

# How to “Unlock” Value to Remediate and Redevelop Gasoline Stations

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## Introduction and Background

Service stations (e.g., gasoline stations or petroleum hydrocarbon bulk facility sites) are a specific type of brownfield site that are commonly found throughout Canada. The basic process for the remediation of these brownfield sites, subject to site specific conditions, is perceived as a relatively straight-forward activity and yet many sites still remain undeveloped.

One of the main challenges involved in redeveloping former service stations is how to create site value given that conventional petroleum hydrocarbon contamination cleanups (e.g., “dig and dump”) for gas stations can typically range in cost from \$75 to \$125K, while land values, especially in rural areas, can be as low as \$25K per hectare. In many cases, there is a need to identify innovative redevelopment solutions and exit strategies of former service station sites, in both urban and rural settings, in order for redevelopment of service stations to occur.

Industry and government stakeholders from across Canada have emphasized the need for more effective guidance on how to address process barriers and successfully navigate the redevelopment of under-utilized and abandoned service stations. These stakeholders are interested in identifying and/or creating the tools and mechanisms to unlock the value to remediate and redevelop gas stations. Developing a standardized approach to redevelop former service stations, based on a stakeholder consultation process, will accelerate service station redevelopment by providing a clear, transparent, and streamlined mechanism that has consolidated existing best practice information into a user-friendly format.

To address the need for more effective guidance on redeveloping service stations, the Ontario Centre for Environmental Technology Advancement (OCETA) collaborated with the Province of Ontario and the Canadian Petroleum Products Institute (CPPI) as well as other stakeholders to develop the Redevelopment Framework for Former Service Stations in the Province of Ontario as a pilot project for the Province of Ontario. The purpose of the Framework was to clarify and streamline the process of redeveloping a typical service station in Ontario. An effective Framework should result in more sites being returned to safe use in a timelier manner and at a reduced cost.

The objective of the initiative was to develop a standardized approach that:

- Provided a common language tool;
- Presented the information in a clear and transparent way;
- Streamlined the processes and timelines;
- Accessed stakeholder input through consultations;
- Identified guiding principles and best practices; and
- Was user-friendly and easily accessible.

The Service Station Redevelopment Project was proposed as a three phase initiative that included: Phase 1 – Research and Scoping, Phase 2 – Development, Phase 3 – Implementation (Testing and Training). Phases 1 and 2 have now been completed.

Phase 1 of the project involved the creation of a Research Compendium and Resource List as well as scoping the development phase. The Research Compendium identified the relevant legislation, tools, technologies, and approaches used in Ontario and other jurisdictions for service station remediation and redevelopment.

The major findings and recommendations from Phase 1 emphasized that:

- It is important to conduct site characterization studies in accordance with the specific jurisdictional requirements;
- Simple decision trees and steps written in non-technical language should be used to guide the stakeholders through the redevelopment process;
- Risk-based protection and management approaches should be described in the Framework, including a flow chart of a simplified risk assessment process;
- The Framework should identify and describe the proven technologies that are recognized by the specific regulatory body. Providing guidance on these technologies will help to streamline the approval process and allow remediation and redevelopment projects to meet critical timelines;
- The Framework must reflect the existing regulatory regime, but be flexible to allow for easy updates and revisions; and
- The Framework should be created as an online tool that can be adapted for use in other Canadian provinces.

## **Development**

OCETA developed and implemented a multi-stakeholder engagement process for conducting an arms length, third party consultation to facilitate public and private sector input in the development of the Framework. OCETA also created an online communication and management tool to coordinate stakeholder involvement. This process provided the opportunity to develop a simple, easy to use Framework that focused on “typical” service stations.

## **Characteristics of Typical Service Stations**

It is estimated that in Ontario, approximately 80 per cent of all underutilized and abandoned service stations requiring remediation and redevelopment can be characterized as “typical”. The following provides an overview of the characteristics of a typical service station:

Contamination Source:

- Underground Storage Tanks (USTs)
- Distribution piping and dispensing systems
- Waste Oil Tanks

Main Contaminants of Concern (COCs):

- Petroleum Hydrocarbons (PHC)
- Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)
- Polycyclic Aromatic Hydrocarbons (PAHs)

#### Site Size and Location:

- Small footprint (less than 2,000 tonnes of impacted soil)
- Adjacent to major roadways, intersections and other service stations

#### Soil Conditions:

- On-site soil, weathered (soil-like) bedrock and groundwater impacted with COCs
- Minor free phase product
- Soil vapour intrusion
- Offsite migration of COCs to utility corridors and right-of-ways

#### Other Contaminants of Concern (may be found in levels below generic standards):

- Methyl tert butyl ether (MTBE); Diisopropyl ether (DIPE)
- Metals (e.g. Lead) and Lead Scavengers (1,2-dichloroethane and 1,2-dibromoethane)

Situations not considered “Typical” for service stations in Ontario, may include the following:

#### Soil Conditions:

- Potential for recontamination due to migration from an offsite source
- Complex hydrogeology (e.g., multiple groundwater levels)
- Contamination in competent fractured bedrock

### **Benefits of Using the Framework**

By applying the Key Elements, Guiding Principles and Best Practices outlined in the Framework, users will improve their ability to successfully navigate the redevelopment of under-utilized and abandoned service stations.

#### Benefits for Stakeholders:

- Provides an accessible online resource
- Provides a set of Guiding Principles and Best Practices
- Highlights the importance of early and ongoing communication between stakeholders
- Provides guidance on 4 streams: Finance, Technical Issues, Land Use Planning, and External Communication at each stage of the redevelopment process

#### Benefits for Municipalities:

- Identifies Planning Tools that municipalities can use to streamline the municipal approval process
- Highlights the importance of a predictable and timely approvals process
- Provides guidance on how municipalities can offer effective incentives
- Describes how municipalities can work with property owners to implement interim site uses when there is no immediate redevelopment potential
- Illustrates what municipalities can do to improve the development potential of a site
- Illustrates how municipal planning and technical decisions interact at different stages of redevelopment

Benefits for Property Owners and Developers:

- Creates a streamlined approach that provides a basis for working with municipalities
- Reduces approval delays by addressing misunderstandings between developers and municipalities
- Identifies financial incentives available at each stage of redevelopment
- Illustrates how the development potential of a site can be improved through the use of Property Specific Standards
- Clarifies at what point in the development process municipalities can ask for a Record of Site Condition
- Clarifies the approval process for Remediation to Property Specific Standards and Risk Management Measures

Benefits for the Province of Ontario:

- Develops a streamlined process that works within the existing regulatory framework
- Addresses a number of regulatory barriers by improving communication
- Identifies the major issues, current practices, possible solutions and gaps

### **Framework Components**

The Framework outlines the Four Stages to Redevelopment in the Redevelopment Framework for Former Service Stations in the Province of Ontario. These Four Stages to Redevelopment are the foundation of the Framework and include: Setting the Stage, Evaluation and Planning, Implementation, and Management.

The Guiding Principles and Best Practices outline the key issues and the best practices that stakeholders should consider implementing when redeveloping typical service station sites.

Framework tools include the Framework Diagram and three Screening Matrices.

### **Framework Diagram**

The Framework Diagram: Key Elements of Ontario Service Station Redevelopment outlines the stages and "thought process" that stakeholders should follow when redeveloping a typical service station. The Key Elements are grouped into Four Stages to Redevelopment (Setting the Stage, Evaluation and Planning, Implementation, and Management) and the Four Streams of a Redevelopment Project (Finance, Technical, Land Use Planning, and External Communication) along the top of the diagram.

Best practices for Stage 1 include consulting with property owners and developers early and on an ongoing basis (it is important to identify and understand the community vision, improvement plans and redevelopment priorities); aligning the Municipality's Official Plan and zoning to encourage redevelopment of service stations; and ensuring the planning tools are flexible and the approval processes is streamlined to provide certainty of process.

In Stage 2, value creation is an important consideration. Creating value on a brownfield site is difficult given that the cost of cleanup or remediation is often higher than land values. It is important to look at more creative approaches and exit strategies for successful redevelopment of gas stations to occur. Best practices for this stage include the importance of high quality site

characterization (Phase I and II ESAs), as rigorous site characterization will support the requirements for a risk assessment process (determining property specific or site specific cleanup standards). One important consideration in Stage 2 is the consideration of interim uses. Interim uses can be seen as the first step in the gradual development of these sites.

One of the best practices for Stage 3 is the use of the Record of Site Condition (RSC) in the province of Ontario. A RSC is a statement filed by a Qualified Person (QP) to protect site owners from environmental cleanup orders and it must be filed whenever a property changes to a more sensitive use. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (i.e. residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up. A Phase II ESA must be completed in order to submit a RSC. Municipalities should require that a RSC be filed for all typical service station redevelopment projects where ownership or land use is going to change. While a RSC is only required by the Ontario Ministry of the Environment when changing to a more sensitive property use, it is considered a best practice to file a RSC for all service station sites since it can provide protection from regulatory liability including future cleanup orders. A municipality may require a RSC as part of their approval process, however in Ontario, a municipality cannot require an RSC for the issuance of a site plan approval or a building permit where no change of use is contemplated.

Information management and sharing is an important consideration for Stage 4. Municipalities are encouraged to collect and document (database) all site work conducted on properties within their jurisdiction. This type of resource has been found to be a very effective internal tool for municipalities who are interested in remediation and redevelopment of their brownfield sites.

### **Screening Matrix for Property Use & Redevelopment Potential of Typical Service Stations**

This screening matrix is designed to assist municipalities in understanding the redevelopment potential of typical service stations. The tool is intended to assist municipalities in making preliminary assessment on the redevelopment potential of service stations. The matrix addresses how the net site value and municipal site considerations play a role in "creating value" for the typical service station site. It requires a Phase II ESA to determine the environmental considerations. The matrix shows how the redevelopment potential of a site can be improved through the use of municipal policies, protocols and incentives, and the remediation to property specific standards. This tool fits into Stage 2: Evaluation and Planning and is meant to be used as a starting point for discussions between municipalities, property owners and developers.

The matrix compares the municipal considerations of the site to the net value for site. In the bottom left corner of the matrix it states that the redevelopment potential is very poor because the site is located in an area with no plans or redevelopment focus and has a negative net site value. In this case, the Framework would not be applicable but there may be an opportunity to develop an interim use where the municipality enters into an aesthetics or surface use agreement with the owner that may include an interim site management obligation. Interim uses are first step in the gradual development of these sites to full redevelopment.

In the top right corner, the redevelopment potential is very good where the site is located within a municipal community improvement plan area or revitalization strategy area (municipality is engaged) and the net value for the property is positive. In this situation the Framework is applicable and should be followed.

### **Screening Matrix for Selection of Remediation Technologies and Risk Management on Typical Service Stations**

This screening matrix provides information on commonly used remediation technologies and risk management approaches used on typical service station sites. It provides information on the relative chance of success, approximate cost and time involved, and regulatory requirements. The matrix provides a high level summary and should not be used as a comprehensive technical overview. For property specific decisions, proponents need to engage the services of a Qualified Person when making decisions towards the use of a remediation technology or risk management. The matrix is not a substitute for an expert's opinion. The tool fits into Stage 2: Evaluation and Planning and is meant to provide general information and background for municipalities and other stakeholders.

### **Implementing Remediation and Risk Management on Typical Service Stations**

This flowchart guides stakeholders through the regulatory process for remediation to generic standards, remediation to property-specific standards, and remediation to property-specific standards with risk management. It outlines the steps from the submission of a risk assessment Pre-Submission Form (PSF) to the submission of a Record of Site Condition. The tool fits into Stage 3: Implementation and provides information on where the documents should be submitted to, who the approving authority is and process timelines.

The next step for the initiative is to implement the Framework. This involves testing the Framework with Ontario municipalities and launching the online Framework through the Web portal [www.aboutRemediation.com](http://www.aboutRemediation.com).

In summary, the process resulted in the development of an effective guidance framework for the redevelopment of former service stations in the Province of Ontario. It assisted in streamlining the various government approval processes and created a product on a transferable platform with potential application in other jurisdictions and for other types of brownfield sites.