

Vegetative Covers: We're not out of the woods yet!

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Case Study
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Case Study: Welsh Road Landfill Superfund Site

Objective: To change the type of landfill cap required by the Record of Decision

Issue: State regulations for a final cover

Site Background/History

- Site is approximately 7 acres
- Operated as an unpermitted landfill
- Reportedly received mixed municipal and industrial wastes
- Property owner is currently operating businesses on the Site

Welsh Road Site (circa 1984)



Selected Remedy for the Site

- Extension of a public water supply system
- ***Construction of a multi-media landfill cap***
- Removal of materials from the surface
- Perform a groundwater study
- Site fencing/deed restrictions

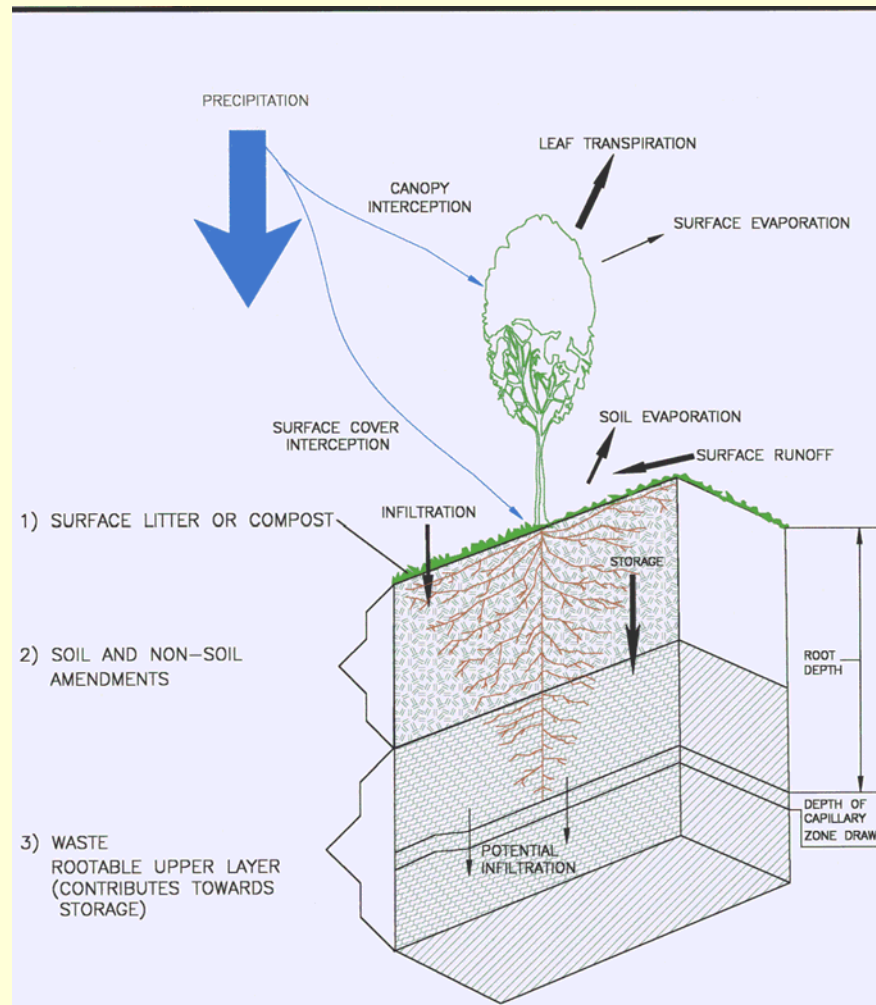
Post-ROD Activities

- Design
 - Multi-media landfill cap
 - Water line extension
- Construction
 - Water line extension
- Focused Groundwater Study and Monitoring (ongoing)
- EPA issued an Order to Potentially Responsible Parties (PRPs)

Alternate Remedy Proposal

- A conceptual plan was presented by a group of PRPs in 1999
- Designed to meet cover performance requirements in 25 PA Code 273
- EPA/State of Pennsylvania to give proposal consideration and requested that PRP Group prepare a Focused Feasibility Study (FFS)

Conceptual Diagram of the Phyto cover



Development of the Focused Feasibility Study

- FFS completed in 2000 by PRP Group
- Compared several alternatives against the selected remedy
- Evaluate against EPA's Nine Criteria

State's Regulation

25 § 273.234 ENVIRONMENTAL PROTECTION

Pt. I

§ 273.234. Final cover and grading.

- (a) The operator shall provide final cover in the following manner:
- (1) A cap shall be placed over the entire surface of each final lift. The following performance standards for the cap shall be met:
 - (i) The cap shall have a permeability less than or equal to the permeability of the primary liner or a permeability no greater than 1×10^{-7} cm/sec, whichever is less.
 - (ii) The cap shall be resistant to physical and chemical failure.
 - (iii) The cap shall cover all areas where waste is disposed.
 - (2) A drainage layer capable of transmitting flow and preventing erosion of the soil layer shall be placed over the cap.
 - (3) A uniform and compacted layer of soil at least 2 feet in thickness shall be placed over the drainage layer.

State's Position on the FFS

- ECap doesn't meet their regulations for closure
- Willing to allow ECap cover system on an "experimental" basis
- Explicit recognition that the ECap does not meet their regulations
- If ECap fails, then the responsible parties must install a cap that meets their regulations

Site Modeling

- Performed in 2001 using the HYDRUS-2D model
- Several cover systems were modeled
- Compared the predicted hydraulic efficiencies

Modeling Results

Scenario	Average Annual Cumulative Infiltration (in/yr)	Percent Reduction vs. Existing Conditions
1 (Existing Conditions)	16.433	0
2 (PA cap)	0.851	95
3 (Ecap -3')	6.577	60
4 (Ecap – 6')	4.106	75
5 (Ecap -9')	3.893	76

Development of Required Documentation

- Proposed Plan and an Amendment to the Record of Decision
- EPA formally propose an E/T Cover System
- Performance Standards
 - Monitor cover development (O&M Plan) and infiltration
 - Perform an evaluation of cover performance against a PA Cap
 - Groundwater monitoring
 - Agencies to evaluate 5 years after constructed
- Contingent Remedies

The Proposed Plan

- Issued by EPA in August 2002
- Public Meeting in September 2002
- Proposed remedy met with very little resistance by the public
- Comments by the PRP Group were not fully supportive

State's Position with the Proposal

- Formal non-concurrence with the remedy
- Based on ability to meet their regulations
- Supportive of EPA's effort to try a new remedy for the Site

Next Step....

- Abandon remedy change
- Move forward without State concurrence
 - How to deal with ARAR issue

How can ARAR can be Waived?

- 1) Interim measure,
- 2) Greater risk to human health and the environment,
- 3) Technically impracticable,
- 4) *Equivalent standard of performance,***
- 5) Inconsistent application of State requirements,
- 6) Fund-balancing.

Equivalent Standard of Performance

- Criteria currently under development
 - Compliance with the O&M Plan
 - Cap monitoring data and evaluation
 - ACAP field data
 - Groundwater monitoring data

EPA's Proposed Revisions

- Waive the State's ARAR up front in the ROD Amendment and state that it will meet an equivalent standard of performance when it is evaluated
- Include the Equivalent Standard of Performance Criteria
- Evaluate the E/T cover system at the next available Five-Year Review Period after it is established

EPA's Proposed Revisions (continued)

- Keep in Contingent Remedies, but first allow for enhancements to the E/T cover system
- Monitor the performance of the E/T cover system with lysimeters
- Monitor groundwater