and analysis (including geophysical mapping) activities of landforms, soil, ground water, sediments, airborne contaminants, etc., as required.	2
15	Characterizes environmental aspects of site (such as landforms, drainage, plant communities, and soil properties) based on interpretation of data collected during site investigation, sampling and analysis (for example, contaminants, their concentration and general extent).	3
16	Prepares site assessment report(s) to meet regulatory and other requirements, identifying potential risk and scope of further action by appropriate stakeholders, if necessary.	3
SUB-CATEGORY 3: Developing/Implementing Site Remediation (Phase 3) Plans		
24	Monitors post-remediation conditions and results to assess if targets and regulatory requirements have been met.	3

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25	Prepares remediation completion report, including documentation of remediation and post-remediation monitoring data, and review of environmental outcomes relative to standards, for submission to regulators and stakeholders.	3
SUB-CATEGORY 4: Developing/Implementing Site Restoration/Reclamation (Phase 3) Plans		
29	Provides environmental inspection during construction and reclamation to ensure that regulatory requirements are met and that procedures and plans are being followed.	3
32	Monitors post-restoration/reclamation conditions and results to assess if targets and regulatory requirements have been met.	3
CATEGORY C: Regulatory & Enforcement		
SUB-CATEGORY 5: Interpreting/Enforcing/Complying with Environmental Regulations and Environmental or Sustainability Standards		
34	Provides advice and/or testimony to sr. management, internal staff, regulatory bodies, interest groups and the public regarding environmental regulations and environmental or sustainability standards' issues.	1
35	Applies environmental legislation regarding issues such as contaminated sites, hazardous materials and waste, pesticide use, storage tanks, etc. to specific applications as appropriate.	1
37	Prepares regulatory applications.	3
38	Prepares permits and operational permit reports (including air permits, waste disposal permits, resource harvesting permits, etc.).	3
40	Develops plans and programs to meet environmental regulatory requirements and/or environmental and sustainability standards.	1
41	Implements programs, including monitoring activities, to ensure regulatory compliance and standards conformance.	1
42	Evaluates compliance with environmental regulations and conformance to environmental and sustainability standards.	1
43	Prepares compliance and regulatory reports for internal use and for filing with regulatory or reporting agencies.	2
45	Oversees or participates in audits of the environmental and/or sustainability performance to determine adequacy of procedures and non-compliance/conformance issues.	3

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CATEGORY D: Pollution Prevention, Abatement, & Control		
SUB-CATEGORY 6: Implementing Pollution Prevention, Abatement & Control (PAC) Methods		
46	Assesses operations and processes for potential pollution problems (involves identifying contaminant sources, determining their characteristics and the magnitude of the potential risks).	3
47	Characterizes the attributes of processes and products generated (for example, chemical/biological composition, toxicity, physical properties and degradability).	3
50	Implements pollution prevention, abatement, and control methods/solutions to prevent, abate, control and reduce pollution, contamination or emissions (e.g. devises ways to prevent contamination of water by agri-chemicals and petroleum products).	3
51	Monitors the effectiveness of Pollution Prevention, Abatement, and Control (PAC) solutions, and the performance of installed PAC equipment, systems and technologies.	3
CATEGORY G: Water Quality Management		
SUB-CATEGORY 10: Developing/Implementing Water Supply and Water Efficiency Plans and Programs		
76	Assesses the environmental aspects of the design, operation and maintenance of water and wastewater distribution/collection systems.	3
77	Assesses the quality and availability of water supply (both surface and groundwater).	1
80	Monitors effectiveness of water/wastewater programs and water treatment equipment and processes to meet environmental performance requirements.	2
84	Provides guidance and management on day to day operations of water treatment plants.	1
85	Supports in the optimization of plant processes and operations to ensure/maintain excellent water quality.	1
CATEGORY H: Environmental Sampling & Analytical Work		
SUB-CATEGORY 11: Developing Environmental Sampling, Testing and Monitoring Programs		
86	Determines the need and scope for sampling program, including environmental indicators, chemicals of concern, and sampling constraints	1

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87	Develops environmental sampling protocols, including data quality objectives, the frequency and timing of sampling, optimum locations for continuous or discrete sampling, data capture systems, sampling procedures, sampling methodology, personnel, and parameter list for analysis.	1
88	Develops site-specific work plans, including Quality Assurance/Quality Control (QA/QC) methods, measuring/monitoring procedures and analytical equipment (both field and lab equipment) to be used for the specific application (e.g. air, water, soil, sediments, rock, fauna, flora, human, workplace, etc.).	1
89	Develops methodologies and protocols for the collection and analysis of qualitative data to complement any quantitative data collected.	1
90	Modifies existing sampling programs to reflect changing research priorities and/or environmental circumstances.	1
91	Maintains analytical test instruments and monitoring or sampling equipment as per manufacturers' user-maintenance specifications and user's standard operating procedures, including calibration of instruments/equipment.	1
SUB-CATEGORY 12: Collecting Samples and Data for Environmental Purposes		
92	Determines the appropriate sample size, sampling containers, protocols, preservation methods, collection apparatus and transportation, etc.	1
93	Selects, assembles and deploys analytical test instruments or sampling equipment (such as data capture systems, continuous monitoring devices, drilling cores, water bailers, etc.), including assembly and documentation of deployment and operational conditions and other pertinent details, such as any deviation to standard procedures.	1
94	Collects samples and specimens as per established protocol, using more routine sampling procedures and apparatus.	1
95	Collects samples and specimens as per established protocol, using more complex sampling procedures and apparatus.	1
96	Uses appropriate techniques to prepare (code, preserve, pretreat and transport) samples for analysis while maintaining chain of custody requirements and sample integrity.	1
99	Performs direct measurement of physical parameters for air/water/soil, including for example, temperature, flow rates, pressure, gaseous/particulate emissions, etc.	1
102	Maintains appropriate records and ongoing documentation pertaining to field and laboratory analytical work, including regulatory documentation.	1

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722	Ensures the coordination with laboratories to establish appropriate water sample parameters, submission dates and deliverable of sample collection containers.	1
SUB-CATEGORY 13: Analyzing and Interpreting Environmental Samples and Data		
103	Uses more routine analytical procedures and instruments (such as meters, electrodes, and spectrophotometers) to identify and/or quantify the physicochemical properties, specific chemicals or chemical groups, etc. of the samples collected.	2
109	Conducts statistical analysis of data using appropriate computer software, databases, etc.	2
110	Assesses the accuracy and precision of analytical results by applying good practice guidance or established QA/QC methods.	1
111	Interprets analytical data to identify trends, significant changes from historical patterns, deviations, or evidence of environmental stresses, etc.	1
112	Determines how results will be applied, for example redesigning sampling protocol, redesigning research methodology, developing a baseline dataset, etc.	1
113	Conducts quality control reviews of data collection, processing, and analysis to ensure data is 'fit for purpose' using accepted scientific practices and proper Quality Assurance/Quality Control (QA/QC) protocols.	2
114	Prepares summary reports of analysis results to be added into technical reports or presentations to expert and/or non-expert audiences	2
CATEGORY K: Corporate Environmental and/or Sustainability Program Planning & Implementation		
SUB-CATEGORY 19: Conducting Environmental Risk Assessments		
150	Identifies hazards, opportunities or potential risks to human health, the environment, facility operation/financial loss, legal liability, social impact, public perception through such activities as collecting source data, reviewing literature, investigating illness/injuries, and obtaining feedback from workers or the public.	3
SUB-CATEGORY 20: Implementing Environmental and/or Sustainability Management Systems		
161	Implements the Environmental Management System strategies and practices.	3
SUB-CATEGORY 21: Managing Environmental and/or Sustainability Management Systems and Practices		
170	Revises Environmental and/or Sustainability Management System practices and outcomes to correct and prevent non-conformance.	3

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CATEGORY L: Environmental Health & Safety		
SUB-CATEGORY 23: Monitoring/Addressing Occupational and Public Health and Safety		
180	Develops preventative programs that help protect workers' (or the public's) health and safety in response to environmental concerns.	3
181	Develops organizational procedures concerning environmental and occupational/public health and safety matters.	3
182	Implements measures to mitigate the health & safety hazards associated with environmental issues created by operations or construction activities and their by-products such as hazardous leachates, effluents and dusts.	3
183	Develops emergency response plans and procedures to address environmental crises (such as accidental emissions, discharges, releases, explosions, leaks or spills that could cause a threat to humans and the environment), in consultation with stakeholders and emergency response experts.	3
185	Monitors existing or potential environmental health hazards and stressors such as noise, energy (UV, IR, radiation), chemical/biological pollutants in the air, water, and/or soil.	3
CATEGORY M: Natural Resources Planning & Management		
SUB-CATEGORY 24: Conducting Studies Related to Ecosystem and Habitat Preservation and/or the Management of Natural Resources		
195	Identifies the impact of development/exploration/exploitation activities on the biodiversity of surrounding natural habitats (such as the "downstream" impacts of agricultural activities on surrounding soil and water).	3
203	Prepares baseline report including gap analysis report where baseline data is incomplete, interpretation of baseline data and development of recommendations for consideration by stakeholders and decision-makers.	3
204	Designs monitoring systems for measuring human impacts on natural resources and/or ecosystems.	3
205	Tracks the deviation of earth and life science inventories from baseline levels through environmental monitoring programs.	3
SUB-CATEGORY 25: Developing and Implementing Plans, Programs and Practices for Ecosystem and Habitat Preservation and/or the Management of Natural Resources		
206	Investigates significant occurrences and changes that may signal the need for a resource management and/or ecosystem preservation plan.	3
207	Seeks input from technical specialists (e.g., biologists, taxonomists, modellers) and other stakeholders (governments, non-governmental organizations, aboriginal peoples, etc.) with respect to resource management and habitat protection (such as the identification of important habitat sites).	3

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CATEGORY N: Environmental Education & Training		
SUB-CATEGORY 27: Developing Environmental Curricula and Programs		
233	Demonstrates a knowledge of environmental science and technology that enables the educational professional to understand the fundamental relationships between human activities and the natural environment.	1
CATEGORY O: Environmental Research		
SUB-CATEGORY 31: Conducting Environmental Research/Publishing Results		
268	Writes up the results of the environmental research in accordance with rigorous publishing guidelines (for publication in peer-reviewed journals, presentation at conferences, etc.).	3
CATEGORY Q: Environmental and/or Sustainability Communications & Public Awareness		
SUB-CATEGORY 34: Developing/Implementing Environmental and/or Sustainability Communications and Awareness Programs		
288	Demonstrates an understanding of the fundamental relationships between human activities and the natural environment.	3
297	Establishes goals for environmental and/or sustainability awareness programs that will help ensure the intended message is accurately conveyed to the appropriate target audience.	3