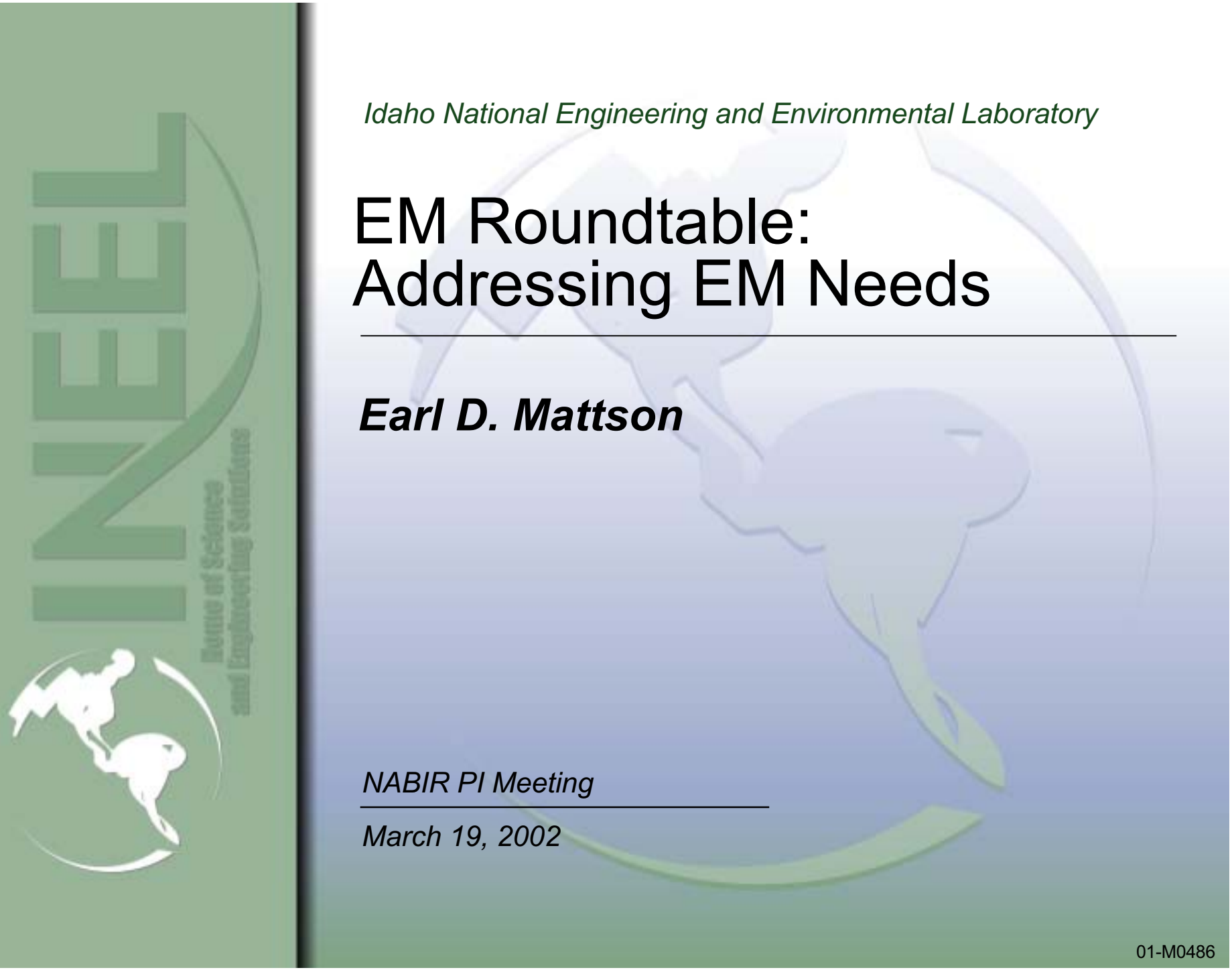


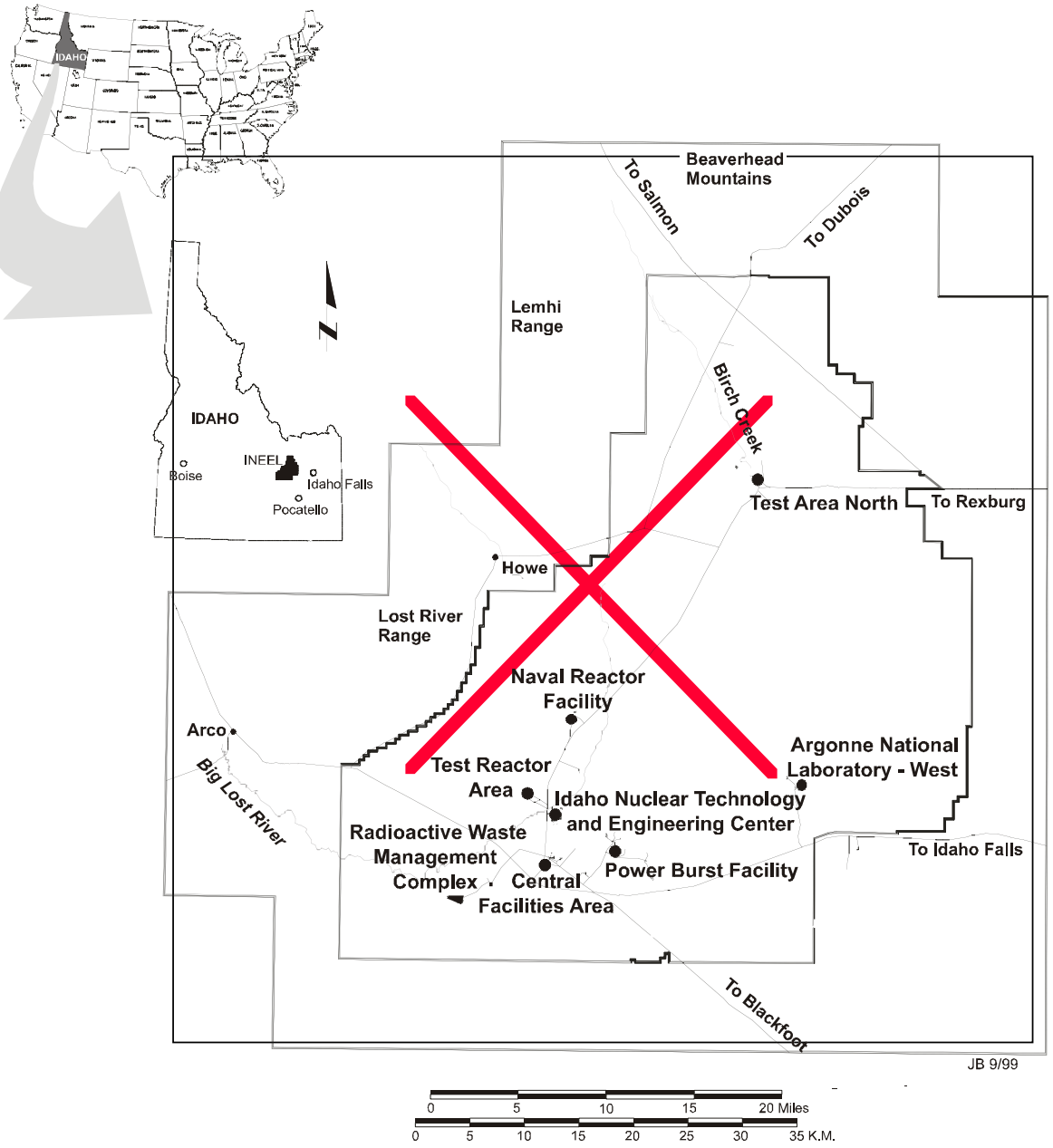
Idaho National Engineering and Environmental Laboratory

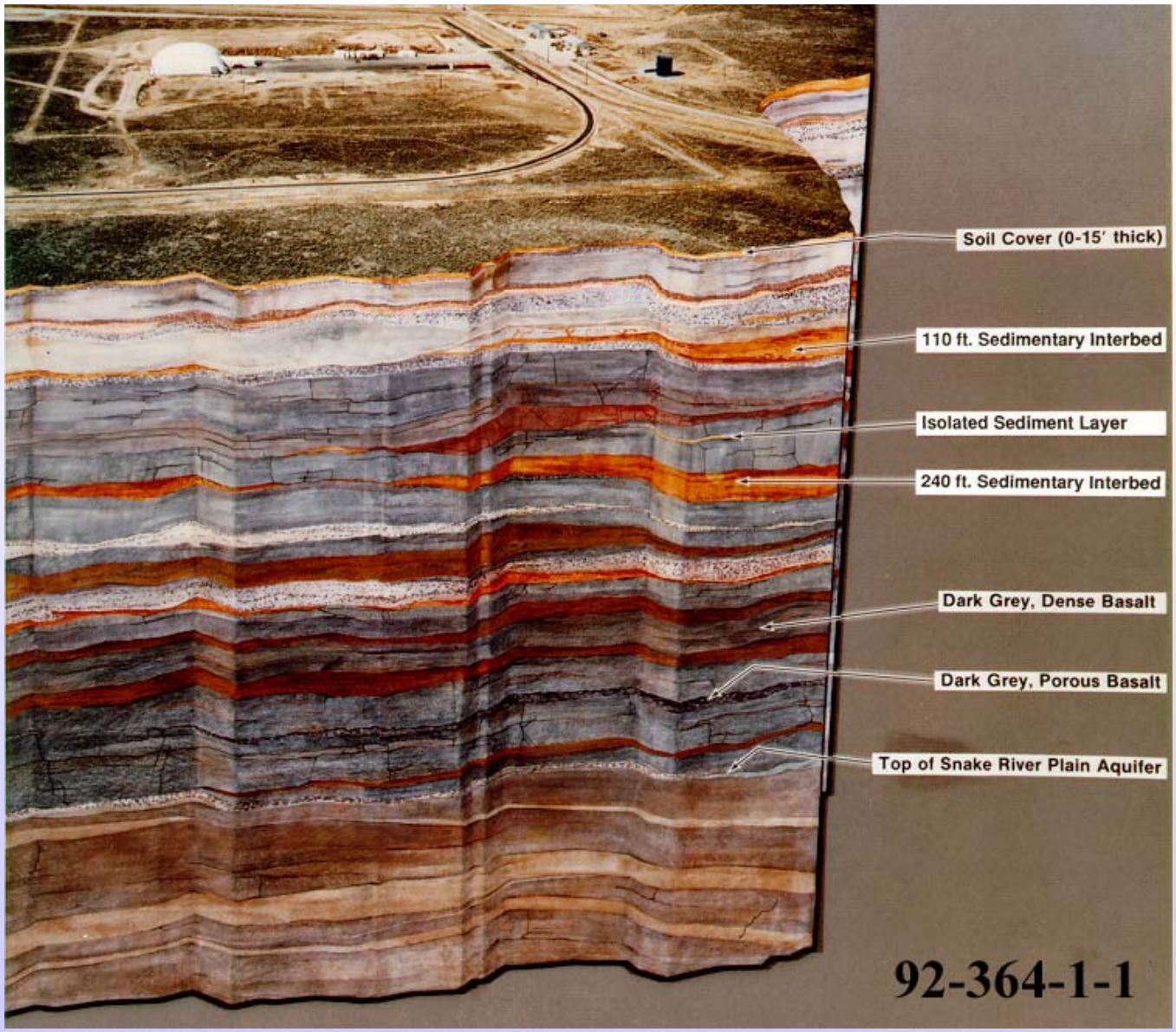
EM Roundtable: Addressing EM Needs

Earl D. Mattson

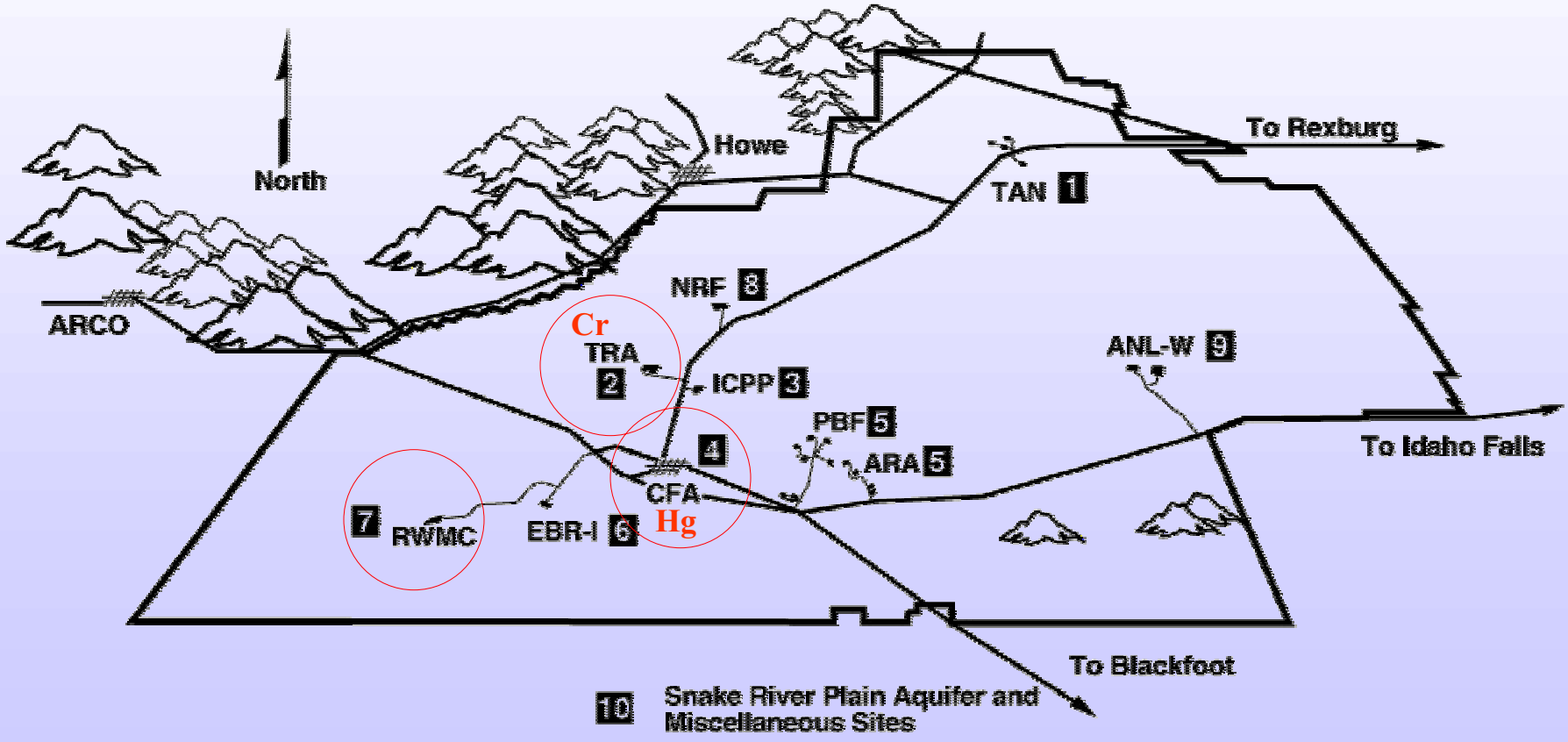
NABIR PI Meeting

March 19, 2002


IDAHO
Beaverhead Mountains
To Salmon
To Dubois
Lemhi Range
N
IDAHO
INEEL
Boise
Idaho Falls
Pocatello
Birch Creek
Test Area North
To Rexburg
Howe
Lost River Range
Naval Reactor Facility
Arco
Big Lost River
Test Reactor Area
Argonne National Laboratory - West
Idaho Nuclear Technology and Engineering Center
Radioactive Waste Management Complex
Central Facilities Area
Power Burst Facility
To Idaho Falls
To Blackfoot
JB 9/99
0 5 10 15 20 Miles
0 5 10 15 20 25 30 35 K.M.


Soil Cover (0-15′ thick)
110 ft. Sedimentary Interbed
Isolated Sediment Layer
240 ft. Sedimentary Interbed
Dark Grey, Dense Basalt
Dark Grey, Porous Basalt
Top of Snake River Plain Aquifer
92-364-1-1

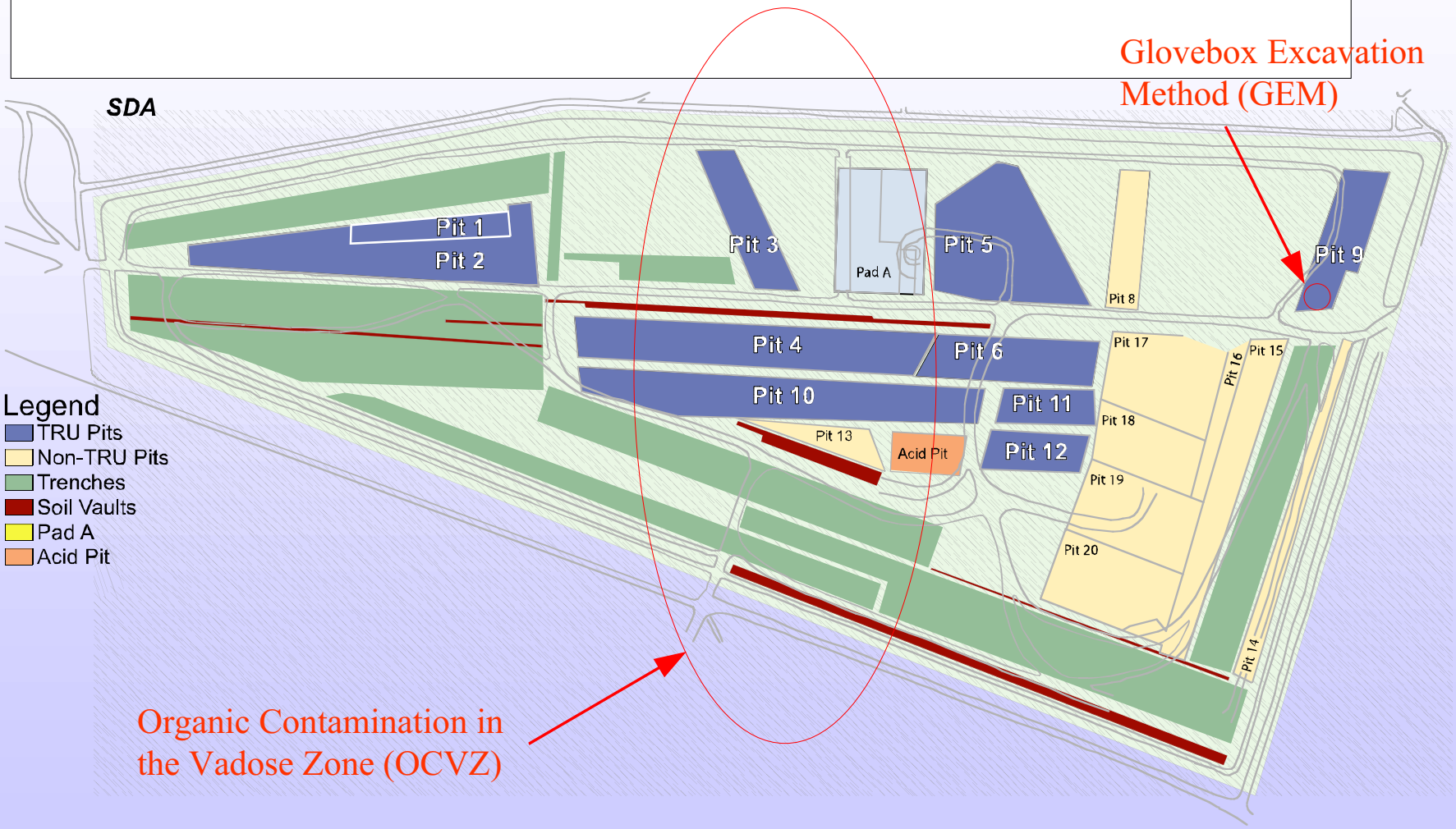
INEEL Environmental Restoration Waste Area Group (WAG) locations



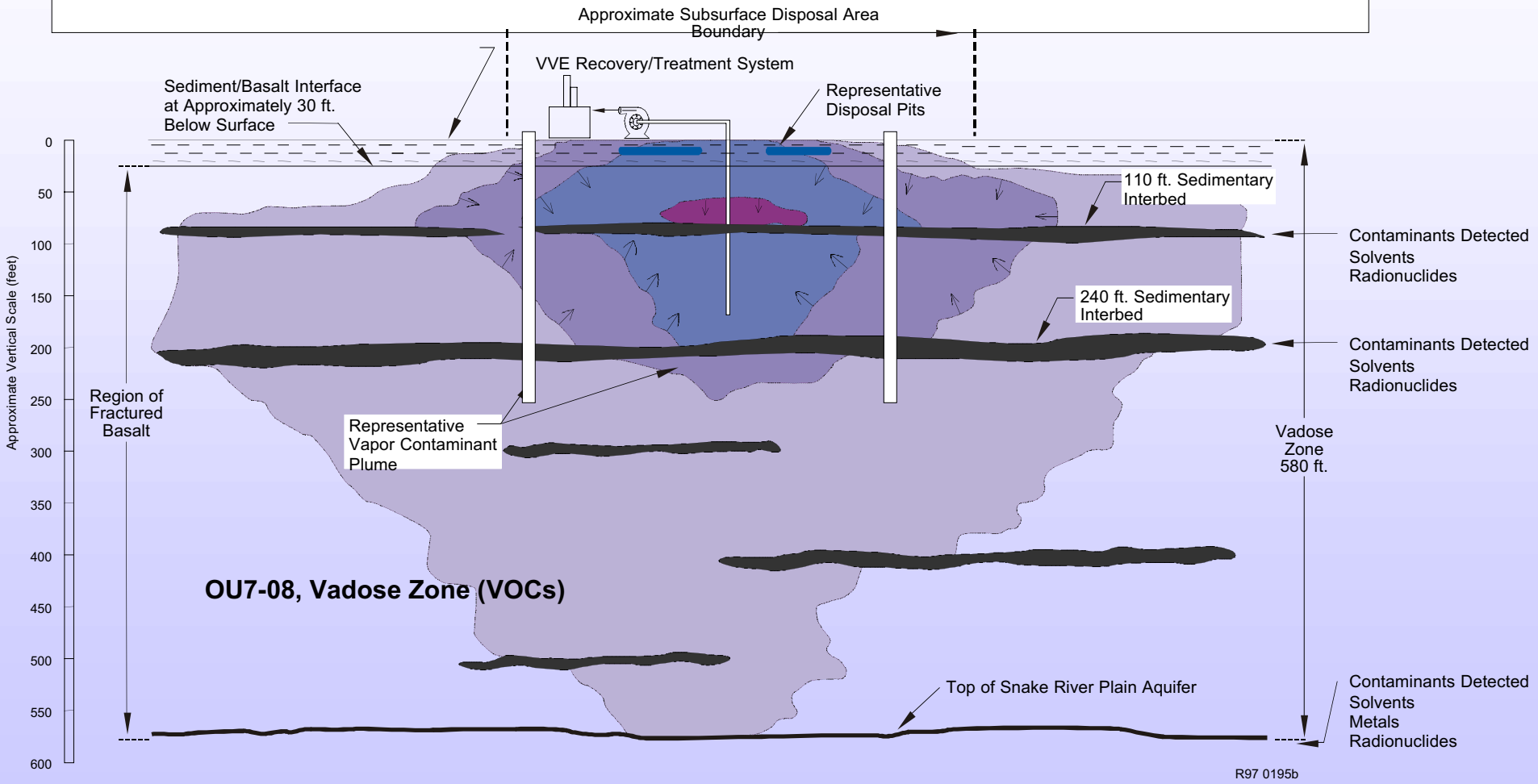
Radioactive Waste Management Complex

97-620-1-5A

RWMC Buried Waste



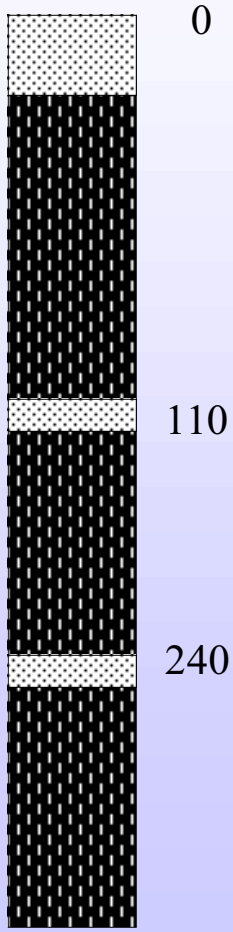
OCVZ FY02 Extraction Wells



Sediment contamination in RWMC

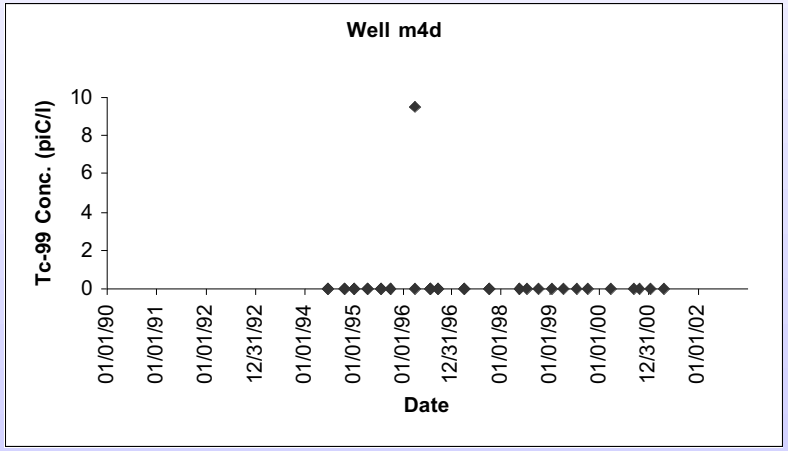
- *Shallow lysimeter samples*
  - *Tc-99 20-50 piC/L (fairly consistent)*
  - *Pu 1 to 24 piC/L*

- *Sedimentary interbeds*
  - *soil samples*
    - *Tc-99 1-4 piC/g (?) [6200 to 25000 piC/L]*
    - *Pu 0-1 piC/g*
  - *lysimeter samples*
    - *no detect (only one sampling event)*



Groundwater Monitoring Results beneath the RWMC

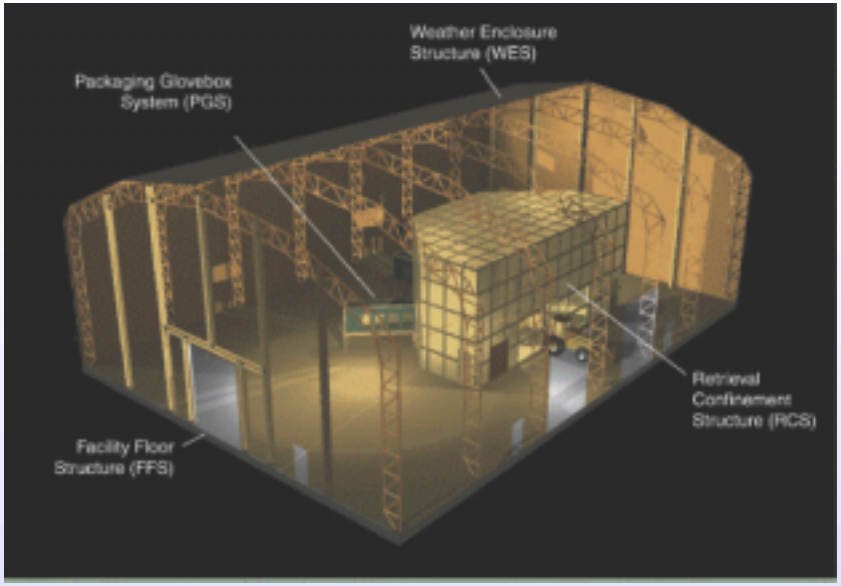
- *Sporadic detection of Tc and Pu*
  - *Tc-99 range*
    - *0 to ~10 piC/L*
  - *Pu-(238,239,240)*
    - *0 to 0.05 piC/L*
- *Fairly steady metals*
  - *Cr range*
    - *20 to 30 ug/L*

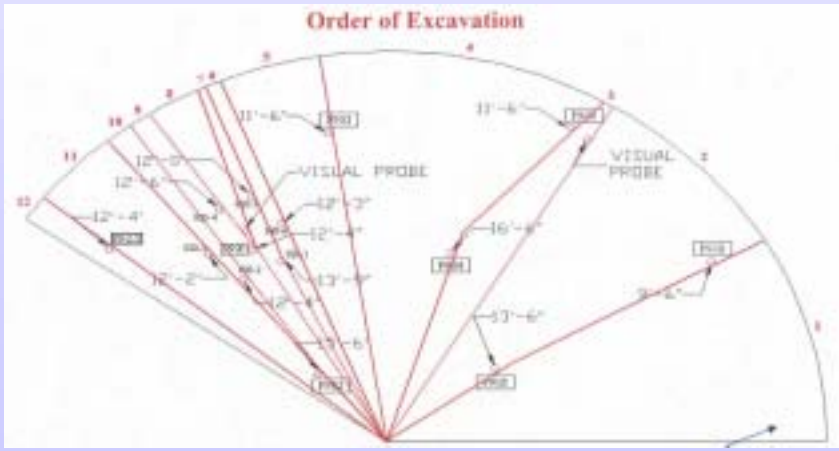


Typical Monitoring Result

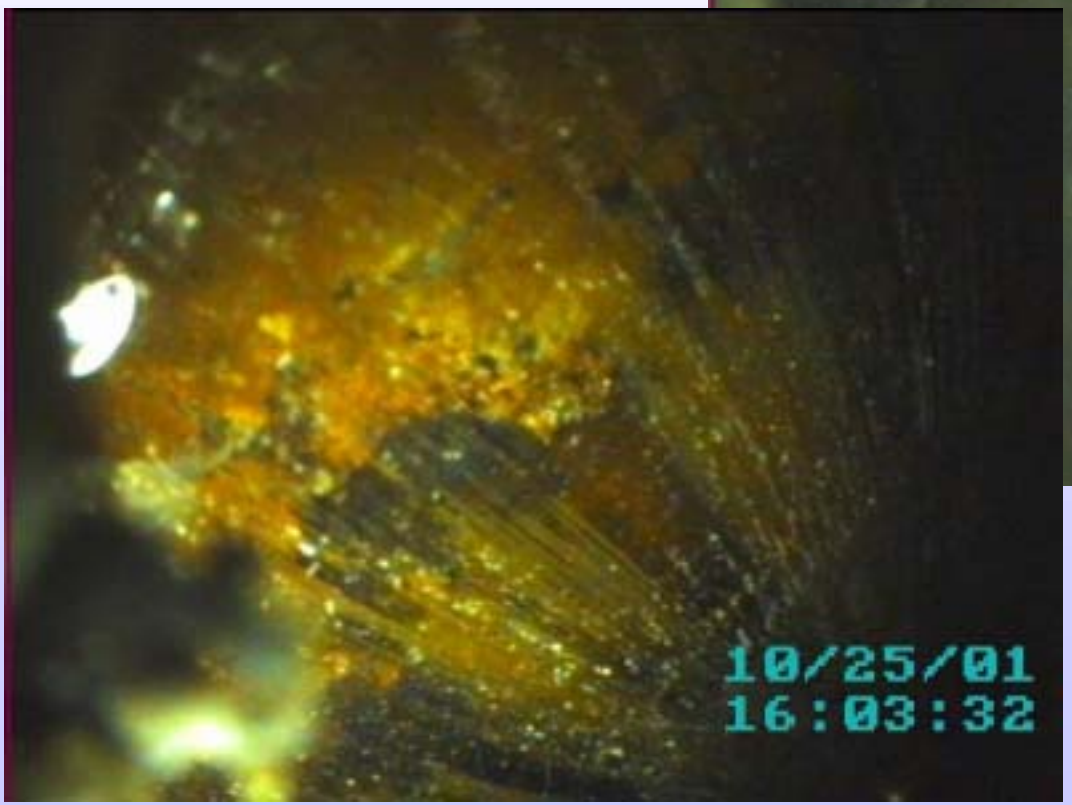
GEM in Pit 9

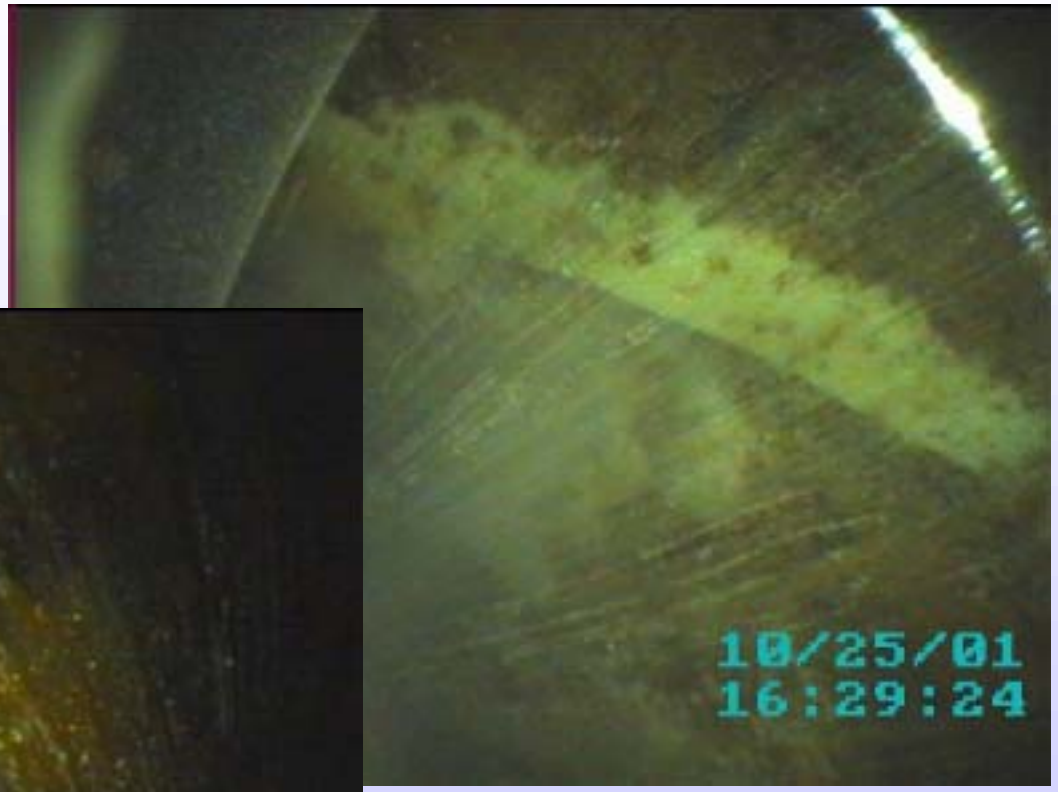
- *Expected contaminant concentrations*
  - *Pu-239 - 10^8 piC/g*
  - *U-238 - no response*
- *Schedule*
  - *construction Spring 03*
  - *samples Fall 03*





Gem Visual Probe Results





Summary

- *Best opportunities for NABIR partnership*
  - *OCVZ drilling in FY02*
    - *surface sediments, basalt drill cuttings, potential interbed material*
  - *Pit 9 GEM*
    - *excavation begins in late FY03 into FY04*
    - *negotiating for samples must begin now*

Summary (cont.)

- *Suction lysimeter samples*
  - *insufficient sample collection for sharing*
- *Groundwater samples*
  - *fairly easily obtained*
  - *sporadic detection*
- *Uncontaminated samples*
  - *surface soil*
  - *basalt core*
  - *interbed soil*