Nevada Site Specific Advisory Board
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Full Board Meeting Handouts for
Wednesday, April 17, 2013

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Nevada National Security Site

Darwin J. Morgan, Director
Office of Public Affairs

The Nevada National Security Site

✓Large – 1,360 square miles

✓Surrounded by NTTR providing for 4,200 square miles of federally owned land

Travel Distances

Las Vegas	NNSS Entrance	65 miles	
Las Vegas	Tonopah	215 miles	
Las Vegas	Reno	452 miles	

National Nuclear Security Administration

Established in 1950

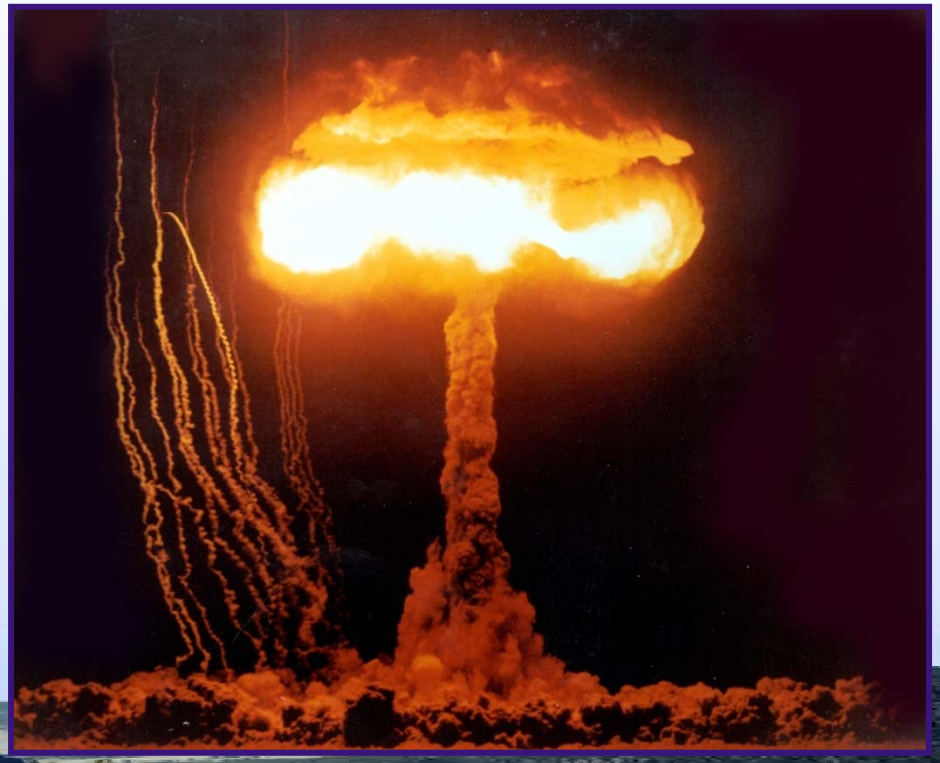
- Atomic testing in the South Pacific presented challenges
  - Logistics
  - Weather
  - Security
  - Safety
- Urgent need for continental test site
  - Top secret feasibility study, code named *Nutmeg*, commenced to search for a continental test site
  - Study concluded arid, southwest section of U.S. as an ideal location
- President Truman officially established Nevada Proving Grounds, now the Nevada National Security Site, on December 18, 1950

Atmospheric Testing at the Nevada National Security Site

- 100 atmospheric tests conducted at the Nevada National Security Site from January 1951 through July 1962 to study weapons-related effects, as safety experiments, and to study peaceful effects of nuclear explosions

- Conducted aboveground in the atmosphere
  - Tower 42
  - Balloon 24
  - Airdrop 19
  - Surface 11
  - Rocket 3
  - Airburst 1

Climax – an airdrop test at the Nevada National Security Site on June 4, 1953



National Nuclear Security Administration

The End of Atmospheric Testing

- U.S. agreed to observe Limited Test Ban Treaty in October 1963, effectively ending atmospheric testing

Little Feller I test location 49 years after the last atmospheric test was detonated on July 17, 1962

National Nuclear Security Administration

Underground Testing at the Nevada National Security Site

- First underground nuclear test was *Uncle* on November 29, 1951 (*Rainie*r 1st contained test 9/19/1957)
- Last underground nuclear test, Divider, detonated on September 23, 1992
- Underground nuclear testing occurred at depths of 600 to 5,000 feet
- 828 underground nuclear tests conducted at Nevada National Security Site

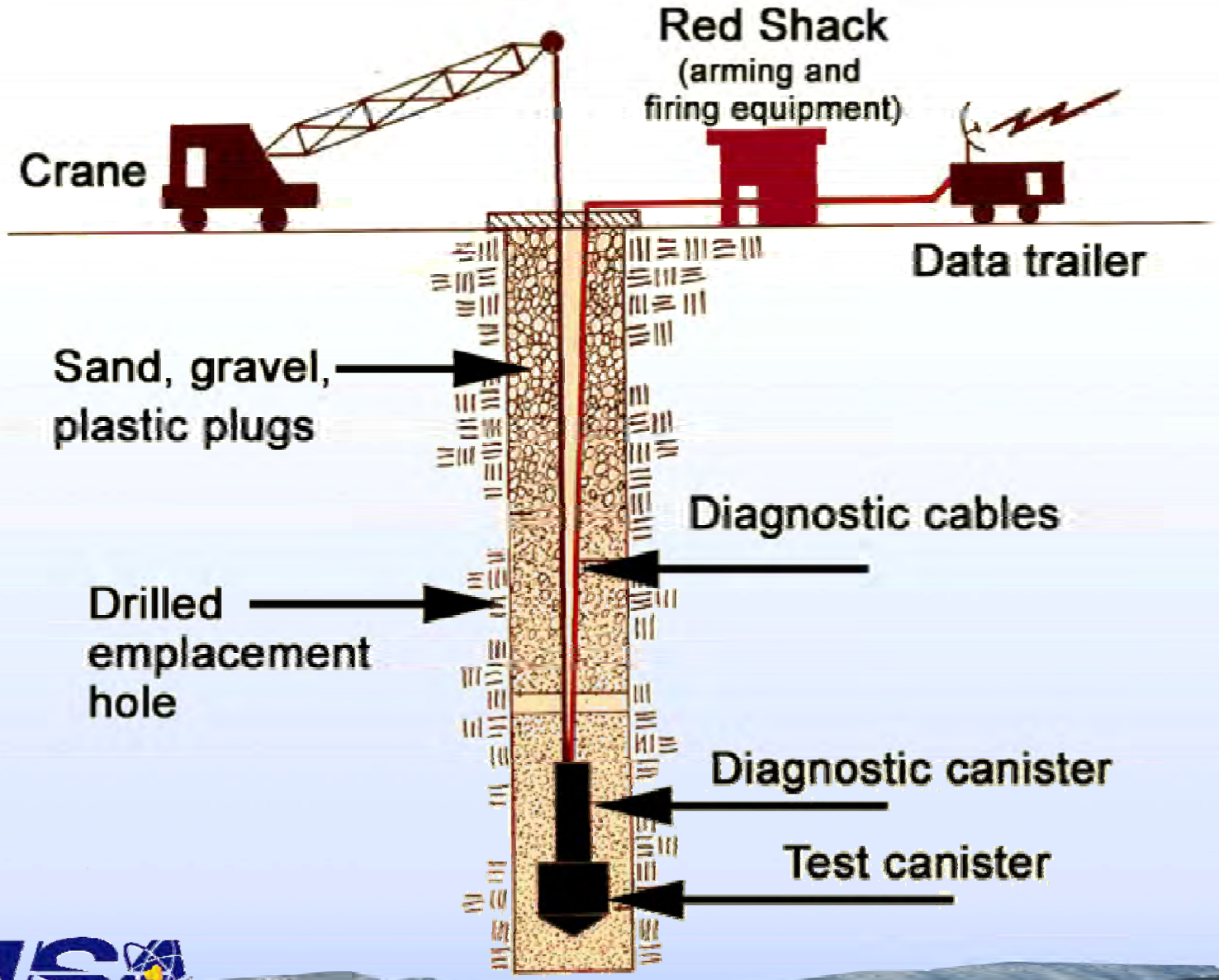
National Nuclear Security Administration

Underground Testing
Big Hole Drilling

- Holes were six to 12 feet in diameter
- A large hole required the removal of more than 4,280 cubic yards of soil
- If the depths of holes drilled for underground nuclear tests since 1961 were combined, it would total about 280 miles
- Drilling techniques developed at the Nevada National Security Site continue to be used throughout the world

National Nuclear Security Administration

Underground Test



National Nuclear Security Administration

Control Point

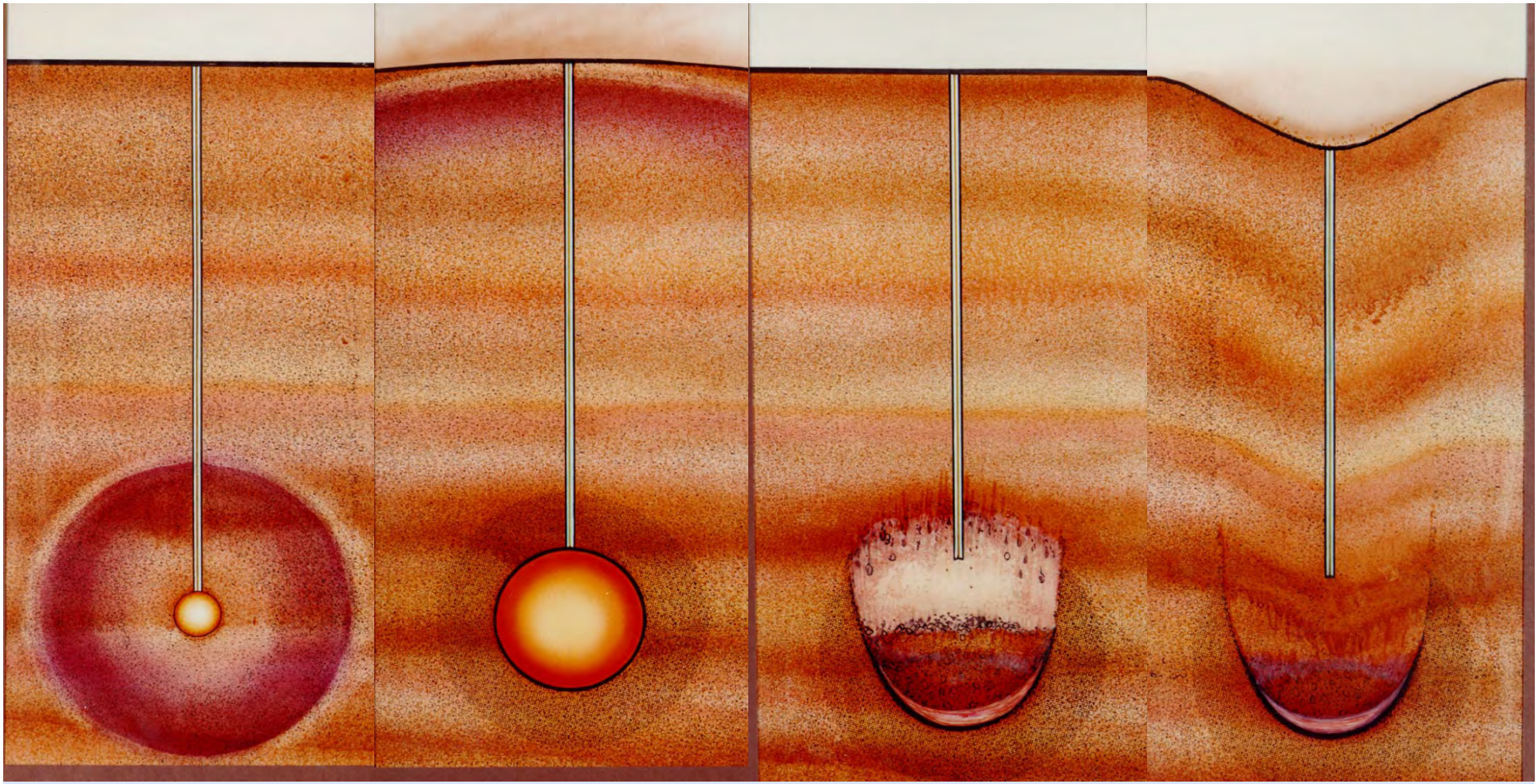
CP-1 was the firing control point for majority of tests.

Federal Test Controller with scientific panel determined “go” or “no go” on shot day.

National Nuclear Security Administration

National Nuclear Security Administration

Underground Testing
Subsidence Crater Formation



National Nuclear Security Administration

Divider “Rack”
Last underground nuclear test
Conducted September 23, 1992

National Nuclear Security Administration

United States Nuclear Tests

Location	Tests	Detonations
South Atlantic	3	3
Pacific	106	106
Alamogordo, NM	1	1
Amchitka, AK	3	3
Carlsbad, NM	1	1
Central, NV	1	1
Fallon, NV	1	1
Farmington, NM	1	1
Grand Valley, CO	1	1
Hattiesburg, MS	2	2
Nellis Range	5	5
Rifle, CO	1	3
NTS Atmospheric	100	100
NTS Underground – U.S.	804	
NTS Underground – U.S./U.K.	24	921
	1,054	1,149

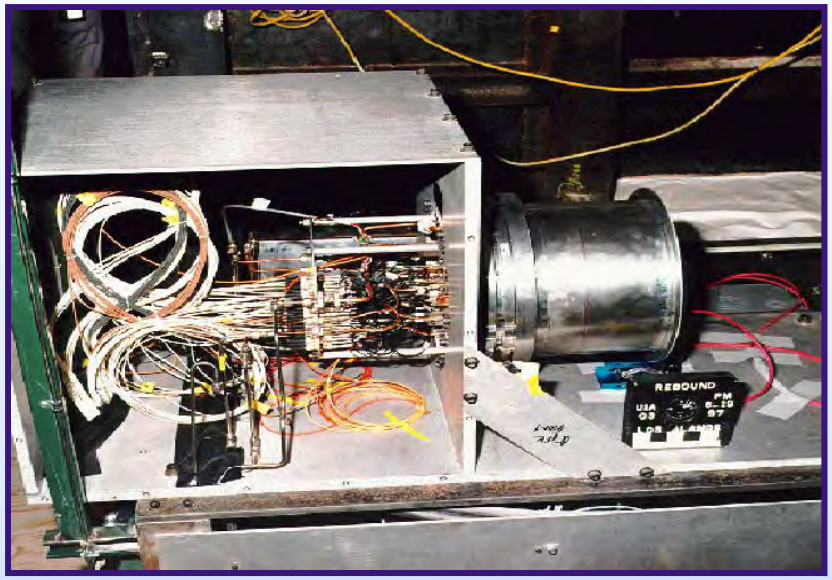
A test is defined in the Threshold Test Ban Treaty as either a *single underground nuclear explosion* (detonation) or *two or more underground nuclear explosions* (detonations) conducted within an area delineated by a circle having a diameter of two kilometers and conducted within a total period of time not to exceed 0.1 second.

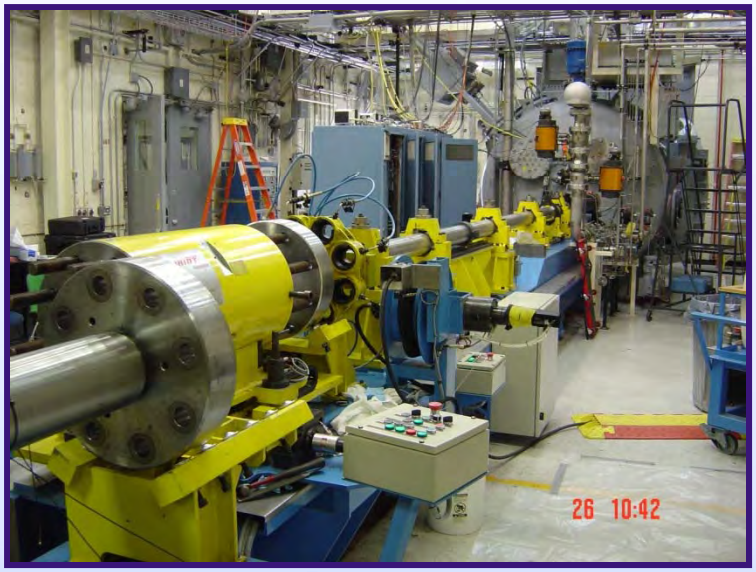
Source: NV-209 Rev 15

National Nuclear Security Administration

Post-1992 Approach

- Comprehensive Nuclear Test Ban Treaty of 1996 prohibits any nuclear weapons tests
- Establishment of “Stockpile Stewardship Program”
- Weapons material reliability tested through a variety of non-nuclear experiments





National Nuclear Security Administration

U1a

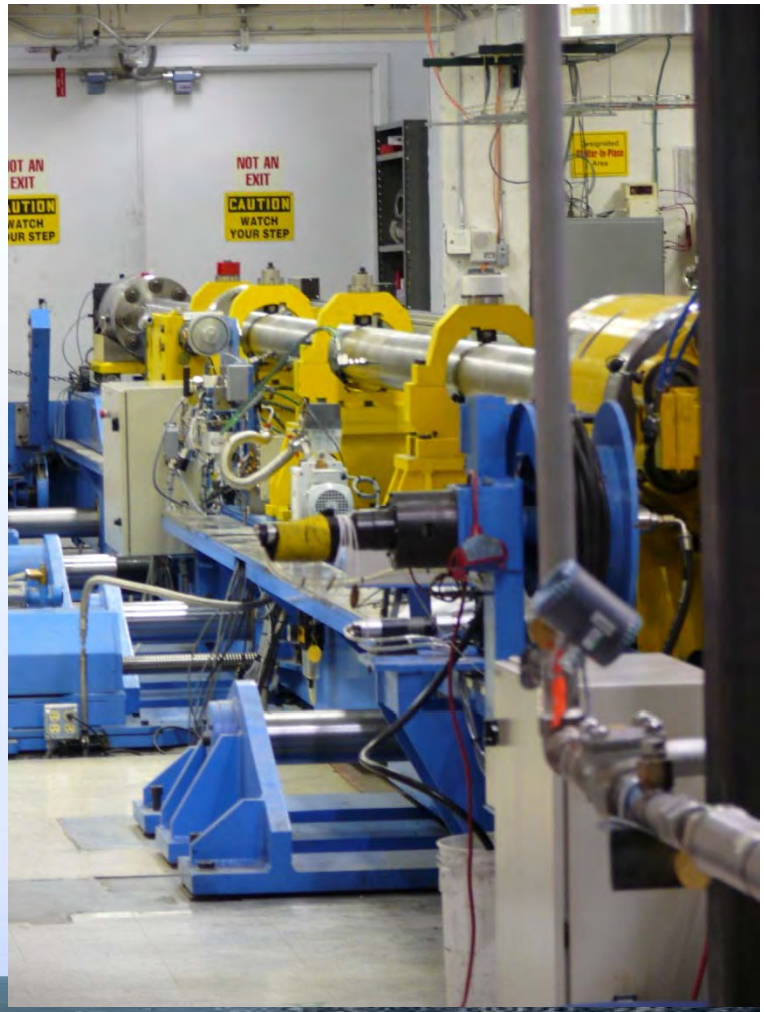
- Underground lab for subcritical experiments
- Data for National Laboratories
- Safety and reliability of stockpile
- 27 Subcritical experiments to date

National Nuclear Security Administration

National Nuclear Security Administration

Joint Actinide Shock Physics Experimental Research (JASPER)

- Study properties and responses of special nuclear materials under high pressure
- 106 shots to date (45 plutonium [Pu] shots)
  - First shot: JAS001 March 19, 2001
  - First Pu shot: JAS021 July 8, 2003



National Nuclear Security Administration

National Nuclear Security Administration

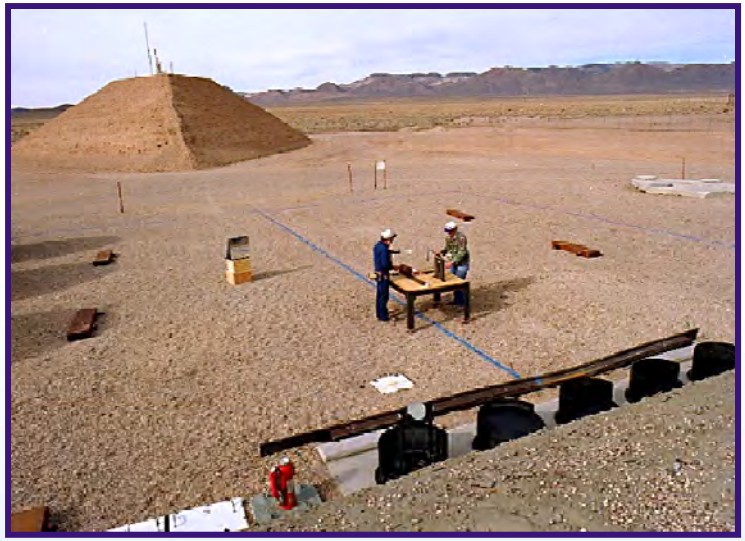
NNSA
National Nuclear Security Administration

Device Assembly Facility

- 100,000 square feet
- SNM Storage
- Target assembly for JASPER/U1a
- Criticality Experimental Facility
- Capability to conduct Nuclear Explosive Operations

National Nuclear Security Administration

Big Explosive Experimental Facility



- Non-nuclear high-explosive tests
- Capable of 70,000 pounds of explosives

National Nuclear Security Administration

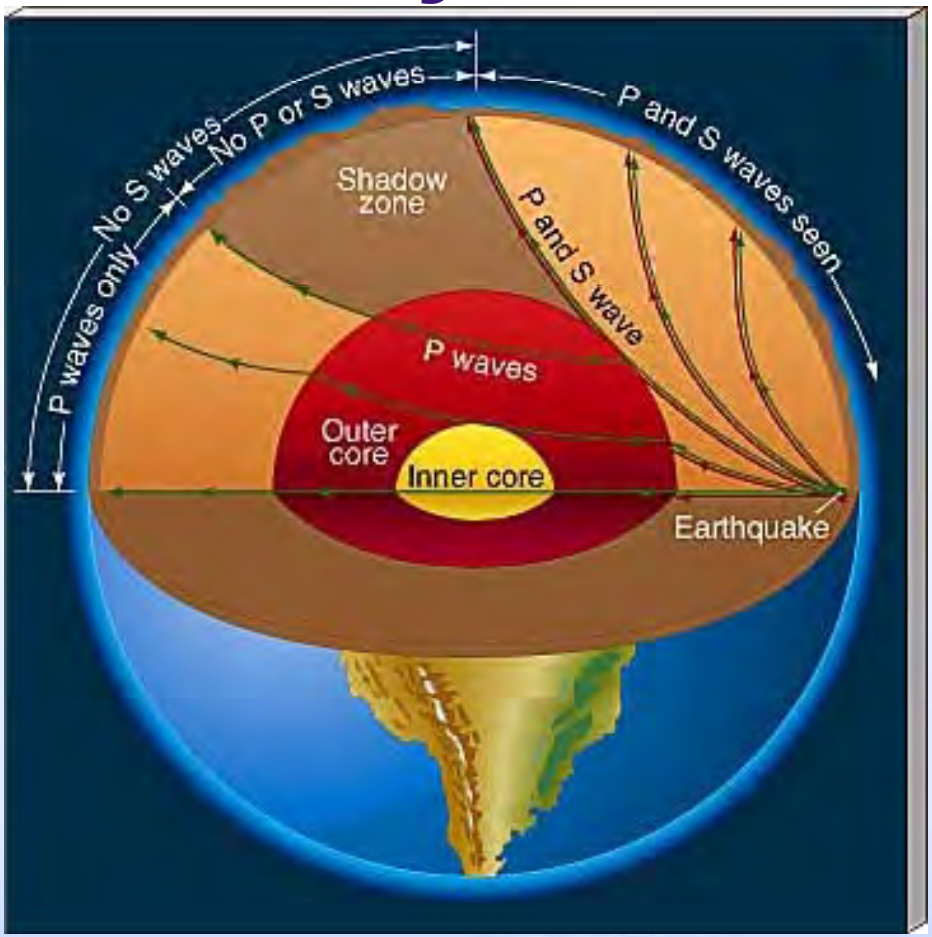
Nonproliferation Test and Evaluation Complex (NPTEC)

- Unique 67-acre facility equipped to test sensors using a variety of release methods, including chemical releases, wind tunnel releases, and portable release systems
- Provides sensor arrays for ground truth data, an explosives pad, weather data instrumentation, calibrated release systems, and 24-hour release capability
- Environmental Impact Statement allows release of hazardous materials for training, field-testing of detectors, plume dispersion experimentation, and equipment and materials testing

National Nuclear Security Administration

National Center for Nuclear Security

- Develop tools for treaty verification
- Challenge is to discriminate seismic waves generated by natural events from conventional or nuclear explosions



National Nuclear Security Administration

Homeland Security and Defense

- Train responders in prevention/response to terrorist radiological/nuclear material
- Unique training complexes and capabilities simulate realistic scenarios in radiation and chemical environment
  - More than 136,000 responders trained since 1999

COUNTER TERRORISM OPERATIONS SUPPORT

U.S. DEPARTMENT OF HOMELAND SECURITY

NNSA National Nuclear Security Administration

Homeland Security: Increasing Activity at the Nevada National Security Site

- Radiological / Nuclear Countermeasures Test and Evaluation Complex
  - National test bed for radiation detectors/sensors
  - Realistic operational environment allows use of significant quantities of nuclear material

National Nuclear Security Administration

National Emergency Response

- Remote Sensing Laboratory (RSL) provides technologies, equipment, and national response teams to search for improvised nuclear devices and radiation dispersal devices ("dirty bombs")
  - RSL-Andrews provides the national capital region response
  - RSL-Nellis provides other national response
- Also provides consequence management teams if a device were to detonate

National Nuclear Security Administration

Stewardship of the Nevada National Security Site

Mercury

Facilities and Infrastructure

National Nuclear Security Administration

For More Information

For more information on

U.S. Department of Energy,

National Nuclear Security Administration

Nevada Site Office programs and activities:

visit our website at www.nv.energy.gov

or call the

Office of Public Affairs at

(702) 295-3521

National Nuclear Security Administration

AGENDA

NSSAB FULL BOARD MEETING

National Atomic Testing Museum (Frank Rogers Auditorium)
755 East Flamingo Road, Las Vegas, NV

April 17, 2013 at 5 p.m.

Open Meeting / Announcements — **Barb Ulmer**, Facilitator

Chair's Opening Remarks — **Kathleen Bienenstein,** Chair

- Agenda approval

Public Comment — **Barb Ulmer**, Facilitator

Liaison Updates

- Clark County — Phil Klevorick
- Elko County Commission — Charlie Myers
- Esmeralda County Commission — Ralph Keyes
- Lincoln County Commission — Kevin Phillips
- Nye County Commission — Andrew "Butch" Borasky
- Nye County Nuclear Waste Repository Project Office — John Klenke
- State of Nevada Division of Environmental Protection — Tim Murphy
- U.S. National Park Service — Mike Cipra
- West Career and Technical Academy — Marcy Brown
  - Update on Student Project
- White Pine County Commission — Mike Lemich
- U.S. Department of Energy — Scott Wade

Corrective Action Alternatives Recommendation for Corrective Action Unit 105 - Area 2 Yucca Flat Atmospheric Test Sites (Work Plan Item #1) — **Barb Ulmer**, Facilitator

- DOE Presentation — **Tiffany Lantow,** DOE
- NSSAB Discussion and Determine Path Forward — **Kathleen Bienenstein,** Chair

Break — **Barb Ulmer**, Facilitator

NNSS Integrated Groundwater Sampling Plan (Work Plan Item #8) — **Barb Ulmer**, Facilitator

- DOE Presentation — **Kathryn Knapp**, DOE
- NSSAB Discussion and Determine Path Forward — **Kathleen Bienenstein,** Chair

Other NSSAB Business: — **Kathleen Bienenstein,** Chair

- EM SSAB Chairs' conference call (February 19)
- EM SSAB National Chairs' Meeting (April 25)
- UGTA Technical Information Exchange (April 30)
- Devil's Hole Workshop (May 1 - 3)

Meeting Wrap-up/Assessment/Adjournment — **Barb Ulmer**, Facilitator

- Next Full Board Meeting
  - 5 p.m., Wednesday, May 15, 2013, 755 E. Flamingo Rd. Las Vegas, NV 89119

NSSAB MEETING ATTENDANCE

Full Board Meetings

October 2012 through September 2013 (FY 2013)

Name	11/28/12	1/16/13	4/17/13	5/15/13	8/21/13	9/18/13	Max Terms Limit
MEMBERS							
Jason Abel	√	E	√				2018
Kathleen Bienenstein	√	√	√				2014
Ed Brown	E	√	RS				2018
Matthew Clapp	√	√	E				2017
Thomas Fisher	√	√	√				2017
Arthur Goldsmith	√	√	E				2017
Donna Hruska	√	√	√				2016
Cheryl Kastelic	√	√	E	E			2018
Janice Keiserman	√	√	√				2018
Barry LiMarzi	√	√	√				2017
Michael Moore	√	√	√				2016
Edward Rosemark	√	√	√				2018
William Sears	√	E	√				2018
Jack Sypolt	√	E	√				2017
James Weeks	√	√	√				2013
LIAISONS							
Clark County	√	√	E				
Elko County Commission	√	U	U				
Esmeralda County Commission		E	√				
Lincoln County Commission		U	U				
Nye County Commission	√	√	√				
Nye Co. Nuclear Waste Repository Project Office	√	√	√				
State of NV Division of Env Protection	√	√	√				
U.S. Department of Energy	√	√	√				
U.S. Natl Park Service	E	√	√				
WCTA Student Liaison	E	E	E				2013
White Pine Co. Commission		√	U				

KEY: √ = Present | Term Limit | E = Excused U = Unexcused | RM = Remove | RS = Resign

Corrective Action Alternatives Recommendation for Corrective Action Unit 105

Tiffany Lantow
Soils Activity Lead
Nevada Site Specific Advisory Board
April 17, 2013

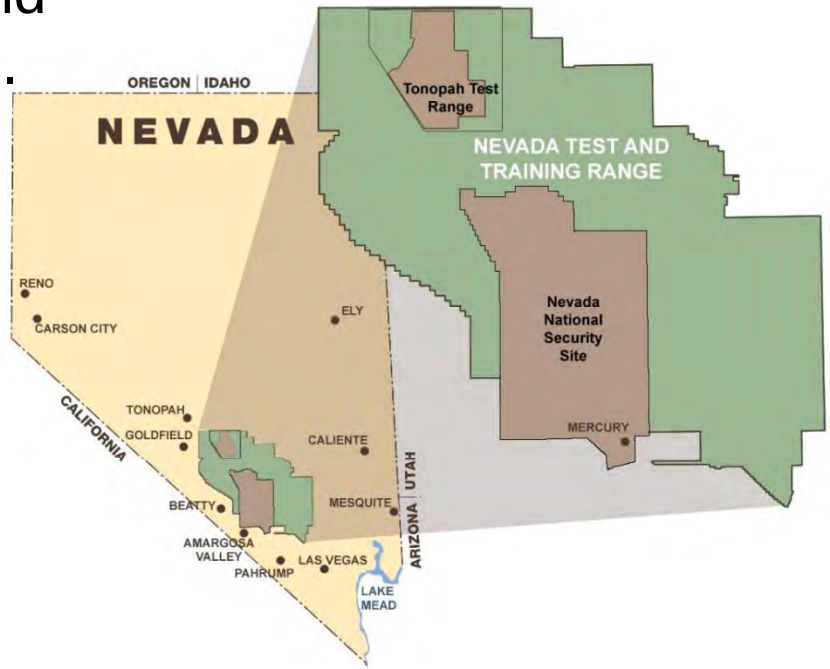
NSSAB Work Plan Item 1

Provide a recommendation to DOE on which corrective action alternative (closure in place or clean closure) should be selected by DOE for Corrective Action Unit 105 – Area 2 Yucca Flat Atmospheric Test Sites (Soils Activity)

What are the Issues?

Surface soils at the Nevada National Security Site and the Nevada Test and Training Range (operated by the U.S. Air Force) were contaminated by:

- Historical atmospheric nuclear weapons tests
- Nuclear weapon safety experiments
- Nuclear weapon storage-transportation tests
- Evaluation tests for peaceful uses of nuclear explosives



Addressing the Issues

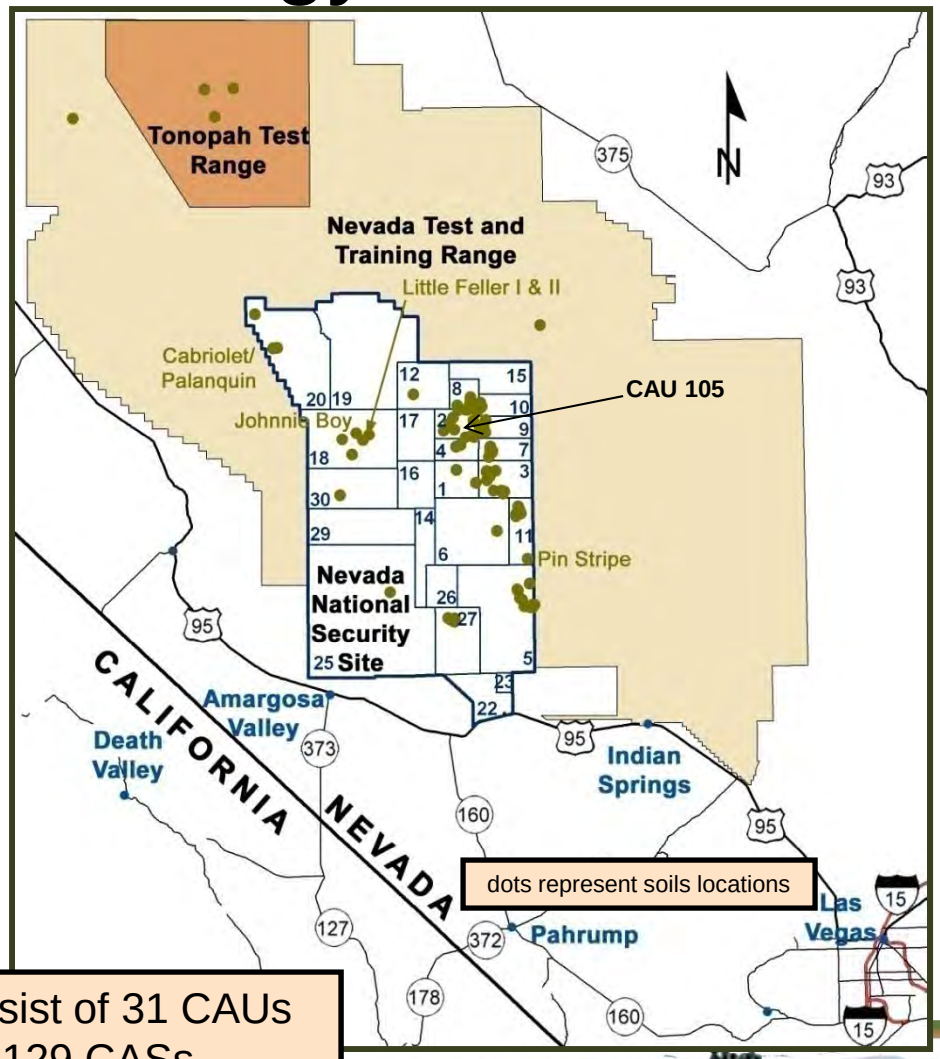
- The Soils Activity is responsible for:
  - Characterizing and/or remediating surface soil contamination
    - Characterize means to identify the nature and extent of the contamination present
    - Remediate means to select and complete a closure option (clean closure, closure in place, etc.)

Addressing the Issues
(continued)

- The Soils Activity is responsible for:
  - Ensuring appropriate controls (i.e., signage/postings, barriers, etc.) are in place at the sites with remaining contamination
  - Conducting long-term monitoring of sites
- State of Nevada Division of Environmental Protection (NDEP) provides oversight under the Federal Facility Agreement and Consent Order

Key Terminology

- Corrective Action Site (CAS)
  - A site that where a potential release of contaminants has been identified
- Corrective Action Unit (CAU)
  - Grouping of CASs that are similar in remediation technique, type of contaminants, or proximity to each other (grouped to create efficiencies)



Soils Activities consist of 31 CAUs comprised of 129 CASs

Principles of Soils Strategy

- Build upon Soils Risk-Based Corrective Action Evaluation Process, which is:
  - Strategy approved by NDEP to plan, implement, and complete environmental corrective actions
    - Compares measurements of radiological and chemical contaminant levels to risk-based action levels
- Corrective actions must be considered when site conditions exceed a final action level

Corrective Action Alternatives (CAAs)

- CAAs identified in Federal Facility Agreement and Consent Order:
  - Closure in place with use restrictions, as necessary
  - Clean closure (removal of contaminants, no use restrictions)
  - No further action
- CAAs evaluated based on *general standards* and *remedy selection decision factors* defined by the U.S. Environmental Protection Agency

CAAs General Standards

- All CAAs must meet the four general standards in order to be selected for evaluation using the remedy selection decision factors:
  - Protection of human health and the environment
  - Compliance with environmental cleanup standards
  - Control the source(s) of the release
  - Comply with applicable federal, state, and local standards for waste management

CAAs Remedy Selection Decision Factors

- Only CAAs that meet the general standards are scored on the remedy selection decision factors:
  - Short-term reliability and effectiveness
  - Reduction of toxicity, mobility, and/or volume
  - Long-term reliability and effectiveness
  - Feasibility
  - Cost

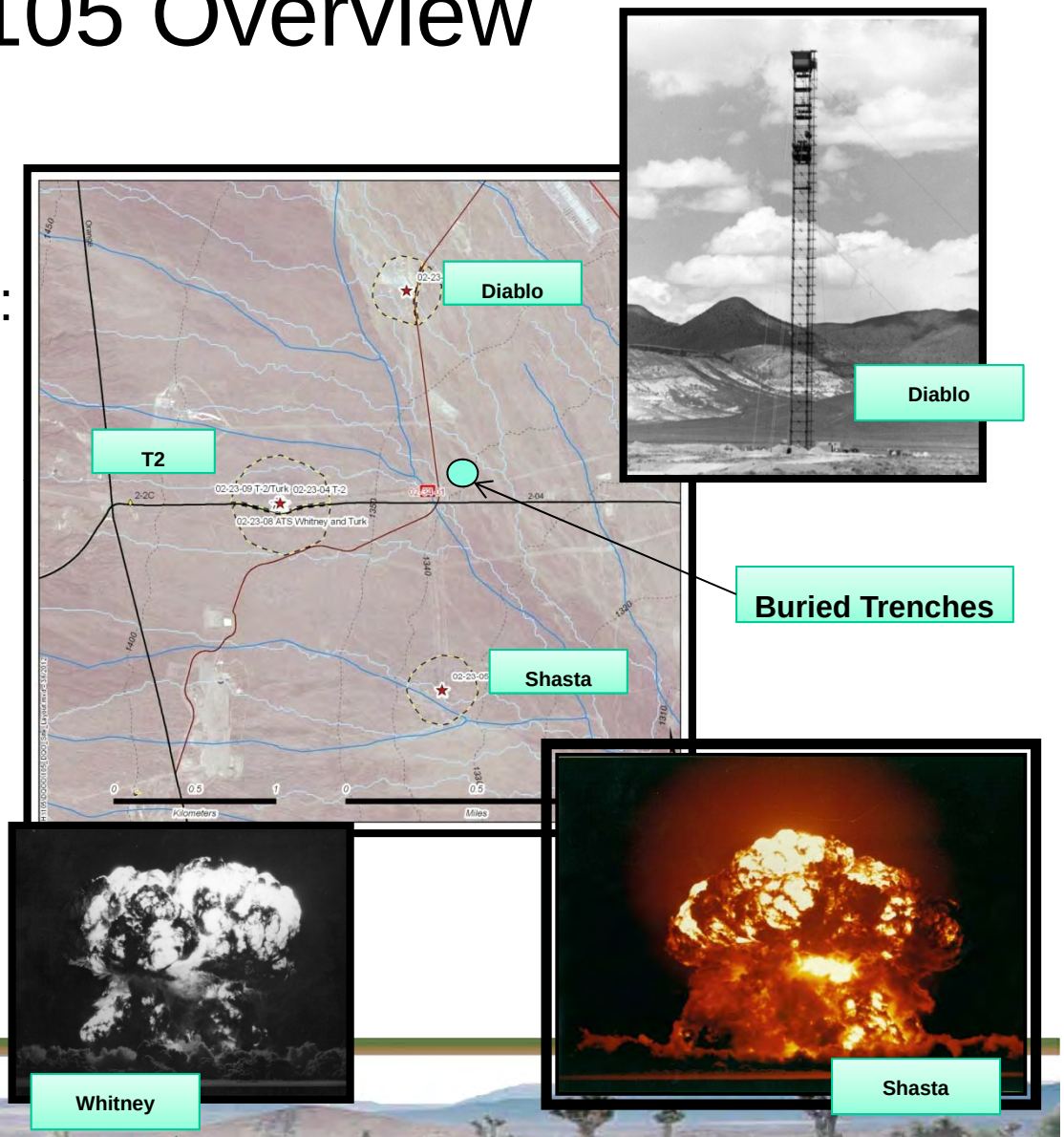
Soils CAU/CAS Summary

- 31 Total CAUs comprised of 129 Total CASs
  - 45 Closed CASs
    - 23 Closure in Place
    - 2 Clean Closure
    - 20 No Further Action

35% of CASs Closed

CAU 105 Overview

- Six aboveground tests from 1952 to 1957
- Three physical test locations:
  - *T2* Site *(Whitney*, *Badger*, *How*, and *Turk*) in east
  - *Shasta* Site in south
  - *Diablo* Site in north
- Buried trenches
- Site investigations to be completed in Spring 2013



CAU 105 Field Activities

- Field Activities
  - Sampling and radiological dose measurements initiated October 2012 through March 2013
  - Preliminary results received
  - Expect final investigation results in May 2013
    - Results are not expected to change

CAU 105 Preliminary Results

- All sites are below the radiological action level
- No decision is needed

CAU 105 Preliminary Results
(continued)

- Three areas exceeded the chemical action level for lead and require corrective actions
  - Buried trenches (approximately 10 acres) contain surface and subsurface lead debris
  - Two areas contain surface and subsurface lead debris

CAU 105 Preliminary Results
(continued)

- Shasta Site: Approximately two acres with lead debris and associated contaminated soils (area is subject to historic preservation)

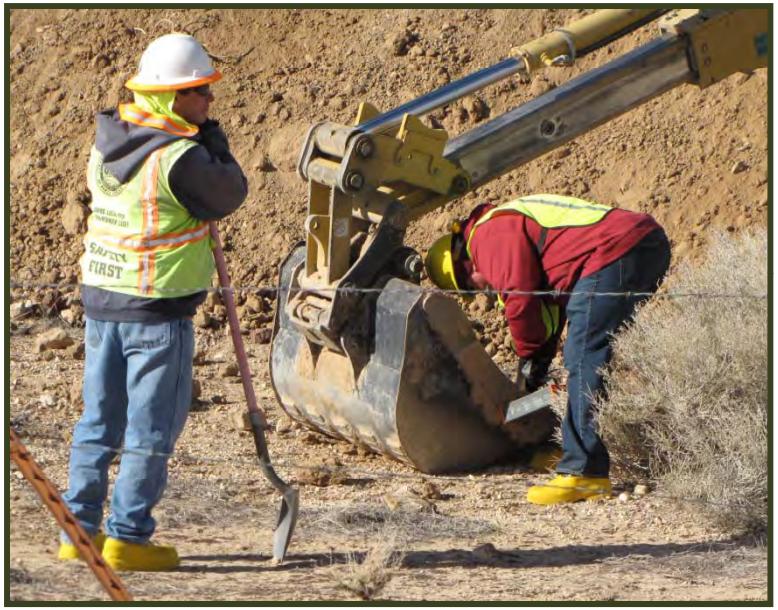
CAU 105 Preliminary Results
(continued)

- Six buried trenches and one open trench (approximately 10 acres) contain surface and subsurface lead debris

- Site T-2: 40 to 50 surface and subsurface lead bricks used for test shielding

CAU 105 Next Steps

- Next Steps
  - Discuss CAAs and NSSAB recommendation with NDEP: June 2013
  - Develop Corrective Action Decision Document (CADD): Summer 2013
    - The CADD presents the CAAs and identifies the selected alternative



NSSAB Involvement

- DOE requests NSSAB provide a recommendation on selection of a CAA for the three sites identified in the following slides by May 15 Full Board Meeting
- Possible CAAs
  - Closure in Place with Use Restrictions
  - Clean Closure
- DOE will provide additional information/briefings upon request

CAA Evaluation – Shasta Site

CAA	Pros	Cons
Clean Closure $125K	Reduces toxicity and mobility by removing hazard Long-term reliability and effectiveness Eliminates long-term monitoring and maintenance costs	Higher effort and cost Moderate risk to workers Disregards the historic significance of the site Mitigating the Historical Preservation Act would require significant documentation
Closure in Place $40K	Feasible and cost effective Minimal environmental risk Preserves the historic nature of the site	Will not reduce toxicity and mobility Controls exposure but does not remove hazard Will require long-term monitoring and maintenance costs

CAA Evaluation – Buried Trenches

CAA	Pros	Cons
Clean Closure $500K	Reduces toxicity and mobility by removing hazard Long-term reliability and effectiveness Eliminates long-term monitoring and maintenance costs	Large effort and occupational risk during excavation Unknown physical, radiological, and chemical hazards High cost associated with excavation, waste packaging, and disposal
Closure in Place $40K	Feasible and cost effective Minimal environmental risk Consistent with other similar sites	Will not reduce toxicity and mobility Controls exposure by engineered barriers and administrative controls but does not remove hazard Will require long-term monitoring and maintenance costs

CAA Evaluation – T2 Site (lead bricks)

CAA	Pros	Cons
Clean Closure $35K	Reduces toxicity and mobility by removing hazard Long-term reliability and effectiveness Eliminates long-term monitoring and maintenance costs	Moderate short-term cost Minimal risk to workers
Closure in Place $40K	Feasible and cost effective Minimal environmental risk	Will not reduce toxicity and mobility Controls exposure but does not remove hazard Will require long-term monitoring and maintenance costs

Summary of Options

Site	Closure Options
Shasta Site	Clean Closure
	Closure in Place
Buried Trenches	Clean Closure
	Closure in Place
T-2 (Lead Bricks)	Clean Closure
	Closure in Place

Questions / Comments?

Nevada Site Specific Advisory Board

Members
Kathleen Bienenstein, *Chair*
Matthew Clapp
Daniel Coss
Thomas Fisher, PhD
Arthur Goldsmith
Donna Hruska
Robert Johnson
John M. McGrail, P.E.
Barry LiMarzi
Gregory Minden
Michael Moore
James Weeks
Walter Wegst, PhD*, Vice-Chair*

Liaisons
Nye County
Clark County
State of Nevada Division of Environmental Protection
U.S. Department of Energy, Nevada Site Office
U.S. National Park Service

Administration
Denise Rupp, Administrator
Navarro-Intera
Kelly Snyder, DDFO
U.S. Department of Energy, Nevada Site Office

March 21, 2012

Mr. Rob Boehlecke
Environmental Restoration Project Director
U.S. Department of Energy, Nevada Site Office
P.O. Box 98518
Las Vegas, NV 89193-8518

SUBJECT: Recommendation on Draft Soils Project Risk-Based Corrective Action Evaluation Process

Dear Mr. Boehlecke:

The Nevada Site Specific Advisory Board (NSSAB) approved Work Plan Item number 14 is to review the draft Soils Project Risk-Based Corrective Action Evaluation Process Document and to provide comments regarding possible improvements to either the process or the actual document.

The NSSAB has completed the requested review. The Board concurs with and supports the concept of basing corrective actions on relative risk. The overall concept should provide for the most cost effective clean up of the various sites, and allow the limited funding available to be best utilized.

Regarding the specifics of the technical process and the document itself, the NSSAB does not feel it has the technical or regulatory expertise to offer much improvement or suggestions. We understand this document will be submitted to the State of Nevada Division of Environmental Protection (NDEP), as the appropriate regulator, for review and approval. The NSSAB is of the opinion that if the final document is approved by NDEP, it should be acceptable for its intended use.

The NSSAB appreciates the opportunity to review this document and provide meaningful input to the DOE. We look forward to your response.

Sincerely,

Kathleen L. Bienenstein, Chair

cc: M. Nielson, DOE/HQ (EM-13) FORS
C. Alexander, DOE/HQ (EM-13) FORS
A. Clark, DOE/HQ (EM-13) FORS
K. Snyder, PSG, NNSA/NSO, Las Vegas, NV
C. Lockwood, PSG, NNSA/NSO, Las Vegas, NV
D. Rupp, NI, Las Vegas, NV
NSSAB Members and Liaisons
NNSA/NSO Read File

Department of Energy
National Nuclear Security Administration
Nevada Site Office
P.O. Box 98518
Las Vegas, NV 89193-8518

AUG 08 2012

Kathleen Bienenstein, Chair
Nevada Site Specific Advisory Board
232 Energy Way
North Las Vegas, NV 89030

RESPONSE TO NEVADA SITE SPECIFIC ADVISORY BOARD (NSSAB) RECOMMENDATION ON DRAFT SOILS PROJECT RISK-BASED CORRECTIVE ACTION EVALUATION PROCESS

I would like to thank the NSSAB for taking the time to review the draft Soils Project Risk-Based Corrective Action Evaluation Process document. The Nevada Site Office Environmental Management Operations Activity appreciates the support of the NSSAB in this project and the efforts made by the Board to review the document. The Board concurred with and supported with the concept of the Risk-Based Corrective Evaluation Process. The Soils Project Risk-Based Corrective Action Evaluation Process document has been finalized and concurred on by the Nevada Division of Environmental Protection. As always, the NSSAB's input is valued and your efforts are greatly appreciated.

Please direct comments and questions to Kelly Snyder at (702) 295-2836.

Robert F. Boehlecke, Manager
Environmental Management Operations

EMO:8815.TL

cc via e-mail:
C. B. Alexander, DOE/HQ (EM-3.2) FORS
M. A. Nielson, DOE/HQ (EM-3.2) FORS
B. K. Ulmer, N-I, Las Vegas NV
NSSAB Members and Liaisons
T. A. Lantow, EMO, NNSA/NSO,
Las Vegas, NV
K. K. Snyder, EMOS, NNSA/NSO,
Las Vegas, NV
NNSA/NSO Read File

Nevada National Security Site Integrated Groundwater Sampling Plan

Kathryn S. Knapp
Sampling and Analysis Task Manager
Nevada Site Specific Advisory Board

April 17, 2013

NSSAB Work Plan Item 8

- *Nevada National Security Site (NNSS) Integrated Groundwater Sampling Plan* – Review the key parameters of the NNSS Integrated Groundwater Sampling Plan and determine if the NSSAB supports the parameters. Additionally and from a community perspective, provide recommendations for how the proposed concept of an integrated groundwater sampling plan could be enhanced.
  - DOE is seeking NSSAB recommendations on five specific questions related to three parameters
  - NSSAB recommendations needed by May 15, 2013

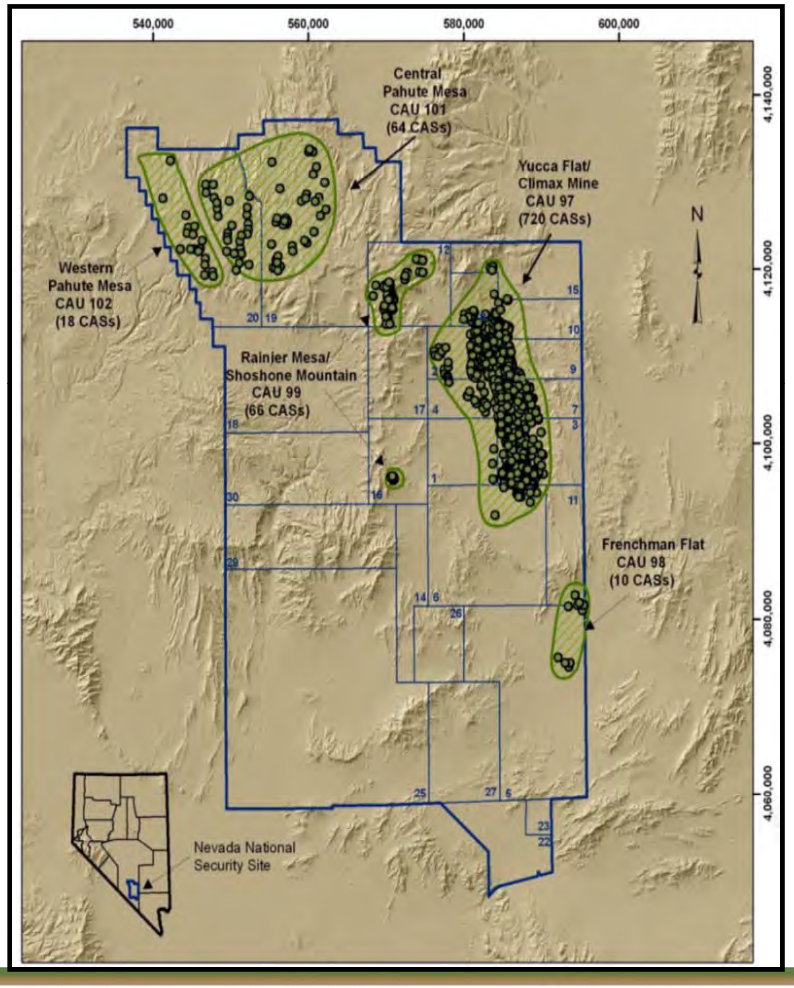
What is the Underground Test Area (UGTA) Activity?

- 828 underground nuclear tests were conducted at the NNSS from 1951 to 1992 (depths ranged from ~ 90 to 4,800 feet below the ground surface)
- UGTA evaluates the historic testing impacts on groundwater resources and studies the extent of contaminant migration

What is the UGTA Activity?

(continued)

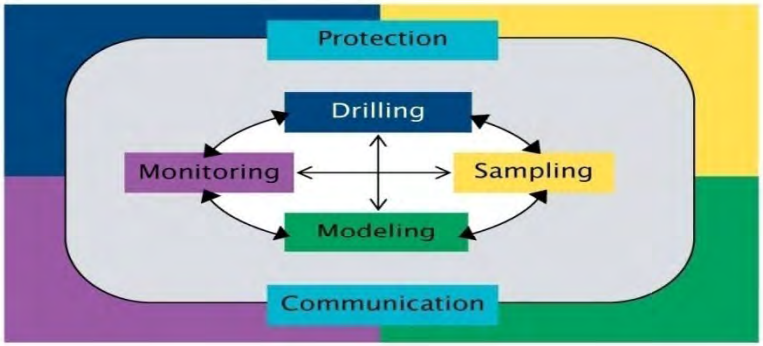
- Five Corrective Action Units (CAUs) make up the UGTA activity
  - CAUS are determined by location and geologic conditions
- Regulatory Standard is the Safe Drinking Water Act
  - Primary contaminant of concern (COC) is tritium and respective compliance level is 20,000 picocuries/liter (pCi/L)



Understanding Groundwater... an Iterative and Collaborative Approach

Sampling under UGTA conducted in support of drilling, modeling and monitoring

Sampling under DOE Monitoring Programs in support of environmental compliance and public protection



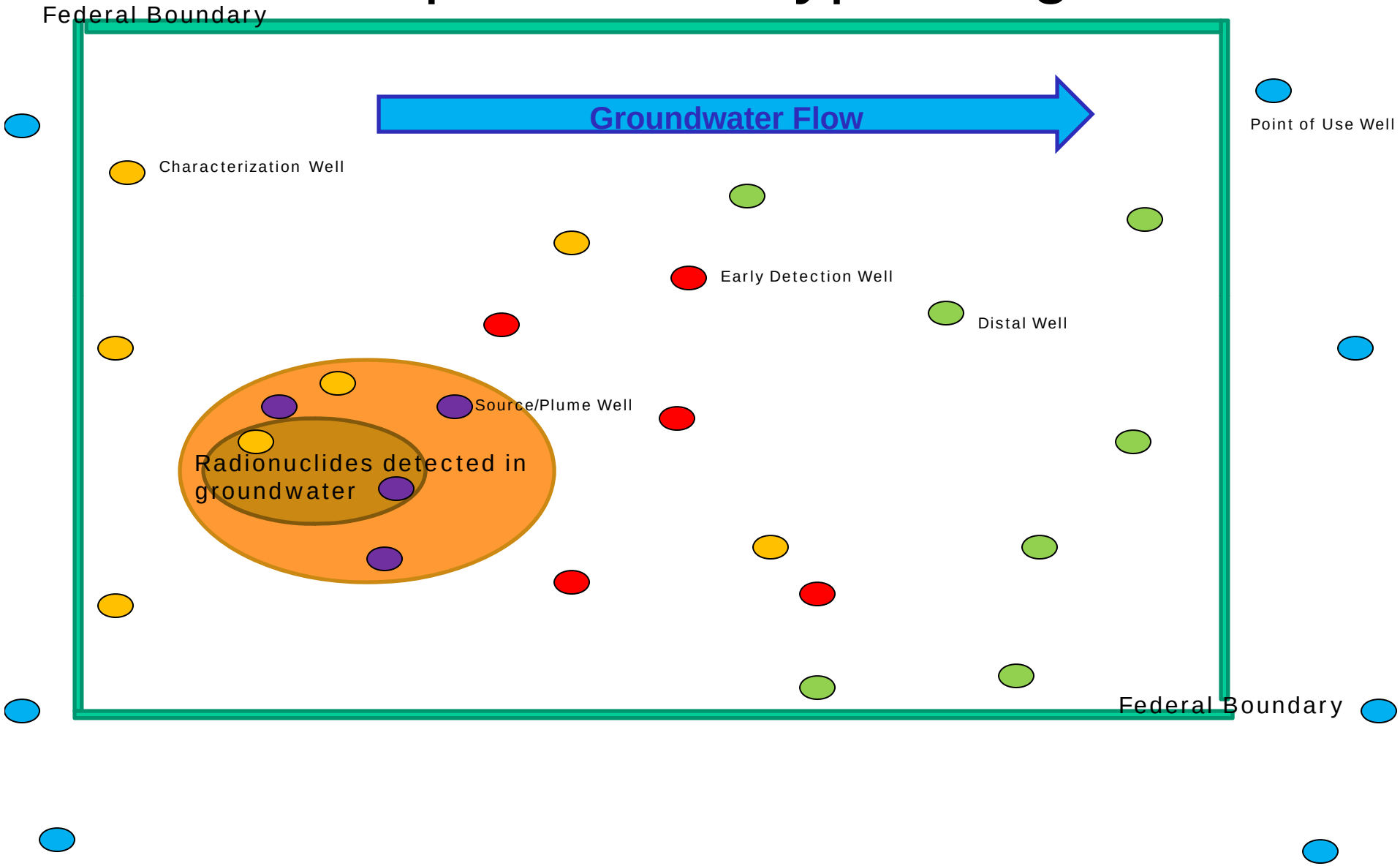
Integrating Routine Radiological Environmental Monitoring Program (RREMP) and Community Environmental Monitoring Program (CEMP) groundwater sampling **AND** UGTA data into a sampling plan

OUTCOME: A comprehensive, consistent, and unified NNSS Integrated Groundwater Sampling Plan for collecting and analyzing groundwater samples

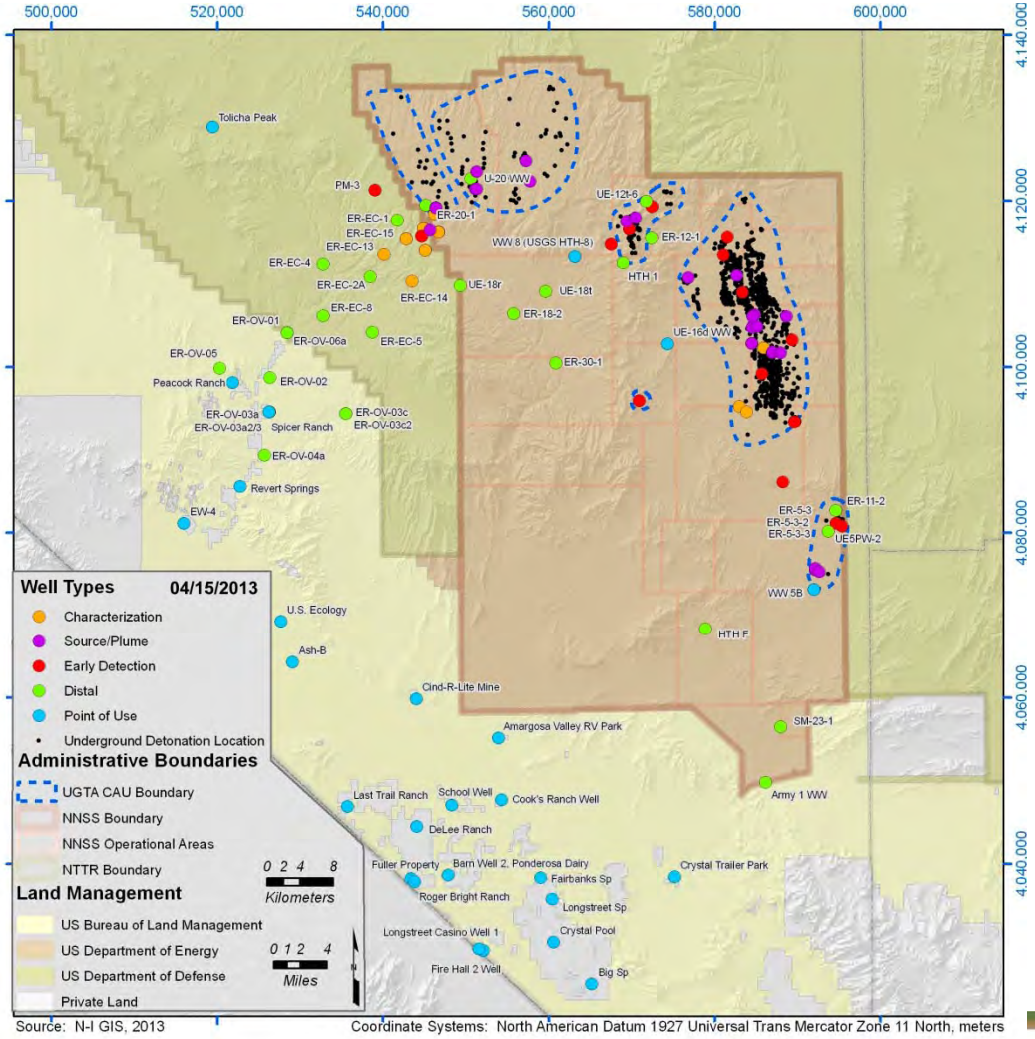
NNSS Integrated Groundwater Sampling Plan Well Types

Well Type	Definition	Purpose
Characterization	Used for system characterization or model evaluation	• Identify groundwater flow paths and contaminant migration • Travel time estimates • Model evaluation
Source/Plume	Located within, near, and/or immediately downgradient of test cavity and/or detectable tritium	• Characterize source term • Monitor natural attenuation • Identify potential COCs
Early Detection	Located downgradient of an underground test and tritium has yet to be detected	• Detect plume front
Distal	Outside the early detection boundary but on government land	• Verify COCs (i.e., currently tritium) do not exceed the maximum contaminant level (MCL). The MCL is based on 4 millirem. • May support the regulatory boundary
Point of Use	Used as private or public water supply source	• Verify COCs do not exceed the MCL

Conceptual Well Type Diagram



Well Types



Source: N-I GIS, 2013

Coordinate Systems: North American Datum 1927 Universal Trans Mercator Zone 11 North, meters

NNSS Integrated Groundwater Sampling Plan Proposed Sampling Criteria

Well Type	Analytes and Detection Limits	Frequency
Characterization	Wet chemistry, Anions, Total Metals, Dissolved Metals, Stable Isotopes, U/Sr/S Isotopes, Tritium, Gamma Emitters, DOC Carbon-14, Chlorine-36, Strontium-90, Technetium-99, Iodine-129, Plutonium – the detection limit is dependent on where the well is located	2 year interval
Source/Plume	Tritium, Gamma Emitters, Carbon-14, Chlorine-36, Strontium-90, Technetium-99, Iodine-129, Plutonium – the detection limit is dependent on where the plume is located	5 year interval
Early Detection	Low-level Tritium (1 to 10 pCi/L)	2 year interval
Distal	Tritium $\geq$ 300 pCi/L	5 year interval
Point of Use	Tritium $\geq$ 300 pCi/L	5 year interval

Key Parameters for NSSAB Consideration

- DOE is asking the NSSAB to comment on three of the proposed key parameters that will be part of the new integrated sampling plan

- DOE is asking the NSSAB to focus its recommendation on the Distal and Point of Use wells only

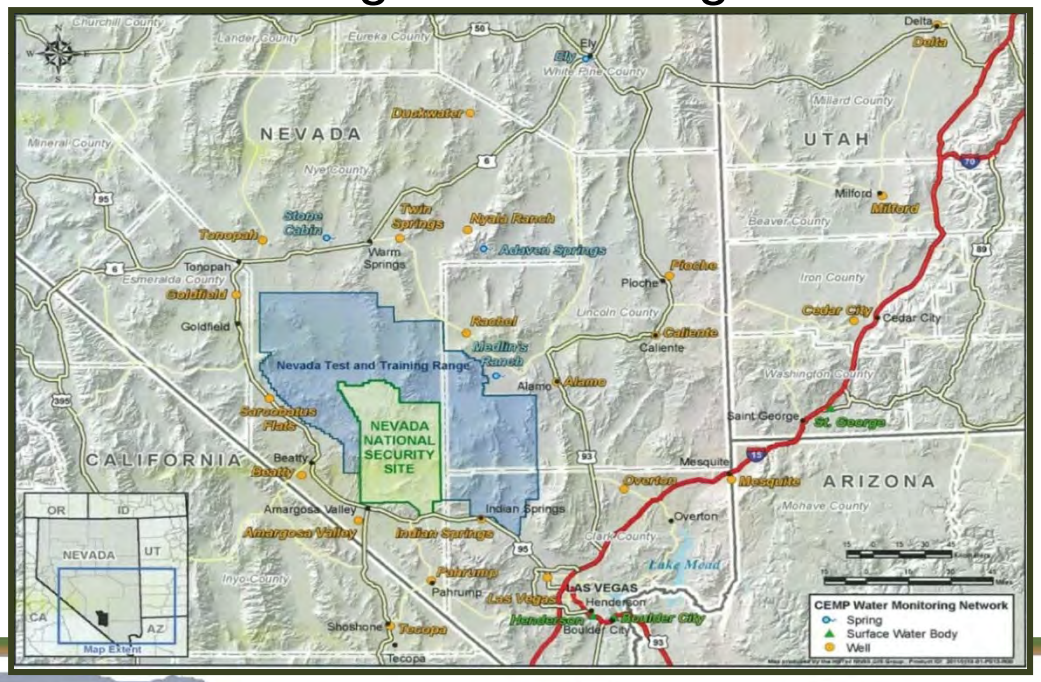
Parameter # 1

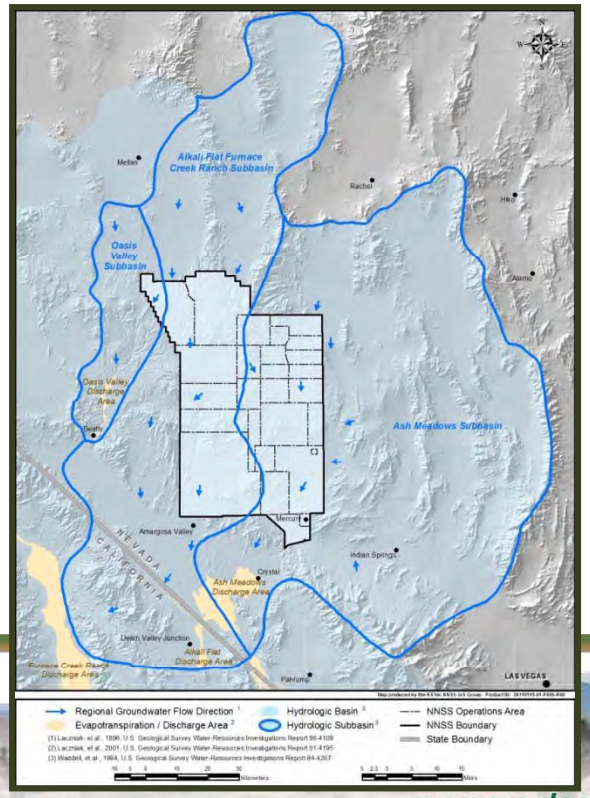
- Parameter - The new integrated sampling plan will identify wells selected for monitoring contaminant transport from underground nuclear tests from all DOE monitoring sources

Question 1
Does the NSSAB support eliminating sampling of upgradient wells?

Supporting Material for Question 1

- CEMP samples wells upgradient of the NNSS groundwater flow system and outside of the water shed
- Wells and water supply systems within CEMP monitoring network show no evidence of tritium contamination related to underground testing





Parameter # 2

- Parameter - The new integrated sampling plan will identify the COCs to be analyzed, as well as the detection levels, and sampling frequency based on well type

Supporting Material for Question 2

Question 2

Does the NSSAB support reducing the list of radionuclides to be analyzed to only tritium?

- UGTA forecasts tritium as radionuclide first detected
- RREMP database results from 2000 - present
  - no confirmed presence of tritium or other radionuclides in Distal or Point of Use wells

Supporting Material for Question 2
(continued)

- Integrating the sampling completed by RREMP, CEMP and UGTA, would cause no reduction in radionuclides analyzed but would put the focus on those wells where radionuclides are more likely to be present
  - Source/Plume Wells analyzed for extended suite of radionuclides
  - These wells are upgradient of Distal and Point of Use wells
  - If results of these wells indicate need to expand beyond tritium, analysis will be modified as appropriate

Well Type	Radionuclides to be Analyzed	
	Current	Proposed
Distal & Point of Use	Tritium, Gross alpha, Gross beta, Gamma emitters, Carbon-14, Strontium- 89+90, Technetium-99, Plutonium- 239 +240, Plutonium-238	Tritium

Well Type	Radionuclides to be Analyzed
Source/Plume	Tritium, Gamma Emitters, Carbon-14, Chlorine-36, Strontium-90, Technetium-99, Iodine-129, Plutonium

Supporting Material for Question 3

Question 3
Does the NSSAB support increasing
the laboratory detection level for tritium?

- Satisfies regulatory requirements
  - Minimum detection level required is 1,000 pCi/L
- Standard methodology more reliable
- Standard methodology standard industry practice
- Cost savings

Supporting Material for Question 3
(continued)

- By integrating RREMP and CEMP into UGTA, sampling for low-level tritium in wells at the edge of the plume
  - Early Detection wells analyzed for lower levels of tritium
  - These wells are upgradient of Distal and Point of Use wells
  - If results of these wells indicate need to detect lower levels of tritium, analysis will be modified as appropriate

Well Type	Laboratory Detection Limits	
	Current	Proposed
Distal & Point of Use	Tritium ≤ 50 pCi/L	Tritium ≥ 300 pCi/L

Well Type	Laboratory Detection Limits
Early Detection	Tritium 1 to 10 pCi/L

Supporting Material for Question 4

Question 4
Does the NSSAB support reducing the frequency of sampling?

- RREMP allows for a reduction of sampling after establishing a baseline consisting of four replicates

Supporting Material for Question 4
(continued)

- By integrating RREMP and CEMP with UGTA, DOE can better focus on wells that provide information to refine the models and plume detection
  - Early Detection Wells sampled on a two year interval
  - These wells are upgradient of Distal and Point of Use wells
  - If results of these wells indicate need to sample downgradient more often, sampling frequency will be modified as appropriate

Well Type	Sampling Frequency	
	Current	Proposed
Distal & Point of Use	Tritium – 1 year interval Other radionuclides – 2-3 year intervals	5 year interval

Well Type	Sampling Frequency
Early Detection	2 year interval

Parameter # 3

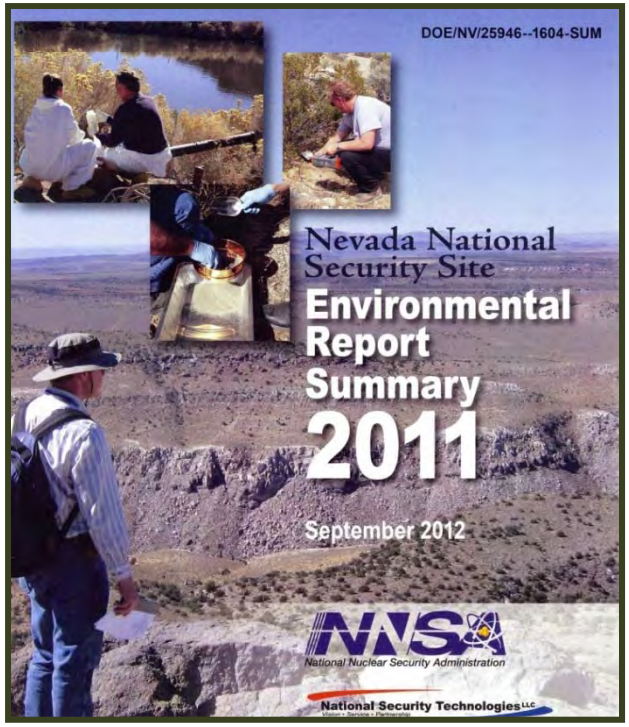
- Parameter - The new integrated sampling plan will allow for well types to change as UGTA progresses

Question 5
Does the NSSAB support DOE changing the well status to reclassify as inactive?

Supporting Material for Question 5

- Upon model completion and results from sampling both indicate that it is unlikely for presence of radionuclides, well may be reclassified as inactive
- Under RREMP - reduction of sampling after establishing a baseline consisting of four replicates
- DOE wants to focus on sampling that is science based, concentrating on areas of potential contaminant transport
  - effective and efficient use of resources

Supporting Resources



- NNSS Environmental Report
  - http://www.nv.energy.gov/library/publications/aser.aspx
  - Section 5.1, Radiological Surface Water and Groundwater Monitoring
  - Section 7.2, Offsite Surface and Groundwater Monitoring
  - Chapter 12, Groundwater Characterization and Contaminant Flow Modeling

Thank You

Your input is beneficial for DOE to consider how to address these key parameters from a scientific and regulatory perspective while being responsive to the needs of the public.

NSSAB Path Forward

Question 1
Does the NSSAB support eliminating sampling of upgradient wells?

– CEMP sampling upgradient of the NNSS groundwater flow system and outside of the water shed

– CEMP monitoring network shows no evidence of tritium contamination related to underground testing

Question 2
Does the NSSAB support reducing the list of radionuclides to be analyzed to only tritium?

- Tritium radionuclide first detected
- RREMP data - no confirmed presence of tritium or other radionuclides in Distal or Point of Use wells
- Change focuses on wells where radionuclides are more likely to be present

Question 3
Does the NSSAB support increasing the laboratory detection level for tritium?

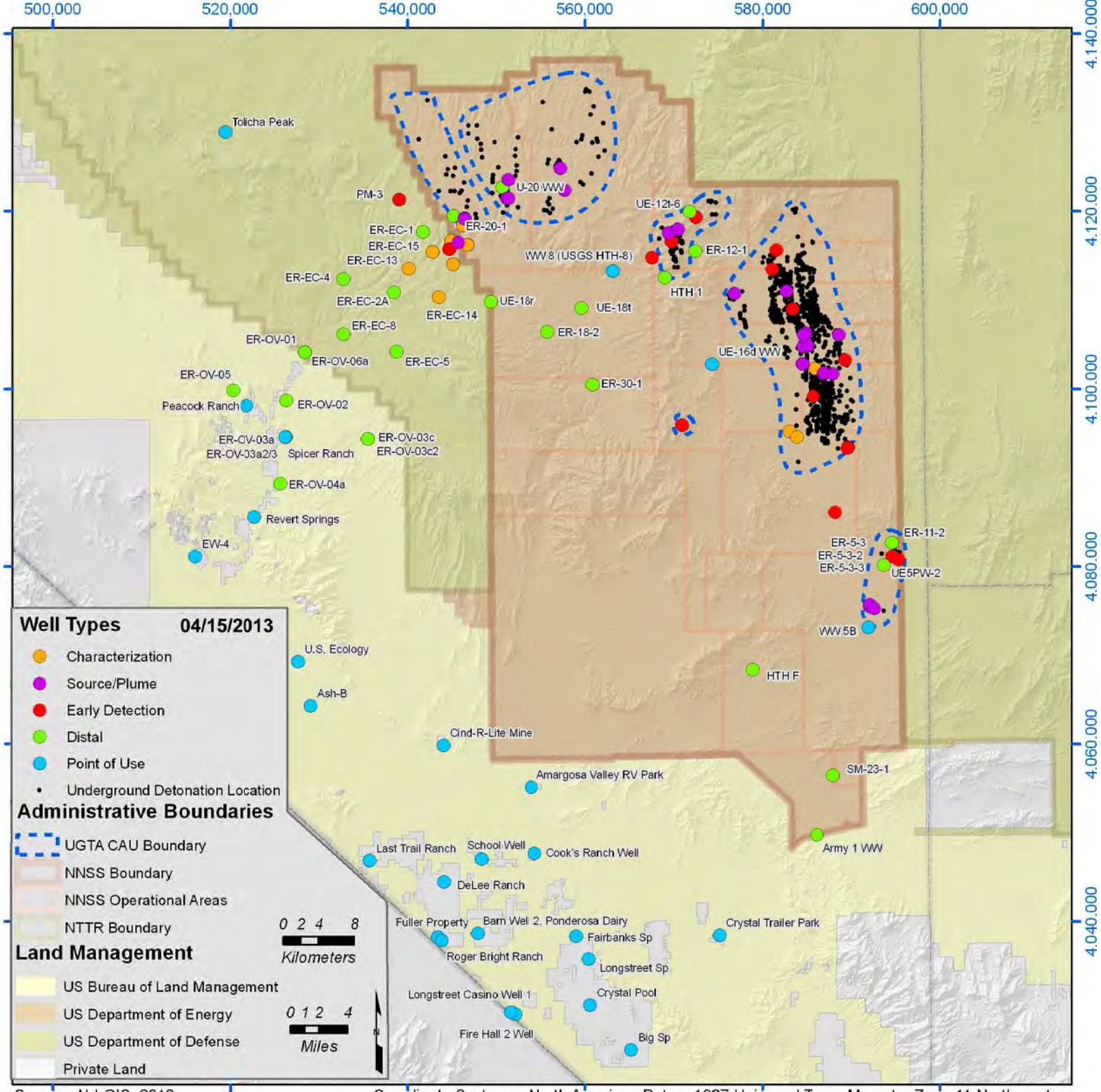
- Minimum detection level required is 1,000 pCi/L
- Standard methodology more reliable
- Standard methodology standard industry practice
- Cost savings
- Sampling for low-level tritium in wells at the edge of the plume

Question 4
Does the NSSAB support reducing the frequency of sampling?

- RREMP - reduction of sampling after establishing a baseline consisting of four replicates
- Focuses on wells that provide information to refine the models and plume detection

Question 5
Does the NSSAB support DOE changing the well status to reclassify as inactive?

- Upon model completion and results from sampling both indicate that it is unlikely for presence of radionuclides, well may be reclassified as inactive
- RREMP - reduction of sampling after establishing a baseline consisting of four replicates
- Focuses sampling that is science based, concentrating on areas of potential contaminant transport
  - Effective and efficient use of resources



Source: N-I GIS, 2013

Coordinate Systems: North American Datum 1927 Universal Trans Mercator Zone 11 North, meters

ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD

Hanford	**Idaho**	**Nevada**	**Northern New Mexico**
Oak Ridge	**Paducah**	**Portsmouth**	**Savannah River**

February 27, 2013

Mr. David Huizenga
Senior Advisor for Environmental Management
U.S. Department of Energy, EM-1
1000 Independence Avenue, SW
Washington, DC 20585

Dear Mr. Huizenga:

The Environmental Management Site-Specific Advisory Board (EM SSAB) recommends that the Department of Energy (DOE) place more emphasis and priority on evaluating technologies that could make recycling excess materials cost effective. Decontaminating these materials for resale can have many positive benefits:

- Saving space in onsite CERCLA disposal cells
- Adding more dollars for cleanup from the sale of excess
- Reducing cumulative environmental insult
- Reducing long-term monitoring and stewardship costs

To facilitate continuous cost-effective recycling, the EM SSAB recommends that DOE identify and establish a national recycling center of excellence, incentivize contractors to recycle and repurpose items, and add a recycling and repurposing element to future Requests for Proposals.

Steve Hudson, Chair
Hanford Advisory Board

Kathleen Bienenstein, Chair
Nevada SSAB

Carlos Valdez, Chair
Northern New Mexico
Citizens' Advisory Board

David Martin, Chair
Oak Ridge SSAB

Ralph Young, Chair
Paducah Citizens
Advisory Board

William Henderson,
Chair
Portsmouth SSAB

Donald Bridges, Chair
Savannah River Site
Citizens Advisory Board

cc: Melissa Nielson, EM-3.2
Catherine Alexander, EM-3.2

Department of Energy
Washington, DC 20585

April 5, 2013

Ms. Kathleen Bienenstein, Chair
Nevada Site Specific Advisory Board
Navaro, Inc.
232 Energy Way, M/S 505
North Las Vegas, Nevada 89030

Dear Ms. Bienenstein:

Thank you for your February 27, 2013, letter recommending that the Department of Energy place more emphasis and priority on evaluating technologies that could make recycling excess materials cost effective.

Recycling excess materials within the restrictions identified in the 2000 Secretarial Moratorium has always been one of our priorities during site cleanup activities. We agree with you that decontamination and resale of these materials could have many positive impacts. We also agree that adding a recycling and repurposing element to future requests for proposals to incentivize contractors is a fine concept to be considered when sites draft their scopes of work for future cleanup contracts. We will consider your recommendation to identify and establish a national recycling center of excellence as we continue to analyze how best to move forward on recycling eligible materials.

I appreciate your continued support and take your input very seriously. Please continue to work with your site point-of-contact to offer thoughts and recommendations on the Office of Environmental Management's cleanup activities.

If you have any questions, please feel free to contact me or Ms. Catherine Alexander, Office of Intergovernmental and Community Activities, at (202) 586-7711.

Sincerely,

David Huizenga
Senior Advisor
for Environmental Management

cc: Paul Seidler, EM-3
Melissa Nielson, EM-3.2
Catherine Alexander, EM-3.2

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