FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFACO)
ERRATA SHEET

Corrective Action Unit (CAU) Number: CAUs 97, 98, 99, 101, and 102

CAU Description: Yucca Flat/Climax Mine, Frenchman Flat, Rainier Mesa/Shoshone Mountain, Central Pahute Mesa, Western Pahute Mesa

The following corrections and clarifications apply to: Underground Test Area (UGTA) Calendar Year (CY) 2022 Quality Assurance Report, Nevada National Security Site, Nevada, Rev. 1, March 2024

Environmental Management (EM) Nevada Program Document Number: DOE/EMNV--0047-REV. 1

Revision: 1

Original Document Issuance Date: March 2024

This errata sheet was issued under cover letter from Environmental Management (EM) Nevada Program on: April 1, 2024

Description of Change:	Justification:
1. Page A-7 footnote: Add the document number as follows "2021 QA report, DOE/EMNV--0041 (DOE/EMNV, 2023)."	1. Document number is added for clarification purposes.
2. Page A-8: Revise the reference to read as follows: U.S. Department of Energy Environmental Management Nevada Program. 2023. *Underground Test Area Calendar Year 2021 Quality Assurance Report, Nevada National Security Site, Nevada,* Rev. 0, DOE/EMNV--0041. Las Vegas, NV.	2. The reference to the 2021 Annual Quality Assurance Report was incorrectly reported.

Table A-2
2022 Closed Corrective Actions
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Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Closure Date	Description	Corrective Action
A-2940	I-3376	Finding	Navarro	06/08/2022	08/22/2022	6 of the 59 visually identified hold tags were not sent to QA as required by procedure.	Hold tags have been sent to QA and entered into the Hold Tag database.
A-2988	I-3436	Finding	USGS	08/09/2022	10/11/2022	Vehicle used to transport the camera and downhole reel equipment was not equipped with a power inverter.	Transport vehicle was equipped with a power inverter.
A-2988	I-3437	OFI	USGS	08/09/2022	11/17/2022	Awning for video logging	Awning was purchased.
A-2988	I-3438	OFI	USGS	08/09/2022	11/17/2022	Limited resolution of Laval R-Cam 1300 monitor/screen	A large field grade video monitor that will connect to the current camera system was researched and procured.
A-2988	I-3439	OFI	USGS	08/09/2022	11/17/2022	Laval R-Cam 1300 Winch overheating	A larger motor rated for a higher load was purchased.
N/A	I-3467	OFI	Navarro	09/22/2022	12/05/2022	Personnel have not been aware of the migration to SharePoint Online, and no training concerning the use of SharePoint has been offered to associates.	Options for accessing files after network drive migration to document center was distributed to all personnel.One Drive User Guide was also distributed to all personnel.

[a] Although issues originated in 2022 upon final closure of Assessment A-1265 (Data Flow Processes for Analytical Services and Geochemical Databases), the assessment itself was completed in 2021 and is therefore reported in Table 2-1 of the 2021 QA report, DOE/EMNV--0041 (DOE/EMNV, 2023).

EDD = Electronic data deliverable
PAT = Procedure Action Tracker

A.1.0 References

U.S. Department of Energy Environmental Management Nevada Program. 2023. *Underground Test Area Calendar Year 2021 Quality Assurance Report, Nevada National Security Site, Nevada*, Rev. 0, DOE/EMNV--0041. Las Vegas, NV.

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Underground Test Area Calendar Year 2022 Quality Assurance Report Nevada National Security Site, Nevada

Revision No.: 1

March 2024

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UNDERGROUND TEST AREA
CALENDAR YEAR 2022
QUALITY ASSURANCE REPORT
NEVADA NATIONAL SECURITY SITE, NEVADA

U.S. Department of Energy,
Environmental Management Nevada Program
Las Vegas, Nevada

Revision No.: 1

March 2024

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List of Acronyms and Abbreviations

General Acronyms and Abbreviations

AIMS	Assessment and Issue Management System
ARS	Aleut Analytical, LLC
CADD	Corrective action decision document
CAMS	Center for Accelerator Mass Spectrometry
CAP	Corrective action plan
CAU	Corrective action unit
COPC	Contaminant of potential concern
CR	Closure report
CY	Calendar year
DOC	Demonstration of capability
DOE	U.S. Department of Energy
DOECAP	U.S. Department of Energy Consolidated Audit Program
DRI	Desert Research Institute
EDC	Electronic data capture
EDD	Electronic data deliverable
E/I	Event/issue
EM	Environmental Management
EMIS	Environmental Management Information System
ERA	Environmental Resources Associates
ESRI	Environmental Systems Research Institute
FD	Field duplicate
FOERP	Facility Operations and Emergency Response Plan
FR	Facility Representative
GEL	General Engineering Laboratories

List of Acronyms and Abbreviations (Continued)

GIS	Geographic Information Systems
GPS	Global Positioning System
IA	Independent assessment
ISPID	Integrated Sampling Plan Identifier
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
MA	Management assessment
MAPEP	Mixed Analyte Performance Evaluation Program
MCL	Maximum contaminant level
MDA	Minimum detectable activity
MSTS	Mission Support and Test Services
N/A	Not applicable
NDEP	Nevada Division of Environmental Protection
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSS	Nevada National Security Site
OBS	Observation
OFI	Opportunity for improvement
PAT	Procedure Action Tracker
pCi/L	Picocuries per liter
PEP	Performance evaluation program
QA	Quality assurance
QAP	Quality Assurance Plan
QC	Quality control
QSL	Qualified Suppliers List
RBMS	Requirements-Based Management System

List of Acronyms and Abbreviations *(Continued)*

RN	Radionuclide
RPD	Relative percent difference
SOW	Statement of Work
UGTA	Underground Test Area
USGS	U.S. Geological Survey

Symbols for Elements and Compounds

AgCl	Silver chloride
Cl	Chlorine
^{3}H	Tritium
I	Iodine

1.0 Introduction

This report is required by the Underground Test Area (UGTA) Activity Quality Assurance Plan (QAP) (NNSA/NFO, 2015; DOE/EMNV, 2018b) and identifies the UGTA quality assurance (QA) activities for calendar year (CY) 2022 (January 1 through December 31, 2022). UGTA organizations—the U.S. Department of Energy (DOE) Environmental Management (EM) Nevada Program; DOE, National Nuclear Security Administration Nevada Field Office (NNSA/NFO), Navarro Research and Engineering, Inc. (Navarro); Lawrence Livermore National Laboratory (LLNL); and U.S. Geological Survey (USGS)—conducted QA activities throughout CY 2022. The QA activities included conducting assessments for UGTA Activity QAP compliance, identifying findings and completing corrective actions, evaluating laboratory performance, reviewing technical work, and publishing documents. Desert Research Institute (DRI); Los Alamos National Laboratory (LANL); and Mission Support and Test Services, LLC (MSTS) did not conduct QA activities for the UGTA Activity in 2022.

UGTA Activity participants conducted 16 assessments. These assessments are summarized in Section 2.0. Corrective actions associated with quality-related issues are presented in Appendix A. UGTA Activity use of laboratories not certified by the State of Nevada is identified and justified in Section 3.0. Results of the laboratory performance evaluations are summarized in Section 4.0. Key personnel are identified in Section 5.0. Other activities that affected UGTA quality are discussed in Section 6.0. UGTA QA program conclusions are provided in Section 7.0, and references are listed in Section 8.0.

2.0 Assessments and Corrective Action Tracking

2.1 Assessments

The UGTA Activity participants conduct management assessments (MAs) and independent assessments (IAs) to identify process improvements or efficiencies. MAs are conducted by the responsible managers or designees, and IAs are conducted by personnel independent of the work. Vendor assessments are IAs that evaluate a vendor's performance, including ensuring compliance with QA provisions of the subcontract. Fifteen assessments were conducted on UGTA participants in CY 2022 (Table 2-1). These include assessments of the laboratories used for UGTA sample analysis, the video logging procedure, and the hold-tag process; and also routine surveillances of UGTA and other EM Nevada Program activities by NNSA/NFO. The 15 assessments resulted in three findings, no observations (OBSs), and three opportunities for improvements (OFIs) that were related to quality and associated with the UGTA Activity.

2.2 Corrective Action Tracking

UGTA participants provide UGTA-related issues, assessment reports, corrective actions, and related closure documentation to Navarro for tracking and summarization. Items (e.g., findings, OFIs, OBSs, event/issues [E/Is]) may be identified during an assessment, outside an assessment, or as a result of an event. Assessments and items are tracked in the Navarro Assessment and Issue Management System (AIMS). The open corrective actions for 2022 are presented in Table A-1 and the closed corrective actions in Table A-2. Corrective actions presented in Tables A-1 and A-2 are associated with quality-related issues. Issues associated with health and safety, operations (e.g., schedules/delays, find-and-fix instrumentation issues), and classification are not presented.

Not all issues are found during UGTA assessments; therefore, some corrective actions in Tables A-1 and A-2 are not associated with UGTA assessments. UGTA corrective actions are discussed during the monthly contract managers meeting. At the end of CY 2022, nine corrective actions remained open (see Table A-1), and 29 had been closed (see Table A-2).

Table 2-1
Assessments Conducted on EM Nevada Program Participants, and Summary of the Corresponding Quality-Related Issues Associated with the UGTA Activity

Assessment No	Completion Date	Assessing Organization	Assessed Organization	Assessment Type	Title	Finding	OBS	OFI	Other
A-2897	01/31/2022	Navarro	Navarro	Independent	Document Control	1	0	0	0
A-2911	03/30/2022	EM Nevada Program	Navarro	Surveillance	Preliminary Hazard Analysis for Pahute Mesa Geophysical Work	0	0	0	0
A-2919	01/19/2022	NNSA/NFO	Navarro	Surveillance	Routine Facility Representative (FR) Oversight Assessment (01/19/22)	0	0	0	0
A-2920	01/26/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (01/26/2022)	0	0	0	0
A-2921	02/02/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (02/02/2022)	0	0	0	0
A-2922	02/09/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (02/09/2022)	0	0	0	0
A-2923	02/16/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (02/16/2022)	0	0	0	0
A-2924	02/23/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (02/23/2022)	0	0	0	0
A-2925	03/09/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (03/09/2022)	0	0	0	0
A-2926	03/16/2022	NNSA/NFO	Navarro	Surveillance	Routine FR Oversight Assessment (03/16/2022)	0	0	0	0
A-2940	06/08/2022	Navarro	Navarro	Surveillance	Hold Tag Process	1	0	0	0
A-2951	07/28/2022	Navarro	Navarro	Independent	Building 23-310 and 6-909 Field Operations Emergency Response Plans (FOERPs)	0	0	0	0
A-2988	08/09/2022	USGS	USGS	Management	Video Logging Procedure (MSA-22-USGS-001)	1	0	3	0
A-3037	10/31/2022	Navarro	Aleut Analytical, LLC (ARS)	Vendor	Vendor Assessment of ARS Aleut Analytical, LLC (Port Allen)	0	0	0	0
A-3101	12/13/2022	Navarro	General Engineering Laboratories (GEL)	Vendor	Vendor Assessment of GEL	0	0	0	0
					Totals	**3**	**0**	**3**	**0**

3.0 Noncertified Laboratory Use

Noncertified laboratories may be used to support characterization and model evaluation investigations but are not used for compliance sampling during closure. The UGTA QAP (NNSA/NFO, 2015; DOE/EMNV, 2018b) states, "Laboratories must be certified by the State of Nevada for analysis of groundwater and soil samples or justification must be provided in the Annual QA Report when Nevada-certified laboratories cannot be used." This section identifies and justifies analyses performed during CY 2022 by laboratories not certified by the State of Nevada.

Analyses by noncertified laboratories during CY 2022 were limited to chlorine-36 (^{36}Cl) and iodine-129 (^{129}I) by LLNL for samples collected in 2019 from several wells (ER-EC-5, ER-EC-13, ER-EC-14, ER-EC-15, ER-20-5-1, ER-20-5-3, UE-20n 1, and U-20n PS 1D). These samples were collected in support of the *Nevada National Security Site* (NNSS) *Integrated Groundwater Sampling Plan* (DOE/EMNV, 2018a and 2019), and this plan identified ^{36}Cl and ^{129}I as contaminants of potential concern (COPC) for all corrective action units (CAUs). Both ^{36}Cl and ^{129}I are used to evaluate extent and trends in contamination resulting from underground nuclear testing (i.e., evaluate contaminant transport).

LLNL is able to measure these radionuclides (RNs) at much lower levels than the commercial laboratory, allowing detection at levels that cannot be detected by the commercial laboratory. While commercial laboratories are useful for verifying nondetects below the maximum contaminant levels (MCLs), LLNL analyses are necessary for evaluating trends in the majority of NNSS locations and for meeting other sampling objectives (e.g., evaluate groundwater flow paths and estimate groundwater travel times/velocities) that are associated with groundwater characterization. LLNL's low-level measurements also provide confidence in commercial lab results and in any exceedances reported. A comparison between LLNL and the commercial lab ^{36}Cl and ^{129}I results is presented in Section 4.3.

4.0 Performance Evaluation Programs

The UGTA QAP (NNSA/NFO, 2015; DOE/EMNV, 2018b) requires that analytical laboratories providing data for the UGTA Activity participate in performance evaluation programs (PEPs). In 2022, laboratory results were provided by ARS, GEL, and LLNL. GEL and ARS are commercial laboratories certified by the State of Nevada. Commercial laboratories participate in formal PEPs when available and require demonstrations of capability (DOCs) for analytes that do not have a formal program. LLNL performs specialized analyses that typically do not have formal PEPs. These analyses require interlaboratory comparisons, blind sample analyses, or data evaluations to assess laboratory performance.

The parameters analyzed by each laboratory are as follows:

- **GEL:** Metals (silver, aluminum, arsenic, barium, calcium, cadmium, chromium, iron, potassium, magnesium, manganese, sodium, lead, selenium, silica, strontium, and uranium), anions (bromide, chloride, fluoride, and sulfate), alkalinity, pH, and tritium (^{3}H)
- **ARS:** ^{3}H (low-level)
- **LLNL:** ^{36}Cl and ^{129}I

Formal PEPs are available for most of the analytes and DOCs or interlaboratory comparisons were performed for the remaining analytes (^{3}H [low-level], ^{36}Cl, and ^{129}I). This section summarizes the PEP results for analyses performed for the UGTA Activity in 2022. Additional QA information is provided in Chapter 14 of the 2022 NNSS Site Environmental Report (Redding, 2023). This includes the 2022 results for the laboratory performance in the Mixed Analyte Performance Evaluation Program (MAPEP) administered by the Radiological and Environmental Sciences Laboratory operated by the DOE Idaho Operations Office, and a summary of 2022 results for field duplicates (FDs), laboratory control samples (LCSs), method blanks, and matrix spikes for standard and low-level ^{3}H analyses.

4.1 Established Programs

The commercial laboratory, GEL, successfully participated in MAPEP to satisfy the PEP requirement for arsenic, barium, cadmium, chromium, lead, selenium, and ^{3}H. All reported results were within the acceptance thresholds. The PEP requirement was satisfied for remaining analytes by the following programs:

- MRaD, conducted by Environmental Resources Associates (ERA)
- WatR Pollution Proficiency Testing, conducted by ERA
- Water Supply Proficiency Testing, conducted by ERA

There were no consecutive failed performances for any one analyte during this reporting period, and wherever there was one failed performance, remedial PEP results were reported with acceptable results.

4.2 Demonstration of Capability

The PEP requirement for ARS's low-level ^{3}H analysis was met by a DOC. The DOC demonstrated the analyst's ability to meet measurement quality objectives (e.g., for precision and bias) by analyzing four LCSs with acceptable levels of precision and accuracy. The percent recoveries for these analyses (82 to 101 percent) were within the acceptance limits (75 to 125 percent). The concentration of ^{3}H in the LCSs ranged from 33.7 to 34.3 picocuries per liter (pCi/L). In addition, ARS successfully participated in ERA's RadCheM Proficiency Testing study (RAD-131 and RAD-133) for ^{3}H. Although this supports the DOC for low-level ^{3}H analysis, the concentrations of ^{3}H in the test samples were much higher (15,000 and 12,700 pCi/L) than the LCS concentrations.

4.3 Interlaboratory Comparisons

The PEP requirement for LLNL's ^{36}Cl and ^{129}I analysis was met by interlaboratory comparison. The LLNL and commercial laboratory ^{36}Cl and ^{129}I results are presented in Table 4-1. All except one commercial laboratory ^{36}Cl result (U-20n PS 1D_m2) are qualified with a "U" identifying the results as nondetects. Statistical comparisons between laboratories cannot be performed for the values reported as nondetects. It can only be stated that the LLNL results are all well below the detection capabilities (i.e., minimum detectable activity [MDA]) of the commercial laboratory. This is consistent with the commercial laboratory results reported as nondetects.

Table 4-1
Interlaboratory Comparison for ^{36}Cl and ^{129}I

Sample (ISPID)	Sample Date	^{36}Cl (pCi/L)		^{129}I (pCi/L)	
		Commercial Lab [a]	LLNL	Commercial Lab [a]	LLNL
ER-20-5-1_m1	09/24/2019	U 6.6 ± 4.4 (5.8)	3.4	UJ 0.074 ± 0.58 (0.98)	0.19
ER-20-5-3_m1	09/17/2019	U 1.7 ± 3.6 (5.8)	1.26E-02	UJ 1.1 ± 2.6 (5.3) [b]	3.2E-04
ER-4-1_m1	02/13/2019	U -2.4 ± 15 (25.5)	1.81E-04	--	--
ER-EC-13_m2	06/04/2019	U 0.5 ± 2.0 (3.5)	1.13E-03	--	--
ER-EC-14_m2	06/18/2019	U 1.6 ± 3.2 (5.3)	4.11E-04	--	--
ER-EC-15_m3	05/21/2019	U -1.3 ± 1.8 (3.3)	1.16E-03	--	--
		U 2.5 ± 2.3 (3.3)	1.15E-03	--	--
ER-EC-5_m1-3	06/26/2019	U 0.8 ± 2.6 (4.4)	3.20E-04	--	--
U-20n PS 1D_m2	11/19/2019	UJ 4.6 ± 1.8 (3.0)	4.29E-01	U 4.5E-03 ± 0.31 (0.57)	0.30
		J 6.0 ± 1.9 (3.1)	4.26E-01	U -0.19 ± 0.61 (0.96)	0.29
UE-20n 1_o2	11/06/2019	U 2.4 ± 2.8 (4.2)	8.13E-01	U 0.38 ± 0.52 (0.81)	0.15
		U 2.7 ± 2.8 (4.2)	8.08E-01	U 0.15 ± 0.51 (0.84)	0.15

[a] Commercial laboratory results are reported as "Reported Result ± 2-Sigma Error (MDA)."
[b] MDA criterion was not met as a result of a limited sample volume. The original laboratory could not perform analysis because of matrix issues, so the remaining volume was submitted to a different laboratory. The volume was not sufficient to meet the criteria.

-- = Not analyzed by LLNL.
J = Value is estimated.
U = Result was qualified as a nondetect.

ISPID = Integrated Sampling Plan Identifier

The ^{36}Cl commercial laboratory results for the U-20n PS 1D_m2 samples are also qualified with a "J" identifying them as "estimated." This qualifier was applied because the laboratory duplicate did not meet the required acceptance criteria. The relative percent difference (RPD) between the "estimated" U-20n PS 1D_m2 ^{36}Cl commercial laboratory and LLNL was high (173 percent), which likely reflects the uncertainty in the commercial laboratory rather than the LLNL result.

5.0 Key Personnel

The following section identify participants, committee memberships, and responsibilities, along with any personnel changes that occurred during CY 2022.

5.1 EM Nevada Program

The EM Nevada Program UGTA Activity Lead was John Myers, and the QA points of contact were John Myers and Janis Romo in CY 2022.

5.2 Contract Managers

Each organization assigns a contract manager responsible for managing the participants' tasks. Table 5-1 lists each manager by organization. A monthly contract managers meeting was held with EM Nevada Program.

Table 5-1
Contract Managers by Organization

Name	Organization
Mark Hausner	DRI
Michelle Bourret	LANL
Andrew Tompson	LLNL
Ken Rehfeldt	Navarro
Roger Olson	MSTS
Jeff Sanders	USGS

5.3 CAU Leads and Science Adviser

The use of CAU leads for performing technical leadership roles has been discontinued. The Navarro Contract Manager is now responsible for implementation of monitoring requirements for those CAUs in the closure report stage and for leading characterization/model evaluation activities for the Central and Western Pahute Mesa CAUs (101 and 102).

5.4 Preemptive Review Committee Members

The use of CAU-specific preemptive review committees for providing internal technical reviews has been discontinued. Review of activities and documents during the corrective action decision document (CADD)/corrective action plan (CAP) and closure report (CR) stage will be performed at the discretion of EM Nevada Program in consultation with Nevada Division of Environmental Protection (NDEP).

5.5 Topical Committee Members

Topical committees may be formed on an ad hoc basis to address items such as non-CAU-specific issues, questions, concerns, and readiness. The committees may be disbanded when their scope is complete. No committees were active in 2022.

6.0 Other Activities

6.1 External Peer Review of the Pahute Mesa Flow and Transport Model

An external peer review of the Pahute Mesa (CAUs 101 and 102) groundwater flow and contaminant transport model was conducted in 2022. The peer review panel consisted of four highly qualified subject matter experts in areas including hydrogeology, transport modeling, regulatory implementation, and closure of complex groundwater sites. The panel members were external to the UGTA Activity to obtain an independent, unbiased review. The peer reviewers assessed the scientific appropriateness of the model; whether the assumptions, methods, and conclusions of the model study are based on sound scientific principles; and whether potential users will have sufficient confidence in the model analyses and its outputs to use the model and accept its results.

The peer review panel responded favorably in their review, but provided some recommendations that they thought could impact the contaminant boundary extent by up to a few kilometers (i.e., boundaries would remain on federally controlled land). The comments and recommendations of the peer review panel are documented in *Report of the Peer Review Panel for the Pahute Mesa Groundwater Flow and Transport Model, Nevada National Security Site, Nevada* (Navarro, 2023a). The comments and recommendations are used support NDEP and EM Nevada Program decision whether the groundwater flow and contaminant transport model and results are acceptable for proceeding to the next stage of the UGTA strategy, which is the CADD/CAP stage. The recommendations are also used to support selection of activities to be performed during the CADD/CAP stage.

The UGTA modeling team responded to the peer review comments and recommendations in *Response to Report of the Peer Review Panel for the Pahute Mesa Groundwater Flow and Transport Model, Nevada National Security Site, Nevada* (Navarro, 2023b). The UGTA modeling team consisted of experienced technical professionals from Navarro, Inc., and HGL, Inc., who developed and documented the groundwater flow and contaminant transport model and results. The professional expertise on the team covered the areas of geology, hydrology, code development, groundwater flow modeling, and Pahute Mesa (CAUs 101 and 102) groundwater transport modeling as well as environmental project management and document production.

6.2 Evaluation of Anomalous Low-Level ^{3}H Results

In 2022, groundwater samples were collected from five wells for low-level ^{3}H analysis by ARS (Table 6-1). FD samples were collected from two of the wells (ER-12-1 and WW C-1). Several reported results appeared anomalous for the following reasons:

- ^{3}H was detected in ER-20-4 and UE-18r samples, and ^{3}H has never been detected at these locations (Navarro, 2023c).
- ^{3}H results are more than four times greater in WW C-1 samples than the 9.9 to 12.5 pCi/L concentrations recently reported (DOE/EMNV, 2023).
- ^{3}H was detected in the ER-12-1 sample but not in the FD (Table 6-1).
- The reported errors are quite high relative to the reported result and the MDA (Table 6-1).
- All results were qualified as "estimates" because the quality control (QC) results (e.g., laboratory duplicates, LCSs, and/or matrix spikes) did not meet the acceptance criteria.

Table 6-1
Low-Level ^{3}H Results

Sample (ISPID)	Sample Date	^{3}H Concentration (pCi/L)	
		Sample	FD
ER-12-1_m5	04/19/2022	J 22.1 ± 6.8 (2.3)	UJ 0.97 ± 1.49 (2.46)
ER-20-4_p1	07/06/2022	J 332 ± 98 (2.4) [a]	--
		UJ 1.5 ± 1.7 (2.8) [b]	--
ER-EC-12_p2	08/08/2022	UJ 1.5 ± 1.5 (2.3)	--
UE-18r_o1	06/29/2022	J 109 ± 32 (2.5) [a]	--
		UJ 1.4 ± 1.6 (2.6) [b]	--
WW C-1_o1	05/25/2022	J 51.5 ± 15.4 (2.7)	J 48.8 ± 14.6 (2.3)
		J 50.0 ± 15.0 (3.1) [b]	J 53.7 ± 16.0 (2.6)
	02/02/2023	15.6 ± 5.1 (2.8)	13.9 ± 4.6 (2.9)
		14.3 [c]	14.8 [c]

[a] Result was rejected and flagged with a data evaluation flag. (Anomalously high value determined by data originator.)
[b] Result is for sample that was re-extracted and reanalyzed.
[c] Result reported by University of Miami Tritium Laboratory.

-- = No FD was collected.
J = Value is estimated.
U = Result was qualified as a nondetect.

Because these results seemed anomalous, the laboratory was requested to re-extract and reanalyze samples that had sufficient volume available. WW C-1 was also resampled (02/02/2023) to determine whether there was an issue with the sample collection process. Samples were also split from this resampling, and were sent to ARS and to the University of Miami Tritium Laboratory. The Miami laboratory is widely used for low-level ^{3}H. Clients include environmental consulting firms, mining companies, municipalities, universities, and governmental agencies (University of Miami Tritium Laboratory, 2023).

The results of the resampling (WW C-1) and the reanalysis (ER-20-4, UE-18r, and WW C-1) are reported in Table 6-1. The results for the ER-20-4 and UE-18r sample reanalysis were consistent with historically reported results (Navarro, 2023c). Although the result was qualified as an estimate ("J" qualified), the QC result was near the threshold value (LCS recovered at 74 percent, and 75 percent is the criterion), indicating a reasonable level of certainty. This is compared to the RPD between the sample and the laboratory duplicate of 182 percent for the original analysis of ER-20-4 samples (criterion is within 20 percent) and a recovery of -247 percent for the matrix spike for the original analysis of UE-18r samples (criterion is 60 to 140 percent). The originally reported result was therefore rejected and flagged as "Anomalously high value determined by data originator."

Although a positive bias is suspected, the WW C-1 reanalysis results were quite similar to the original results, and therefore all values will be reported. The ^{3}H concentrations reported for the samples collected in 2023 were consistent with historically reported results and with those of the University of Miami. While it appears that ARS has resolved the present issues, the Miami laboratory will be used periodically to corroborate the results.

6.3 Corrective Action for LLNL ^{36}Cl Analysis

LLNL identified two issues with respect to seven specific ^{36}Cl analysis of samples collected in 2019. Following receipt of the analysis results from the Center for Accelerator Mass Spectrometry (CAMS), it was discovered that the samples were overly diluted during their preparation which implied uncertainty in the results reflective of CAMS detection limits. As a result, new samples were prepared using the original sample water, taking care to develop proper dilution levels, and were reanalyzed at CAMS.

The second round of ^{36}Cl results from CAMS (analyzed 05/17/2022) were judged to be inaccurate. The results of the standards were not reproducible, and the sample results were not consistent with earlier ^{36}Cl data for the same wells (Figure 6-1a). No firm reason for this was determined. The corrective action was to prepare new samples again with the remaining well samples and rerun the "new" samples at CAMS, ensuring extremely careful attention to potential sample preparation and CAMS loading issues. The results of these analyses (12/06/2022) are presented in Figure 6-1b. The sample from ER-20-5-3_m1 was not reanalyzed, as it was realized that it was analyzed earlier (07/16/2021) and did not need to be included in this batch. It is therefore not included in Figure 6-1b. Earlier results for the same samples showing that the results from 12/06/2022 tend to be much more consistent with the earlier results are shown in Figure 6-1.

As an added measure, small amounts of two older samples (ER-EC-11 and PM-3) that had already completed the sample preparation process (i.e., conversion to a silver chloride [AgCl] solid) and that had been included in a previous batch of successful analyses were included for reanalysis in the CAMS analytical batch (as controls) to see whether the same results would be reproduced. The new sample results matched trend lines from earlier ^{36}Cl/Cl ratios for the same wells; the standards reproduced well; and the exact same results were obtained as the previous analysis of the old AgCl samples (Figure 6-1b). This second round of results were reported as the final results for the 2019 samples (Tables 4-1 and 6-2).

Table 6-2
LLNL ^{36}Cl/Cl Ratios and ^{36}Cl Activities
(Page 1 of 2)

Sample (ISPID)	Sample Date	LLNL Sample Number	^{36}Cl /Cl Ratio [a]	^{36}Cl (pCi/L) [a]
ER-20-5-1_p1	09/24/2019	UG100492	3.97E-09	3.4
UE-20n1_o2	11/06/2019	UG100493	1.87E-09	8.13E-01
		UG100494	1.93E-09	8.08E-01
		UG100494 [b]	1.95E-09	8.14E-01
U-20n PS 1D_m2	11/19/2019	UG100495	1.06E-09	4.29E-01
		UG100496	1.05E-09	4.26E-01

Table 6-2
LLNL ^{36}Cl/Cl Ratios and ^{36}Cl Activities
(Page 2 of 2)

Sample (ISPID)	Sample Date	LLNL Sample Number	^{36}Cl /Cl Ratio [a]	^{36}Cl (pCi/L) [a]
ER-EC-11_p3	10/19/2017	UG100469	5.12E-12 [c]	--
PM-3_p2	06/21/2018	UG100478	8.04E-13 [c]	--

[a] Results from 12/06/2022 analysis.
[b] Laboratory duplicate sample, not reported as a sample result (Table 4-1).
[c] Reanalysis of previous AgCl sample originally analyzed on 01/24/2019.

-- = Not evaluated.

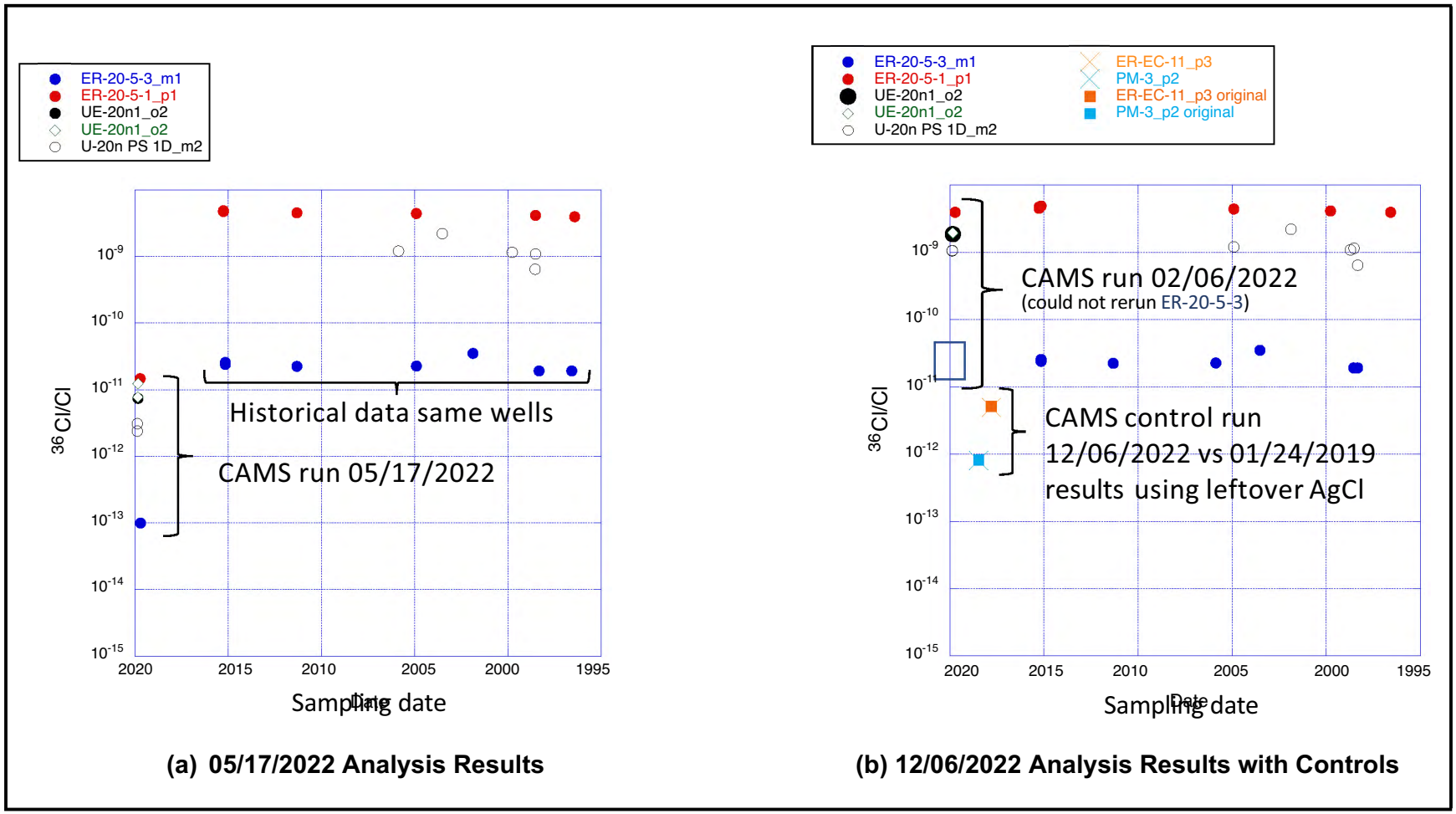

Figure 6-1
^{36}Cl/Cl Ratios for Samples Analyzed by LLNL in (a) May 2022 and (b) December 2022 along with LLNL's Earlier Results for Same Wells

7.0 Conclusion

During CY 2022, UGTA Activity participants conducted 15 assessments on topics including assessments of the laboratories used for UGTA sample analysis, the video logging procedure, and the hold-tag process; and also routine surveillances of UGTA and other EM Nevada Program activities by NNSA/NFO. The 15 assessments resulted in three findings and three OFIs that were related to quality and associated with the UGTA Activity.

The UGTA Activity focused on sampling with all analyses performed by commercial laboratories and completing the external peer review of the Central and Western Pahute Mesa (CAU 101 and 102) groundwater flow and transport model. In addition, issues associated with low-level ^{3}H and ^{36}Cl analysis were evaluated and resolved. Analyses performed by specialized (noncertified) laboratories was limited to ^{36}Cl and ^{129}I analysis by LLNL for samples collected in 2019.

8.0 References

DOE/EMNV, see U.S. Department of Energy Environmental Management Nevada Program.

NNSA/NFO, see U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office.

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Navarro. 2023b. *Response to Report of the Peer Review Panel for the Pahute Mesa Groundwater Flow and Transport Model, Nevada National Security Site, Nevada*, Rev. 0, N/0002653--105. Las Vegas, NV.

Navarro. 2023c. Written communication. Subject: "UGTA Chemistry Database (UCDB)," UGTA Technical Data Repository No. UGTA-4-1197. Las Vegas, NV. As accessed on 6 December.

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U.S. Department of Energy Environmental Management Nevada Program. 2018b. *Record of Technical Change to Underground Test Area Activity Quality Assurance Plan, Nevada National Security Site, Nevada*, Rev. 2, DOE/NV--1450-REV. 2; Technical Change No. DOE/NV--1450-REV. 2-ROTC-1, 5 February. Las Vegas, NV.

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Appendix A

Tracked Corrective Actions

Table A-1
2022 Open Corrective Actions
(Page 1 of 2)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Due Date	Description	Corrective Action
A-1247	I-3125	OBS	Navarro	03/04/2021	09/30/2021 [a]	There is no single process for the configuration management of software.	Determine what organization will own the software baseline, and identify the tool for tracking the software baseline. Identify what items will be included as part of the baseline, and add Navarro software to the baseline.
N/A	I-3132	E/I	Navarro	03/23/2021	04/19/2022 [a]	Century Wireline Unit Failure. Field personnel attempted to diagnose the problem rather than red-tagging the equipment and sending it to a vendor for repair. Self-diagnosis of broken equipment and work arounds seem to be ingrained in the culture and could potentially pose a safety issue if this mindset continues.	The Century Wireline unit was repaired, equipment was marked for electrical load, and the user's manual now maintained with the equipment. FOERP for Building 6-909 was updated to clarify the authorized tools and their use, and to align with the on-the-job process. Field personnel completed training.
A-1512	I-3200	OFI	Navarro	08/06/2021	12/23/2021 [a]	GIS Functionality Training	A training presentation was developed to encompass GIS data and functionality, request for service, standard maps, and record requirements.
N/A	I-3405	Observation	Navarro	07/13/2022	10/12/2022	No Process for Development / Review / Approval of SOWs	Create a separate RBMS procedure for the SOW development, coordination, review, and approval of SOWs.
N/A	I-3474	Event/Issue	Navarro	10/18/2022	01/18/2023 [a]	2022 ARS Tritium Results Biased High	Request that lab reanalyze samples and compare results to those of the original analysis to identify potential problem. Apply validation qualifiers and determine whether a data evaluation flag (DEF) should be applied. Evaluate recent DOECAP assessment results to determine whether potential causes were observed during the assessment. Identify and possibly qualify (add to QSL) another low-level tritium laboratory and send sample splits to both labs (see Section 6.2).

Table A-1
2022 Open Corrective Actions
(Page 2 of 2)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Due Date	Description	Corrective Action
N/A	I-3489	Observation	Navarro	11/03/2022	02/15/2023 [a]	UE-10j_m3_a Lid Security Reconfiguration	Coordinate with USGS and MSTS to identify potential reconfiguration solutions. Notify EM Nevada Program of the need to repair the well head at UE-10j. EM Nevada Program will request support and authorize funding for MSTS to make the needed repairs.
N/A	I-3501	OFI	Navarro	12/06/2022	03/08/2023 [a]	Accessibility of Document Versions in RBMS	Provide the current version and the revised version of documents to everyone in RBMS.
N/A	I-3510	Observation	Navarro	12/15/2022	03/15/2023 [a]	On-Boarding and Off-Boarding Subcontractors	Develop a process for on-boarding and off-boarding subcontractor personnel.
N/A	I-3511	Observation	Navarro	12/15/2022	03/15/2023	The project closeout procedure is contained in BM-102; however, it needs some additional text in order to make it a valid closeout plan.	The closeout procedure will be rewritten so it will be adequate and appropriate.

[a] Issues I-3125, I-3132, I-3200, I-3474, I-3489, I-3501, I-3510 were closed on 01/21/2023, 02/02/2023, 01/10/2023, 06/22/2023, 03/21/2023, 03/08/2023, 01/05/2023, respectively. The corrective actions were consistent with those presented in this table.

DOECAP = U.S. Department of Energy Consolidated Audit Program
GIS = Geographic Information Systems
N/A = Not applicable
QSL = Qualified Suppliers List
RBMS = Requirements-Based Management System
SOW = Statement of Work

Table A-2
2022 Closed Corrective Actions
(Page 1 of 5)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Closure Date	Description	Corrective Action
N/A	I-2984	Finding	Navarro	07/30/2020	05/31/2022	The current inventory of nitric acid ampoules was purchased many years ago; and there are no certificates of analysis, lot number, or expiration date for the ampoules. Because the nitric acid is likely expired, and there are no associated certificates for the acid, the ampoules should no longer be used.	Purchased new nitric acid ampoules that identify the lot number to ensure traceability and the expiration date to ensure effectiveness. The old ampoules were disposed of.
A-771	I-3012	OBS	Navarro	08/31/2020	05/24/2022	Although most of the data in the Borehole Index are accurate, data retrieved through the Field Operations Well Construction Diagram link cannot be retrieved because of an unconfigured server.	The ARC GIS mapping server was reconfigured with the assistance of the software development vendor.
A-771	I-3013	OFI	Navarro	08/31/2020	08/09/2022	Currently, there is governance for documenting the workflow from environmental activities that impact field operations to updating the Navarro downstream database component interfaces.	Change management documentation was developed to establish workflows from well construction diagrams to Borehole Index impacts to ensure necessary updates are implemented. GIS procedure was updated.
N/A	I-3183	E/I	Navarro	07/20/2021	05/25/2022	Electronic Data Capture (EDC) Application Version 11 is Non-Functional.	The EDC process was modified to include steps to ensure the data are migrated correctly and to notify the users that data were uploaded.
A-1512	I-3193	OFI	Navarro	08/06/2021	11/17/2022	GIS Work Orders	The statuses of existing Geographic Work Orders were reviewed and updated. The procedure was revised to reflect how work orders are entered.
A-1512	I-3194	OBS	Navarro	08/06/2021	11/28/2022	Improvements to the GIS Baseline	GIS baseline database and associated dictionary were update with the most current spatial data. A schedule was developed to request new/updated information on a regular basis for inclusion into the GIS baseline or other appropriate location.

Table A-2
2022 Closed Corrective Actions
(Page 2 of 5)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Closure Date	Description	Corrective Action
A-1512	I-3195	OFI	Navarro	08/06/2021	11/15/2022	Improve Efficiency of GIS/Global Positioning System (GPS) Procedures	GIS/GPS procedures were updated to improve efficiency; to assure consistency of products, workflow, and data transfer; and to provide easier maintenance, revision, and implementation.
A-1512	I-3196	OFI	Navarro	08/06/2021	12/12/2022	Improvements to GIS Data Collection and Map Packaging	New survey data and supplementary feature classes were entered into the GIS baseline. Additionally, map packaging issues were resolved to facilitate transfer of complete GIS project maps to outside users.
A-1512	I-3197	OFI	Navarro	08/06/2021	07/12/2022	Testing of SharePoint On-Line Environment	GIS personnel assisted with implementation testing of the new version of SharePoint to reduce broken links and decreased functionality of GIS SharePoint Services.
A-1512	I-3198	OBS	Navarro	08/06/2021	06/13/2022	GIS Source/Version Information	A process for update and exchange of information stored in the Navarro GIS system (e.g., GIS baseline) was developed and described in the procedure.
A-1512	I-3199	OBS	Navarro	08/06/2021	08/24/2022	List of Standard Maps	A list of potential “standard” maps was identified for use on the project. These standard maps will now be updated on a set schedule with specified data and formatting.
A-1512	I-3201	OBS	Navarro	08/06/2021	05/31/2022	Improve Communications with GIS Software Vendor	Formal communications was established with the Environmental Systems Research Institute (ESRI) to ensure that updates, software requirements, and other pertinent information is obtained and made available to the appropriate project personnel.

Table A-2
2022 Closed Corrective Actions
(Page 3 of 5)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Closure Date	Description	Corrective Action
A-1512	I-3202	OFI	Navarro	08/06/2021	05/26/2022	Maintenance of GPS Equipment List	A list of Survey Grade instruments (e.g., Property No., S/N, software installed, software version) and relevant Non-Survey Grade Equipment information are now maintained to aid in tracking, maintenance, and other functions.
A-1512	I-3203	OFI	Navarro	08/12/2021	06/27/2022	GPS Equipment Not Being Used	The master list of GPS equipment was reviewed, and units that no longer are operational or in use were excessed.
A-1512	I-3204	OFI	Navarro	08/12/2021	08/24/2022	Updates to Database Management Systems	A regular schedule of updates to specific database management systems (e.g., Borehole Index) and GIS data sources (e.g., GIS baseline) was developed to ensure data are current.
A-1466	I-3282	Finding	Navarro	11/15/2021	03/14/2022	The current version of the Accepts of Items and Services form, N-251, was not used to document receipt inspection.	UGTA field staff were briefed on the importance of using the most current version of procedures, forms, and work packages to perform and document work. Also, the two versions of the N-251 form were compared to determine the impact of using the incorrect version on the receipt inspection results and documentation.
N/A	I-3287	Finding	Navarro	12/09/2021	10/04/2022	Multiple versions of final document	An extent of condition was completed; procedures were reviewed; and staff were trained to know where to find official final copies of project reports and documents (Central Files and Environmental Management Information System [EMIS]).

Table A-2
2022 Closed Corrective Actions
(Page 4 of 5)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Closure Date	Description	Corrective Action
A-2897	I-3321	Finding	Navarro	02/16/2022	07/25/2022	Several controlled copy holders did not have their assigned hard copy controlled document in their possession, or they did not have the latest version.	Controlled document owners were contacted to determine whether the controlled copy is missing. If a controlled copy is missing, a controlled copy will be provided if required to ensure compliance with work activities, otherwise the missing controlled copy will be canceled. RBMS procedure, Technical Documents Distribution (DM-902) will be revised to incorporate a process change for issuing/receiving controlled copies. Procedure revision is now tracked using the Procedure Action Tracker.
A-1265[a]	I-3327	OFI	Navarro	03/10/2022	11/15/2022	In the Tier I and Tier II data validation procedures, there is discussion of forms that are to be populated once validation has been performed, but there is no instruction on what to do with validation results once entered into the database.	Three Tier I and II data validation procedures will be revised. Procedure revision is now tracked using the Procedure Action Tracker.
A-1265[a]	I-3328	OFI	Navarro	03/10/2022	11/29/2022	EDD Loader documentation	Transferred to PAT 36.
A-1265[a]	I-3329	OFI	Navarro	03/10/2022	11/15/2022	There are inconsistent requirements requested from the labs for data format.	Requirements for data format are established by the laboratory statement of work and depend on the data purpose.
A-1265[a]	I-3330	OFI	Navarro	03/10/2022	06/04/2022	There are numerous temporary, obsolete, or backup tables within the three chemistry databases.	The databases will remain in their current form because these tables do not impair database use. This ensures continued proper usage and does not potentially jeopardize their use.
A-1265[a]	I-3331	OFI	Navarro	03/10/2022	06/04/2022	Determination of database for sample results	The UGTA Chemistry Database User's Manual identifies the types of data entered into the three chemistry databases (Analytical Services, GeoChem 2 EDD, and GeoChem 2).

Table A-2
2022 Closed Corrective Actions
(Page 5 of 5)

Assessment No.	Track	Issue Type	Owning Organization	Origination Date	Closure Date	Description	Corrective Action
A-2940	I-3376	Finding	Navarro	06/08/2022	08/22/2022	6 of the 59 visually identified hold tags were not sent to QA as required by procedure.	Hold tags have been sent to QA and entered into the Hold Tag database.
A-2988	I-3436	Finding	USGS	08/09/2022	10/11/2022	Vehicle used to transport the camera and downhole reel equipment was not equipped with a power inverter.	Transport vehicle was equipped with a power inverter.
A-2988	I-3437	OFI	USGS	08/09/2022	11/17/2022	Awning for video logging	Awning was purchased.
A-2988	I-3438	OFI	USGS	08/09/2022	11/17/2022	Limited resolution of Laval R-Cam 1300 monitor/screen	A large field grade video monitor that will connect to the current camera system was researched and procured.
A-2988	I-3439	OFI	USGS	08/09/2022	11/17/2022	Laval R-Cam 1300 Winch overheating	A larger motor rated for a higher load was purchased.
N/A	I-3467	OFI	Navarro	09/22/2022	12/05/2022	Personnel have not been aware of the migration to SharePoint Online, and no training concerning the use of SharePoint has been offered to associates.	Options for accessing files after network drive migration to document center was distributed to all personnel.One Drive User Guide was also distributed to all personnel.

[a] Although issues originated in 2022 upon final closure of Assessment A-1265 (Data Flow Processes for Analytical Services and Geochemical Databases), the assessment itself was completed in 2021 and is therefore reported in Table 2-1 of the 2021 QA report (DOE/EMNV, 2023).

EDD = Electronic data deliverable
PAT = Procedure Action Tracker

A.1.0 References

U.S. Department of Energy Environmental Management Nevada Program. 2023. *Underground Test Area Calendar Year 2023 Quality Assurance Report, Nevada National Security Site, Nevada,* Rev. 0, DOE/EMNV--0047. Las Vegas, NV.

Appendix B

Nevada Division of Environmental Protection Comments

(2 Pages)

NEVADA ENVIRONMENTAL MANAGEMENT OPERATIONS ACTIVITY
DOCUMENT REVIEW SHEET

1. Document Title/Number: UGTA CY 2022 Quality Assurance Report				2. Document Date: Navarro 2023
3. Revision Number: 0				4. Originator/Organization: Navarro
5. Responsible EM Nevada Program Activity Lead: John Myers				6. Date Comments Due: N/A
7. Review Criteria: NDEP Review				
8. Reviewer/Organization Phone No.: Shantae Greene (702-668-3902), Meghan Lyle (702-668-3924), Chris Andres (702-668-3911)				9. Reviewer's Signature:
10. Comment Number/Location		11. Type[a]	12. Comment	13. Comment Response
1.			Please explain why the ten findings, three observations, seven opportunities for improvements, and one correctable deficiency from the 15 assessments conducted in 2022, and listed on Table 2-1, are not all listed in either Table A-1, 2022 Open Corrective Actions or Table A-2, 2022 Closed Corrective Actions, given that they were all identified in 2022. Only one finding (I-3321) for A- 2897 and one finding (I-3376) for A-2940 are listed in Table A-2	As stated in Section 2-2, Tables A-1 and A-2 only report UGTA-related issues that are associated with quality-related issues. Issues associated with health and safety, operations (e.g., schedules/delays, find-and-fix instrumentation issues), and classification are not presented. One finding (I-3433; A-2951), although associated with UGTA, was not considered a quality-related issue (Overdue [Waste Handler] Training). The remaining findings, OFIs, observations, and correctable deficiency were not associated with the UGTA Activity and therefore were not reported in this report. This report will be revised to only report quality-related issues related to UGTA. In addition, the Table 2-1 title will be revised to "Assessments Conducted on EM Nevada Program Participants, and Summary of the Corresponding Quality-Related Issues Associated with the UGTA Activity."

[a]Comment Types: M = Mandatory, S = Suggested.
Return Document Review Sheets to Environmental Management Nevada Program Operations Activity, Attn: QAC, M/S NSF 505

NEVADA ENVIRONMENTAL MANAGEMENT OPERATIONS ACTIVITY
DOCUMENT REVIEW SHEET

1. Document Title/Number: UGTA CY 2022 Quality Assurance Report				2. Document Date: Navarro 2023
3. Revision Number: 0				4. Originator/Organization: Navarro
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8. Reviewer/Organization Phone No.: Shantae Greene (702-668-3902), Meghan Lyle (702-668-3924), Chris Andres (702-668-3911)				9. Reviewer's Signature:
10. Comment Number/Location		11. Type[a]	12. Comment	13. Comment Response
2.			Table A-2, 2022 Closed Corrective Actions lists Assessment A-1265 as originating on March 10, 2022, and Assessment MSA-22-USGS-001 as originating on August 9, 2022. Please explain why neither of these assessments appear in Table 2-1, Assessments Conducted on EM Nevada Program Participants in calendar year 2022.	The dates in Appendix A are for the tracked issue numbers, not assessment dates. Assessment A-1265 was completed in 2021 but not closed until 2022. Because it was completed in 2021, the assessment was listed in the UGTA 2021 QA Report. Table 2-1 of the 2021 report includes the following footnote: "Assessment was not closed until 2022; therefore, the OFIs were not addressed until 2022." The issues were therefore only listed in the 2022 (current) report. Assessments MSA-22-USGS-001 and A-2988 are the same. MSA-22-USGS-001 is the USGS assessment number, and A-2988 is the Navarro assessment tracking number. Unfortunately, this was not made clear between Tables 2-1 and A-2. This report will be revised to (1) add a footnote to Table A-2 for all issues associated with Assessment A-1265 (I-3327, I-3328, I-3329, I-3330, and I-3331) that states: "Although issues originated in 2022 upon final closure of Assessment A1265 (Data Flow Processes for Analytical Services and Geochemical Databases), the assessment itself was completed in 2021 and is therefore reported in Table 2-1 of the 2021 QA report (DOE/EMNV, 2023)"; (2) add the 2021 QA report (DOE/EMNV, 2023) to the reference list (Section A.1.0); and (3) change the assessment number in Table A-2 from MSA-22-USGS-001 to A-2988 to be consistent with Table 2-1.

[a]Comment Types: M = Mandatory, S = Suggested.
Return Document Review Sheets to Environmental Management Nevada Program Operations Activity, Attn: QAC, M/S NSF 505