Environmental Remediation Sciences

Mike Kuperberg

Office of Biological and Environmental Research

Office of Science

U.S. Department of Energy

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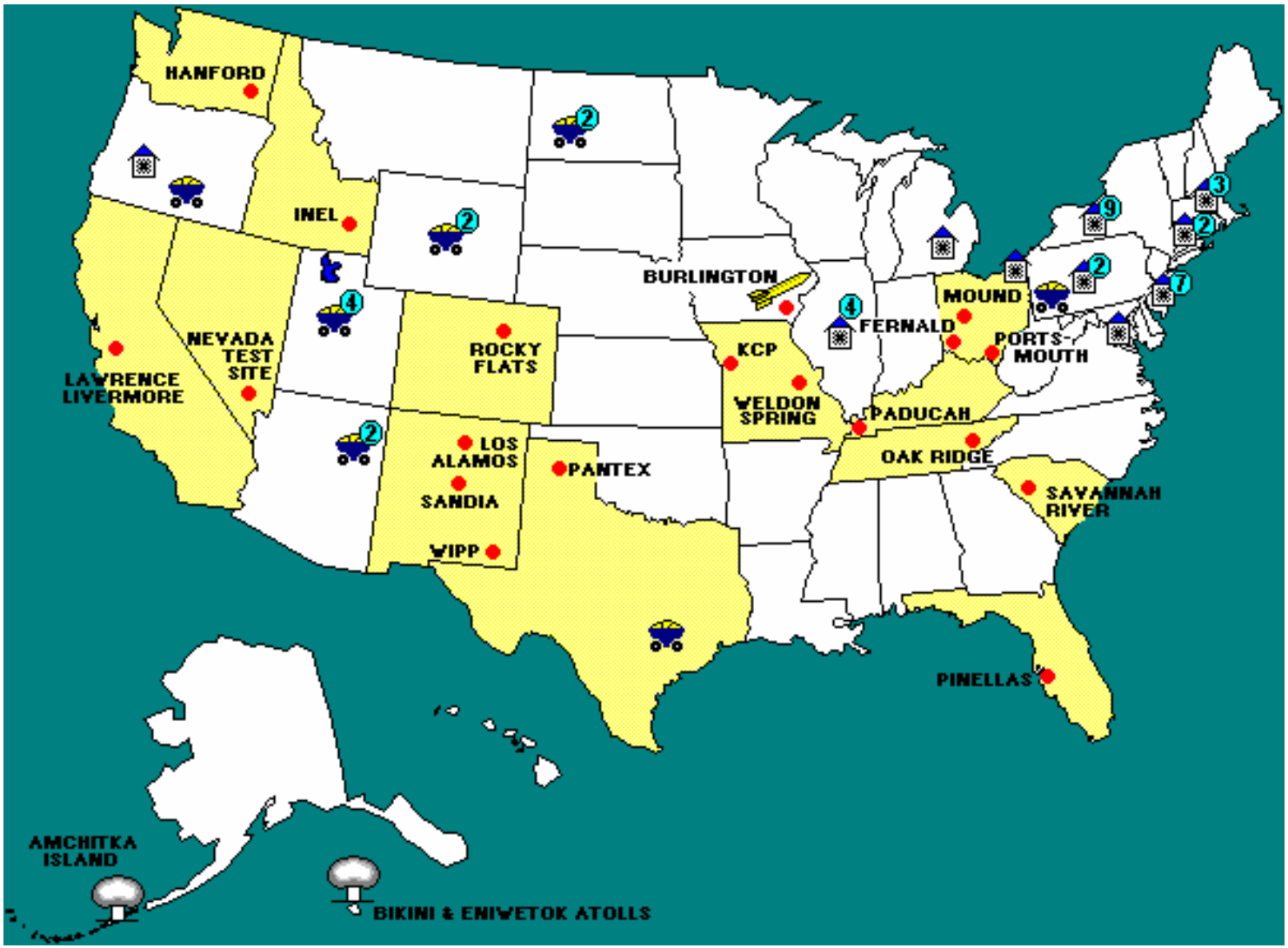
Nuclear Weapons Complex



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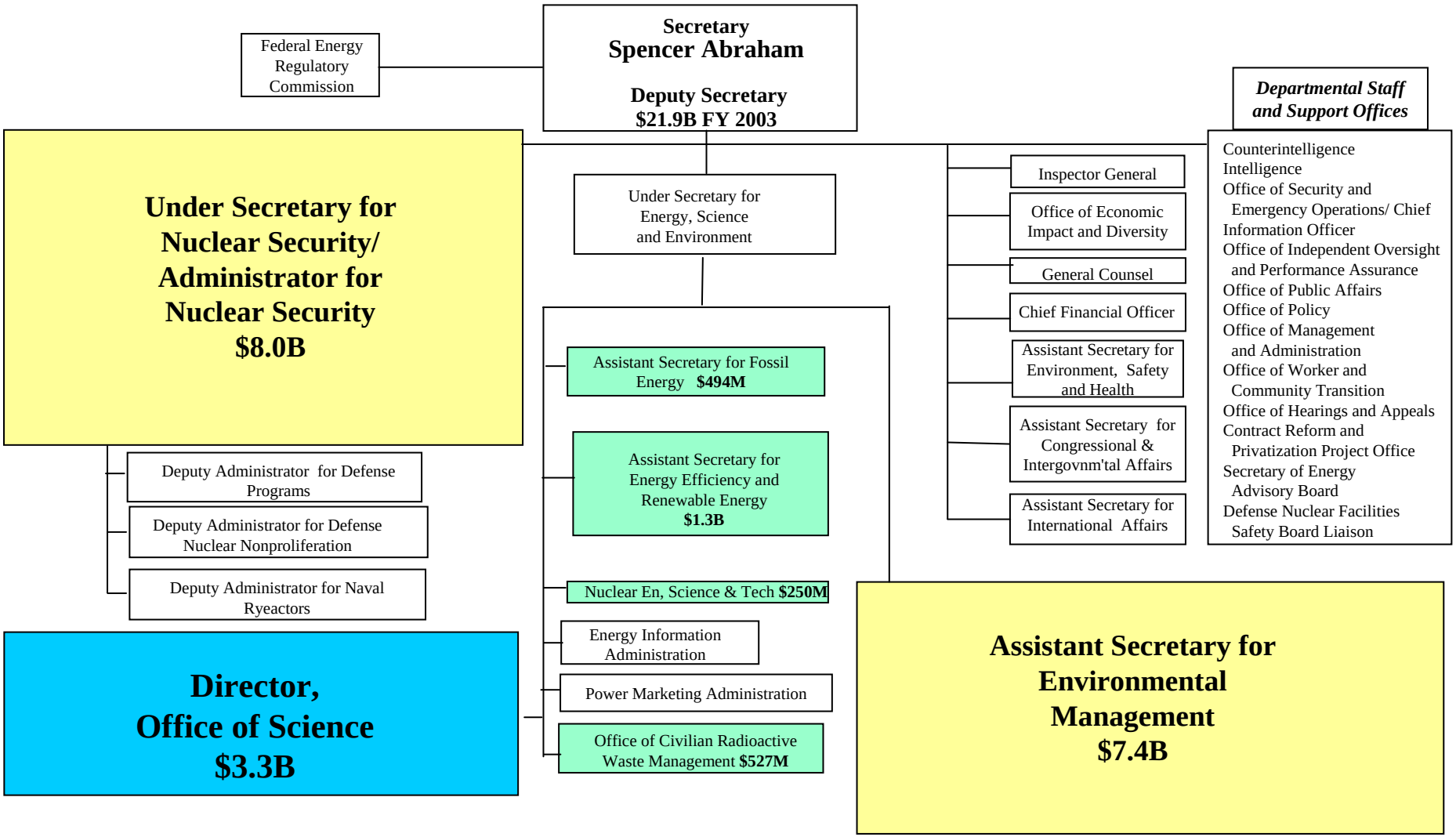

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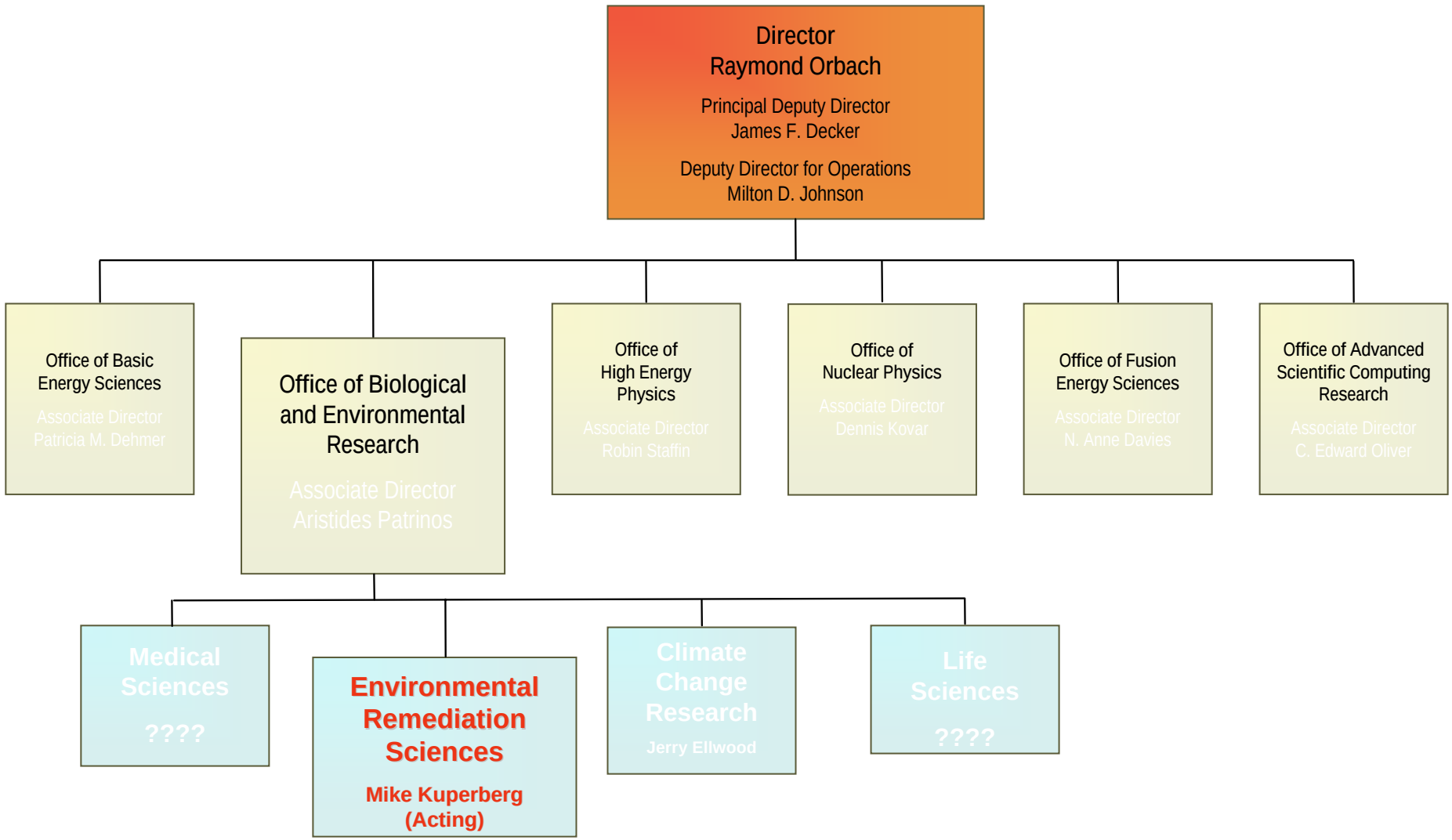

ERSD Mission

…Advance the fundamental science leading to solutions to currently intractable environmental problems or to break-through strategies for remediation of the DOE sites and other DOE environmental and energy missions.

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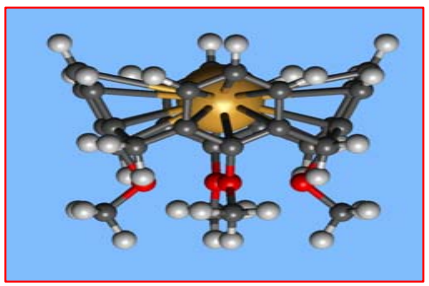
Environmental Remediation Sciences

R&D for solutions to DOE's long-term environmental cleanup challenges

D. radiodurans reduces uranium



complexation ions with tetramethoxycalix[4]arene of cesium

The Environmental Management Science Program (EMSP) is developing the scientific basis for risk-based decision making and "breakthrough" approaches to cleaning up the nuclear weapons complex.

Bioremediation Research (NABIR) provides the understanding of how microbes that naturally exist in soils can stabilize metals and radionuclides. Studies span the range of microbial genetics of all the way to field studies at actual contaminated sites.

The Environmental Molecular Sciences Laboratory (EMSL) is serving environmental users from around the world by providing the leading edge of computational and experimental capabilities for understanding processes at the molecular level.

The Savannah River Ecology Laboratory (SREL) is studying the ecological impacts of remediation activities in real time at the Savannah River Site while providing hands-on educational programs at the Site.

ERSD FY04 President's Request

NABIR	$24,097*
EMSP	$29,246
EMSL	$37,149 (operations)
SREL	$ 7,776
Misc.	$10,932
Total	**$109,200**

***thousands of dollars**

ERSD Staff

- Mike Kuperberg, Acting Director
- Paul Bayer, Program Manager
  - NABIR, Facilities
- (Roland Hirsch, Program Manager)
  - EMSP
- Todd Anderson, Program Manager
  - NABIR, EMSI
- Drew Tait, Detailee, Los Alamos

ERSD Characteristics

- Primary focus is on a subset of DOE-EM relevant issues where science can have the greatest impact
- Highly interdisciplinary – integrates results from biology, geology, chemistry, ecology, *etc*.
- **Committed to developing and supporting "grand challenges" in DOE remediation issues that incorporate laboratory and field research, modeling, and multidisciplinary approaches.**
- Committed to supporting facilities that are/will contributing to environmental sciences (light sources, EMSL, *etc*.)
- Highly collaborative with other organizations

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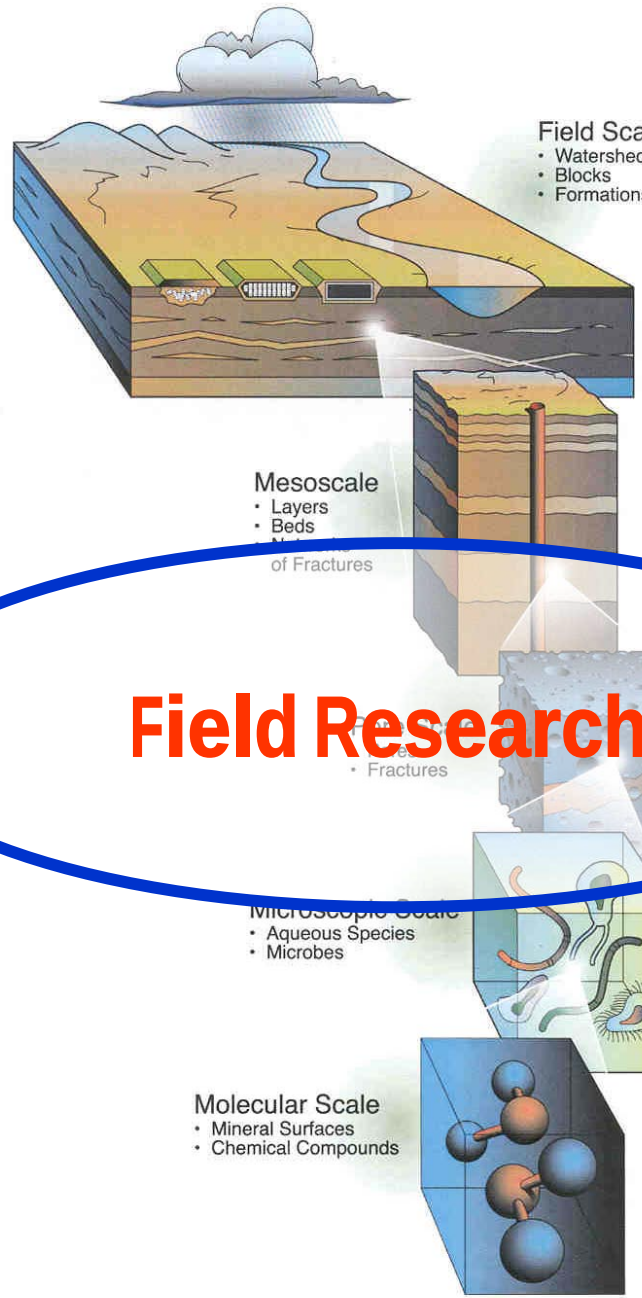
ERSD Integrating Vision



Characterization & Monitoring

Modeling & High-performance computing

Field Research

Microbiology, Ecology, Geochemistry

Molecular Science: EMSL, Light Sources

ERSD

- What's next?
  - NABIR & EMSP
  - Field research
  - EMSI's
- Questions?