

# The Role of Quality in Environmental Remediation Value for Money

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# Value for Money

- A long standing objective of public spending
- Value achieved in many different ways
- This presentation is about obtaining value from spending public funds on Environmental Remediation Projects

# Environmental Remediation Projects

- Necessary to correct damage that we have collectively allowed to accumulate in the natural environment
- Remediation can be a very significant cost
- In Canada public money is spent at abandoned sites that have a high potential environmental impact
- Value for money is highly desirable but Value does not have a measurable metric

# Value Defined

- The most efficient and effective result for the minimum price
- Requires effective result to be defined
- Two major opportunities – strategic and implementation
- The focus today is implementation value

# Value Requires Quality

- Implementation Value is created by efficient completion of a defined SOW for the best price
- SOW reflects strategic value and defines performance objectives
- Means and methods to complete SOW defined in terms of cost, time and quality

# ERIV

- Environmental Remediation  
Implementation Value = ERIV
- $ERIV = f(\text{budget, schedule and quality})$

# Defining Quality in Env'l Rem'n

- Requires that Performance Objectives be known and understood by implementors
- Environmental Objectives – receptors defined, exposure criteria, treatment standards....
- Implementation Objectives – natural restrictions like weather, migrations, cultural issues, neighbour relationship...

# Planning for Quality

- Design plans and specifications that address the performance objectives define what the owner intended to buy Requires clarity and completeness to get the best price for exactly what you want
- Requires construction that is faithful to the design plans and specifications

# Planning for Quality, cont'd

- Requires that measuring and sampling be completed as an objective demonstration of product delivery
- These actions create transparent accountability

# Making Quality Happen

- Quality requires planning
- Specifications – define measurements, samples, reporting and consequences
- Management – action on delinquency and failure
- Quality Plan – define expectations, roles and responsibilities in advance

# Documenting Quality

- Organization - field→ lab→ office→ management→ field
- Field – field book, summary forms, sample record
- Lab – procedures, analytical QA/QC, need correct results, timely to be relevant
- Office – relate field to lab and to spec
- Management – action on delinquency and failure

# Example # 1- Successful

- 56,300 tonnes coal tar contaminated soil in multiple irregular deposits
- Expect 20,000 T haz, 36,300 T non-haz
- CQAP – 3 soil categories, test in 500 T piles
- Separation and testing in spec
- Result 6462 T haz
- Save \$1,700,000, 1/3 of total contract value

## Example # 2 - Unsuccessful

- Closed industrial landfill requires media drain for leachate control
- Owner selects bidder with one pass technology
- Owner limits third party engineering oversight to 1 day per week
- Drain does not work, Engineer discovers that 1800 m of pipe installed in 2000 m trench

# Implementation Value for Money

- Define correct Performance Objectives
- Translate Performance Objectives into measurable quality standards
- Prepare clear unambiguous specifications
- Design and follow a QA/QC program
- Include QA/QC program in all contracts
- Diligently implement quality program

# Implementation Value for Money

- Diligently follow up on quality results
- Document all results in an organized manner
- Link final payment to proof of quality