BASELINE STUDIES - THE FIRST STEP IN THE LICENSING PROCESS

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K L E I N F E L D E R
>EXPECT MORE

REGULATORY FRAMEWORK

BASELINE STUDIES CONTENTS

PLANNING AND PERFORMING BASELINE STUDIES

K L E I N F E L D E R
>EXPECT MORE

PRIMARY REGULATORY REFERENCES FOR BASELINE STUDIES

- 10 CFR 40-- DOMESTIC LICENSING OF SOURCE MATERIAL
  Appendix A *Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings*
- 10 CFR 51-- ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS

- Regulatory Guide 3.5 - Standard Format and Content of License Applications for Uranium Mills
- Regulatory Guide 3.8 - Preparation of Environmental Report for Uranium Mills
- Regulatory Guide 3.46 - Standard Format and Content of License Applications, Including Environmental Reports, for In Situ Uranium Solution Mining

- NUREG 1569 - Standard Review Plan for In Situ Leach Uranium Extraction License Applications
- NUREG 1748 - Environmental Review Guidance for Licensing Actions Associated with NMSS Programs
- NUREG 1556 – NRC Consolidated Guidance About Materials Licenses

AGREEMENT STATES REGULATIONS

Colorado
6-CCR-1007-1, Part 3 Licensing of Radioactive Material; Part 18 Licensing Requirements for Uranium and Thorium

Texas
25 Texas Administrative Code §289.260, Licensing of Uranium Recovery and Byproduct Material Disposal Facilities

Utah
Utah Administrative Code, Rule R313-24. Uranium Mills and Source Material Mill Tailings Disposal Facility Requirements, Rule R317-6, Ground Water Quality Protection

ER/EIS requirements for uranium mill license applications:

- **Regulation Guide 3.8 Rev. 2 October 1982 -**

  "…requires each applicant…to submit a report on the potential environmental impact of the proposed…activities."

- **10 CFR 51.20 (b)(8) –**

  An EIS is required for "issuance of a license to possess and use source material for uranium milling"

- **10 CFR 51.45 Environmental Report.**

  (a) *General.* ….each applicant or petitioner for rulemaking shall submit with its application or petition for rulemaking one signed original of a separate document entitled "Applicant's" or "Petitioner's Environmental Report," as appropriate.

ENVIRONMENTAL IMPACT STATEMENT, ENVIRONMENTAL REPORT, AND BASELINE STUDIES

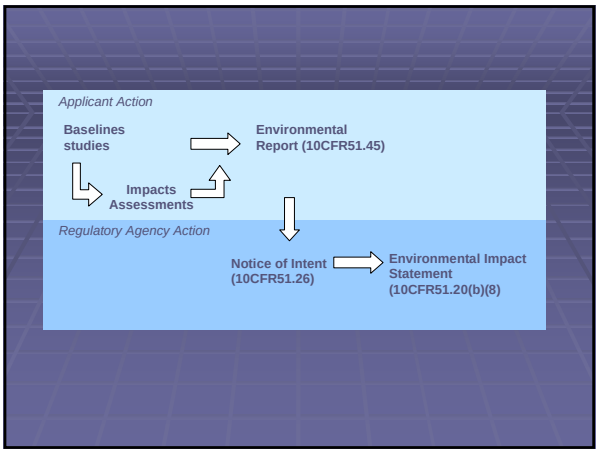
Actions Associated with the Office of Nuclear Materials Safety and Safeguards (NMSS) Programs: NUREG 1748, July 2003

Environmental Report :(NRC terminology)

~~**Categorical Exclusion (CATEX): (NEPA terminology)**~~

~~**Environmental Assessment (EA) : (NEPA terminology)**~~

Environmental Impact Statement (EIS): (NEPA terminology)



CONTENT OF BASELINE STUDIES

Baseline studies provide the content of Chap. 3, *Description of the Affected Environment*, in both the ER and the EIS.

Scope and content based on:

Reg. Guide 3.8

10CFR40 App. A

10CFR51.45, 51.60

Reg. Guide 3.5

Reg. Guide 3.46

BASELINE SCOPE? ----TALK TO YOUR REGULATOR

10CFR40 App.A
"All site specific licensing decisions …. will take into account the risk to the public health and safety and the environment…."

Reg. Guide 3.8
"Early consultation with the (regulatory) staff is encouraged to determine the applicability of environmental requirements in specific instances."

10CFR51.40 Consultation with NRC staff.
(a) A prospective applicant or petitioner for rulemaking is encouraged to confer with NRC staff as early as possible in its planning process before submitting environmental information or filing an environmental report.

TYPICAL CONTENT OF A BASELINE STUDY:

Location and layout
Transportation
Existing and Expected Land and Water Uses
Geography
Demography
Socioeconomics
Cultural resources
Meteorology
Air Quality
Groundwater Hydrology
Surface Water Hydrology and Nearby Waters
Geology
Soils
Seismology
Noise
Visual/ scenic resources
Ecology – flora and fauna, esp. T&E
Radiological background
Non-radiological background – metals, toxics (U, Mo)

Land Uses/Adjacent Land uses 8km radius (5 miles)

- Agriculture
  - Livestock raising
  - Dairies
  - Pasturelands
- Residences (County and City)
- Wildlife preserves (USFWS)
  - Sanctuaries (USFWS)
  - Hunting areas (DOW)
- Industries
- Recreation (BLM, Forest Service, NPS)
- Transportation (DOT)

Population distribution (literature/records search)
•Remoteness (0.1 km to 80 Km)

Regional Historic, Archeological, Architectural
(initial pedestrial survey 100% coverage)
- **Survey archeological and historic artifacts.**
- **Consult State Historic Preservation Officer (SHPO)**
- **Identify any new roads, pipelines, structures**

Geology and Soils
- **Literature/records search**
- **Field mapping of soils physical and chemical characteristics**
- **Field mapping of major geological features**
- **Regional continuity, faulting, dip, strikes of water bearing formations**
- **Inventory of important minerals and energy-related deposits**

Seismology
- **Seismicity (including history) of the region**
- **Regional earthquake epicenter map showing site location**

Hydrology

- Physical, chemical, biological, radiological, and hydrological characteristics of surface waters.
- Seasonal ranges and averages and historic extremes for surface and ground water
- Usually four quarters of field data

Surface Water

- Location, size, shape, and other hydrologic characteristics of water bodies.
- Upstream and downstream river control structures including a topographical map showing major hydrological features.
- HEC-RAS modeling of watershed and flood routing for 100 year, PMP events

Groundwater

- Hydrogeology of the region
- Local groundwater aquifer, formations, sources, and sinks
- Recharge zones and potential
- Data concerning drawdown, of groundwater that may affect major industrial, agricultural, or municipal wells.

Meteorology and Air Quality

- One full year cycle of data collection
- Meteorological diffusion of the site and surrounding areas.
- Quarterly and annual for wind rose data
- Quarterly and annual data for wind direction, speed and atmospheric stability data
- Total precipitation and evaporation by month
- Airborne particulates background

Ecological Surveys

- Most initial studies require 1 to 2 years of baseline data
- Initial inventory to establish identities of the majority of terrestrial and aquatic organisms
- Initial inventory should reveal which organisms are important to the community
- Species critical to structure and function of the ecological system (i.e. Prairie dogs)
- Threatened or Endangered species
- Commercial or recreational value of species
- Bird surveys

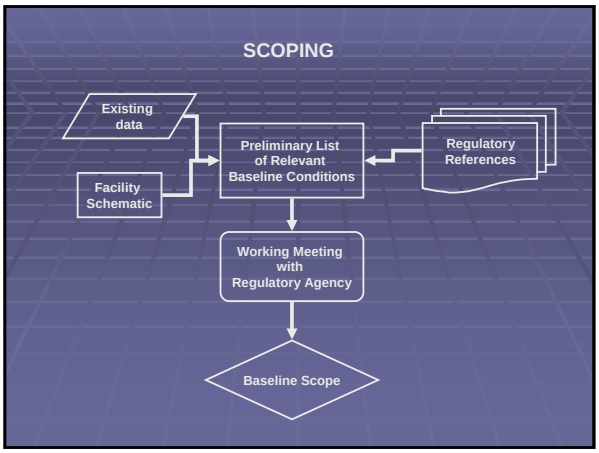
Other Environmental Considerations (Literature/Record Search)

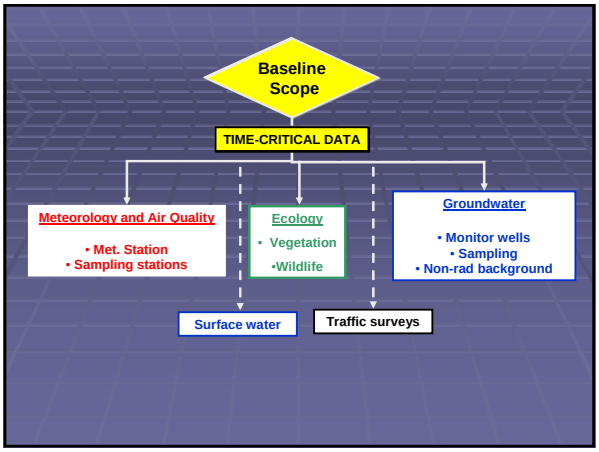
- Environmental Justice
- Socioeconomic
- Viewscapes
- Soundscapes

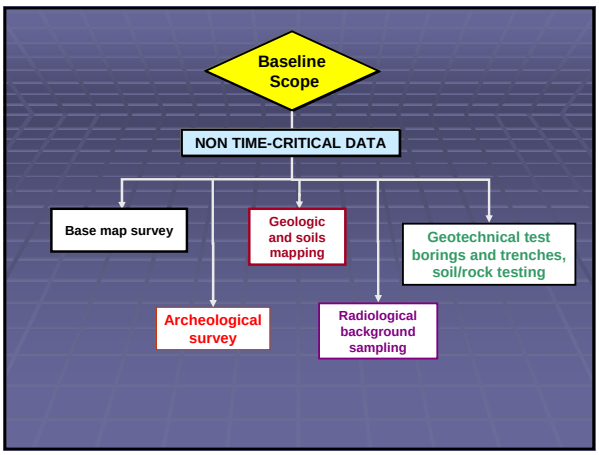
PLANNING AND PERFORMING BASELINES STUDIES

SCOPING

1. Collect existing data of region and site (initial database)
2. Develop facility schematic
3. Formulate a preliminary list of relevant site conditions and parameters; submit for agency review
4. Confer with the regulatory agency to finalize the scope (working meeting)


SCOPING
Existing data
Facility Schematic
Preliminary List of Relevant Baseline Conditions
Regulatory References
Working Meeting with Regulatory Agency
Baseline Scope


Baseline Scope
TIME-CRITICAL DATA
Meteorology and Air Quality
• Met. Station
• Sampling stations
Ecology
• Vegetation
•Wildlife
Groundwater
• Monitor wells
• Sampling
• Non-rad background
Surface water
Traffic surveys


Baseline Scope
NON TIME-CRITICAL DATA
Base map survey
Geologic and soils mapping
Geotechnical test borings and trenches, soil/rock testing
Archeological survey
Radiological background sampling