



Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, NV 89036-0307

QA: N/A

JAN 26 2001


OVERNIGHT MAIL

N. King Stablein
High Level Waste & Uranium Recovery
Division of Waste Management
Office of Nuclear Material Safety & Safeguards
U.S. Nuclear Regulatory Commission
Two White Flint North
Rockville, MD 20852

SUBMITTAL OF PARTICIPANTS' MONTHLY PROGRESS REPORT

As you have requested, the U.S. Nuclear Regulatory Commission is on distribution to receive a copy of the Yucca Mountain Site Characterization Project participants' monthly status report on a regular basis. Enclosed is the U.S. Geological Survey Progress Report for December 2000.

If you have any questions, please contact Bertha M. Terrell at (702) 794-1348.

for 
Stephan Brocoum
Assistant Manager, Office of
Licensing and Regulatory Compliance

OL&RC:BMT-0601

Enclosure:

Ltr, 01/11/01, Craig to Trebules, w/encl

*WM-11
NM5507*

JAN 26 2001

cc w/o encl:

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Leonard Fiorenzi, Eureka County, Eureka, NV
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U.S. GEOLOGICAL SURVEY

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IN REPLY REFER TO:

INFORMATION ONLY

January 11, 2001

Victor W. Trebules
Director, Office of Project Control
Yucca Mountain Site Characterization
Project Office
U. S. Department of Energy
P.O. Box 30307
Las Vegas, Nevada 89036-0307

SUBJECT: Yucca Mountain Project Branch - U.S. Geological Survey (YMPB-USGS)
Progress Report, December, 2000

Attached is the USGS progress report in the required format for the month of December, 2000.

If you have any questions or need further information, please call Raye Ritchey Arnold at (303)236-5050, ext 296.

Sincerely,

for Robert W. Craig
Technical Project Officer
Yucca Mountain Project Branch
U.S. Geological Survey

Enclosure:

cc: J. Bresee, DOE/OCRWM-HQ/Forrestal
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U.S. GEOLOGICAL SURVEY EXECUTIVE SUMMARY

December 2000

COORDINATION and PLANNING

Processing of some 65 documents prepared by U.S. Geological Survey authors continued during December, representing a slight increase over previous months. Informal-series reports included 11 Open-File Reports (OFRs) and 12 Water-Resources Investigations Reports (WRIRs), with ten of the OFRs covering geologic subject matter and nine of the WRIRs likewise involving hydrologic topics. One administrative report (regarding geologic work) was in processing. One USGS Fact Sheet (containing hydrologic subject matter) was being processed under the informal series. Formal-series reports included one Investigations-series map, geologic in subject matter. Six journal articles were in processing, all but one on geologic topics. Eleven Proceedings papers (split between six of geologic and five of hydrologic subject matter) were being processed. Some 22 abstracts (with 13 on geologic topics) were in processing. No reports were published during December.

GEOLOGY

Several efforts continued in work related to the waste-handling building and associated investigations. Staff continued compilation of drill-hole and test-pit logs from field logging and geophysical surveys. Preliminary work began on interpretation of waste-handling-building geotechnical data. Development of the framework for the AMR contribution began, with effort mainly toward general geology text and compilation of the reference section.

HYDROLOGY

Unsaturated-Zone Hydrology

The USGS continued to monitor pressure, temperature, and water potential at stations located in unsaturated-zone boreholes UZ #5, UZ #4, and NRG-7a. The data from UZ #4 and UZ #5 currently are being analyzed to provide infiltration estimates associated with the Winter 1998 El Niño rainfall events in Pagany Wash. The NRG-7a data are being collected and reviewed by the USGS for use in validation studies for the UZ site-scale model.

Moisture monitoring continued in the ESF and the Cross Drift. Water applications to the fault in Alcove #8 (the Cross-Over Alcove) on the small box plot continued until December 14, when those applications were terminated. The box was removed at that time. Trench construction along the fault began on December 18 and is expected to be

completed in early January. At that time, water applications will resume in on-going experiments evaluating seepage into Niche #3.

Two additional water samples collected in late June in support of the Drift-Scale Test were analyzed for strontium isotopes, although those samples contain such low concentrations that the measured isotope ratios may not reflect the *in situ* water. Uranium analyses are underway but currently are on hold due to the sudden illness of a critical USGS staff member. In data work, sample-collection reports have been compiled so that the data package describing dissolved-ion and isotopic analyses can be completed (expected during the next reporting period).

Saturated-Zone Hydrology

Water-level monitoring continued during the period. The fourth-quarter FY2000 water-level data package will be combined with the first-quarter FY2001 package. Field measurements for calibration of the powered electric tape were begun. Regarding other data issues, work on FY2000 data packages continued. Responses were compiled to checker comments on the second-quarter and third-quarter FY2000 data packages. The calendar-year 1999 water-level report remained in colleague review.

Preparations for short-term tracer test #1 at the Alluvial Testing Complex (ATC) were completed during November 2000. The test was started on November 30 by injection of tracer followed by chase water. Injection of the nearly 22,000 gallons of chase water was completed on December 1. The injected tracer plume was allowed to drift with the natural ground-water gradient for two days, then pumpback was initiated on December 3. The pumpback was intentionally interrupted from 4:10 PM on December 14 to 11:55 AM on December 15 as an experiment to investigate diffusion of the tracer into non-flowing (non-advective) parts of the test interval. The pumpback was stopped at 4 PM on December 18. Tracer test #2 is planned for the first week of January 2001. That test will involve no drift and only one week of pumpback (as opposed to the two days of drift and two weeks of pumpback conducted in Test #1).

Several efforts again continued on the Death Valley regional flow system (DVRFS) modeling, including tasks in data-base construction, work related to hydrogeologic framework modeling, and efforts in ground-water modeling. In on-going work in data-base integration, the DVRFS data base was updated with NWIS data. Some minor data errors require correction, but that task is essentially complete. Work continued on pre-processors for the flow model. In work on the hydrogeologic framework, files containing AutoCad .DXF portrayals of cross-section traces were compiled for use in construction of the transient hydrogeologic framework model (HFM). Coverage of those traces was created in the Intergraph MGE, and cross-section templates were created for use in the processing of cross-section data for that transient HFM. A rough draft of the text for the report documenting the steady-state HFM was produced. Lithologic and structural updates to the HFM were completed and were reported in a memorandum to the TPO, toward milestone SPH688M5 [Progress on HFM Update—Lithology and Structure]. A manuscript titled *Hydrostructural map of the Death Valley region*, authored by C. Potter,

D. Sweetkind, R. Dickerson, and M. Killgore, at a scale of 1:350,000 and containing two plates and text, was submitted for USGS technical review on December 21.

Numerous efforts also continued in ground-water flow modeling. Regional model simulations were conducted throughout the month. Spring-discharge data were evaluated in the flow model; evaluation of the Nevada (State) driller's-log data base for determination of generalized openings for discretization of pumpage data also continued. Input of early pumpage details for the Pahrump Valley area began. Development of a conversion process to transform model nodal coordinates into township, range, section, and latitude/longitude coordinates also began. Work continued on changes to post-processing capabilities of the flow model, including development of post-processing functions for visualization of 3-D model results. The DVRFS team continued model evaluation during calibration runs. Post-processors for the parameter-estimation package received on-going development efforts. G. O'Brien presented a talk titled *Effective model calibration for the geologically complex Death Valley regional ground-water flow system, Nevada and California* at the annual American Geophysical Society meeting in San Francisco, California.

CLIMATE and PALEOHYDROLOGY

In work related to evaluation of paleodischarge at Nye County sites, a revised data package containing uranium isotopic data was completed and resubmitted to the USGS data-checking process. Reviewer comments currently are being addressed. The data package is expected to be completed and submitted to the RPC/TDB in early January.

The USGS also provided support to investigations of water-rock interactions on engineered-barrier-system (EBS) materials. In response to a request from the Subsurface Performance Group, USGS staff worked to design a protocol for collection and analysis of dust in the ESF. Collection of thirty to fifty samples of dust is planned (for January) for geochemical and mineralogic characterization. Scanning electron microscope studies were arranged by the USGS team for analysis (to be conducted at UNLV) of representative dust samples. Work continued on evaluation of surficial carbonate source validation. Work completed in that task has consisted of preparing 22 samples of surface deposits (calcretes) from Crater Flat for strontium, oxygen, and carbon isotope analyses and completing ten carbon and oxygen isotope analyses.

WATER-RESOURCES MONITORING

Water-resource studies continued. Ground-water levels were measured at 34 sites, and ground-water discharge was measured at one spring and at one flowing well. Ground-water data collected during November 2000 were checked and filed. The ground-water and discharge data collected for the previous quarter were made available on the USGS Nevada District home page at http://nevada.usgs.gov/doe_nv/ymq_quarterly.htm. Compilation of historical data for the study area (including historical ground-water levels,

spring-flow discharges, precipitation, and water-use data) continued. Work began on refining the trend-analysis report scope and outline.

USGS Level 4 Milestone Report
October 1, 2000 - December 29, 2000
Sorted by Baseline Date

Deliverable	Due Date	Expected Date	Completed Date
SPS018CM4 Lev & Data Rel-Qualified/Verified Data Available	12/29/00	12/29/00	12/29/00
SPS162CM4 Hydrogeol Frmwork-Qualified/Verified Data Availa	12/29/00	12/29/00	12/29/00
SPU054CM4 Climate Mdl-Qualified/Verified Data Available	12/29/00	12/29/00	12/29/00
SPU098CM4 Infiltr Mdl-Qualified/Verified Data Available	12/29/00	12/29/00	12/29/00

USGS Level 5 Milestone Report
October 1, 2000 - December 31, 2000
Sorted by Baseline Date

Deliverable	Due Date	Expected Date	Completed Date
SSW700M5 Letter Update: 4th Qtr FY00	10/31/00	10/25/00	10/25/00
SPH508CM5 Preliminary Maps to Hydrologists	11/30/00	11/30/00	11/30/00
SPW395M5 4th Qtr FY00 Water Level Data to TDB/RPC	11/30/00	3/29/01	
SSH615CM5 Tipping Bucket Monitoring Data to RPC/TDB	11/30/00	1/30/01	
SPH394CM5 Water-Level Data 2nd Qtr FY00 DP to RPC/TDB	11/30/00	1/30/01	
SPH737CM5 Moisture Monitoring DP to RPC/TDB	11/30/00	1/30/01	
SPH396CM5 Water-Level Data 3rd Qtr FY00 DP to RPC/TDB	11/30/00	1/30/01	
SPH345CM5 Closing Calibration Data to TDB/RPC	11/30/00	1/30/01	
SSH617CM5 Document Missing Closing Calibrations	12/15/00	2/16/01	
SPH872CM5 Alcove 1 DP to RPC/TDB	12/15/00	1/30/01	
SPH747CM5 Document Missing Closing Calibrations	12/15/00	1/30/01	
SPH457CM5 EBS DP to TDB/RPC	12/15/00	1/19/01	
SPH477CM5 Descript & DP: Dissolved Ion & Isotopic Anal	12/29/00	1/31/01	
SPH956CM5 Fluid Inclusion Data to RPC/TDB	12/29/00	1/31/01	
SPH3491CM5 RPC/TDB: SD-6 Pumping/Monitoring Data Pkg	12/29/00	1/30/01	
SPH688M5 Progress HFM Update - Litho/Struct	12/29/00	1/8/01	
SPH715M5 Steady-State Model Report to Review	12/29/00	1/31/01	

YMP PLANNING AND CONTROL SYSTEM (PACS)

MONTHLY COST/FTE REPORT

Participant U.S. Geological Survey
Date Prepared 1/10/01 11:24 AM

Fiscal Month/Year December 31, 2000
Page 1 of 1

CURRENT MONTH END

FISCAL YEAR

WBS ELEMENT	ACTUAL COSTS	PARTICIPANT HOURS	SUBCONTRACT HOURS	PURCHASE COMMITMENTS	SUBCONTRACT COMMITMENTS	ACCRUED COSTS	APPROVED BUDGET	APPROVED FUNDS	CUMMULATIVE COSTS
1.2.21.2.1	0	0	0	0	0	0	25	0	0
1.2.21.3.2	0	0	0	0	0	0	110	0	0
1.2.21.3.S	0	0	0	0	0	0	75	0	0
1.2.21.3.U	1	0	0	0	180	0	363	0	3
1.2.21.5.2	58	200	269	0	2	0	598	0	170
1.2.21.5.3	180	1578	2534	0	304	0	1000	0	576
1.2.21.5.4	152	2563	391	0	161	0	1600	0	505
1.2.21.5.T	38	144	593	0	180	0	432	0	108
1.2.21.6.1	210	1069	854	0	466	0	1982	0	488
1.2.22.4.6	52	509	184	0	64	0	335	0	122
1.2.22.4.E	5	78	0	0	0	0	100	0	8
1.2.22.4.S	70	1493	0	0	81	0	1744	0	251
1.2.22.4.U	136	1816	654	0	515	0	1969	0	379
1.2.22.5.2	0	0	0	0	0	0	25	0	0
1.2.22.6.T	28	353	0	0	0	0	350	0	74
1.2.22.8.0	4	24	0	0	0	0	50	0	5
	934	9827	5479	0	1953	0	10758	0	2689

U.S. GEOLOGICAL SURVEY

ESTIMATED COSTS FOR October 1, 1999 - December 31, 2000

1/5/01 1:51:41 PM

	OCT EST	NOV EST	DEC EST	JAN EST	FEB EST	MAR EST	APR EST	MAY EST	JUN EST	JUL EST	AUG EST	SEP EST	TOTAL
4889-21211 Science Support to Vol. 1 SR (LOE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
81912121U1 Science Support to Volume 1 - SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2016 Site Recommendation Rprt Vol. 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.21.2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.21.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-21319 Science Support to TSPA-SR (LOE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
81912132U2 Science Support to TSPA - SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
GS2397 USGS TSPA for SR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.21.3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-21350 Saturated Zone PMR Finalize Field Data	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-21351 Saturated Zone PMR Comment Resolutio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-21355 Saturated Zone PMR rev. 1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.17
8191213SU7 Science Support to SZ PMR for SR	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.17
2031 SZ Flow and Transport PMR-SR	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.17
1.2.21.3.S	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.17
4889-21360 Unsaturated Zone PMR Finalize Field Dat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-21361 Unsaturated Zone PMR Comment Resolu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-21365 Unsaturated Zone PMR rev. 1	0.0	2.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.02
8191213UU7 Science Support to UZ PMR for SR	0.0	2.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.02
4889-21399 DEFERRED - Alcove Moisture Monitoring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191213UUM DEFERRED - Alcove Moisture Monito	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2027 UZ Flow and Transport PMR-SR	0.0	2.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.02
1.2.21.3.U	0.0	2.1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.02
1.2.21.3	0.0	2.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.19
4732-16300 Water Resources	35.8	35.8	35.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.49
81912152U5 Water Resources	35.8	35.8	35.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.49
4889-10715 Federal Occuational Safety & Health	8.4	10.8	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.73

U.S. GEOLOGICAL SURVEY

ESTIMATED COSTS FOR October 1, 1999 - December 31, 2000

1/5/01 1:51:41 PM

	OCT EST	NOV EST	DEC EST	JAN EST	FEB EST	MAR EST	APR EST	MAY EST	JUN EST	JUL EST	AUG EST	SEP EST	TOTAL
81912152U6 Federal Occupational Safety and Hea	8.4	10.8	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.73
4889-84099 DEFERRED - Precipitation Gage Monitori	4.3	16.3	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.63
81912152UM DEFERRED - Precipitation Gage Mo	4.3	16.3	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.63
GS9121 USGS ES & H Core Program - SR	48.5	62.9	58.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.85
1.2.21.5.2	48.5	62.9	58.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.85
4889-10535 Technical Data Management	36.3	35.5	48.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.05
81912153U3 Technical Data Management	36.3	35.5	48.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.05
4889-21111 Data Q/V & Software V for SR Products	149.1	163.0	122.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	434.09
81912153U5 Data Q/V & Software V for SR Produ	149.1	163.0	122.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	434.09
GS2470 USGS Tech. Data Mngmnt - SR	185.5	198.4	170.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	554.14
4889-10714 Records	6.0	5.9	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.75
81912153U4 Records	6.0	5.9	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.75
GS9197 USGS Dcmnt Cntrl, Rcrds & Mngmnt	6.0	5.9	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.75
1.2.21.5.3	191.4	204.3	180.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	575.89
4889-10710 TPO	99.6	106.3	90.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	296.75
81912154U4 USGS TPO	99.6	106.3	90.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	296.75
4889-10713 Project Control	55.7	21.4	28.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.12
81912154U5 Project Control	55.7	21.4	28.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.12
4889-11201 Regulatory Product Integrity	35.8	34.0	33.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.91
81912154U6 Regulatory Product Integrity	35.8	34.0	33.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.91
GS9135 USGS Project Planning & Control	191.0	161.7	152.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	504.79
1.2.21.5.4	191.0	161.7	152.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	504.79
4889-21599 DEFERRED - Water Level Monitoring Clo	19.3	13.9	17.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.41
4889-23099 DEFERRED - Surface Base Boreholes CI	18.4	17.7	21.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.41
8191215TUM DEFERRED - Testing and Analysis C	37.7	31.7	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.81
8621 USGS Tst Coord/Sup for Site Activitie	37.7	31.7	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.81

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1.2.21.5.T	37.7	31.7	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.81
1.2.21.5	468.7	460.6	429.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,358.34
4889-10401 Support & Personnel Services	19.3	36.3	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.55
4889-10402 Procurement & Property Mgt.	14.6	15.1	13.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.46
4889-10403 Facilities Management - Space	74.7	-44.7	149.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	179.71
4889-10404 Facilities Management - Computers/Phon	0.0	2.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.32
4889-10405 Facilities Management - Other	20.7	31.1	-19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.69
4889-10406 Computer Support	20.7	20.2	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.60
81912161U3 Support and Personnel Services	150.0	60.4	184.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	394.34
4889-10409 DEFERRED - Space and Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
81912161UM DEFERRED - Space and Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
GS533 USGS Administrative Support - SR	150.0	60.4	184.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	394.34
4889-10711 Training Support	7.5	60.6	25.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.75
81912161U4 Training Support	7.5	60.6	25.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.75
GS9111 USGS Training Program - SR	7.5	60.6	25.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.75
1.2.21.6.1	157.5	121.0	209.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	488.09
1.2.21.6	157.5	121.0	209.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	488.09
1.2.21	626.2	583.8	639.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,849.62
4889-21501 Lithostratigraphic Support to Nye Co.	18.8	11.1	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.45
81912246U1 Lithostratigraphic Support to Nye Cou	18.8	11.1	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.45
4889-21502 Isotope/Hydrochemical Support to Nye Co	23.4	17.0	20.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.17
4889-21511 Isotope/Hydrochemical Support to Nye Co	0.0	0.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.59
81912246U2 Isotope/Hydrochemical Support to Ny	23.4	17.0	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.76
RMX25LA Nye County Drilling	42.2	28.2	51.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	122.20
1.2.22.4.6	42.2	28.2	51.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	122.20
4889-21322 Effects of Water-Rock Interaction on EBS	0.0	3.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.31
8191224EU2 Effects of Water-Rock Interaction on	0.0	3.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.31
GS532 USGS-EBS Dgrdtn Flow & Trnsprt P	0.0	3.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.31

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1.2.22.4.E	0.0	3.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.31
4889-21357 Hydrogeologic Framework AMR	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.40
4889-21358 Water Level AMR	7.9	3.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.77
4889-22451 SZ AMRs/PMRs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191224SU1 Science Support to SZ AMRs/PMR fo	7.9	4.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.17
4889-12013 Alluvial Testing Complex	60.9	33.1	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	139.50
8191224SU3 SZ Investigations	60.9	33.1	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	139.50
4889-12015 Monitor Isotope/Hydrochemical Condition	1.2	5.9	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.75
8191224SU4 SZ Isotope Hydrology	1.2	5.9	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.75
4889-11012 Regional Modeling Data Base	5.5	6.4	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.22
4889-11017 Hydrogeologic Framework Model - Refine/	8.8	6.5	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.25
4889-11020 Groundwater Flow Modeling	13.0	27.8	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.06
4889-11021 Technical Interactions - Regional Model	1.8	-1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8191224SU5 Regional Model	29.1	38.9	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.53
GS522 USGS - SZ Flow & Trnsprt PMR - LA	99.2	82.1	69.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	250.95
1.2.22.4.S	99.2	82.1	69.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	250.95
4889-21345 Drift-Scale Test ESF	11.8	-2.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.77
8191224UU7 Drift-Scale Test ESF	11.8	-2.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.77
GS502 USGS - Near Field Envrn. PMR - LA	11.8	-2.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.77
4889-21303 Crossover Alcove (Alcove 8)	29.2	28.3	31.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.10
4889-21384 ESF/Cross Drift Moisture Monitoring	12.0	9.8	16.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.02
4889-21385 ECRB (Bulkhead) Moisture Monitoring	10.4	-3.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.76
8191224UU3 UZ Moisture Studies	51.5	35.1	51.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	137.88
4889-22424 Surficial Carbonate Source Validation - Cr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-27009 CI-36 Validation in the ESF	10.7	11.9	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.97
4889-62213 Ages of Calcite/Opal Fracture/Cavity Coat	38.7	33.0	24.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.36
4889-62219 Fluid Inclusions in Calcite/Opal	20.8	25.9	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.33
8191224UU4 UZ Isotope Hydrology	70.3	70.8	60.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.66

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4889-21368 Busted Butte Mapping (Mineback)	0.0	5.9	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.38
8191224UU5 Mapping (USBR)	0.0	5.9	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.38
GS520 USGS - UZ Flow & Trnsprt PMR - LA	121.8	111.8	128.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	361.92
1.2.22.4.U	133.6	109.3	135.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	378.69
1.2.22.4	274.9	222.5	262.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	760.15
4889-22520 Update PC Plan Support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
81912252U1 Update PC Plan Support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2004 Prep. LA Dcmntry Rcrd (Incl LSN Spp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.22.5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
1.2.22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4889-22607 Interpret WHB Geotechnical Data	1.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.82
8191226TU4 Interpret WHB Geotechnical Data	1.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.82
4889-22602 Deferred - Field Effort for WHB Geotechni	12.5	28.1	27.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.44
8191226TUM DEFERRED - Field Effort for WHB G	12.5	28.1	27.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.44
GS8622 USGS Tst Coord/Sup for Site Activitie	14.3	32.1	27.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.26
1.2.22.6.T	14.3	32.1	27.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.26
1.2.22.6	14.3	32.1	27.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.26
4889-10712 KTI Meeting Support	0.0	0.4	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.81
81912280U1 KTI Meeting Support	0.0	0.4	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.81
GS503 Support Closure of NRC Key Technic	0.0	0.4	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.81
1.2.22.8.0	0.0	0.4	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.81
1.2.22.8	0.0	0.4	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.81
1.2.22	289.2	255.1	295.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	839.21

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1.2 OPERATING	915.4	838.9	934.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,688.84
CAPITAL EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRAND TOTAL	915.4	838.9	934.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,688.84
FTEs													
FEDERAL	57.8	61.5	58.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
CONTRACT	42.0	37.3	35.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTAL	99.8	98.7	93.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	