US Ecology Idaho (USEI) Briefing and Grand View Facility Tour

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RICHLAND, WA

Disposal
Low-Level Radioactive Waste
& NORM

GRAND VIEW, ID

Treatment & Disposal
Hazardous, Industrial,
PCB,
Low Activity Rad Waste

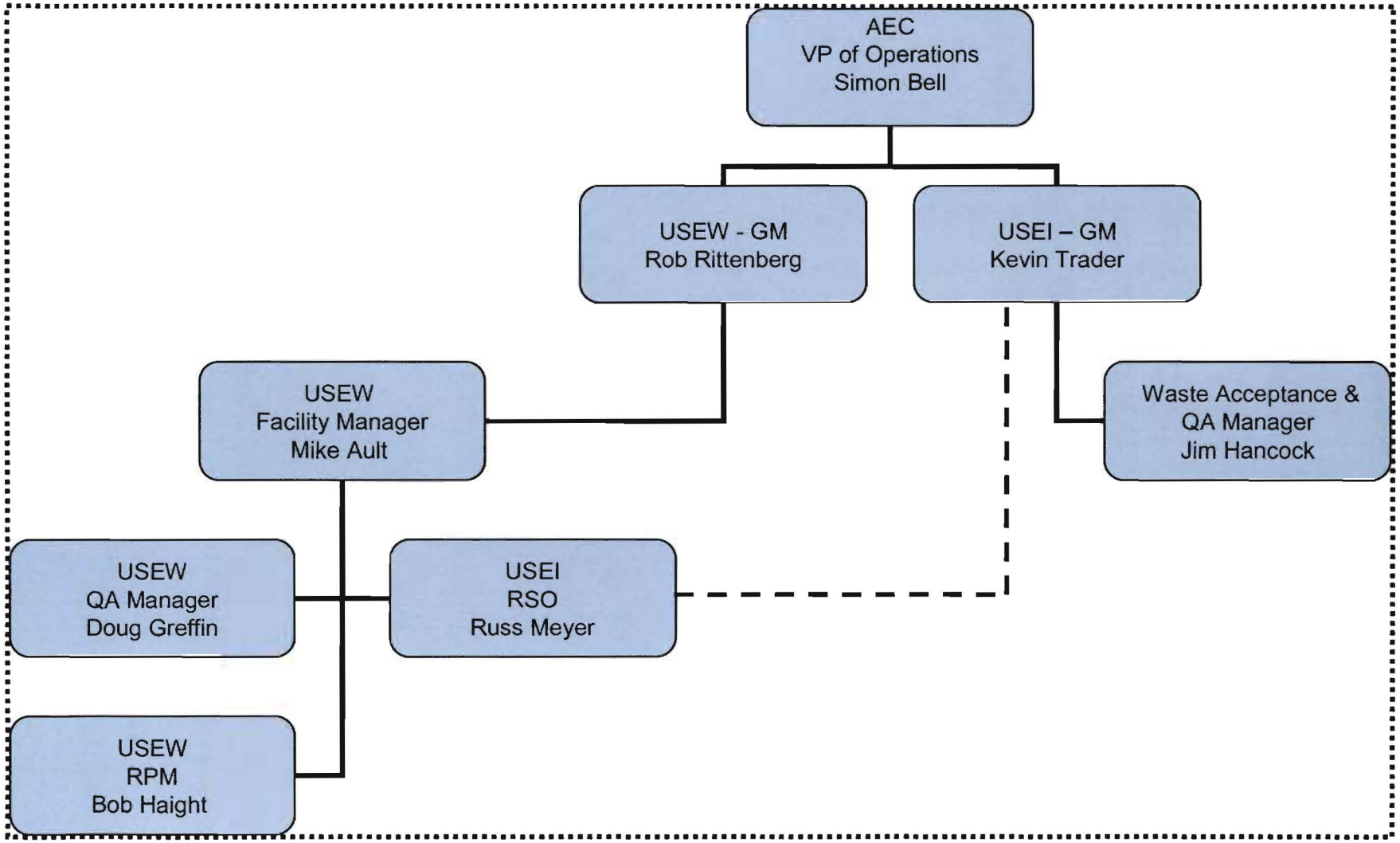
BEATTY, NV

Treatment & Disposal
Hazardous, Industrial, & PCB

ROBSTOWN, TX

Treatment & Disposal
Hazardous, Industrial,
Low Activity Radioactive Waste

Radiological Organization Chart



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Grand View Site Characteristics

- 1280 Acres including buffer zone (160 in use)
- Average annual precipitation 7.26 inches
- Annual pan evaporation potential 53 inches
- Average annual temperature ~52.2°F
- Interbedded sands, silts & clays with thick clay layer
- Deep geothermal aquifer
- Monitored saturated zone 200-300 feet below surface
- No up-gradient surface water flow onto site
- Nearest resident & water supply well ~1 mile to NE
- Nearest community (Grand View) 10.5 miles

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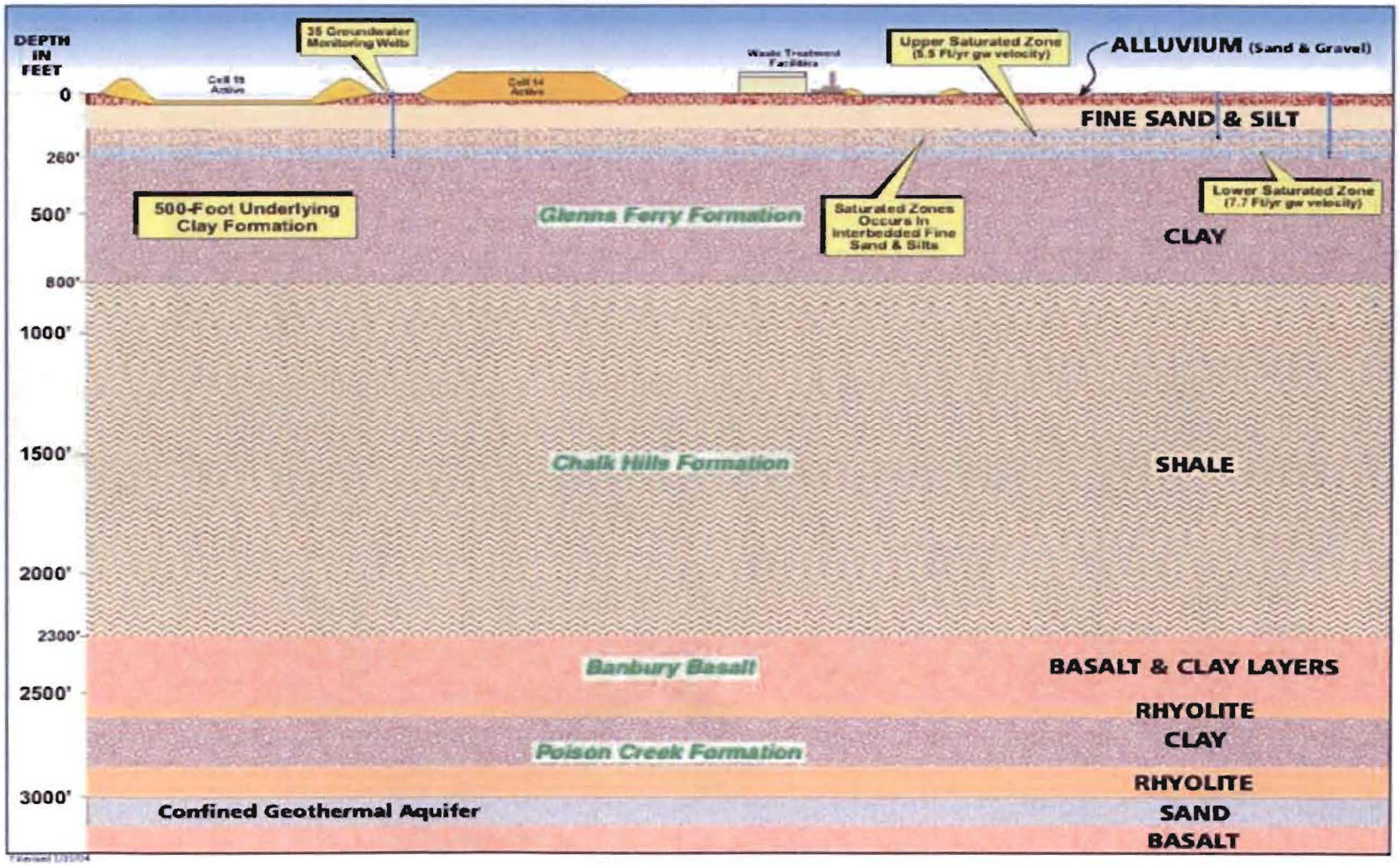
Grand View Site
Hydrogeologic Conditions



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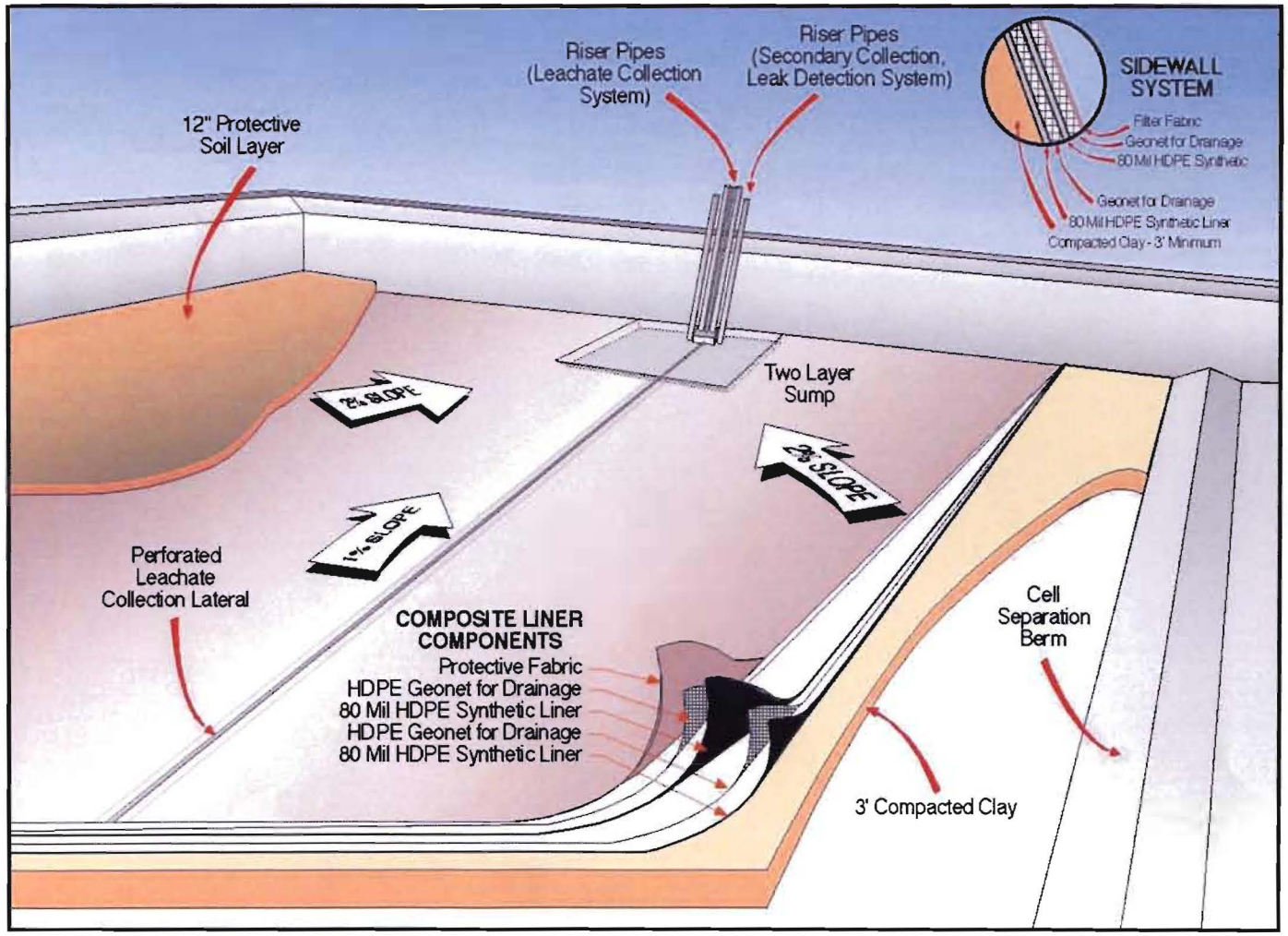
Standard RCRA Triple-Lined Disposal Cells



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Idaho Regulation of Radioactive Material at RCRA Subtitle C Sites

- Idaho Rule Radioactive Material Rule (IDAPA 58.01.10)
  - Allows AEA-exempt source, byproduct & special nuclear material at authorized RCRA Subtitle C site
  - 15 millirem / year standard (same as INL)
- Idaho DEQ RCRA Program
  - Initial Part B permit allowed NORM
  - USEI permit modified to allow generally & specifically exempted source, byproduct & SNM based on review of USEI safety analysis
  - Waste acceptance criteria & operating procedures
- DEQ RCRA Program added health physicist in 2006

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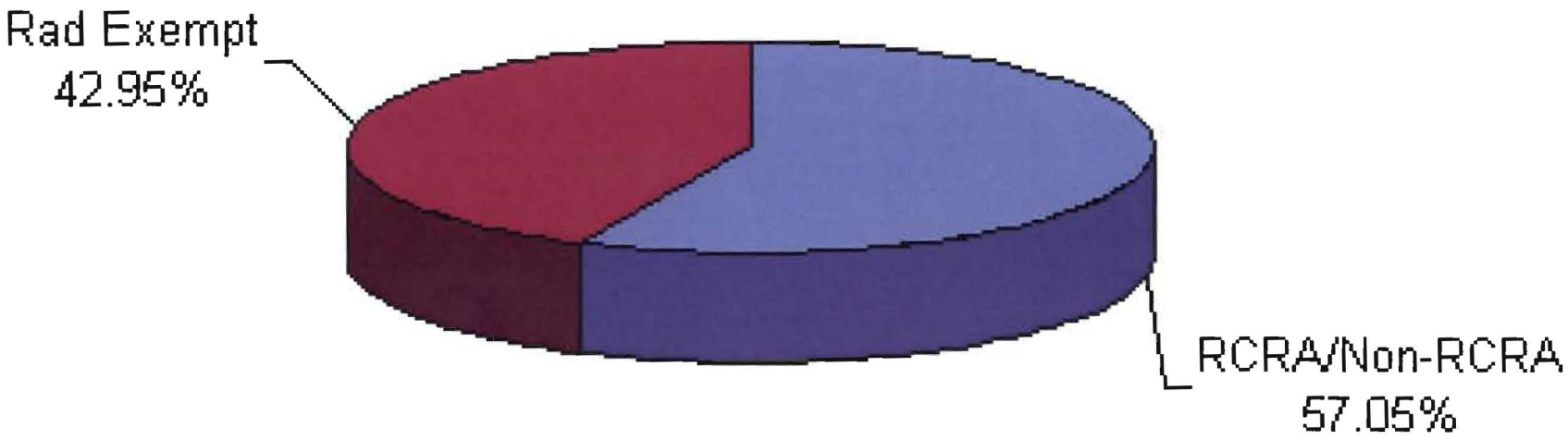
Grand View Disposal Summary
5.3 million Tons Disposed 2000-2008

Percentage of Waste by Category



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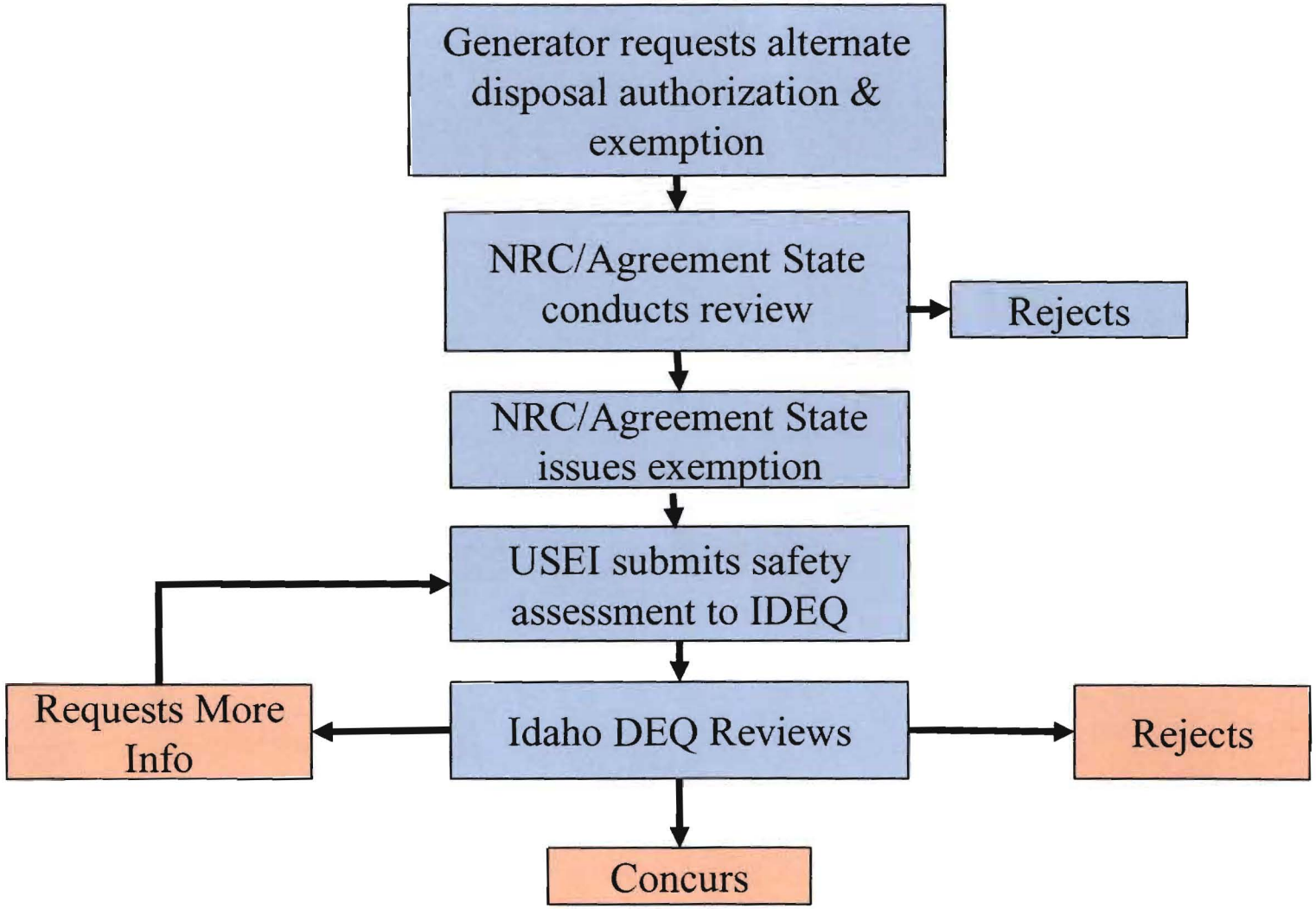
Idaho Specific Exemption Approval Process



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RESRAD Performance Assessment & Safety Analysis

- Meets regulatory compliance limit of 15 millirem / year post-closure dose to public
- RESRAD bounding case: standard post-closure resident farmer intruder scenario
- Site-specific RESRAD modifications
  - 3.6 or 6 meters minimum burial depth (isotope driven
  - 5 vadose zone layers using site-specific data
  - 3 foot clay liner (no credit for plastic liners)
  - No aquatic pathways apply
  - No basement per construction practice in area
- Microshield used to model potential doses during transportation, transfer & disposal operations

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Grand View Waste Acceptance Criteria*

General

- Sum of all concentrations <2,000 picocuries / gram total activity

With Specific Exemption:

- Source, Byproduct & Special Nuclear Material <3,000 picocuries / gram total activity, and
- NRC exemption based on "less than a few millirem" projection dose per case-by-case Safety Analysis

*** See Tables 1-4b of RCRA Permit Waste Acceptance Criteria**

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Grand View Radiological Source Term Disposed (2000-2008)

Year	U-nat	U-dep	Th-nat	Th-230	Ra-226	Ra-228	Pb-210	Am-241	Cs-137	Sr-90	Other	Totals
2000	0.03	1.35	0.58	0.85	0.21	0.58	0.21					3.81
2001	0.87	1.00	0.87	6.23	0.35	0.87	0.35					10.53
2002	1.20	1.01	0.35	20.10	1.04	0.35	1.04					25.09
2003	4.75	1.15	0.45	28.60	2.51	0.61	2.51					40.58
2004	8.58	1.11	0.84	32.80	3.84	0.84	3.84					51.85
2005	8.02	1.18	3.69	40.00	3.10	3.74	3.10					62.83
2006	3.10	1.30	1.70	24.00	3.70	1.90	3.70					39.40
2007	5.51	0.53	4.77	6.40	5.53	4.69	5.40					32.83
2008	5.33	0.00	0.44	2.79	1.27	0.55	1.21					11.59
Accel/Ex	0.00	8.60	0.28	0.00	0.00	0.00	0.00	0.07	0.07	0.05	0.28	9.35
Total (Ci)	37.39	17.23	13.97	161.77	21.55	14.13	21.36	0.07	0.07	0.05	0.28	287.86
Conc in Cell (pCi/g)	8.22	3.79	3.07	35.55	4.74	3.11	4.69	0.02	0.02	0.01	0.06	63.26

<u>Source</u>: Radionuclide concentrations from customer profiles X mass of waste received from each per year summed for all customers. U-235 total is approximately 1.86 Curies.

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Grand View Radiological QA Program

- Compliant with 10 CFR Parts 19 and 20
- Incorporates 40 CFR 192 (Th and U mill tailings)
- Harmonized with NQA-1 18 point criteria and incorporates the salient elements of NUREG-1293 (Quality Assurance Guidance for a Low-Level Radioactive Waste Disposal Facility)
- Consistent with requirements of RCRA Part B and TSCA permits
- Appropriate to types of materials received at USEI rail transfer station and disposal facility
- Supported by radiation protection staff from US Ecology Richland facility

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Grand View Audit & Training Program

- Annual Radiation Safety Officer (RSO) audit
  - Regulatory reports, personnel and environmental monitoring, DOT compliance, radiological health and safety manual and associated procedures, instrument calibration records, etc.
  - Inspection of operations
- Training
  - Annual employee refresher training by RSO
  - "Hands on" training at Richland facility

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Environmental & Occupational Monitoring

- Air Particulates - gamma spec, U & Th isotopic, Ra-226, Am-241
- Radon
- Groundwater - gamma spec., gross alpha/beta, U & Th isotopic, Ra-226, Am-241
- Soil - gamma spectrometry, U & Th isotopic, Ra-226, Am-241
- Contamination surveys - weekly swipes of offices, lunch room, ingress/egress to work areas, bathroom, etc.

-- Idaho DEQ independently monitors the facility --

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Personnel Dosimetry Program

- **Personnel monitoring devices (TLDs) for all site employees**
- **Records managed with Remit**
- **Quarterly doses for all employees minimal**

2008 Dose Distribution

Date: 07/21/2009
License No. 00001
Licensee: US ECOLOGY IDAHO
Affiliated Lic. No.:

	Primary & Affiliated Licensee Records		All Records for Monitoring Year	
Dose Range (rem)	Number of Individuals	TEDE Dose (person - rem)	Number of Individuals	TEDE Dose (person - rem)
No Meas. Exposure	123		123	
Meas. < .100				
.100 - .250				
.250 - .500				
.500 - .750				
.750 - 1.000				
1.000 - 2.000				
2.000 - 3.000				
3.000 - 4.000				
4.000 - 5.000				
> 5.000				
Number with Meas. TEDE				
Total Monitored	123		123	
Total Collective TEDE				
Total Collective CEDE				

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Waste Receipt & Release Surveys

- Incoming vehicle survey (gamma survey)
  - Gamma
  - Contamination survey if DOT Class 7
- Outgoing vehicle survey
  - Visual inspection
  - Contamination survey (Fixed and non-fixed if DOT Class 7, otherwise non-fixed)
- Any shipment exceeding limits held pending resolution with Idaho DEQ