Geoscience Competencies and Workplace Examples
March 23, 2019

WORK EXPERIENCE COMPETENCIES		WORKPLACE EXAMPLES	
1. PROFESSIONAL COMPETENCIES			
1.1	Comply with relevant legislation, regulations, and statutory reporting requirements		
		a	Apply for licenses and permits
		b	Undertake stakeholder consultations
		c	Complete and file reports and notifications
1.2	Practice within the bounds of personal expertise and limitations		
		a	Undertake self-assessment to identify personal limits
		b	Seek advice from professionals with more appropriate expertise
		c	Refer client to other professionals
1.3	Increase relevant knowledge, skills and level of performance over time		
		a	Attend conferences, workshops or courses related to area of practice
		b	Undertake focused research or learning to address knowledge gaps
		c	Obtain relevant specialty training or certification
1.4	Maintain constructive working relationships		
		a	Undertake and apply diversity training
		b	Provide and accept constructive feedback
		c	Contribute to workplace conflict resolution
1.5	Apply ethical principles		
		a	Communicate consequences of disregarding professional advice
		b	Respond to unethical behaviour of others
		c	Identify and address conflict of interest
1.6	Respond to obligations and responsibilities to the public, to the natural environment, to clients and to employers		
		a	Undertake work activities in a manner that minimizes environmental impact
		b	Make decisions consistent with client or employer needs that protect the safety, health and welfare of the public
		c	Provide accessible and appropriate information to minimize public concerns
1.7	Contribute to health and safety in the workplace		
		a	Proactively address workplace health and safety
		b	Identify unsafe practices or hazardous situations
		c	Contribute to development of site-specific health and safety requirements
2. COMPETENCIES IN SCIENTIFIC METHOD			
2.1	Apply scientific principles		
		a	Use mathematical and statistical principles to analyze data
		b	Use principles of chemistry and physics to interpret data
		c	Formulate, test and evaluate hypothesis
2.2	Effectively utilize scientific literature		
		a	Undertake a literature search
		b	Critically analyze and incorporate published research
		c	Identify and acknowledge relevant sources
2.3	Identify uncertainty and ambiguity in data, and limits to knowledge		
		a	Identify bias in data collection
		b	Evaluate margin of error on results
		c	Display uncertainty in analytical results or interpretation
2.4	Apply principles of quality assurance and quality control (QA / QC)		
		a	Follow established protocols in data collection or analysis
		b	Review project outcomes relative to quality standards
		c	Establish QA / QC standards
2.5	Undertake relevant investigation and due diligence		
		a	Research complete background information

		b	Review similar situations to identify known hazards and risks
		c	Consider potential unanticipated outcomes
3. COMPETENCIES IN AREA OF GEOSCIENCE PRACTICE			
3.1	Plan investigations based upon purpose of study, incorporating existing site-specific information and appropriate approaches		
			Examples of investigations:
		a	geological mapping
		b	geophysical survey
		c	baseline monitoring
		d	geohazard assessment
		e	drilling program
		f	sampling program
		g	environmental site assessment
		h	research project
3.2	Acquire, process and analyze data using appropriate methodologies		
		a	Use effective devices and instruments to acquire data
		b	Apply locational tools and principles to georeference data
		c	Analyze and process data using 3-D modelling software
3.3	Incorporate relevant data from other sources		
		a	Integrate historical and current data
		b	Include local or regional information
		c	Identify analogs
3.4	Interpret and evaluate data to construct models consistent with purpose of investigation		
		a	Prepare and interpret logs, sections or maps
		b	Prepare and interpret spreadsheets, charts or diagrams
		c	Apply geoscience principles to generate models
3.5	Critically evaluate models		
		a	Address uncertainty and bias
		b	Compare and contrast analogous models
		c	Evaluate validity of model relative to objectives
3.6	Formulate conclusions and recommendations		
		a	Define drilling targets
		b	Assess site suitability and determine mitigation measures
		c	Assess feasibility based on resource estimation
		d	Provide alternative solutions and make recommendations
3.7	Adapt methodologies to address unfamiliar situations		
		a	Modify mapping or sampling methodologies in unfamiliar terrain or geological settings
		b	Adapt approach based on stakeholder values
		c	Integrate additional knowledge & skills to address unfamiliar situations
		d	Develop new techniques
4. COMPLEMENTARY COMPETENCIES - Communication and management			
4.1	Deliver and comprehend oral communication		
		a	Participate in a consultation or working group
		b	Deliver a geoscience lecture or presentation
		c	Describe a geoscience model to a client, peer or supervisor
4.2	Deliver and comprehend written communication		
		a	Prepare and respond to business correspondence
		b	Write a project or funding proposal
		c	Interpret and synthesize written information
4.3	Communicate technical information effectively to a variety of audiences		
		a	Create or adapt a presentation for technical and non-technical audiences
		b	Create or modify written material for technical and non-technical audiences
		c	Deliver a geoscience presentation to students
4.4	Manage activities		

		a	Plan or coordinate geoscience field work
		b	Plan or coordinate data collection or analysis
		c	Organize a conference, workshop or meeting
4.5	Use time management skills		
		a	Prioritize activities to meet deadlines
		b	Use scheduling tools
		c	Adapt schedule to changing situations
4.6	Provide direction to others		
		a	Provide instructions to students
		b	Advise team members or co-workers
		c	Supervise the work of others
4.7	Contribute to budgetary management		
		a	Evaluate quotes
		b	Estimate costs
		c	Control expenditures
4.8	Apply basic principles of risk management		
		a	Mitigate risk associated with field work
		b	Coordinate activities to manage risk
		c	Communicate business risks associated with geoscience interpretations
4.9	Contribute to secure data management		
		a	Use data security software
		b	Protect confidential information or materials
		c	Develop or follow organizational data management protocols
4.10	Maintain comprehensive professional records		
		a	File and archive comprehensive and clear field observations
		b	Label, store and catalogue samples
		c	Prepare and retain business and administrative records