Savannah River Site
Waste Disposition Project

F Tank Farm Closure and Performance Assessment

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Purpose & Presentation Overview

Purpose: Describe the process, decision points and public participation for closing tanks, status of activities including publication of the F Tank Farm Performance Assessment and path forward.

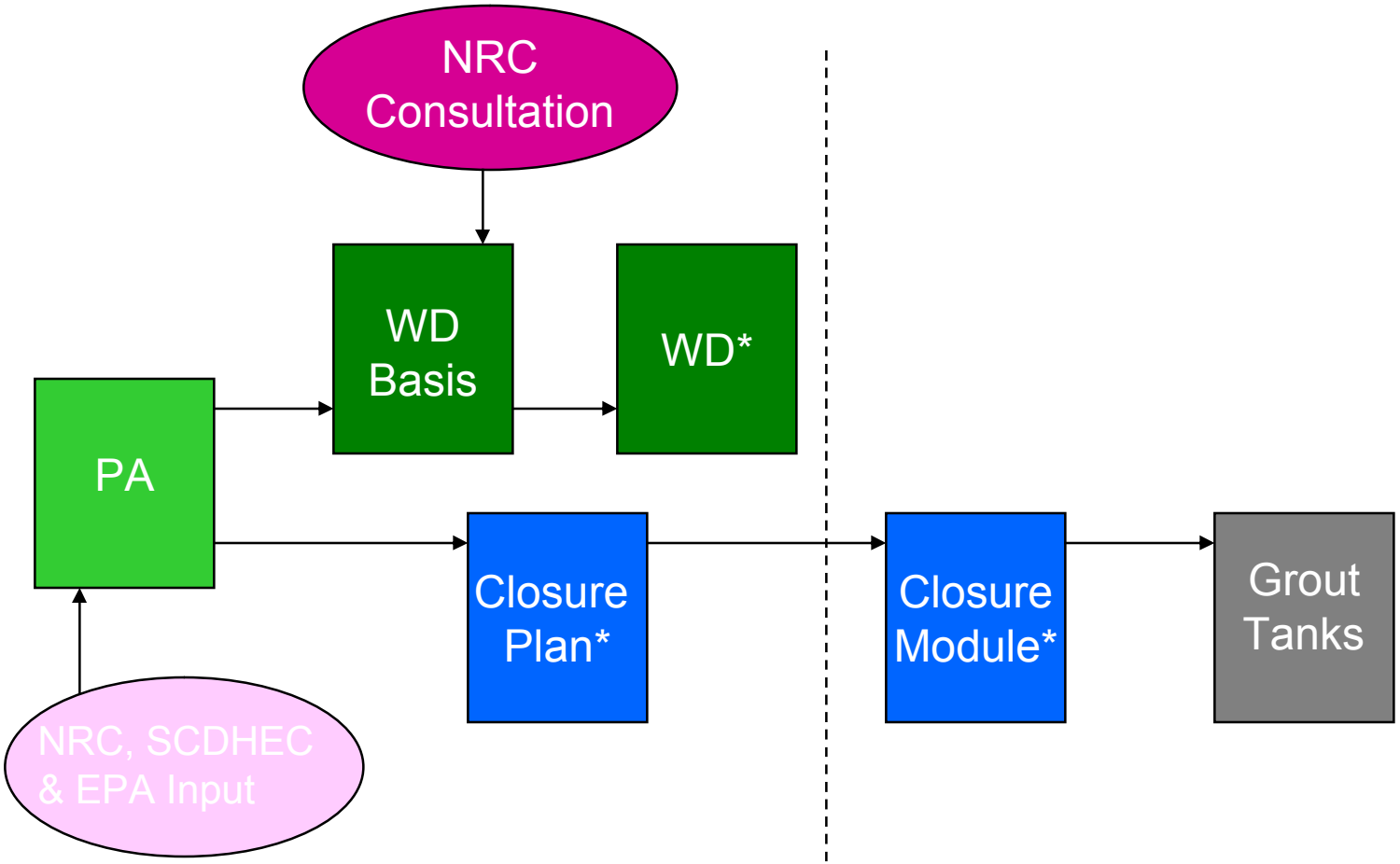
Presentation Overview:

- Tank Closure Process
- Status of Closure Activities
- F Tank Farm Performance Assessment
- Path Forward

Acronyms

EPA	Environmental Protection Agency
FTF	F Tank Farm
NRC	Nuclear Regulatory Commission
PA	Performance Assessment
SCDHEC	South Carolina Department of Health and Environmental Control
WD	Waste Determination

Tank Closure Process, Decision Points*, & Public Participation Opportunities



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Status of Tank Closure Activities

- Issued the FTF PA to NRC, SCDHEC and EPA in August 2008.
- FTF PA available for public information
  - http://sro.srs.gov/ftfpa.html
  - http://emdev.apps.em.doe.gov/EMDEV/stakepages/wmdiswd.aspx?PAGEID=WMDI
- Comments/Questions may be submitted to:

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Savannah River Nuclear Solutions, LLC
A Fluor Daniel Partnership

F-Tank Farm Performance Assessment

An Overview

Steve Thomas
Manager, §3116 Documentation

September 22, 2008

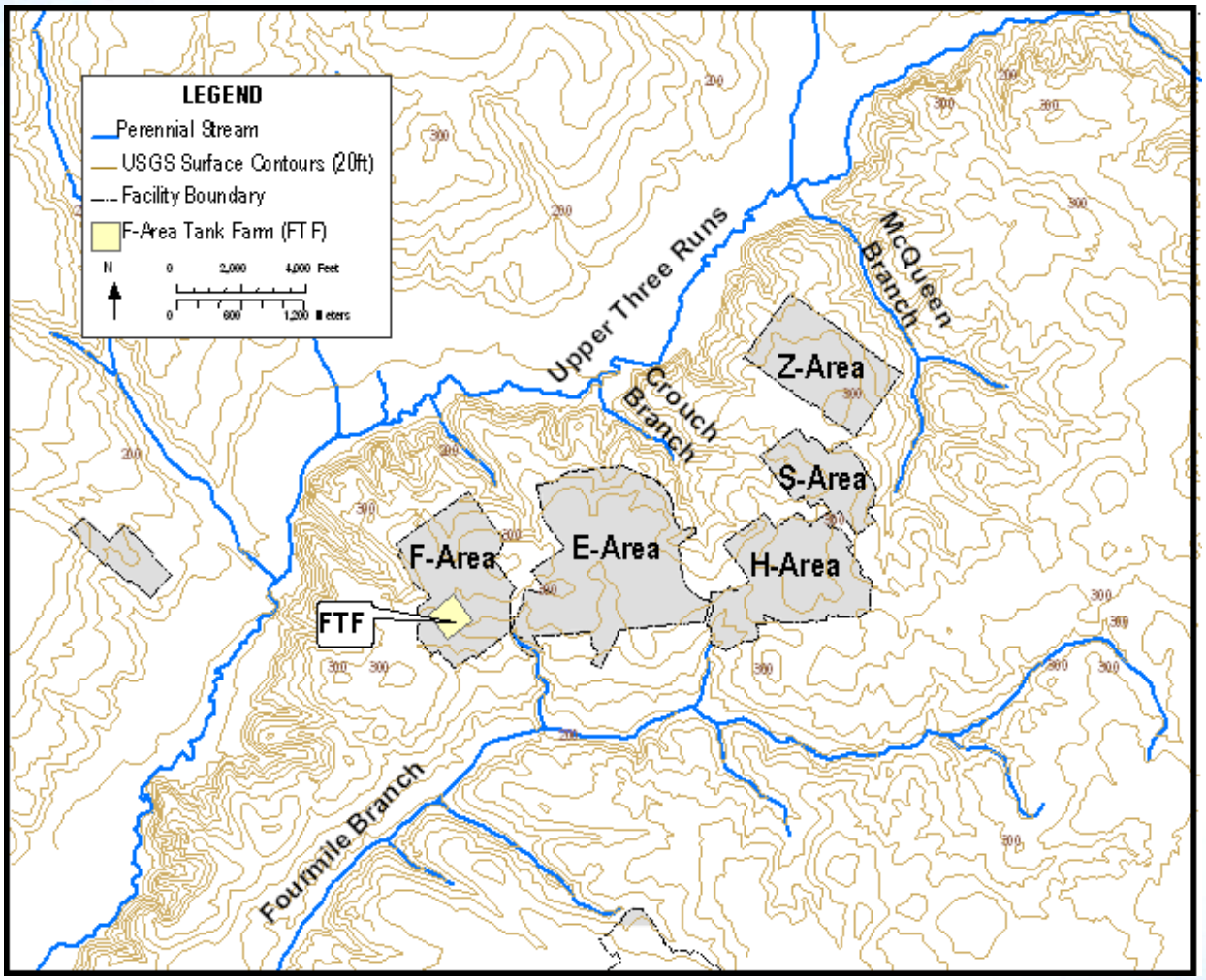
What is a PA?

- PA = Performance Assessment
- Performance Assessment = a key risk assessment tool used to inform closure and disposal decisions
  - Models fate and transport of materials over long periods of time to determine potential consequences
  - Utilizes informed assumptions
  - Provides most likely consequences of planned actions

How does a PA inform?

- PA provides best estimation of what the dose consequences will be, both chemical and radiological, over time
  - Focused on determining "peak dose" - worst one-year period – or "peak concentration"
  - Reflects uncertainty and identifies key parameters for which the model has the greatest sensitivity (importance)

Layout of the General Separations Area



What is the scope of the FTF PA?

- The PA covers all ~ 22 acres of FTF
- Includes 22 carbon steel waste tanks ranging in capacity from 750,000 to 1,300,000 gallons
- Also includes ancillary equipment:
  - 2 evaporator buildings
  - Catch tank
  - Diversion boxes
  - Pump pits
  - Transfer lines

FTF PA Development Process

9/2006	Organized PA Development Team
2/2007	Initiated Scoping Meetings w/ DHEC, EPA, NRC
1/2008	Concluded Scoping Meetings
12/2007	Issued Revision A for DOE-SR review
3/2008	Issued Revision B for LFRG review
8/2008	Issued Revision 0 for external review/comment

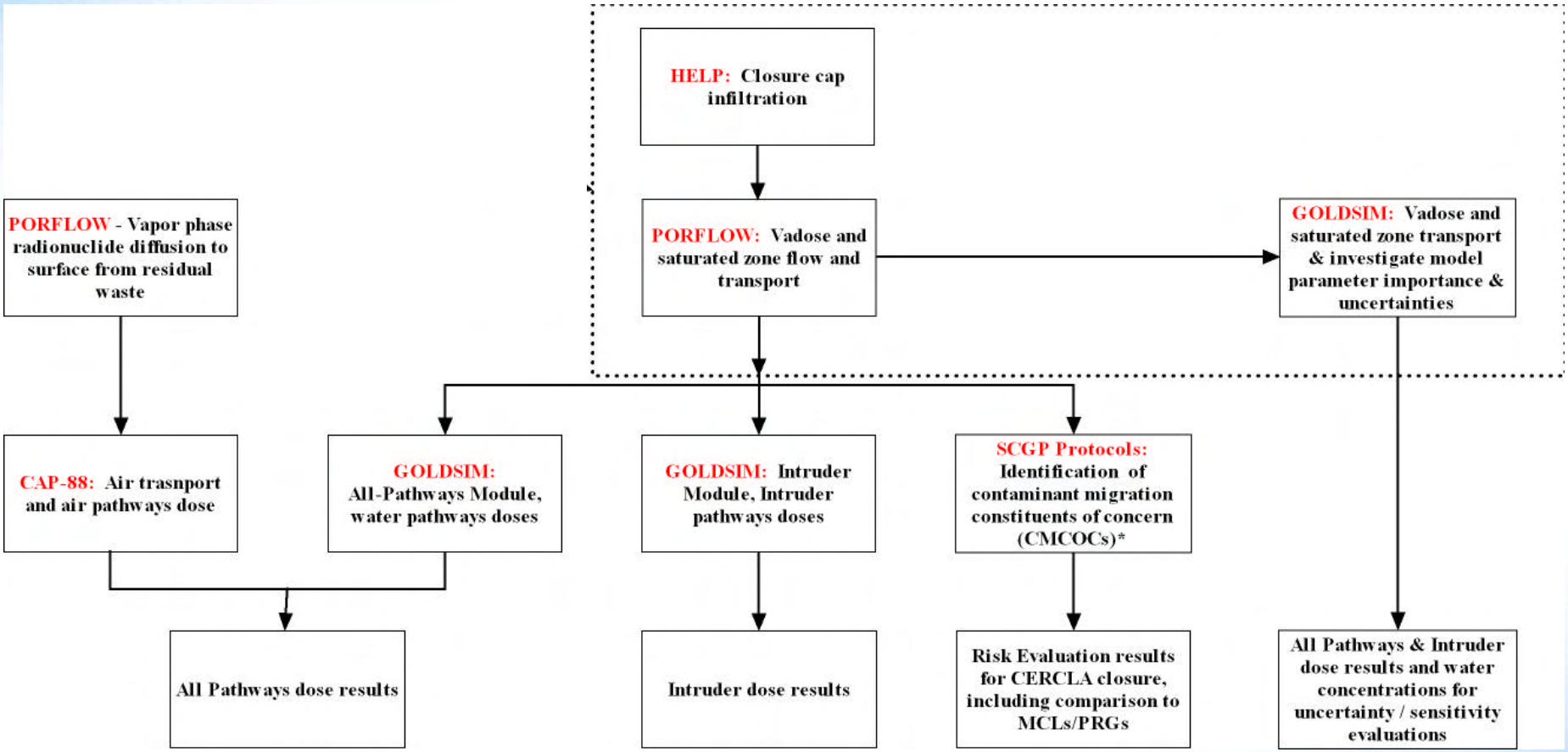
FTF PA Contents Overview

- Eleven chapters in the main body and ten appendices
- More than 260 figures and 150 tables of information in the body of the PA
- Over 2600 total pages between the PA body (736 pages) and the appendices
- ~ 260 direct references utilized in the development

FTF PA Contents Overview

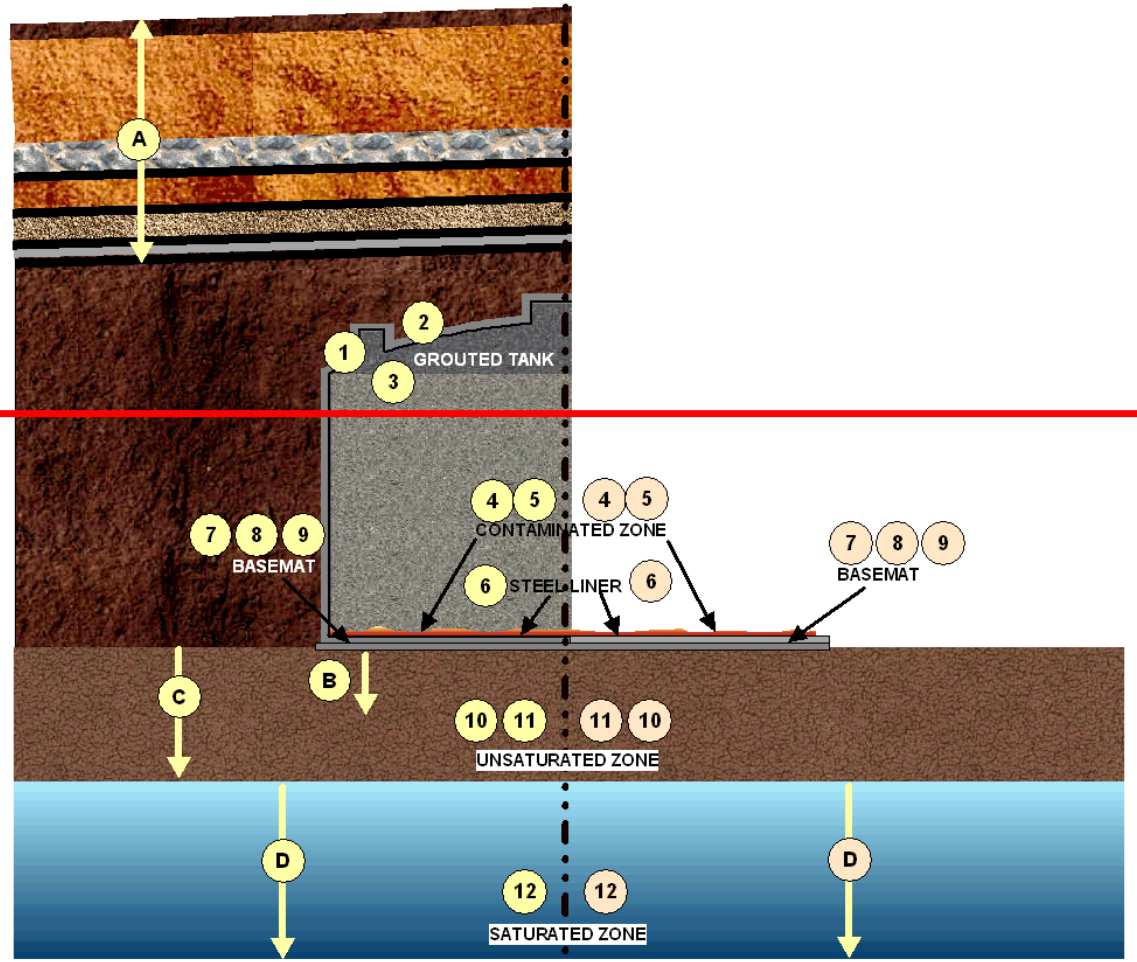
- Introduction and Executive Summary
- Disposal Facility Characteristics
  - Site geography, hydrogeology, ecology, design features, etc.
- Performance Analysis
  - Integrated conceptual model, modeling codes, air analysis, biotic pathways, RCRA/CERLA risk evaluation, etc.
- Analysis Results
  - Transport, Pathways, Dose and Sensitivity / Uncertainty
- Inadvertent Intruder Analysis
- Results Interpretation
- Performance Evaluation (forward looking)

FTF PA Modeling Code Integration



*The SGCP protocols are not a specific computer code.

Conceptual Model Inputs



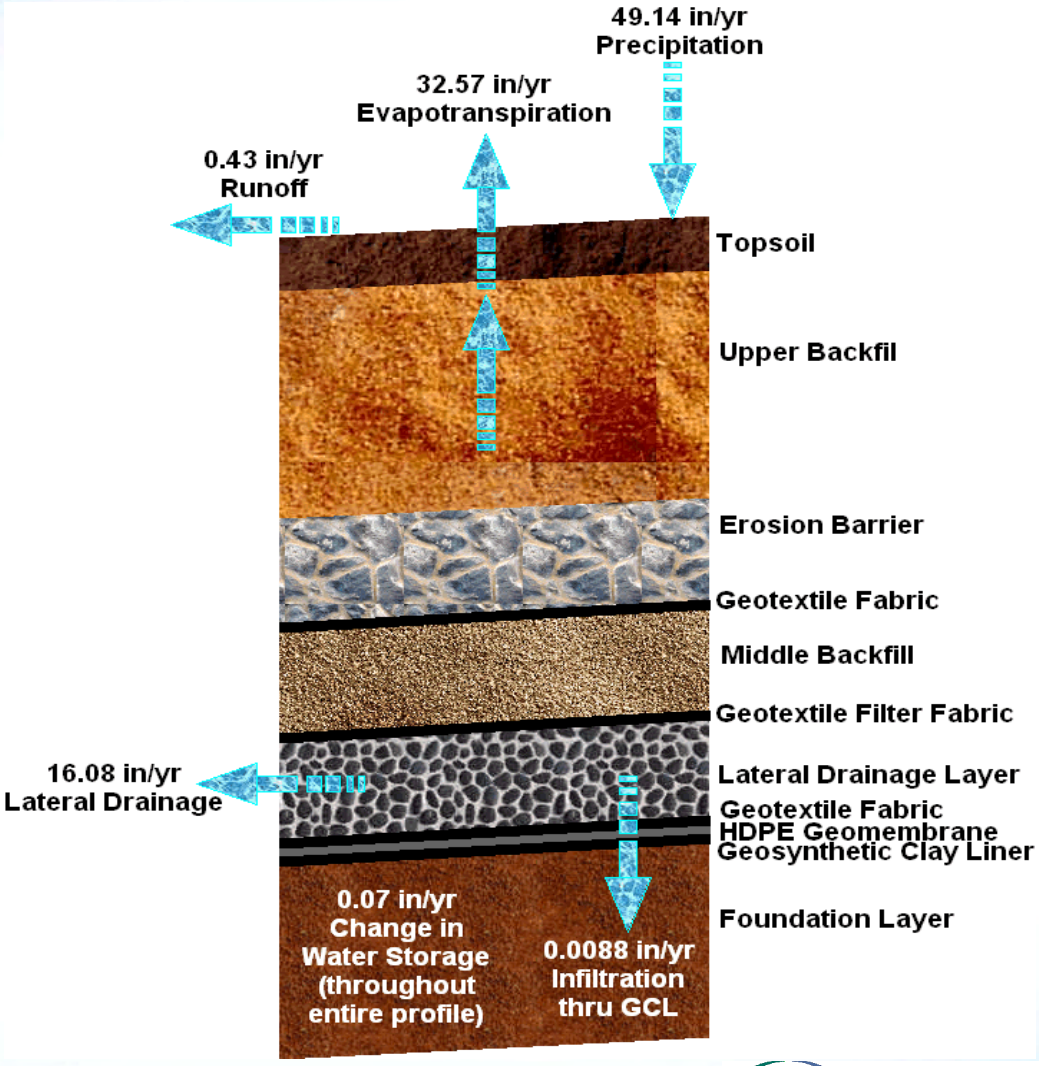
PORFLOW

- A — Infiltration Rate Through Cap (From HELP Code)
- 1 — Tank Design/Location
- 2 — Tank Top/Grout Cementitious Properties
- 3 — Concrete/Grout Hydraulic Conductivities
- B — Flowrate Results from Contamination Zone
- 4 — Waste Release Formula per Porewater Volume
- 5 — Waste Inventory
- 6 — Liner Failure Analysis
- 7 — Basemat Design
- 8 — Basemat Kd Values
- 9 — Cementitious Basemat Properties
- 10 — Soil Properties
- 11 — Soil Kd Values
- 12 — GSA Database Parameters
- C — Flowrate through Unsaturated Zone
- D — PORFLOW Flowrate through Saturated Zone

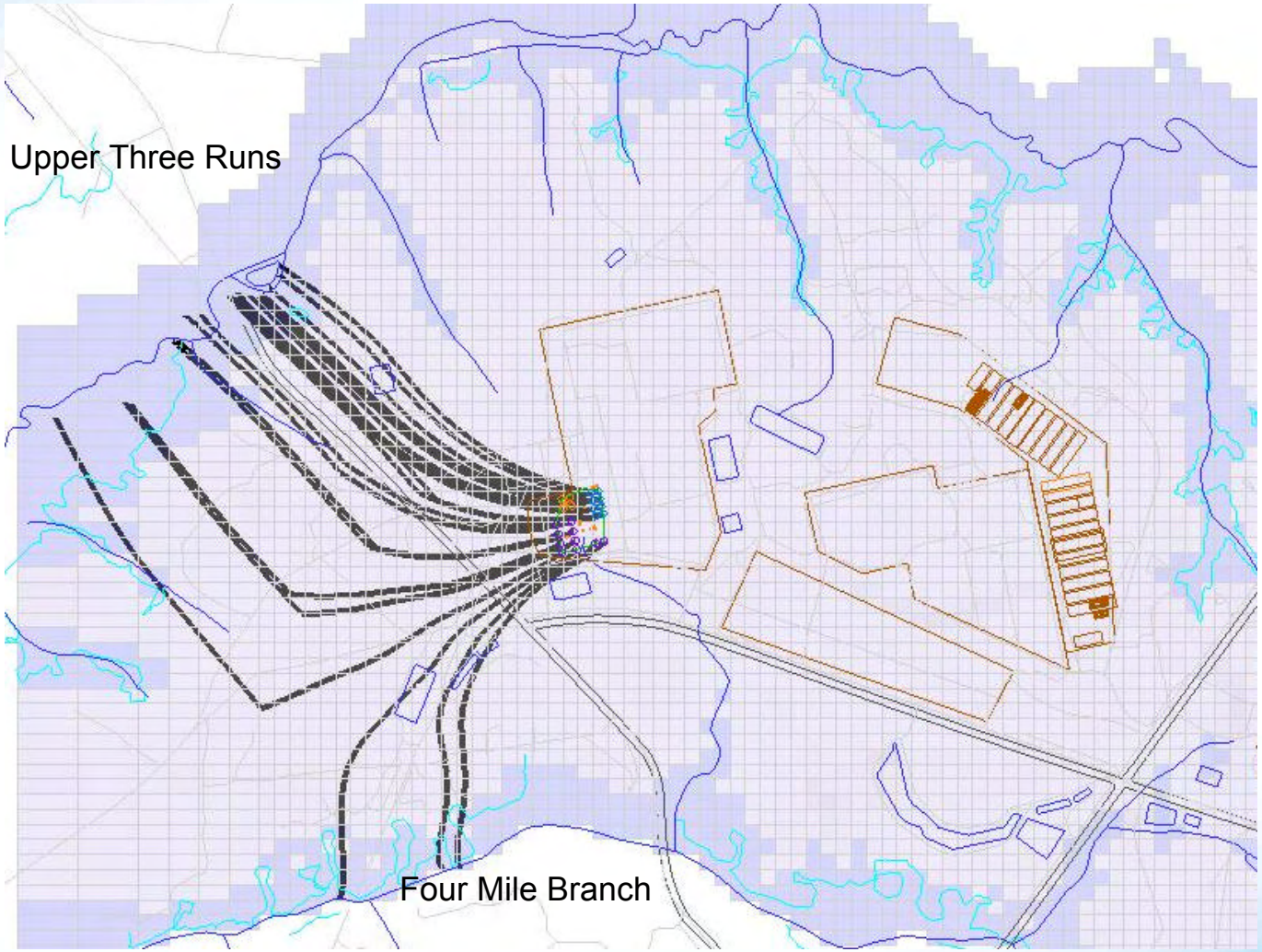
GOLDSIM

- B — Flowrate Through Grout/Waste
- 4 — Waste Release Formula per Porewater Volume
- 5 — Waste Inventory
- 6 — Liner Failure Analysis
- 7 — Basemat Design
- 8 — Basemat Kd Values
- 9 — Cementitious Basemat Properties
- 10 — Soil Properties
- 11 — Soil Kd Values
- 12 — GSA Database Parameters
- D — Flowrate Through Aquifer

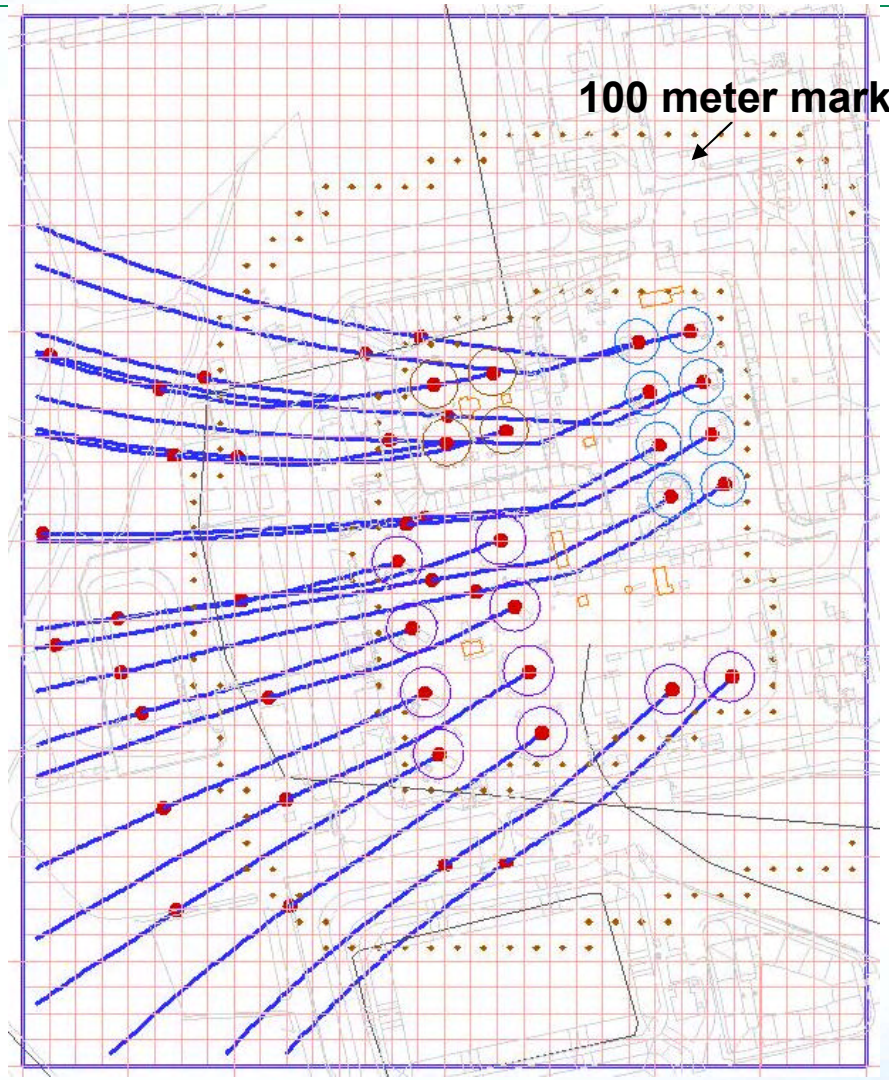
Model Example: Closure Cap Configuration



Stream Tracers for FTF



Stream Tracers from FTF – Closer View



What are the requirement drivers?

- The PA development process is regulated by DOE Order 435.1

- Closure requirements are based on:
  - DOE Order 435.1
  - Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005
  - SCDHEC “Standards for Wastewater Facility Construction” [SCDHEC R.61-67]

What are the requirement drivers?

Requirement	All-Pathway Dose	Intruder Dose	Air Pathway Dose	Radon Flux	Groundwater Protection
NDAA Section 3116	25 mrem/yr	500 mrem/yr	N/A	N/A	N/A
DOE O 435.1	25 mrem/yr	500 mrem – acute 100 mrem/yr – chronic	10 mrem/yr	20 pCi/m^2/s at ground surface	<MCL
Wastewater Permit	N/A	N/A	N/A	N/A	<MCL

N/A = Not applicable
MCL = Maximum Contamination Limit

Summary

- The FTF PA has been completed and is currently undergoing external review:
  - SCDHEC
  - Environmental Protection Agency
  - Nuclear Regulatory Commission
  - Public
- Provides important information to inform closure decisions
- Planned FTF closure activities results in peak year doses/concentrations well below regulatory requirements

SRS
savannah river site

Where Do We Go from Here

Ginger Dickert
Manager, Regulatory Integration and Closure Documentation

September 22, 2008

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Using the PA in Decision-Making

- **PA will be used to inform development of the Waste Determination Basis and the Closure Plan**
  - Only addresses the Performance Objectives requirement
- **PA <u>does not</u> establish goal at which tank cleaning stops**
- **Tanks will be cleaned to the Maximum Extent Practical**
- **Residuals will then be characterized and evaluated using the PA to assure the Performance Objectives are met**

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Path Forward

- **Waste removal on-going for Tanks 18, 19, 5 and 6 in F Tank Farm**
- **Residual source term characterization in Spring 2009**
- **Documentation development to support closure decisions on-going**
  - F Tank Farm Waste Determination Basis
  - F Tank Farm Closure Plan

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