

NRC Groundwater Presentation

June 10, 2015

WESTERN NUCLEAR, INC.
SPLIT ROCK SITE



99142

153.02B

6661.6.17M

Western Nuclear Inc.

Agenda:

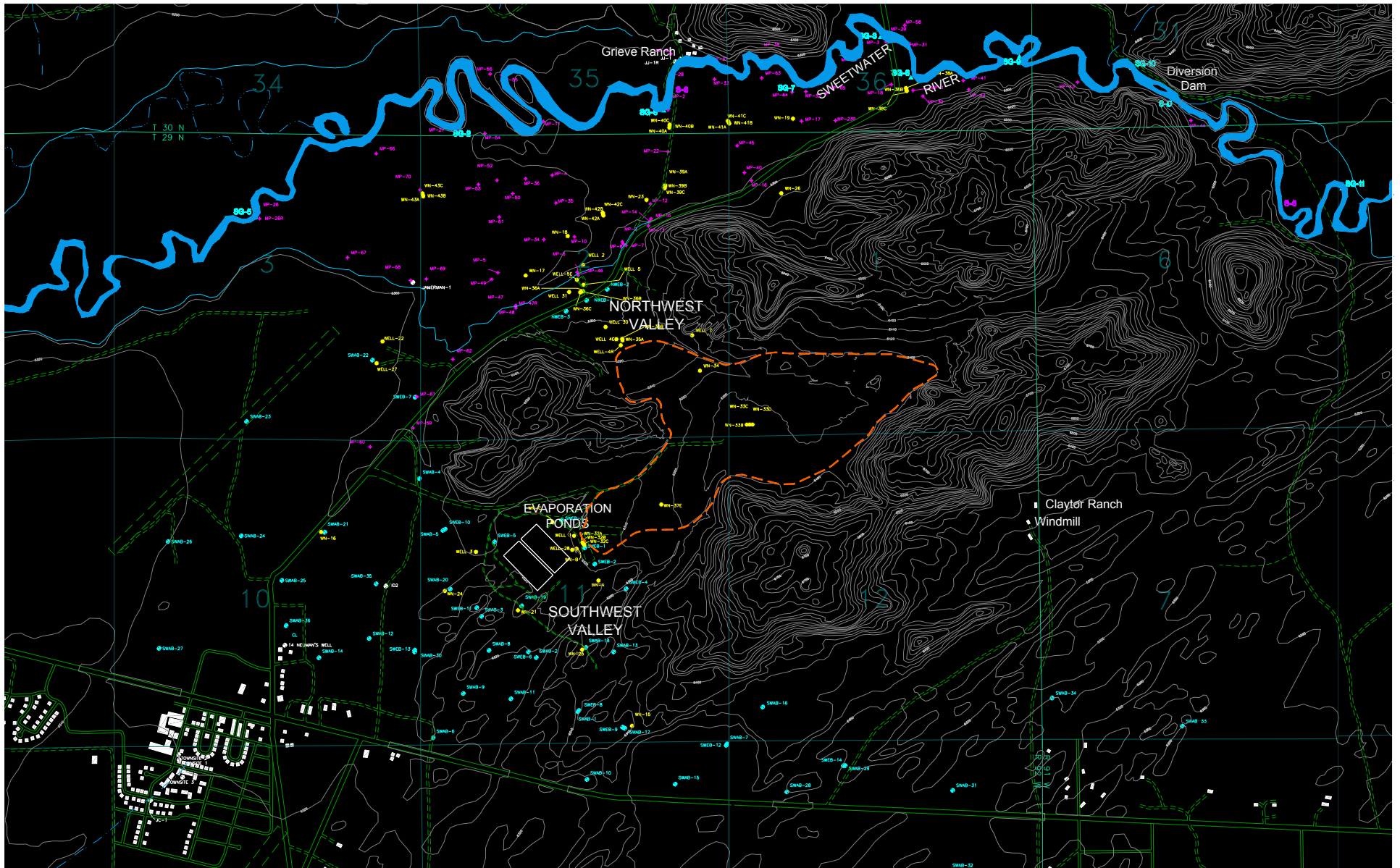
- Brief Summary of recent history and record
- Existing GW Protection Standards & ACLs
 - Current Conditions comply with License @ POC and POE
- Discussion of why approved LTSB still provides the reasonable assurance of protection over the compliance period.

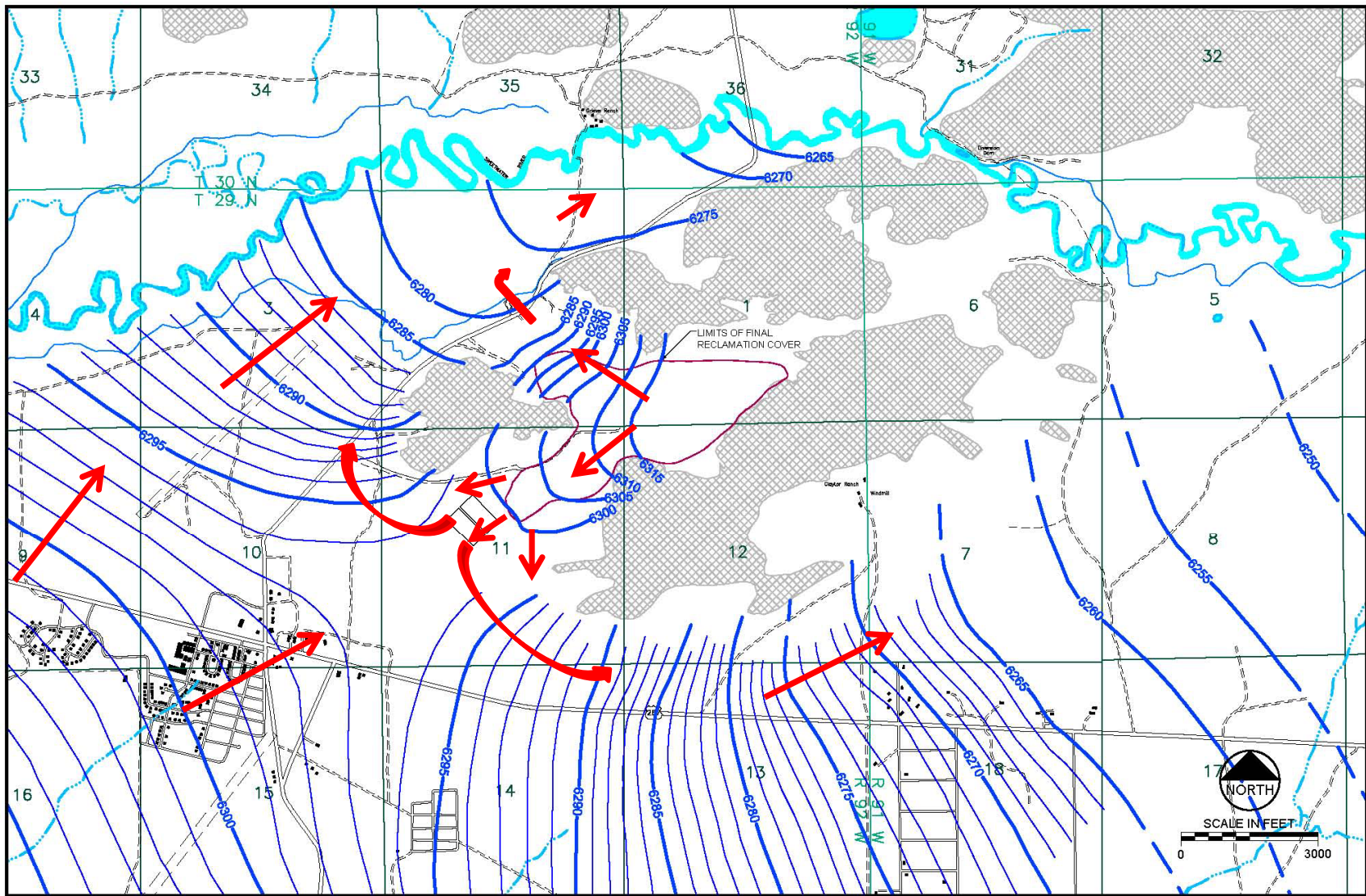
Western Nuclear Inc.

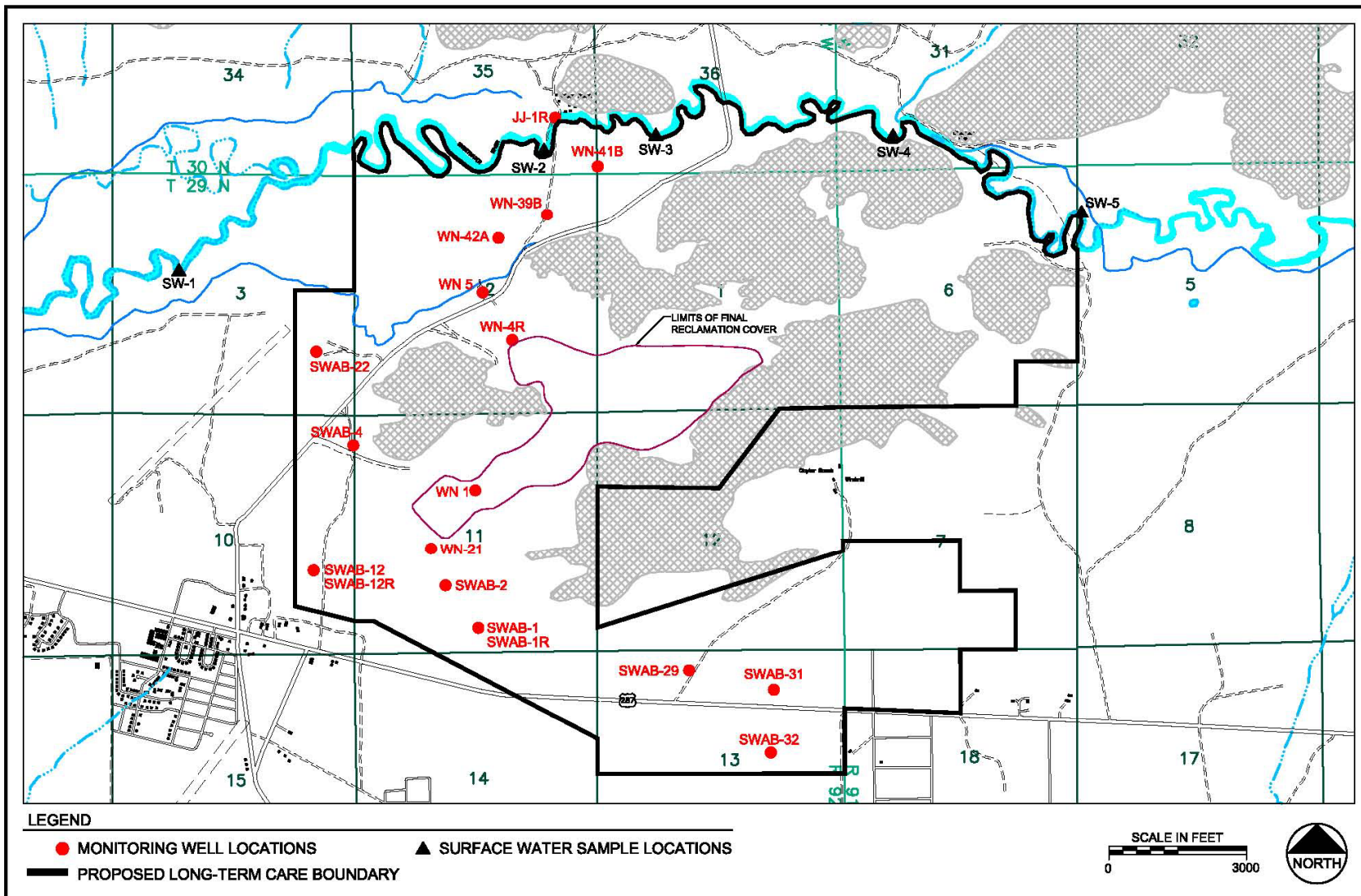
BRIEF SITE HISTORY REVIEW

- 1957- 1981 Operations
- 1981- 1986 Standby
- 1986 -1998 Reclamation & Closure
- 1999 ACL Application
- 2006 ACLs Approved (Alternative)
- 2007 GW CAP Ponds reclaimed
- 2010 License termination requested
- 2011 Draft LTSP from DOE
- 2011-2015 Ongoing discussions regarding LTSP, GW monitoring and LTSP fund amount

Western Nuclear Inc. Split Rock Site







WORTHINGTON
MILLER
ENVIRONMENTAL, LLC.

Figure 2-1
Surface Water and Groundwater Monitoring Locations and
Long-Term Surveillance Boundary (LTSB)

Date: DECEMBER 2014
Project: Jeffrey City
File: SW-GW-MON-2014



Western Nuclear Inc.

Existing GW Protection Standards & ACLs

- Northwest Valley POC (WN-5)
- Southwest Valley POC (WN-21)

		Northwest Valley		Southwest Valley	
		WN-5		WN-21	
	Al	37	mg/L	37	mg/L
	Sb	0.01	mg/L	0.01	mg/L
	As	0.05	mg/L	0.05	mg/L
	Be	0.01	mg/L	0.01	mg/L
	Cd	0.01	mg/L	0.01	mg/L
	F	4	mg/L	4	mg/L
ACL	Mn	225	mg/L	35	mg/L
ACL	Mo	0.66	mg/L	0.22	mg/L
	Pb	0.05	mg/L	0.05	mg/L
ACL	NH3-N	0.61	mg/L	0.84	mg/L
	Ni	0.05	mg/L	0.05	mg/L
ACL	NO ₃ -N	317	mg/L	70.7	mg/L
	Se	0.05	mg/L	0.05	mg/L
	Tl	0	mg/L	0	mg/L
	Th-230	0.95	pCi/L	0.95	pCi/L
ACL	Ra-226 + 228	7.2	pCi/L	19.9	pCi/L
ACL	Unat	4.8	mg/L	3.4	mg/L

Western Nuclear Inc.

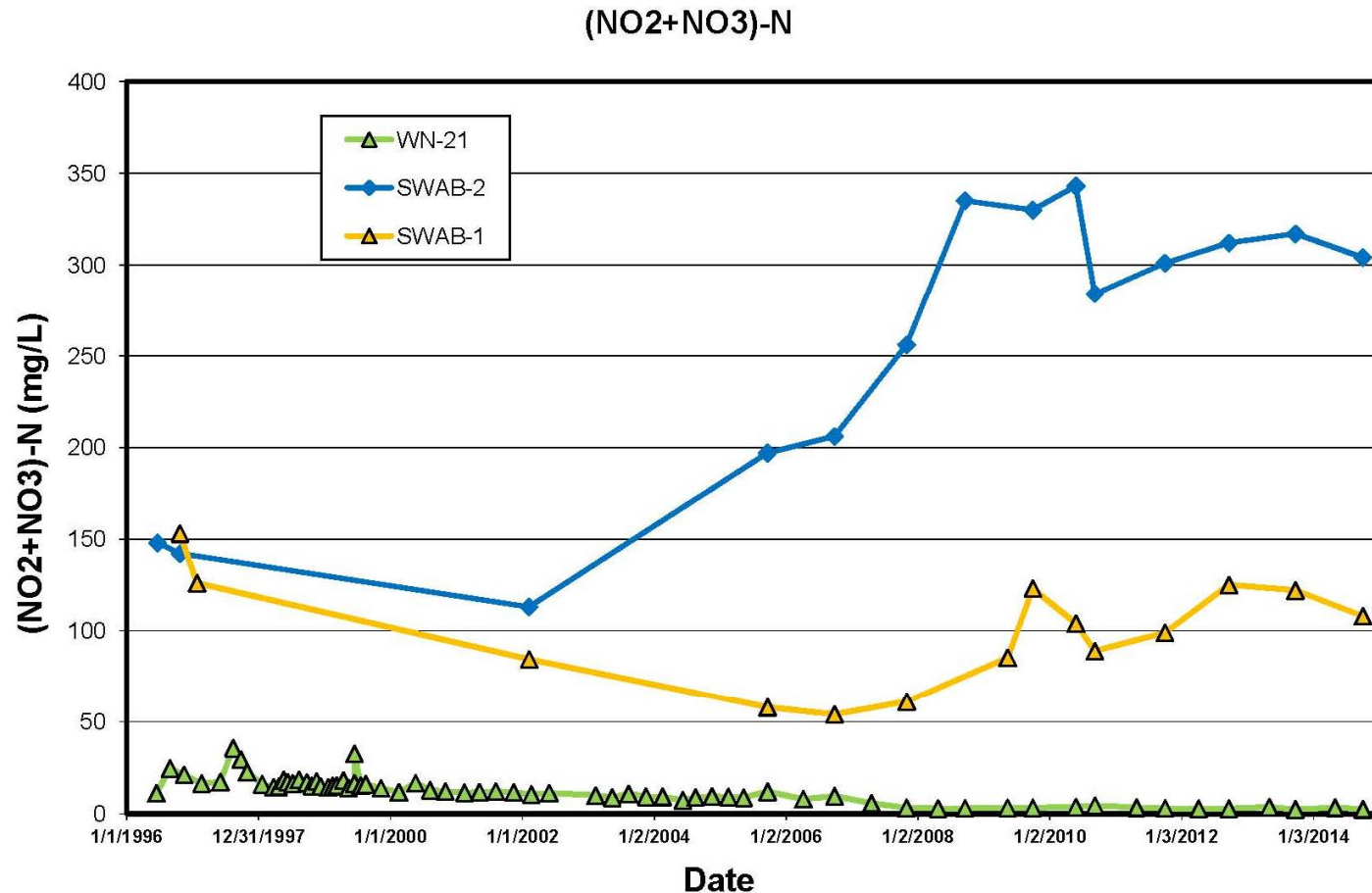
- Current GW concentrations at the POC are below all license condition standards
- Current GW concentrations at the POE are at background
- The only constituent of concern (CoC) that is greater than its license condition standard beyond the POC is nitrate (70.7 mg/L) in two SW Valley wells:
 - SWAB-2 (\cong 300 mg/L)
 - SWAB-11/1R (\cong 100 mg/L).

Western Nuclear Inc.

- Approved ACLs constitute an alternative to the requirements of 10 CFR 40 Appendix A criteria.
 - *“WNI’s proposed use of IC’s constituted an alternative to the provisions of 10 CFR Part 40, Appendix A.” (NRC TER, 2006)*

Western Nuclear Inc.

- GW concentrations greater than ACLs beyond the POC were presented in the 1999 submittal and annual reports since, including the period when NRC approved the ACLs.



Western Nuclear Inc.

- In granting the ACLs, the NRC approved the alternative as an exception to the requirements of Criterion 5.b(1), which states:
“Hazardous constituents entering the ground water from a licensed site must not exceed the specified concentration limits in the uppermost aquifer beyond the point of compliance during the compliance period.”
- *The “alternative” is protective because these conditions were considered in the predictions that were used to establish the LTSB.*

Western Nuclear Inc.

- GW Model was not used to establish ACLs
- GW Model was calibrated to 1986 conditions
 - head
 - Unat & SO₄ concentration distributions
- GW Model was validated by reasonably matching measured 1996 conditions.

Western Nuclear Inc.

- Validated GW Model was used to predict **leading edge** of plume @ 1,000 years.
- NRC concluded in the 2006 TER (Section 3.3.3) :

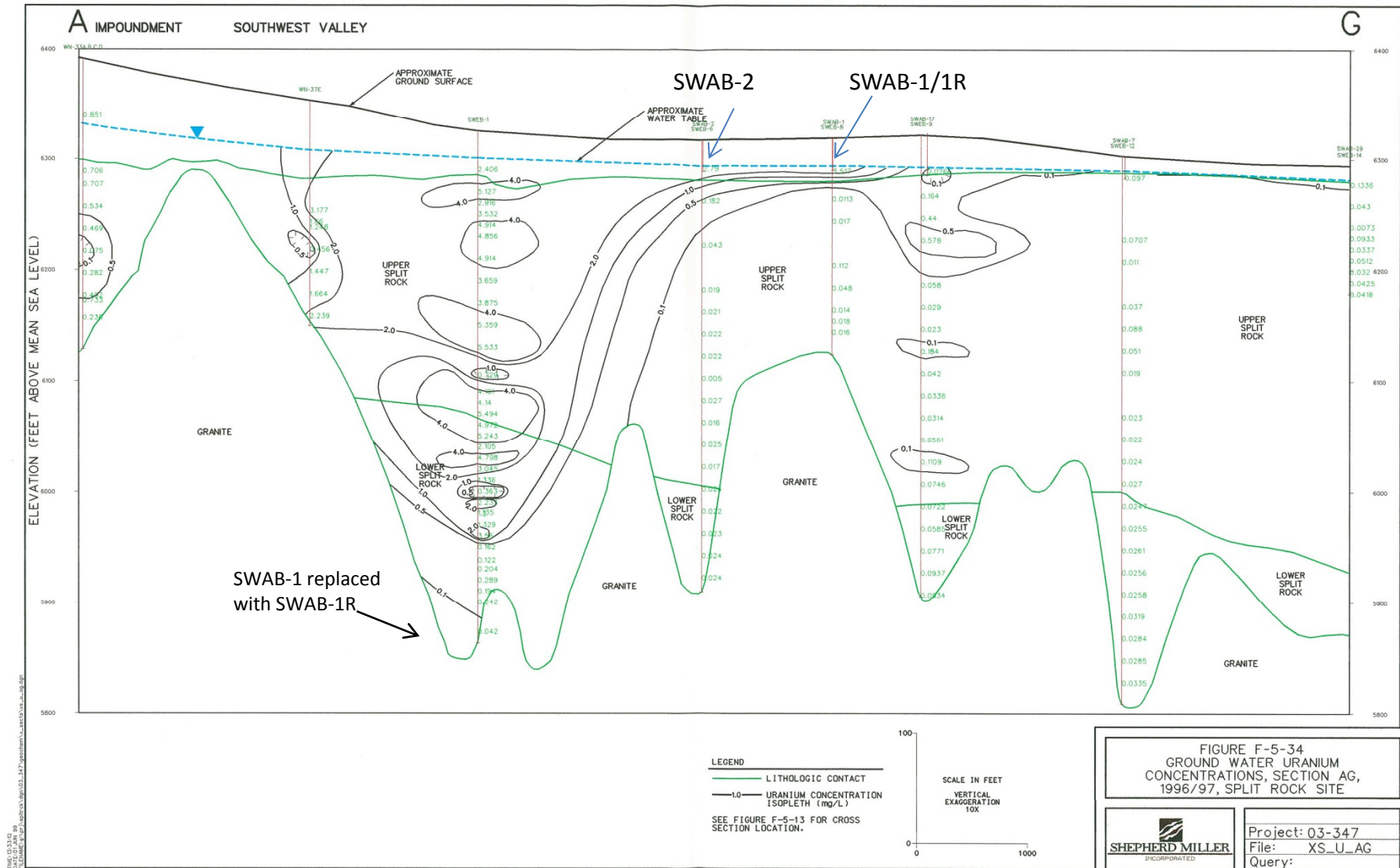
“On the basis of this review, the staff finds that the latest modeling study discussed in the reference (WNI, 2003) adequately support the extent of the long-term boundary.”

Model was not designed nor intended to be used to validate future concentrations within core of the plume.

Western Nuclear Inc.

- Saturated alluvial material in southwest Valley (Model Layer 1) becomes unsaturated between SWAB-1R and SWAB-29, all flow is in the Upper Split Rock Formation, which has a lower overall hydraulic conductivity.

1996/1997 Uranium



Western Nuclear Inc.

- Only 16 years of the 1,000 year model temporal domain has elapsed (1.6%)
- Model assumed a limited set of values for hydraulic conductivity (k) to approximate conditions documented to vary by 2 orders of magnitude over a few tens of meters.
- Model is expected to over-predict and under-predict head and concentration at different points in model domain (spatial and temporal)
- It is unlikely that model will precisely predict concentrations in any specific point.

Western Nuclear Inc.

- Model was intend to provide a reasonable technical basis for the LTSB, not for assessing internal plume dynamics.
- To expect a model to always over-predict or match actual conditions for all points in the model spatial and temporal domain would require unprecedented and non-representative conservatism.

Western Nuclear Inc.

- No license condition GW standard has been exceeded.
- WNI asserts that the observed data are consistent with the model and within the level of the approved model precision and accuracy.

Western Nuclear Inc.

- Standard for protection is “*reasonable assurance*”
Criterion 5D
- Compliance period is “...*for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years*” **Criterion 6**
- “*All site specific licensing decisions based on the criteria in this Appendix or alternatives proposed by licensees or applicants will take into account **the risk** to the public health and safety and the environment*” **10 CFR 40**

Appendix A: Introduction

Western Nuclear Inc.

- WNI asserts that it is compliance with all license requirements and that it has met all conditions for license termination.
- WNI respectfully requests that NRC act on its request for license termination and transfer.