

# U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*



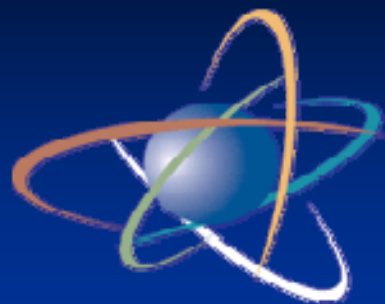
**U.S.NRC**

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

**DRAFT GENERIC ENVIRONMENTAL  
IMPACT STATEMENT FOR  
IN-SITU LEACH URANIUM MILLING  
FACILITIES**

**Public Comment Meeting  
Gillette, Wyoming  
September 23, 2008**



**U.S. NRC**

United States Nuclear Regulatory Commission

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*Protecting People and the Environment*

**Patrice M. Bubar, U.S. NRC**

**Deputy Director, Environmental Protection and  
Performance Assessment Directorate**

# Meeting Purpose

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- Describe our activities to date to assess the environmental impacts of future uranium recovery operations
- Listen and gain insight on public's feedback on Draft Generic Environmental Impact Statement (GEIS)
- Second in a series of meetings for public participation

# Meeting Topics

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- NRC's Roles and Responsibilities – Emphasis on National Environmental Policy Act (NEPA)
- The Draft GEIS – Purpose and Approach
- NRC's Draft Findings
- GEIS Schedule
- Next Steps
- Public Comments

# NRC Roles and Responsibilities

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- The NRC is an independent agency
- Mission: Protect the public health and safety and the environment, and to promote common defense and security
- Has responsibility along with Agreement States for licensing commercial use of nuclear materials
- Openness and soliciting comments on our actions is one of our core values
- NRC's regulations governing the environmental review are in 10 CFR Part 51

# NRC's Licensing Review Process

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- License Application submitted for review
- Review conducted in two steps:
  - Acceptance Review
  - Detailed Review
- Detailed Review composed of two parts:
  - Site-specific Environmental Review
  - Site-specific Safety Review

# The Environmental Review Process

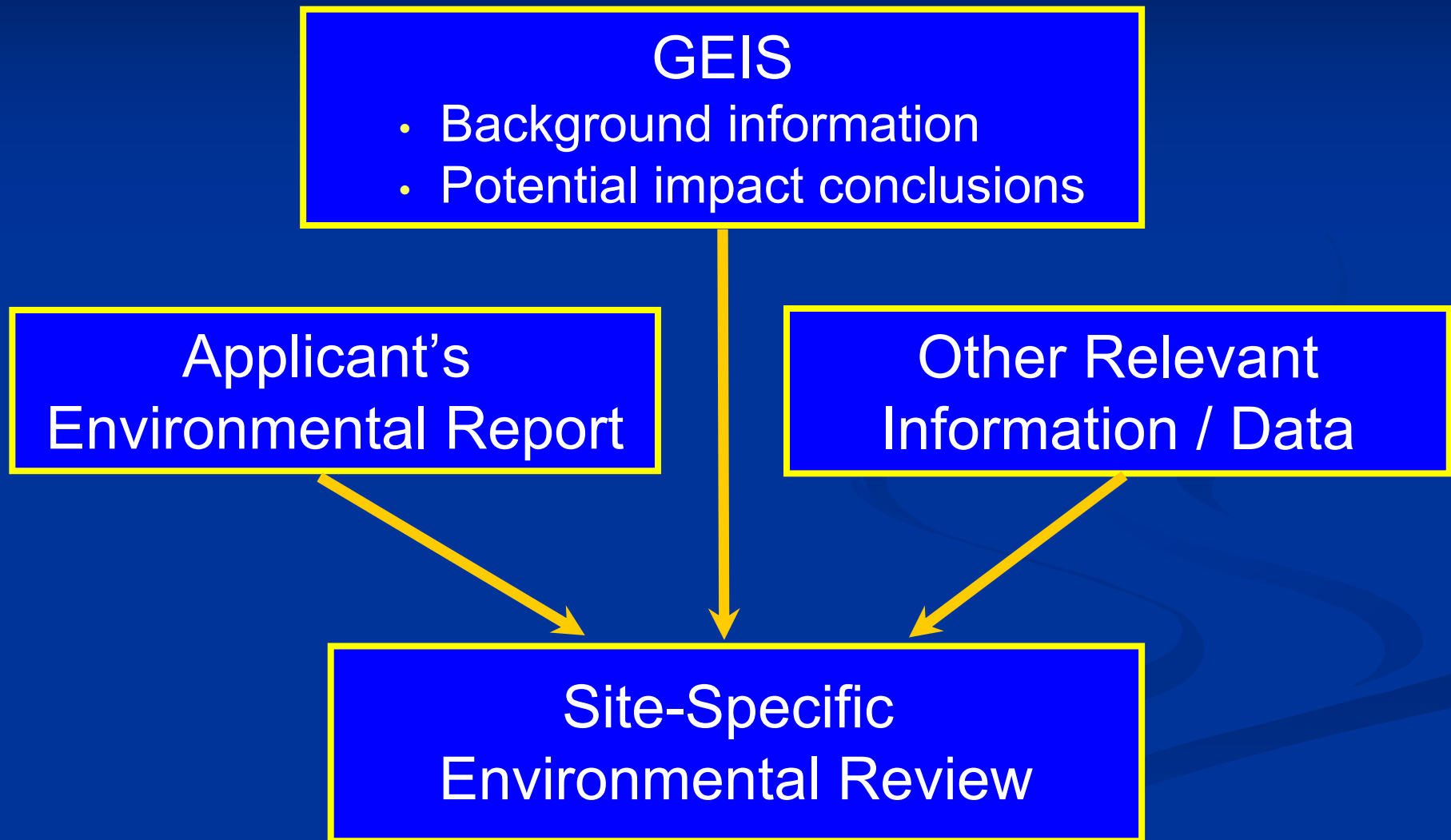
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- GEIS
  - Scoping
  - Draft
  - Final
- Site-specific Review



# Use of the GEIS

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# Criteria for Exempted Aquifer

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- Determination by EPA (per 40 CFR 146.4) that an aquifer or portion of an aquifer is not an underground source of drinking water, because:
  - Does not currently serve as a source of drinking water, *and*
  - Cannot now or will not in the future serve as a source of drinking water, *or*
  - Total dissolved solids content of the groundwater is more than 3,000 and less than 10,000 mg/L and it is not reasonably expected to supply a public water system

# Summary of Restoration History

<u>Site Location</u>	<u>Type</u>	<u>Wellfield</u>	<u>% Constituents Returned to Baseline</u>	<u>Approval Standard</u>
Crow Butte Crawford, NE	Commercial	Mine Unit 1	68% (23/34)	Baseline values + pre-mining "class of use"
Smith Ranch-Highlands Douglas, WY	Commercial	Wellfield A	50% (17/34)	Baseline values + pre-mining "class of use"
Irigaray Johnson & Campbell Cos., WY	Commercial	Units 1 - 9	86% (30/35)	Baseline values + pre-mining "class of use"
Crow Butte Crawford, NE	Pilot	Wellfield 2	70% (23/30)	Baseline values + pre-mining "class of use"
Ruth Johnson Co., WY	Pilot	20-sand aquifer	68% (13/19)	Baseline values + pre-mining "class of use"

# Government-to-Government Consultations

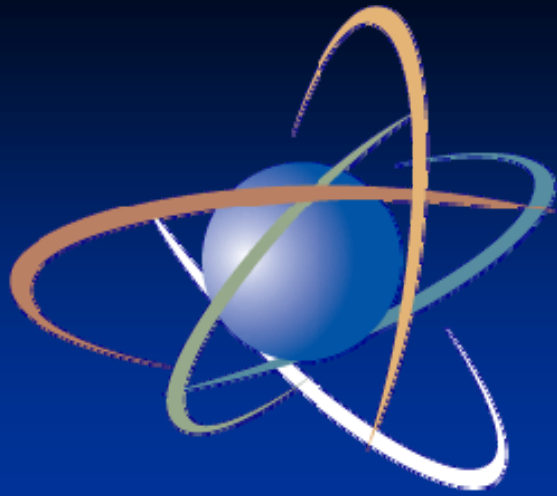
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- Oglala Sioux (Pine Ridge Reservation)
- U.S. Department of the Interior
  - Bureau of Land Management
  - Fish & Wildlife Service
- U.S. Department of Agriculture (Forest Service)
- State of Wyoming Governor's Office
- State of Wyoming Department of Environmental Quality

# Why Are We Here Tonight?

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- Continue the listening process and public dialogue
- Answer any questions about the Draft GEIS



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Alan Bjornsen, U.S. NRC  
Deputy Project Manager for Generic  
Environmental Impact Statement (GEIS)

- In-Situ Leach Process
- Background on the GEIS
- Approach taken in the Draft GEIS
- Findings in the Draft GEIS
- How to submit comments

# In-Situ Leach (ISL) Process

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1. Distinct from conventional mining and milling
2. Three general components:
  - \* Mobilize
  - \* Process
  - \* Restore

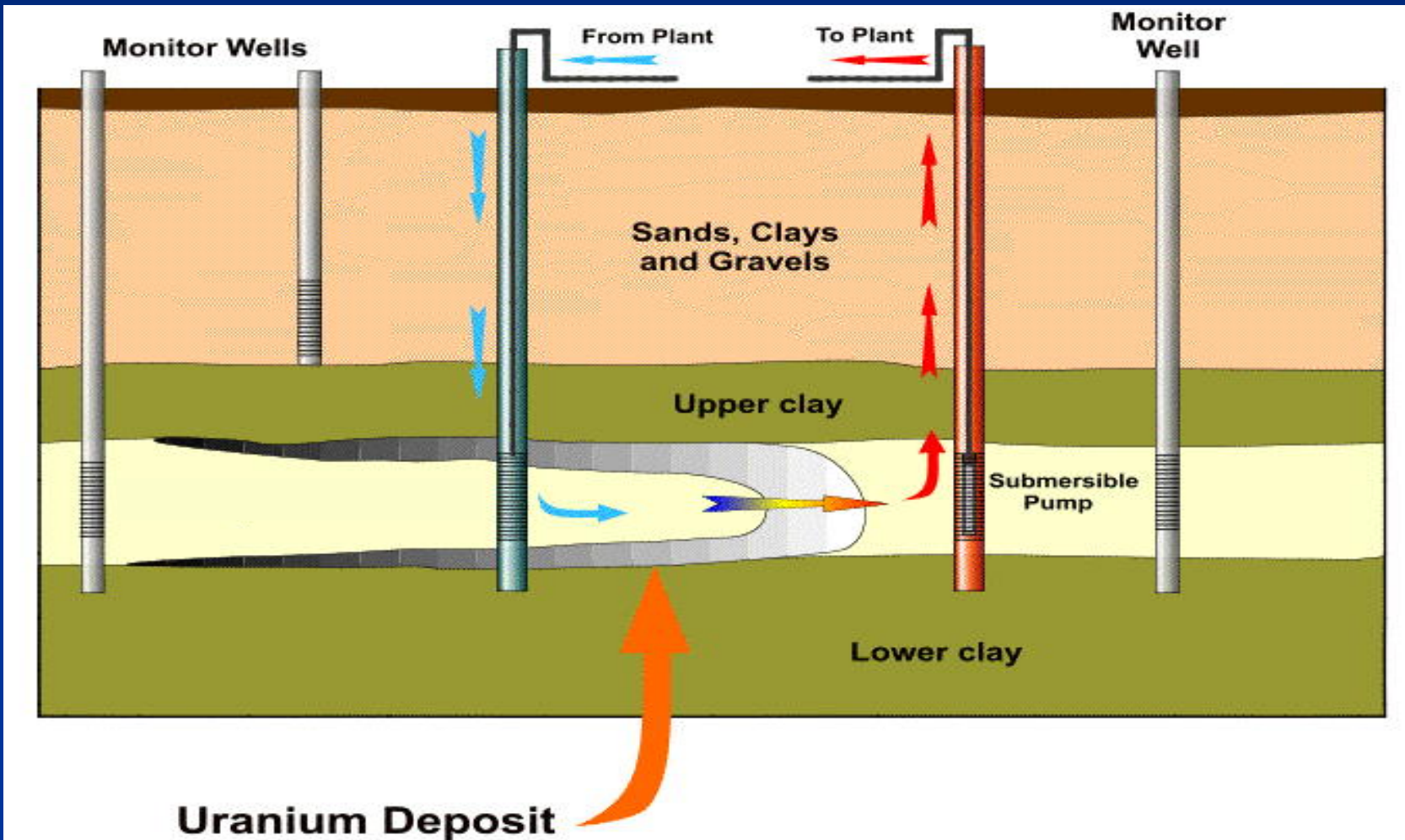


# Uranium Mobilization – Well Field

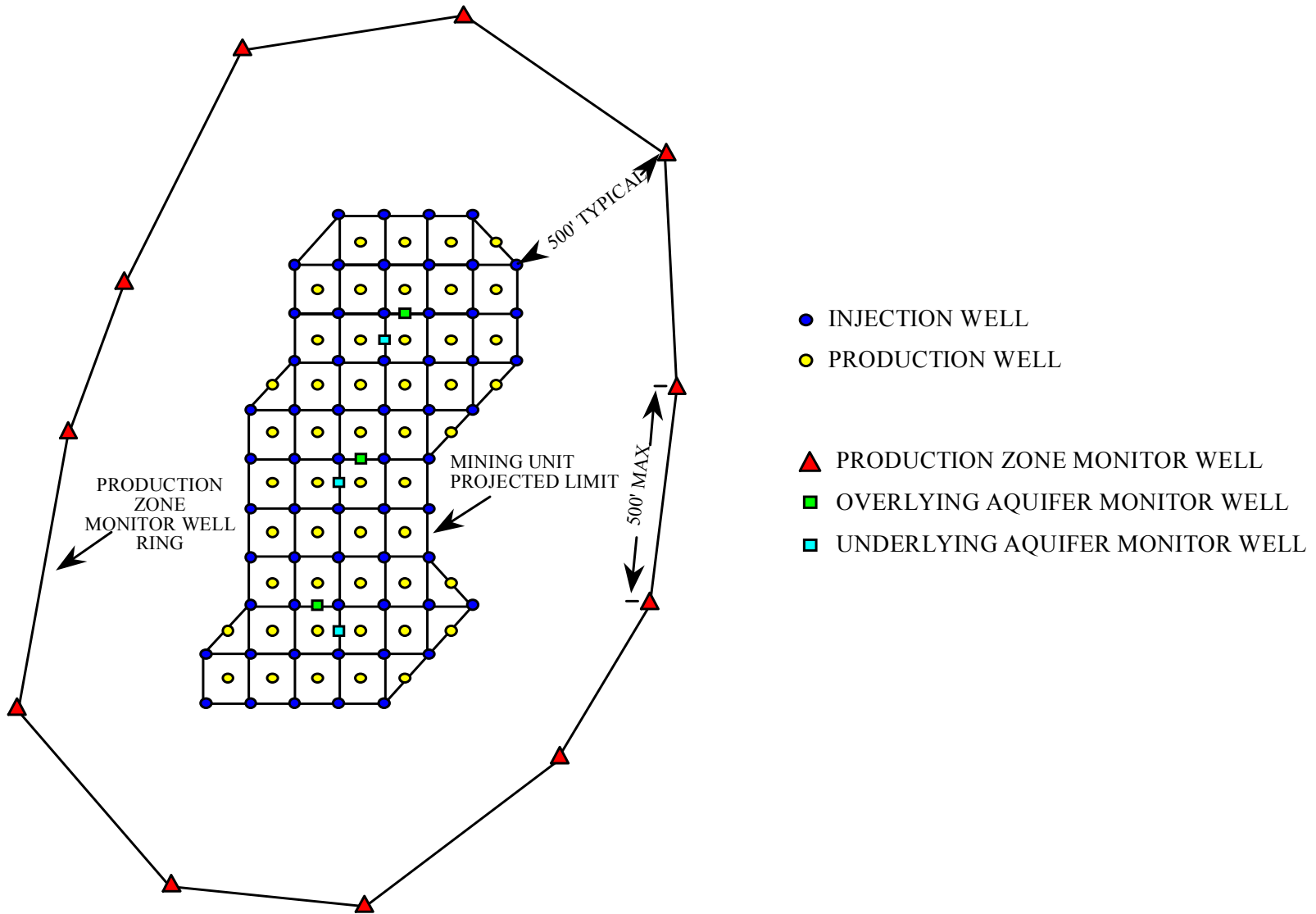
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# Uranium Mobilization – Injection/Recovery



# Typical ISL Wellfield Layout





# Uranium Processing and Restoration

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# NRC License for an In-Situ Leach Facility

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- Construction
- Operation
- Aquifer Restoration
- Decommissioning

# Other Permits & Approvals

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- Aquifer exemption (EPA/State)
- Permit to operate injection wells (EPA/State)
- Waste discharge permits (including storm water) (EPA/State)
- Federal/State land use (BLM, NE/SD/WY)

# Need for the GEIS

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1. Volume of expected license applications
2. Thorough and consistent approach to NRC's environmental reviews

# Purpose of the GEIS

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- Evaluates environmental issues common to the ISL process
- Provides a starting point in NRC's site-specific environmental reviews



# Scope of the GEIS

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What does the GEIS include?

1. Addresses the construction, operation, aquifer restoration, and decommissioning of ISL facilities
2. Evaluates potential environmental impacts to specific resource categories (for example: air quality, water resources, land use)

# Approach Taken in the Draft GEIS

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1. Identify uranium milling regions
2. Describe the ISL process
3. Describe the environment in each of the milling regions
4. Evaluate potential environmental impacts in each milling region from the ISL process

# Approach Taken in the Draft GEIS

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1. Identify uranium milling regions

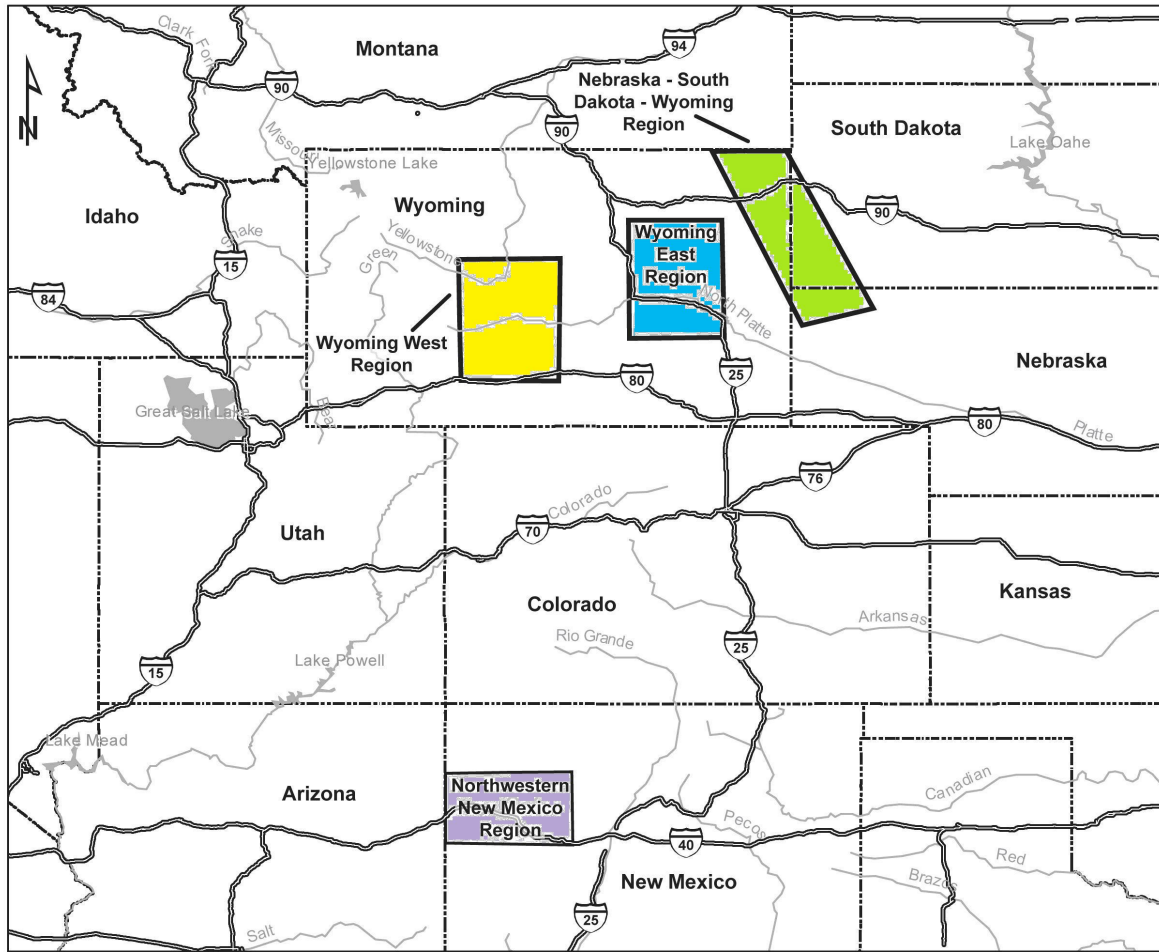
# 1. Identify Uranium Milling Regions

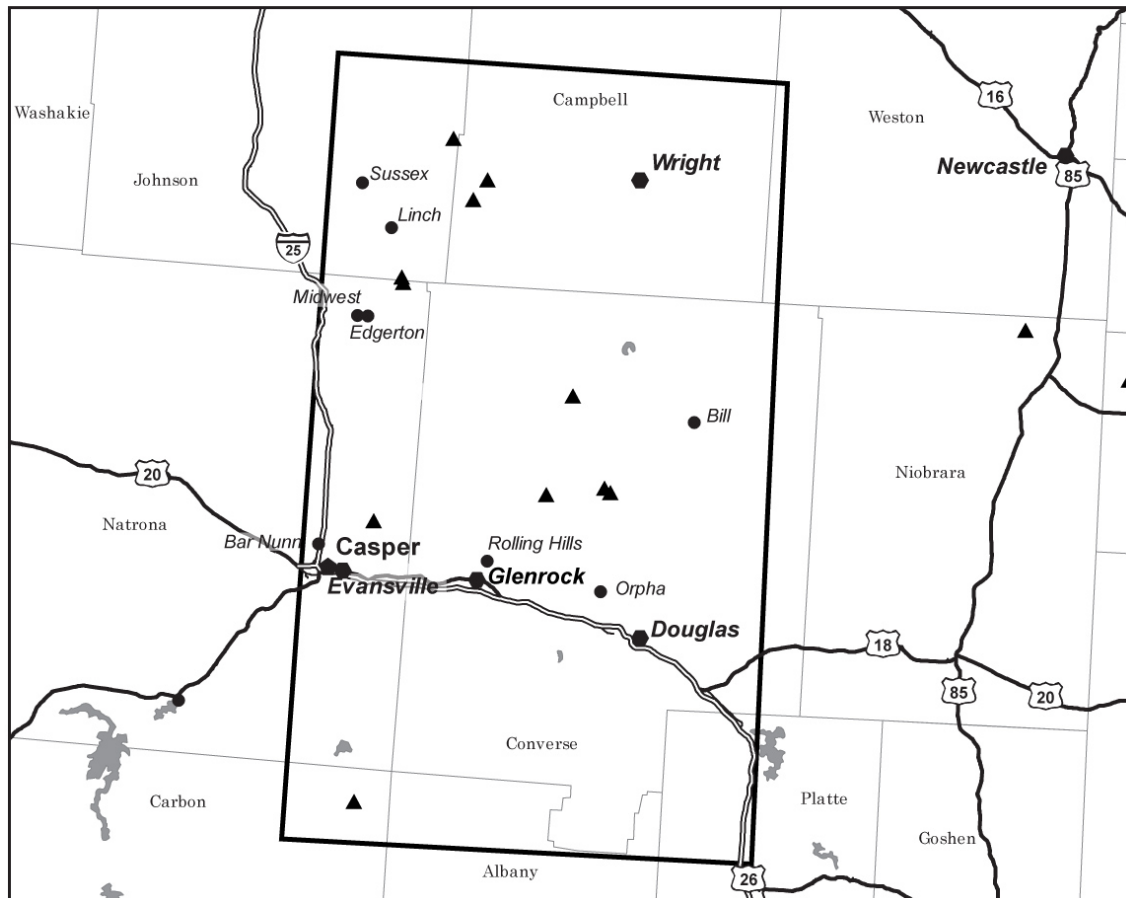
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## ■ Considerations:

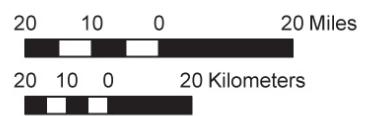
- In States where NRC has regulatory authority for licensing ISL facilities
- Locations of current and past milling activities
- Industry plans for new sites using the ISL process
- Historical uranium deposits in WY, NE, SD, and NM

## ■ Four uranium milling regions identified





**WYOMING EAST REGION**



- ▲ Ur Milling Site (NRC)
- ▭ Wyoming East Milling Region
- ▭ Counties
- ≡ Interstate Highway
- US Highway
- ☁ Water bodies (Lakes, Bays, ...)

# Approach Taken in the Draft GEIS

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1. Identify uranium milling regions
2. Describe the ISL process

## 2. Describe the ISL Process

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- Construction, operation, aquifer restoration, and decommissioning of ISL facilities
- Radiological health and safety, waste management, transportation, and financial assurance
- Experience of NRC-licensed ISL facilities



# Approach Taken in the Draft GEIS

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1. Identify uranium milling regions
2. Describe the ISL process
3. Describe the environment in each of the milling regions

## 3. Describe the Environment

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- Describe for each of the four uranium milling regions
- Describe in terms of the environmental resource categories identified in NUREG-1748

# Environmental Resource Categories

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- Air Quality
- Ecological Resources
- Geology & Soils
- Historic & Cultural Resources
- Land Use
- Noise
- Public & Occupational Health
- Socioeconomics
- Threatened & Endangered Species
- Transportation
- Visual & Scenic Resources
- Waste Management
- Water Resources

# Approach Taken in the Draft GEIS

---

1. Identify uranium milling regions
2. Describe the ISL process
3. Describe the environment in each of the milling regions
4. Evaluate potential environmental impacts in each milling region from the ISL process

# 4. Evaluate Potential Environmental Impacts

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- Evaluates potential impacts
  - in each uranium milling region
  - for each phase of the ISL process
  - to each of the environmental resource areas
- Characterizes the significance of the potential impacts
- Describes possible mitigation measures

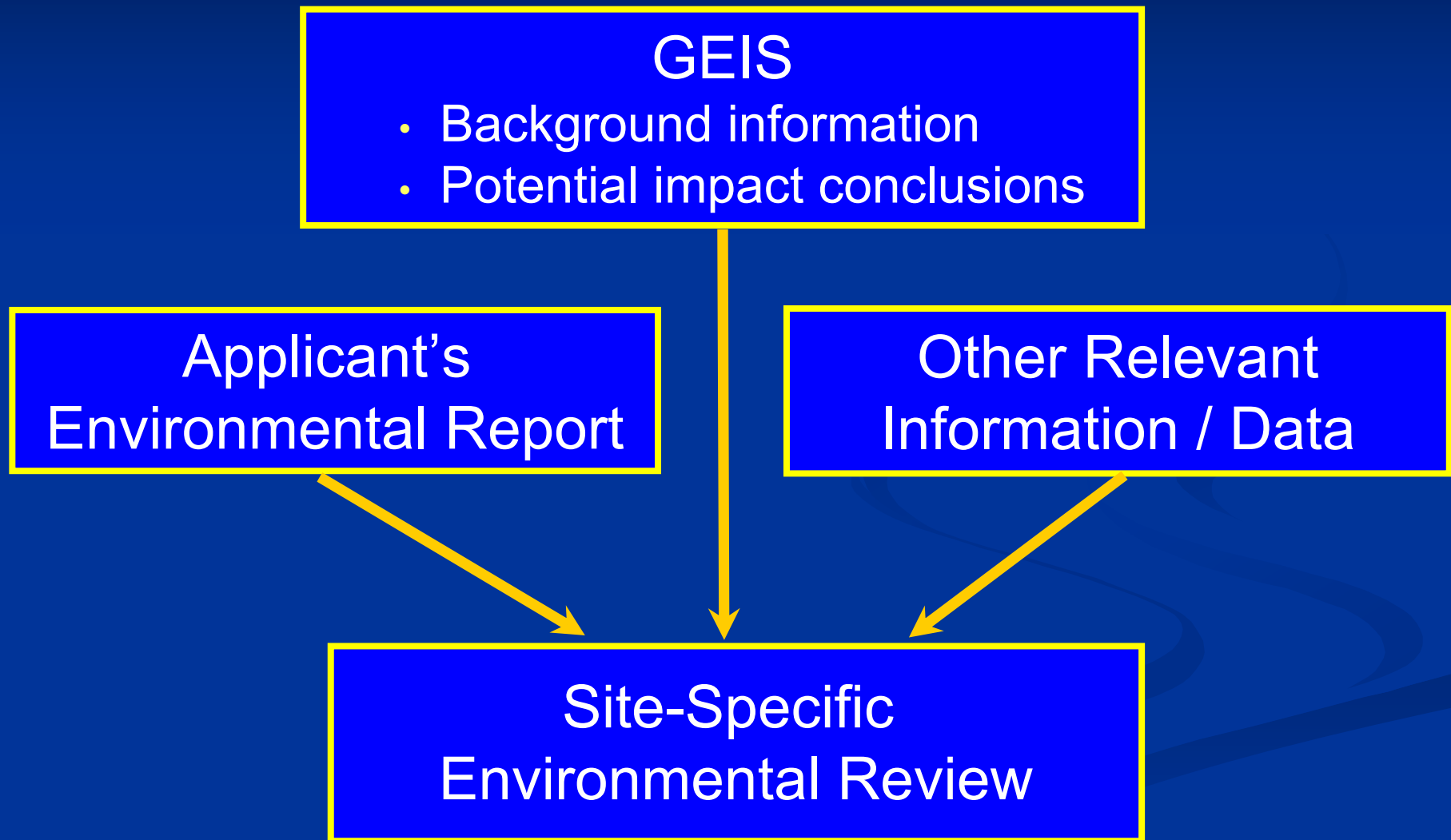
# Significance Categories of Environmental Impacts

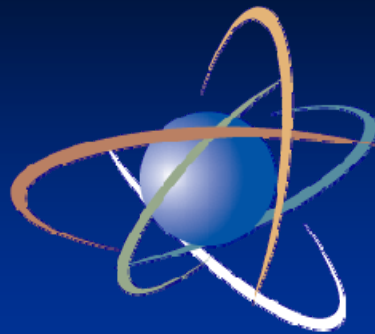
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- SMALL – not detectable, or are so minor that they would not noticeably alter nor destabilize any important attribute of the resource
- MODERATE – sufficient to noticeably alter, but not destabilize, important attributes of the resource
- LARGE – clearly noticeable and sufficient to destabilize important attributes of the resource

# Use of the GEIS

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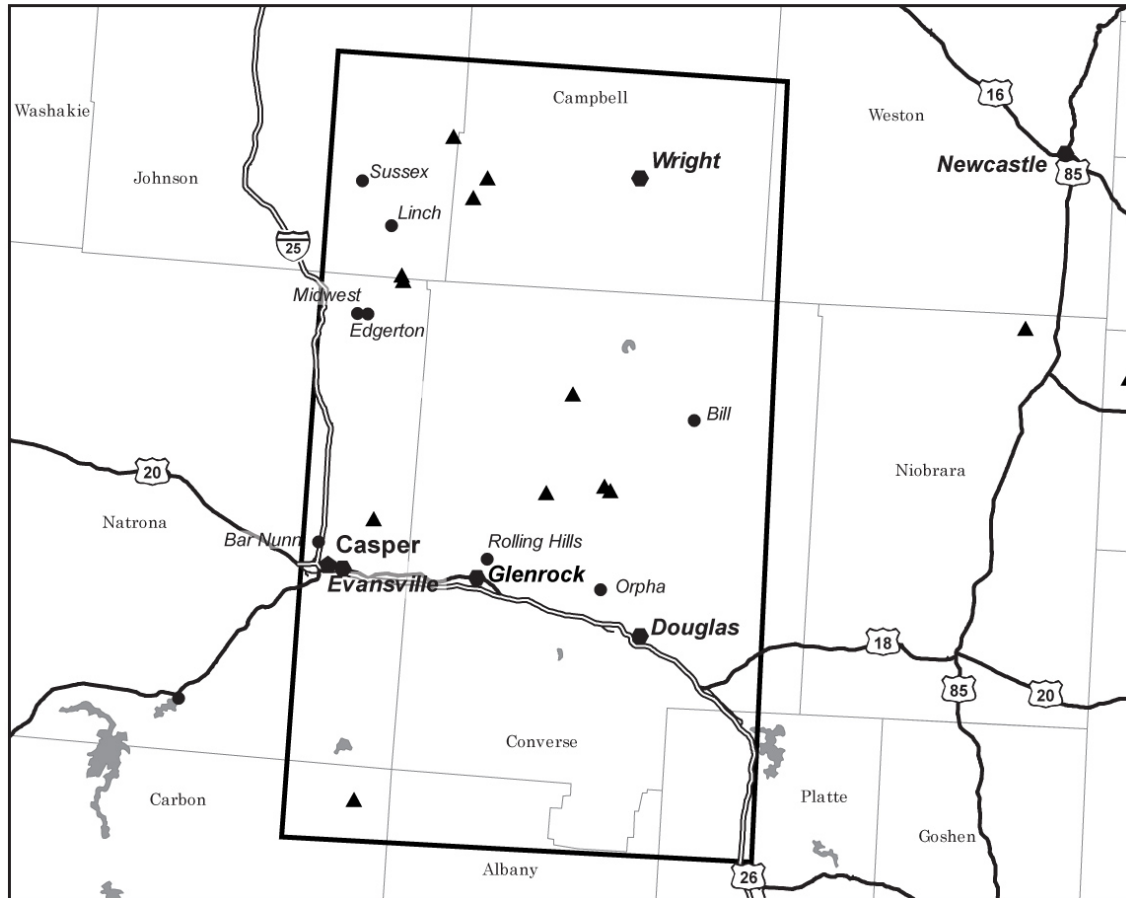
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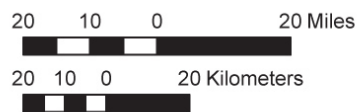
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**NRC's Findings  
in the Draft GEIS for  
the Wyoming East  
Uranium Milling Region**





**WYOMING EAST REGION**



- ▲ Ur Milling Site (NRC)
- ▭ Wyoming East Milling Region
- ▭ Counties
- ══ Interstate Highway
- US Highway
- ☁ Water bodies (Lakes, Bays, ...)

# Resource Areas with Small Potential Impacts

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- Aquatic Ecology
- Air Quality
- Visual & Scenic Resources
- Waste Management

# Resource Areas with Small to Moderate Potential Impacts

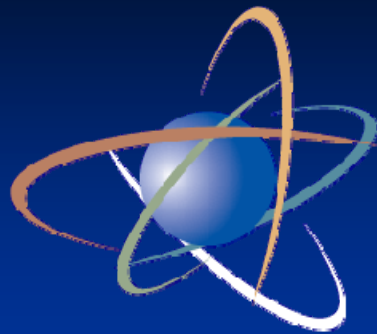
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- Transportation
- Surface Water
- Terrestrial Ecology
- Noise
- Socioeconomics
- Public & Occupational Health

# Resource Areas with Small to Large Potential Impacts

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- Land Use
- Geology & Soils
- Groundwater
- Threatened & Endangered Species
- Historic & Cultural Resources



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Overall GEIS Schedule  
and  
How to Comment on the Draft GEIS

# Overall GEIS Schedule

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<b>Notice of Intent published</b>	<b>July 24, 2007</b>
<b>Scoping Meetings</b>	<b>August &amp; September 2007</b>
<b>Scoping Period ends</b>	<b>November 30, 2007</b>
<b>Draft GEIS issued</b>	<b>July 28, 2008</b>
<b>Draft GEIS Public Comment Meetings</b>	<b>August &amp; September 2008</b>
<b>Draft GEIS Public Comment Period ends</b>	<b>October 7, 2008</b>
<b>Final GEIS issued</b>	<b>June 2009</b>

# Comments on Draft GEIS

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By regular mail – postmarked by October 7, 2008

Chief, Rules Review and Directives Branch

Mail Stop T-6D59

U.S. Nuclear Regulatory Commission

Washington, DC 20555-0001

By e-mail – by midnight, October 7, 2008

[NRCREP.Resource@nrc.gov](mailto:NRCREP.Resource@nrc.gov)

with 'Uranium Recovery GEIS' in the subject line

# Contact Information

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## Questions on Draft GEIS

James Park, Project Manager, Environmental Review Branch (ERB)

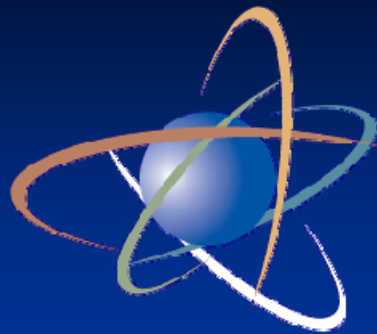
(800) 368-5642 ext 6935

## Questions on in-situ leach process

Stephen Cohen, Team Leader, Uranium Recovery Licensing Branch (URLB)

(800) 368-5642 ext 7182





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Questions on Presentations

Comments on the Draft GEIS