JURISDICTIONAL REVIEW OF CONTAMINATED SITE QUALIFIED PROFESSIONAL PROGRAMS

Prepared For:

Canadian Petroleum Products Institute | Institut canadien des produits pétroliers

Canadian Manufacturers & Exporters | Manufacturiers et Exportateurs du Canada

Cement Association of Canada | Association Canadienne du Ciment

KILMER BROWNFIELD EQUITY FUND L.P.

Prepared By:

Ontario Centre for Environmental Technology Advancement

OCETA

On Behalf Of:

The Canadian Brownfields Network

cbn Canadian Brownfields Network

FINAL REPORT
December 2007

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS USED IN THIS DOCUMENT 2

EXECUTIVE SUMMARY 3

JURISDICTIONAL REVIEW OF CONTAMINATED SITE QUALIFIED PROFESSIONAL PROGRAMS 4

1 INTRODUCTION AND BACKGROUND 4

2 PURPOSE OF THE STUDY 4

3 REVIEW AND ASSESSMENT OF EXISTING QP PROGRAMS 4

4 SURVEY OF KEY STAKEHOLDERS TO IDENTIFY KEY ELEMENTS AND BEST PRACTICES OF QP PROGRAMS 15

5 SUMMARY OF RESULTS 16

6 RECOMMENDATIONS 23

7 RESOURCES 26

LIST OF TABLES

Table 1: Summary of QP Programs in Canada (National) 5
Table 2: Summary of QP Program in British Columbia 6
Table 3: Summary of the Proposed QP Program in Alberta 6
Table 4: Summary of QP Program in Ontario 7
Table 5: Summary of QP Program in Quebec 7
Table 6: Summary of QP Program in New Brunswick 8
Table 7: Summary of QP Program in Nova Scotia 8
Table 8: Summary of QP Programs for the USA (National) 9
Table 9: Summary of QP Program in California 10
Table 10: Summary of QP Program in Connecticut 11
Table 11: Summary of QP Program in Massachusetts 11
Table 12: Summary of QP Program in North Carolina 12
Table 13: Summary of QP Program in Ohio 12
Table 14: Summary of QP Program in West Virginia 13
Table 15: Summary of QP Program in the UK 13
Table 16: Summary of QP Program in Australia 14
Table 17: Minimum Experience Requirements of QPs 17
Table 18: Should QPs be required to take a qualification exam? 18

LIST OF FIGURES

Figure 1: Survey Respondents by Sector 16
Figure 2: Survey Respondents by Geographic Area 16
Figure 3: Minimum Educational Requirements 17
Figure 4: Required Professional Designations for QPs 18
Figure 5: Preferred Methods of QP Skill Maintenance 19

List of Appendices

APPENDIX A – QP Program Jurisdictional Overview 27

APPENDIX B – QP Program Survey 35

APPENDIX C – List of Survey Contacts 44

LIST OF ABBREVIATIONS AND ACRONYMS USED IN THIS DOCUMENT

AESAC	Associated Environmental Site Assessors of Canada
APEGBC	Association of Professional Engineers and Geoscientists of BC
Atlantic PIRI	Atlantic Partnership in RBCA Implementation
CAC	Cement Association of Canada
CBN	Canadian Brownfields Network
CCEP	Canadian Certified Environmental Practitioner
CEAA	Canadian Environmental Auditing Association
CEAS	Certified Environmental Assessor of Sites
CECAB	Canadian Environmental Certification Approvals Board
CLA	Contaminated Land Auditor (Australia)
CME	Canadian Manufacturers and Exporters
CP	Certified Professional (Ohio)
CPPI	Canadian Petroleum Products Institute
CSAP	Contaminated Site Approved Professional (British Columbia)
ESA	Environmental Site Assessment
LCR	Land Condition Record (UK)
LEP	Licensed Environmental Professional (Connecticut)
LSPA	Licensed Site Professional Association
LRS	Licensed Remediation Specialist (West Virginia)
MOE	Ministry of the Environment
NSW	New South Wales (Australia)
QP	Qualified Professional
QPRA	Qualified Person for Risk Assessment
RA	Risk Assessment
RBCA	Risk-Based Corrective Actions
RBP	Registered Brownfield Professional (USA)
REA	Registered Site Assessor (California)
RSC	Record of Site Condition (Ontario)
RSM	Registered Site Manager (North Carolina)
VIC	Victoria (Australia)

EXECUTIVE SUMMARY

Many jurisdictions rely on Qualified Professionals (QPs) to provide efficient and consistently high-quality execution of contaminated site management. A well functioning QP Program ensures that QPs have the skills, expertise and capability to provide accurate and high-quality reports that meet jurisdictional requirements.

QP Programs vary significantly between jurisdictions and can often be complex, making it difficult for companies operating in multiple areas to efficiently manage contaminated sites. In addition to the objective of identifying best practices, stakeholders identified the need to analyze existing QP Programs in terms of key elements and obtain examples where harmonization between jurisdictions has occurred.

To address this need OCETA, on behalf of the Canadian Brownfields Network, conducted a review and assessment of existing QP Programs and a survey of key stakeholders to identify "best practices".

Information was gathered from government web sites, third party reports, and interviews with experts for the review and assessment. The review examined the structure of Programs that are being developed as well as those that are fully implemented, the reasons for their creation, and requirements of QPs in jurisdictions from across Canada (British Columbia, Alberta, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island), the United States (California, Connecticut, Massachusetts, North Carolina, Ohio, and West Virginia), Australia and the United Kingdom.

The survey included questions on the current QP Program in the respondent's jurisdiction as well as their opinion on education and experience requirements, professional designations, skill maintenance, liability coverage and best practices. The survey responses identified important aspects of QP Programs and emphasized "best practices".

The following recommendations are based on the key findings identified through the jurisdictional review and survey of stakeholders for the purpose of developing an effective QP Program (Further details on these recommendations are provided in Section 6):

- Recommendation #1:
  Engage all stakeholders early in the development or re-design of QP Programs

- Recommendation #2:
  Leverage existing accredited professional organizations

- Recommendation #3:
  Conduct a national working session on Qualified Professionals

- Recommendation #4:
  Clearly communicate requirements and expectations of QPs

- Recommendation #5:
  Provide ongoing consultation and training on regulatory issues and requirements

- Recommendation #6:
  Initiate discussions with other jurisdictions on the topic of harmonization

JURISDICTIONAL REVIEW OF CONTAMINATED SITE QUALIFIED PROFESSIONAL PROGRAMS

1.0 INTRODUCTION AND BACKGROUND

The ability of qualified professionals (QPs) to provide efficient and consistently high-quality execution of contaminated site management including site assessments, risk assessments and remediation plans is an integral component of site redevelopment. Ensuring that QPs have the skills, expertise and capability to provide accurate and high-quality reports, as well as an excellent working knowledge of the jurisdictional requirements, are essential conditions to continuously improve the quality of brownfields or contaminated site redevelopment. A well functioning QP Program generates consistently high quality of work and facilitates an effective and efficient site closure process.

QP Programs vary significantly between jurisdictions and can often be complex. This makes it difficult for companies which operate in multiple areas to efficiently manage contaminated sites. Organizations such as the Canadian Petroleum Products Institute (CPPI), the Cement Association of Canada (CAC), Canadian Manufacturers and Exporters (CME), and the Kilmer Brownfield Equity Fund are interested in the following to facilitate redevelopment work in all jurisdictions:

- Obtaining an analysis of existing QP Programs;
- Identifying key elements of QP Programs; and
- Identifying instances where harmonization between jurisdictions has occurred.

2.0 PURPOSE OF THE STUDY

In order to assist jurisdictions to identify key elements and work towards the harmonization of QP Programs OCETA, on behalf of the Canadian Brownfields Network (CBN), conducted the following:

- Review and assessment of existing QP Programs
- Survey of key stakeholders to identify “best practices”

3.0 REVIEW AND ASSESSMENT OF EXISTING QP PROGRAMS

A review of existing QP Programs was undertaken to provide an overview and analysis of the QP Programs currently in place. The information was gathered from government web sites, third party reports, and interviews with experts. The review examines the structure of Programs that are under development or fully implemented, the reasons for creation, and requirements of QPs. Jurisdictions from across Canada, the United States, Australia and the U.K. were examined. A brief description of each jurisdiction as well as a summary table highlighting the QP qualifications and audit process is provided in Table 1.

CANADA

On a national basis, three independent organizations provide voluntary certification of QPs. These include the Canadian Environmental Auditing Association, the Canadian Environmental Certification Approvals Board, and the Associated Environmental Site Assessors of Canada. Table 1 highlights the requirements for these QP Programs.

Table 1: Summary of QP Programs in Canada (National)

Oversight Body	Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
		Education and Experience	Association Membership	Exams	Other	
Canadian Environmental Auditing Association (CEAA)	Certified Environmental Assessor of Sites (CEAS)	• Post-secondary education at a college diploma level or higher in either a science or engineering discipline • 5 or more consecutive years of relevant experience conducting or managing site assessments and related activities		• Written exam	• 20 assessments performed to CSA Z768 standards • Experience can be reduced to 4 years with a minimum of 35 hours of formal training	
Canadian Environmental Certification Approvals Board (CECAB)	Canadian Certified Environmental Practitioner (CCEP) (Phase I & II)	• Post-secondary education at a college diploma level or higher • 5 or more years of relevant experience in Canada			• Level of knowledge that meets or exceeds the National Occupational Standards for environmental employment	
Associated Environmental Site Assessors of Canada (AESAC)	Certified Environmental Site Assessor (Phase I)	• AESAC uses a credit system where credits are earned for education, experience, professional designation and training. To become certified the applicant must have a combination of the four categories.		• Qualification exam		

British Columbia

In British Columbia, the Province takes on responsibility for work conducted on contaminated sites. This acceptance of liability has contributed significantly towards shaping the QP Program. The requirements and exam process are more onerous than in jurisdictions where the regulatory body does not assume responsibility for the contaminated sites.

The Province developed legislation requiring that all contaminated site assessments had to be reviewed by the Ministry of Environment or hired contractors before financing, permits and other procedures could take place. A backlog developed as a result of staff limitations, so the Ministry created a Roster of Approved Professionals in 1998 to approve professionals who could take over responsibility of reviewing assessments from the Province. The role of professionals would be to review Phase I and II Environmental Site Assessments (ESAs) and make recommendations to the Province.

The Roster has evolved and an independent organization, the Contaminated Site Approved Professional (CSAP) Society, has been formed to oversee the approved professionals. It has two categories of approved professionals: “Standards Professionals” for sites cleaned to standards and “Risk Assessment Professionals” for sites cleaned to risk-based levels. The Society is expected to finalize the role of Professionals in risk-based assessments in the Fall of 2007. Table 2 provides an overview of the QP requirements within the CSAP.

Table 2: Summary of QP Program in British Columbia

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Licensed Environmental Standards Professional	10 years of experience in contaminated site assessments	• Association of Professional Engineers and Geoscientists of BC (APEGBC) • College of Applied Biology (CAB) • British Columbia Institute of Agrologists	• QP technical and regulatory examinations (in addition to professional association exams)	• If not part of one of the three parent organizations, the applicant must demonstrate that (s)he is not eligible for registration in the organizations (i.e. toxicologist) • Must have liability insurance ($2 million)	Responsibility of the CSAP. The Province can audit the processes of the CSAP.
Licensed Environmental Risk Assessment Professional	10 years of experience in contaminated site risk assessments				

Alberta

Alberta does not have a formal QP Program. Professionals can make judgements on underground storage tank sites, but all other contaminated sites processes are handled by the Provincial Government. The Alberta Environment Ministry is currently developing a QP Program that will include professional sign off on all activities prior to the Ministry issuing a reclamation and remediation certificates. These will be mandatory as of November 2007 for contaminated sites and January 2008 for reclamation of upstream oil and gas sites. Alberta recognizes members of any professional organization that is authorized by and is accountable to the Province of Alberta. With six organizations meeting those requirements, Alberta recognizes a broader range of professionals than many other jurisdictions. Under the proposed Program, complaints regarding QP performance will be handled by the respective professional organizations. Table 3 summarizes the qualifications included in the new Program.

Table 3: Summary of the Proposed QP Program in Alberta

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
		• Alberta Institute of Agrologists • Association of Professional Engineers, Geologists and Geophysicists of Alberta • Alberta Society of Professional Biologists • Association of the Chemical Profession of Alberta • College of Alberta Professional Foresters • College of Alberta Forestry Technologists			Approx. 15% of sites issued a reclamation certificate receive a field audit and approx. 10% of sites issued a remediation certificate will receive a field audit or a desktop application audit. The audits are to determine if the site meets Alberta Environment's remediation or reclamation requirements.

Ontario

The Ontario Ministry of the Environment (MOE) is in the process of refining their QP Program, which is scheduled to sunset in April 2008. The current Program is part of Ontario Regulation 153/04 which identifies the requirements that property owners must meet when filing a Record of Site Condition (RSC).

The Program is multi-tiered, with different qualification requirements for QPs performing Phase I ESA or Phase II ESAs and QPs for Risk Assessments (QPRAs). It relies on existing professional designations to determine who is qualified to make certifications in a RSC. Similar to Alberta's program, MOE accepts a broader range of professional designations compared to many other jurisdictions.

QPRAs preparing and supervising a risk assessment for use in a Phase II ESA are required to meet specific education and experience qualifications. Since there is no requirement for the QPRA to hold a professional designation there is nothing preventing professionals from other jurisdictions from performing RAs in

Ontario provided that the QPRA meets the prescribed qualifications. QPRAs are expected to retain a team that has the necessary expertise and experience but this is not detailed as a requirement for the QPRA. Table 4 outlines these qualifications.

Table 4: Summary of QP Program in Ontario

Name for Professionals	QP Qualifications					Reviews or Audits of Assessments
	Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
Qualified Persons	Phase I ESA		• Professional Engineer • Professional Geoscientist • Engineering Technician or Technologist • Architectural Technologist • Professional Agrologist • Chartered Chemist		• Must have liability insurance ($2 million)	Random and targeted reviews of assessments by the regulatory body
	Phase II ESA		• Professional Engineer • Professional Geoscientist • Professional Agrologist • Chartered Chemist			
	Phase II ESA (with RA)		• Professional Engineer • Professional Geoscientist			
	Risk Assessment (QPRA)	• 4-year bachelor's degree in science or engineering from a university • 5 years experience if they have a Ph.D. • 7 years experience if they have a Masters • 8 years experience if they have a Bachelor's • At least 2 years experience must be in the conduct of supervision of assessment of risk				Full review of all risk assessments by the regulatory body

Quebec

The Ministry of Sustainable Development in Quebec maintains a List of Experts. These QPs are authorized to issue certificates regarding land protection and rehabilitation. In order to qualify for the List of Experts, the applicant must meet education/experience requirements, pass a qualifying exam and be a member of an association that governs practicing professionals. Table 5 summarizes the qualifications for QPs in Quebec.

Table 5: Summary of QP Program in Quebec

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Experts	• Bachelor's degree in a relevant discipline such as biology, chemistry, engineering or geology • Minimum 10 years experience in the field of site characterization and rehabilitation	• Member of an association or order that governs practicing professionals	• Regulatory examination		Random audits of Phase II ESAs are done by the Province

New Brunswick

New Brunswick has a more mature QP Program that was been operating for 8 years under the Atlantic Partnership in RBCA Implementation (Atlantic PIRI). The Province does not oversee QPs but instead relies on the membership of the Association of Professional Engineers and Geoscientists. There is a one time qualifying exam, administered by the Association, as well as ongoing education for QPs. The Program is harmonized with the other Atlantic Provinces and they are currently discussing harmonization with Quebec. Table 6 summarizes the qualifications for QPs in New Brunswick.

Table 6: Summary of QP Program in New Brunswick

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Approved Site Professionals		• Member of the Association of Professional Engineers and Geoscientists in good standing	• Entrance exam administered by the Association	• Mandatory ongoing education	Responsibility of the Association

Nova Scotia

Nova Scotia's QP Program relies on existing professional associations to qualify and govern QPs. It has been harmonized with New Brunswick, PEI, and Newfoundland under the Atlantic Partnership in Risk-Based Corrective Actions (RBCA) Implementation (PIRI). Table 7 summarizes the qualifications for QPs in Nova Scotia.

Table 7: Summary of QP Program in Nova Scotia

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Approved Site Professionals		• Professional Engineers of Nova Scotia • A licensing body authorized in writing by the Nova Scotia Environment and Labour Director of Resource Management and Pollution Control	• Entrance exam administered by the Association		Responsibility of the Association

Newfoundland and PEI

Newfoundland and PEI do not have regulations specifically defining QPs, however these provinces are harmonized with the other Atlantic Canada provinces under Atlantic PIRI.

UNITED STATES OF AMERICA

In the US, there are two national QP Programs as well as a number of state-run Programs. In addition to the examples provided here, many states have requirements in State laws detailing the requirements needed to perform work on contaminated sites. The US Environmental Protection Agency (USEPA) has developed a set of qualifications for professionals overseeing work at Superfund sites. These qualifications include both membership in a professional association and relevant experience.

The Institute of Brownfields Professionals is an independent organization whose role is to promote brownfield professionals and provide guidance in jurisdictions where there is no well-defined QP Program. It is a voluntary designation that is meant to be an attestation of apparent competence rather than a regulatory requirement. Currently a professional must be a licensed Engineer, Geologist, or Environmental Professional to qualify as a Registered Brownfield Professional. The Institute is developing an additional set of criteria to

recognize professionals that are not licensed in order to focus on education and relevant experience as a measure of competence. Table 8 outlines the QP requirements for these national QP Programs.

Table 8: Summary of QP Programs for the USA (National)

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Environmental Professional	• Membership in an approved group and 3 years relevant experience (see Membership) • OR Bachelor's or higher degree in science or engineering and 5 years of relevant experience • OR 10 years relevant experience	• Professional Engineer • Professional Geologist • Another professional licensed by the federal government, a state, tribe, or US Territory		• Must participate in continuing education or other activities and be able to demonstrate such efforts	
Registered Brownfield Professional	• Bachelors Degree in an engineering, geoprofessional or related scientific course of study • At least 3 years of experience	• Licensed as a professional engineer, geologist, or environmental professional by a state, the District of Columbia, the Commonwealth of Peurto Rico, a tribe, or a US territory		• By three-quarters majority vote, the Board of Directors may confer the Registered Brownfield Professional designation upon an individual it deems worthy of holding that designation, whether or not such individual meets the criteria established above	

California

California has a Registered Environmental Assessors (REAs) Voluntary Program to provide a listing of professionals with adequate knowledge to perform ESAs. Registration is solely dependent on meeting the prescribed education and experience requirements. There are two levels of REA, one for Phase I ESAs and a second for Phase II ESAs which are more stringent. REAs cannot provide engineering or geological services as part of the ESA unless they are appropriately licensed. It should be noted that the Underground Storage Tank Cleanup Fund does not recognize REAs and will only reimburse activities undertaken by members of recognized professional associations. Table 9 summarizes the required qualifications for these QP Programs.

Table 9: Summary of QP Program in California

Name for Professionals	QP Qualifications					Reviews or Audits of Assessments
	Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
Registered Environmental Assessors	Phase I	• 5 years general field experience within the past 8 years • 2 years in environmental assessments within the past 4 years • Bachelor's degree in physical of biological science, engineering or law, or 5 years environmental assessment experience in the last 8 years			• Must reapply every 5 years to show they meet the qualifications	
	Phase II, Risk Assessment and cleanup	• 8 years experience in the last 10 of professional level environmental experience • 4 years in the last 6 of experience in professional level site mitigation • Bachelor's degree in physical or biological science, engineering or a related field				
Acceptable Professional Licenses (UST Cleanup Fund)			• Professional Engineer • Professional Geologist • Certified Engineering Geologist • Certified Hydrogeologist • Professional Petroleum Engineer			

Connecticut

Connecticut established an independent board to oversee their Licensed Environmental Professional (LEP) Program for work done on sites undergoing voluntary remediation. An LEP may verify that an investigation has been performed on a property and that it has been remediated in accordance with regulations. LEPs must meet education and experience requirements and pass qualifying regulatory and technical exams. The LEP Board is responsible for any audits and complaints registered against LEPs. Table 10 outlines the requirements for QPs in Connecticut.

Table 10: Summary of QP Program in Connecticut

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Licensed Environmental Professionals	• 8 years experience with environmental investigation and remediation including minimum 4 years in a supervising role and hold a Bachelor's degree in a related science or engineering field or is a licensed professional engineer • OR 14 years of experience with environmental investigation and remediation including 7 years in a supervising role		• Must pass regulatory and technical tests		Undertaken by the LEP Board

Massachusetts

Massachusetts has developed an independent, regulated, professional body to oversee QPs. The Licensed Site Professional Association (LSPA) governs professionals who are able to render professional opinions on assessment and cleanup of sites. To become an LSP, a professional must meet the prescribed education and experience requirements and pass a qualification exam. The LSPA offers courses to its members and required ongoing education and re-examination every three years. Table 11 outlines the requirements for QPs in Massachusetts.

Table 11: Summary of QP Program in Massachusetts

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Licensed Site Professionals	• Minimum 8 years total professional experience including at least 5 years of contaminated site experience (3 of which in the past 5 years) and a Bachelor's degree in a related science of engineering field • OR minimum 14 years total professional experience, including at least seven years of contaminated site experience (3 of which in the last 5) and at least a high school diploma		• Qualification exam	• Examination every 3 years and continuing education credits	

North Carolina

North Carolina's Registered Environmental Consultant Program allows Registered Site Managers (RSMs) to oversee and certify work done on voluntary clean-up sites. The Department of the Environment may undertake audits to ensure the quality of work done by the RSM meets the standards of the State. The RSM must meet the qualification requirements outlined by the State and do not need to be a member of a professional association. However, the RSM must not perform work outside of their expertise. This means that any engineering or geoscience work that has been performed at a site must be overseen by a Professional Engineer or Geoscientist. Table 12 outlines the requirements for QPs in North Carolina.

Table 12: Summary of QP Program in North Carolina

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Registered Site Managers / Registered Environmental Consultants (for voluntary remediation)	• 5 years experience in investigation and remediation • 3 years of direct experience in supervising remedial action projects • 8 years of total relevant professional experience • Sufficient training to meet the hazardous waste operations and emergency response standard • Bachelor's or higher degree in a related, approved scientific or engineering discipline • Record of professionalism and integrity		• Qualifying exam		Audits may be undertaken by the Department of the Environment

Ohio

In Ohio, Certified Professionals (CPs) can certify that "no further action" is required on voluntary remediation projects. Professionals must meet education and experience requirements and mandatory ongoing professional development. CPs can either undertake the work directly, or review work done by others. The Ohio EPA can audit "no further action" submissions made by QPs. Table 13 outlines the requirements for QPs in Ohio.

Table 13: Summary of QP Program in Ohio

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Certified Professionals	• Bachelor's or higher degree in a specified related science or engineering field • 8 years of relevant professional experience, 3 of which are supervisory or project management related • Possess the professional competence and knowledge required, as determined by the Director			• Minimum 24hrs of professional development training each year	Regulatory agency can conducts audits.

West Virginia

All Voluntary Remediation Program activities must be supervised by a Licensed Remediation Specialist (LRS). In order to become a LRS, a professional must pass a qualifying exam and meet the education and experience requirements. West Virginia has two levels of qualification requirements; one is for professionals with a Bachelor's degree and a second is for professionals with a high school diploma, in combination with a significant amount of experience as shown in Table 14.

Table 14: Summary of QP Program in West Virginia

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Licensed Remediation Specialists (for voluntary remediation)	• Bachelor's or higher degree in a specified related science or engineering field and 6 years experience, including 1 year supervisory • OR a high school diploma and 10 years experience including 1 year supervisory		• Qualification exam		

EUROPE

UK

In order to develop greater consistency in handling information related to contaminated sites, the Department of the Environment, Transport and the Regions, along with the Environment Agency, introduced a standardized Land Condition Record (LCR). The LCR contains factual information relevant to land contamination and site condition but does not include assessments of the implications of the information. The LCR must be completed by a QP. Table 15 outlines the requirements of a QP in the UK.

Table 15: Summary of QP Program in the UK

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Specialist in Land Condition	• 8 years of suitable work experience after graduation	• Geological Society of London • Chartered Institute of Environmental Health • Chartered Institution of Water and Environmental Management • Institution of Civil Engineers • Institute of Environmental Management and Assessment • Royal Institution of Chartered Surveyors • Royal Society of Chemistry • Institute of Biology • Chartered Institution of Wastes Management • Institute of Materials, Minerals and Mining • Society for the Environment • Institute of Physics • Association Planning Supervisors • Institution of Environmental Sciences • Institute of Structural Engineers	• Must complete a question paper that involves full or partial completion of a Land Condition Record, and tests the understanding of Land Condition Records and general land condition knowledge		

AUSTRALIA

In the Australia QP Program, individual Contaminated Land Auditors (CLAs) are appointed by the Environmental Protection Agency based on their education and experience. A CLA is required to sign-off that the land is suitable for the intended end-use. Table 16 outlines the requirements for consideration.

Table 16: Summary of QP Program in Australia

Name for Professionals	QP Qualifications				Reviews or Audits of Assessments
	Education and Experience	Association Membership	Exams	Other	
Contaminated Land Auditors	• Bachelor's degree in a relevant field • 5 years (New South Wales) or 8 years (Victoria) • Broad experience in contaminated site assessment and remediation • 2 years relevant experience in Australia, 2 years as supervisor or project manager of multi-disciplinary team		• Regulatory and technical exam	• $5 million liability insurance • Oral interview based on case study • Renewal required at the end of term (1 year for first 3 years)	• Monitoring and review of audit work

Key Findings

The key findings that were identified from a review and assessment of existing QP Programs include:

1. All of the QP Programs established or being developed in Canadian Provinces require the QP to be a member of an association that governs practicing professionals. Of these, only BC and Quebec have additional education and experience requirements.
2. Many jurisdictions still rely on government oversight of ESAs and RAs, although more jurisdictions are developing QP Programs in order to expedite redevelopment of contaminated sites.
3. Many State QP programs in the US do not require a professional designation. In some cases, such as California and North Carolina, these programs explicitly state that QPs are not allowed to work outside of their expertise. While these QPs can certify work done on contaminated sites, they cannot conduct or make judgements on geological or engineering work unless they have the appropriate professional designation. In other states such as West Virginia, there is no Professional Geologist designation.
4. Of the QP Programs that include experience as a requirement, the majority require 5-10 years of relevant experience.
5. Many jurisdictions require QPs to have project management experience as well as technical experience in order to oversee work conducted on a contaminated site.
6. In addition to mandatory QP Programs, there are a number of voluntary programs whose purpose is to attest to the competence of the QP and assist clients to find a professional with sufficient experience.
7. British Columbia and Massachusetts were the only jurisdictions examined that have implemented independent societies to govern QPs. The Massachusetts Program is a stand alone, regulated, professional body, while the BC Program is more of a hybrid society that relies on existing professional designations. The UK also has an independent body to govern QPs, but the role of QPs is slightly different in that QPs certify the condition of a site, but do not make any assessments of the implications of the information.
8. Australia's QP Program was the most stringent out of those examined. It is believed that this restricted membership with high qualification standards ensures a consistent, high quality, standard

of work. The resultant higher cost of site assessments are thought to be offset by more effective and efficient remediation.

9. The level of responsibility in assuming the liability for remediation of contaminated sites varies by jurisdiction. Jurisdictions that accept liability related to contaminated sites tend to have more stringent qualification requirements for QPs than jurisdictions that do not accept liability.

4.0 SURVEY OF KEY STAKEHOLDERS TO IDENTIFY KEY ELEMENTS AND BEST PRACTICES OF QP PROGRAMS

OCETA, on behalf of the CBN, conducted a survey to identify key elements and best practices of QP Programs. The target audience included regulators, professional associations, consultants, and developers across Canada, the US, Europe, and Australia.

The survey was divided into three sections (Current QP Program, Requirements of QPs, and Best Practices) and included questions on the current QP Program in their jurisdiction as well as their opinion on education and experience requirements, professional designations, skill maintenance, liability coverage and best practices. Responses from the first section assisted in the review and assessment of existing programs while responses to the second and third sections were used to identify “best practices” of existing QP Programs.

OCETA developed a list of 69 stakeholders to survey to offset the potential for low response rates that are typically experienced in surveys administered during the summer vacation season. The list was derived from online government and professional association directories as well as from OCETA’s personal contacts with regulators, developers, and consultants who have an understanding or awareness of QP Programs.

OCETA distributed the survey by email on August 20, 2007 to 63 of the 69 individuals, and requested a response by August 31, 2007. A reminder notice was distributed on August 24, 2007 followed by a notice on August 31, 2007 to extend the survey deadline to September 11, 2007 to allow for more responses. The remaining six individuals were surveyed by telephone in order to obtain more detailed information through a more interactive approach. Some of the telephone interviews were conducted as a pre-test prior to finalizing the survey to allow refinement of the questions before distribution.

5.0 SUMMARY OF RESULTS

OCETA was able to obtain twenty-nine survey responses and interviews that represented government regulators, professional associations, developers and consultants. Respondents were from jurisdictions across Canada and the US. These responses are summarized in Figure 1 and 2.

Figure 1: Survey Respondents by Sector

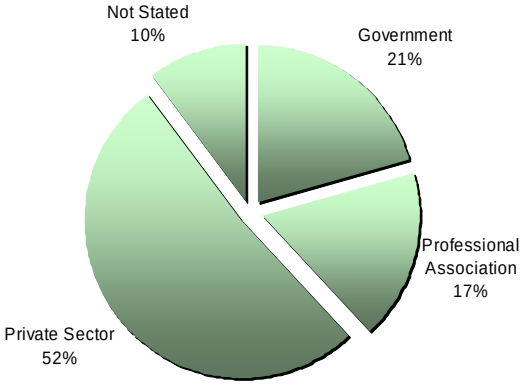
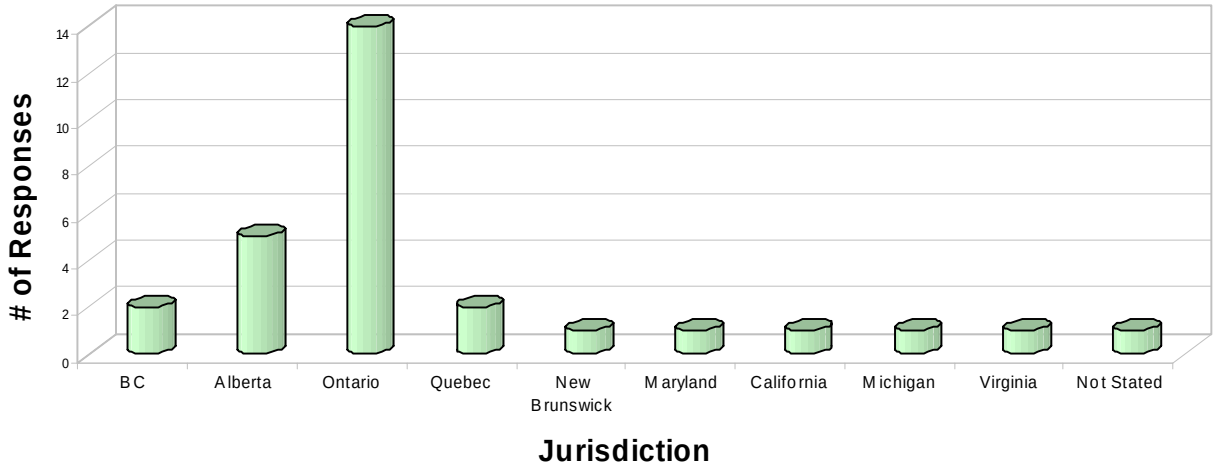


Figure 2: Survey Respondents by Geographic Area



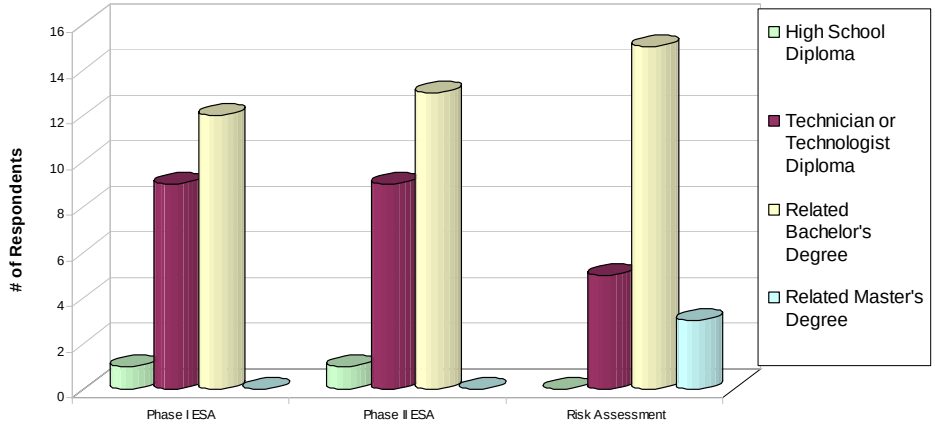
Requirements of QP Programs

This section asked respondents for their perspective regarding the requirements of a QP Program which included general requirements, as well as qualifications required to oversee or sign off on Phase I ESAs, Phase II ESAs, and RAs. A summary of the survey responses are provided below.

Education

The majority of the survey respondents indicated that QPs must have at least a Technician's or Technologist's Diploma or a Bachelor's Degree in a related field of study. Related fields of study included engineering, geology, biology or sciences. If a respondent checked multiple boxes, only the minimum level checked was counted. If the respondent did not specify a minimum level of education but indicated a required professional designation for QPs, the minimum level commensurate with the required professional designations was inferred. A number of respondents indicated that education on its own is not a good indicator of a professional's abilities and that it is important to consider education in conjunction with relevant experience. A summary of the results is presented in Figure 3.

Figure 3: Minimum Educational Requirements



Experience

Respondents were asked to indicate how many years of experience should be required for QPs to oversee work on contaminated sites. The responses are shown in Table 17. The number of responses does not add up to 100% because not all respondents answered the question. In addition, one response indicated that years of experience are "not relevant" and another response only indicated that a "sufficient number of years of experience" are required.

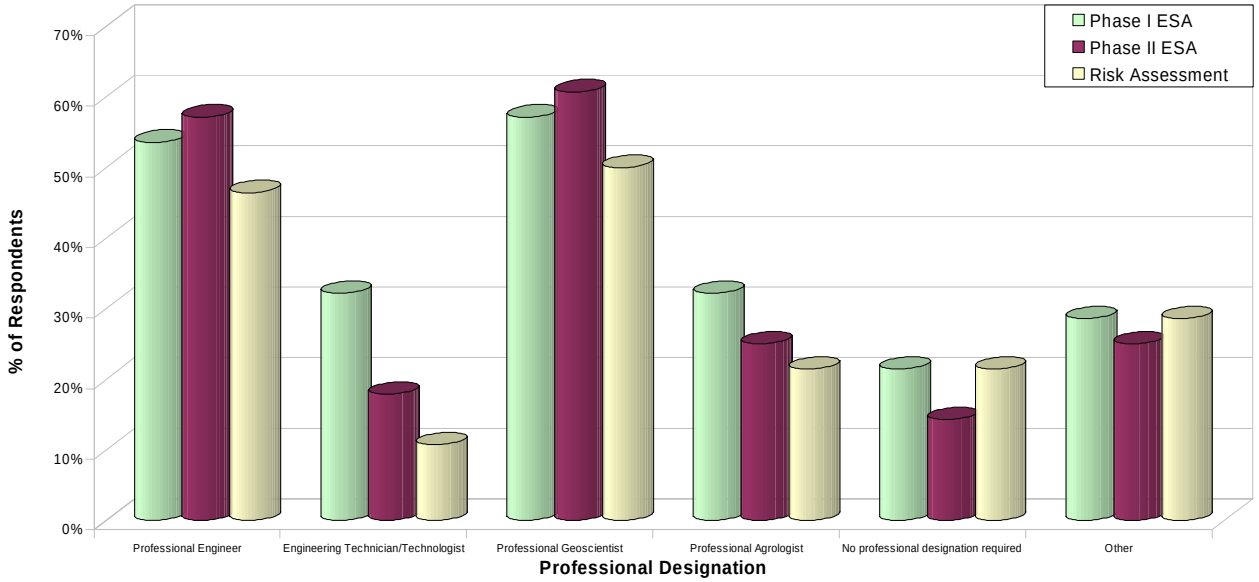
Table 17: Minimum Experience Requirements of QPs

	1-5Years	6-10 Years	11-15 Years	16+Years
Phase I ESA	52%	26%	0%	0%
Phase II ESA	43%	25%	0%	0%
Risk Assessment	50%	14%	4%	0%

Professional Designation

The majority of survey respondents indicated that QPs should be members of an independent, self-regulating association such as Professional Engineers, Professional Geologists, or other similar associations. The liability protection and disciplinary role these organizations provide were regarded as an important aspect of protecting the public interest. A number of respondents indicated that engineering technicians/technologists should also be qualified as QPs, particularly for Phase I ESAs.

Figure 4: Required Professional Designations for QPs



Several respondents indicated that no professional designation should be required. The reasons provided by the respondents for this position are listed below.

- If the issue is liability, then adequate liability coverage should be purchased and educational background and experience should be sufficient qualifications;
- QPs should have a combination of academic credentials and work experience;
- Qualifications for risk assessments require expertise in specific disciplines such as toxicology and many Professional Engineers and Geologists do not have this expertise.

Several respondents also indicated that other professional designations should be included as follows:

- Chartered Chemists
- Professional Biologist
- Architectural Technologist
- AESAC
- CECAB
- Professional Foresters
- Registered Brownfield Professional (US)

Qualification Exams

Respondents were split relatively evenly with regards to whether or not qualification exams are necessary for QPs, as shown in Table 18. A number of respondents indicated that if there is an exam, it should focus on knowledge of regulatory requirements since technical abilities can be addressed by education/professional associations.

Table 18: Should QPs be required to take a qualification exam?

	Yes	No
Phase I ESA	39%	46%
Phase II ESA	39%	39%
Risk Assessment	43%	32%

General Requirements

The questions in this section of the survey asked respondents to comment on professional liability coverage requirements and the maintenance of skills. Fifty-four percent of respondents indicated that professional liability coverage should be a requirement of the QP program compared to twenty-nine percent who indicated it should not be included as a requirement. The reasons given for not including liability coverage as a requirement were:

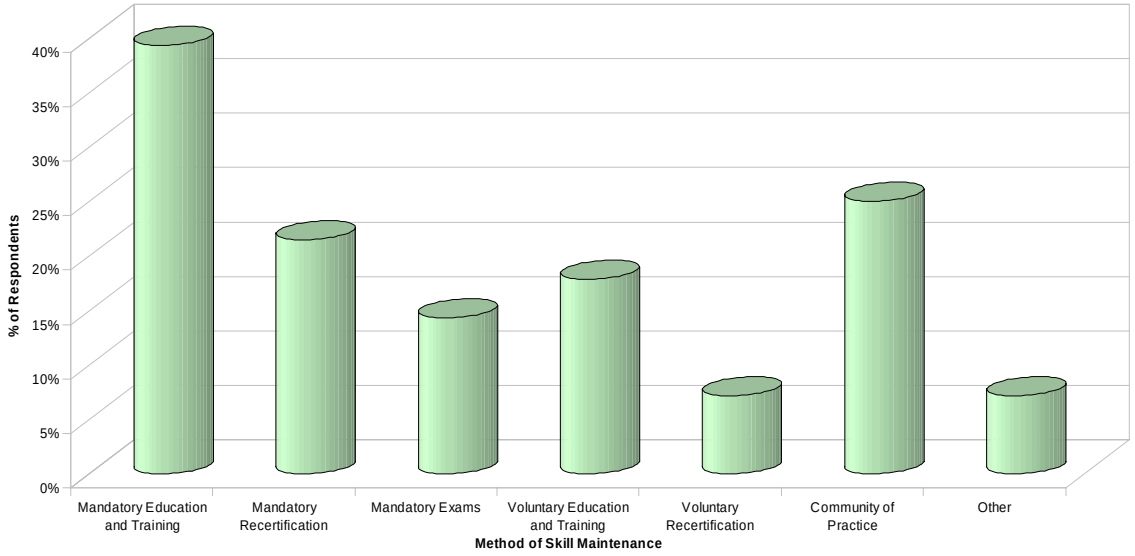
- It is the responsibility of the practitioner/developer/company to ensure adequate professional liability coverage has been obtained;
- Liability coverage is already a requirement of professional associations.

Respondents were split as to whether $1 million or $2 million of liability coverage should be required, however a number of respondents noted that if it is required, it should be taken as a minimum since the amount of liability coverage a QP should have will vary depending on the risk involved in a particular site. It was also stated that ensuring the QP has adequate liability coverage should be the responsibility of a diligent developer/buyer.

For the question of how to ensure QPs maintain their skills, the respondents strongly favoured education and training over exams or recertification, as shown in Table 19. Comments included:

- Professional associations already require ongoing professional development;
- A continuing professional development program for QPs would be a good idea;
- Training should focus on regulations/guidelines.

Figure 5: Preferred Methods of QP Skill Maintenance



Best Practices of QP Programs

The first question of this section asked respondents to identify the aspects of their QP Program that were effective. Comments included:

- Stakeholder consultation
- Rigorous exam/qualification process
- Focus on experience eliminates unqualified individuals from conducting ESAs
- Requirement for registration with an independent professional association ensures an unbiased handling of complaints and protection of public interest
- Program includes multiple disciplines and not just engineers
- Clarifies who can do the work and expedite approvals

- Minimum professional liability insurance requirement
- Allowing the QP the ability to complete site closure documentation once a site has been assessed or remediated to regulatory standards is an important aspect. This process allows timing to be controlled by owners and consultants and not regulators who operate on different timelines
- Allowing the recognition of work on a public registry and documentation of work that has been done on a site
- Organization of Professionals into volunteer committees
- Actually having a program

The second question asked respondents to identify the top three aspects of their QP Program that could be improved. Comments included:

- Improve understanding of requirements
- Quality of assessments needs to be raised
- Quality of QPs conducting RAs is highly inconsistent
- Professional development requirements should be mandatory
- QPs should be allowed to do RA type work
- Certification process should be put in place to maintain quality control
- More emphasis should be placed on work experience when establishing an individual as a QP
- Should not give formal education more weight than experience
- Professional designations should be assessed on the basis of what knowledge and experience is necessary to conduct site work and not represent a list of "who's who" in professional lobbying groups
- The current program favours larger firms
- Individuals with professional designation meet the regulatory QP definition even though QP activities are not a core activity of their business
- Very limited scope as to who can sign off on reports
- Proposed audit limit by the regulator is too small and should be increased
- Audits and reviews should be the responsibility of the professional associations who have the expertise and not the regulatory body
- If the regulatory body conducts audits it should be done in a manner that does not impact the predicted redevelopment timeline
- An independent QP society can lead to abuse of privilege
- QPs can conduct environmental work on properties that they own or have a financial interest in, thereby creating a conflict of interest
- Reliance on professional associations for disciplinary role hasn't worked well because of poor communication
- Better understanding of when the regulator will get involved in a file and what triggers their involvement
- Liability issues for the professional need to be better understood
- Negotiations of indemnity and liability controls with government

The third question of this section asked respondents to identify what they would consider to be the "best practices" of a QP Program. Comments included:

- Early stakeholder involvement
- Consultation with professional reference groups of people that are going to be regulated or who will rely on the work of the QP
- Realistic criteria to ensure the proper level of knowledge and experience and to be able remain impartial in their assessment

- Should go beyond academic credentials and recognize the direct work experience of individuals conducting the work
- Multidiscipline QP Program that allows a variety of professionals to conduct work and sign off
- Clear definition of skill, expertise and insurance requirements
- There needs to be a relationship between different regimes for the purpose of integration
- Recognizing international practices
- Harmonization with other jurisdictions
- Transparent auditing processes should provide assurance to the public and government that the work that has been done meets regulatory standards
- Audit process to ensure QP conformance
- Audits conducted by the professional associations
- Vigorous enforcement and prosecution of failures of standards of care or unlicensed/unqualified professional practice
- Work with the professional regulatory organizations to improve the program over time
- Maintenance and communication of high professional performance standards
- Mandatory re-certification
- Established standards and protocols for the QP to follow
- Clear terms of reference for the QP
- Liability for work is clearly outlined and scoped
- Independent agency to administer and certify QPs
- Divest sign-off responsibility to professional associations

Finally, respondents were asked if they had any additional comments. These are summarized below.

- The QP Program in Ontario has not given me any more confidence in QPs and I still conduct my own due diligence. If anything, I feel it may have created a false sense of security.
- Ontario doesn't work well; there is still a wide range of RA quality which causes a longer approval process.
- Atlantic Canada works but is limited in scope. They have trouble with sites that fall outside of RBCA.
- None of the existing 'QP' programs have the powers of professional registration bodies with respect to discipline. Rather than trying to set up stand-alone QP Programs, you should try to work with professional registration bodies to improve the practice in ESA and RA.
- The QP Program to date in Ontario has been a fundamental success in facilitating brownfield development and improved best environmental practices.
- Small firms who were qualified and practicing prior to the implementation of QP requirements should be given consideration for their prior experience and grandfathered.
- The accountability mechanism of professional licensure insures that licensed Professional Geologists develop and maintain interdisciplinary teams, as required by specific projects. This level of public protection is not provided by non-licensed programs.

Key Findings

The key findings from the survey responses include the following:

1. Stakeholder consultation early on in the development of a QP Program is seen as essential, both to ensure that concerns of stakeholders are being addressed and to get buy-in.
2. Reliance on professional associations is a key component in Canadian jurisdictions. This is seen as a way to ensure protection of public interest through an established complaint and disciplinary action framework.
3. There is concern from both practitioners and regulators that reliance on professional associations will exclude competent individuals from practicing. In some cases, small consulting companies that are experienced in site work are excluded because they do not have any staff with professional designations.
4. Membership within a professional association on its own does not ensure quality ESAs and RAs, which is a skill primarily developed through experience and training. Risk Assessments in particular go beyond the expertise of many professional association members and require specialized education and training in specific disciplines such as toxicology to make appropriate judgements. In these situations the QP must assemble and manage a team that has all the required education, expertise, and experience.
5. Inconsistent quality of work is an issue in many jurisdictions. On-going education and professional development is seen as a key factor in improving the quality. Training focused on regulatory requirements and standards is of particular importance.
6. The ability of the governing body to clearly communicate requirements and expectations and to address concerns is important in raising the standard of practice. New Brunswick appears to have been successful at maintaining this communication.
7. With the exception of Atlantic Canada, jurisdictions developing QP Programs have not considered the importance of harmonization with other jurisdictions. This may be primarily because many QP Programs are a relatively new development. It is important for jurisdictions to consider the issue of harmonization as QP Programs become more common.
8. Existing national QP Programs are voluntary and are an attestation of apparent competence rather than a regulatory requirement.
9. Liability insurance is essential for practicing QPs, however, the amount of coverage required depends on the risk involved in any particular project.
10. Some survey respondents expressed concern with independent QP associations such as those used in BC and Massachusetts because they perceive that they facilitate abuse of privilege and are ineffective at pursuing disciplinary action.
11. There is concern that, in some jurisdictions, there are no mechanisms in place to prevent potential conflicts of interest where QPs sign off on sites in which they have a vested interest.
12. Survey respondents reported a wide range in the number of years of experience and education that should be required by QPs. In contrast, existing QP Programs that have education and experience requirements are very consistent in terms of the number of years of experience required.
13. The preferred method to audit QP work for quality control and assurance varies considerably by jurisdiction.
14. The “best practices” used in QP Programs vary by jurisdiction and depend on Program design and delivery, and level of responsibility taken by the regulatory body to assume liability of the contaminated sites.

6.0 RECOMMENDATIONS

The following recommendations are based on the key findings identified during the review and assessment of QP Programs in various jurisdictions and the survey of stakeholders to identify "best practices". These recommendations can assist jurisdictions with developing QP Programs and improving current programs already in place. It is important to note that specific recommendations related to QP experience and education could not be determined based the survey findings where respondents had varying opinions of best practices. A more extensive stakeholder engagement process such as a working session is required to obtain specific recommendations.

Recommendation #1:

Engage all stakeholders early in the development or re-design of QP Programs

- Broad based consultations ensure stakeholder positions are considered, and that stakeholders understand and are engaged in the decision-making process and outcomes. The stakeholders that should be consulted include:
    - Site managers/developers
    - Professional associations
    - Other persons who currently conduct work on ESAs and RAs
    - Environmental consulting firms
    - General public
    - Municipalities
    - Industry associations
    - Property owners
    - Insurers
    - Financial institutions
    - Business communities.
- Issues that should be discussed include (but are not limited to):
    - Professional designations relevant to ESAs and RAs
    - Education, experience, and other requirements of QPs
    - The auditing process.
- While it may not be possible to satisfy all of the different stakeholder issues and concerns, it is important to identify and consider these concerns when designing a QP Program.

Recommendation #2:

Leverage existing accredited professional organizations

- Qualified Professionals should be members of existing self-governing professional organizations.
    - Existing accredited professional associations have established acceptance criteria and codes of conduct as well as a structure to pursue disciplinary action. Associations may also have exams and ongoing education requirements that can help ensure professionals maintain a high level of competency.
    - Experience is an important factor in ensuring the quality of contaminated site work and should be considered in conjunction with membership in a professional organization. It should be noted that experienced practitioners who are not members of a professional organization may be excluded from being designated as a QP even though their experience clearly shows that they are capable. To address this concern, an "associate" member category may be created by Professional organizations for the purpose of accommodating individuals with demonstrated capability in the duties of a QP.
    - Identifying a number of relevant professional associations can reduce concern that qualified persons are being excluded.
- Maintain an open working relationship and communication with the professional associations in order to:

- Ensure that only qualified members are performing QP work.
- Improve the standard of practice.
- Ensure that complaints and disciplinary actions are being properly addressed.
- Deal with issues as they arise.

Recommendation #3:

Conduct a national working session on Qualified Professionals

- Topic areas to include:
  - Responsibilities of the professional associations with respect to QP Programs
  - Certification requirements
  - Ongoing performance expectations
  - Disciplinary standards
  - Accommodation for non-professionals with demonstrated capabilities
  - Other elements of a Best Practice QP Program.
  - Harmonization across Canadian jurisdictions.
- Potential organizations that can be approached for funding to support a national working session include CPPI, Provincial Ministries of the Environment, etc.
- The CBN could be engaged to design the content and deliver this working session and to report on the main findings and recommendations.

Recommendation #4:

Clearly communicate requirements and expectations of QPs

- Once finalized, the qualification, ongoing certification and performance expectations of the QP Program should be broadly communicated. A web portal specifically supporting the QP Program should be part of this communication. Leveraging an existing site such as AboutRemediation.com would be beneficial.
- QPs should be made aware that a professional designation must be accompanied by relevant experience and expertise. Relevant expertise should include both technical abilities and non-technical skills such as the ability to manage projects. This may be accomplished through proper communication and coordination with the professional associations.
- Guidelines and bulletins detailing regulatory updates, requirements, and recommendations for QP work should be made available and properly disseminated.
- The technical and scientific discipline requirements for RAs should be clearly communicated to ensure QPs understand such requirements and assemble an appropriate project management team.

Recommendation #5:

Provide ongoing consultation and training on regulatory issues and requirements

- Conduct outreach and education activities for QPs by developing training material and workshops to increase awareness and expertise. These may be developed in cooperation with the professional development activities of professional associations. Suggested topics may include:
  - Regulatory requirements including updates, revisions, and identified issues.
  - ESA and RA case studies.
  - Accepted tools for ESAs and RAs.

Recommendation #6:

Initiate discussions with other jurisdictions on the topic of harmonization

- Be proactive in the development of harmonized Programs.
- Harmonization of Programs will allow companies to more easily transfer expertise between jurisdictions to expedite the redevelopment of contaminated sites.
- Harmonization discussions with other jurisdictions act as another level of due diligence in the creation of a QP Program.

7.0 RESOURCES

Braul, Waldemar. *British Columbia's New Licensed Environmental Professional Framework.* British Columbia Roster Steering Committee. December 2004.
www.csapsociety.bc.ca/documents/report_framework.pdf

Bulman, Terri. *The Australian Contaminated Land Auditor System.* Presentation: Canadian Brownfields. October 2006.
http://www.canurb.com/media/Presentations/Brownfields2006/TBulman.pdf

Coish, Dianne. *Guideline for Management of Contaminated Sites in Nova Scotia.* Nova Scotia Environment and Labour. March 1996.
http://www.gov.ns.ca/enla/contaminatedsites/docs/ContaminatedSiteManagementGuidelines.pdf

Competencies for Remediation and Reclamation Advisory Committee. *Recommendations Report.* Alberta. February 2007.
http://www3.gov.ab.ca/env/protenf/landrec/upstream/competencies.html

Department of Environment and Conservation. *Guidelines for the NSW Site Auditor Scheme.* New South Wales, Australia. April 2006.

North Carolina Inactive Hazardous Sites Branch. *Registered Environmental Consultant Program: Implementation Guidance.* Department of Environment and Natural Resources. North Carolina. August 2006.
http://www.wastenotnc.org/sfhome/RECGuidance.pdf

Ontario Ministry of the Environment. *Records of Site Condition: A guide on site assessment, the cleanup of brownfield sites and the filing of Records of Site Condition*. Toronto, ON. October 2004.

Professional Engineers of Ontario. *Position Statement: Regulation 153/04 (Brownfields) – Limited License Exclusion*. Ontario. September 2005.
www.peo.on.ca/POSITION/LLE.pdf

RMI Group. *Characterization of the Labour Market of Professionals Conducting Brownfields Site Assessments and Risk Assessments.* June 2006.

Sawyer, Tony. *Registered Geologists and Registered Environmental Assessors – A Comparison and Update.* San Diego. 2003.
www.sdcounty.ca.gov/deh/lwq/sam/pdf_files/update_2003/sawyer_1.pd

SiLC. *Specialist in Land Condition Registration Guide.* UK. August 2006.
http://www.silc.org.uk/stream.php/filestream/download/downloads/silc-registration-guide-v5.doc

Sprague, Michael. *Atlantic PIRI – Brownfield Initiative.* October 31st, 2003.
http://www.atlanticrbca.com/data_eng/conf_2003/piri-nb_michael_sprague_nbdelg_2003_piri_halifax.pdf

Zapf-Gilje, Reidar. et.el. *Qualification Requirements for the Contaminated Sites Roster of Professional Experts.* British Columbia. July 2002.
www.apeg.bc.ca/aboutus/cs/CSRSC-Report-DiscussionPaper.pdf.

Zapf-Gilje, Reidar. *Presentation: Society for Contaminated Sites Approved Professionals.* BC Ministry of the Environment. February 2007.
http://www.env.gov.bc.ca/epd/remediation/draft_documents/pdf/presentations/csap.pdf

APPENDIX A – QP Program Jurisdictional Overview

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
Canadian Environmental Auditing Association (CEAA)	Certified Environmental Assessor of Sites (CEAS)	**Independent Society**	www.ceaa-acve.ca	- Voluntary membership - Recognizes individuals who have the competency requirements to carry out Phase I ESAs in accordance with the CSA Z768 standard	Fully Implemented		- Post-secondary education at a college diploma level or higher in either a science or engineering discipline - 5 or more consecutive years of relevant experience conducting or managing site assessments and related activities		- Written exam	- 20 assessments performed to CSA Z768 standards - Experience can be reduced to 4 years with a minimum of 35 hours of formal training	
Canadian Environmental Certification Approvals Board (CECAB)	Canadian Certified Environmental Practitioner (CCEP) (Phase I & II)	**Independent Society**	www.cecab.org	- voluntary membership	Fully Implemented		- Post-secondary education at a college diploma level or higher - 5 or more years of relevant experience in Canada			- Level of knowledge that meets of exceeds the National Occupational Standards for environmental employment	
Associated Environmental Site Assessors of Canada (AESAC)	Certified Environmental Site Assessor (Phase I)	**Independent Society**	www.aesac.ca	- voluntary membership	Fully Implemented	AESAC uses a credit system where credits are earned for education, experience, professional designation and training. To become certified the applicant must have a combination of the four categories.			- Qualification exam		
British Columbia	Licensed Environmental Professionals (LEPs)	**Independent Society** Contaminated Site Approved Professionals (CSAP) Society	www.csapsociety.bc.ca	- BC takes on responsibility for contaminated sites and as such has stringent standards for QPs who perform a review role for the province	Under development In September 2007, the program will finalize the role of Risk Assessment Professionals in risk-based assessments.	Standards Professional Risk Assessment Professional	10 years of experience in contaminated site assessments 10 years of experience in contaminated site risk assessments	- Association of Professional Engineers and Geoscientists of BC (APEGBC) - College of Applied Biology (CAB) - British Columbia Institute of Agrologists	Technical and Regulatory entrance examinations Technical and Regulatory entrance examinations	- If not part of one of the three parent organizations, the applicant must demonstrate that (s)he is not eligible for registration in the organizations (i.e. toxicologist) - must have liability insurance ($2 million)	
Alberta		**Existing Associations**			Under Development			- Alberta Institute of Agrologists - Association of Professional Engineers, Geologists and Geophysicists of Alberta - Alberta Society of Professional Biologists			Approx. 15% of sites issued a reclamation certificate receive a field audit and approx. 10% of sites issued a remediation certificate will receive a field audit or a desktop application audit. The audits are to determine if the site meets

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
								- Association of the Chemical Profession of Alberta - College of Alberta Professional Foresters - College of Alberta Forestry Technologists			Alberta Environment's remediation or reclamation requirements.
Ontario	Qualified Persons	**Government Body** Ministry of the Environment		- MOE does not take on any responsibility for contaminated sites	Under Review The current program has a sunset clause for April 1, 2008.	Phase I ESA		- Professional Engineer - Professional Geoscientist - Engineering Technician or Technologist - Architectural Technologist - Professional Agrologist - Chartered Chemist			Random and targeted reviews of assessments by the regulatory body
						Phase II ESA		- Professional Engineer - Professional Geoscientist - Professional Agrologist - Chartered Chemist			
						Phase II ESA (with RA)		- Professional Engineer - Professional Geoscientist			
						Risk Assessment	- 4-year bachelor's degree in science or engineering from a university - 5 years experience if Ph.D. - 7 years experience if Masters - 8 years experience if Bachelor's - at least 2 years experience must be in the conduct of supervision of assessment of risk				Full review of all risk assessments by the regulatory body
Quebec		**Government Body** Ministry of Sustainable Development - List of Experts	http://www.ceaeg.gouv.qc.ca/accreditation/experts/index_en.htm				- Bachelor's degree in a relevant discipline such as biology, chemistry, engineering or geology - Minimum 10 years experience in the	- member of an association or order that governs practicing professionals	- regulatory examination		Random audits of Phase II ESAs are done by the Province

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
							field of site characterization and rehabilitation				
New Brunswick	Approved Site Professionals	**Existing Association** of Professional Engineers and Geoscientists		Harmonized throughout Atlantic Canada	Fully Implemented			Member of APEG in good standing.	Entrance exam administered by the Association	Mandatory ongoing education.	Responsibility of the Association
Nova Scotia	Licensed Environmental Site Professional	**Government Body** Ministry of Environment and Labour	http://www.gov.ns.ca/enla/contaminatedsites/docs/ContaminatedSiteManagementGuidelines.pdf					- Professional Engineers of Nova Scotia - a licensing body authorized in writing by the Nova Scotia Environment and Labour Director of Resource Management and Pollution Control	Entrance exam administered by the Association		
USA											
USEPA	Environmental Professional		http://www.epa.gov/swerosps/bf/regneg.htm				- Membership in an approved group and 3 years relevant experience (see Membership) - OR Bachelor's or higher degree in science or engineering and 5 years of relevant experience - OR 10 years relevant experience	Approved Groups: - Professional Engineer - Professional Geologist - licensed by the federal government, a state, tribe, or US Territory		- must participate in continuing education or other activities and be able to demonstrate such efforts	
California	Registered Environmental Assessors	**Government Body** Department of Toxic Substance Control	http://www.dtsc.ca.gov/rea/	- REA is a voluntary title system. They can perform site assessment work but cannot provide engineering or geological services unless they are properly licensed. - Phase I work can be performed by		Phase I	- 5 years experience in the last 8 in general field experience - 2 years with in the last 4 in environmental assessments - Bachelor's degree in physical of biological science, engineering or law, or 5 years environmental assessment			Must reapply every 5 years to show they meet the qualifications	

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
				anyone, the list is meant as a guide to consumers			experience in the last 8 years				
						Phase II, Risk Assessment and cleanup	- 8 years experience in the last 10 of professional level environmental experience - 4 years in the last 6 of experience in professional level site mitigation - Bachelor's degree in physical or biological science, engineering or a related field				
	Acceptable Professional Licenses			The Underground Storage Tank (UST) Cleanup Fund will only reimburse for the activities of firms that are properly licensed and maintain necessary licenses for legal operations in the State of California.				- Professional Engineer - Professional Geologist - Certified Engineering Geologist - Certified Hydrogeologist - Professional Petroleum Engineer			

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
Connecticut	Licensed Environmental Professionals	**Independent Body** State Board of Examiners of Environmental Professionals	http://www.dep.state.ct.us/pao/PERDfact/LEP.htm				- 8 years experience with environmental investigation and remediation including minimum 4 years in responsible charge and hold a Bachelor's degree in a related science or engineering field or is a licensed professional engineer - OR 14 years of experience with environmental investigation and remediation including 7 years of responsible charge		Must pass regulatory and technical tests		
Massachusetts	Licensed Site Professionals	**Independent Body** LSP Board	http://www.lspa.org/				- minimum 8 years total professional experience including at least 5 years of contaminated site experience (3 of which in the past 5 years) and a Bachelor's degree in a related science of engineering field - OR minimum 14 years total professional experience, including at least seven years of contaminated site experience (3 of which in the last 5) and at least a high school diploma		Qualification Exam	Examination every 3 years and continuing education credits	

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
North Carolina	Registered Site Managers / Registered Environmental Consultants (for voluntary remediation)	**Government Oversight**	http://wastenot.enr.state.nc.us/sfhome/recprog.htm				- 5 years experience in investigation and remediation - 3 years of direct experience in supervising remedial action projects - 8 years of total relevant professional experience - sufficient training to meet the hazardous waste operations and emergency response standard - bachelor's or higher degree in a related, approved scientific or engineering discipline - record of professionalism and integrity				Audits may be undertaken by the Department of the Environment
Ohio	Certified Professionals	**Government Body** Ohio EPA					- Bachelor's or higher degree in a specified related science or engineering field - 8 years of relevant professional experience, 3 of which are supervisory or project management related - possess the professional competence and knowledge required, as determined by the Director			minimum 24hrs of professional development training each year	
West Virginia	Licensed Remediation Specialists (for voluntary remediation)	**Government Body** Department of Environmental Protection	http://www.dep.state.wv.us/oer/index.cfm?page=l_prog.cfm				- Bachelor's or higher degree in a specified related science or engineering field and 6 years experience, including 1 year supervisory - OR a high school diploma and 10 years experience including 1 year		qualification exam		

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
							supervisory				
International											
Australia	Contaminated Land Auditors	**Government Body** EPA					- BSc	- 5 years (NSW) or 8 years (VIC) - broad experience in contaminated site assessment and remediation - 2 years relevant experience in Australia, 2 years as supervisor or project manager of multi-disciplinary team	- Regulatory and technical	- Oral Interview based on case study - renewal required at the end of term (1 year for first 3 years)	Monitoring and review of audit work
UK	Specialist in Land Condition (SiLC)	**Independent Organization**	www.silc.org.uk				- 8 years suitable work experience after graduation	- Geological Society of London - Chartered Institute of Environmental Health - Chartered Institution of Water and Environmental Management - Institution of Civil Engineers - Institute of Environmental Management and Assessment - Royal Institution of Chartered Surveyors - Royal Society of Chemistry - Institute of Biology - Chartered Institution of Wastes Management - Institute of Materials, Minerals and Mining - Society for the Environment - Institute of Physics - Association Planning Supervisors	- must complete a question paper that involves full or partial completion of a Land Condition Record, and tests the understanding of Land Condition Records and general land condition knowledge		

Jurisdiction	Name for Professionals	QP Oversight	Website	Key Points	Status of Current Program	QP Qualifications					Reviews or Audits of Assessments
						Type of Qualified Professional	Education and Experience	Association Membership	Exams	Other	
								- Institution of Environmental Sciences - Institute of Structural Engineers			

APPENDIX B – QP Program Survey

Survey To Determine The Key Elements and Best Practices For Contaminated Site Qualified Professionals (QP) Programs

We would appreciate your participation in this survey being conducted by OCETA on behalf of the Canadian Brownfields Network (CBN).

Intro

OCETA and the CBN are conducting a jurisdictional review of contaminated site Qualified Professional (QP) Programs to obtain information on existing programs and to identify the key elements and best practices of an effective QP Program. Some regions may use different names such as Contaminated Site Approved Professionals. For the purpose of this survey, we are using the term Qualified Professional.

Background

The ability of qualified professionals (QP) to provide efficient and consistently high quality execution of contaminated site management including site assessments, risk assessments and remediation plans is an integral component of site redevelopment. QPs need the skills, expertise and capability to provide accurate and high quality reports, as well as an excellent working knowledge of the jurisdictional requirements, to allow for the efficient redevelopment of contaminated sites and brownfields.

Purpose

The CBN plans to share the main findings from the survey with relevant Canadian government and industry stakeholders that are in the process of developing, revising or considering a QP Program.

* * * * *

We would appreciate your time in answering a few questions on your knowledge and experience with QP Programs. We expect that the survey will take approximately 15-20 minutes to complete.

The information provided by the organizations responding to this survey will be kept strictly confidential. All survey results will be presented in aggregate form only without any organization names included.

If you have any questions, please contact Jay Mullin, Project Analyst, OCETA at jmullin@oceta.on.ca or (905) 822-4133 ext.238.

Thank you for participating in the QP Regime Survey

Section 1 Contact Information

Name:	Title:
Company:	
Address:	
City:	Prov.:
Postal Code:	
Phone:	Fax:
Email:	Website:
Notes:	

Section 2 – Knowledge of Current QP Programs

1) Which jurisdiction's QP Program are you most familiar with (check one box only)?

- ☐ British Columbia
- ☐ Alberta
- ☐ Saskatchewan
- ☐ Manitoba
- ☐ Ontario
- ☐ Quebec
- ☐ New Brunswick
- ☐ Nova Scotia
- ☐ P.E.I
- ☐ Newfoundland
- ☐ United States - specify State: _____
- ☐ Europe – specify country: _____

- ☐ Other:_____

2) What is the title of the QP Program?

_____
_____
_____

3) What is the current status of the QP Program?

- ☐ Under development
- ☐ Under revision
- ☐ Fully implemented
- ☐ No Program
- ☐ Considering the development of a Program

Comments:_____
_____
_____

4) How is the QP Program administered?

- ☐ Government Roster/Committee
- ☐ Independent Professional Organization/Association
- ☐ Extension of existing Professional Organizations/Associations
- ☐ Other _____

Comments:_____
_____
_____
_____

5) What were the underlying factors or reasons for the implementation of the QP Program (check all that apply)?

- ☐ Over-burdened government staff
- ☐ Slow rate of contaminated site approvals
- ☐ Industry-driven
- ☐ Public concern over safety of remediated sites
- ☐ Private sector liability concerns
- ☐ Other:_____

Comments:_____
_____
_____

6) What stakeholders were consulted during the design of the QP Program (check all that apply)?

- ☐ Site managers/developers
- ☐ Professional organisations (Professional Engineers, etc.)
- ☐ Environmental Consulting Firms
- ☐ General Public
- ☐ Municipalities
- ☐ Provincial departments
- ☐ Federal government
- ☐ Industry Associations
- ☐ Property Owners
- ☐ Other:_____

Comments:_____
_____
_____

7) Does the QP program recognize QP status in other jurisdictions (i.e. can a professional qualified as a QP in another jurisdiction perform the duties of a QP in your jurisdiction)?

- ☐ Yes
- ☐ No

Why or why not?

_____
_____
_____

8) Does the QP Program administrator or regulatory agency undertake regular reviews or require self-audits for quality assurance of completed environmental site assessments?

- ☐ Yes
- ☐ No

If yes, what assessments are subject to review (check all that apply)?

- ☐ Phase I Environmental Site Assessments
- ☐ Phase II Environmental Site Assessments
- ☐ Risk Assessments

What types of reviews are undertaken (check all that apply)?

- ☐ Reviews of random sites by the QP administrator
- ☐ Reviews of targeted sites by the QP administrator
- ☐ Reviews of random sites by the regulatory agency
- ☐ Reviews of targeted sites by the regulatory agency
- ☐ Self-audits
- ☐ Other_____

Comments:_____
_____
_____
_____

If no, why not?

_____
_____
_____

9) How are complaints related to the performance of QPs handled?

- ☐ Government Roster/Committee
- ☐ Independent Professional Organization/Association
- ☐ Existing Professional Organization/Association
- ☐ Other _____

Comments:_____
_____
_____

Section 3 – Requirements of Qualified Professionals

1) <u>Phase I Environmental Site Assessment</u>

In your opinion, what minimum qualifications should be required in order for a QP to perform a Phase I Environmental Site Assessment (ESA) (check all that apply)?

a. **Education**

- ☐ Technicians or Technologist Diploma
- ☐ Bachelor's Geoscience Degree
- ☐ Bachelor's Engineering Degree
- ☐ Master's Degree in a related field
- ☐ Other:_____

b. How many years of experience in conducting Phase I ESAs should a QP have: ____ years

c. What professional designation should the QP have to conduct a Phase I ESA (check all that apply):

- ☐ Professional Engineer (P.Eng)
- ☐ Engineering Technician/Technologist
- ☐ Professional Geoscientist (P.Geo)
- ☐ Professional Agrologist
- ☐ No professional designation required
- ☐ Other: _____

d. Should the QP be required to undertake an examination to be approved as a QP to carry out Phase I ESAs?

- ☐ Yes
- ☐ No

If yes, what types of exams should be required?

_____
_____
_____

2) <u>Phase II Environmental Site Assessment</u>

In your opinion, what minimum qualifications should be required in order for a QP to perform a Phase II ESA (check all that apply)?

a. **Education**

- ☐ Technicians or Technologist Diploma
- ☐ Bachelor's Geoscience Degree
- ☐ Bachelor's Engineering Degree
- ☐ Master's Degree in a related field
- ☐ Other:_____

b. How many years of experience in conducting Phase II ESAs should a QP have: ____ years

c. What professional designation should the QP have to conduct a Phase II ESA (check all that apply):

- ☐ Professional Engineer (P.Eng)
- ☐ Engineering Technician/Technologist
- ☐ Professional Geoscientist (P.Geo)
- ☐ Professional Agrologist
- ☐ No professional designation required
- ☐ Other: _____

d. Should the QP be required to undertake an examination to be approved as a QP to carry out Phase II ESAs?

- ☐ Yes
- ☐ No

If yes, what types of exams should be required?

_____
_____
_____

3) Risk Assessment

In your opinion, what minimum qualifications should be required in order for a QP to perform a Risk Assessment (RA) (check all that apply)?

a. **Education**

- ☐ Technicians or Technologist Diploma
- ☐ Bachelor's Geoscience Degree
- ☐ Bachelor's Engineering Degree
- ☐ Master's Degree in a related field
- ☐ Other:_____

b. How many years of experience in conducting RA should a QP have: ____ years

c. What professional designation should the QP have to conduct a RA (check all that apply):

- ☐ Professional Engineer (P.Eng)
- ☐ Engineering Technician/Technologist
- ☐ Professional Geoscientist (P.Geo)
- ☐ Professional Agrologist
- ☐ No professional designation required
- ☐ Other: _____

d. Should the QP be required to undertake an examination to be approved as a QP in RAs?

- ☐ Yes
- ☐ No

If yes, what types of exams should be required?

_____

_____

e. **What additional education or technical skills should be required for a QP to conduct a RA (check all that apply)?** Geoscience

- ☐ Ecological
- ☐ Toxicology
- ☐ Biology
- ☐ Chemistry
- ☐ Other:_____

f. Does the QP conducting the Risk Assessment need to have all the skills that you identified in part e)?

- ☐ Yes, the QP is required to have all necessary skills
- ☐ No, but the QP is required to have all the necessary skills present on his team
- ☐ No, there is no requirement but it is the responsibility of the QP to ensure that his team possesses the proper expertise

Comments:_____

_____

_____

4) a) Should QPs be required to have a minimum level of liability coverage to be included in the QP Program, or should they be required to present proof of coverage only when retained by a client?

☐ Liability coverage should be a requirement of the QP Program
☐ Liability coverage should not be a requirement of the QP Program, but must be obtained when the QP is retained by a client
☐ Other: _____

b) If liability coverage is a requirement for a QP, what level of coverage would be appropriate?

☐ $1 million
☐ $2 million
☐ Other: _____

Comments:_____
_____
_____

5) How should the skills and knowledge of QPs be maintained (check all that apply)?

☐ Mandatory Education and Training
☐ Mandatory Recertification
☐ Mandatory Exams
☐ Voluntary Education and Training
☐ Voluntary Recertification
☐ Community of Practice
☐ Other:_____

Comments:_____
_____
_____

Section 3 - Best Practices for QP Programs

1) **For the QP Program that you are most familiar with, what are the top 3 aspects that have worked well?**
Please describe:

2) **For the QP Program that you are most familiar with, what are the top 3 aspects that could be improved?**
Please describe:

3) **What do you consider to be the top 3 elements that would constitute "best practices" of a QP Program?**
Please describe:

4) **Additional Comments?**

Thank you for completing this survey.

APPENDIX C – List of Survey Contacts

Organization	Type of Organization	Name	Position
Canada			
Gartner Lee	Company	Geoff Westerby	Principal
Hazco	Company	Dan Forsyth	Senior Manager
Associated Environmental Site Assessors of Canada (AESAC)	Association	Bruno Luzak	President
Canadian Environmental Auditors Association (CEAA-ACVE)	Association	Don Fraser	Executive Director
Canadian Environmental Assessment Agency	Association	David Robinson	Senior Advisor, Comprehensive Studies and Class Screenings
Canadian Environmental Certification Approvals Board (CECAB)	Association	Lou Locatelli	CECAB Vice Chair
National Round Table on the Environment and the Economy (NRTEE) National Brownfield Redevelopment Strategy	Association	Sara Melamed	Special Projects Manager
Canadian Brownfields Network (CBN)	Association	Angus Ross	Chair, Advisory Panel
British Columbia			
Contaminated Sites Approved Professionals BC Roster of Approved Professionals	Government	John ter Borg	Project Manager, CSAP Development
British Columbia, Ministry of Water, Land and Air Protection (MWLAP)	Government	Vincent Hanemayer	Senior Contaminated Sites Officer
Ivey International	Company	George Ivey	
Cascade Environmental	Company	Dave Williamson	
British Columbia Environmental Industry Association (BCEIA)	Association	Daniel Todd	Director of Special Projects
Association of Professional Engineers and Geoscientists of BC (APEGBC)	Association	Derek Doyle	Executive Director & Registrar
Alberta			
Alberta Environment	Government	Mike Zemanek	Environmental Policy Branch - Risk Assessment, Toxicology and Remediation
Alberta Environment	Government	Darlene Howat	Environmental Policy Branch - Land Remediation and Reclamation
Worley Parsons Komex	Company	Gord Johnson	President, Canada
Golder Associates	Company	Jeanette Southwood	Senior Risk Assessment and Risk Management Specialist
City of Calgary	Government	Kevan Van Velzen	Manager, Environmental Assessment & Liabilities
The Association of Professional Engineers, Geologists and Geophysicists of Alberta	Association	Dave Todd	Director Compliance
Saskatchewan			
Environment Ministry	Government	Tracy Roy	Manager - Waste Management and Contaminated Sites
ERIN Consulting Ltd.	Company	James Irelend	President
Saskatchewan Environmental Industry and Managers Association (SEIMA)	Association	John Gillies	President
Manitoba			
Manitoba Conservation	Government	Dean Kasur	Contaminated/Impacted Sites Program Coordinator
Manitoba Environmental Industries Association	Association		

Ontario			
Ontario Minstry of the Environment	Government	Chris Lompart	Manager
Quantum Environmental	Company	Michael Billowits	Project Manager, Brownfields
GOWEN Environmental Ltd	Company	Gareth Owen	President
Dillon Consulting	Company	Bryan Leece	Toxicology/Risk Assessment Specialist
GlobalTox	Company	Ron Brecher	Principal
Jacques Whitford	Company	Chris Cushing	Senior Consultant
Kilmer	Company	Dave Harper	Managing Partner, Env Risks
Golder	Company	Jeanette Southwood	Senior Risk Assessment and Risk Management Specialist
Conestoga Rovers & Associates	Company		
Association of Professional Geoscientists of Ontario	Association	William (Bill) Stiebel	President
Ontario Bar Association - Environmental Law	Association	Marc McAree	Chair
Ontario Association of Certified Engineering Technicians and Technologists	Association	David Thomson	Executive Director
Professional Engineers of Ontario (PEO)	Association	Kim Allen	CEO and Registrar
Quebec			
Centre d'expertise en analyse environnementale du Quebec	Government	François Houde	
Mnistere du Developpement Durable, de l'Environment et des Parcs	Government	Mireille Blouin	Responsible for Expert List and Accreditation of Sampling Program
Terrapex Environmental	Company	Tony Hawke	
Secrétariat de l'Ordre des Géologues du Québec	Association		
Ordre des ingénieurs du Québec	Association		
Atlantic Canada			
New Brunswick Department of Environment - Remediation Branch	Government	Michael Sprague	
Mewfoundland & Labrador Department of Environment and Conservation	Government	Craig Bugden	
Nova Scotia Department of Environment and Labour	Government	Dan Hewsworth	
PEI Department of Environment Energy and Forestry	Government	Danny McInnis	
New Brunswick Environmental Industry Association	Government		
GemTec	Company	Paul McNeil	President
Jacques Whitford	Company	Kevin Hocquard	Area Manager
Jacques Whitford	Company	David Rae	Group Leader, Human Health & Ecological Risk Assessment
Irving Oil	Company	Mike Sauerteig	
Cantox Environmental Ltd.	Company	Gord Brown	
Association of Engineering Technicians and Technologists of Newfoundland and Labrador	Organization	Lynda Hayward	Office Manager
USA			
USEPA	Government	Sven-Erik Kaiser	
USEPA	Government	Myra Blakely	
Licensed Site Professional Association	Government	Lisa Campe	Chair
Licensed Site Professional Association	Government	Duff Collins	
Registered Environmental Consultant Program (North Carolina)	Government		

Registered Environmental Assessor Program (California)	Government		
California EPA	Government	Elizabeth Haven	Manager, Division of Water Quality
California Board for Geologists and Geophysicists	Association	George Dunfield	
State Board for Professional Engineers and Land Surveyors	Association	Ric Moore	
Institute of Brownfield Professionals	Association	John P. Bachner	Executive Director
Europe			
Department for Environment Food and Rural Affairs	Government	Trevor Jones	
UK Institute of Environmental Management and Assessment	Association	Russell Foster	Chief Executive
Specialist in Land Condition	Association		
CABERNET	Association	Dr. Millar	
CABERNET	Association	Dr. Neonato	
Land Restoration Trust	Association	Euan Hall	
Australia			
		Terri Bulman	