Remediation of the Gowrie Wash Plant, Port Morien, NS

By Dave Forrester, Mark King & Jeff Hilchey

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REMEDIATION OF THE GOWRIE WASH PLANT

• CHALLENGE
• REMEDIAL OPTIONS
• RESOLUTION
• IMPLEMENTATION
• SUMMARY

LOCATION IN THE SYDNEY COAL FIELD

• 19th Century coal industry left a legacy, not all positive, e.g. Gowrie Wash Plant a former central coal washing plant
• Operations were abandoned in 1897
• Left behind over 130,000 cubic metres of waste rock pile
• Slowly eroded and weathered over the years:
  - silting drainage courses
  - producing numerous seeps of acid rock drainage
  - with deep erosion channels
  - And coal fines accumulations around toe and
  - In a large natural wetland area located downstream
• AECOM scope: gap analysis, investigation, RAP, design

CHALLENGE

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REMEDIAL OPTIONS

REMEDIAL ACTION PLAN:
- OPTIONS:
  i. DO NOTHING
  ii. INSTITUTIONAL CONTROLS (Signage & Fencing)
  iii. EXCAVATION & OFFSITE DISPOSAL
     a. Gowrie material alone
     b. Central repository
  iv. CAPPING IN PLACE
     a. Gowrie material alone
     b. Central repository
- Each option was evaluated against qualitative, financial and loadings criteria

FEASIBILITY:
- OBJECTIVES
  • minimize the site footprint
  • provide for an engineered cover that would isolate the waste materials and
  • minimize the formation of acid rock drainage
- VALUE ENGINEERING
  • feasibility and cost effectiveness of sub-options
  • based on performance and applicability, installation / maintenance costs and local economic benefits.

REMEDIAL OPTIONS – groundwater model

REMEDIAL OPTIONS – Major Water Sources

PREFERRED OPTION:
- Central repository for 8 local sites,
- An engineered cap consisting of layers, btm up:
  • a rough graded surface,
  • a 150 mm sand bedding layer,
  • a HDPE liner,
  • a geocomposite geonet drainage layer,
  • a 600 mm compacted till layer, top 25 mm soil
  • hydraulic seeding,
  • Surface water diversion channels,
  • Settling ponds

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**DESIGN**

- Two contracts dovetailed for efficiencies
  - Consolidation contract
    - late 2008 to mid 2009
    - import of approximately 170,000m$^3$ of similar waste rock and coal fines materials
    - from several local sites within 20km radius
    - Mainly off highway trucking
  - Capping contract
    - fall 2009 to spring 2010
    - Working with others under PWGSC coordination.

**IMPLEMENTATION**

- ABANDONED MINES LEAVE HAZARDS TO PUBLIC
- IMPACTS MANY ECBC PROPERTIES inc. GWP
- ECBC IMPLEMENTING MINE SITE CLOSURE PROGRAM
- SUCCESSFUL REMEDIATION
  - remediation of the Gowrie Wash Plant Site from Phase I to VI,
  - RAP assessed the remedial response options for the site and selected capping in place as a preferred remedial option due to:
    - provide a protective barrier from contaminants,
    - reduce ARD generation and
    - allow the site to be used as a central repository for waste rock
  - implemented an impermeable cap with HDPE liner
  - drainage from the geosynthetic layer and groundwater from upward seeps are controlled and directed to new settlement ponds for treatment on a monitor and develop basis.
- ONGOING LONG-TERM MONITORING & MAINTENANCE
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References

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